

**SPECIFICATION**

**Myers Middle School  
Roof Replacement**

**Savannah Chatham County School  
System, Savannah, Georgia**



351 Commercial Dr., Ste E  
Savannah, Georgia 31406  
912.349.3661

February 1<sup>st</sup>, 2018



02-01-2018

**Raymond Engineering Project # SAV1018.002**

**SECTION 00 41 00**  
**BID FORM**

PROJECT INFORMATION: Myers Middle School Roof Replacement  
2025 East 52nd Street  
Savannah, Georgia 31404

CONTRACT IDENTIFICATION AND NUMBER: REI Project No. SAV1018.002

BID PREPARATION DATE: \_\_\_\_\_

CALENDER DAYS TO COMPLETE CONTRACT: \_\_\_\_\_

THIS BID IS SUBMITTED TO: Savannah Chatham County School System

1.1 The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in the Bid and in accordance with the other terms and conditions of the Contract Documents.

1.2 BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance for sixty days after the day of Bid opening. BIDDER will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen days after the date of OWNER'S Notice of Intent to Award.

1.3 In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

1.3.1 BIDDER has examined copies of all Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

| DATE  | NUMBER | DATE (continued) | NUMBER (continued) |
|-------|--------|------------------|--------------------|
| _____ | _____  | _____            | _____              |
| _____ | _____  | _____            | _____              |
| _____ | _____  | _____            | _____              |
| _____ | _____  | _____            | _____              |
| _____ | _____  | _____            | _____              |
| _____ | _____  | _____            | _____              |

1.3.2 BIDDER had familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

1.3.3 BIDDER has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies which pertain to the physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work as BIDDER considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents.

1.3.4 tests, reports and studies with the terms and conditions of the Contract Documents.

1.3.5 BIDDER has given ENGINEER written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolutions thereof by ENGINEER is acceptable to BIDDER.

1.3.6 This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham BID; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or OWNER.

1.4 BIDDER will complete the Work for the following price(s):

1.4.1 BASE BID: \_\_\_\_\_  
 (WORDS)

BASE BID ..... \$ \_\_\_\_\_

1.4.2 **Deductive Alternate 1:** To omit demolition on the gym wall EIFS and install new metal wall panels over the existing EIFS as specified, DEDUCT from the base bid :

\$ \_\_\_\_\_

1.5 It is the intent of the Owner to issue a Letter of Intent to Award within as stated in the General Conditions.

1.6 Roofing operations shall be substantially complete as listed in the Conditions of the Contract.

1.7 All specific cash allowances are included in the price(s) set forth above.

1.7.1 Unit Prices included in the Request for Proposal:

| UNIT PRICE SCHEDULE |                                   |      |            |   |           |                      |
|---------------------|-----------------------------------|------|------------|---|-----------|----------------------|
| NO.                 | ITEM                              | UNIT | UNIT PRICE |   | ALLOWANCE | INCLUDED IN BASE BID |
| 1.                  | Wood Blocking Replacement         | BF   | \$ _____   | x | 100 BF    | = \$ _____           |
| 2.                  | Deck Priming                      | SF   | \$ _____   | x | 2,500 SF  | = \$ _____           |
| 3.                  | Deck Priming & Plate Installation | SF   | \$ _____   | x | 150 SF    | = \$ _____           |

|    |                    |     |    |   |        |   |       |
|----|--------------------|-----|----|---|--------|---|-------|
| 4. | Steel replacement  | SF  | \$ | x | N/A    | = | \$N/A |
| 5. | Deck Screws        | EA  | \$ | x | 250 EA | = | \$    |
| 6. | Side Lap Screws    | EA  | \$ | x | 100 EA | = | \$    |
| 7. | Gutter replacement | L F | \$ |   |        |   |       |

1.8 BIDDER agrees that the Work:

1.8.1 will be substantially complete and completed and ready for final payment in accordance with the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

1.8.2 BIDDER acknowledges that there are no provisions for extending the project due to adverse weather conditions, and that the BIDDER will adequately staff the project to overcome possible weather delays.

1.9 BIDDER acknowledges that this project has specific staffing requirements during waterproofing operations and agrees to meet these requirements.

1.10 BIDDER has also provided a letter of intent from the materials manufacturer to provide a guarantee in accordance with the requirements of the Specification.

1.11 BIDDER has also provided:

- 1.11.1 Letter of Intent to Warrant
- 1.11.2 AIA Document G705 List of Subcontractors (2001)
- 1.11.3 Other forms as required by the Owner

If BIDDER is:

A Partnership

By \_\_\_\_\_  
 (Firm Name)

(SEAL)

\_\_\_\_\_  
 (general partner)

Business address:

\_\_\_\_\_

Phone No:

Raymond Engineering-Georgia, Inc.

Myers MS  
Roof Replacement

REI Project No. SAV1018.002

Raymond Engineering-Georgia, Inc.

Myers MS  
Roof Replacement

REI Project No. SAV1018.002

A Corporation

By \_\_\_\_\_  
(Corporation name)

\_\_\_\_\_  
(State of Incorporation)

By \_\_\_\_\_  
(name of person authorized to sign)

\_\_\_\_\_  
(Title)

(Corporate Seal)

Attest \_\_\_\_\_  
(Secretary)

Business address:

\_\_\_\_\_  
Phone No:

Raymond Engineering-Georgia, Inc.

Myers MS  
Roof Replacement

REI Project No. SAV1018.002

A Joint Venture

By \_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

By \_\_\_\_  
(Name)

\_\_\_\_\_  
(Address)

(Each joint venture member must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

END OF THE BID FORM

**DIVISION 1**  
**GENERAL REQUIREMENTS**



**SECTION 01 11 00  
SUMMARY OF WORK**

**PART 1 - GENERAL**

1.1 Work Covered by Contract Documents

- 1.1.1 Work under this Contract consists of furnishing all labor, materials and equipment necessary to perform the quality remedial roofing of the Myers Middle School as shown on drawings.
- 1.1.2 The work will include, but is not necessarily limited to, the following:
  - 1.1.2.1 Remove the existing built-up roofing system from designated areas as shown on the drawings, which includes aggregate surfacing, bituminous interplies, and mineral perlite insulation down to the existing metal deck, and discard.
  - 1.1.2.2 Remove all existing bituminous flashings and pipe flashings, and discard.
  - 1.1.2.3 Remove all existing metal flashing including edge metal, gutters, downspouts, expansion joint covers, and counterflashing, and discard.
  - 1.1.2.4 Remove all wood blocking above the top flat surface of the roof deck, and discard. Wood beneath rooftop units shall remain.
  - 1.1.2.5 Remove EIFS at the walls above roof as identified on drawings, and discard.
  - 1.1.2.6 (**Deductive Alternate No. 1**) Omit the specification requirement to remove the EIFS.
  - 1.1.2.7 At metal panel roofing areas shown on drawings, remove the existing gutters, and discard. Remove the fasteners securing the gutters and first row of fastener securing the metal roof panels to the eave strut, and discard.
  - 1.1.2.8 At additional built-up roofing areas shown on drawings, remove the existing gutter and edge metal, and discard.
  - 1.1.2.9 Furnish and install new wood blocking as specified herein.
  - 1.1.2.10 Furnish and install new insulation, cover board, and polyvinyl chloride (PVC) roofing as specified herein.
  - 1.1.2.11 Furnish and install new separator board, membrane flashings, and pipe flashings as specified herein.
  - 1.1.2.12 Furnish and install new metal flashing including edge metal, gutters, downspouts, expansion joint covers, and counterflashing as specified herein. This shall include removed flashings at areas where roof replacement is not occurring. Furnish and install new splash blocks.
  - 1.1.2.13 Furnish and install new foam closures at metal roof panels where new gutters are being installed. Furnish and install new fasteners to secure the roof gutters and to secure the metal roof panels to eave strut as specified herein.

1.1.2.14 At removed EIFS, furnish and install new insulated metal wall panels as specified herein.

1.1.2.15 (**Deductive Alternate No. 1**) At walls above the roofing indicated on plans, furnish and install new non-insulated metal wall panels over the existing EIFS as specified herein.

1.2 Description of the Existing Roof System

1.2.1 Information in this Section is provided only to establish general description and is not necessarily accurate. The Contractor is responsible for visiting the site and satisfying himself as to the existing conditions, size of roof areas, etc. before submitting his Bid.

1.2.2 The roof assembly at all Roof Areas is composed of the following:

1.2.2.1 Roof surfacing is aggregate adhered using asphalt.

1.2.2.2 Inter-plyies are bituminous.

1.2.2.3 Base flashings are bituminous.

1.2.2.4 The roof insulation is 1.5-inch-thick mineral perlite insulation.

1.2.2.5 The roof deck is a Type B steel roof deck.

**PART 2- PRODUCTS:** Not used.

**PART 3 - EXECUTION:** Not used.

**END OF SECTION**

**SECTION 01 23 00  
ALTERNATES**

**PART 1 - GENERAL**

- 1.1. Work Included: All alternates as listed in Bid Form
- 1.2. Related Work
  - 1.2.1. Summary of Work – Section 01 11 00
  - 1.2.2. Miscellaneous Rough Carpentry – Section 06 10 53
  - 1.2.3. Metal Wall Panels – Section 07 42 13
- 1.3. Procedures
  - 1.3.1. Alternates will be exercised at the option of the Owner.
  - 1.3.2. The Owner reserves the right to select the lowest responsive bidder using the value of the Base Bid plus any alternate or combination of alternates.
  - 1.3.3. Modify and coordinate related activities as required to complete the work if, and when, acceptance is designated by the Owner.
  - 1.3.4. In the event alternates are exercised, applicable sections of this Specification shall govern. Other sections may be modified as required to address the alternate.

**PART 2 – PRODUCTS:** See applicable specification sections.

**PART 3 – EXECUTION**

- 3.1. **Deductive Alternate No. 1:** At walls above the roofing indicated on plans, omit the specification requirement to remove the EIFS. Furnish and install new insulated metal wall panels over the existing EIFS as specified herein.

**END OF SECTION**

**SECTION 01 26 00****MODIFICATION PROCEDURES****PART 1 - PROCEDURES**

## 1.1 Summary

- 1.1.1 This Section specifies administrative and procedural requirements for processing Contract modifications.

## 1.3 Requests for Information or Clarification

- 1.3.1 Request for Information (RFI): The Designer will issue a written RFI Response to each written Contractor inquiry. Unless specifically addressed, RFIs and RFI Responses shall not involve any adjustment to the Contract Sum or the Contract Time. RFI Responses when issued, become a part of the Contract Documents, and as such, must be adhered. The effects of RFI Responses must be reflected in the Project Record Documents. Each RFI Response shall bear words addressed by the Designer to the Contractor: "The work shall be carried out according to the following instructions or clarifications issued in response to Request For Information #(enter RFI #), and in accordance with The Contract Documents without change in The Contract Sum or Contract Time. If you determine that this response does affect The Contract Sum or Contract Time, you shall notify The Designer immediately, and shall do so prior to proceeding with the work in accordance with this response. Proceeding with the work in accordance with this response without your prior notification otherwise indicates your acknowledgment that there will be no change in The Contract Sum or Contract Time."

## 1.4 Changes in the Work Affecting Cost And/Or Time

- 1.4.1 Proposed Change Order Requests: The Designer (or Owner) may issue a Proposed Change Order Request, which is a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. The description will include supplemental or revised Drawings and Specifications. Each PCO will be numbered and dated, and subsequent communications regarding each PCO should give reference to the PCO number and date.

1.4.1.1 Proposal Requests are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

1.4.1.2 Within time specified in PCO after receipt of Proposal Request, the Contractor shall submit a Change Order Proposal (COP), which is a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. Each COP must give reference to the number and date of the PCO to which it is in response.

- (a) Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
- (b) Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
- (c) Pricing of Changes shall be in accordance with Articles 3.2.9 and 3.2.10 of the Construction Contract.
- (d) If affected, the Contractor's Construction Schedule shall be updated to indicate the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. This updated schedule shall be submitted

with the COP. Use available total float before requesting an extension of the Contract Time. By omission of an updated Schedule as a part of a COP, the Contractor shall and does establish that the Schedule is not affected by the subject change. Any COP that proposes to affect Contract Time may be considered non-responsive if it does not include an updated Schedule

1.4.2 All change proposals shall include complete break-out and support documentation, including unit descriptions, unit quantities, unit costs (labor, material, other), burdens and mark-ups. Portions of work that are to be deleted as a part of an overall change description shall be clearly reflected in the break-out; abbreviated descriptions which reflect only the net effects of reduced work scopes combined with increased work scopes will not be accepted. The Designer and Owner shall have full discretion in determining what measure of breakout and support is adequate and acceptable. No extension of Contract Time will be allowed for Construction delays attributable to the failure on the part of the Contractor to provide properly prepared and supported change proposals.

1.4.3 Proposal and change request forms: AIA Document G701 in three copies and submit to the Designer and Owner for signatures.

1.4.4 Do not reflect any Change Order in the Schedule of Values or Application for Payment Continuation without an approved Change Order. The Designer or Owner shall have full discretion in establishing the manner in which Change Orders are added to the Schedule of Values and Continuation Sheets.

## 1.5 Allowance

1.5.1 Allowance Adjustment: All charges against an Allowance shall be made in the form of a CO resulting from PCO or RFI, shall be managed as any CO, and shall be invoiced against the Allowance line item in the Application for Payment. At Project completion, any unused balance in each allowance will be returned to the Owner by deductive CO.

1.5.2 Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents. Submit claims within 14 days of receipt of the Change Order authorizing work to proceed. Owner will reject claims submitted later than 14 days after such authorization per Article 5.2.2 of the Contract.

1.5.2.1 Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.

1.5.2.2 No change to Contractor's indirect expense is permitted for selection of higher-or lower-priced materials or systems of the same scope and nature as originally indicated.

## 1.6 Change Order Procedures

1.6.1 The Designer shall immediately upon receipt review each Proposed Change Order (PCO) for its technical and monetary merits. The Designer will not forward to the Owner any advice or recommendation for any PCO that does not meet all requirements per Article 3.2.4 of the Contract Documents, but shall instead return it to the Contractor with specific instructions as to what must be done in order to rectify the problems with PCO. The Designer will provide written advice to the Owner regarding his opinion of each PCO, which will include a recommendation.

1.6.2 Upon Owner's approval of a Proposed Change Order (PCO), Designer will issue a Change Order

for approval by the Owner.

1.7 Force Account Change Order

1.7.1 Force Account: Force Account work shall be undertaken only after receipt of an Approved Change Order, stating a maximum dollar amount (Stipulated Maximum Sum) beyond which no change work may be undertaken subject to amendment, for funding all costs of the Change Order as prescribed in Article 3.2.7.3 of the Contract.

1.7.2 Documentation: The Contractor shall maintain detailed records on a time and material basis of work required by the Force Account Change Order.

1.7.2.1 After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.8 Tracking, Coordination and Management of Clarifications and Changes

1.8.1 Some clarifications and changes will go through a process whereby they are assigned tracking numbers as more than one of the type documents defined in the articles above and in other Sections of these Specifications (i.e. RFIs, etc.). All documents created which pertain to the same subject shall make clear reference to other previous or concurrent documents on the subject.

1.8.1.1 The Contractor shall establish and maintain current a single Log which tracks these types of documents. The form and content of this log is subject to Designer and Owner approval, and may if sufficient be used to meet other stipulated tracking log requirements.

1.9 Delays and Extensions of Time Due to Weather

1.9.1 Delays caused by weather are non-compensable, and will be processed in accordance with Article 3.3.7.2 of the Contract.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not used.

**END OF SECTION**

**SECTION 01 32 13  
CONSTRUCTION SCHEDULES**

**PART 1 - GENERAL**

1.1 Description

1.1.1 To assure adequate planning and execution of the work so as to complete the project within the time period allowed in the Contract and to assist the Designer in evaluating work progress.

1.1.2 "Day" used throughout the Contract shall mean "Consecutive Calendar Days" unless otherwise stated.

1.2 Schedule Adherence

1.2.1 Should any activity not be completed in accordance with the construction project schedule, Owner shall have the right to order the Contractor to expedite completion of work in accordance with Article C-43 of the General Conditions.

1.2.2 Inclement Weather

1.2.2.1 Where the contract includes schedule requirements including, but not limited to, available working hours, available working days, construction durations, substantial completion date(s), and/or final completion date(s), these requirements shall be graphically shown in the construction schedule. The schedule shall be based on assuming normal inclement weather for each calendar month, and no contract time extensions shall be considered until the calendar month has experienced inclement weather beyond this normal consideration. Furthermore, the Contractor bears the burden of proof to show inclement weather beyond normal considerations, which shall include documentation from the National Weather Service (NWS), or approved equal prior to bid, that the reported inclement weather was outside of the specified parameters to perform the work of this specification. All inclement weather documentation shall be submitted in writing within the payment period for each occurrence.

1.2.2.2 Normal Inclement Weather for each calendar month shall be considered:

| <u>( a )</u> | <u>M o n t h</u>  | <u>D a y s</u> |
|--------------|-------------------|----------------|
| <u>( b )</u> | J a n u a r y     | 6              |
| <u>( c )</u> | F e b r u a r y   | 5              |
| <u>( d )</u> | M a r c h         | 6              |
| <u>( e )</u> | A p r i l         | 5              |
| <u>( f )</u> | M a y             | 5              |
| <u>( g )</u> | J u n e           | 6              |
| <u>( h )</u> | J u l y           | 6              |
| <u>( i )</u> | A u g u s t       | 6              |
| <u>( j )</u> | S e p t e m b e r | 4              |
| <u>( k )</u> | O c t o b e r     | 3              |
| <u>( l )</u> | N o v e m b e r   | 3              |
| <u>( m )</u> | D e c e m b e r   | 6              |

1.2.2.3 No consideration or extension shall be allowed for inclement weather days that fall outside any working restrictions.

1.2.2.4 Work under this specification shall be adequately staffed to complete the work of this specification given the specified work restrictions with considerations for normal inclement weather.

1.2.2.5 No financial compensation shall be made due to inclement weather, and any changes to the contract shall be no-dollar time extensions.

1.2.2.6 The contractor is expected to maintain construction in accordance with the approved schedule less any approved inclement weather days outside of normal considerations. Should the contractor fall behind schedule less any approved inclement weather days outside normal consideration, this shall be considered non-compliance with the contract and the Designer may act in accordance with the Contract Documents.

### 1.3 Schedule

1.3.1 Prior to the pre-construction meeting, the Contractor shall submit the construction schedule to the Designer in accordance with Supplementary General Conditions Paragraph D-05. However, one copy of the construction schedule shall be received and approved by the Owner prior to the issuing of the Notice to Proceed.

1.3.2 The holidays observed by Georgia state offices are attached to this section, and the contractor should make considerations for these holidays in their schedule. Furthermore, these holidays should also be assumed to be observed by Georgia state offices for any other years included over the project duration.

### 1.4 Diagrams

1.4.1 Graphically show the sequence and interdependence of all activities necessary to complete the work and the order in which such activities are to be accomplished as planned by the Contractor and his project field supervisor in coordination with all subcontractors whose work is shown on the diagram. Activities shown on the diagram shall include, but are not limited to:

1.4.1.1 Submittals and approvals of shop drawings and samples.

1.4.1.2 Project mobilization

1.4.1.3 Demolition/Roof preparation

1.4.1.4 Construction

1.4.1.5 Sheet Metal

1.4.1.6 Miscellaneous work

1.4.1.7 Final Cleanup

1.4.1.8 Final Inspection

1.4.1.9 All activities by the Designer which affects progress, required completion dates, or both, for all and each part of the Work.

1.4.2 The detail of information shall be such that duration times of activities shall normally range from 1 to 30 days. The selection and number of activities shall be subject to approval by the Engineer.

**PART 2 - PRODUCTS:** Not Used.



**PART 3 - EXECUTION**

- 3.1 Construction Schedule: Prior to the pre-construction meeting, the Contractor shall complete the analysis described in Article 1.4 of this section in preliminary form. Meet with the Designer to review the contents of the proposed schedule and make all revisions agreed upon. Submit in accordance with Paragraph 1.3.1 of this section.
- 3.2 Periodic Reports
  - 3.2.1 Periodic reports shall show the following activities:
    - 3.2.1.1 Activities completed during the reporting period.
    - 3.2.1.2 Percentage of work actually completed and schedule as of the report date.
    - 3.2.1.3 Progress along the critical path in terms of days ahead of or behind schedule dates.
    - 3.2.1.4 If work is behind schedule, a brief report which shows, but is not limited to:
      - (a) A description of problem areas, both current and anticipated.
      - (b) Delaying factors and their impact.
      - (c) An explanation of corrective actions taken or proposed.
  - 3.2.2 Revisions: Contractor shall make only those revisions to the construction schedule as are approved in advance by the Designer.

**END OF SECTION**

**SECTION 01 32 26  
PROGRESS REPORTS**

**PART 1- GENERAL**

- 1.1 Description: Contractor shall keep a daily progress report to provide a continuous record of the progress of this Work. The format of the report shall be as directed by the Designer.
- 1.2 Quality Assurance
  - 1.2.1 Reports shall be filled out on a daily basis by the Contractor's job site representative who shall be in a supervisory capacity.
  - 1.2.2 Reports shall be completed by the same individual throughout the duration of the Project wherever possible.

**PART 2- PRODUCTS:** Not Used.

**PART 3- EXECUTION**

- 3.1 Contractor shall complete one form for each work day.
- 3.2 Forms shall be completed for work days shortened or cancelled due to weather, material shortages, labor conditions or holidays.
- 3.3 Forms shall be legible with all pertinent items.
- 3.4 Submit copies to the Designer upon request.
- 3.5 Information required in the contractor's daily report shall include the following:
  - 3.5.1 Date
  - 3.5.2 Company Name
  - 3.5.3 Name of Superintendent/Foreman
  - 3.5.4 Number of Workers
  - 3.5.5 Weather Conditions
  - 3.5.6 Location of Work Performed
  - 3.5.7 Materials Installed
  - 3.5.8 Description of Work Performed
  - 3.5.9 Photographs of Unit Price Work (minimum of 4): Contractor required to maintain a function digital camera with a minimum resolution of 12 megapixels. Photographs taken on cell phones shall not be allowed.

3.5.10 Photographs of the day's sequence of work (minimum of 8): Contractor required to maintain a functioning digital camera with a minimum resolution of 12 megapixels. Photographs taken on cell phones shall not be allowed.

3.5.11 Project Issues/Request for Information

3.5.12 Name of Visitors

3.5.13 Change Order/Unit Price Work Performed

**END OF SECTION**

**SECTION 01 33 00**  
**SUBMITTALS**

**PART 1- GENERAL**

- 1.1 Procedures
  - 1.1.1 Submit certain items with Bid and within seven (7) calendar days after receipt of signed Contract. It should be noted that certain items are due prior to the pre-construction meeting as listed in Section D, Supplementary General Conditions. The Contractor shall adhere to Owner requirements. The successful Contractor shall submit the required information to the Design Professional in five (5) copies. Electronic copies of the submittals are acceptable.
  - 1.1.2 Each transmitted document shall identify the project name and Contractor. Material submittals shall also identify the type and trade name of materials, material manufacturer, intended use and specification number. The successful bidder shall request an electronic copy of the attached "Submittal Checklist" to complete and include with the submittals. See Paragraph 1.7. Deviations from Contract Documents shall be identified.
  - 1.1.3 Submittals shall bear the Contractor's stamp and indicate approval and date.
  - 1.1.4 After Design Professional's review of materials, revise and resubmit, as required, identifying changes made since previous submittal.
  - 1.1.5 Upon approval by Design Professional, submittals will be forwarded to the Georgia Department of Corrections for review and approval.
- 1.2 Bid Submittals: Refer to Bid Form
- 1.3 Site Specific Safety Plan: Refer to Section 01 66 00.
- 1.4 Construction Schedules: Refer to Section 01 32 13 of this Specification
- 1.5 Shop Drawings, Samples and Product Data: Refer to Section 01 33 23 of this Specification.
- 1.6 Foreman's Statement: Submit on or before pre-construction conference. See paragraph 3.3 below.
- 1.7 Emergency phone number of principals, superintendent, foreman, project manager: Submit to Owner and Design Professional at Pre-Construction Conference.
- 1.8 Pre-Construction Submittals
  - 1.8.1 Prior to the start of the project, the following items need to be submitted within seven (7) calendar days after the receipt of signed Contract. It should be noted that certain items are due prior to the pre-construction meeting as listed in Section D-03 Supplementary General Conditions. The contractor shall adhere to Owner requirements. The contractor shall fill out the attached Submittal checklist form, if one, ensuring that all items listed in this section, referenced for submittal in the specification, and/or items to be used on this project are properly submitted. Items submitted must conform to the standards and expectations of that material, detail, and/or procedure expressed in this specification. If not, that item may be rejected for use by the Design Professional.
  - 1.8.2 The following literature shall be submitted.

- 1.8.2.1 Contractor's Letter of Good Standing with Manufacturer.
- 1.8.2.2 Manufacturer's Sample 20-year warranty
- 1.8.2.3 Contractor's Sample 5-year warranty
- 1.8.2.4 Manufacturer's Application Instructions
- 1.8.2.5 Contractor's Foreman's Statement
- 1.8.2.6 Contractor's Construction Schedule
- 1.8.2.7 Contractor's Schedule of Values
- 1.8.2.8 Insulation Manufacturer's Letter of Approval of Product Use on Project
- 1.8.2.9 Membrane Manufacturer's Letter of Approval of Product Use on Project
- 1.8.2.10 Georgia-Based Materials and Products Checklist (Attached)

1.8.3 Submit template progress report form.

1.8.4 Submit all materials as outlined in Part 2 of the Specification sections. Group and label material submittals by Specification Section. See attached Submittal Register.

1.8.5 Submit metal flashing color charts.

1.8.6 Submit shop drawings in accordance to Section 01 33 23.

## 1.9 Close-out Submittals

1.9.1 At the end of the project and prior to final payment, the following documents shall be submitted to the Design Professional:

- 1.9.1.1 Copies of all punch lists prepared by the Design Professional and documentation of completion.
- 1.9.1.2 Contractor's Warranty to Owner.
- 1.9.1.3 Manufacturer's Guarantee
- 1.9.1.4 Contractor's Final Payment Application
- 1.9.1.5 Consent of Surety for Final Payment
- 1.9.1.6 Final Lien Waiver
- 1.9.1.7 Contractor's Affidavit of Payment of Debts and Claims
- 1.9.1.8 Contractor's Affidavit of Release of Liens
- 1.9.1.9 Other forms and affidavits required by Owner
- 1.9.1.10 As-Built Drawings

## **PART 2- PRODUCTS**

2.1 Membrane and associated membrane flashings are to be manufactured and labeled by the membrane materials manufacturer or, if supplied by a different manufacturer, approved for use by membrane manufacturer in compliance with warranty requirements.

2.2 This project is subject to the Energy Efficiency and Sustainable Construction Act of 2008 ("Energy Act"). Projects subject to the Energy Act require use of not less than 10% of Georgia products.

## **PART 3- EXECUTION**

3.1 Timing

3.1.1 Make all submittals in accordance with schedules specified herein.

3.1.2 Design Professional will be allowed a minimum of ten (10) calendar days following receipt of submittals

for review.

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

3.2 Review

3.2.1 The notations "No Exceptions Taken" or "Exceptions as Noted" shall authorize the Contractor to proceed with fabrication, purchase, or both subject to the revisions, if any, required by the Design Professional's review comments.

3.2.2 The Contractor shall make all revisions, as required. If the Contractor considers any revisions to constitute a change in the scope of work, he shall notify the Design Professional under the provisions of the General Conditions.

3.2.3 Only those revisions directed or approved by the Designer shall be shown on the re-submittal.

3.2.4 After a submittal has been approved by the Designer, substitution of materials, equipment and/or procedures shall not be considered unless accompanied by an acceptable explanation for the substitution.

3.3 Foreman's Statement

STATEMENT  
Myers MS Roof Replacement

\_\_\_\_\_

I,       (Name)      , an employee of       (Contractor)       hereby state that I have my own personal copy of the project specifications and drawings, have thoroughly read them and have visited the work site.

By \_\_\_\_\_

Date

**END OF SECTION**

**SECTION 01 33 23**  
**SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

**PART 1- GENERAL**

- 1.1 Shop Drawings
  - 1.1.1 Shop drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor, Subcontractor, manufacturer, supplier or distributor which illustrate some portion of the Work.
  - 1.1.2 Submit shop drawings electronically with the following information:
    - 1.1.2.1 Designer's Project Number
    - 1.1.2.2 Submittal Date
    - 1.1.2.3 Submittal Number
    - 1.1.2.4 Project Title
    - 1.1.2.5 Name of Contractor, Approval Date and Contractor's approval stamp/signature.
    - 1.1.2.6 Reference to Specification Section, Paragraph and/or Drawing.
    - 1.1.2.7 The location of the work covered by the shop drawing.
    - 1.1.2.8 Any qualification, deviation or departure from Contract.
    - 1.1.2.9 Any additional information required by the Specifications for the particular material being furnished.
  - 1.1.3 Each shop drawing shall be numbered. The same numbering system shall be retained through all revisions. Each drawing shall have a clear space for the approval stamps of contractor and Designer.
  - 1.1.4 In submitting shop drawings for approval, all associated shop drawings related to a complete assembly shall, where possible, be submitted at the same time so that each may be checked in relation to the entire proposed assembly.
  - 1.1.5 Contractor shall prepare composite shop drawings and installation layouts, when required, to depict proposed solutions for tight field conditions. The composite shop drawings and field installation layouts shall be coordinated in the field by the Contractor for proper relationship to the work of other trades involved in the work.
  - 1.1.6 With respect to standard manufactured items, Contractor shall submit to Designer manufacturer's illustrated cuts of the items to be furnished showing details, sizes and dimensions and all other pertinent information. Sufficient copies of cuts shall be furnished so that Engineer may maintain a minimum of two copies and return to Contractor the number required for Contractor's use.
  - 1.1.7 Shop Drawings: Dimensioned shop drawings which shall include details of the installation of the systems and flashing methods for penetrations, edges, parapets, expansion joints, gutters, downspouts, scuppers, conductor heads, drains, and any other detail necessary to graphically show the extent of the work and how materials will be incorporated into the work. At a minimum, provide a shop drawing for each contract drawing and detail.
- 1.2 Product Data
  - 1.2.1 Submit a complete description of the roofing systems listing all components and their respective

manufacturer.

1.2.2 Submit each manufacturer's technical specifications and installation procedures for each major roofing component required.

1.2.3 Minimum required components include fasteners, insulation, roof membrane, flashing and metal flashing material.

1.3 Manufacturer's Certificates

1.3.1 Submit separate letters from the membrane manufacturer and the insulation manufacturer stating he has examined the plans, specifications and details for this project and approves the use of his products and systems on this project.

1.3.2 Submit a letter from the membrane manufacturer acknowledging the brand name and type of insulation proposed for use and his approval of the use of this insulation with his products.

1.3.3 Submit a letter from the insulation manufacturer acknowledging the brand name and type of roof membrane being proposed and his approval of the use of the roof membrane and system with his product.

1.3.4 Submit a copy of the licensed membrane applicator agreement.

1.3.5 If any membrane components are not packaged by the membrane manufacturer, submit a letter from the membrane manufacturer clearly identifying the component and acknowledging approval to use this component on this project.

1.3.6 Submit for each bulk shipment of asphalt a manufacturer's certificate clearly stating type of asphalt and compliance with reference standard.

1.4 Samples: Submit a 6-inch long sample of each metal shape to be used on this project to Designer for approval. Metal shapes are to be constructed in accordance with approved shop drawings and will be used for establishment of quality standards during installation.

**PART 2- PRODUCTS:** Not Used.

**PART 3- EXECUTION**

3.1 Timing

3.1.1 A minimum of 10 days shall be allowed for review by the Designer following his receipt of the submittals.

3.1.2 If a submittal contains more than 10 shop drawings, Contractor shall indicate which drawings must be returned within 10 days. Engineer shall have an additional 10 days to return the balance of submittals.

3.1.3 Delays caused by tardiness in receipt of submittals shall not be an acceptable basis for extension of the contract completion date.

3.2 Review

3.2.1 Review by the Designer shall be directed to the general method of construction and shall not be construed



as a complete check nor shall the review relieve the contractor from responsibility for errors and/or omissions which may exist.

- 3.2.2 The notations "No Exceptions" or "Exceptions as Noted" shall authorize Contractor to proceed with fabrication, purchase, or both, subject to the revisions, if any, required by the Designer's review comments.
- 3.2.3 The Contractor shall make all revisions, as required. If the Contractor considers any required revisions to constitute a change, he shall notify the Designer under the provisions specified in the General Conditions.
- 3.2.4 Only those revisions directed or approved by the Designer shall be shown on the re-submittal.
- 3.2.5 After a submittal has been approved by the Designer, substitution of materials or equipment shall not be considered unless accompanied by an acceptable explanation as to the necessity for the substitution.

**END OF SECTION**

**SECTION 01 33 23**  
**SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

**PART 1- GENERAL**

- 1.1 Shop Drawings
- 1.1.1 Shop drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor, Subcontractor, manufacturer, supplier or distributor which illustrate some portion of the Work.
- 1.1.2 Submit shop drawings electronically with the following information:
- 1.1.2.1 Designer's Project Number
  - 1.1.2.2 Submittal Date
  - 1.1.2.3 Submittal Number
  - 1.1.2.4 Project Title
  - 1.1.2.5 Name of Contractor, Approval Date and Contractor's approval stamp/signature.
  - 1.1.2.6 Reference to Specification Section, Paragraph and/or Drawing.
  - 1.1.2.7 The location of the work covered by the shop drawing.
  - 1.1.2.8 Any qualification, deviation or departure from Contract.
  - 1.1.2.9 Any additional information required by the Specifications for the particular material being furnished.
- 1.1.3 Each shop drawing shall be numbered. The same numbering system shall be retained through all revisions. Each drawing shall have a clear space for the approval stamps of contractor and Designer.
- 1.1.4 In submitting shop drawings for approval, all associated shop drawings related to a complete assembly shall, where possible, be submitted at the same time so that each may be checked in relation to the entire proposed assembly.
- 1.1.5 Contractor shall prepare composite shop drawings and installation layouts, when required, to depict proposed solutions for tight field conditions. The composite shop drawings and field installation layouts shall be coordinated in the field by the Contractor for proper relationship to the work of other trades involved in the work.
- 1.1.6 With respect to standard manufactured items, Contractor shall submit to Designer manufacturer's illustrated cuts of the items to be furnished showing details, sizes and dimensions and all other pertinent information. Sufficient copies of cuts shall be furnished so that Engineer may maintain a minimum of two copies and return to Contractor the number required for Contractor's use.
- 1.1.7 Submit shop drawings for the following details:
- 1.1.7.1 Curb detail
  - 1.1.7.2 Counterflashing details
  - 1.1.7.3 Tapered insulation layout
  - 1.1.7.4 Insulation fastening pattern details
  - 1.1.7.5 Drip Edge Flashing details
  - 1.1.7.6 Through-wall scupper details
  - 1.1.7.7 Wall Details
  - 1.1.7.8 Expansion Joint Details

- 1.1.7.9 Gutter details
- 1.1.7.10 Downspout details
- 1.1.7.11 Gutter outlet detail
- 1.1.7.12 Coping and closure details
- 1.1.7.13 Other details, as specified

1.2 Product Data

- 1.2.1 Submit a complete description of the roofing systems listing all components and their respective manufacturer.
- 1.2.2 Submit each manufacturer's technical specifications and installation procedures for each major roofing component required.
- 1.2.3 Minimum required components include fasteners, insulation, roof membrane, flashing and metal flashing material.

1.3 Manufacturer's Certificates

- 1.3.1 Submit separate letters from the membrane manufacturer and the insulation manufacturer stating he has examined the plans, specifications and details for this project and approves the use of his products and systems on this project.
- 1.3.2 Submit a letter from the membrane manufacturer acknowledging the brand name and type of insulation proposed for use and his approval of the use of this insulation with his products.
- 1.3.3 Submit a letter from the insulation manufacturer acknowledging the brand name and type of roof membrane being proposed and his approval of the use of the roof membrane and system with his product.
- 1.3.4 Submit a copy of the licensed membrane applicator agreement.
- 1.3.5 If any membrane components are not packaged by the membrane manufacturer, submit a letter from the membrane manufacturer clearly identifying the component and acknowledging approval to use this component on this project.
- 1.3.6 Submit for each bulk shipment of asphalt a manufacturer's certificate clearly stating type of asphalt and compliance with reference standard.

- 1.4 Samples: Submit a 6-inch long sample of each metal shape to be used on this project to Designer for approval. Metal shapes are to be constructed in accordance with approved shop drawings and will be used for establishment of quality standards during installation.

**PART 2- PRODUCTS:** Not Used.

**PART 3- EXECUTION**

3.1 Timing

- 3.1.1 A minimum of 10 days shall be allowed for review by the Designer following his receipt of the submittals.
- 3.1.2 If a submittal contains more than 10 shop drawings, Contractor shall indicate which drawings must be

returned within 10 days. Engineer shall have an additional 10 days to return the balance of submittals.

3.1.3 Delays caused by tardiness in receipt of submittals shall not be an acceptable basis for extension of the contract completion date.

3.2 Review

3.2.1 Review by the Designer shall be directed to the general method of construction and shall not be construed as a complete check nor shall the review relieve the contractor from responsibility for errors and/or omissions which may exist.

3.2.2 The notations "No Exceptions" or "Exceptions as Noted" shall authorize Contractor to proceed with fabrication, purchase, or both, subject to the revisions, if any, required by the Designer's review comments.

3.2.3 The Contractor shall make all revisions, as required. If the Contractor considers any required revisions to constitute a change, he shall notify the Designer under the provisions specified in the General Conditions.

3.2.4 Only those revisions directed or approved by the Designer shall be shown on the re-submittal.

3.2.5 After a submittal has been approved by the Designer, substitution of materials or equipment shall not be considered unless accompanied by an acceptable explanation as to the necessity for the substitution.

**END OF SECTION**

**SECTION 01 45 00  
QUALITY CONTROL**

**PART 1- GENERAL**

- 1.1 Quality Control – Contractor: Maintain quality control over products, services, site conditions, and workmanship, to produce work of specified quality.
- 1.2 Quality Control – Owner
  - 1.2.1 A minimum of 3 seam samples shall be taken across seams per day per welder. Field peel tests shall be performed in accordance with the roofing system manufacturer’s requirements by the roofing contractor. At a minimum, a peel test shall be performed each time machines are activated, and this test shall be dated, stored on-site, and readily available for Design Professional’s inspection. Samples shall be tack welded to the roof at each test location, but shall be removed before substantial completion, unless otherwise directed by the Owner.
  - 1.2.2 Work found in violation of the Specifications, or not in conformance with acceptable roofing practices/standards, shall be subject to rejection including removal and replacement with new materials at Contractor's expense.
  - 1.2.3 Failure of Owner or Designerto discover or reject defective work, or work not in accordance with the Contract, shall not be deemed an acceptance thereof, nor a waiver of Owner's rights to Contractor's compliance with the Contract or performance of the work, or any part thereof. No partial or final payment, or partial or entire occupancy, by Owner shall be deemed to be an acceptance with the Contract, nor shall it be deemed a waiver by Owner or any of Owner's rights pursuant to this Contract or otherwise.
  - 1.2.4 Owner intends to conduct inspections of the work by in-house personnel and/or the Owner's representative on a full/part-time basis. Such work is in addition to the Design Professional’s inspections which may be conducted to verify that work completed is comparable to contractor’s monthly application for payment.
  - 1.2.5 PVC membrane and base flashings shall be smooth to the substrate, and wrinkles in membrane or base flashings shall be grounds for rejection.
  - 1.2.6 The accumulation of debris and foam adhesive beneath new membrane is not acceptable and shall be grounds for rejection.

**PART 2– PRODUCTS:** Not Used.

**PART 3– EXECUTION:** Not Used.

**END OF SECTION**

**SECTION 01 66 00**

**STORAGE AND PROTECTION**

**PART 1 - GENERAL**

1.1 Protection

- 1.1.1 Limit size of work sections to safeguard adjacent materials, structures, etc., and to minimize dust and noise.
- 1.1.2 Protect existing facilities from damage during work. Do not overload existing paving, curbs, sidewalks, etc. with vehicle traffic. Do not overload new or existing construction with demolition debris, equipment, etc.
- 1.1.3 Protect existing facilities from fire as a result of re-roofing and/or HVAC operations. Contractor shall provide suitable and adequate fire extinguishers conveniently located on the roof at staging areas, storage areas and at areas or equipment where an open flame is being used. Competent operators shall be in attendance at all times and shall be properly trained or instructed in fire protection.
- 1.1.4 At each location where an open flame is used, Contractor shall provide a watchman with a suitable fire extinguisher.
- 1.1.5 Plywood, minimum  $\frac{3}{4}$ " thick, or other suitable materials shall be used to protect roof areas from damage that may be caused by concentrated equipment loads and foot traffic.
- 1.1.6 Roof traffic shall be confined to work areas. Contractor shall be responsible for leaks that develop in traffic areas during and after project completion.
- 1.1.7 Self-supporting ramps shall be used where expansion joints, area dividers, etc. are to be crossed.
- 1.1.8 Contractor shall protect the new single ply membrane from damage, dirt, debris, foot and equipment traffic etc. during installation. Storage of materials and equipment on the new roof is not acceptable unless the Contractor has taken measures to protect the new roof system from damage, staining, dirt, debris, and crushing. Any new work that incurs damage due to such activities is subject to cleaning, repairs, and/or total replacement at no additional cost to the Owner. Any cleaning that is required shall be performed in accordance with the roofing system manufacturer's written instructions at no additional cost to the Owner.
- 1.1.9 Contractor shall protect interior operations from adverse weather during roofing operations.
- 1.1.10 At the end of each work day, the contractor shall apply nightly temporary tie-ins to ensure that the building is weather tight, and that newly installed materials are free from moisture and debris. Newly install materials coming in contact with moisture and debris is grounds for rejection of materials, and shall constitute the replacement of the materials with like materials at no additional cost to the Owner.
- 1.1.11 The Contractor will be held liable for any damages to the building, building contents, its occupancy, grounds or landscaping resulting from work under the Contract. In the event of damage, Contractor will restore property to a condition equivalent to that at the time the project started.
- 1.1.12 The Contractor shall keep existing drainage facilities and associated leaders/downspouts clear of debris and bitumastic materials during construction. The Contractor will be required to use elastomeric plugs to protect leaders/downspouts during demolition and re-roofing operations.

1.1.13 Prior to the start of re-roofing operations, the Contractor has the option to water test all drain leaders and lines for clogs prior the start of work. All findings shall be immediately reported to the Owner/Engineer in writing for direction prior to proceedings.

1.1.13.1. Failure to perform this option, and proceeding with work shall serve as the acceptance of the existing drain leaders and lines to be functioning at one-hundred percent (100%) capacity prior to the start of re-roofing operations.

1.1.13.2. Furthermore, with this acceptance, the Contractor shall be responsible to ensure that drain leaders and lines are functioning at one-hundred (100%) capacity prior to the Final Payment at no additional cost to the Owner.

1.1.14 Prior to the start of re-roofing operations, the Contractor shall provide Mercer Middle School personnel with plastic bags/tarps which will be used by school personnel to protect televisions, computers, and other associated equipment during the period of time that re-roofing operations are occurring. Bags/tarps shall be provided a minimum of one week prior to the start of re-roofing operations. Costs for providing such materials shall included in the Base Bid.

Note: Contractor will still be required to provide any other additional protection to interior items as may be deemed necessary to comply with the requirements of the Contract Documents.

## 1.2 Material Protection

1.2.1 Products shall be transported by methods which avoid damage. Damaged material shall be subject to rejection by the Engineer.

1.2.2 Store materials off of the ground covered with tarps. Factory-applied wrappings are not acceptable.

1.2.3 Wet materials shall be removed from the project site.

1.2.4 Materials that are temperature sensitive are to be stored in strict accord with manufacturer's written instructions.

## 1.3 Storage

1.3.1 Contractor shall be responsible for proper storage of equipment, materials and devices furnished by himself and/or his subcontractors and suppliers.

1.3.2 To the maximum extent possible, the Contractor shall not store combustible or flammable materials inside the facility.

1.3.3 All storage areas are subject to approval by the Owner or his authorized representative.

## **PART 2 - PRODUCTS**

Not Used.

## **PART 3 - EXECUTION**

Not Used.

**SECTION 01 78 36  
WARRANTIES**

**PART 1- GENERAL**

- 1.1 Upon completion of the work and prior to the final payment, the Contractor shall submit the required contractor's warranty and/or manufacturer's guarantee, as required by this Section.
- 1.2 Submit all items required by this Section as part of project record documents, Section 01 78 39.
- 1.3 Warranties and Bonds
  - 1.3.1 General Contractor: Comply with the Project Manual concerning warranties and bonds. The work covered under this Contract shall remain free from any water penetration and physical defects caused by defective workmanship or materials for a period of one (1) year from the date of material completion by the Owner. Warranty shall be executed to the General Contractor's company letterhead and signed by an authorized agent.
  - 1.3.2 Roofing Contractor: Comply with the Project Manual concerning warranties and bonds. The work covered under this Contract shall remain free from any water penetration and physical defects caused by defective workmanship or materials for a period of five (5) year from the date of material completion by the Owner. Warranty shall be executed to the Roofing Contractor's company letterhead and signed by an authorized agent.
  - 1.3.3 Prior to final payment, Contractor shall submit one original and three copies of the roofing system manufacturer's twenty year, No Dollar Limit Guarantee, with flashing endorsement, to the Owner.
  - 1.3.4 The roofing system manufacturer shall include in the warranty all materials approved for use by the roofing system manufacturer regardless of whether the manufacturer manufactures the product. Warranties excluding a material approved for use are not be permitted.
  - 1.3.5 Metal Finish Warranty: Prior to final payment, the contractor shall furnish one original and three copies of the metal flashing manufacturer's 20 year finish warranty for factory applied finishes for the warranty period. Metal Finish Warranty Period shall be a minimum twenty-years (20).
  - 1.3.6 Emergency repairs to defects and leaks shall be performed within 24 hours of receiving notice from Owner. As soon as weather permits, permanent repairs and restoration of affected areas shall be accomplished in a manner in conformance with the original Contract requirements. This work shall be done without additional cost to the Owner, except if it is determined that such leaks and effects were caused by abuse, lightning, hurricane, tornado, hail storm, or other unusual phenomena.
  - 1.3.7 The warranties shall also state that the Owner has the right, at any time during the five-year Contractor's warranty period to make emergency repairs to protect the contents of the building or the building itself from damage due to leaking. The cost of emergency repairs made during the five year period of the warranty shall be borne by the Contractor and action by the Owner shall not invalidate the warranty.
  - 1.3.8 Starting dates of all warranties shall be the date of the material completion.

**END OF SECTION**



(Print Warranty Body on Contractor's Company Letterhead)

**WARRANTY**

1. Known all men by these presents, that we, *Contractor shall insert company name here* (Contractor), having installed insulation, roofing, flashings, and sheet metal work, and having accomplished certain other work on Myers Middle School, located at 2025 E. 52<sup>nd</sup> Street, Savannah, GA 31404 under Contract between SCCPSS and (Contractor) warrant to SCCPSS with respect to said work that for a period of five years from date of final acceptance of said work by SCCPSS, the roofing including insulation, roofing membrane, flashings, and sheet metal work, shall be absolutely watertight and free from all leaks, provided however that the following are excluded from this warranty:
  - a. Defects or failure resulting from abuse by the Owner.
  - b. Defects in design involving failure of the structure, load-bearing walls, and/or foundations.
  - c. Damage caused by fire, tornado, hail, hurricane, acts of God, wars, riots, and/or civil commotion.
2. We agree that should any leaks occur in the roofing, we will promptly remedy said leaks in a manner to restore the roof to a watertight condition by methods compatible to the system and acceptable under industry standards and/or general practice.
3. We further agree that for a period of five years from date of final acceptance referred to above, we will make repairs at no expense to the Owner, to any defects which may develop in the work including, but not limited to, blisters, wrinkles, ridges, splits, warped insulation, and loose flashings, in a manner compatible to the system and acceptable under industry standards and general practice.
4. We also agree that the Owner has the right, at any time during the five-year warranty period, to make emergency repairs to protect the contents of the building or the building itself from damage due to leaking. The cost of emergency repairs made during the five years of the warranty period shall be borne by the Contractor and action by the Owner shall not invalidate the warranty.

IN WITNESS WHEREOF, we have caused this instrument to be duly executed, this \_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_ by \_\_\_\_\_  
Contractor President

\_\_\_\_\_  
Notary Public

**SECTION 01 78 39**  
**PROJECT RECORD DOCUMENTS**

**PART 1- GENERAL**

- 1.1 Description
  - 1.1.1 To maintain an accurate record of the project throughout its duration. Items to be noted include, but are not necessarily limited to:
    - 1.1.1.1 Contract Documents
    - 1.1.1.2 Addendum
    - 1.1.1.3 Change Orders
    - 1.1.1.4 Field Orders and Instructions.
    - 1.1.1.5 Construction Schedule.
    - 1.1.1.6 Shop Drawings
    - 1.1.1.7 Product Samples
    - 1.1.1.8 Progress Reports
- 1.2 Quality Assurance
  - 1.2.1 The Contractor shall delegate responsibility for maintenance of the record documents to one person on the Contractor's staff as approved by the Designer.
  - 1.2.2 All entries shall be made within 24 hours after receipt of information.
- 1.3 Submittals: The Contractor shall submit the final record documents to the Designer for approval prior to submitting a request for final payment. Submit two copies of "as-built" documents to Designer with letter of transmittal indicating date, project title, Contractor's name and address, list of documents, and signature of Contractor.
- 1.4 Product Handling: The Contractor shall take all necessary precautions to protect the record documents from deterioration loss and damage until completion of the work and transfer of the recorded data to the final record documents.

**PART 2– PRODUCTS:** Not Used.

**PART 3– EXECUTION:** Not Used.

**END OF SECTION**

**DIVISION 2**  
**EXISTING CONDITIONS**

**SECTION 02 41 13**  
**SELECTIVE DEMOLITION AND PREPARATIONS**

**PART 1- GENERAL**

- 1.1 Work Included: Selective demolition and preparations for the roof replacement project, as specified herein.
- 1.2 Related Work Specified Elsewhere
  - 1.2.1 Temporary Facilities and Control - Section 01 50 00
  - 1.2.2 Storage and Protection - Section 01 66 00
  - 1.2.3 Miscellaneous Rough Carpentry - Section 06 10 53
- 1.3 Protection: Refer to Section 01 66 00.

**PART 2- PRODUCTS**

- 2.1 Metal Deck Primer: Kem Kromik as manufactured by Sherwin Williams, or approved equal.
- 2.2 Sheet Metal for Steel Decks: ASTM A 653, 20-gauge galvanized steel.
- 2.3 Metal Deck: ASTM A 653, galvanized G-90 deck, manufactured in accordance with the requirements of the Steel Deck Institute, Inc. for wide rib (Type B). Minimum section properties:
  - 2.3.1 Yield strength = 33 ksi.
  - 2.3.2 Min. Thickness: 22 gauge:
  - 2.3.3 Panel Width: minimum 36 inches.
- 2.4 Deck Fastener: ASTM A240, 410 stainless steel, self-drilling minimum #12 stainless steel screw with a nominal head diameter of 0.430 inches and stainless steel bonded neoprene washers. Screws shall be one size larger than the existing.
- 2.5 Side Lap Screws: ASTM A240, 410 stainless steel, self-drilling minimum #10 stainless steel screw with a nominal head diameter of 0.415 inches and stainless steel bonded neoprene washers. Screws shall be one size larger than the existing.
- 2.6 Panel Fastener: ASTM A240, 410 stainless steel, self-drilling screws. Screw shall be one size larger than the existing and a minimum #12 stainless steel screw with a nominal head diameter of 0.430. Screw shall have a stainless steel bonded neoprene washer.

**PART 3- EXECUTION**

- 3.1 Demolition
  - 3.1.1 Refer to **Section 01 11 00 Summary of Work.**

- 3.1.2 The Designer and Contractor shall document the actual quantities removed for materials bid on a unit price basis.
- 3.1.3 All existing roof mounted equipment shall be lifted or removed so that existing flashings can be totally removed.
- 3.1.4 Remove only as much material as can be made watertight each day.
- 3.1.5 Demolition shall be performed by personnel familiar with the replacement of materials being used.
- 3.1.6 Demolition adjacent to areas to remain shall be performed in a neat manner with straight lines to facilitate tie-ins of replacement materials.
- 3.1.7 Excessive demolition, as determined by the Owner's representative, shall be replaced with equal materials at the Contractor's expense in accordance with the General Conditions of the Contract.
- 3.1.8 No demolition shall be performed if the chance of precipitation is 40% or more as reported by the nearest office of the National Weather Service.

## 3.2 Preparations

- 3.2.1 Prior to the installation of any new roofing, flashings, metal flashings, any other miscellaneous items, the Contractor shall clean surfaces of all dust, dirt, and other foreign materials.
- 3.2.2 Inspect the deck carefully. If, in Contractor's opinion, there are metal deck areas that require repair and/or replacement, notify the Designer. Do not proceed with any repairs or replacement until directed by the Designer.
- 3.2.3 Cost associated with the removal of any abandoned penetrations identified on plans and/or marked on the roof shall be included in the Base Bid.
- 3.2.4 Cost associated with the repair of decking at removed abandoned penetrations identified on plans and/or marked on the roof shall be included in the Base Bid.
- 3.2.5 Prior to the installation of any new roofing materials, extend all existing soil pipe vents through the roof to a minimum height of 8 inches (or as required by local plumbing codes) above the finished roof surface. Modifications shall be performed as follows: Furnish a piece of PVC piping that will fit snugly into the existing soil pipe vent and shall extend into the pipe a minimum of 12 inches. Provide a second PVC pipe that fits snugly around the smaller PVC pipe and shall provide a minimum 8" height above the finished roof surface. The smaller pipe height shall match the outer pipe. Cement the two PVC pipes together with an approved pipe solvent/glue. Insert the extension into the existing soil pipe vent.
- 3.2.6 (**Unit Price No. 1**) Where wood blocking or curbs are damaged or deteriorated, remove existing wood blocking to a point 6 inches beyond the damage and/or deterioration and repair and/or replace with new wood blocking to match existing. Secure new wood blocking to the substrate using specified fasteners that penetrate the substrate a minimum of 1 inch at spacings not to exceed 12 inches on-center, staggered pattern.
- 3.2.7 Steel Roof Deck
  - 3.2.7.1 (**Unit Price No. 2**) Where steel decking is rusted but remains structurally sound, wire brush deck units so that all rust is removed. Paint with the specified metal primer and allow to dry before

proceeding with the installation of new materials.

- 3.2.7.2 **(Unit Price No. 3)** Where steel decking is damaged or rusted through in small areas, clean deck of rust with a wire brush. Paint with Sherwin Williams Kem Kromik Universal metal primer or approved equal. Install over the damaged area the specified sheet metal secured to the existing steel deck with specified deck fasteners around the perimeter of the plate at 6 inches on center. Extend the new sheet metal a minimum of 6 inches onto the surface of the existing steel deck beyond the damaged area.
- 3.2.7.3 **(Unit Price No. 4)** Where steel decking is severely damaged or has deteriorated over large areas, remove the entire existing deck unit and install new decking of the same type and gauge as the existing. Lap new deck units over the existing in the same manner as originally installed. Secure to structural framing with specified deck fasteners at 6 inches on center at each available framing member and not more than 24 inches on center at side laps. Fasteners shall penetrate structural members a minimum of 1-1/2 inches, and at side laps a minimum of 1 inch.
- 3.2.7.4 **(Unit Price No. 5)** At those locations where side lap screws have not been installed or in those areas where additional side lap screws are required and/or directed by the Engineer, furnish and install new sheet metal screws at locations and/or spacings directed by the Engineer. Contractor shall submit technical data on the proposed screws before the start of this phase of the work. Contract shall include 1,500 sheet metal side lap screws in the Base Bid.
- 3.2.7.5 **(Unit Price No. 6)** At those locations where existing welds have broken from the top of the supporting members or at locations directed by the Engineer, furnish and install new Tek 10 screws so as to penetrate the deck and top of the supporting member. Welding is not an acceptable means of attaching/re-attaching the deck to the supporting member. Contract shall include 1,500 sheet metal side lap screws in the Base Bid.

### 3.2.8 Abandoned Penetrations at Steel Roof Deck

- 3.2.8.1 At all abandoned roof penetrations less than 6 inches in diameter, secure a piece of 20 ga. galvanized steel to the existing metal decking at spacings not to exceed 6 inches on center and located approximately one inch from the edge of the opening. Sheet metal shall be secured to metal decking with appropriate sheet metal screws. The sheet metal shall extend onto the existing metal deck a minimum of 6 inches.
- 3.2.8.2 At abandoned openings larger than 12 inches on any side but less than 24 inches, furnish and install new steel decking which matches the existing and install so that the ends and sides extend past the edges of the existing deck a minimum of 12 inches. The ends of the new steel deck shall extend over a structural member. Secure the new deck to the existing deck with specified deck screws at spacings not to exceed 6 inches on-center located approximately 6 inches from the opening on all sides. The ends of the new deck shall be secured to the existing structural supports using specified deck screws at Steel Deck Institute 36/7 patterns. Install specified side lap screws along the side laps at spacings not to exceed 30 inches on-center.
- 3.2.8.3 At abandoned openings larger than 24 inches on any side, furnish and install new steel decking which matches the existing and install so that the new deck unit is supported by a minimum of three structural supports. Insure that the new deck section is "nested" tightly in the existing, which may require the removal of existing deck fasteners or grinding down existing welds. Secure the new deck to each structural member with specified deck screws at Steel Deck Institute 36/7 patterns. At side laps, furnish and install a minimum of 3 specified side lap screws between each structural member.

- 3.2.9 At any locations where steel deck is repaired, the interior finish of the repair shall match the finish of the existing steel deck.
- 3.2.10 At removed fastener at metal panels roofing, install new specified fasteners at existing panel fastener locations.

**END OF SECTION**

**DIVISION 6**  
**WOOD, PLASTICS, AND COMPOSITES**



**SECTION 06 10 53**  
**MISCELLANEOUS ROUGH CARPENTRY**

**PART 1- GENERAL**

- 1.1 Work Included: Installation of blocking and/or curbs, as specified herein.
- 1.2 Related Work
  - 1.2.1 Selective Demolition and Preparations – Section 02 41 13
  - 1.2.2 Polyvinyl Chloride (PVC) Roofing – Section 07 54 19
  - 1.2.3 Flashing and Sheet Metal – Section 07 60 00
- 1.3 Submittals: In accordance with Section 01 33 00 of this Specification.
- 1.4 Environmental Conditions: Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.5 Warranty: In accordance with Section 01 78 36 of this Specification.

**PART 2- PRODUCTS**

- 2.1 Non-structural wood blocking: Maximum 2” nominal thickness, widths as specified. Shop pressure-treated for above ground contact. Do not use oil-based preservatives.
- 2.2 CD-X Exterior Grade Plywood. Maximums 1” thickness unless otherwise specified. Three-ply minimum.
- 2.3 Wood Fiber Tapered Edge Strips: Wood fiberboard, ASTM C208-95, Grade 2.
- 2.4 Screws: #12 double-coated galvanized steel screws or stainless steel self-tapping wood screws that shall be able to resist any galvanic action that may be able to develop between the nail and the pressure treatment. The use of a lesser quality screw will not be approved. Screws shall be of sufficient length to penetrate a minimum of 1-1/2 inches into the substrate.
- 2.5 Nails: For securing new lumber to new lumber or new plywood/OSB to new lumber, double-coated galvanized steel or stainless steel ring shank nails to penetrate a minimum of 1-1/2 inches into the substrate but not smaller than 8d nails. Use 16d nails where material being secured is 1 1/2 to 2 inches thick.
- 2.6 Masonry Anchor:
  - 2.6.1 Masonry Anchor, minimum 1-1/4 inch into substrate, as manufactured by OMG Roofing Products
  - 2.6.2 Tapcon 1/4” x minimum 1-1/4” in the substrate, as manufactured by Buildex.
  - 2.6.3 Roofing Spike, minimum 1-1/4 inch into substrate, as manufactured by Powers Fasteners.
  - 2.6.4 Approved equal prior to bid.

**PART 3- EXECUTION**

## 3.1 General

- 3.1.1 Furnish and install new wood blocking at all roof mounted equipment as required to provide a minimum flashing height of 8-inches above roof level.
  - 3.1.2 Blocking shall be installed under integral equipment curbs as required to maintain full cant face above roof level and secured to the deck with appropriate fasteners through the deck at spacings not to exceed 12-inches on-center, staggered pattern.
  - 3.1.3 At small units (largest dimension up to 30-inches) where wood blocking cannot be installed beneath the units, new pressure-treated wood blocking may be installed on top of the existing curb. The wood blocking shall match the curb in width and shall not exceed 2-inches in thickness, per layer. New wood blocking shall be attached to the curb using specified wood screws and a minimum of 2 equal spaced screws per side. Subsequent layers of wood blocking shall be secure using specified nails and a minimum of 2 equally spaced nails per side.
  - 3.1.4 At large units (smallest dimension over 30-inches) where wood blocking cannot be installed beneath the units, furnish and install new pre-manufactured galvanized steel curb extensions at units where required to meet a minimum 8-inches flashing height. Curb extensions shall be made from minimum 14 ga. galvanized steel, shall be one piece, and shall fit on top of the existing curb. All joints shall be welded so as to provide a watertight, one-piece assembly. The contractor shall furnish and install insulation at the exterior side of the extensions, as necessary, to provide a smooth, consistent surface to apply base flashings. The base flashing shall be able to make a smooth transition over the juncture of the existing curb and the curb extension.
  - 3.1.5 Extending and/or modifying ductwork, wiring, and/or plumbing as part of this work shall be included in the Base Bid. This work shall be accomplished by a mechanical, electrical, or plumbing contractor, as applicable, licensed to perform this work in the state of the Georgia for no less than 5-years.
  - 3.1.6 The cost for raising curbs or installing curb extensions shall be included in the Base Bid.
- 3.2 Wood Blocking Installation: Install the minimum number of layers to satisfy the total thickness requirements shown on Drawings or specified herein. Locate two fasteners approximately 2-inches from the end of each board.
- 3.3 Eave: Furnish and install new 6-inch wide wood blocking over the roof deck to match the height of the roof insulation adjacent to the eave. Secure the first layer of wood blocking using specified screws. Secure additional layers of new wood blocking using specified nails. Refer to Drawings.

**END OF SECTION**

**DIVISION 7**  
**THERMAL AND MOISTURE PROTECTION**

**SECTION 07 22 16**  
**ROOF BOARD INSULATION**

**PART 1- GENERAL**

- 1.1 Work Included: Installation of new roof insulation, as specified herein.
- 1.2 Related Work
  - 1.2.1 Miscellaneous Rough Carpentry - Section 06 10 53.
  - 1.2.2 Polyvinyl Chloride (PVC) Roofing – Section 07 54 19
- 1.3 Submittals: Refer to Section 01 33 00 of this Specification.
- 1.4 Environmental Conditions: Materials installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.5 Warranty: Refer to Section 01 78 36 of this Specification.

**PART 2- PRODUCTS**

- 2.1 Polyisocyanurate Roof Insulation: Flat and tapered, as specified, ASTM C1289, Type II, Class I. Board size shall not exceed 4' x 8' for mechanically attached insulation. Board size of tapered insulation shall not exceed 4' x 4'. The Long-Term Thermal Resistance shall be a minimum of 5.6 per inch. Insulation compressive strength shall be minimum 20 psi. Insulation density shall be 2 pcf minimum. The thicknesses of each layer of insulation shall not exceed 2 inches.
- 2.2 Cover Board (Contractor Option):
  - 2.2.1 High Density Polyisocyanurate Roof Insulation, minimum 1/4-inch-thick, ASTM C1289, Type II, Class IV. Board size shall not exceed 4-foot x 8-foot. The Long-Term Thermal Resistance shall be a minimum of 2.5 per 1/2-inch thickness.
- 2.3 Fasteners & Plates:
  - 2.3.1 Insulation Fastener: Minimum #12 steel screw roof insulation fastener for steel decking as approved by the roofing materials manufacturer to resist uplift requirements shown on plans. Fasteners must pass a minimum of 15 cycles in the Kesternich SFW 2.0s DIN 50018 test with less than 15% red rust.
  - 2.3.2 Insulation Fastener Plate: 3" ribbed, galvalume coated steel plate. As approved by the roofing materials manufacturer to be used with the specified screw to resist uplift requirements shown on plans.
- 2.4 Paneling: Nominal 1/4" thick, ASTM C 1177 or C1278, 0 Flame Spread and 0 Smoke Developed when tested in accordance with ASTM E 84, nominal 900 psi minimum compressive strength, Class A, non-combustible, 4' x 8' board size. Approved for use by the roofing system manufacturer to adhere membrane flashings.
- 2.5 Low-Rise Foam Adhesive: Double or single-component low-rise polyurethane adhesive as approved by the roofing system manufacturer.

**PART 3- EXECUTION**

- 3.1 Coordination and Inspection: The substrate shall be clean, smooth, dry, and free of debris and all foreign matter prior to receiving insulation and cover board. Application of new materials shall constitute approval of the substrate by the Contractor.
- 3.2 General Requirements: Roof Insulation and Cover Board
- 3.2.1 Minimum R-value required including flat insulation and cover board: R-20.
- 3.2.2 Apply insulation with end joints staggered approximately one-half the length of the units.
- 3.2.3 Offset joints of insulation and cover board from the preceding layer a minimum of six (6) inches.
- 3.2.4 Fit insulation and cover board units snugly to each other and to all vertical surfaces.
- 3.2.5 Low-Rise Foam Adhesive: Secure each board to the substrate using low-rise adhesive beads at spacings in accordance with the manufacturer's requirements to resist the uplift pressures shown on drawings for each zone and the approved RoofNav assembly number. However, spacings shall not to exceed 12 inches on-center in the field (Zone 1), 6 inches on center for the perimeter (Zone 2), and 4 inches on center for the corner (Zone 3). Zone definition is indicated on drawings. Ensure insulation contact with adhesive by weighting units. Prior to applying adhesive bead, apply one continuous bead of adhesive around the perimeter of the of the insulation board not further that 4 inches from the edge.
- 3.2.6 Mechanical Attachment: Secure each board to the metal deck using plates and fasteners in accordance with the manufacturer's requirements to resist the uplift rating shown on drawings for each zone and the approved RoofNav assembly number. However, there shall be a minimum of 1 fastener/plates per 4 square feet for the field (Zone 1), 1 fastener/plates per 2 square feet at the perimeter (Zone 2), and 1 fastener/plates per 1 square feet at the corners (Zone 3). Zone definition is indicated on drawings. Partial units less than 4 square feet shall be secured with a minimum of 4 fasteners/plates.
- 3.2.7 Replace damaged units as required to provide a smooth surface and uniform insulation thickness.
- 3.3 General Requirements: Crickets/Saddles
- 3.3.1 Cricket/Saddles shall also meet the requirements of Paragraph 3.2 above.
- 3.3.2 Start cricket construction by striking chalk lines for outer edges of tapered units. Install the first row along the chalk lines, mitering and fitting at the points where lines break.
- 3.3.3 Complete the cricket assembly using tapered isocyanurate and isocyanurate fill units.
- 3.3.4 Remove and replace damaged units with new insulation or repair to provide a smooth surface and uniform insulation thickness.
- 3.3.5 Utilize tapered wood fiber edge strips that transition from 0" to 1/2" as the first layer of tapered insulation to provide a smooth transition. Set wood fiber on top of the insulation in one continuous band of low-rise foam adhesive.
- 3.4 Installation
- 3.4.1 Apply 2-inch-thick isocyanurate roof insulation over the roof deck and secure by mechanical attachment.

- 3.4.2 Apply additional isocyanurate over the first layer of insulation as required to meet the specified R-value and secure using low-rise foam adhesive.
- 3.4.3 At the gutter eave, furnish and install one 4-foot row of new 1/8-inch-per-foot tapered isocyanurate in lieu of the top layer of flat insulation. The thin edge tapered insulation shall be located along the inside edge of the eave wood blocking. The high edge of the tapered insulation shall match the height of the new flat insulation system. Secure the tapered insulation using low-rise foam adhesive.
- 3.4.4 Install tapered insulation upslope from any roof mounted equipment and at any other location as shown on drawings, on top of the flat insulation using factory-tapered isocyanurate units and isocyanurate insulation fill units. Secure insulation using low-rise foam adhesive. Refer to Drawings.
- 3.4.5 Furnish and install one layer of HD cover board over all isocyanurate insulation and secure to the isocyanurate insulation using low-rise foam adhesive.
- 3.5 At curbs and other vertical substrate where base flashing will be applied, furnish and install new gypsum paneling over the substrate where new membrane flashings will be applied. Secure the paneling to the substrate using appropriate fasteners and plates at spacings not to exceed 12 inches on center, in every direction. Fasteners shall penetrate the substrate a minimum of 1 inch.
- 3.6 In lieu of installing gypsum paneling, the Contractor may furnish and install 60-mil-thick, white, asphalt resistant membrane flashing furnished by the approved roofing system manufacturer in accordance with Section 07 54 19 of this specification.

**END OF SECTION**

**SECTION 07 42 00**  
**PRE-FINISHED INSULATED METAL WALL AND SOFFIT PANELS**

**PART 1 - GENERAL**

1.1 SUMMARY

A. Pre-insulated architectural metal panel cladding where indicated on the drawings. Also included are all necessary trims, fasteners, sealants and gaskets as required for a weather tight Installation. Panels shall be secured to the structure with concealed clips and fasteners in the side joints.

1. Steel faced factory foamed-in-place flat panels with integral reveals with compatible joinery. Panels shall be designed to permit installation in either vertical or horizontal orientations.
2. Extruded aluminum trim related to the walls and its intersection with adjacent materials.
3. Sealants and gaskets between panels and their intersection.

1.2 REFERENCES

- A. AAMA 501.1 – Standard Test Method for Exterior Windows, Curtain Walls and Doors for Water Penetration Using Dynamic Pressure.
- B. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- C. ASTM C 518 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- D. ASTM E 72 – Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
- E. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E 119 – Standard Test Methods for Fire Tests of Building Construction and Materials.
- G. ASTM E 283 – Standard Method for Determining the Rate of Air Leakage Through Exterior Window, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- H. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Wall by Uniform Static Air Pressure Difference.
- I. CAN 4-S101 – Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- J. CAN/ULC S102 – Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- K. CAN/ULC S127 – Standard Corner Wall Method of Test for Flammability Characteristics of Non-Melting Building Materials.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Tests: The design load/deflection criteria shall be verified from tests per ASTM E 72 see cover sheet of drawings for wind loads.

- B. Thermal Transmission: Testing in accordance with ASTM C 518, “measurement of steady state thermal transmission”, the panels shall provide a K-factor of .127 btu/sf/hr/deg. F at 75° F. (24° C) mean temperature.

C. Vapor Barrier

1. Air Infiltration: Air infiltration shall not exceed .06 cfm per square foot of wall area when tested per ASTM E 283 at a static pressure per load on cover sheet.
2. Static Water Penetration: There shall be no uncontrolled water penetration through the panel joints at a static pressure per pressure on cover sheet when tested per ASTM E 331.
3. Dynamic Water Penetration: There shall be no uncontrolled water penetration through the panel joints when subjected to an air speed on cover sheet of slipstream airflow and application of water for a 15 minute period in accordance with AAMA 501.1.

D. Fire

1. Factory Mutual Research Corporation (FMRC) Standard 4880, 50' (15.24 m) High Corner Test for Unlimited Height Structures: The panel assembly shall not support a self-propagating fire which reaches any of the limits of the 50'(15.24 m) high corner test structure as evidenced by flaming or material damage of the ceiling of the assembly. Note: Approval is applicable to structures of unlimited height.
2. Surface Burning Characteristics: The insulated core shall have been tested in accordance with ASTM E 84 for surface burning characteristics. The core shall have a maximum flame spread of 25 and a maximum smoke developed rating of 450.

E. Bond Strength

1. Fatigue Test: The panel shall withstand deflection cycling at L/180 to two (2) million alternate cycles with no evidence of delamination, core cracking or permanent bowing.
2. Freeze/Heat Cycling: The panel shall exhibit no delamination, surface blistering or permanent bowing when subjected to cyclic temperature extremes of -20° F (-28° C) to +180° F (+82° C) for twenty-one (21) eight hour cycles.
3. Humidity Test: The panel shall exhibit no delamination or metal corrosion at interface when subjected to a +140° F (+60° C) temperature and 100% relative humidity for a total of 1200 hours.
4. Autoclave Test: The panel shall exhibit no delamination of the foam core from metal skins when exposed to 2 psi (.122 kg/sq. cm) pressure at a temperature of +212° F (+100° C) for a total of 2 1/2 hours.

#### 1.4 SUBMITTALS

- A. Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Material type, metal thickness and finish.
4. Installation methods.

- B. Shop Drawings: Including elevations, fastening patterns, sections of each condition and details as required.

- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.



D. Panel Sample: Submit 1' (305 mm) high by full width sample panel for each profile specified indicating the metal, texture and finish.

E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing factory foamed-in-place insulated metal panels with a minimum documented experience of ten (10) years.

B. Installer Qualifications: Company specializing in installation of the products specified for projects of similar size and scope with minimum five (5) years documented experience.

#### 1.6 SUBSTITUTIONS

A. Materials, accessories and testing specified shall establish the minimum level of quality, performance, dimension and appearance required of any substitution.

B. No substitution will be considered unless a written request to the specifying architect is received for approval at least ten (10) days prior to the established bid date. Evidence shall be submitted to demonstrate equivalency to the products and performance levels specified. Laminated panels shall not be considered acceptable substitutes for the specified foamed-in-place panels.

1. A complete description of the substitution including details referenced to the wall panel shown on the contract drawings.
2. Independent test reports verifying compliance with specified performance requirements.
3. A detailed listing of each specification item with which the substitution does not fully comply.

C. The manufacturer or wall panel contractor proposing the substitution shall pay the costs of any other subcontractor affected by the proposed substitution.

#### 1.7 DELIVERY, STORAGE AND HANDLING

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

B. Store products off the ground, with panels sloped for drainage and covered to protect factory finishes from damage.

#### 1.8 WARRANTY

A. Manufacturer's Warranty: Manufacturer's two (2) year limited warranty that panels are free from defects in materials and workmanship, beginning from the date of shipment of panels, but excluding coil coatings (paint finishes) covered under a separate warranty.

B. Submit manufacturer's written five (5) year limited warranty providing panels to be free from gas blister formation of the foam core to the exterior panel facing, beginning from the date of shipment of panels.

C. The installation contractor shall issue a separate one (1) year warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.

- D. Submit exterior paint manufacturer's twenty (20) year limited warranty on paint finish against cracking, peeling, blistering, chalk and color change.

## **PART 2 – PRODUCTS**

### 2.1 MANUFACTURER

- A. Insulated Panel Systems
- B. Metl-Span
- C. IBP
- D. Metal Sales
- E. Citadel
- F. Ceco Building Systems
- G. Equal products of other suppliers or manufacturers, may be substituted as approved in advance by the Architect/Engineer.

### 2.2 PANEL DESIGN

- A. Exterior Profile: Architectural flat with flush side joints.
- B. Interior Profile: Corrugated nominal 1/16" deep
- C. Panel Core: Foamed-in-place, Non-CFC & zero ODP polyurethane, Factory Mutual Class I approval
- D. Thermal Values: K-factor, Btu in/ft<sup>2</sup> hr. °F @ 75°F (24°C) mean core temperature = 0.140. K-factor, Btu in/ft<sup>2</sup> hr. °F @ 40°F (4°C) mean core temperature = 0.126.
- E. Module Widths: 36"
- F. Panel Thickness: 2"
- G. Panel Lengths: to fit soffit and fascia as detailed.
- H. Exterior Facings: AZ- 50 aluminum-zinc coated steel in 22 Ga.
- I. Interior Facings: AZ-50 aluminum-zinc coated steel in 26 Ga., 24 Ga. and 22 Ga.
- J. Panel Joint: Offset double tongue and groove with extended metal shelf for positive face fastening
- K. Fastening: Fastener and Clip concealed in the side joint

## **PART 3 – EXECUTION**

### 3.1 EXAMINATION

- A. Panel installer shall examine all structural steel before beginning installation to ensure that all supporting members are straight, level, plumb and satisfactory for panel installation.
- B. Do not begin installation until unsatisfactory conditions are corrected.
- C. Start of installation shall signify structure and adjacent conditions as being proper and acceptable.

### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations including approved shop drawings, installation guidebook and manufacturer's handbook of construction details.
- B. Form panel shape as indicated on drawings, accurate in size, square, and free from distortion or defects.
- C. Install flashing and trim true and in proper alignment.
- D. Install sealants where indicated to clean dry surfaces only without skips or voids, to ensure weather tightness and integrity of the vapor barrier.

### 3.3 DAMAGED MATERIAL

- A. Damage caused by the manufacturer or wall panel contractor shall be replaced or repaired to as new construction.
- B. The panel installer shall inspect and approve each completed wall area and shall be responsible for protection of completed work from damage by other trades.

### 3.4 CLEANING

- A. Replace damaged panels and other components of work, which cannot be repaired by finish touch-up or similar minor repair.
- B. Wipe finished surfaces clean of any filings caused by drilling or cutting to prevent rust staining.

**END OF SECTION**

**SECTION 07 42 13  
PRE-FINISHED NON-INSULATED METAL WALL PANELS**

**PART 1 - GENERAL**

- 1.1. Summary
  - 1.1.1. Installation of a new non-insulated metal wall panels at Gymnasium.
  - 1.1.2. Installation of roof accessories including flashings.
- 1.2. Related Work Specified Elsewhere
  - 1.2.1. Miscellaneous Rough Carpentry – 06 10 53
  - 1.2.2. Selective Demolition and Preparations - Section 07 01 50
  - 1.2.3. Roof Board Insulation – Section 07 22 16
  - 1.2.4. Flashing and Sheet Metal – Section 07 60 00
- 1.3. Protection
  - Refer to Section 01 60 00 of this Specification.
- 1.4. Submittals
  - 1.4.1. Refer to Section 01 33 00 of this Specification.
- 1.5. Warranty
  - 1.5.1. Refer to Section 01 78 36 of this Specification.

**PART 2 – PRODUCTS**

- 2.1. Approved Metal Wall Panel Manufacturer
  - 2.1.1. 12” flush wall panel as manufactured by Pac-Clad, or equal.
  - 2.1.2. Approved equal prior to bid.
  - 2.1.3. Finish of walls panels and soffits to be selected by Owner from standard color chart.
- 2.2.
  - 2.2.1. Finish: Kynar 500-based finish: Shall be factory applied, oven-finish. Finish and primer shall be applied in strict accordance with the formulator's specifications and shall meet the performance criteria of AAMA 605.2-90 specification. Finish coat thickness shall be a minimum of 0.90 mil. Primer coat thickness shall be a minimum of 0.3 mil. Color to match the existing color currently used.
  - 2.2.2. Trim/Flashings: Pre-manufactured with a baked on Kynar 500 finish as specified above.

Trim/Flashing material to match the panel materials and color. Install in accordance with manufacture recommendations.

- 2.2.3 Fasteners: As specified by the approved metal wall panel manufacturer.
- 2.2.4 Hat Channels: Minimum 22 ga. galvanized steel with a 7/8" depth, as required by metal wall panel manufacturer for attachment of metal wall panels to metal studs.
- 2.2.5 Masonry Fastener:
  - 2.2.5.1 Masonry Anchor, minimum 1-1/4 inch into substrate, as manufactured by OMG Roofing Products
  - 2.2.5.2 Tapcon 1/4" x minimum 1-1/4" in the substrate, as manufactured by Buildex.
  - 2.2.5.3 Roofing Spike, minimum 1-1/4 inch into substrate, as manufactured by Powers Fasteners.
  - 2.2.5.4 approved equal prior to bid
  - 2.2.5.5 Plastic mushroom head anchors will not be accepted.

### **PART 3 - EXECUTION**

#### **3.1 Underlayment Installation**

- 3.1.1 Prior to the installation of any new items, the Contractor shall clean surfaces of all dust, dirt, and other foreign materials.
- 3.1.2 Prior to installation of new wall panels, install R20 insulation to the metal studs in accordance with manufacturer recommended practices.
- 3.1.3 Prior to installing metal wall panels, the Contractor shall furnish and install new continuous hat channels at attached to the metal studs, after removal of the EIFS.
  - 3.1.3.1 Install hat channel rows at spacings not to exceed 12 inches on center.
  - 3.1.3.2 Leave a 1/4" inch gap between sections of hat channels.
  - 3.1.3.3 Attach the top and bottom of the hat channel to the substrate using appropriate fasteners at spacings not to exceed 16 inches on center. Fasteners shall penetrate the EIFS a minimum of 1 inch.

#### **3.2 Metal Wall Panel Installation**

- 3.2.1 Install metal wall panels in accordance with the manufacturer's written instructions and/or approved shop drawings. Refer to Drawing Nos. AR-301 and AR-302.
- 3.2.2 In addition to fastening panels to hat channels, metal wall panels shall also be "back-stitched" at side laps using appropriate screw type fasteners at spacings not to exceed 12 inches on-center.
- 3.2.3 At the top of the walls, panels shall finish flush with the underside of the soffit. Panels shall have sheet metal J-closures that are formed from 22 ga. galvalume with Kynar 500 finish or approved equal. J-closures shall be fastened to the substrate using appropriate screw-type fasteners at spacing not to exceed 12 inches on-center.
- 3.2.4 The bottom of the panels shall be neatly cut and shall extend down to 4" below the bottom of the

sill. Vented Base trim provided by the metal panel manufacturer shall be installed at the bottom of the metal panels. Trim shall be riveted to panels at spacing not to exceed 18" on-center. Rivet finish shall match the color of the panels. Refer to Drawing No. A-302.

- 3.2.5 Only install metal wall panels at walls above roof level, as shown on applicable drawings. Where metal wall panels transition to insulated wall panels, furnish and install new Z-shaped closures formed from 24 ga. galvalume with Kynar 500 finish, or approved equal prior to bid, that shall extend onto the brick and metal wall panels a minimum of 4 inches. Set both flanges of the closures in minimum 1" thick continuous butyl tape prior to fastening, and secure to the substrate using appropriate fasteners at spacings not to exceed 12 inches on center. Apply sealant to match the color of the closure to seal the vertical seams of the flashing with the substrates.
- 3.2.6 At building wall, furnish and install new corner closures formed from 24 ga. galvalume with Kynar 500 finish, or approved equal prior to bid, in accordance with the wall panel manufacturer's written instructions and approved shop drawings. Closure shall lap over the wall panels a minimum of 4 inches, and the flange shall be set on the wall in a minimum 1 inch wide continuous butyl tape. Secure closure with appropriate fasteners in a line located approximately 1 inch from the edge of the flange and at spacings not to exceed 12 inches on center. Lap closure sections a minimum of 3 inches so that water runs across the lap.

Note: Shop drawings of this detail shall be submitted to the Engineer for review and approval. Prior to submission to the Engineer, such drawings shall be reviewed and approved by the wall system manufacturer.

**END OF SECTION**

**SECTION 07 54 19**

**MECHANICALLY ATTACHED POLYVINYL CHLORIDE ROOFING**

**PART 1- GENERAL**

- 1.1 Work Included: Installation of a mechanically attached PVC roof membrane, as specified herein.
- 1.2 Related Work
  - 1.2.1 Selective Demolition and Preparations – Section 02 41 13.
  - 1.2.2 Roof Board Insulation - Section 07 22 16.
- 1.3 Submittals: In accordance with Section 01 33 00 of this Specification
- 1.4 Environmental Conditions: Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.5 Warranty: In accordance with Section 01 78 36 of this Specification, contractor shall furnish a NDL twenty year, edge to edge, warranty to include all labor and materials without a dollar limit.

**PART 2- PRODUCTS**

- 2.1 Approved PVC Roofing Manufacturers are manufacturers by which the Contractor may solely furnish materials to perform the work. Materials furnished by the roofing system manufacturer are subject to the standards listed below. Any deviations from standards listed below shall only be considered if the approved system manufacturer does not produce a material to that stated standard, and must be submitted in writing by the approved roofing system manufacturer. Any substitutions shall not alter the Warranty periods as described in this specification
  - 2.1.1 Johns Manville 60 mil KEE meeting ASTM D 4434
  - 2.1.2 Durolast 60 mil, meeting ASTM D 4434.
  - 2.1.3 Fibertite 45 mil meeting ASTM D 6754
- 2.2 PVC Roofing Materials
  - 2.2.1 Polyvinyl Chloride Roofing Membrane: ASTM 4434, nominal 60-mil overall thickness ( JM, Durolast) or 45 mil ( Fibertite) with minimum 23 mil thickness above the scrim, as manufactured by the approved roofing system manufacturer.
  - 2.2.2 Unsupported Flashing: Minimum 55 mil thickness as provided by the approved roofing system manufacturer.
  - 2.2.3 Universal Pipe Boot Flashings, as manufactured by the approved roofing system manufacturer. Pre-fabricated flashing boot shall include a draw band for securing the top of the flashing boot to the pipe

- 2.2.4 Inside and Outside Corners, as manufactured by the approved roofing system manufacturer. For use at inside and outside corners of curbs, parapets, and other similar junctures. The use of field-fabricated corner pieces is not acceptable.
- 2.2.5 Membrane fasteners as manufactured by the approved roofing system manufacturer.
- 2.2.6 Membrane Cleaner: As manufactured by the approved roofing system manufacturer. For use in removing foreign debris from the membrane prior to welding.
- 2.2.7 Clad Metal: As manufactured by the approved roofing system manufacturer, minimum 24 gauge galvanized steel.
- 2.2.8 Termination Bar. As manufactured or approved by the approved roofing system manufacturer.
- 2.2.9 Polyurethane Caulk: As manufactured and/or approved by the roofing system manufacturer. To be applied at those locations identified by the manufacturer.
- 2.3 Membrane Welding Machines: As approved by the roofing system manufacturer. Contractor shall provide written documentation that operators have received the roofing system manufacturer's required training to operate equipment. Welders shall be maintained in good working order and shall be operated and maintained in accordance with the welding machine manufacturer's written instructions.
- 2.4 Walkway Pads: As manufactured by the approved roofing system manufacturer. Nominal 30" wide.
- 2.5 Foam Core: Compression tube that is a minimum of 1.5 times larger than the expansion joint opening, as approved for use by the approved roofing system manufacturer.
- 2.6 Roofing Nails: With minimum 1" head, such as Simplex nails or approved equal.
- 2.7 Membrane Fastener: Minimum #15, Phillips Head drive, steel screw roof fastener for steel decking: As approved by the approved roofing materials manufacturer to resist uplift requirements shown on plans. Fasteners must pass a minimum of 15 cycles in the Kesternich SFW 2.0s DIN 50018 test with less than 15% red rust.
- 2.8 Seam Plate: Minimum 2-3/8" grooved, galvalume steel plate. As approved by the roofing materials manufacturer to use in conjunction with the specified fastener to resist uplift requirements shown on plans.

### **PART 3- PROCEDURES**

- 3.1 Inspection
- 3.1.1 The substrate shall be clean, smooth, dry, free of debris and all foreign matter prior to installation of the roof membrane and in a condition to receive the manufacturer's product in accordance with manufacturer's instructions. Application of new materials shall constitute approval of the substrate by the Roofing Contractor.
- 3.1.2 Cover board joints with gaps greater than 1/4" shall be filled with roof insulation and/or cover board material in order to provide a smooth surface.
- 3.1.3 The accumulation of debris and foam adhesive beneath new membrane is not acceptable and shall



be grounds for rejection.

3.1.4 Completely clean asphalt residue from substrates prior to applying mastic, sealant, or caulk.

3.1.5 Contractor is responsible for all damage to any membrane. Contractor shall replace any damaged material with new, regardless of the Manufacturer's willingness to pay for such.

### 3.2 Roof Membrane Installation

3.2.1 Sweep the substrate with a stiff broom or leaf blower to remove materials that will interfere with the proper installation of the membrane. Clean membrane and substrate of any oils, greases, or other materials that will be detrimental to the system.

3.2.2 Roll out membrane and allow the membrane to "relax" in accordance with manufacturer written instructions. Back roll the membrane prior to application.

3.2.3 Position the sheet at any field splices by overlapping the membrane approximately 5 inches, unless the manufacturer has a more stringent requirement. Once the membrane is in place, mark the bottom sheet  $\frac{1}{2}$ " -  $\frac{3}{4}$ " from the edge of the top sheet every 4' - 6' with a lumber crayon or similar type marking device.

3.2.4 Furnish and install fasteners of sufficient length through fastening plates to attach the roof cover in accordance with the membrane manufacturer's written requirements to resist the design wind speed and uplift loads shown on drawings.

3.2.5 Furnish and install the roofing system manufacturer's termination bar at the base of all tapered edge strips and at transitions, peaks, and valleys as required by the manufacturer in details and application instructions. Strip in the termination bar in accordance with the manufacturer's approved written instructions.

3.2.6 Extend the membrane to the base of all vertical surfaced and cut neatly. Furnish and install the membrane manufacturer's membrane fastener and membrane plate at spacings not to exceed 12 inches on-center at membrane terminations at verticals substrates.

3.2.7 At eaves, extend membrane over the wood blocking and down past the exterior outside face of the blocking a minimum of 1 inch. However, membrane shall extend down the face of the exterior cladding to match the existing cladding exposure.

3.2.8 At the base of pipe penetrations, the membrane shall be mechanically fastened to the metal decking using a minimum of 4 membrane fasteners/plates and at spacings not to exceed 12 inches on-center.

3.2.9 At gutters, extend the membrane over the wood blocking behind the gutter down to the bottom of the gutter. However, membrane shall extend down the face of the exterior cladding to match the existing cladding exposure.

3.2.10 Furnish and install the roofing system manufacturer's patches at all required locations such as intersection field seams. Apply the manufacturer's approved seam caulk, as required, at locations specified by the roofing system manufacturer.

3.2.11 Prior to final inspection, the surface of the membrane shall be cleaned of all debris, dust, and

foreign material. This may require the use of water, detergents, and other cleaning agents approved by the roofing system manufacturer. Contractor will be responsible for providing the necessary items to perform this task. Do not use any abrasive pads that can score the polymer.

3.2.12 During the work, the Contractor or subcontractor shall not be allowed to stage materials on newly installed roofing. The Contractor shall phase work and stage necessary materials at existing roofing areas. Any damage to new membrane during construction shall result in repairs to the membrane at no additional cost to the Owner, and large areas shall result in the removal and replacement of new membrane at no additional cost to the Owner.

### 3.3 Base Flashings Installation

3.3.1 Apply the roofing system manufacturer's approved flashing adhesive to the inside face of vertical surfaces, such as parapets, curbs, and/or wood blocking, at the rate specified by the roofing system manufacturer for the substrate using the manufacturer's approved applicator. At locations where membrane flashing will be applied directly to smooth residual asphaltic materials, the Contractor may furnish and install 60 mil thick, white, asphalt resistant membrane flashing furnished by the approved roofing system manufacturer in accordance with this Section of the specification.

3.3.2 Roll out the membrane to be used for base flashings and allow to relax in accordance with the roofing system manufacturer's written instructions.

3.3.3 Cut flashing pieces so as to extend onto the roof a minimum of 8 inches and 3 inches past the fastener at the edge of the membrane sheet and up the vertical surface a minimum of 8 inches.

3.3.4 Apply the roofing system manufacturer's approved flashing adhesive to the back of the base flashing material and substrate at the rate specified by the roofing system manufacturer for the substrate. At side laps and the edge of the base flashing extending onto the roof, do not apply adhesive at these locations so as to allow hot-air welding. Allow adhesive to dry sufficiently so as to produce strings when touched with a dry, clean finger.

3.3.5 Roll the base flashing material onto the previously coated substrate without voids using a hand roller to insure positive contact of the substrate and base flashing material. Overlap all adjacent flashing sheets a minimum of 3 inches.

3.3.6 Base flashing shall be smooth to the substrate, and wrinkles in base flashing shall be grounds for rejection.

3.3.7 At those locations where the top of the base flashings will not be secured with counter flashings, or as shown on drawings, furnish and install a nominal 1" x 1/4" flat bar or the roofing system manufacturer's termination bar along the top edge of the base flashings. Secure with appropriate fasteners at spacings not to exceed 8 inches on center. Apply a bead of the roofing system manufacturer's water cut-off mastic behind the top edge of the base flashing. Apply a bead of the roofing system manufacturer's approved caulk along the top edge of the base flashings.

3.3.8 In the event that base flashings terminate at a corner and edges would be exposed, furnish and install new 4-inch-wide PVC-coated metal closures with an exterior edge caulking cove. The closure shall be set in water cut-off mastic and fastened to the substrate using appropriate fasteners at spacings not to exceed 12 inches on center. Completely hot air weld the base flashings to the PVC-coated metal. Apply a non-shrinking sealant, such as NP-1 or approved equal, to the caulking cove at the exterior edge of the closure. Completely remove all residual asphalt from the

substrate prior to installing any sealant or caulking. This shall be installed prior to the sheet metal parapet closures indicated on drawings. Refer to Drawings.

- 3.3.9 At inside and outside corners of curbs, Contractor shall use the roofing system manufacturer's pre-fabricated corner pieces. The use of field-fabricated pieces is not acceptable. Pre-fabricated pieces shall be installed in accordance with the roofing system manufacturer's written instructions.
- 3.3.10 Use the roofing system manufacturer's termination bar at base flashing edges at changes in base flashing height. Fastener spacings not to exceed 12 inches on center. Set flashing in water cut-off mastic, set the bar over the edge of the base flashing, and apply caulk at the top of the flashing.
- 3.3.11 At a minimum, extend base flashings up and over the top horizontal surface of curbs and inside the curb a minimum of 1 inch, unless otherwise stated in specification or shown on drawings.
- 3.4 Expansion Joints: Install new membrane expansion joints as indicated on drawings. Secure the field membrane at the base of curbs as specified herein. Form a membrane envelope that matches the depth of the curb and roof insulation. Fill envelope with batt insulation. Furnish and fully adhere continuous foam core over the opening using the membrane manufacturer's bonding adhesive. Cover the joint and foam core with the base flashings and/or additional membrane as indicated on drawings. Reinforce the seams over the expansion joint with additional membrane that shall extend a minimum of 3 inches past the expansion joint seams in every direction.
- 3.5 Heat Welding
- 3.5.1 Hot air weld all sheet seams using either a machine or hand-held hot air welder approved by the roofing system manufacturer. A copy of the operating instructions shall be provided to the Designer prior to the start of the project.
- 3.5.2 Monitor the temperature of the hot air welder so as to minimize the amount of smoke that should develop and to ensure that the material from the bottom of the sheet begins to soften and flow from the seam. Hand held welders shall insure that membrane welding is immediately followed by a hand roller to press the heated membrane surfaces together with slow, even movements.
- 3.5.3 All seams shall be manually probed using a blunt rounded instrument daily. Any fishmouths or other seam defects where the seam is not fully adhered shall be repaired in accordance with the roofing system manufacturer's instructions.
- 3.5.4 After seams have set for approximately 8 hours, the Contractor shall make a minimum of 3, 2" x 12" test cuts across the seam, with at least one of the test cuts taken from the first seam of the day. If multiple welders are used, the minimum test cuts are applicable to each welder used. Test cuts shall be repaired by the Contractor daily and shall be done at no additional cost to the Owner. In lieu of test cuts, the contractor may perform peel tests. Peel test shall be performed with two 4" x 12" pieces of membrane that shall be welded together 1-1/2 inch for the machine welder and 2 inches for hand welders. The membrane shall be pulled apart across the seam. Test shall be dated, and one test shall be performed every time a welding device is turned on. An archive of test shall be available for Designer inspection.

Peel-test shall only be considered successful if:

- i there is a complete cohesion failure in a polymer layer, and/or

- ii there is an adhesion failure between a polymer layer and the scrim.
- iii Other instances as stated in writing by the membrane manufacturer.

3.5.5 Seams shall be tested in accordance with the roofing system manufacturer's instructions and evaluated for seam integrity. Seams that fail this test shall be subject to additional test cuts, as directed by the Designer and/or roofing system manufacturer, in order to further quantify the extend of the deficient condition. Repairs to deficient seams and/or test cut locations shall be performed by the Contractor at no additional cost to the Owner.

3.5.6 Seal the edges of the membrane where the reinforcing fabric is cut with the roofing system manufacturer's approved seam sealant. Such work shall be done on a daily basis.

### 3.6 Pipe Flashing Installation

3.6.1 Pipe penetrations shall be flashed using pre-manufactured PVC pipe flashings. Cut the pipe flashing so that it will fit tight to the pipe penetration. Ensure that the field membrane is secured at the base of the pipe in accordance with this section. Set the pipe flashing at against the pipe in a continuous bead of water-cut off mastic. Secure the pipe flashing to the pipe using draw-band clamps and seal the top of the flashing using non-shrinking sealant.

3.6.2 Premanufactured pipe flashings shall be used to the fullest extent possible. Where premanufactured flashings cannot be used at circular penetrations, it is acceptable to field flash penetrations with PVC membrane in accordance with the membrane manufacturer's written instructions.

3.6.3 Install any necessary pre-molded pitch pans in accordance with manufacturer written instructions. Prior to applying pourable sealer, seal the penetration though the membrane with sealant.

### 3.7 Walkway Pad

3.7.1 Furnish and install one row of walkway pads around four sides of all units and the roof hatch as shown at Drawings.

3.7.2 Furnish and install walkway pads beneath splash blocks on the roof.

3.7.3 Furnish and install walkway pads at locations as shown on roof plan.

3.7.4 Walkway pads shall be spaced approximately 1 inch apart.

3.7.5 Clean the surface of the membrane to receive the walkway pads in accordance with the roofing system manufacturer's written instructions. Fully adhere the walkway pad to the membrane and hot-air weld all sides of the pads to the surface of the membrane in accordance with the roofing system manufacturer's written instructions.

**END OF SECTION**

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**SECTION 07 60 00**  
**FLASHING AND SHEET METAL**

**PART 1- GENERAL**

- 1.1 Work Included: Includes the fabrication and installation of sheet metal and related accessories associated with roofing membranes, providing physical protection to membrane, base flashings and membrane terminations, as specified herein.
- 1.2 Related Work
  - 1.2.1 Rough Carpentry - Section 06 10 53
  - 1.2.2 Polyvinyl Chloride (PVC) Roofing – Section 07 54 19
- 1.3 Submittals: In accordance with Section 01 33 00 of this Specification
- 1.4 Environmental Conditions: Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.5 Warranty: In accordance with Section 01 78 36 of this Specification.

**PART 2- PRODUCTS**

- 2.1 Galvalume: ASTM A-792, minimum 24 ga. thickness, unless otherwise noted..
- 2.2 Flat Bar: 1/4-inch x 1-inch (stiffener for gutter and counterflashing), 1/8-inch x 1-inch (gutter spacers) and 1/4-inch x 2-inch (gutter brackets) flat stock galvanized steel.
- 2.3 Termination Bar: 1/4-inch x 1-inch aluminum.
- 2.4 Kynar 500-based finish: Shall be factory applied, oven-finish. Finish and primer shall be applied in strict accordance with the formulator's specifications and shall meet the performance criteria of AAMA 605.2-90 specification. Finish coat thickness shall be a minimum of 1.0 mil. Primer coat thickness shall be a minimum of 0.3 mil. Color to match the existing color to be selected by owner.
- 2.5 Clad metal: Minimum 24-gauge PVC-clad galvalume, as provided by the roof system manufacturer
- 2.6 Non-Shrinking Sealant: ASTM C920, Type S or M, Grade NS, Class 25, for Use NT, M, A, and O.
- 2.7 Self-adhering Modified Bitumen Membrane: ASTM 1970 minimum 40 mils, W.R. Grace Ice and Water Shield, or approved equal prior to bid.
- 2.8 Low-Rise Adhesive Fastener: single-component low-rise urethane adhesive as approved by the roofing system manufacturer.
- 2.9 MINIMUM ACCEPTABLE METAL WEIGHTS (All metal to be finished with Kynar 500 coating or approved

equal prior to bid unless otherwise specified).

|                                     |                                |
|-------------------------------------|--------------------------------|
| Counterflashing:                    | 24 ga. galvalume               |
| Downspout:                          | 24 ga. galvalume               |
| Eave Flashing – Built-Up Roofing:   | 24 ga. galvalume               |
| Eave Flashing – Single-Ply Roofing: | 24 ga. galvalume (PVC-Clad)    |
| Expansion Joint Cover:              | 24 ga. galvalume               |
| Face Extender:                      | 24 ga. galvalume               |
| Face Extender Cleat:                | 22 ga. galvalume (mill finish) |
| Gutter:                             | 24 ga. galvalume               |

### PART 3- EXECUTION

#### 3.1 General Installation Requirements

- 3.1.1 Inspect all surfaces to which metal is to be applied. Do not install metal unless surfaces are even, sound, clean, dry and free from defects which might affect the application.
- 3.1.2 Follow recommendations of the National Roofing Contractors' Association (NRCA) and Sheet Metal and Air Conditioning Contractors National Association Architectural Sheet Metal Manual (7<sup>th</sup> Edition) for fabricating in-shop and on-site, and for installation, unless otherwise specified herein.
- 3.1.3 Follow published instructions of the product manufacturer for installation of extruded or proprietary metal products, unless otherwise specified herein.
- 3.1.4 Use nails, screws, bolts, cleats or other fasteners of the same material or of material chemically compatible with the contacted metal.
- 3.1.5 Do not place dissimilar metals in direct contact or in positions where water sheds across both metals.
- 3.1.6 Install metal to be water and weather tight with lines, arises and angles, sharp and true and with paint surfaces free of waves and buckles.
- 3.1.7 Install shop-formed metal flashings in 10 foot lengths maximum with a minimum number of pieces in each straight run.
- 3.1.8 Apply a continuous bead of caulk between any lapped metal sections, with the exception of counterflashing lapped joints. The application of caulk after metal components have been lapped is unacceptable and will be grounds for rejection.
- 3.1.9 At locations where metal flashing and closure edges will be exposed, hem the edges a minimum of 1/2 inch and provide a kick-out to move water away from items below.

#### 3.2 Counterflashing Installation

- 3.2.1 Form and install new continuous two-piece reglet behind cladding and counterflashing at locations as shown on drawings. Refer to 2010 NRCA, Detail SM-24 and drawings. Set the reglet flange against the vertical surface in a solid bed of sealant and secure using appropriate specified fasteners. Cover the top edge of the reglet using the specified building wrap. Lap reglet sections a minimum of 3 inches. Secure counterflashing to the reglet using appropriate specified fasteners. Extend counterflashing down a

minimum of 4 inches over base flashing. It is acceptable to provide premanufactured snap-lock counterflashing.

3.2.2 Form and install new continuous skirt counterflashing as shown on drawings and around all RTU curbs. Refer to 2010 NRCA, Detail SM-24 (skirt flashing) and drawings. Set flange against vertical surface in a solid bed of sealant. Slide the top edge of the counterflashing behind existing metal flashing a minimum of 1-inch. Extend counterflashing down a minimum of 2 inches over base flashing. Secure the counterflashing using appropriate specified fasteners.

3.2.3 Notch and lap sections a minimum of 3 inches.

3.2.4 Notch and lap joints and inside corners. Notch and seam outside corners. Do not rivet or otherwise secure joints and corner.

### 3.3 Downspout Installation

3.3.1 Form new downspouts. Refer to SMACNA Architectural Sheet Metal Manual Figure No. 1-32B and 132F.

3.3.2 Downspouts to be box-style and shall match existing downspouts in size, unless otherwise specified.

3.3.3 Lap sections a minimum of 3 inches and secure sections with a minimum of 2 stainless steel sheet metal screws.

3.3.4 Form 45° elbow where water discharges onto the roof or ground. Downspouts shall discharge a maximum of 6 inches above grade or high enough to install the concrete splash blocks.

3.3.5 Form downspout hangers from the same material as downspouts using material not less than 2 gauges heavier than downspouts. Secure downspouts to wall with hangers spaced not more than 5 feet on center and within 12 inches of the top and bottom of the downspout. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-35G. Apply one coat of metal primer and two coats of field-grade Kynar 500 paint to all hangers or provide prefinished hangers. Color shall match the downspouts.

3.3.6 Form new downspout protection covers from 10 ga. galvanized steel. Refer to SMACNA Architectural Sheet Metal Manual Figure No.1- 32I and Drawings. Cover shall be a minimum of 4 feet in length and shall be installed so that the bottom is no higher than 3 inches above grade. Apply one coat of metal primer and two coats of field-grade Kynar 500 paint to all exposed metal. Color shall match the downspouts.

3.3.7 Furnish and install new concrete splash blocks where water discharges onto new roofing or grounds. Refer to SMACNA Architectural Sheet Metal Manual Figure No.1- 36.

### 3.4 Eave Flashing Installation – Built-Up Roofing

3.4.1 At locations shown on drawings, furnish and install new A-type eave flashing. Refer to NRCA Detail UL-27 and drawings. The flashing shall extend a minimum of 1-inch and no more than 1-1/2-inch above the roof level. The flashing shall have a 4-1/2-inch horizontal flange.

3.4.2 At gutters, flashing shall extend into gutter a minimum of 2 inches.

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- 3.4.3 Prior to installing the flashing and gutter, furnish and install self-adhered modified bitumen membrane that shall extend onto the roofing a minimum of 6 inches and down the exterior face of wall a distance to match the gutter.
- 3.4.4 At edges where gutters are located, install gutters before gravel stop-fascia.
- 3.4.5 Apply a strip of PVC sheeting in a continuous bed of black plastic cement across the top of the blocking and extending down the outside face approximately the width of the vertical section of the gravel stop fascia. Sheeting shall extend into gutter. Lap sections a minimum of 6 inches and seal with black plastic roof cement.
- 3.4.6 Use maximum 10-foot lengths and a minimum number of pieces in each straight run.
- 3.4.7 A continuous cleat is not required at gutter locations.
- 3.4.8 Any deviations to this basic design shall be submitted to the Designer for approval along with documentation that the revised detail meets the ANSI/SPRI ES-1 wind uplift requirement.
- 3.4.9 Set horizontal flange in a continuous bed of black plastic roof cement on top of PVC sheeting.
- 3.4.10 Leave a  $\frac{1}{4}$  inch opening between sections. Center the cover plate over the opening, set in black plastic roof cement and nail with 2 nails through opening between sections.
- 3.4.11 Nail fascia through horizontal flange near center. Space nails 3 inches on-center staggered 1/2-inch minimum. The first row of nails shall be 1 inches from the end of the flange.
- 3.4.12 Form new gravel stop-fascia closures from 24 ga. galvanized steel with Kynar 500 finish. Refer to Drawings.
- 3.4.13 Strip flange with 2 plies of felt cemented in bitumen. Fit all plies snugly to vertical leg. Extend first ply at least 6 inches beyond flange and the second ply 6 inches beyond the previous one. Use same type of felt and bitumen as in roof membrane.
- 3.4.14 Fit felts snugly to the inside edge of the gravel stop.
- 3.4.15 Reapply gravel over stripping and provide a consistent appearance with the existing roofing. Provide additional gravel to match existing as necessary.
- 3.5 Eave Flashing Installation – Single-Ply Roofing
- 3.5.1 At locations shown on drawings, furnish and install new L-type flashing with a 4-1/2-inch horizontal flange. Refer to NRCA Details SM-17. At gutters, flashing shall extend into gutter a minimum of 2 inches.
- 3.5.2 At locations shown on drawings, furnish and install new A-type flashing with a 180-degree bend that extends a minimum of 2-inches above the roof level. The flashing shall have a 4-1/2-inch horizontal flange. Refer to NRCA Details SM-15. The flashing shall cover the exterior wall cladding a distance to match the existing; however, the vertical flange of the flashing shall not be more than 8 inches. If additional area of wall needs to be covered with flashing to match the existing, furnish and install new face extenders. Install face extender prior to installing flashing.



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- 3.5.3 Prior to installing the flashing, ensure that membrane extends behind the gutter a distance that matches the depth of the gutter. At locations where there is no gutter, ensure that membrane extends down past the top edge of the wall a minimum of 1 inch.
- 3.5.4 Use maximum 10-foot lengths and a minimum number of pieces in each straight run.
- 3.5.5 A continuous cleat is not required at gutter and expansion joint locations.
- 3.5.6 Flashing shall engage a continuous cleat that shall be secured to the substrate with appropriate fasteners at spacings not to exceed 6 inches on center and approximately 1-3/4 inch from the bottom edge of the cleat.
- 3.5.7 Set flashing in a continuous bead of sealant on top of the membrane. Lap section a minimum of 3 inches so water runs across the lap and set in two continuous beads of sealant. First, apply roofing system manufacturer aluminum tape over the joint. Then, apply unsupported membrane strip over the lapped sections that extend a minimum of 2 inches past the tape on both sides and fully welded to both metal sections.
- 3.5.8 Nail through horizontal flange near center. Space nails 3 inches on-center staggered pattern and locate nails approximately 1 inches from the edge of the flange. Do not nail in lapped sections.
- 3.5.9 Strip in the flange with membrane per manufacturer's written instructions by fully welding the membrane to the metal flashing.
- 3.5.10 Apply membrane manufacturers approved sealant along the edge of the membrane.
- 3.6 Expansion Joint Cover
- 3.6.1 Complete any curb modifications, as required in Section 06 10 53 of the Specification.
- 3.6.2 Fill cavity between curbs with fiber glass batten insulation in a PVC sheeting envelope.
- 3.6.3 Form new metal expansion joint cover as shown drawings and with an 'E' that matches the width of the existing joint.
- 3.6.4 Prior to the installation of the expansion joint cover, apply over the joint a strip of PVC sheeting extending across the joint and terminating at the bottom edge of the joint cover cleat. Lap sections a minimum of 3 inches and seal with black plastic roof cement.
- 3.6.5 Use minimum 10-foot lengths and a minimum number of pieces in each straight run.
- 3.6.6 Engage horizontal leg of cover to a continuous T-type cleat formed from metal to match the cover, which shall be secured to the top of the curb with appropriate nail fasteners space no more than 6 inches on center, staggered pattern.
- 3.6.7 Set the vertical flange against the wall in a solid application sealant. Fasten the flange using appropriate fasteners at spaced no more than 18-inches on center and located approximately 1 inch from the top edge of the flange.
- 3.6.8 Lap expansion joint sections.

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- 3.7 Face Extender: Furnish and install new face extender and continuous cleat, if necessary. The cleat shall be secured to the substrate using specified fasteners at spacings not to exceed 6 inches on-center. Lap face extender pieces a minimum of 3 inches. Fasten the face extender approximate  $\frac{3}{4}$ " from the top edge flashing to the substrate using specified fasteners at spacings not to exceed 12 inches on-center. Offset face extender laps from flashing joints a minimum of 12 inches. Single face extender shall not exceed 8 inches in height.
- 3.8 Gutter Installation – Low-Slope Roofing
- 3.8.1 Form new gutter. Gutter size shall box-style and shall match the existing. The back of the gutter shall be a minimum of 1 inch higher than the front. Refer to NRCA Detail SM-33.
- 3.8.2 Lap gutter section end laps a minimum of 3 inches, set in two continuous beads of the sealant around the girth, and rivet using stainless steel pop rivets. Refer to NRCA Detail SM-35.
- 3.8.3 Provide butt type expansion joints in gutters at spacings required for the type material used to fabricate gutters. Refer to NRCA Details SM-37.
- 3.8.4 Provide specified gutter spacers at 3'-0" on center. Refer to SMACNA Architectural Sheet Metal Manual Figure No. 1-12. Continuous specified flat bar shall be installed at the front of the gutter and secured with stainless steel bolts and nuts at spacer locations.
- 3.8.5 Provide specified gutter brackets at 3'-0" on center, and alternating in location from gutter spacers. Refer to SMACNA Architectural Sheet Metal Manual Figure No. 1-12. Brackets shall be secured with stainless steel screws through pre-drilled holes. Brackets should be primed and double coated with an approved field-applied Kynar 500 paint prior to installation.
- 3.8.6 Furnish and install a gutter baffle that extends 12 inches from either side of the gutter corners made from the same material as the gutter and using material not less than 1 gauges heavier in accordance with SMACNA Architectural Sheet Metal Manual Figure No. 1-24A.
- 3.8.7 Furnish and install gutter outlet tubes in accordance with SMACNA Architectural Sheet Metal Manual Figure No. 1-24C.
- 3.8.8 Furnish and install stainless steel downspout strainers in accordance with SMACNA Architectural Sheet Metal Manual Figure No. 1-24D.
- 3.9 Gutter Installation – Metal Panel Roofing
- 3.9.1 Form new gutter as shown on Drawings.
- 3.9.2 Gutter shall match the existing in size and profile.
- 3.9.3 Lap gutter section end laps a minimum of 3 inches, set in two continuous beads of the sealant around the girth, and rivet using stainless steel pop rivets. Refer to NRCA Detail SM-35.
- 3.9.4 Provide butt type expansion joints in gutters at spacings required for the type material used to fabricate gutters. Refer to NRCA Details SM-37.

- 3.9.5 Form end caps from the same material as the gutter. Set end caps in a solid application of sealant and rivet at spacings not to exceed 1 inch on-center. The height of the end caps shall be one inch lower than the back vertical leg of the gutter.
- 3.9.6 Secure the flange at the back of the gutter to the underside of the metal panels using a minimum of 4 specified #14 fasteners per roof panel, unless manufacturer has more stringent requirements.
- 3.9.7 Furnish and install gutter outlet tubes in accordance with SMACNA Architectural Sheet Metal Manual Figure No. 1-24C.
- 3.9.8 Provide gutter spacers at spacings required by the metal roofing system manufacturer, however, spacings shall not exceed 3'-0" on center. Contractor shall use the roofing system manufacturer's approved spacers. Spacers shall be in accordance with the roofing system manufacturer's approved shop drawings.

**END OF SECTION**