Kansas City Kansas Public Schools

Project Manual

IFB 18-004

F.L. Schlagle High

&

Cheyenne Building

January 22, 2018
# DOC00010 - TABLE OF CONTENTS

## DIVISION 00 BIDDING REQUIREMENTS AND CONTRACT FORMS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00010</td>
<td>Table of Contents</td>
</tr>
<tr>
<td>00101</td>
<td>Invitation to Bid</td>
</tr>
<tr>
<td>00201</td>
<td>Instructions to Bidders</td>
</tr>
<tr>
<td>00411</td>
<td>Bid Form</td>
</tr>
<tr>
<td>00439</td>
<td>Bid Form Supplement – Bid Bond</td>
</tr>
<tr>
<td>00500</td>
<td>Contracting and Administrative Forms</td>
</tr>
</tbody>
</table>

## DIVISION 1 - GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01100</td>
<td>Summary</td>
</tr>
<tr>
<td>01230</td>
<td>Alternates</td>
</tr>
<tr>
<td>01270</td>
<td>Unit Prices</td>
</tr>
<tr>
<td>01330</td>
<td>Submittal Procedures</td>
</tr>
<tr>
<td>01700</td>
<td>Execution Requirements</td>
</tr>
<tr>
<td>01731</td>
<td>Cutting and Patching</td>
</tr>
<tr>
<td>01732</td>
<td>Selective Demolition</td>
</tr>
<tr>
<td>01770</td>
<td>Closeout Procedures</td>
</tr>
</tbody>
</table>

## DIVISION 2 (NOT APPLICABLE)

## DIVISION 3 – CONCRETE

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>03931</td>
<td>Concrete Deck Rehabilitation</td>
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</table>

## DIVISION 4 (NOT APPLICABLE)

## DIVISION 5 - METALS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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<tbody>
<tr>
<td>05310</td>
<td>Steel Deck</td>
</tr>
</tbody>
</table>

## DIVISION 6 - WOOD AND PLASTICS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>06105</td>
<td>Miscellaneous Carpentry</td>
</tr>
</tbody>
</table>

## DIVISION 7 - THERMAL AND MOISTURE PROTECTION

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>07157</td>
<td>Fluid Applied Roofing System</td>
</tr>
<tr>
<td>07510</td>
<td>Cold Applied Built-up Roofing</td>
</tr>
<tr>
<td>07511</td>
<td>Hot Applied Built-Up MB Asphalt Roofing</td>
</tr>
<tr>
<td>07541</td>
<td>Tri-Polymer Alloy Roofing</td>
</tr>
<tr>
<td>07591</td>
<td>Membrane Reroofing Preparation</td>
</tr>
<tr>
<td>07620</td>
<td>Sheet Metal Flashing And Trim</td>
</tr>
</tbody>
</table>

## DIVISION 8 – 16 (NOT APPLICABLE)

## DETAIL DRAWINGS

## ROOF PLANS

END OF DOCUMENT 00010
INVITATION TO
BID
DOCUMENT 00101 – INVITATION TO BID

PROJECT: 2018 - F.L. Schlagle High - Roofs 4, 5, 6, 7, & 8, and Cheyenne Building

LOCATION: F.L. Schlagle High School and Cheyenne Building

OWNER: Unified School District #500

The Owner will receive sealed bids until the bid time and date at the location given below for the following Work: Roof Replacement on miscellaneous buildings as listed in Specification Documents.

BID SUBMITTAL AND BID SECURITY
The Owner will consider bids as listed above, prepared in compliance with the Instructions to Bidders issued by the Owner, and delivered as follows:

Bid Date: February 16, 2018
Bid Time: 1:00 p.m., local time.

Location: Bids to be mailed or hand delivered to the following address:
Attn: Mr. Wayne Correll, Director - Purchasing
2010 North 59th Street
Third Floor – Conservatory Room
Kansas City, Kansas 66104

Faxed bids are not acceptable.

The Owner (USD #500) reserves the right to accept or reject any and all bids and reserves the right to final judgment as to awarding the bid.

PRE-BID CONFERENCE
A pre-bid conference for all bidders will be held at District Maintenance Shop, 2220 N. 59th, Suite 229, Kansas City, Kansas 66104 on February 2, 2018 at 1:00 p.m., local time. All prospective bidders are required to attend.

DOCUMENTS
Bidding documents may be obtained on the District website. https://kckps.org

TIME OF COMPLETION
Bidders shall begin work upon receipt of Notice to Proceed and to complete the work within the Contract Time indicated in the Contract Documents.

BIDDER’S QUALIFICATIONS
Bidders must be properly licensed under the state laws governing their respective trades and be able to obtain insurance and bonds required for the Work.

END OF SECTION 00101
INSTRUCTIONS TO BIDDERS
1.1 ADVERTISEMENT FOR BIDS

A. An Invitation to Bid, published as a separate document, is part of these instructions.

1.2 DEFINITIONS

A. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bids, these Instructions to Bidders, bid forms, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract, Drawings, Specifications, and all Addenda issued prior to execution of the Contract.

B. Addenda are written or graphic instruments issued by the Owner prior to the execution of the Contract that modify or interpret the Bidding Documents.

C. The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

D. An Alternate Bid is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

E. A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work as described in the Bidding Documents.

F. A Bidder is a person or entity who submits a Bid to the Owner and who meets the requirements set forth in the Bidding Documents.

1.3 BIDDING DOCUMENTS

A. Obtaining Bidding Documents: Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement for Bids in the number and for the cost or deposit sum, if any, stated therein. Bidders shall use complete sets of Bidding Documents in preparing Bids. The Owner assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

B. Examination of Bidding Documents and Site: Before submitting a bid, the Bidder shall carefully examine the drawings, read the specifications and all other Contract Documents and visit the site of the Work. The Bidder shall fully inform himself prior to bidding as to all existing conditions and limitations under which the Work is to be performed and he/she shall include in the Bid a sum to cover the cost of all items necessary to perform the Work as set forth in the Contract Documents. No allowance will be made to the Bidder because of lack of such examination or knowledge. The submission of a bid shall be construed as conclusive evidence that the Bidder has made such examination.
C. Interpretation or Correction of Bidding Documents: If the Bidder is in doubt as to the interpretation of any part of the Bidding Documents, or finds discrepancies in or omissions from any part of the Contract Documents, he/she must submit a written Request for Interpretation thereof not later than 7 days prior to opening of bids. Address all communications to the Owner.

1.4 ADDENDA

A. Any interpretation, correction to, or addition to the Contract Documents will be made by written Addendum and will be delivered by mail or fax to each prime Bidder of record and the plan services indicated in the Advertisement for Bids. The written Addenda constitute the only interpretations of the Contract Documents; the Owner accepts no responsibility for any other claimed interpretations.

B. It is the responsibility of each Bidder to verify that he/she has received all Addenda prior to submitting a bid. It is also the responsibility of each Bidder to verify that all sub-Bidders and material suppliers whose prices are incorporated in the Bidder’s bid are familiar with the Bidding Documents in their entirety, including all Addenda issued up to the time of bid opening.

C. In the event a conflict or omission is discovered in the Bidding Documents after the issuing of the last addendum such that an interpretation cannot be issued by the Owner prior to bidding, the Bidder is directed to estimate on and provide the quantity and quality of material and labor consistent with the overall represented work so as to provide all materials, equipment, labor, and services necessary for the completion of the Work.

1.5 SUBSTITUTIONS DURING BIDDING

A. Substitutions are not allowed during bidding. Bids shall be submitted based upon the materials, equipment, and services specified.

1.6 BIDDING PROCEDURES

A. Form Of Bid

1. Bids must be submitted on the Bid Form provided, properly executed and with all items filled out in ink or typed. Do not change or add words to the Bid Form. Unauthorized conditions, limitations, or provisions on or attached to the Bid Form may be cause for rejection of the bid. Bidder’s information on the Bid Form that is altered by erasure or by interlineation prior to submittal must be initialed and explained by notation on the Bid Form above the signature of the Bidder. All signatures must be witnessed.

B. Submission Of Bids

1. Each bid shall be delivered to the location indicated on the Bid Form on or before the day and hour set for receipt and opening of bids. Each bid shall be submitted in an opaque, sealed envelope marked in the lower left-hand corner as follows:

<table>
<thead>
<tr>
<th>Bid for (name of prime contract)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Project</td>
<td></td>
</tr>
<tr>
<td>Bidder's Name</td>
<td></td>
</tr>
</tbody>
</table>
2. If not delivered in person, this envelope shall be enclosed in a second envelope for posting to the location indicated for receipt of bids. This envelope shall be addressed as follows:

Bid for (name of prime contract)
Owner name
Street address OR Post Office Box 0000
City Name, State, Zip Code
Contractor's License No.
Date and Time of Bid Opening

3. It is the sole responsibility of the Bidder to see that his/her bid is received in proper time. No bids submitted after the time fixed for receiving bids will be considered; late bids will be returned to the Bidder unopened.

C. Acknowledgement Of Addenda
1. Bidder must acknowledge all Addenda received in the spaces provided on the Bid Form. By submitting a bid, Bidder indicates that all considerations issued by addendum are incorporated in the bid.

D. Bid Supplements
1. Attached to the Bid Form will be certain supplements that are included in this Project Manual following the Bid Form. Bidders shall complete all forms, entering “Not Applicable” where information does not apply to their portion of the Work. Absence of any of the Bid Supplements included in the Project Manual will be reason for possible rejection of bid.

E. Status Of Bidders
1. Proprietors submitting bids shall indicate their status as proprietors.
2. Bidders submitting bids for partnerships shall indicate their status as partners and shall submit, upon request of the Owner within 24 hours following receipt of bids, a certified copy of the power of attorney authorizing the executor of the bid to bind the partnership.
3. Bidders submitting bids for corporations shall indicate their status as corporations and shall submit, upon request of the Owner within 24 hours following receipt of bids, a certified copy of the board of directors’ authorization for the Bidder to bind the corporation and shall affix the corporate seal on the bid.
4. Bidders shall provide, upon request of the Owner, within 24 hours following receipt of bids, the following:
   a. Names and addresses of proprietors, of all members of a partnership, or of the corporation’s officers.
   b. Name of county or state where the partnership is registered or where the corporation is incorporated. Corporations must be licensed to do business in the project state at the time of executing the contract.
1.7 MODIFICATION AND WITHDRAWAL OF BIDS

A. A bid may be withdrawn on personal requests received from Bidder prior to submission time. A withdrawn bid may be resubmitted up to submission time. Negligence or error on the part of the Bidder in preparing his/her bid confers no right for withdrawal of the bid after it has been opened.

B. Telegraphic and faxed bids will not be considered.

C. No Bidder may withdraw a bid within 60 days following the opening of bids.

1.8 AWARD OR REJECTION OF BIDS

A. The contract, if awarded, will be awarded to the lowest responsible Bidder, subject to the Owner's right to reject any or all bids and to waive any informality in the bids or in the bidding. Failure to complete all information required on the Bid Form and Bid Form Supplements, may result in rejection of bid. The Owner shall have the right to accept alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low bidder on the basis of the sum of the Base Bid and Alternates accepted.

B. Bids may be rejected if the Bid Form shows any unexplained erasures, omissions, alterations of form, additions not called for, added restrictions or qualifying conditions or other irregularities of any kind.

C. The Owner may make such investigations as he/she deems necessary to determine the ability of the Bidder to perform the Work, and the Bidder shall furnish to the Owner all such information for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by or investigation of such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein within the Contract Time.

1.9 ACCEPTANCE

A. The acceptance of a bid will be a Notice of Award, signed by a duly authorized representative of the Owner; no other act by the Owner or his/her agents shall constitute the acceptance of a bid. The acceptance of a bid by the Owner shall bind the successful Bidder to execute the contract. The Bidder to whom the contract is awarded by the Owner, shall, sign and deliver to the Owner for execution by the Owner all required copies of the Agreement, along with all required insurance and bonding documents. The rights and obligations provided for in the Contract shall become effective upon the parties only with formal execution of the Agreement by the Owner.

1.10 BONDS AND CERTIFICATES

A. Bid shall be accompanied by an acceptable bid bond or certified cashier's check drawn on a local bank, payable to Treasurer, Board of Education, for an amount not less than five percent of the total amount of the bid. This bid security shall become the property of the Board of Education as liquidated damages in the event the successful bidder fails to execute and deliver a
contract, along with specified surety and statutory bonds, within ten days after the received notice of the acceptance of his bid by the Board of Education.

B. Bidder shall deliver to the Owner, upon receipt of contract or purchase order, a Performance Bond, a Payment Bond, and a Labor and Material Bond, each in the amount of 100 percent of the Contract Sum, with a corporate surety authorized to transact business in the Project State, within 3 days following execution of the Contract, or prior to commencement of the Work, whichever occurs first. Attorneys-in-fact who sign bonds must file with each bond a certified and effective dated copy of their power of attorney.

C. Satisfactory certificates of insurance in the amounts specified in the Contract Documents shall be furnished prior to commencement of Work.

D. All bonds and policies or certificates of insurance must meet with the approval of the Owner before the Contractor will be allowed to commence the Work. Failure or refusal to furnish bonds or insurance policies or certificates in a form satisfactory to the Owner shall subject the Bidder(s) to forfeiture of bid bond.

E. The form of the Agreement that the successful Bidder, as Contractor, will be required to execute is the form of Agreement referenced in the Project Manual.

1.11 INVOICING AND OFFICE SUPPORT

A. All bidders must have the ability within their office to process all required paperwork for invoicing the District. This is to include, but not be limited to, timely issuance of invoices with proper backup to support the amount due, certified payrolls/reports, and all required closeout documents.

B. Invoices may be emailed IF the contents of the email contain a cover letter with the invoice amount and all necessary support backup for the total amount due.

C. All tax exempt “completion forms” must be provided to the District within the State of Kansas required timeframe. Violation of this process point might negate the tax free benefit of working with the District.

1.13 LIQUIDATED DAMAGES

A. Liquidated Damages: In the event Contractor fails to complete the work in accordance with the Schedule specified in the Agreement or within such additional time(s) as may be granted by formal written action of the District, District will suffer damage, the amount of which is difficult or impossible to ascertain. It is agreed that the Contractor shall pay to the District as fixed late fees, and not a penalty, the sum of $800.00 USD for each calendar day of delay until the work is completed and accepted by the District. Contractor and its Surety shall be liable for late fees assessed by the District.

END OF SECTION 00201
BID FORM
BASE BID OR ALTERNATE BID, SINGLE-PRIME (ALL TRADES) CONTRACT

The undersigned Bidder, having carefully examined the Bidding and Contract Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, all as issued by the Owner, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material (other than roofing material listed on Attachment A), labor, equipment and services as described in the above documents, without exception, including all scheduled Allowances if any, necessary to complete the specified work.

USD #500 shall purchase all roofing material supplied by the primary roofing material manufacturer for all projects. The Bidder shall provide Attachment A with their bid, verifying quantities required to complete this project as specified. All materials not listed on Attachment A shall be the responsibility of the Bidder. The cost for the items listed on Attachment A shall not be included in your Base Bid price. Failure to provide the mandatory Attachment A with verified quantities will render your bid non-responsive.

Single Prime (All trades) Contract for the above-named Project, in accordance with the requirements of the Bidding Documents, for the sum of:

BASE BID

1. F.L. Schlagle High School – Roofs 4 and 5 $________________________
2. Cheyenne Building - MB Membrane $________________________

ALTERNATE BID

1. F.L. Schlagle High School – Roofs 6, 7, & 8 $________________________
   ADD to Base Bid #1
2. Cheyenne Building – Single Ply Membrane $________________________
   ADD or DEDUCT to Base Bid #2

UNIT PRICES

1. Wood Blocking Replacement $____________ per board foot
2. Drain Bowl Replacement – 5” $____________ each
3. Drain Clamping Ring Replacement $____________ each
4. Metal Deck Repair $____________ per square foot
5. Metal Deck Replacement $____________ per square foot
6. Concrete Deck Repair $____________ per cubic foot
7. 18-gauge Metal – Flat-stock $____________ per square foot
8. Plywood Replacement 5/8” $____________ per square foot
**BONDING**
Bid shall be accompanied by an acceptable bid bond or certified cashier's check drawn on a local bank, payable to Treasurer, Board of Education, for an amount not less than five percent of the total amount of the bid. This bid security shall become the property of the Board of Education as liquidated damages in the event the successful bidder fails to execute and deliver a contract, along with specified surety and statutory bonds, within ten days after the received notice of the acceptance of his bid by the Board of Education.

The undersigned Bidder agrees to furnish a Payment & Performance Bond, in the amount of 100% of total contract value after receipt of contract.

**TIME OF COMPLETION**
The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by the District and shall complete 100% of the Roofing and Sheet Metal Work no later than August 31, 2018. If work cannot be completed within specified timeframe, contractor shall provide immediate repairs to stop or minimize leaks until work is completed and shall pay as a late fee the sum of $800 for each consecutive calendar day that work is not completed thereafter.

**ACKNOWLEDGEMENT OF ADDENDA**
The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
Addendum No. 1, dated _____________
Addendum No. 2, dated _____________
Addendum No. 3, dated _____________
Addendum No. 4, dated _____________

**CONTRACTOR'S LICENSE**
The undersigned further states that he is a duly licensed Contractor, for the type of work proposed, in the State of Kansas, and that all fees, permits, etc., pursuant to the submission of this proposal have been paid in full.

**SUBMISSION OF BID**
Respectfully submitted this ____ day of ____________, 2018.

By: ________________________________

(Name of bidding firm or corporation)

Witness: By: ________________________________

(Signature)
Attest: ________________________________  ________________________________
(Signature) (Type or print name)

By: ________________________________  Title: ________________________________
(Type or print name) (Owner/Partner/President/Vice Pres.)

Title: ________________________________  Address: ________________________________
(Corporate Secretary or Assistant Secretary Only)

Phone: ________________________________

License: ________________________________

(Affix Corporate Seal Here) Federal ID No.: ________________________________
ATTACHMENT A  
USD #500 – 2018 ROOFING PROJECTS 
F.L. Schlagle High - Base Bid #1

<table>
<thead>
<tr>
<th>Products</th>
<th>Material Size &amp; Container</th>
<th>Material Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>AlphaGuard MT Base Coat</td>
<td>2 gallon bucket</td>
<td>4 buckets</td>
</tr>
<tr>
<td>AlphaGuard MT Top Coat</td>
<td>2 gallon bucket</td>
<td>3 buckets</td>
</tr>
<tr>
<td>AlphaGuard M-Prime</td>
<td>1 gallon bucket</td>
<td>1 buckets</td>
</tr>
<tr>
<td>Alumanation 301</td>
<td>5 gallon bucket</td>
<td>8 buckets</td>
</tr>
<tr>
<td>Burmastic Adhesive</td>
<td>50 gallon barrels – lined</td>
<td>118 barrels</td>
</tr>
<tr>
<td>Burmastic Composite Ply HT</td>
<td>20 rolls per pallet - 2/sq/roll</td>
<td>23 pallets</td>
</tr>
<tr>
<td>Burmastic Glass Ply – 33 lb.</td>
<td>20 rolls per pallet – 2/sq/roll</td>
<td>37 pallets</td>
</tr>
<tr>
<td>Burmesh</td>
<td>6” x 300’ rolls</td>
<td>8 rolls</td>
</tr>
<tr>
<td>ELS Mastic</td>
<td>5 gallon bucket</td>
<td>72 buckets</td>
</tr>
<tr>
<td>Permafab</td>
<td>6” x 300’ roll</td>
<td>1 roll</td>
</tr>
<tr>
<td>Polyroof SF</td>
<td>3 gallon buckets</td>
<td>70 buckets</td>
</tr>
<tr>
<td>Premium IV Asphalt</td>
<td>18 cartons per pallet</td>
<td>29 pallets</td>
</tr>
<tr>
<td>TRA Flashing</td>
<td>18” x 50’ roll</td>
<td>15 rolls</td>
</tr>
<tr>
<td></td>
<td>24” x 50’ roll</td>
<td>12 rolls</td>
</tr>
<tr>
<td></td>
<td>36” x 50’ roll</td>
<td>2 roll</td>
</tr>
<tr>
<td>TremSeal Pitch Pan Sealer</td>
<td>5 cartridge sets/case – 1.5 gal/case</td>
<td>3 cases</td>
</tr>
</tbody>
</table>

Contractor Name: __________________________________________

Project Size: ____________________________________________ square feet
# ATTACHMENT A
## USD #500 – 2018 ROOFING PROJECTS
### Cheyenne Building - Base Bid #2

<table>
<thead>
<tr>
<th>Products</th>
<th>Material Size &amp; Container</th>
<th>Material Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumanation 301</td>
<td>5 gallon bucket</td>
<td>5 buckets</td>
</tr>
<tr>
<td>Burmesh</td>
<td>6” x 300’ rolls</td>
<td>3 rolls</td>
</tr>
<tr>
<td>ELS Mastic</td>
<td>5 gallon bucket</td>
<td>18 buckets</td>
</tr>
<tr>
<td>PowerPly Plus HT FR</td>
<td>1 sq/roll (20 rolls/pallet)</td>
<td>1 pallets</td>
</tr>
<tr>
<td>PowerPly Plus HT Smooth</td>
<td>1.5 sq/roll (20 rolls/pallet)</td>
<td>6 pallets</td>
</tr>
<tr>
<td>Premium IV Asphalt</td>
<td>18 cartons per pallet</td>
<td>13 pallets</td>
</tr>
<tr>
<td>Thermastic 80 Adhesive</td>
<td>9 ctn/pallet (55 lb/ctn)</td>
<td>24 pallets</td>
</tr>
<tr>
<td>Thermglass Premium Type VI</td>
<td>5 sq/roll (20 rolls/pallet)</td>
<td>4 pallets</td>
</tr>
</tbody>
</table>

Contractor Name: _________________________________

Project Size: _________________________________ square feet
## ATTACHMENT A
### USD #500 – 2018 ROOFING PROJECTS
#### F.L. Schlagle High - Alternate Bid #1

<table>
<thead>
<tr>
<th>Products</th>
<th>Material Size &amp; Container</th>
<th>Material Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>AlphaGuard MT Base Coat</td>
<td>2 gallon bucket</td>
<td>5 buckets</td>
</tr>
<tr>
<td>AlphaGuard MT Top Coat</td>
<td>2 gallon bucket</td>
<td>3 buckets</td>
</tr>
<tr>
<td>AlphaGuard C-Prime</td>
<td>4 gallon kit</td>
<td>1 kit</td>
</tr>
<tr>
<td>AlphaGuard WB Primer</td>
<td>1 gallon bucket</td>
<td>1 bucket</td>
</tr>
<tr>
<td>Alumanation 301</td>
<td>5 gallon bucket</td>
<td>4 buckets</td>
</tr>
<tr>
<td>Burmastic Adhesive</td>
<td>50 gallon barrel – lined</td>
<td>44 barrels</td>
</tr>
<tr>
<td>Burmastic Composite Ply HT</td>
<td>20 rolls per pallet - 2/sq/roll</td>
<td>5 pallets</td>
</tr>
<tr>
<td>Burmastic Glass Ply – 33 lb.</td>
<td>20 rolls per pallet – 2/sq/roll</td>
<td>14 pallets</td>
</tr>
<tr>
<td>Burmesh</td>
<td>6” x 300’ rolls</td>
<td>3 rolls</td>
</tr>
<tr>
<td>ELS Mastic</td>
<td>5 gallon bucket</td>
<td>36 buckets</td>
</tr>
<tr>
<td>Polyroof SF</td>
<td>3 gallon buckets</td>
<td>35 buckets</td>
</tr>
<tr>
<td>Premium IV Asphalt</td>
<td>18 cartons per pallet</td>
<td>6 pallets</td>
</tr>
<tr>
<td>TRA Flashing</td>
<td>18” x 50’ roll</td>
<td>1 rolls</td>
</tr>
<tr>
<td></td>
<td>24” x 50’ roll</td>
<td>12 rolls</td>
</tr>
</tbody>
</table>

Contractor Name: ___________________________________________________________

Project Size: ____________________________________________________________ square feet
### ATTACHMENT A

**USD #500 – 2018 ROOFING PROJECTS**

**Cheyenne Building - Alternate Bid #2**

<table>
<thead>
<tr>
<th>Products</th>
<th>Material Size &amp; Container</th>
<th>Material Quantity</th>
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</thead>
<tbody>
<tr>
<td>Burmesh</td>
<td>6” x 300’ rolls</td>
<td>3 rolls</td>
</tr>
<tr>
<td>ELS Mastic</td>
<td>5 gallon bucket</td>
<td>18 buckets</td>
</tr>
<tr>
<td>Premium IV Asphalt</td>
<td>18 cartons per pallet</td>
<td>13 pallets</td>
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<tr>
<td>Thermastic 80 Adhesive</td>
<td>9 ctn/pallet (55 lb/ctn)</td>
<td>9 pallets</td>
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<tr>
<td>Thermsglass Premium Type VI</td>
<td>5 sq/roll (20 rolls/pallet)</td>
<td>4 pallets</td>
</tr>
<tr>
<td>TPA Coated Metal</td>
<td>4’ x 10’ sheet</td>
<td>8 sheets</td>
</tr>
<tr>
<td>TPA 80-mil Fleeced Back</td>
<td>76” x 75” roll</td>
<td>36 rolls</td>
</tr>
<tr>
<td>TPA 45-mil Flashing</td>
<td>12” x 50’ roll</td>
<td>9 rolls</td>
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<tr>
<td>TPA 45-mil Flashing</td>
<td>30” x 50’ roll</td>
<td>4 rolls</td>
</tr>
<tr>
<td>TPA/LV Bonding Adhesive</td>
<td>5 gallon buckets</td>
<td>3 buckets</td>
</tr>
<tr>
<td>TPA Cover Strip</td>
<td>6” x 100’ roll</td>
<td>2 rolls</td>
</tr>
</tbody>
</table>

Contractor Name: _______________________________________________________

Project Size: ___________________________________________ square feet

END OF SECTION 00411
BID FORM SUPPLEMENT
1.1 BID BOND FORM

A. AIA Document A310 Bid Bond is the recommended form for a Bid Bond. A bid bond acceptable to the Owner, or other bid security as described in the Instructions to Bidders, is required to be attached to the Bid Form as a supplement.

B. Copies of AIA standard forms may be obtained from:
   1. American Institute of Architects: (800) 365-2724.
CONTRACT and ADMINISTRATIVE DOCUMENTS and FORMS
DOCUMENT 00500 – CONTRACTING AND ADMINISTRATIVE FORMS

1.1 FORM OF AGREEMENT

A. The Districts Standard Form of Agreement shall be utilized for the Project:

1.2 STANDARD ADMINISTRATIVE FORMS

A. The following standard forms shall be utilized in the administration of the Project:


2. Form of Performance Bond and Labor and Material Bond: AIA Document A312 Performance Bond and Labor and Material Bond.


B. Copies of AIA standard forms may be obtained from:

1. American Institute of Architects: (800) 365-2724.

END OF SECTION 00500
SUMMARY
SECTION 01100 – SUMMARY

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

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

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification:
   1. F.L. Schlagle High School – Roofs 4, 5, 6, 7, and 8
   2. Cheyenne Building – Entire Roof

B. Owner: Kansas City Kansas Public Schools - (USD #500)

C. The Work consists of the following:
   1. General conditions and details for all roof areas:
      a. Any roofing or sheet metal work not completed by the date stated in these specification documents shall only be completed during non-school hours.
         1) Non-school hours: Monday through Friday Evenings after 4:00 P.M. or Saturdays or Sundays.
      b. The District has implemented the following Job Site Safety & Risk Mitigation Requirements and Policies.
         1) The job site staging area surrounding the cranes, forklifts, kettles, ORI’s, job box’s, and all equipment and tools shall be secured by an minimum eight-foot chain link fence prior to start of work, and the District must approve prior to job start.
         2) Any axes, shovels, picks, brooms, ladders or other tools or equipment found on the grounds surrounding the work site and not secured inside the chain link fence or job box shall justify a $500 penalty per occurrence to be deducted from final payment.
3) Any ropes extending from the roof or ladder wheels, accessible from the
ground while the contractor is not on site shall justify a $500 penalty per
occurrence to be deducted from final payment.

C. Prime Contractor shall supply Site Specific Safety Plan and Sheet Metal Submittal
drawings prior to start of work.

1) Safety Plan shall show a site plan locating kettle, security fence, roof access
points, cranes, dumpsters, ORIs, material storage, and any other equipment
being supplied and used by contractor throughout the duration of the project.

D. Prime Contractor shall keep complete roofing specification and approved submittal
drawing on the roof at all times during the work.

1) If required paperwork is not present on the roof, the project may be
immediately shut down at District's discretion.
   a) All cost associated with such shut downs shall be the contractor's
      responsibility.

e. The prime contractor shall use any subcontractor for their base and alternate bids
as long as their sub-contractors are licensed in the State of Kansas and Wyandotte
County for the specific job requirements.

1) Prime Contractor shall provide the district with a list of their sub-contractors
   with their submittal package.

2) Any sub-contractor not meeting the state and county requirements shall not
   be allowed on the project.

f. It is the responsibility of the contractor to provide 100% supervision of the kettle at
all times when hot adhesives are in use.

1) It is the District's requirements that the Kettle person have a minimum of 5-
years' experience monitoring and regulating the temperature controls on a
kettle.

g. It is the District's requirements that all project Foreman have a minimum of 5-
years' experience installing the specified roofing system.

1) Documentation showing Foreman work history shall be provided to District
   and approved by District prior to job start.

2) If Foreman does not have 5-years' experience installed specified roofing
   system, contractor shall pay for full-time inspection by the roofing material
   manufacturers representative.

h. After receipt of all roofing materials listed on Attachment A Form, contractor shall
provide the District a letter stating they have received all materials, which shall be
secure and stored on their property.

i. The contractor shall include in their bids the cost to remove and re-install all drain
clamping rings at the end of each days work.

j. It is the responsibility of the contractor to report in writing to the District, any areas
of cracks or deterioration to the masonry walls above the roofline.

k. It is the responsibility of the contractor for all underside clean up from drippage
and debris coming through the roof deck.

l. It is the responsibility of the contractor to provide a sub-contractor to water test all
existing drains prior to starting the projects and at the completion of the projects.

1) Contractor shall water test all drains using a standard ¾" hose running full
on for a minimum of 10-minutes per drain.

2) Contractor shall verify that the primary roof drains, overflow roof drains,
and plumbing vents located within the project area are free of debris and
properly functioning. The contractor shall perform a flood test of existing
roof drain bowls and connections to piping by temporarily plugging the drain
pipe below the existing connection and flooding the drain bowl to its top
edge. Notify the Owner immediately if defects are found in the roof drain bowl and/or roof drain assembly components, or if the roof drains and/or plumbing vents are found to be blocked, clogged, or otherwise not properly functioning. Any plumbing work necessary to correct identified defects, and clear existing roof drains and vents shall be performed by a licensed plumber at the direction of the Owner. Prior to start of work, the contractor shall provide a letter to the Owner indicating this work has been completed, detailing the results of this roof drain inspection and testing, and identifying any corrective action needed.

3) After completion of roofing work, the prime contractor shall again obtain the services of a licensed plumbing contractor to verify that primary roof drains, overflow roof drains and plumbing vents located within the project area are free of debris and properly functioning. The plumber shall perform a second flood test of existing roof drains located in the project areas. The flood test shall include the same testing as completed prior to the roofing work. Continue to flood the roof drain, up and over the installed roof drain flashing. Notify the prime contractor and Owner immediately if defects are found in the roof drain flashing, roof drain bowl and/or roof drain assembly components, or if the roof drains and/or plumbing vents are found to be blocked, clogged, or otherwise not properly functioning. Plumbing work necessary to correct identified defects, and clear existing roof drains and vents shall be performed by a licensed plumber at the direction of the Owner and paid for by the prime contractor. After construction completion, the contractor shall provide a second letter to the Owner indicating this work has been completed, detailing the results of this roof drain inspection and testing, and identifying any corrective action needed.

m. It is the responsibility of the contractor to examine the job site and document any damages or issues with pictures and/or video.
   1) Any damages found after start of work will be the responsibility of the contractor.
   2) Contractor shall submit all videos and pictures to District with their submittal package prior to job start.

n. It is the responsibility of the contractor to add or remove perimeter and projection wood blocking to accommodate new roof system.
   1) Metal edge details are only allowed at gutters. All existing metal edge details shall be changed to raised edge details. Contractors are responsible for adding new wood blocking per attached detail drawing and approved by roofing material manufacturer and owner.

o. It is the responsibility of the contractor to clean roofs, drains, gutters, and scuppers of all debris and trash at the end of the project and prior to the expiration of their two year warranty.
   1) Failure to provide this work shall end the contractor’s approval to bid future work with the owner.

p. It is the contractor’s responsibility to keep all RTU’s clean and free of any roofing material, personal items, or debris.
   1) RTU’s shall not be used to store tools, lunchbox’s, or any items related to the project.

q. It is the contractor’s responsibility to disconnect and raise all electrical conduit and gas lines, and extend plumbing pipes as needed to complete work per specifications and meet all local building codes.
   1) All lines shall be supported by new specified supports and hangers.
2) No lines shall be supported directly on outside walls, expansion joints, or other equipment.
3) During work, contractor shall properly support lines with wood blocking as needed to complete work and eliminate any damage to lines.
   a) Any damage found after project shall be the responsibility of the contractor to repair and/or replace as owner approves.

r. Drains:
   1) Sump all drains a minimum of 48” x 48”.
   2) Replace all broken or missing drain strainers with new cast iron strainers that will properly fit drain ring.
   3) Install 30” x 30” four-pound lead flashing into drain and strip-in with 2-plies of trilaminate felt and/or 2-plies of granular MB membrane set in cold asphalt mastic, or as required by roofing material manufacturer.
      a) Adhere lead in a solid application of cold mastic.
   4) Replace any broken or missing drain clamping rings and bolts.
   5) Drain plugs shall be installed in all drains prior to roof removal.
      a) All drain plugs shall be removed and drains cleared at the end of each day.
      b) Any drain or drain pipe joint leak found after completion of project, and not documented as leaking prior to job start, shall be the responsibility of the contractor to repair and/or replace as approved by owner.

s. Remove obsolete equipment and projections as indicated by owner during pre-bid meeting.
   1) Cover voids in decks with minimum 16-gauge flat metal panels or matching metal deck.
      a) Provide additional structural support on underside as required by local codes.

t. As needed, raise and extend projection curbs and pipes, expansion/control joints, and perimeters to accommodate new insulation height and provide a minimum eight-inch flashing height.
   1) Add or remove wood blocking as needed to accommodate new tapered insulation at perimeter and projection details.

u. Replace deteriorated wood blocking at perimeters and projections as needed.
   1) Provide unit cost per board foot.
   2) New wood blocking shall not be installed on ends.
   3) All blocking shall be securely fastened and approved by owner and roofing material manufacturer.

v. Repair deck as needed. (Provide unit cost)
   1) District’s representative and/or roofing manufacturer representative shall be notified and allowed to verify deck repair and/or replacement.

w. Adhere fiberboard cant at all projection base flashing locations as required by roofing material manufacture.

x. Adhere fiberboard cricket on high side of projections to eliminate any ponding water.
   1) Adhere as required by roofing material manufacturer.

y. At all perimeter and projection base flashing:
   1) Prime masonry walls prior to installing any base flashing.

z. Base Flashing:
   1) Install bar termination at the top edge of all base flashing where the flashing is not wrapped over a curb, wall, or expansion joint.
a) Strip-in all bar terminations with 3-course of asphalt mastic and reinforcing mesh.

2) Base flashing height shall be a minimum of eight-inches and shall not exceed twelve-inches.

3) Flashing over twelve-inches shall be bar terminated and another flashing membrane wrapped over the above wall or projection and extended down past the bar termination a minimum of four-inches, or install metal wall panels above base flashing.

4) Adhere fiberboard cant at all base flashing with hot Type IV asphalt.

5) Provide a 3-course strip-in at all vertical and horizontal flashing laps, horizontal edges, and corners of flashing with elastomeric asphalt mastic.

6) Install specified counterflushing over termination bar. Termination bar shall always be covered with metal counterflushing a minimum of four-inches.

7) All brick walls shall require new 22-gauge pre-finished reglet joint counterflushing.
   a) Width shall be sufficient to extend down over bar termination a minimum of four-inches.

8) New 22-gauge metal end covers and 90-degree corners shall be installed to properly terminate ends of all sheet metal details.

9) District’s representative and roofing material manufacturer shall review and approve all completed flashing work prior to the installation of sheet metal.
   aa. Install fiberboard tapered edge strips as needed along perimeters and around projections to provide positive drainage.
   1) Adhere tapered edge strips with hot Type IV asphalt.
   bb. Install new 22-gauge pre-finished metal counterflushing skirt to all mechanical equipment curbs and vents.
      1) The new skirt can be mechanically fastened or riveted to the existing curb flange with no back-water laps, and shall extend down over the bar termination a minimum of four-inches.
   cc. All new coping shall be 22-gauge pre-finished and approved by owner and roofing manufacturer. (District to select color)
      1) Outside and inside fascia width shall exceed and extend down past the existing fascia width unless otherwise specified.
      2) Install proper end closures and trims, approved by the roofing manufacturer, where terminating into concrete, brick, stucco, and/or metal walls.
      3) Provide a new 20-gauge continuous cleat on all copings.
      4) Slope the new coping to the inside by installing treated wood at the outside edge and covering top with treated 5/8” or thicker plywood.
      5) Any fascia over 6” shall have horizontal stiffening ribs every 6” o.c.
      6) Walls shall be completely wrapped (inside and outside) with new flashing or trilaminate base sheet prior to installing new coping.
         a) Flashing or base sheet shall be back-nailed on the outside face of wood nailer to completely encapsulate and cover all wood.
   dd. Install new 22-gauge pre-finished gutters and downspouts as specified.
      1) Gutter and downspout size shall be based on drainage area and shall follow local code requirements.
         a) Minimum 6” gutters and 4” x 5” downspouts.
      2) Inside upper flange of gutter shall extend up over membrane covering perimeter felt and wood blocking.
      3) Downspouts shall be open faced except for bottom two feet.
4) Downspouts draining into underground lines shall be solid and provide appropriate metal transition connections at tie-in.

5) Provide new concrete splash blocks under each downspout.
   a) If downspout is located on another roof, splash blocks shall have protection treads installed under them.

6) Any substrate behind gutter shall be wrapped with new 22-gauge pre-finished metal prior to installing new gutters.
   a) Fascia wrap shall be approved by Districts Representative and roofing material manufacturer, and detail drawings shall be included in submittal package.

ee. Install new 22-gauge pre-finished metal edge with gravel stop at all gutter edges.
   1) Set primed metal edge in solid bed of asphalt mastic over wood nailer.
   2) Mechanically fasten flange into wood blocking with approved fasteners every four inches on-center, two rows staggered.
   3) Strip in flange with two ply flashing system.
      a) Install metal gravel dam approximately 12” back from gutter and set metal flange in asphalt mastic. Do not attach or strip in metal dam.
      b) Coat flashing with premium reflective fibered aluminum coating.
   4) Outside fascia shall extend down into gutter a minimum of four inches.

ff. Install metal gravel dams around all roof drains, scuppers, gutters, and overflows.
   1) Approximate gravel dam size 4’ x 4’.
   2) Adhere flange of dams in asphalt mastic.
   3) Do not attach or strip in flange of dams.
   4) V-cuts in metal dams shall extend to roof level.
   5) Cover sump areas with smooth MB membrane as required by roofing material manufacturer.
   6) Coat MB with fibrated aluminum or specified liquid applied membrane and required by roofing material manufacturer.

gg. Install new 22-gauge pre-finished raised edge caps at all outside perimeters unless otherwise specified. (Metal-edge/gravel-stop details are only allowed at gutters unless otherwise specified)
   1) Outside fascia width shall extend down past the existing fascia width a minimum of one inch unless otherwise specified.
   2) Install proper end closures and trims, approved by the roofing manufacturer, where terminating into concrete, brick, stucco, and/or metal walls.
   3) Provide a new 20-gauge continuous cleat on all copings.
   4) Fasten on inside slope of new metal with approved grommeted screws.

hh. Install new 22-gauge pre-finished surface-mount counterflushing to all specified walls.
   1) Fasten to substrate 8” o.c. minimum with approved fasteners.
   2) Top edge shall provide a caulking lip.
      a) Prime metal and wall prior to installing sealant
      b) Install sealant compatible to roof system and components.
      c) Sealant shall be tooled to eliminate any voids and shed water.
   3) Any counterflushing skirt that is more than 8” wide will require a horizontal stiffening rib every 6” o.c.

ii. Install new four-pound lead flashing sleeves over plumbing pipes and strip-in with two plies of trilaminate felt set in cold asphalt mastic.
   1) Adhere lead in solid application of asphalt mastic.
   2) Plumbing pipe shall extend above finished roof a minimum of eight-inches or more as required by local building codes.
jj. Install new 24-gauge pitch pans and hoods around all electrical conduits, cooling pipes, equipment supports, and miscellaneous projections.
   1) Strip-in with two-plies of trilaminate felt set in cold asphalt mastic or as required by roofing material manufacturer.
   2) Fill pans with dual component, solvent free, roofing sealant.
   3) Install 24-gauge sloped hoods over pans with sealant around projection.
   4) Install gooseneck hoods over pitch pans with multiple pipes.

kk. Install new jacks and storm collars at all round vent stacks.
   1) Secure storm collar and seal with approved sealant.
   2) Strip-in with two plies of trilaminate felt set in cold asphalt mastic.

ll. At all scuppers, install new 22-gauge scupper sleeves.
   1) Insulation around all scuppers shall be bumped 48” x 48”.
      a) Install metal gravel dams outside sump areas.
   2) Scupper sleeves shall be primed and set in a bed of elastomeric mastic.
   3) Secure interior flanges at top, bottom, and sides.
   4) Strip-in with two plies of trilaminate felt set in cold elastomeric mastic.
   5) Install new 22-gauge pre-finished scupper heads and downspouts.
      a) Match size and shape of exiting scupper heads and downspouts unless otherwise specified or required larger by local building codes.
         i) All scupper heads shall have a half-moon overflow opening in the outside face.
      b) Install new scupper heads and downspouts at all drain line pipes extending out vertical walls.
      c) New downspouts shall be 4” x 5” or match existing, whichever is bigger.
      d) Size of heads and downspouts shall meet building codes and owner’s requirements.
   6) Provide new concrete splash blocks under each downspout.

mm. At metal edge and gravel stop perimeters not changed to raised metal edge details, remove existing and install new 22-gauge pre-finished metal.
   1) Install 20-gauge continuous cleat.
   2) Outside fascia shall exceed the existing width and/or extend down over current termination point by a minimum of one-inch.
   3) Inside horizontal flange shall be primed, set in a bed of asphalt mastic, fastened 8” staggered o.c., and striped in with 2-plies of trilaminate felt and cold asphalt mastic or as required by roofing material manufacturer.

nn. Install hanger supports under gas and conduit lines that are 4” or wider. (Provide Owner with the hanger design prior to installation)
   1) Install rubber triangular support blocks at gas line supports and electrical conduit smaller than 4”.
      a) Install treated wood blocking to adjust height.
   2) Install protection treads under wood blocking supports, rubber blocks, and hanger support legs.
   3) Hanger supports shall meet or exceed PS-1-2 by PHP Systems & Design.
   4) All wood blocking supports for gas and electrical conduit shall be replaced with new rubber pipe blocks or hangers.

oo. Repair and replace all PVC condensate lines on RTU’s.
   1) Any broken or missing PVC components, including pee-traps, shall be replaced.
   2) Extend all PVC drain lines out past RTU’s a minimum of four feet towards the closest drainage point.
a) Attach PVC lines to wood blocking with u-clamps every 6’ o.c.

pp. All wood supports shall be replaced with new treated wood with protection treads underneath, unless being replaced by other supports mentioned in specification.
   1) New wood shall not be installed on ends unless approved by owner and roofing material manufacturer.
   2) New wood will be utilized only under support legs and where triangular pipe blocks are not appropriate per roofing material manufacturer.

qq. Install protection treads outside the access panels to all RTU’s, mechanical equipment, roof hatches, and roof access doors.

rr. Paint all base flashing, soil stacks, gas lines, drain strainers, drain sumps, and rusted equipment or sheet metal with two coats of aluminum reflective coating unless otherwise specified.

ss. Contractor shall provide District’s Representative and roofing material manufacturer a completed Pre-Final Inspection Form prior to installing, flood coat and gravel, modified bitumen cap sheet, and/or any restoration coating material.
   1) After receipt of the Form, a meeting shall be scheduled to walk completed roof work.
   2) Only after the roof walk and approval by the District and roofing material manufacturer shall the contractor install the appropriate surfacing’s and/or membranes.
   3) If the Form is not received and no roof walk is completed, the project will be rejected if these top surfacing’s or membranes are installed.
      a) The contractor shall be responsible for all cost to remove surfacing’s and/or membranes as needed for inspection of the underlying roof system.

tt. All scrap copper material being removed during the project shall be securely stored and stacked on the ground for the District to collect.
   1) All stored scraped copper shall be the responsibility of the contractor until the District can collect.

2. F.L. Schlagle High School – Roofs 4, 5, 6, 7, and 8
2214 N. 59th Street
K.C., KS 66104

a. Roof 4
   1) District shall have their contracted electrical contractor remove all electrical conduit, lights, and junction boxes from the perimeter walls prior to start of roofing work.
   2) District shall have their IT Department remove the security cameras in the northwest and southwest corners before start of work and reinstall after work is complete.
      a) New security camera design
   3) District shall repair damaged masonry at perimeter parapet wall prior to start of roofing work.
   4) Remove all roofing and insulation down to concrete deck.
      a) Remove all perimeter and projection metal terminations including metal coping over brick parapet walls, metal edges, counterflushing, and skirt flashing.
      b) Remove overflow scupper sleeves.
      c) Remove reglet counterflushing in perimeter parapet walls.
d) Remove pitch pans around all cooling tower support legs. Clean, scrap, and grind all metal support legs to a shiny bright surface. Cover and protect cleaned area.

e) Leave existing coping in place at south perimeter wall connecting to Roof 1.

f) Remove obsolete antennas and satellite as determined at pre-bid meeting.

5) Sweep concrete deck clean of all dirt and debris.

6) Install new wood blocking along the east perimeter to accommodate new insulation and provide a raised edge coping detail where the existing metal edge detail is currently.

7) Prime concrete deck with asphalt primer.

8) Adhere trilaminate deck over concrete deck with hot Type IV asphalt.
   a) Wrap base sheet over all perimeter parapet walls and fasten on outside face of wood blocking.

9) Adhere 1.5” polyisocyanurate insulation over concrete deck with hot Type IV asphalt.

10) Adhere tapered polyisocyanurate crickets between drains.
    a) Width at cricket ridge shall be a minimum of 16’.

11) Adhere ½” high-density fiberboard insulation over polyisocyanurate insulation with hot Type IV asphalt.

12) Adhere 1ply of trilaminate base sheet with hot Type IV asphalt.

13) Adhere 3-plys of 33-lb. fiberglass felt in cold modified asphalt adhesive.

14) Adhere polyurethane liquid membrane around all cooling tower support legs to include primer, base coat, polyester reinforcement, and top coat.

15) Adhere EPDM/SBR base flashing to all perimeters and projection base flashing with cold modified asphalt mastic.
    a) Strip-in all vertical and horizontal joints and ends with 3-course of elastomeric asphalt mastic and reinforcing mesh.

16) Install new 22-gauge pre-finished copings at all outside perimeter walls.
    a) Exterior fascia shall extend down past lowest point of previous metal fascia a minimum of two inches.

17) Install new 22-gauge pre-finished raised edge detail along areas of east perimeter originally detailed with a metal edge.

18) Install new 22-gauge pre-finished counterflashing skirt under penthouse metal wall panels.
    a) Extend up and behind existing wall panels a minimum of four-inches.

19) At parapet brick walls, install new flashing above roof membrane approximately 8-inches.
    a) Install bar termination and 3-course strip-in at top edge of flashing
    b) Cover remaining wall area above flashing with new 22-gauge pre-finished metal skirt.
    c) Extend new metal skirt up and under inside fascia of new coping a minimum of 4-inches.

20) At thresholds at penthouse doors;
    a) Remove bolts holding angle iron below threshold.
    b) Install new flashing and extend up behind angle-iron.
    c) Install new 22-gauge pre-finished skirt flashing up behind angle-iron and reinstall angle-iron bolts.

21) Install new 22-guage pre-finished overflow scupper sleeve, and faceplate on exterior brick wall.
SUMMARY

2018 Schlagle & Cheyenne Projects

USD #500
January 22, 2018

a) Outside flange shall be a minimum of one-inch wider that existing.

22) Install new 22-guage pre-finished counterflashing skirt up and behind the coping metal fascia separating Roof 1.

23) Over new roof membrane, install cold modified asphalt flood coat and Kunshek gravel surface.

24) Install two coats of aluminum reflective coating to all base flashing, drain strainers, and plumbing stacks.

25) Install concrete splash blocks with protection treads under each of the four drain lines from the penthouse roof.

b. **Roof 5**

1) Remove all roofing and insulation down to metal deck.

a) Remove all perimeter and projection metal terminations including metal edges, counterflashing, and skirt flashing.

b) Remove two obsolete pitch pans.

2) Sweep metal deck and flutes clean of all dirt and debris.

3) Prime roofing contractor shall contract with a district approved plumbing contractor to install two new 4” cast iron drains, strainers, and connections.

a) Install in the southeast and southwest corners as determined at pre-bid meeting.

b) New cast iron drain lines shall extend down the interior penthouse walls and exit out the bottom of the walls onto Roof 4.

c) Drain bowl and connecting line layout shall be provide with the prime contractor submittal package.

4) Install new wood blocking along all perimeters to accommodate new insulation and provide a raised edge coping detail.

5) Mechanically fasten 1.5” polyisocyanurate insulation over metal deck with 16 fasteners per 4’ x 8’ board.

a) Contractor shall map out the electrical conduit running on the underside of the metal deck so not to hit or damage any conduit during installation of insulation fasteners.

b) Any and all damages occurred during fastener installation shall be the sole responsibility of the prime contractor.

6) Adhere ½” high-density fiberboard insulation over polyisocyanurate insulation with hot Type IV asphalt.

7) Adhere 1ply of trilaminate base sheet with hot Type IV asphalt.

8) Adhere 3-ply of 33-lb. fiberglass felt in cold modified asphalt adhesive.

9) Adhere EPDM/SBR base flashing to all perimeters and projection base flashing with cold modified asphalt mastic.

a) Strip-in all vertical and horizontal joints and ends with 3-course of elastomeric asphalt mastic and reinforcing mesh.

10) Install new 22-gauge pre-finished raised edge detail around all perimeters.

a) Exterior fascia shall extend down over metal wall panels and kick inward to form a tight connection against wall panels.

b) Reinstall metal panel closures at top edge. Replace any missing or damage closures.

11) Over new roof membrane, install cold modified asphalt flood coat and Kunshek gravel surface.

12) Install two coats of aluminum reflective coating to all base flashing, drain strainers, and plumbing stacks.
c. **Roofs 6 and 8**

1) District shall have their contracted electrical contractor remove all electrical conduit, lights, and junction boxes from the perimeter walls prior to start of roofing work.

2) District shall repair damaged masonry at the south brick wall prior to start of roofing work.

3) Remove all roofing and insulation down to metal deck.
   a) Remove all perimeter and projection metal terminations including coping, wall expansion joint detail, counterflashing, and skirt flashing.
   b) Remove and replace existing roof hatch with new Bilco roof hatch matching the existing size.

4) Sweep metal deck and flutes clean of all dirt and debris.

5) Install new wood blocking along the south perimeter wall of Roof 6 to accommodate new insulation and provide a wall expansion joint detail.

6) Install new wood blocking along the north perimeter of Roof 8 to accommodate new insulation and a raised edge detail.

7) Mechanically fasten 1.5” polyisocyanurate insulation over metal deck with 14 fasteners per 4’ x 8’ board.

8) Adhere ½” high-density fiberboard insulation over polyisocyanurate insulation with hot Type IV asphalt.

9) Adhere 1 ply of trilaminate base sheet with hot Type IV asphalt.

10) Adhere 3 plies of 33-lb. fiberglass felt in cold modified asphalt adhesive.

11) Adhere EPDM/SBR base flashing to all perimeters and projection base flashing with cold modified asphalt mastic.
    a) Strip-in all vertical and horizontal joints and ends with 3-course of elastomeric asphalt mastic and reinforcing mesh.

12) Install new 22-gauge pre-finished copings at all outside perimeter walls of Roof 6 and east wall of Roof 8.
    a) Exterior fascia shall extend down past lowest point of previous metal fascia a minimum of two inches.

13) Install new 22-gauge pre-finished wall expansion joint detail along the south perimeter wall of Roof 6.
    a) Expansion joint detail shall extend through the east and west parapet walls and turn downward a minimum of 8-inches.

14) Install new 22-gauge pre-finished gutter and downspout along the south perimeter of Roof 8.

15) Install new 22-gauge pre-finished gravel stop gutter edge along the south perimeter of Roof 8.

16) Install new 22-gauge pre-finished raised edge detail along the north perimeter of Roof 8.

17) Install new 22-gauge pre-finished reglet counterflashing detail along the west brick wall of Roof 8.

18) Over new roof membranes, install cold modified asphalt flood coat and Kunshek gravel surface.

19) Install two coats of aluminum reflective coating to all base flashing, drain strainers, and plumbing stacks.
d. **Roof 7**
   
   1) Remove all roofing and insulation down to concrete deck.
      a) Remove all perimeter and projection metal terminations including metal wall expansion joint detail at south wall.
      b) Remove drain sleeve.
      c) Remove reglet counterflashing in perimeter parapet walls.
   
   2) Install wood blocking along south wall to accommodate new wall expansion joint detail.
   
   3) Prime concrete deck and brick walls with masonry primer recommended by polyurethane liquid applied membrane manufacturer.
   
   4) Install new 4-lb lead sleeve in drain hole opening.
      a) Adhere lead flange with solvent-free elastomeric mastic.
      b) Prime top side of lead sleeve with metal primer.
   
   5) Install polyurethane liquid applied base coat at 4 to 5 gallons per square.
      a) Extend base coat to outside edge of exterior perimeters to the north and west.
      b) Extend base coat into expansion joint at south perimeter.
      c) Extend base coat up east brick wall a minimum of 8-inches.
   
   6) Immediately embed polyester reinforcement into base coat.
      a) Polyester shall extend down into the lead drain opening.
      b) Polyester shall be completely encapsulated into the base coat with no wrinkles, puckers, pin-holes, blisters, or voids.
   
   7) Install polyurethane liquid applied top coat at 2 to 3 gallons per square.
   
   8) Install new 22-gauge pre-finished wall expansion joint detail at the south perimeter wall.
      a) Expansion joint detail shall extend through the west parapet wall and turn downward a minimum of 8-inches.
      b) New detail shall turn upward at southeast corner and terminate to provide a watertight detail approved by roofing material manufacturer.
      c) New expansion joint metal shall terminate into a surface-mount counterflashing detail.
   
   9) Install new 22-gauge pre-finished surface mount counterflashing along the east brick wall.

3. **Cheyenne Building**
   
   1112 Cheyenne
   Kansas City, KS
   
   a. **Base Bid No. 2**
   
   1) District shall have their contracted electrical contractor remove all electrical lines and conduits running along the south perimeter prior to start of roofing work.
   
   2) Remove all roofing and insulation down to concrete deck.
      a) Remove all perimeter and projection metal termination.
      b) Remove and reuse metal gutter and downspouts along south perimeter.
      c) Remove all four drain gutters and connections along south perimeter.
         i. Install 18-gauge flat-stock steel plate over holes in concrete deck.
         ii. Install 6” peel and stick membrane around perimeter of new steel plates to eliminate hot asphalt from entering the building.
d) Remove bell tile covering east and west parapet walls.

e) Remove all six skylights and curbs down to concrete deck.

i. Install 16-gauge steel plates over deck openings.

ii. Install structural reinforcement under steel plates as needed to meet all city and state codes requirements.

iii. Install 6” peel and stick membrane around perimeter of new steel plates to eliminate hot asphalt from entering the building.

f) Remove obsolete equipment as determined at pre-bid meeting.

3) Add wood blocking along the north perimeter to accommodate new insulation and new raised edge detail.

4) Install new 2” x 6” wood nailer along south perimeter.

5) Sweep deck clean of all dirt, dust, and debris.

6) Prime deck with asphalt primer.

7) Install 6” wide peel and stick membrane over pre-cast concrete panel butt joints.

8) Adhere 2-layers of polyisocyanurate insulation over primed concrete deck with hot Type IV asphalt. First layer 3” and second layer 1.5”.

9) Adhere ½” high-density fiberboard insulation over polyisocyanurate insulation with hot Type IV asphalt.

10) Adhere 2-ply of Type VI fiberglass felts over fiberboard insulation with hot Type IV asphalt.

a) Adhere one ply up and over all perimeters.

11) Adhere 1-ply of smooth surfaced modified bitumen with hot modified elastomeric asphalt.

12) Adhere 1-ply of granular surfaced modified bitumen membrane to all perimeter and projection base flashings with hot modified elastomeric asphalt.

a) Extend flashing membrane over the east and west parapet walls and over the north raised edge detail.

i. Completely encapsulate wood blocking past outside fascia with new flashing membrane.

13) Reinstall gutter along the south perimeter.

a) If gutter is damaged, replace damaged areas to match existing.

b) Reconnect downspouts and secure to building.

14) Install 24-gaue pre-finished gravel stop gutter edge along south perimeter.

a) Prime metal flange and attach to wood blocking prior to stripping in.

b) Strip-in flange with 2-ply of Type IV fiberglass felts set in hot elastomeric asphalt.

15) Install 24-gauge pre-finished coping over east and west parapet walls.

16) Install 24-gauge pre-finished raised edge detail along the north perimeter.

17) Over new roof membrane, install hot elastomeric asphalt flood coat and Kunshek gravel surface.

18) Install two coats of aluminum reflective coating to all base flashing.

b. Alternate Bid No. 2

1) District shall have their contracted electrical contractor remove all electrical lines and conduits running along the south perimeter prior to start of roofing work.

2) Remove all roofing and insulation down to concrete deck.

a) Remove all perimeter and projection metal termination.
b) Remove and reuse metal gutter and downspouts along south perimeter.

c) Remove all four drain bowls and connections along south perimeter.
   i. Install 18-gauge flat-stock steel plate over holes in concrete deck.
   ii. Install 6” peel and stick membrane around perimeter of new steel plates to eliminate hot asphalt from entering the building.

d) Remove bell tile covering east and west parapet walls.

e) Remove all six skylights and curbs down to concrete deck.
   i. Install 16-gauge steel plates over deck openings.
   ii. Install structural reinforcement under steel plates as needed to meet all city and state codes requirements.
   iii. Install 6” peel and stick membrane around perimeter of new steel plates to eliminate hot asphalt from entering the building.

f) Remove obsolete equipment as determined at pre-bid meeting.

3) Add wood blocking along the north perimeter to accommodate new insulation and new raised edge detail.

4) Install new 2" x 6" wood nailer along south perimeter.

5) Sweep deck clean of all dirt, dust, and debris.

6) Prime deck with asphalt primer.

7) Install 6” wide peel and stick membrane over pre-cast concrete panel butt joints.

8) Adhere 2-layers of polyisocyanurate insulation over primed concrete deck with hot Type IV asphalt. First layer 3" and second layer 1.5”.

9) Adhere ½” high-density fiberboard insulation over polyisocyanurate insulation with hot Type IV asphalt.

10) Adhere 2-plies of Type VI fiberglass felts over fiberboard insulation with hot Type IV asphalt.
   a) Adhere one ply up and over all perimeters.

11) Adhere an 80-mil single ply tri-polymer alloy fleece backed membrane with hot modified asphalt adhesive.
   a) Heat weld all joints per material manufacturer’s recommendations.
   b) Install 6” cover strip at all T-joints and end laps.

12) Adhere tri-polymer alloy elastomeric membrane to all perimeter and projection base flashings with single ply bonding adhesive.
   a) Heat weld all joints per material manufacturer’s recommendations.
   b) Extend flashing membrane over the east and west parapet walls and over the north raised edge detail.
      i. Completely encapsulate wood blocking past outside fascia with new flashing membrane.

13) Reinstall gutter along the south perimeter.
   a) If gutter is damaged, replace damaged areas to match existing.
   b) Reconnect downspouts and secure to building.

14) Install 24-guage TPA coated gutter edge along south perimeter.
   a) Strip-in flange with TPA membrane per material manufacturer’s requirements.

15) Install 24-gauge pre-finished coping over east and west parapet walls.

16) Install 24-gauge pre-finished raised edge detail along the north perimeter.
1.4 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

1.5 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of project site beyond areas in which the Work is indicated.
   1. Driveways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Use of Existing Building: Maintain existing building in a watertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

C. Security: Comply with Owner’s requirements related to security.

D. Safety: Comply with all OSHA regulations and guidelines that apply to project.

E. No smoking on Owner’s property.

F. No changing into or from work clothes on site.

G. Use of adjacent roofs not related to the project is prohibited unless provided written approval by Owner.

1.6 OWNER'S OCCUPANCY REQUIREMENTS

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits, unless otherwise indicated.
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
   2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
   1. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
1.7 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated.
   1. Weekend Hours: As approved by Owner.
   2. Early Morning Hours: As approved by Owner.
   3. Hours for Utility Shutdowns: Coordinated with and approved by Owner.

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

1.8 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "Master Format" numbering system.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
ALTERNATES
SECTION 01230 - ALTERNATES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate. Work of each alternate includes costs of related coordination, modification of existing or new work, and adjustment of indicated work.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: F.L. Schlagle High School – Roofs 6, 7, and 8
   1. Alternate: Provide amount to Add to Base Bid No. 1 to include the removal and replacement of Roofs 6, 7, and 8 as stated in Section 01100 “Summary”.

B. Alternate No. 2: Cheyenne Building – Entire Roof
   1. Alternate: Provide amount to Add or Deduct to Base Bid No. 2 to install a single ply TPA Fleece Back membrane in lieu of the smooth MB membrane and gravel surface as stated in Section 01100 “Summary”.

END OF SECTION 01230
UNIT PRICES
SECTION 01270 - UNIT PRICES

PART 1 - GENERAL

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

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

1.3 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.

1.4 PROCEDURES
   A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
   B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
   C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
   D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES
   A. Unit Price No. 1: Wood blocking replacement:
1. Description: Provide new wood blocking according to Division 6 Section "Miscellaneous Carpentry."

B. Unit Price No. 2: Drain Bowl Replacement:

1. Description: Remove existing drain bowl and replace with new five-inch cast iron drain bowl and connections according to local building codes.

C. Unit Price No. 3: Drain Clamping Ring Replacement:

1. Description: Remove existing drain clamping ring and replace with new cast iron drain clamping ring per local building codes.

D. Unit Price No. 4: Metal Deck repair:

1. Description: Remove existing deck material and replace according to Division 5 – 05310 Steel Deck.

E. Unit Price No. 5: Metal Deck replacement:

1. Description: Remove existing deck material and replace according to Division 5 – 05310 Steel Deck.

F. Unit Prices No. 6: Concrete Deck replacement:

1. Description: Remove damaged decking and repair areas of all dirt, dust, and debris. Skim repair areas with quick-set gypsum per roofing material manufacturer’s recommendations.

G. Unit Price No. 7: Flat-stock metal plates:

1. Description: Install 18-gauge flat-stock metal over damaged deck and or holes and voids in decking. Secure new flat-stock to deck with approved fasteners.

H. Unit Price No. 8: Plywood Replacement:

1. Description: Remove damaged plywood and replace with new 5/8” plywood according to Division 6 Section “Miscellaneous Carpentry.”

END OF SECTION 01270
SUBMITTAL PROCEDURES
SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY
A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS
A. Action Submittals: Written and graphic information that requires Owner's responsive action.
B. Informational Submittals: Written information that does not require Owner's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES
A. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Owner for Contractor's use in preparing submittals.
B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Submit complete submittal package.
C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner's receipt of submittal.
   1. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   2. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner will advise Contractor when a submittal being processed must be delayed for coordination.
   3. Resubmittal Review: Allow 10 days for review of each resubmittal.
   4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Owner and to Owner's consultants, allow 10 days for review of each submittal. Submittal will be returned to Owner before being returned to Contractor.
D. Identification: Place a permanent label or title block on each submittal for identification.
   1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Owner.

3. Include the following information on label for processing and recording action taken:
   a. Project name.
   b. Date.
   c. Name and address of Owner.
   d. Name and address of Contractor.
   e. Name and address of subcontractor.
   f. Name and address of supplier.
   g. Name of manufacturer.
   h. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).

i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.
k. Location(s) where product is to be installed, as appropriate.
l. Other necessary identification.

E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

F. Additional Copies: Unless additional copies are required for final submittal, and unless Owner observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Owner.
2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Owner will discard submittals received from sources other than Contractor.

1. Transmittal Form: Use AIA Document G810, CSI Form 12.1A, or similar form acceptable to Owner.
2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Owner on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked "Approved" or "Approved as Noted."

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

J. Use for Construction: Use only final submittals with mark indicating "Approved" or "Approved as Noted."

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's written recommendations.
   b. Manufacturer's product specifications.
   c. Manufacturer's installation instructions.
   d. Standard color charts.
   e. Standard product operation and maintenance manuals.
   f. Compliance with specified referenced standards.
   g. Testing by recognized testing agency.
   h. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit three copies of Product Data, unless otherwise indicated. Owner will return one copy. Mark up and retain one returned copy as a Project Record Document.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Dimensions.
   b. Identification of products.
   c. Fabrication and installation drawings.
   d. Schedules.
   e. Compliance with specified standards.
   f. Notation of coordination requirements.
g. Notation of dimensions established by field measurement.
h. Relationship to adjoining construction clearly indicated.
i. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).

3. Number of Copies: Submit two opaque (bond) copies of each submittal. Owner will return one copy.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Owner will return submittal with options selected.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Location.
3. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Owner will return one copy.
   a. Mark up and retain one returned copy as a Project Record Document.

F. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
G. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.
   
   1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. Owner will not return copies.
   
   2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
   
   3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Owners and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

T. Construction Photographs: Comply with requirements specified in Division 1 Section "Photographic Documentation."

U. Material Safety Data Sheets (MSDSs): Submit information directly to Owner.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 OWNER'S ACTION

A. General: Owner will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Owner will review each submittal, make marks to indicate corrections or modifications required, and return it. Owner will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Owner will review each submittal and will not return it, or will return it if it does not comply with requirements. Owner will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01330
EXECUTION REQUIREMENTS
SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY
   A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
      1. General installation of products.
      2. Progress cleaning.
      3. Protection of installed construction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSTALLATION
   A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
   C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
   D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
   E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
   F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
      1. Allow for building movement, including thermal expansion and contraction.
   G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
3.2 PROGRESS CLEANING

A. General: Clean Project site and work areas daily. Enforce requirements strictly. Dispose of materials lawfully.
   2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

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

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.

D. Concealed Work: Remove debris from concealed work prior to concealing with subsequent construction.

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

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

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period.

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

3.3 PROTECTION OF INSTALLED CONSTRUCTION

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

3.4 CORRECTION OF THE WORK

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

B. Restore permanent facilities used during construction to their specified condition.
C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

END OF SECTION 01700
CUTTING AND PATCHING
SECTION 01731 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY
A. This Section includes procedural requirements for cutting and patching.

1.3 DEFINITIONS
A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE
A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
1.5 **WARRANTY**

A. **Existing Warranties:** Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

**PART 2 - PRODUCTS**

2.1 **MATERIALS**

A. **General:** Comply with requirements specified in other Sections.

B. **In-Place Materials:** Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

**PART 3 - EXECUTION**

3.1 **EXAMINATION**

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. **Compatibility:** Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 **PREPARATION**

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

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

C. **Adjoining Areas:** Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 **PERFORMANCE**

A. **General:** Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
   b. Restore damaged pipe covering to its original condition.
   c. Provide an even surface of uniform finish, color, texture, and appearance.
   d. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01731
SELECTIVE DEMOLITION
PART 1 - GENERAL

1.1 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.

1.2 SUMMARY
   A. This Section includes the following:
      1. Demolition and removal of selected portions of building or structure.

1.3 DEFINITIONS
   A. Remove: Detach items from existing construction and legally dispose of them off-site, unless
      indicated to be removed and salvaged or removed and reinstalled.
   B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
   C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and
      reinstall them where indicated.
   D. Existing to Remain: Existing items of construction that are not to be removed and that are not
      otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS
   A. Predemolition Photographs: Show existing conditions of adjoining construction and site
      improvements, including finish surfaces that might be misconstrued as damage caused by
      selective demolition operations. Comply with Division 1 Section "Photographic
      Documentation." Submit before Work begins.
   B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility
      licensed to accept hazardous wastes.
      1. Comply with submittal requirements in Division 1 Section "Construction Waste
         Management."

1.5 QUALITY ASSURANCE
   A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification
      program.
B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI A10.6 and NFPA 241.

D. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

1. Comply with requirements specified in Division 1 Section "Summary."

B. Notify Owner of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner.

C. Storage or sale of removed items or materials on-site is not permitted.

D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities affected by the Work have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Owner.
3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Contractor shall arrange to shut off indicated services/systems when requested by Contractor.
2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
   a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 1 Section "Temporary Facilities and Controls."

B. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
2. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

3. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

5. Dispose of demolished items and materials promptly.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.

2. Protect items from damage during transport and storage.

3. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

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

3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 01732
CLOSEOUT PROCEDURES
SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Final completion procedures.
2. Final cleaning.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
2. Prepare and submit Project Record Documents, operation and maintenance manuals, and similar final record information.
3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
4. Complete final cleaning requirements.
5. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
6. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
7. Instruct Owner's personnel in maintenance of products and systems.
8. Inspection: Submit a written report of final inspection as specified in Division 7 roofing section(s).
PART 3 - EXECUTION

3.1 FINAL CLEANING

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

1. Complete the following cleaning operations before Final Completion:
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
   h. Leave Project clean and ready for occupancy.

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

END OF SECTION 01770
CONCRETE DECK REHABILITATION
SECTION 03931 - CONCRETE DECK REHABILITATION

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. Rehabilitation of deteriorated concrete deck surfaces.

1.3 UNIT PRICES

A. Unit prices include costs of field quality-control testing required by the Work for which the unit price applies.

B. Concrete Surface Removal and Patching or Rebuilding: Work will be paid for by the square foot computed on the basis of rectangular shapes approximating the actual shape of concrete surface requiring patching, removed and replaced with average, widths, and lengths, measured to the nearest foot.

1.4 SUBMITTALS

A. Product Data: Include material descriptions, chemical composition, physical properties, test data, and mixing and application instructions.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original and unopened containers, labeled with type and name of products and manufacturers.

B. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

C. Store cementitious materials off the ground, under cover, and in a dry location.

1.6 PROJECT CONDITIONS

A. Cold-Weather Requirements for Cementitious Materials: Comply with the following procedures:
   1. When air temperature is below 40 deg F, heat patching material ingredients and existing concrete to produce temperatures between 40 and 90 deg F.
   2. When mean daily air temperature is between 25 and 40 deg F, cover completed Work with weather-resistant insulating blankets for 48 hours after repair.
   3. When mean daily air temperature is below 25 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair.
B. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F and above.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

B. Products: Subject to compliance with requirements, provide one of the following:
   1. Latex Bonding Agent, Type II:
      a. Euclid Chemical Company; FLEX-CON.
      b. Dayton Superior Corporation; Day-Chem Ad Bond (J-40).
      c. Kaufman Products, Inc.; SureBond.
   2. Cementitious Patching Mortar, Rapid Setting:
      a. Euclid Chemical Company; EUCO-SPEED.

2.2 BONDING AGENTS

A. Latex Bonding Agent: ASTM C 1059, Type II.

2.3 PATCHING MORTAR


2.4 CONCRETE

2.5 MIXES

A. Mix products in clean containers according to manufacturer's written instructions.
   1. Add clean silica sand and coarse aggregates to products only as recommended by manufacturer.
   2. Do not add water, thinners, or additives unless recommended by manufacturer.
   3. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
   4. Do not mix more materials than can be used within recommended open time. Discard materials that have begun to set.

B. Concrete:
   1. Proportion normal-weight concrete mixes to provide the following properties:
      a. Compressive Strength: 3000 psi at 28 days.
      b. Slump Limit: 4 inches at point of placement.
      c. Air Content: 5.5 to 7.0 percent for concrete exposed to freezing and thawing, 2 to 4 percent elsewhere.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Locate areas of delamination using hammer or chain drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries of delaminated areas.

3.2 PREPARATION

A. Protect people, motor vehicles, equipment, surrounding construction, Project site, plants, and surrounding buildings from injury resulting from concrete rehabilitation work.

B. Surface Preparation for Overlays: Remove delaminated material and deteriorated concrete surface material. Roughen surface of concrete by sand blasting, shot blasting, scarifying, needle scaling, high-pressure water jetting, scabbling, flame blasting, or milling to produce a surface profile recommended by manufacturer of patching materials. Sweep and vacuum roughened surface to remove debris followed by low-pressure water cleaning.

3.3 APPLICATION

A. Latex Bonding Agent, Type II: Mix with portland cement and scrub into concrete surface according to manufacturer's written instructions. If bonding agent dries, recoat before placing patching mortar or concrete.

B. Patching Mortar: Unless otherwise recommended by manufacturer, apply as follows:
   1. Wet substrate thoroughly and then remove standing water. Scrub a slurry of neat patching mortar mixed with latex bonding agent into substrate, filling pores and voids.
   2. Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.
   3. After each lift is placed, consolidate material and screed surface.
   4. Where multiple lifts are used, score surface of lifts to provide a rough surface for application of subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
   5. Allow surfaces of lifts that are to remain exposed to become firm and then finish to a smooth surface with a wood or sponge float.

C. Concrete: Place as follows:
   1. Apply latex bonding agent to concrete substrate.
   2. At unformed surfaces, screed concrete to produce a surface that when finished with patching mortar will match required profile and surrounding concrete.
   3. Wet-cure concrete for not less than seven days by keeping surfaces continuously wet by water-saturated absorptive cover.

END OF SECTION 03931
STEEL DECK
SECTION 05310 - STEEL DECK

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 deck.

B. Unit Prices: Work of this section is related to provisions of Division 1 Section “Unit Prices.”

1.3 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Product Certificates: For each type of steel deck, signed by product manufacturer.

C. Welding certificates.

D. Field quality-control test and inspection reports.

1.4 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

B. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

1.5 DELIVERY, STORAGE, AND HANDLING

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

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

A. Comply with owners ongoing operations.

PART 2 - PRODUCTS

2.1  ROOF DECK

A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:

1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 33 (230) minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
2. Deck Profile: Match existing deck profile.
3. Profile Depth: Match existing deck profile depth.
4. Design Uncoated-Steel Thickness: Match existing deck steel thickness.
5. Span Condition: Existing.

2.2  ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 (4.8-mm) minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi (230 MPa), not less than 0.0359-inch (0.91-mm) design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch (1.52 mm) thick, with factory-punched hole of 3/8-inch (9.5-mm) minimum diameter.

G. Flat Sump Plate: Single-piece steel sheet, 0.0747 inch (1.90 mm) thick, of same material and finish as deck. For drains, cut holes in the field.

H. Galvanizing Repair Paint: ASTM A 780.

I. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels, if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

H. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.3 ROOF-DECK INSTALLATION

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches (38 mm) long, and as follows:

1. Weld Diameter: Match welds of existing deck to remain, but not less than 5/8 inch (16 mm), nominal.
2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds to match spacing of welds on existing deck units, but not less than 18 inches (450 mm) apart, maximum.
3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches (450 mm), and as selected from following to match existing deck unit installation:
1. Mechanically fasten with self-drilling, No. 10 (4.8-mm-) diameter or larger, carbon-steel screws.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches (38 mm), with end joints as follows:

1. End Joints: Lapped 2 inches (51 mm) minimum.

D. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Mechanically fasten to substrate to provide a complete deck installation.

1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.

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

3.4 REPAIRS AND PROTECTION

A. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on top surface of prime-painted deck immediately after installation, and apply repair paint.

B. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05310
MISCELLANEOUS CARPENTRY
SECTION 06105 - MISCELLANEOUS CARPENTRY

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. Rooftop equipment bases and support curbs.
   2. Wood blocking, cants, and nailers.
   3. Sheathing.

1.3 DEFINITIONS

A. Lumber grading agencies, and the abbreviations used to reference them, include the following:
   1. NELMA - Northeastern Lumber Manufacturers Association.
   2. NLGA - National Lumber Grades Authority.
   3. SPIB - Southern Pine Inspection Bureau.
   4. WCLIB - West Coast Lumber Inspection Bureau.
   5. WWPA - Western Wood Products Association.

1.4 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
   2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
   3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
   1. Factory mark each piece of lumber with grade stamp of grading agency.
   2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
   3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
   4. Provide dressed lumber, S4S, unless otherwise indicated.
   5. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

B. Wood Structural Panels:
   1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise indicated.
   2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
   3. Factory mark panels according to indicated standard.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA C2 (lumber) and AWPA C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).
   1. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:
      a. Chromated copper arsenate (CCA).
      b. Ammoniacal copper zinc arsenate (ACZA).
      c. Ammoniacal, or amine, copperquat (ACQ).
      d. Copper bis (dimethyldithiocarbamate) (CDDC).
      e. Ammoniacal copper citrate (CC).
      f. Copper azole, Type A (CBA-A).
      g. Oxine copper (copper-8-quinolinolate) in a light petroleum solvent.

B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.
   1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

D. Application: Treat items indicated on Drawings, and the following:
   1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, blocking, and similar concealed members in contact with masonry or concrete.
3. Wood framing members less than 18 inches above grade.

2.3 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:
   1. Rooftop equipment bases and support curbs.
   2. Blocking.
   3. Cants.
   5. Furring.

B. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
   1. Mixed southern pine, No. 2 grade; SPIB.
   2. Eastern softwoods, No. 2 Common grade; NELMA.
   3. Northern species, No. 2 Common grade; NLGA.
   4. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.

2.4 PANEL PRODUCTS

A. Miscellaneous Concealed Plywood: Exterior sheathing, span rating to suit framing in each location, and thickness as indicated but not less than 1/2 inch.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
   1. Where carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or of Type 304 stainless steel.


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

D. Wood Screws: ASME B18.6.1.

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

F. Lag Bolts: ASME B18.2.1.

G. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.6 METAL FRAMING ANCHORS
A. General: Provide galvanized steel framing anchors of structural capacity, type, and size indicated and acceptable to authorities having jurisdiction.
B. Galvanized Steel Sheet: Hot-dip galvanized after fabrication (ASTM A 153/A 153M) or stainless steel (ASTM A 666, Type 304)

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL
A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.
D. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.
E. Countersink fastener heads on exposed carpentry work and fill holes with wood filler.
F. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION
A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.
3.3 PANEL PRODUCT INSTALLATION


END OF SECTION 06105
FLUID APPLIED
ROOFING SYSTEM
SECTION 07157 – FLUID APPLIED ROOFING SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Roof replacement.

B. Related Requirements:
   1. Division 01 Section "Summary" for use of the premises and phasing requirements, and for restrictions on use of the premises due to Owner or tenant occupancy.

C. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.3 MATERIALS OWNERSHIP

A. Demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

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

B. Roofing Re-Coating Preparation: Existing roofing that is to remain and be prepared to accept restorative coating application.

C. Patching: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system and replacement with similar materials.

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

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

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: To include in maintenance manuals.

B. Warranties: Executed copies of approved warranty forms.
1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and the following:
1. Qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
2. Licensed to perform asbestos abatement work in Project jurisdiction.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of specified products in successful use in similar applications.
1. Approval of Other Manufacturers and Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
   a. Product data, including certified independent test data indicating compliance with requirements.
   b. Samples of each component.
   c. Sample submittal from similar project.
   d. Project references: Minimum of five installations of specified products not less than five years old, with Owner and Architect contact information.
   e. Sample warranty.

C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer’s compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
1. An authorized full-time technical employee of the manufacturer.

D. Roofing Rehabilitation Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
Review methods and procedures related to roofing system.
1. Meet with Owner; roofing re-coating materials manufacturer's representative; roofing re-coating Installer including project manager and foreman; and installers whose work interfaces with or affects re-coating including installers of roof accessories and roof-mounted equipment requiring removal and replacement as part of the Work.
2. Review methods and procedures related to re-coating preparation, including membrane roofing system manufacturer's written instructions.
3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
4. Review roof drainage during each stage of re-coating and review roof drain plugging and plug removal procedures.
5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
6. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect re-coating.
7. Review HVAC shutdown and sealing of air intakes.
8. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
10. Review governing regulations and requirements for insurance and certificates if applicable.
11. Review existing conditions that may require notification of Owner before proceeding.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below re-coating area. Conduct re-coating so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

B. Protect building to be rehabilitated, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from rehabilitation operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Weather Limitations: Proceed with rehabilitation work only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.
   1. Store all materials prior to application at temperatures between 60 and 90 deg. F.
   2. Apply coatings within range of ambient and substrate temperatures recommended by manufacturer. Do not apply materials when air temperature is below 50 or above 110 deg. F.
   3. Do not apply roofing in snow, rain, fog, or mist.

E. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
   1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.

1.8 WARRANTY

A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Special Manufacturer’s Warranty: Submit roofing system Manufacturer's standard form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
   1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, sheet metal flashings and trim, copings, roof edge flashings, roof edge drainage systems, counterflashings’s and reglets, and roof expansion assemblies specified in other Division 7 Sections and other components of roofing system. Covers wind speeds up to 74 mph.
   2. Warranty Period: 15 years from date of Substantial Completion.

C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of roofing
system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards for the following warranty period:
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by a manufacturer meeting qualification requirements in Quality Assurance Article.

2.2 MATERIALS

A. General: Re-coating materials recommended by roofing system manufacturer for intended use and compatible with components of existing membrane roofing system.

B. Temporary Roofing Materials: Selection of materials and design of temporary roofing is responsibility of Contractor.

C. Infill Materials: Where required to replace test cores and to patch existing roofing, use infill materials matching existing membrane roofing system materials, unless otherwise indicated.

2.3 FLUID-APPLIED ROOFING MEMBRANE

A. Polyurethane Elastomeric Fluid-Applied System: Two-coat reinforced fluid-applied roofing membrane formulated for application over prepared existing roofing substrate, with the following minimum physical properties:
1. Polyurethane Top Coat:
   a. Volume Solids, ASTM D 2697: 87%.
   b. Combustion Characteristics, UL 790: Class A, for two-coat system.
   c. Volatile Organic Compounds (VOC), ASTM D 3960: 40 g/L.
2. Polyurethane Base Coat:
   a. Volume Solids, ASTM D 2697: 87%.
   b. Combustion Characteristics, UL 790: Class A, for two-coat system.
   c. Volatile Organic Compounds (VOC), ASTM D 3960: 35 g/L.
   e. Accelerated Weathering, 5000 hours, ASTM G 154: Pass.

B. Polyester Reinforcement: 100% stitch-bonded, polyester fabric for fluid-applied membrane and flashing.

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with existing roofing system and fluid-applied roofing system.
B. Metal Surface Primer: Single-component, water based primer to promote adhesion of base coat to metal surfaces.

C. Asphaltic Surfaces Primer: Single-component, multi-substrate primer to promote adhesion of base coat to surfaces recommended by manufacturer.

D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine existing roofing substrates, with Installer present, for compliance with requirements and for other conditions affecting application and performance of roof coatings.
   1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
   2. Verify compatibility of approved re-coating system with and suitability of substrates.
   3. Verify that substrates are visibly dry and free of moisture.
   4. Verify that roofing membrane surfaces have adequately aged to enable proper bond with re-coating system base coat.
   5. Verify that existing roofing membrane is free of blisters, splits, open laps, indications of shrinkage, and puncture damage or other indications of impending roof system failure.
   6. Application of fluid-applied re-coating membrane indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Protect existing roofing system that is indicated not to be rehabilitated, and adjacent portions of building and building equipment.
   1. Comply with warranty requirements of existing roof membrane manufacturer.
   2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
   3. Maintain temporary protection and leave in place until roofing has been completed.

B. Shut down air intake equipment in the vicinity of the Work in coordination with the Owner. Cover air intake louvers before proceeding with re-coating work that could affect indoor air quality or activate smoke detectors in the ductwork.
   1. Verify that rooftop utilities and service piping affected by the Work have been shut off before commencing Work.

C. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
   1. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.3 FLUID-APPLIED MEMBRANE APPLICATION

A. Over existing smooth built-up roof membrane provide the following:
1. Remove all loose dirt, dust, and debris by wet vacuum or power-washing.
2. Prime existing asphalitic material with primer approved by roofing material manufacturer.

B. Fluid-Applied Flashing Application: Install base coat and polyester reinforcement at parapets, curbs, penetrations, and drains prior to application of field of fluid-applied membrane.
1. Extend coating minimum of 8 inches up vertical surfaces and 4 inches onto horizontal surfaces.
2. Roof Drains: Install base coat onto surrounding membrane surface and metal drain bowl flange. Install target piece of fiberglass reinforcement immediately into wet base coat and roll to fully embed and saturate fabric. Reinstall clamping ring and strainer following application of top coat. Replace broken drain ring clamping bolts.

C. Fluid-Applied Membrane Roofing Installation: Install Base Coat, polyester reinforcement, and Top Coat over existing smooth surfaced built-up roof.
1. Extend fluid-applied membrane a minimum of 4 inches up all vertical services. Only after all flashing base coat and reinforcement has been completed.

D. Base Coat: Apply base coat to flashing surfaces in accordance with manufacturer's written instructions at 3 gallons per square (48 Wet Mils). Back roll to achieve minimum wet mil coating thickness of 32 to 48 mils unless otherwise recommended by manufacturer; verify thickness of base coat as work progresses.
1. Apply base coat on prepared and primed surfaces and spread coating evenly.
2. Embed polyester membrane into base coat and roll to confirm 100% complete adhesion.
3. Allow base coat to cure prior to application of top coat.
4. Following curing of base coat and prior to application of top coat, sand/grind raised or exposed edges of polyester reinforcement.

E. Top Coat: Apply top coat uniformly in a complete installation to field of roof and flashings at 2 gallons per square (32 Wet Mils).
1. Prime base coat prior to application of top coat if top coat is not applied within 72 hours of the base coat application, using manufacturer's recommended primer.
2. Apply top coat to flashings extending coating up vertical surfaces and out onto horizontal surfaces 4 inches. Install top coat over field base coat and spread coating evenly.
3. Back roll to achieve wet mil thickness of 32 mils unless otherwise recommended by manufacturer.
4. Avoid foot traffic on new fluid-applied membrane for a minimum of 24 hours.

3.4 FIELD QUALITY CONTROL

A. Roof Inspection: Contractor shall engage roofing system manufacturer's technical personnel to inspect roofing installation, and submit report to the Architect. Notify Owner 48 hours in advance of dates and times of inspections. Inspect work as follows:
1. Upon completion of preparation of first component of work, prior to application of re-coating materials.
2. Following application of re-coating to flashings and application of base coat to field of roof.
3. Upon completion of re-coating but prior to re-installation of other roofing components.

B. Repair fluid-applied membrane where test inspections indicate that they do not comply with specified requirements.
C. Arrange for additional inspections, at Contractor's expense, to verify compliance of replaced or additional work with specified requirements.

3.5 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove coating that does not comply with requirements, repair substrates, and reapply coating.

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

END OF SECTION 07150
COLD APPLIED BUILT-UP ROOFING
SECTION 07510 – COLD-APPLIED BUILT-UP ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
1. Cold-applied built-up asphalt roofing system.
2. Roof insulation.
3. Roof surfacing consisting of aggregate surfacing.

B. Related Sections include the following:
1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, cants, curbs, and blocking.
2. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashing’s.

1.3 DEFINITIONS

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

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
   a.

C. Flashings: Comply with requirements of Division 07 Section “Sheet Metal Flashing and Trim.” Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:
   1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.

1.5 SUBMITTALS

A. Product Certificate: Submit notarized certificate, indicating complete list of products intended for use under Work of this Section, including product names and numbers and manufacturers’
names, with statement indicating that products to be provided meet the requirements of the
Contract Documents.

B. Product Data: For each type of product indicated.
1. Furnish Product Data and certification letter indicating percentages by weight of post-
consumer and pre-consumer recycled content for products having recycled content.
2. Indicate location of material manufacturer for regionally manufactured materials.

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments
to other Work.
1. Base, perimeter, and detail flashings, cants, and membrane terminations.
2. Tapered insulation, including slopes.
3. Crickets, saddles, and tapered edge strips, including slopes.
4. Insulation fastening patterns.

D. Samples for Verification: For the following products:
1. 8-by-10-inch square of base sheet, ply sheet and flashing sheet.
2. 8-by-10-inch square of roof insulation.

E. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is
approved, authorized, or licensed by manufacturer to install roofing system.

F. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system
complies with requirements specified in "Performance Requirements" Article.
1. Submit evidence of meeting performance requirements.

G. Qualification Data: For Installer, manufacturer, and manufacturer’s technical representative.

H. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer
and witnessed by a qualified independent testing agency, for roofing system and system
components.
1. Include report indicating compliance with roof system load-strain properties
requirements.

I. Manufacturer Certificates: Indicating compliance of proposed products with requirements,
including:
1. Product Compatibility: Indicate manufacturer has verified compatibility of roofing
system components, including but not limited to: Roofing base and ply sheets, flashing
sheets, reinforcement fabric felts and mats, adhesives, mastics, coatings, and sealants.
2. Adhesive Flammability: Indicate manufacturer has verified cold process adhesives and
coatings are non-flammable.

J. Maintenance Data and Training Materials: For roofing system to include in maintenance
manuals and Owner’s training library.

K. Warranties: Copy of manufacturer’s warranty that covers cold process built-up roofing system.

L. Inspection Reports: Copy of daily and final technical inspection reports of roofing installation.

1.6 QUALITY ASSURANCE
A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.

B. Manufacturer’s Technical Representative Qualifications: An authorized full-time employee representative of manufacturer experienced in the installation and maintenance of the specified roofing system and qualified to determine Installer’s compliance with the requirements of this Project.
   1. Must be performed daily by a Registered Engineer or Certified Roof Consultant in the State of Missouri.

C. Source Limitations: Obtain components for roofing system from or approved in writing by roofing system manufacturer.

D. Preliminary Roofing Conference: Before starting reroofing preparation, conduct conference at Project site. Comply with requirements for pre-installation conferences in Division 01 Section "Project Management and Coordination." Review methods and procedures related to reroofing preparation and roofing system including, but not limited to, the following:
   1. Contractor shall be required to bring the Foreman who will be supervising this project.
   2. Meet with Owner, Owner's insurer if applicable, testing and inspecting agency representative, roofing installer, roofing system manufacturer's representative, and other installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
   3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
   4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   5. Review work restrictions and requirements for temporary facilities and controls.
   6. Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.
   7. Review structural loading limitations of roof deck during and after roofing.
   8. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
   9. Review governing regulations and requirements for insurance and certificates if applicable.
  10. Review temporary protection requirements for roofing system during and after installation.
  11. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.

B. Do not store materials in open or in contact with ground or roof surface.

C. Store materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Store roll goods on ends only.
D. Protect stored liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

E. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.

F. Handle and store roofing materials and place equipment in a manner to avoid temporary overloading or permanent deflection of deck.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.9 WARRANTY

A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Special Manufacturer’s Warranty: Submit roofing system Manufacturer’s special warranty, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
   1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, and drainage systems specified in other Division 07 Sections and other components of roofing system.
   2. Warranty Period: 15 years from date of Substantial Completion.

C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, sheet metal flashings and trim, for the following warranty period:
   1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 BASE-SHEET MATERIALS

A. Base Sheet: Nonperforated, asphalt-coated, polyester/fiberglass/polyester reinforced sheet dusted with fine mineral surfacing on both sides which exceeds the requirements of ASTM D 4601, Type II, and the following properties:
   1. Tensile strength @ 77-degrees, ASTM D 5147: 165 lbf MD and 150 lbf XMD
   2. Tear Strength @ 77-degrees, ASTM 5147: 260 lbf MD and 230 lbf XMD
   3. Thickness, minimum, ASTM D 5147: 60 mils
4. Weight, minimum, ASTM D 5147: 38 lbs.
5. Asphalt, minimum, ASTM D 228-90a: 10 lb/100 sq. ft.

2.2 ROOFING MEMBRANE PLIES

A. Ply Sheet: ASTM D 4601, Type II, Nonperforated, asphalt-coated, fiberglass reinforced sheet dusted with fine mineral surfacing on both sides which exceeds the requirements of the following properties:
   2. Pliability, ½ inch radius bend, ASTM D 146: No failures.
   3. Weight, minimum, ASTM D 228: 33 lb/100 sq. ft.
   5. Ash, ASTM D 4601: 70 – 80%
   6. Surfacing & stabilizer, maximum, ASTM D 4601: 65%

B. Flashing Sheet: Compounded from a blend of EPDM and SBR thermoset elastomers and reinforced with a polyester woven scrim with the following physical properties:
   1. Breaking Strength, minimum, ASTM D 751: 350 lbf. MD and 300 lbf. XMD
   2. Tear Strength: ASTM D 751: 77 lbf MD & XMD
   3. Elongation ASTM D 751: 31% MD and 35% XMD
   4. Low Temperature Flexibility: ASTM D 2136: -40 deg F.
   5. Thickness, minimum, ASTM D 751: 0.045 inch.
   6. Weight, ASTM D 751: 41.6 oz/sq yd

2.3 ASPHALT MATERIALS

A. Water-Based Asphalt Primer: Water-based, polymer modified, asphalt primer with the following physical properties:
   1. Asbestos Content, EPA 600/R13/116: None.
   2. Non-Volatile Content, minimum, ASTM D 2823: 32 percent.
   3. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 65 g/L.

2.4 COLD-APPLIED ADHESIVE MATERIALS

A. Cold-Applied Adhesive, (Roofing Plies, and Flood Coat): One-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with specified roofing membranes and flashings, with the following physical properties:
   1. Asbestos Content, EPA 600 R-93/116: None.
   2. Volatile Organic Compounds (VOC), maximum, ASTM D 6511: 270 g/L.
   3. Nonvolatile Content, minimum, ASTM D 6511: 72 percent.
   4. Flash Point, minimum, ASTM D 93: 100 deg F.
   5. Density at 77 deg F ASTM D 6511: 8.6 lb/gal.
   7. Asphalt Content, minimum, ASTM D 6511: 50 percent.

B. Elastomeric Flashing Sheet Adhesive: One-part, solvent-free, asbestos-free, low-odor elastomeric roof mastic specially formulated for compatibility and use with specified roofing membranes and flashings, with the following properties:
   1. Asbestos Content, EPA 600/R13/116: None.
2. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: less than 20 g/L.
3. Viscosity at 77 deg. F, ASTM D2196: 600,000 0 2,000,000 cP
5. Density at 77 deg. F, ASTM D 1475: 8.6 lb/gal
6. Tensile Strength @ 77 deg. F, ASTM D 412: 30-50 psi @ 100% elongation

2.5 AUXILIARY ROOFING MEMBRANE MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.

B. Asphalt Roofing Mastic: ASTM D 4586, Type II, Class 1, one-part, asbestos-free, cold-applied mastic specially formulated for compatibility and use with specified roofing membranes and flashings, with the following properties:
   1. Asbestos Content, ASTM D 276: None.

C. Type IV Asphalt: ASTM D 312, thermoplastic hot-melt adhesive, with the following properties:
   2. Penetration @77 deg F, ASTM D 5: 15 – 25 dmm
   3. Flash point, minimum, @ 77 deg F, ASTM D92: 525 deg F.
   4. Equiviscous tem range, ASTM D 4402: 425 – 475 deg F.

D. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM 4470; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.

E. Aggregate Surfacing: ASTM D 1863, No. 6 or No. 67, clean and dry, Kunshek.

F. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

2.6 ROOF INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, HCFC-free, with felt or glass-fiber mat facer on both major surfaces.

C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.7 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

C. Wood Fiber Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board

2.8 COATING MATERIALS

A. Base Flashing Aluminum Coating: Aluminum pigmented roof coating with the following physical properties:
   1. Weight per gallon, ASTM D 1475: 8.8 ± 0.2 lbs.
   2. Solids (% by Weight): 61%
   3. Solids (% by Volume): 47%
   5. Reflectance, ASTM C 1549-02: >60

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
   1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
   2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
   3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with manufacturer’s recommendations.

3.4 NAILED BASE SHEET INSTALLATION

A. Gypsum decks shall be clean and free of any dirt or debris.

B. All deck repair and replacement shall be completed per roofing material manufacturer’s requirements.

C. Mechanically attach trilaminate base sheet over gypsum deck per FM 1-60.
D. Overlap each ply sheet four inches and nail every nine inches on center along edge.

E. Install two staggered rows of fasteners down the field of the sheet every 18 inches on center.

3.5 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system manufacturer's written instructions for installing roof insulation.

C. Wood Fiber Cant Strips: Adhere and secure fiber cant strips at junctures of built-up roofing membrane system. Adhere with solid application of cold insulation adhesive.

3.6 ROOFING MEMBRANE INSTALLATION, GENERAL

A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."
   1. Install roofing system BU-N-5 including nailed base sheet - A, according to specification-plate classifications in NRCA's "The NRCA Roofing and Waterproofing Manual" and requirements in this Section.

B. Start installation of built-up roofing membrane in presence of roofing system manufacturer's technical personnel.

C. Coordinate installing roofing system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.
   1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement with joints and edges sealed.
   2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
   3. Remove and discard temporary seals before beginning work on adjoining roofing.

D. Cold Process Asphalt Heating
   1. An in-line heat exchange unit may be used to facilitate application
      a. Do not exceed maximum adhesive temperature of 100° F.
   2. Heat exchange unit: Use heat transfer oil approved by heating equipment manufacturer.
   3. Follow operation procedures recommended by heating equipment manufacturer.

E. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.7 ROOFING MEMBRANE INSTALLATION

A. Install two lapped courses of base sheet, extending sheet over and terminating beyond cants. Attach base sheet as follows:
   1. Mechanically attach base sheet over gypsum deck and fasten per roofing material requirements.
      a. One fastener every 9” o.c. along lap and 2-rows staggered 18” o.c. across sheet.
2. Fully adhere base sheet over nailed sheet with hot asphalt adhesive, coverage shall be solid layers at 25-lbs per 100 square feet.

B. Install three-ply sheets starting at low point of roofing system. Align ply sheets without stretching. Shingle side laps of ply sheets uniformly to achieve required number of plies throughout thickness of roofing membrane. Shingle in direction to shed water. Extend ply sheets over and terminate beyond cants.

1. Embed each ply sheet in a solid spray application of cold, fluid-applied adhesive, not less than 2.5 gals. per 100 square feet, to form a uniform membrane without ply sheets touching.

C. Aggregate Surfacing: Promptly after installing and testing roofing membrane, base flashing, and stripping, flood-coat roof surface with 6 gal/100 sq. ft. of cold fluid-applied adhesive. While flood coat is fluid, cast the following average weight of aggregate in a uniform course:

1. Aggregate Weight: 500-lb/100 sq. ft.

3.8 FLASHING AND STRIPPING INSTALLATION

A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:

1. Prime substrates with asphalt primer if required by roofing system manufacturer.
2. Flashing Sheet Application: Adhere flashing sheet to substrate in cold adhesive applied at rate required by roofing system manufacturer.

B. Extend base flashing up walls or parapets a minimum of 8 inches above roofing membrane and 6 inches onto field of roofing membrane.

C. Mechanically fasten top edge of base flashing with flat aluminum bar.

2. Strip-in with 3 course at base of flashing and all vertical laps (mastic, mesh, mastic)
3. Fasten termination bar 8” on center.

D. At perimeters fasten base flashing to wood nailers per manufacturer’s recommendations.

E. Lift vent covers and wrap base flashing over the top of the existing curbs.

F. Install stripping, according to roofing system manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

G. Roof Drains: Set 30” x 30” 4 lb. lead flashing in bed of asphalt roofing cement on completed roofing membrane. Sump drain area 48” x 48”. Cover metal flashing with stripping and extend a minimum of 4 inches beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.

H. Install new 4 lb. leads over soil stacks and strip-in with 2 plies of trilaminate felt in cold mastic.

I. Install new pitch pans with hoods around mechanical support legs, conduit, and other miscellaneous projections. Strip-in with 2 plies of trilaminate felt in cold mastic.
3.9 COATING INSTALLATION

A. Apply two layers of aluminum coating to base flashings, plumbing pipes, drain strainers, and rusted equipment according to manufacturer's written instructions.

3.10 FIELD QUALITY CONTROL

A. Test Cuts: Before flood coating and surfacing built-up roofing membrane, test specimens may be removed to evaluate problems observed during quality-assurance inspections of roofing membrane as follows:
   1. Approximate quantities of components within roofing membrane will be determined according to ASTM D 3617.
   2. Test specimens will be examined for interply voids according to ASTM D 3617 and to comply with criteria established in Appendix 3 of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Owner.
   1. Notify Owner 48 hours in advance of date and time of inspection.

C. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

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

3.11 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
   1. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07511
HOT APPLIED BUILT-UP MB ASPHALT ROOFING
SECTION 07511 - HOT-APPLIED BUILT-UP MB ASPHALT ROOFING

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. Hot-applied built-up asphalt roofing system on concrete, gypsum, metal, tectum decks.
   2. Roof insulation.
   3. Flashings.
   4. Roof surfacing consisting of hot adhesive and aggregate surfacing.

B. Related Sections include the following:
   1. Division 1 Section “Summary” for scope of work and general requirements.
   2. Division 6 Section “Miscellaneous Carpentry” for wood nailers, curbs, and blocking.
   3. Division 7 Section "Sheet Metal Flashing and Trim" for custom metal roof penetration flashings, flashings, and counterflashings.

1.3 DEFINITIONS

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

B. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mopping application and 75 centipoise for mechanical application, within a range of plus or minus 25 deg F, measured at the mop cart or mechanical spreader immediately before application.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
C. Flashings: Comply with requirements of Division 7 Sections “Sheet Metal Flashing and Trim”. Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:
1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.

1.5 SUBMITTALS

A. Product Certificate: Submit notarized certificate, indicating complete list of products intended for use under Work of this Section, including product names and numbers and manufacturers’ names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
1. Base, perimeter, and detail flashings, cants, and membrane terminations.
2. Tapered insulation, including slopes.
3. Crickets, saddles, and tapered edge strips, including slopes.
4. Insulation and base sheet fastening patterns.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
1. Submit evidence of meeting performance requirements.

D. Manufacturer Certificates: Indicating compliance of proposed products with requirements, including:
1. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing base and ply sheets, membrane backer and flashing sheets, reinforcement fabric felts and mats, adhesives, mastics, coatings, and sealants.

E. The Material Suppliers Representative will be required by the Owner to periodically observe the work in process. The Material Suppliers Representative shall provide a written report for each site visit. The presence of this representative is for the Owners interest and any information or assistance furnished by the representative shall not relieve the Contractor of his responsibilities for the Work. The Contractor shall provide reasonable notification to the representative whenever work is being done in sufficient time to arrange observations.

F. The Owner reserves the right to provide independent inspectors at the districts expense. The inspector will report to the Project Manager any deviations in materials or workmanship, which the Owner has specified.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.

H. Maintenance Data and Training Materials: For roofing system to include in maintenance manuals and Owner’s training library.

I. Warranties: Special warranties and service agreements specified in this Section.
J. Inspection Reports: Copy of daily and final technical inspection reports of roofing installation.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.

B. Manufacturer Qualifications: A qualified manufacturer that has identical roofing system to that used for this Project.

C. Manufacturer’s Technical Representative Qualifications:
1. An authorized local full-time employee of the manufacturer.
   a) Shall not be a sales representative.
2. Experienced in the installation and maintenance of the specified roofing system
3. Qualified to determine Installer’s compliance with the requirements of this Project.

D. Source Limitations: Obtain components for roofing system from or approved in writing by roofing system manufacturer.

E. Preliminary Roofing Conference: Before starting reroofing preparation, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 1 Section "Project Management and Coordination." Review methods and procedures related to reroofing preparation, and roofing system including, but not limited to, the following:
1. Meet with Owner, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
5. Review governing regulations and requirements for insurance and certificates if applicable.
6. Review temporary protection requirements for roofing system during and after installation.
7. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.9 WARRANTY

A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Special Manufacturer’s Warranty: Submit roofing system Manufacturer's Labor and Material warranty form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
   1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, metal flashings and trim, copings, roof edge flashings, roof edge drainage systems, counterflashings and reglets, and roof expansion assemblies specified in other Division 7 Sections and other components of roofing system. Covers wind speeds up to 74 mph.
   2. Warranty Period: 15 years from date of Substantial Completion.

C. Special Project Warranty: Submit roofing Installer's MRCA 2-year warranty, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, sheet metal flashings and trim, copings, roof edge flashings, roof edge drainage systems, counterflashings and reglets, and roof expansion assemblies:
   1. Warranty Period: Two years from date of Substantial Completion.
PART 2 - PRODUCTS

2.1 MODIFIED BITUMEN CAP SHEET MEMBRANE

A. Adhered Modified Bitumen Cap Sheet: Reinforced SBS/SEBS modified bitumen membrane which meets or exceeds the requirements of ASTM D 6163, Type III, Grade S, and the following properties:
   1. Tensile Strength @ 73 deg F, minimum, ASTM D 5147: machine direction, 240 lbf/in; cross direction, 240 lbf/in.
   2. Tensile Strength @ 0 deg F, minimum, ASTM D 5147: machine direction, 180 lbf/in.; cross direction, 180 lbf/in.
   3. Tear Strength @ 73 deg F, minimum, ASTM D 5147: machine direction, 320 lbf; cross direction, 320 lbf.
   4. Thickness, minimum, ASTM D 5147: 83 mils
   5. Elongation @ 73 deg F, minimum, ASTM D 5147: machine direction, 7%; cross direction, 4%
   6. Low Temperature Flexibility, minimum, ASTM D 5147: -35 deg F.

2.2 ROOFING MEMBRANE PLIES

A. Ply Sheet: ASTM D 2178, Type VI, asphalt-impregnated, glass-fiber felt, which meets or exceeds the requirements of ASTM D 2178, Type VI, and the following properties:
   5. Pliability, ½” radius bend, ASTM D 146-97: No failures

2.3 BASE FLASHING MEMBRANE

A. Flashing Top Cap Sheet: ASTM D 6163, Type III, SBS/SEBS/SIS granule surfaced modified bitumen membrane with fire resistant characteristics, and the following physical properties:
   1. Tensile Strength @ 77 deg F, ASTM D 5147-02a: 220 lbf/in. MD and 220 lbf/in. XMD
   2. Tear Strength @ 77 deg F, ASTM D 5147-02a: 280 lbf MD and 300 lbf XMD
   3. Elongation @ 77 deg F, ASTM D 5147-02a: 6.4% MD and 7.0% XMD
   4. Low Temperature Flexibility: ASTM D 5147-02a: -25 deg F.
   5. Thickness, minimum, ASTM D 5147-02a: 3.4 mm

2.4 ASPHALT MATERIALS

A. Flood Coat, Field Cap Sheet, and Flashing Modified Bitumen Membrane Adhesive: ASTM D 6152 SEBS polymer modified asphalt with the following physical properties:
   1. Softening Point, min/max, ASTM D 36: 195-205 deg F.
   2. Penetration, min/max, ASTM D 5: 51 dmm.
   3. Flash point, minimum, ASTM D 92: 525 deg F.
   4. Elongation at 77 deg. F, minimum, ASTM D 412: 800%
   5. Elastic Recovery, ASTM D 412: 96%
6. Density @ 77-degrees, ASTM D 70: 8.2 lb/gal

B. Water-Based Asphalt Primer: Water-based, polymer modified, asphalt primer with the following physical properties:
   1. Asbestos Content, EPA 600/R13/116: None.
   2. Non-Volatile Content, minimum, ASTM D 2823: 32 percent.
   3. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 65 g/L.

C. Roofing Asphalt Adhesive for Insulation, Cover Board, and 2-ply Interply Adhesive: ASTM D 312, Type IV, hot-melt asphalt, with the following physical properties:
   1. Softening Point, min/max, ASTM D 36: 215-225 deg F.
   2. Penetration at 77 deg F, min/max, ASTM D 5: 15-25 dmm.
   3. Flash point, minimum, ASTM D 92: 525 deg F.
   4. Ductility at 77 deg F, minimum, ASTM D 113: 1.5 cm.
   5. Equiviscous temperature range, ASTM D 4402: 425 – 475 deg. F.

D. Asphalt Roofing Mastic: ASTM D 4586, Type II, Class 1, one-part, asbestos-free, cold-applied mastic specially formulated for compatibility and use with specified roofing membranes and flashings, with the following properties:
   1. Asbestos Content, ASTM D 276-00: None.
   4. Viscosity @ 77 deg. F., ASTM D 2196-99: 480,000 – 1,000,000 cP

2.5 AUXILIARY ROOFING MEMBRANE MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.

C. Aggregate Surfacing: ASTM D 1863, No. 6 or No. 67, clean, dry, opaque, Kunshek water-worn gravel or crushed stone, free of sharp edges.

D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

2.6 ROOF INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated in Section 01100 Summary.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, HCFC-free, with felt or glass-fiber mat facer on both major surfaces.
C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.7 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

C. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

D. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

E. Cover Board: ASTM C 208, Type II, Grade 2, Cellulosic-fiber and water-resistant binders, asphalt coated on six sides and chemically treated for deterioration.

2.8 COATING MATERIALS

A. Aluminum Coating: Non-fibered, aluminum pigmented roof coating with the following physical properties:
   1. Weight per gallon, ASTM D 1475: 8.8 lbs.
   2. Solids % by weight: 61%
   3. Solids % by volume: 47%
   5. Metallic contend, ASTM D 2824: Min. 15%
   6. Flashpoint, ASTM D 3278: 105 deg. F.
   7. Reflectance, ASTM D 1549-02: >60

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
   1. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Prime masonry surface with asphalt primer at a rate of 3/4 gal./100 sq. ft. and allow primer to dry.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with manufacturer’s recommendations.

B. Install roofing system in accordance with the following NRCA Manual Plates and NRCA recommendations:
   1. Base Flashing at Parapet Wall: Plates BUR-1 and BUR-1S.
   2. Base Flashing and Counter flashing at Parapet Wall: Plates BUR-4 and BUR-4S.
   3. Perimeter Edge, Gravel-stop: Plates BUR-3 and BUR-3S.
   4. Gutter at Draining Edge: Plates BUR-22 and BUR-22S.
   5. Penetration, Stack Flashing: Plates BUR-17 and BUR-17S.
   6. Penetration, Pocket: Plates BUR-19 and BUR-19S.

3.4 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system manufacturer's written instructions for installing roof insulation.

C. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of built-up roofing membrane system with vertical surfaces or angle changes greater than 45 degrees.

D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
   1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

E. Install insulation at minimum thickness as listed under specification section “01100 Summary”.

F. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

G. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

H. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

I. Adhere Insulation:
1. Concrete Deck:
   a. Install first layer of insulation over nailed base sheet in solid moppings of hot asphalt at 25-lbs per square.
   b. Install subsequent layers of insulation in a solid mopping of hot roofing asphalt at 25-lbs per square.

J. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Stagger joints from joints in insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck. Tape joints if required by roofing system manufacturer.
   1. Apply hot roofing asphalt to underside and immediately bond cover board to substrate.

3.5 ROOFING MEMBRANE INSTALLATION, GENERAL

A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."

B. Start installation of built-up roofing membrane in presence of roofing system manufacturer's technical personnel.

C. Cooperate with testing and inspecting agencies engaged or required to perform services for installing built-up roofing system.

D. Coordinate installing roofing system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.
   1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt with joints and edges sealed.
   2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
   3. Remove and discard temporary seals before beginning work on adjoining roofing.

E. Asphalt Heating for insulation, coverboard, base sheet, and ply sheets: Heat roofing asphalt and apply within plus or minus 25 deg F of equiviscous temperature unless otherwise required by roofing system manufacturer. Do not raise roofing asphalt temperature above equiviscous temperature range more than one hour before time of application. Do not exceed roofing asphalt manufacturer's recommended temperature limits during roofing asphalt heating. Do not heat roofing asphalt within 25 deg F of flash point. Discard roofing asphalt maintained at a temperature exceeding finished blowing temperature for more than 4 hours.

F. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.6 ROOFING MEMBRANE INSTALLATION

A. Install two-ply sheets starting at low point of roofing system. Align ply sheets without stretching. Shingle side laps of ply sheets uniformly to achieve required number of plies.
throughout thickness of roofing membrane. Shingle in direction to shed water. Extend ply sheets over and terminate beyond cants.

1. Embed each ply sheet in a solid mopping of hot roofing asphalt applied at rate required by roofing system manufacturer, to form a uniform membrane without ply sheets touching.

B. Install one lapped course of smooth MB top cap sheet, extending sheet over and terminating beyond cants. Shingle in direction to shed water.

1. Embed cap sheet in a solid mopping of hot roofing asphalt applied at rate required by roofing system manufacturer, to form a uniform membrane without ply sheets touching.

C. Aggregate Surfacing: Promptly after installing roofing membrane and base flashing, flood-coat roof surface with hot roofing asphalt applied at rate required by roofing system manufacturer, 60-lbs minimum. Immediately after installing flood coat, cast the following average weight of aggregate in a uniform course:

1. Aggregate Weight: 450 to 500-lb/100 sq. ft.
2. Cover flood coat adhesive completely.

3.7 FLASHING AND STRIPPING INSTALLATION

A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:

1. Prime substrates with asphalt primer if required by roofing system manufacturer.
2. Flashing Sheet Application: Adhere flashing sheets to substrate in a solid application of hot roofing asphalt applied at rate required by roofing system manufacturer.

B. Extend base flashing up walls, parapets, or projection curbs a minimum of 8 inches above roofing membrane and 6 inches onto field of roofing membrane.

C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing with termination bar.

3.8 COATING INSTALLATION

A. Apply coatings to base flashings, soil stacks, and rusted equipment according to manufacturer's written instructions, by roller or other suitable application method.

3.9 FIELD QUALITY CONTROL

A. Manufacturer’s Technical Representative: Contractor will engage a qualified manufacturer’s technical representative acceptable to Owner for on site roof tests and inspections.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Owner.

1. Notify Owner 48 hours in advance of date and time of inspection.
C. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

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

3.10 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

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

END OF SECTION 07511
Tri-Polymer Alloy
Fleeced Back Roofing
SECTION 07541 – TRI-POLYMER ALLOY ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section Includes the following:

1. Adhered fleece backed tri-polymer alloy thermoplastic roofing system.
2. Roof insulation.

B. Related Sections:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

C. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.3 DEFINITIONS

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

1.4 PREINSTALLATION MEETINGS

A. Pre-installation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
   1. Base flashings and membrane terminations.
      a. Indicate details meet requirements of NRCA.
   2. Membrane fastening or adhesion requirements.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.
   1. Include letter from Manufacturer written for this Project indicating approval of Installer.

B. Contractor's Product Certificate: Submit notarized certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers’ names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified.
   1. Submit evidence of compliance with performance requirements.
   2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives, and sealants.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

E. Warranties: Unexecuted sample copies of special warranties.

F. Field Quality Control Reports: Daily reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: To include in maintenance manuals.

B. Warranties: Executed copies of warranties.
1.8 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.

B. Roofing Inspector Qualifications: A Roofing Inspector not engaged in the sale of products, certified as a Registered Roof Observer by the Roof Consultants Institute, experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer’s compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:

1. An authorized full-time technical employee of the manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.10 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.

2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
3. Remove temporary plugs from roof drains at end of each day.
4. Remove and discard temporary seals before beginning work on adjoining roofing.

1.11 WARRANTY

A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Manufacturer's Warranty: Manufacturer's standard or customized form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
   1. Manufacturer's warranty includes roofing membrane, base flashings, fasteners, roofing membrane accessories and other components of roofing system.
   2. Warranty Period: 15 years from date of Substantial Completion.

C. Installer's Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section and Work of related Sections, including all components of roofing system, for the following warranty period:
   1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Any roofing material manufacturer who can meet or exceed all specification requirements.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Flashings: Comply with requirements of Division 07 Sections “Sheet Metal Flashing and Trim”. Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:
   1. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.

D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
2.3 BASE-PLY MATERIALS
   A. ASTM D 2178, Type VI, asphalt-impregnated, glass-fiber felt.

2.4 THERMOPLASTIC MEMBRANE MATERIAL
   A. Membrane Sheet: ASTM D 6754-02, white thermoplastic tri-polymer alloy based on Elvaloy. Reinforced with polyester fabric and backed with non-woven polyester fleece. TPA sheet to have the following performance characteristics:
      1. Thickness: 0.080 in., ASTM D 751.
      2. Tensile strength: 350 lbf., ASTM D 751-.
      3. Elongation @ fabric break: 35% MD and XMD, ASTM D 751.
      4. Tear strength: 100 lbf, ASTM D 751.
      5. Dimensional stability @ 176 deg. F: 0.3% @ 6 hrs., ASTM D 1204.
      7. Reflectivity: .086 (initial), ASTM C 1549
   B. Flashing Sheet: ASTM D 4434-04, thermoplastic tri-polymer alloy membrane with the following physical properties:
      1. Tensile Strength, minimum, ASTM D 751-00: 300 lbf
      2. Tear Strength: ASTM D 751-00: 100 lbf
      3. Elongation ASTM D 751-00: 25% MD and XMD
      4. Low Temperature Flexibility: ASTM D 2136-94: -40 deg F.
      5. Thickness, minimum, ASTM D 751-00: 0.045 inch.
      6. Reflectivity, ASTM C 1549-02: 85.78%

2.5 AUXILIARY MEMBRANE ROOFING MATERIALS
   A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.
      1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
   B. Field and Flashing Membrane Adhesive: ASTM D 6152 SEBS polymer modified asphalt with the following physical properties:
      1. Softening Point, min/max, ASTM D 36: 195-205 deg F.
      2. Penetration, min/max, ASTM D 5: 51 dmm.
      3. Flash point, minimum, ASTM D 92: 525 deg F.
      4. Elongation at 77 deg. F, minimum, ASTM D 412: 800%
      5. Elastic Recovery, ASTM D 412: 96%
      6. Density @ 77-degrees, ASTM D 70: 8.2 lb/gal
   C. Tri-Polymer Alloy Metal: 24-gauge G90 hot dipped galvanized steel, laminated on one side with a 20 mil unreinforced TPA membrane.
   D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
E. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

F. Termination Joint Sealant: Silicone, S, NS, 25 or 50, NT: Single-component, nonsag, plus 25 to 50 percent and minus 25 to 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT, and compatible with adjacent materials.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with “Summary” section.

3.4 INSULATION AND BASE-PLIES INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system manufacturer's written instructions for installing roof insulation.

C. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing membrane system with vertical surfaces or angle changes greater than 45 degrees.
D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
   1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

E. Install insulation as specified in Section 01100 Summary.

F. Adhered Insulation and Base Plies:
   1. Concrete Decks:
      a. Install all insulation layers in a solid mopping of hot Type IV roofing asphalt.
   2. Fully adhere 2-plies of Type VI felt over gypsum coverboard with hot Type IV asphalt adhesive.

3.5 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.
   1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
   2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
   3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

G. Install membrane roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

3.6 FIELD QUALITY CONTROL

A. Roofing Inspector: Owner will engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.

B. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of [5] full-time days on site to examine substrates and conditions, verify materials, observe and inspect the Work, perform roof tests and inspections on completed portions of the Work, and to prepare and submit start up, interim, and final inspection reports.
1. Roofing Inspector's quality assurance inspections shall comply with criteria established in ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

D. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

E. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

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

END OF SECTION 07541
MEMBRANE REROOFING PREPARATION
SECTION 07591 - MEMBRANE REROOFING PREPARATION

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. Protection of existing roofing system that is not reroofed.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site and disposed of legally.

1.4 DEFINITIONS

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

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

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

D. Roof Tear-Off: Removal of existing membrane roofing system from deck.

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

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

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Fastener pull-out test report.
C. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Reroofing Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:

1. Meet with Owner; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to reroofing preparation, including membrane roofing system manufacturer's written instructions.

3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.

4. Review roof drainage during each stage of reroofing and review roof drain plugging and plug removal procedures.

5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

6. Review existing deck removal procedures and Owner notifications.

7. Review procedures to determine condition and acceptance of existing deck for reuse.

8. Review structural loading limitations of deck during reroofing.

9. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.

10. Review HVAC shutdown and sealing of air intakes.

11. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.

12. Review procedures for asbestos removal or unexpected discovery of asbestos-containing materials.

13. Review governing regulations and requirements for insurance and certificates if applicable.

14. Review existing conditions that may require notification of Owner before proceeding.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area if desired.
B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not block required exits or path from required exit to public right-of-way. Coordinate with requirements of authorities having jurisdiction.

D. Owner assumes no responsibility for condition of areas to be reroofed.

E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.

F. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
   1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.

PART 2 - PRODUCTS

2.1 INFILL MATERIALS
   A. Use infill materials matching existing decks, unless otherwise indicated.
      1. Infill materials are specified in Division 7 Section "COLD OR HOT APPLIED ASPHALT BUILT-UP ROOFING"

2.2 AUXILIARY REROOFING MATERIALS
   A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.
   B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FMG's "Approval Guide."
   C. Metal Flashing Sheet: Metal flashing sheet is specified in Division 7 Section "Sheet Metal Flashing and Trim."

PART 3 - EXECUTION

3.1 PREPARATION
   A. Coordinate with Owner to shut down air intake equipment in the vicinity of the Work. Cover air intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
B. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

C. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. If roof drains will be temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

D. Verify that rooftop utilities and service piping have been shut off before commencing Work.

3.2 ROOF TEAR-OFF

A. General: Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed.

B. Remove loose aggregate from aggregate-surfaced built-up bituminous roofing with a power broom.

C. Partial Roof Tear-Off: Where indicated, remove existing roofing membrane and immediately check for presence of moisture by visually observing roof insulation.

1. Coordinate with Owner's inspector to schedule times for tests and inspections immediately after membrane removal.

D. Complete Roof Tear-Off:

1. Remove all roofing, insulation, and flashing with metal terminations down to decks.
2. Sweep decks clean of all dirt, dust, and debris.
   a. Do not leave tear-off debris on decks.

3.3 DECK PREPARATION

A. Inspect deck after partial tear-off of membrane roofing system.

B. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Owner. Do not proceed with installation until directed by Owner.

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

D. Replace deck as needed. Replacement deck is specified in Division 5 Section "Steel Deck."
3.4 EXISTING BASE FLASHINGS
A. Remove existing base flashings around parapets, curbs, walls, and penetrations.
   1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.
B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish.

3.5 FASTENER PULL-OUT TESTING
A. Perform fastener pullout tests as required by Owner, and submit test report to Owner before installing new membrane roofing system.
   1. Furnish detailed proposal to Owner for revised fastening pattern commensurate with pull-out test results.

3.6 INSULATION BOARD INSTALLATION
A. Install insulation boards over roof decks with long joints in continuous straight lines and end joints staggered between rows. Loosely butt recover boards together and fasten to deck.
   1. Fasten or adhere bottom layer to resist wind-uplift pressure at corners, perimeter, and field of roof specified in Division 7 Section "COLD OR HOT APPLIED ASPHALT BUILT-UP ROOFING."
   2. Install additional fasteners or adhesive near board corners and edges as necessary to conform boards to substrate and to adjacent boards.
   3. Adhere top layer as specified in Division 7 Section “HOT OR COLD APPLIED ASPHALT BUILT-UP ROOFING.”

3.7 DISPOSAL
A. Collect and place demolished materials in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
   1. Storage or sale of demolished items or materials on-site will not be permitted.
B. Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 07591
SHEET METAL
FLASHING & TRIM
SECTION 07620 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

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

1.2 SUMMARY
A. This Section includes the following sheet metal flashing and trim:
   1. Manufactured reglets.
   2. Formed low-slope roof flashing and trim.
   3. Formed wall flashing and trim.
   4. Formed equipment support flashing.

B. Related Sections include the following:
   1. Division 1 Section “Summary for installing sheet metal flashing and trim.
   2. Division 6 Section "Miscellaneous Carpentry" for wood nailers, curbs, and blocking.
   3. Division 7 Section "Cold Applied Built-Up Roofing" for installing sheet metal flashing and trim integral with roofing membrane.

1.3 PERFORMANCE REQUIREMENTS
A. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.4 SUBMITTALS
A. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:
   1. Identify material, thickness, weight, and finish for each item and location in Project.
   2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
   3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.
   4. Details of expansion-joint covers, including showing direction of expansion and contraction.

B. Samples for Initial Selection: For each type of sheet metal flashing and trim indicated with factory-applied color finishes.
   1. Include similar Samples of trim and accessories involving color selection.
1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA’s "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
   1. Meet with Owner, Manufacturer, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
   2. Review methods and procedures related to sheet metal flashing and trim.
   3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
   4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

B. Coordinate all sheet metal flashing and trim with roofing material manufacturer who will be warranting roof system, which will include sheet metal flashing and trim.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 SHEET METALS
1. Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604.
   1) Color: As indicated by manufacturer's designations.

2.3 UNDERLAYMENT MATERIALS
   A. Felts: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

2.4 MISCELLANEOUS MATERIALS
   A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.
   B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
      1. Exposed Fasteners: Heads matching color of sheet metal by means of plastic caps or factory-applied coating.
      2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
   C. Solder for Lead: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
   D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.

2.5 FABRICATION, GENERAL
   A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.
   B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
   1. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with elastomeric sealant concealed within joints.

F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
   1. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" for application but not less than thickness of metal being secured.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing, Gravel Stop, and Fascia Caps: Fabricate in minimum 96-inch long, but not exceeding 10-foot long, sections. Furnish with 6-inch wide joint cover plates.
   1. Joint Style: Lap, 4 inches (100 mm) wide.
      a. Prepainted, Metallic-Coated Steel: 22-gauge.

B. Copings and Raised Edge Caps: Fabricate in minimum 96-inch long, but not exceeding 10-foot long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight.
   1. Joint Style: Butt, with 12-inch- (300-mm-) wide concealed backup plate and 6-inch- (150-mm-) wide exposed cover plates.
   2. Fabricate copings from the following material:
      a. Prepainted, Metallic-Coated Steel: 22-gauge.

C. Roof to Wall Transition, Roof to Sheet Metal, Roof Edging Transition, Expansion-Joint Cover: Fabricate from the following material:
   1. Prepainted, Metallic-Coated Steel: 0.0276 inch (0.70 mm) thick.

D. Counterflashing: Fabricate from the following material:
   1. Prepainted, Metallic-Coated Steel: 22-gauge.

E. Flashing Receivers: Fabricate from the following material:
   1. Prepainted, Metallic-Coated Steel: 22-gauge.

F. Roof-Penetration Flashing: Fabricate from the following material:

G. Roof-Drain Flashing: Fabricate from the following material:

1. Lead: 4.0-lb/sq. ft. (1.6 mm thick), hard tempered.

2.7 WALL SHEET METAL FABRICATIONS

A. Wall Expansion-Joint Cover: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 22-gauge

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 22-gauge.

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.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

C. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and butyl sealant.

D. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
E. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

F. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.
2. Aluminum: Use aluminum or stainless-steel fasteners.
3. Copper: Use copper or stainless-steel fasteners.

G. Seal joints with butyl sealant as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

H. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pretin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm) except where pretinned surface would show in finished Work.

1. Do not solder prepainted and metallic-coated steel sheet.
2. Where surfaces to be soldered are lead coated, do not tin edges, but wire brush lead coating before soldering.
3. Lead-Coated Copper Soldering: Wire brush edges of sheets before soldering.
4. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

3.3 ROOF DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.
B. Copings and Raised Edge Caps: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.

1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at 16-inch (400-mm) centers.
2. Anchor interior leg of coping with screw fasteners and washers at 18-inch (450-mm) centers.

C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for butyl sealant, extending a minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.

D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant.

1. Secure in a waterproof manner by means of snap-in installation and sealant or lead wedges and sealant.

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:

1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
2. Seal with butyl sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

3.5 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Reglets: Installation of reglets into masonry joints as specified and approved by roofing material manufacturer.

3.6 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with butyl sealant to equipment support member.

3.7 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07620
WOOD NAILER SECURED TO DECK w/ APPROPRIATE FASTENERS, 2 ROWS STAGGERED EACH ROW 24" O.C.

SEALANT BETWEEN METAL SECTIONS

NEOPRENE GASKETED FASTENER 24" O.C.

CONTINUOUS CLEAT FASTENED 16" O.C.

ATTACH NAILER TO WALL REFER TO FACTORY MUTUAL DATA SHEET I-49

BASE SHEET LINER INSTALLED DRY OVER NAILER

BASE FLASHING AS SPECIFIED

GRAVEL SURFACING

TWO-Ply STRIPPING

MULTI-Ply ROOFING

NAIL WOOD CANT TO BLOCKING, 2 ROWS STAGGERED EACH ROW 12" O.C.

INSULATION

CONCRETE ROOF DECK
BASE SHEET LINER INSTALLED DRY OVER NAILER

ATTACH NAILER TO WALL REFER TO FACTORY MUTUAL DATA SHEET 1-49

NEOPRENE GASKETED FASTENER 24" O.C.

CONTINUOUS CLEAT FASTENED 16" O.C.

BASE FLASHING AS SPECIFIED

GRAVEL SURFACING

TWO-Ply STRIPPING

MULTI-Ply ROOFING

INSULATION

CONCRETE ROOF DECK

WOOD NAILER SECURED TO DECK w APPROPRIATE FASTENERS 2 ROWS STAGGERED EACH ROW 24" O.C.

NAIL WOOD CANT TO BLOCKING, 2 ROWS STAGGERED EACH ROW 12" O.C.
NOTES:
1. SLOPE GUTTER TO DOWNSPOUTS 1/4"/1' MINIMUM

GRAVEL GUARD REQUIRED FOR GRAVEL SURFACED ROOFS

TWO-PLY STRIPPING

MECHANICALLY FASTEN, STAGGER 3" O.C.

METAL FLANGE SET IN SPECIFIED MASTIC PRIME FLANGE BEFORE STRIPPING

GRAVEL SURFACING

MULTI-PLY ROOFING

INSULATION

CONCRETE ROOF DECK

FELT ENVELOPE

DRY SHEET

ATTACH NAILER TO WALL REFER TO FACTORY MUTUAL DATA SHEET 1-49

GUTTER SPACER 36" O.C. STAGGERED ALTERNATELY (18") WITH BRACKETS

GUTTER BRACKET 36" O.C.
NOTES:
1. SLOPE GUTTER TO DOWNSPOUTS 1/4"/1' MINIMUM
CONTINUOUS CLEAT
FASTENED 10" O.C.

NAIL WOOD CANT TO
BLOCKING 2 ROWS
STAGGERED EACH ROW 24" O.C.

NOTES:
1. SECURE COVER PLATE USING TWO FASTENERS WITH NEOPRENE GASKETS AT THE CENTER OF EACH FASCIA SECTION.
NOTES:
1. SECURE COVER PLATE USING TWO FASTENERS WITH NEOPRENE GASKETS AT THE CENTER OF EACH FASCIA SECTION.

FASTEN 18" O.C. w/ NEOPRENE GASKETED FASTENERS

NAIL WOOD CANT TO BLOCKING 2 ROWS STAGGERED EACH ROW 24" O.C.

TWO-Ply BASE FLASHING

SPECIFIED TWO-Ply STRIPPING

GRAVEL SURFACING

MULTI-Ply ROOFING

INSULATION

CONCRETE ROOF DECK

CONTINUOUS CLEAT FASTENED 16" O.C.
NOTES:
1. OPTIONAL 1"x4" (25MMX100MM) GRAVEL STOPE APPROXIMATELY 36" (914mm) SQUARE
STRAINER/DOME

CLAMPING RING

TWO TARGT PLIES ADHERED WITH FLASHING ADHESIVE AND EXTENDED UNDER CLAMPING RING

4LB. (20kg/2m) LEAD FLASHING

MULTIPLY ROOFING EXTENDED UNDER CLAMPING RING

GRAVEL SURFACING

TWO-PLY STRIPPING

TAPER INSULATION TO DRAIN

CONCRETE ROOF DECK

TURN LEAD FLASHING DOWN INTO DRAIN 1\*(25mm)

DECK CLAMP

SERVICE CONNECTION

NOTES:
1. OPTIONAL 1\*4\" (25mmx100mm) GRAVEL STOP APPROXIMATELY 36\" (914mm) SQUARE
NOTES:
SOFT METAL FLASHINGS
1. SHEET LEAD: MINIMUM 4 LB. (20kg/2m) PER SQ. FT.
2. SHEET COPPER: MINIMUM 16 OZ. IF COPPER FLASHING IS INSTALLED OVER AN IRON OR STEEL PIPE,
WRAP AN ASPHALT COATED ROOFING FELT TO PREVENT DIRECT CONTACT BETWEEN TWO DISSIMILAR

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<th>SHEET TITLE:</th>
<th>SCALE:</th>
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<td>PLUMBING VENT FLASHING</td>
<td>DRAWING No:</td>
<td>C-310</td>
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</table>
NOTES: SOFT METAL FLASHINGS
1. SHEET LEAD: MINIMUM 4 LB. (20kg./2m) PER SQ. FT.

2. SHEET COPPER: MINIMUM 16 OZ. IF COPPER FLASHING IS INSTALLED OVER AN IRON OR STEEL PIPE,

WRAP AN ASPHALT COATED ROOFING FELT TO PREVENT DIRECT CONTACT BETWEEN TWO DISSIMILAR METALS.
Metal Siding
Metal Drip Flashing Fastened 8" O.C.
Counterflashing Secured Behind Metal Wall
Specified Sealant
Termination Bar Fastened 8" O.C.
Nail Wood Cant to Blocking 2 Rows Staggered Each Row 24" O.C.
Specified Base Flashing
Wood Nailer Secured to Deck with Appropriate Fasteners, 2 Rows Staggered Each Row 24" O.C.
Two-Ply Striping
Gravel Surfacing
Multi-Ply Roofing
Insulation
Concrete Roof Deck
WOOD NAILER SECURED TO DECK WITH APPROPRIATE FASTENERS, 2 ROWS STAGGERED EACH ROW 24" O.C.

METAL SIDING

METAL DRIP FLASHING FASTENED 8" O.C.

SPECIFIED SEALANT

COUNTERFLASHING SECURED BEHIND METAL WALL

TERMINATION BAR FASTENED 8" O.C.

TWO-PLY STRIPPING

GRAVEL SURFACING

SPECIFIED BASE FLASHING

MULTI-PLY ROOFING

NAIL WOOD CANT TO BLOCKING 2 ROWS STAGGERED EACH ROW 24" O.C.

INSULATION
SPECIFIED SEALANT

ONE PIECE COUNTERFLASHING INSTALLED INTO REGLET AND SECURED w/ LEAD WEDGES 8" O.C.

FLEXIBLE VAPOR RETARDER TO SERVE AS INSULATION RETAINER

FASTENERS 8" O.C.

SPECIFIED BASE FLASHING

NAIL WOOD CANT TO BLOCKING 2 ROWS STAGGERED EACH ROW 12" O.C.

MULTI-PLY ROOFING

GRAVEL SURFACING

SPECIFIED TWO-PLY STRIPPING

INSULATION

METAL ROOF DECK

WOOD NAILER SECURED TO DECK w/ APPROPRIATE FASTENERS, 2 ROWS STAGGERED EACH ROW 24" O.C.

COMPRESSIBLE INSULATION
NOTES:
DO NOT CUT PREFABRICATED BOOT. IT MUST BE PULLED OVER VENT PIPE.

PREFABRICATED BOOTS ARE AVAILABLE IN SMALL & LARGE SIZES, AND MUST BE USED WHENEVER POSSIBLE TO FLASH PIPES 1" TO 6" IN DIAMETER.
ROOF PLANS
ELIMINATE SIX (6) SKYLIGHTS

INSTALL RAISED EDGE DETAIL

BELL TILE
REPLACE W/METAL COPING

GUTTER
REUSE

AREA
Comments

ROOF
REPLACE ENTIRE ROOF

CHEYENNE BUILDING

1112 Cheyenne Ave, Kansas City, Kansas

January 22, 2018
ROOF PLAN - F.L.SCHLAGLE HIGH KANSAS CITY KANSAS

F.L.SCHLAGLE HIGH

2214 N 59 ST KANSAS CITY KANSAS 66104

JANUARY 11 2018

Page 164 of 164
IFB 18-004 - ADDENDUM No. 1

Kansas City Kansas Public Schools (USD #500)
2018 Schlagle High & Cheyenne Bldg. Roofing Projects

February 8, 2018

You are instructed to read and note the following described changes, corrections, clarifications, omissions, deletions, additions, approvals and statements pertinent to the Construction Documents.

Addendum No. 1 is a part of the Contract Bid and Construction Documents and shall govern in the performance of the Work.

I. General Information
   A. Teachers return to classrooms at Schlagle High on August 6, 2018. Any roofing or sheet metal work not completed at this time shall only be completed during non-school hours.
      1. Non-school hours: Evenings after 4:00 P.M. or weekends.

II. Specification Adds, Deletions, or Changes:
   A. Cheyenne Building
      1. The District shall have the power lines along the north perimeter either removed or blanketed prior to start of work.
      2. Contractor shall include the removal of the obsolete A/C condensing unit and pitch pan in the southwest corner.
   B. Schlagle High
      1. Remove and replace existing collector head and downspout on the west perimeter of Roof 7.
         a. New metal shall be 22-guage pre-finished metal.
         b. New downspout shall include a round reducer at bottom, connecting to underground drainage.

END OF ADDENDUM No. 1