

Project Manual

For

**ROOFING AND WATERPROOFING MAINTENANCE
CONTRACT
SANTA FE INDEPENDENT SCHOOL DISTRICT**

For the

Santa Fe Independent School District

October 30, 2017

PBK Project No.: 17287R



Project Manual

For

**ROOFING AND WATERPROOFING MAINTENANCE
SPECIFICATIONS
SANTA FE INDEPENDENT SCHOOL DISTRICT**

For the

Santa Fe Independent School District

Date: October 30, 2017

PBK Project No.: 17287R



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NOT USED

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REQUEST FOR COMPETITIVE SEALED PROPOSALS

Competitive Sealed Proposals for the work identified below in accordance with Proposal Documents and addenda as may be issued prior to date of proposal opening will be received by the Board of Trustees, Katy Independent School District, until proposal closing date and time, as identified below. Proposals from Offerors will then be opened in public and read aloud.

- OWNER:** Santa Fe Independent School District
4133 Warpath Ave
Santa Fe, TX 77510
Representative: Mr. Bob Atkins, Director Operations & Maintenance
(409) 925-3526
- PROJECT:** Annual Roofing & Waterproofing Maintenance Contract
Santa Fe Independent School District
4133 Warpath Ave
Santa Fe, TX 77510
- BUDGET:** The budget for this Project will vary depending on amount of leaks and small projects authorized by the District.
- PRE-PROPOSAL CONFERENCE** Wednesday, November 1, 2017 at 10:00am
Santa Fe ISD Board Room
4133 Warpath Ave
Santa Fe, TX 77510
Representatives of the Architect and Owner will be present at this meeting. All Offerors are encouraged to attend.
- PROPOSAL DATE AND TIME:** Thursday, November 9, 2017
at 3:00pm
- LOCATION OF PROPOSAL OPENINGS:** Santa Fe Independent School District
Location: Santa Fe ISD Board Room
4133 Warpath Ave
Santa Fe, TX 77510
Phone: (409) 925-3526
- ARCHITECT:** PBK Facility Consulting Division
11 Greenway Plaza, 22nd Floor
Houston, Texas 77046
(713) 965-0608

Qualified Offerors (Roofing/Water Proofing Contractors) may obtain two (2) sets of plans and specifications at the offices of the Architect upon deposit of [\$25.00] per set (check made payable to PBK Architects, Inc.). The plans and specifications will be ready on October 30, 2017. The deposit will be refunded when the plans and specifications are returned promptly in good condition.

Proposal Documents may be obtained from the following address:

PBK Architects, Inc.
11 Greenway Plaza, 22nd Floor
Houston, Texas 77046
(713) 965-0608

Office Hours are 8:00 AM to 5:00 PM

In addition, proposal documents can be reviewed at the following locations:

Virtual Builders Exchange
7035 W. Tidwell, Bldg J, Ste 112
Houston, TX 77092
Houston, Texas 77098
(832) 613-0201
F: (832) 613-0344
www.virtualbx.com

iSqFt Plan Room
Triangle Reproductions
8450 Westpark, Suite 100
(713) 843-3700

McGraw-Hill Construction Dodge (on line services)
<http://www.dodgeplans.construction.com>
(800) 424-3996

Reed Construction Data (RCD)
www.reedplans.com
(713) 529-4895

All proposals must be in the hands of the Owner no later than the time specified above. Please seal all proposals in duplicate in an envelope with the following information on the face of the envelope.

Name of Offeror (Roofing/Waterproofing Contractor)
Annual Roofing and Waterproofing Maintenance Contract
Santa Fe Independent School District
Attn: Mr. Bob Atkins, Director of Operations & Maintenance

The Owner reserves the right to reject any and all proposals and to waive any irregularities in the Competitive Sealed Proposal process.

No proposal shall be withdrawn within thirty (30) days after the proposal opening without the specific consent of the Owner.

PROPOSAL BOND: Not required.

PAYMENT BOND AND PERFORMANCE BOND: Not required.

The prevailing rates of wages are the minimums that must be paid in conformance with all applicable laws of the State of Texas.

All Offerors submitting a proposal are encouraged to visit the site. All Offerors submitting a proposal are encouraged to attend the proposal opening.

Subcontractors and Suppliers intending to submit proposals to General Construction Offerors are required to prepare their proposals based on a complete set of proposal documents. If after reviewing the complete set of proposal documents, Subcontractors and Supplier Offerors desire to purchase individual drawings and specification sections for their proposal convenience, they may do so by ordering the specific drawings and specifications directly from the reproduction company. Each Offeror purchasing a partial set of proposal documents is responsible for determining exactly which documents he requires and is responsible for all costs associated with printing and delivery. Subcontractors and Suppliers exercising this option must agree to do so on the basis that 1) all documents shall be returned to the Architect, without refund, after submitting a proposal and 2) documents shall not be used on other construction projects. Successful Subcontractors and Supplier Offerors may retain their Proposal Documents until completion of the construction.

END OF DOCUMENT

DOCUMENT AB

INSTRUCTIONS TO OFFERORS

1.1 QUALIFIED OFFERORS

- A. Competitive Sealed Proposals will be accepted from qualified Offerors only for the entire scope of work described in the Contract Documents. As a prerequisite to an Offeror's qualifying for the award of contract on this work, the Offeror must complete each item of the Contractor Information and Experience Statement (AIA Document A305). The Statement forms may be obtained from the Houston Chapter of the American Institute of Architects, 315 Capitol, Suite 120, Houston, Texas 77002, (713) 520-0155. In addition to the information contained in the Statement form, Offerors shall also address the selection criteria issues listed under paragraph below for Determination of Successful Respondent and Award of Contract. The Statement and other requested information shall be submitted at the time of receipt of Proposals in four (4) copies, three (3) for the Owner and one (1) for the Architect. Qualification statements submitted by FAX transmission will not be accepted.
- B. The primary purposes of the evaluation process will be to:
 - 1. Gather information for the Owner's evaluation procedure.
 - 2. Enable the Owner and/or Architect to evaluate the Offeror's qualifications.
- C. After review of Proposals and Contractor's qualifications evaluation the Owner will make his decision and each Offeror will be notified.
- D. In arriving at his opinion concerning the Offeror's qualifications, the Architect will use the same criteria that the Owner will use in determination of the successful Offeror as detailed hereinafter.
- E. If the proposed Offeror fails to submit the specified Contractor's Qualification Statement and other required information at the time specified above, the Owner and Architect shall consider this a negative factor in the determination of the successful Offeror.

1.2 OFFEROR'S PRESENTATION

By submission of a Proposal to the Santa Fe Independent School District the Offeror attests to and affirms that the submitted proposal accounts for and includes the items described in the statements below:

- A. He has read and understands the Proposal Documents and his Proposal is made in accordance therewith.
- B. He has visited the site, has familiarized himself with the local conditions under which the work is to be performed and has correlated his observations with the requirements of the proposed Contract Documents.
- C. He agrees to comply with the requirements of the following paragraph. These requirements are absolute, and any Offeror who subsequently does not agree to comply with these requirements will automatically disqualify himself from proposing or receiving award of the contract.
- D. The Offeror agrees:
 - 1. Work on the project will begin immediately upon receipt of signed Contract or Notice to Proceed.

2. Offeror will participate as a team member in cooperation with the Project Architect.
3. The Offeror will assign a competent full-time superintendent, to project, and that superintendent shall be maintained on the project for the duration of the project, subject only to his continuous employment.
4. Offeror shall carry and keep in full force for the duration of the Project, insurance coverage for builder's risk, workmen's compensation, comprehensive general liability, and automobile liability as required by the General Conditions and/or Supplementary General Conditions of the Specifications.
5. Each Offeror by making his Proposal represents that his Proposal includes only material and equipment specified in the Proposal Documents and supplemented, if necessary, for a complete and operating system.
6. Where subcontract work is involved and where Acceptable Subcontractors are designated for particular sections or phases of the Work, each Offeror by making his Proposal represents that his Proposal includes only firms designated as Acceptable Subcontractors.
7. Each Offeror (and sub-offeror or supplier submitting a proposal to a Offeror) shall submit an affidavit stating that no asbestos PCBs or lead building materials shall be used.

1.3 DEFINITIONS

- A. Proposal Documents include the Request for Competitive Sealed Proposals, Instructions to Offerors, the Proposal Form, all required affidavits, and the Contract Documents.
- B. The Contract Documents for the work consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and any other Conditions), the Drawings, the Specifications, and all Addenda issued prior to receipt of proposals.

1.4 PROPOSAL DOCUMENTS

- A. Proposal Documents include the Request for Competitive Sealed Proposals, Instructions to Offerors, the Proposal Form, and the proposed Contract Documents, including any Addenda issued prior to receipt of proposals. The Contract Documents for the work consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, and all Addenda issued prior to receipt of proposals.

1.5 PROPOSAL PROCEDURES

- A. A proposal is invalid if it has not been received at the designated location prior to the time and date for receipt of proposals indicated in the Request for Competitive Sealed Proposals, or prior to any extension thereof issued to the Offerors by Addenda.
- B. Prior to the receipt of Proposals, Addenda will be mailed, transmitted by fax, transmitted via email, or delivered to each person or firm recorded by the Architect as having received the proposal documents and will be available for inspection wherever the proposal documents are kept available for that purpose.
- C. Proposals will be received in duplicate only on the Owner's Form of Proposal for the work as indicated by the Proposal Documents, filled in, and enclosed in a sealed envelope addressed as follows:

Name of Offeror (Roofing/Water Proofing Contractor)
Annual Roofing and Waterproofing Maintenance Contract
Santa Fe Independent School District
Attn: Ms. Bob Atkins, Director Operations & Maintenance

- D. All proposals must be delivered sealed to the address below, at or before the time and date set.

Santa Fe Independent School District
Purchasing Department
4133 Warpath Ave
Santa Fe, TX 77510
Attn: Ms. Bob Atkins, Director Operations & Maintenance

If Proposal is sent by U.S. Mail, it must be sent Registered Mail to the following address.

Santa Fe Independent School District
Purchasing Department
4133 Warpath Ave
Santa Fe, TX 77510
Attn: Ms. Bob Atkins, Director Operations & Maintenance

- E. A proposal may be withdrawn only upon request by the Offeror or his duly authorized representative, provided such request is received by the Owner at the place designated for receipt of proposals and prior to the time fixed for the opening of proposals. A withdrawal of a proposal shall not be effective unless a written confirmation of the withdrawal is received by the Owner at said place within forty-eight (48) hours before the time fixed for the opening of proposals. The withdrawal of a proposal does not prejudice the right of the Offeror to file a new proposal at the time and place stated. No proposal may be withdrawn after the time fixed for the opening of proposals for a period of thirty (30) days.

1.6 INTERPRETATION OF PROPOSAL DOCUMENTS

- A. Offerors and sub-offerors requiring clarification or interpretation of the Proposal Documents shall make a written request on the form provided in this section which shall reach the Architect at least ten (10) days prior to the date for receipt of proposals.
- B. Any interpretation, correction or change of the Proposal Documents will be made by Addendum. Interpretations, corrections or changes of the Proposal Documents made in any other manner will not be binding. The Architect may issue Addenda up to within seventy-two (72) hours of the proposal time.

1.7 SUBSTITUTIONS OF MATERIALS AND EQUIPMENT

- A. The materials, products and equipment described in the Proposal Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution. The materials and equipment named in, and the procedures covered by these specifications have been selected as a standard because of quality, particular suitability or record of satisfactory performance. It is not intended to preclude the use of equal or better materials or equipment provided that same meets the requirements of the particular project and is approved in an addendum as a substitution prior to the submission of proposals.
- B. No substitution will be considered prior to receipt of proposals unless written request for approval has been received by the Architect at least seven (7) days prior to the date for receipt of proposals as described in Section 01 25 13 – Products and Substitutions. Each

such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

- C. If the Architect approves any proposed substitution prior to receipt of proposals, such approval will be set forth in an Addendum. Offerors shall not rely upon approvals made in any other manner.
- D. No substitutions will be considered after the Contract award.

1.8 REJECTION OF PROPOSALS

- A. The Owner shall have the right to reject any or all proposals and to reject a proposal not accompanied by any required proposal security, or by other data required by the Proposal Documents, or to reject a proposal which is in any way incomplete or irregular.
- B. The Owner reserves the right to reject any or all proposals and to waive any formalities or irregularities and to make the award of the contract in the best interest of the Owner.
- C. The Owner reserves the right to reject any proposal if the evidence submitted by, or investigation of, such offeror fails to satisfy the Owner that such offeror is properly qualified to carry out the obligations of the contract and to complete the work therein. Award may be made to other than the low-dollar offeror and given the one offering the "best value" to the school district, in addition to the purchase price, based on the published selection criteria and on its ranking evaluation.
- D. Do not submit voluntary alternates. The Owner reserves the right to reject any proposal which is accompanied by conditional or qualifying statements, or "voluntary alternates".

1.09 INSURANCE

- A. Each Offeror shall include in his proposal the complete cost for insurance required under the General Conditions and Supplementary Conditions.
- B. Offeror shall carry and keep in full force for the duration of the project, insurance coverage as required by the General Conditions of the Contract for Construction as modified by the Supplementary General Conditions of the Contract for Construction (Section CB).
- C. Certificate of Insurance must be submitted to and accepted by the Owner prior to commencement of on-site mobilization. See Notice to Proceed below.

1.10 PERFORMANCE BOND AND PAYMENT BOND

- A. Not Required.

1.11 SUBMISSION OF POST PROPOSAL INFORMATION

- A. The apparent Selected Offeror shall within three (3) days after proposals are received submit the following:
 - 1. A designation of the work to be performed by the Offeror with his own forces.
 - 2. An experience profile of the selected Offeror's superintendent scheduled to work on this project. In addition, the apparent selected Offeror shall cooperate with the

Owner, supplying requested information to substantiate the qualifications of the superintendent. If, in the opinion of the Owner, the superintendent does not qualify, the Owner may request the submission of another superintendent and more information. The Owner reserves the right to reject the apparent selected Offeror if an acceptable superintendent is not presented.

- B. The Selected Offeror shall within five (5) days thereafter submit a statement of costs for each major item of work included in the proposal. Each section of specifications will be considered a major item of work and shall be shown as a separate cost item.

1.12 AWARD OF CONTRACT

- A. The offeror to whom the award is made will be promptly notified. If an offeror (a) withdraws his proposal within thirty (30) days after the proposal opening date, or (b) fails or refuses to execute the Agreement, or other required forms within ten (10) days after the same are presented to him for signature, or (c) fails or refuses to furnish properly executed Certification of Required Insurance within fifteen (15) calendar days of execution date of the Agreement, the Owner may award the work to another offeror or Offerors or may call for new proposals.
- B. Proposal Bond (if applicable) is forfeited if proposal is withdrawn after the proposal opening, or Contract Documents are not executed in accordance with the above.

1.13 NOTICE TO PROCEED

- A. Upon review and acceptance of Offerors qualifications and proposal documents, and acceptance of the Selected Offerors Proposal, the Architect, on the behalf of the Owner, shall prepare and issue the written Notice to Proceed.
- B. The Offeror shall not commence work under this Contract until he receives the written Notice to Proceed.
- C. Immediately, upon receipt of the written Notice to Proceed, the Selected Offeror shall (a) execute Contract, (b) submit certification of required insurances, all using the Owner's own forms for such respective purposes.

1.14 COMPLETION TIME

- A. Contractor to respond to district notification within two (2) hours of initial contact. All emergency repairs to be completed within twenty-four (24) hours and permanent repairs to be completed within five (5) working/business days. Material mark up shall not exceed a maximum of ten (10) percent.
- B. The following is a requirement of the Contract and will be included in the Agreement Between Owner and Contractor under Time of Completion and the blank spaces will be completed indicating the Commencement of Work and Substantial Completion dates as stated on the Proposal Form.
- C. Having thoroughly familiarized himself with the conditions as they exist at the building site and acquainted himself with the labor supply and the material market, the offeror shall state in his proposal that he agrees to be substantially complete with the work by the date above.
- D. The work to be performed under this Contract shall be commenced as follows; Contractor to respond to district notification within two (2) hours of initial contact. All emergency repairs to be completed within twenty-four (24) hours and permanent repairs to be

completed within five (5) working/business days. Material mark up shall not exceed a maximum of ten (10) percent.

- E. The Offeror shall include in the Base Proposal, all premium time, overhead and profit required to attain substantial completion of the work on the above stipulated dates including Anticipated Inclement Weather Days as stipulated in Section CB. The Contractor shall submit in written form, at each progress meeting, delays claimed during the previous week. If the Architect agrees that the delay(s) claimed by the Contractor had occurred and were on the critical path of the Contractor's construction schedule, the agreed upon number of days will be subtracted cumulative total. A change order to increase the Contract Time will not be considered until after the total cumulative total weather delay days are expended.

1.15 USE OF ASBESTOS, LEAD AND PCB CONTAINING MATERIALS, PRODUCTS AND SYSTEMS

- A. A serious effort has been made to select only materials, products and systems that are asbestos, lead, and PCB free and that are readily available. As far as is known at proposal time all items are either available "off the shelf" or within a relatively short period of time.
- B. Prior to submitting a proposal, Offerors shall notify the Architect, in writing, of any materials, products and systems in these specifications which are known to contain or are likely to contain asbestos, lead or PCBs. The Architect will promptly explore possibilities for selecting other materials, products and systems which would circumvent the problem and notify Offerors of any changes in an addendum, otherwise it will be understood that only specified materials, products and systems that are asbestos, lead, and PCB free are included in the proposals.
- C. Decisions regarding allowance items will be made in a timely manner to avoid construction delays.
- D. The Contractor shall refer to the above requirements during the Proposal period and the following requirements during performance of the Work regarding the use of asbestos, lead or PCB free materials, products and systems in the Project.
 - 1. Since many materials, products and systems are proprietary, it is not possible to know all of the materials or components which go into producing such material, product or system without the manufacturer divulging trade secrets or patent information. Every effort has been made to specify materials, products or systems, which either as an "off the shelf" material, product and system or as a custom material, product and system do not contain asbestos, lead or PCBs.
 - 2. The Contractor and each subcontractor, prior to final payment, shall submit a notarized statement on their letterhead certifying "to the best of their information, knowledge, and belief asbestos and PCB containing materials have not been used or incorporated into the Work and lead or lead bearing materials have not been incorporated into potable water systems." For the purpose of definition as used in this statement, the term "potable water systems" includes, but is not limited to, those water systems for drinking fountains, all sinks, showers, bath tubs, residential and commercial kitchen equipment, ice machines, and hose bibbs, as applicable to the project. Lead sheet flashing used in through roof plumbing penetration applications is permitted. The Contractor shall also obtain such statements from subcontractors and all such statements shall be notarized.

3. In the event the material, product or system is found to contain asbestos, lead or PCB, the Contractor shall offer for the Architect's consideration a substitution which he knows does not contain any asbestos, lead or PCBs.
 4. Even though a material, product or system is specified or a specification is based on a particular material, product or system, the Contractor will not be relieved from the responsibility to ascertain that materials, products and systems used in the Project do not contain asbestos, lead or PCBs.
- E. If a material, product or system containing asbestos, lead or PCBs is used, the Contractor shall remove and replace the material, product or system with one which is asbestos, lead or PCB free at no additional expense to the Owner, including removal and replacement of other materials, products, and systems affected by the removal of the asbestos, lead or PCB bearing material, product or system, such as items affected due to removal of asbestos containing insulation; removal and replacement of gypsum wallboard, including, but not limited to repainting due to lead paint removal and; affected and work due to leaking or faulty PCB containing light ballasts, etc.
- F. The use of any construction process or the installation of any asbestos, lead and PCBs or material containing asbestos, lead and PCBs is strictly prohibited for this Project, except as noted above.
- G. Prior to payment of retainage and final payment, the Contractor shall furnish a notarized statement certifying that no asbestos, lead and PCB containing materials, products, and systems have been used in the Project. In addition to the Contractor's notarized statement, the subcontractors will be required to furnish notarized affidavits that no asbestos, lead, and PCB containing materials, products, and systems have been used in this Project.

1.16 FELONY CONVICTION NOTIFICATION

- A. Section 44.034, of the Texas Education Code requires a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony. Subsection (b) states "a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract." Subsection (c) states "this section does not apply to a publicly held corporation."
- B. Each offeror shall complete and submit the enclosed Statement of Affirmation within the time period stated on the form.

1.17 AFFIDAVIT OF NON-DISCRIMINATORY EMPLOYMENT

- A. All Offerors, Contractor and subcontractors shall agree to refrain from discrimination in terms and conditions of employment to the basis of race, color, religion, sex, or national origin, and agrees to take affirmative action as required by Federal Statutes and Rules and Regulations issued in order to maintain and insure non-discriminatory employment practices.
- B. Each offeror shall complete and submit enclosed Affidavit of Non-Discriminatory Employment within the time period stated on the form.

- C. The sub-offerors shall execute the enclosed Affidavit of Non-Discriminatory Employment before commencing work on this Project. Offerors and sub-offerors who have not executed this document will not be eligible to work on this project.

1.18 NON-COLLUSION AFFIDAVIT

- A. The Offeror shall execute the Non-Collusion Affidavit and submit with the Proposal.

1.19 PROJECT TEAM, LIST OF SUBCONTRACTORS, AND SCHEDULE

- A. The Offeror shall supply a list of the following major subcontractors.
- B. The Offeror shall supply a list of proposed project construction team including Project Manager and Project Superintendent.
- C. The Offeror shall provide a preliminary construction schedule.
- D. Each Offeror **must** complete and submit the enclosed Document Project Team and Schedule within the time period stated on the form.

1.20 AFFIDAVIT OF NON-ASBESTOS, LEAD, AND PCB USE IN PROJECT

- A. The use of any construction process or the installation of any asbestos, lead and PCBs or material containing asbestos, lead and PCBs is strictly prohibited for this Project.
- B. Prior to submitting a proposal, Offerors shall notify the Architect, in writing, of any materials in these specifications which are known to contain or are likely to contain asbestos, lead or PCBs.
- C. The Offeror, and sub-offerors shall agree to refrain from using products which are known to contain asbestos, lead, and PCB containing materials as applicable to the project. They shall also affirm that lead or lead bearing materials have not been incorporated into potable water systems, and that lead sheet flashing used in through roof plumbing penetration applications is the only lead on the Project.
- D. The Selected Offeror, and sub-offerors **must** execute Document AD, Affidavit of Non-Asbestos, Lead, and PCB Use and submit at Project Close-out.

1.21 AVAILABILITY OF MATERIALS AND SYSTEMS

- A. A serious effort has been made to select only materials that are systems that are readily available. As far as is known at proposal time all items are either available "off the shelf" or within a relatively short period of time. If during the proposal period, an Offeror becomes aware of an availability or delivery problem with any of the specified systems or materials, he should notify the Architect immediately. The Architect will promptly explore possibilities for selecting other systems or materials which would circumvent the problem and notify Offerors of any changes in an addendum, otherwise it will be understood that only specified systems and materials that are readily available are included in the proposals.

1.22 CONFLICT OF INTEREST QUESTIONNAIRE

- A. According to Local Government Code, Chapter 176, a person or an agent of a person who contracts or seeks to contract for the sale or purchase of property, goods, or services with any local government agency must file a completed Conflict of Interest Questionnaire with

the records administrator of the local government not later than the seventh business day after the date that the person begins contract discussions or negotiations with the District or submits to the District an application, response to a request for proposals or bids, correspondence, or another writing related to a potential agreement with the District.

- B. All Offeror's and sub-offeror's proposing to do work with the District **must** execute Document AF, Conflict of Interest Questionnaire and submit to the District's Legal Department within seven (7) days of the Proposal Date.

1.23 CRIMINAL HISTORY RECORDS

- A. Prior to commencing any work on this Project, the Selected Contractor shall certify, on the form provided herein as Document AH, that for each of its employee who will have direct contact with students, the Selected Contractor has obtained, as required by Texas Education Code Section 22.0834:

1. national criminal history record information from a law enforcement or criminal justice agency for each employee of the Selected Contractor hired before January 1, 2008 who will have direct contact with students; and
2. national criminal history record information from the Texas Department of Safety for each employee of the Selected Contractor hired on or after January 1, 2008 who will have direct contact with students; Fingerprinting is required and shall be provided by the contractor (applicant) and administered through FAST (Fingerprint Applicant Services of Texas) which will be recorded by the District in the FACT (Fingerprint-based Applicant Clearinghouse of Texas). Currently applicant must obtain fingerprinting from L-1 Identity Solutions Company, (888) 467-2080, or schedule an appointment online at: <https://tx.ibtfingerprint.com/>.

- B. Any personnel who will have direct contact with students must not have been convicted of an offense identified in Texas Education Code Section 22.085.
- C. At this time, Senate Bill 9 applies only to contractors with direct contracts with the District. This requirement does not apply to sub-contractors of the Contractor, material suppliers, or a one-time service provider such as a service technician, delivery person, testing agent, code official, or similar personnel. However, changes to these requirements are anticipated and may require the acquisition and submittal of additional background checks to the District during the course of the Work.
- D. The Selected Contractor shall execute and submit Document AG, Certification of Criminal History Record Information Review by Contractor-Employer along with required Schedule 'A' documenting proposed employees to be working on site, within 10 days after receipt of Notice To Proceed and prior to commencement of Work.
- E. Furthermore, an updated Schedule 'B' shall be submitted weekly to the District indicating changes to contractor personnel with accompanying certifications and criminal history records. Any fingerprinting and photographing required by the aforementioned code will be the responsibility of the Contractor-Employer.

1.24 DETERMINATION OF SUCCESSFUL RESPONDENT AND AWARD OF CONTRACT

- A. In determining the Selected Offeror, the Owner will evaluate the information derived from the Offeror's (General Contractor's) Qualification Statement required herein, the information submitted on the Proposal, and other selection criteria including, but not be limited to the

following. The score for the purchase price will be determined by the respective ratios between the lowest proposal and the other proposals.

- 25% (1) the purchase price;
- 15% (2) the reputation of the vendor and of the vendor's goods or services;
- 10% (3) the quality of the vendor's goods or services;
- 10% (4) the extent to which the goods or services meet the district's needs;
- 20% (5) the vendor's past relationship with the district;
- 5% (6) the impact on the ability of the district to comply with laws and rules relating to historically underutilized businesses;
- 10% (7) the total long-term cost to the district to acquire the vendor's goods or services; and
- 5% (8) any other relevant factor specifically listed in the request for bids or proposals.

- B. The Selection Committee consisting of Santa Fe ISD administrators, architects, consultants and other staff will make an initial evaluation of the proposals. Its recommendation will be considered by the Santa Fe ISD Board of Trustees ("Board"). The District reserves the right to review the recommendation with their administration and others deemed appropriate by the District prior to review by the entire Board. The final decision-making authority on the proposals rests with the full Board. Decision-making authority has not been delegated to any person or entity other than the Board.
- C. By submitting a proposal, each Offeror agrees to waive any claim it has or may have against the District and its respective employees, the Architect/Engineer and consultants, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any proposal; waiver of any requirements under the Proposal Documents: acceptance or rejection of any proposals; and award of the contract.
- D. The Owner will make such investigations as it deems necessary to determine the ability of the offeror to perform the Work, and the offeror shall furnish all such information and data for this purpose as may be requested. The Owner reserves the right to reject any proposal if the evidence submitted by, or investigation of, such offeror fails to satisfy the Owner that such offeror is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.
- E. The Owner reserves the right to reject any or all proposals and to waive any formalities or irregularities and to make the award of the contract in the best interest of the District.
- F. A decision regarding determination of the successful Offeror will be made by the Owner as soon as practical.

1.24 USE OF ASBESTOS FREE MATERIALS, PRODUCTS AND SYSTEMS

- A. The Offeror is reminded to refer to the Paragraph above for requirements during the Proposal period and the following requirements during performance of the Work regarding the use of asbestos free materials, products and systems in the Project.
 - 1. Since many materials, products and systems are proprietary, it is not possible to know all of the materials or components which go into producing such material, product or system without the manufacturer divulging trade secrets or patent information. Every effort has been made to specify materials, products or systems, which either as an "off the shelf" material, product or system or as a custom material, product or system do not contain asbestos.

2. It is the Contractor's responsibility to submit an affidavit from the manufacturer to ascertain that every material, product or system used in the Project does not contain asbestos. In the event the material, product or system is found to contain asbestos, the Contractor shall offer for the Architect's consideration a substitution which he knows does not contain asbestos.
3. Even though a material, product or system is specified or a specification is based on a particular material, product or system, the Contractor will not be relieved from the responsibility to ascertain that materials, products and systems used in the Project do not contain asbestos. Under no circumstances shall a material, product or system which is known, suspected or found to contain asbestos be used on the Project.
4. If a material, product or system containing asbestos is used, the Contractor shall remove and replace the material, product or system with one which is asbestos free at no additional expense to the Owner, including removal and replacement of other materials affected by the removal of the asbestos bearing material, product or system, i.e. gypsum wallboard removed, replaced, and repainted on account of insulation being removed, etc.

END OF SECTION

REQUEST FOR CLARIFICATION OR INTERPRETATION

PROJECT: ANNUAL ROOF AND WATERPROOFING MAINTENANCE CONTRACT
Santa Fe Independent School District

DATE SUBMITTED: _____

SUBMITTED BY: _____

FIRM: _____

IN MAKING THIS REQUEST, THE ABOVE CERTIFIES THAT HE HAS CAREFULLY STUDIED AND COMPARED THE PLANS AND SPECIFICATIONS WITH EACH OTHER AND HAS EXAMINED THE SITE AND LOCAL CONDITIONS.

MAIL OR FAX TO: PBK
11 Greenway Plaza, 22nd Floor
Houston, Texas 77046
Phone: (713) 965-0608
Fax: (713) 961-4571
Attention: Peter Saker

REQUESTED CLARIFICATION OR INTERPRETATION:

REQUESTS MUST BE RECEIVED BY PBK, INC. ALL CLARIFICATIONS OR INTERPRETATIONS WILL BE MADE BY ADDENDUM. INTERPRETATIONS, CORRECTIONS OR CHANGES MADE IN OTHER MANNER WILL NOT BE BINDING.

**SECTION AC
COMPETITIVE SEALED PROPOSAL FORM**

**ANNUAL ROOFING AND WATERPROOFING MAINTENANCE CONTRACT
SANTA FE INDEPENDENT SCHOOL DISTRICT**

**BASE PROPOSALS DUE NOVEMBER 9, 2017 @ 3:00 PM
SANTA FE ISD PURCHASING DEPARTMENT**

Submitted by: _____

Date: _____ Phone No.: _____

To: Board of Trustees
Santa Fe Independent School District
13304 Highway 6
P.O Box 370
Santa Fe, Texas 77510

Having examined Proposal and Contract Documents Prepared by PBK Facility Consulting Division, dated OCTOBER 30, 2017 contained herein and having examined site conditions, the undersigned proposes to furnish all labor, equipment and materials and perform all work for the completion of the above-named project for the sum indicated below.

In submitting his Proposal, the undersigned agrees to the following:

1. Hold proposal open for acceptance thirty (30) days.
2. Accept right of Owner to reject any or all proposals, to waive formalities and to accept proposal, which Owner considers most advantageous.
3. Enter into and execute the contract, if awarded, for the Base Proposal and/or the accepted Alternate Proposals.
4. Complete work in accordance with the Contract Documents within the stipulated contract time.
5. By signing, the undersigned affirms that, to the best of his knowledge, the Proposals have been arrived at independently and is submitted without collusion with anyone to obtain information or gain any favoritism that would in any way limit competition or give an unfair advantage over respondents in the award of this proposal.

I. BASE PROPOSALS

- A. Undersigned agrees to provide a minimum two (2) man repair crew for the lump sum per hour per man. Contractor to respond to District notification within two (2) hours of initial contact. All emergency repairs to be completed within twenty-four (24) hours and permanent repairs to be completed within five (5) working/business days. Material mark up shall not exceed a maximum of ten (10) percent.

_____ Dollars _____ / per man.
(Amount written in words governs) (Amount in figures)

- B. Contractor is to establish amount of travel time (portal to portal, if any) to be included per each purchase order. _____ Hours

II. ALLOWANCES

Not Applicable

III. UNIT PRICES

Unit Price No. 1: Replacement of through wall stainless steel receiver and waterproofing membrane:

Amount: _____ Dollars \$ _____ /LF
(Written amount) (Amount in figures)

IV. SCOPE OF WORK

The offeror shall submit the following information with this Proposal Form:

1. A designation of the work to be performed by the offeror with his own forces.
2. A list of names of subcontractors proposed for any portions of the work.
The undersigned proposes on attached "List of Subcontractors" the following subcontractors/sub-subcontractors for the indicated scope of work:

V. CONTRACT TIME

Contract is to be for a period of one calendar year from November 30, 2017 – June 30, 2018. Contract may be extended for four (4) additional years (from July 1st – June 30th for each year).

Contractor is to respond to district notification within two (2) hours. All emergency repairs to be completed within twenty-four (24) hours and permanent repairs to be completed within five (5) working/business days. Material mark up shall not exceed a maximum of ten (10) percent.

VI. ADDENDA

Undersigned acknowledges receipt of Addenda No.'s _____ dated _____ 2017.

All offerors are instructed to review the General and Supplementary Conditions of the contract for construction and any other applicable portion of the contract documents. By submitting a proposal, each offeror represents that the offeror has read and understands the proposal documents.

It is understood that the right is reserved by the Owner to reject any or all proposals, or waive any informalities in the proposal process.

Authorized Signature

Title

(Seal, if a Corporation)
State whether Corporation,
Partnership or Individual

Name of Contracting Firm

Address

Telephone

Date

DOCUMENT AC

COMPETITIVE SEALED PROPOSAL FORM

**PROPOSED PROJECT TEAM AND CONSTRUCTION SCHEDULE
ANNUAL ROOFING AND WATERPROOFING MAINTENANCE CONTRACT
SANTA FE INDEPENDENT SCHOOL DISTRICT**

Submitted by: _____

Date: _____ Phone No.: _____

To: Board of Trustees
Santa Fe Independent School District
13304 Highway 6
P.O Box 370
Santa Fe, Texas 77510

Having examined Proposal and Contract Documents prepared by PBK Architects, Inc., dated October 30, 2017 and having examined site conditions, the undersigned proposes to furnish all labor, equipment and materials and perform all work for the completion of the above-named project for the sum indicated below.

In submitting his Proposal, the undersigned agrees to the following:

1. Hold proposal open for acceptance thirty (30) days.
2. Accept right of Owner to reject any or all proposals, to waive formalities and to accept proposal which Owner considers most advantageous.
3. Enter into and execute the contract, if awarded, for the Base Proposal and accepted Alternate Proposals.
4. Complete work in accordance with the Contract Documents within the stipulated contract time.
5. By signing, the undersigned affirms that, to the best of his knowledge, the Proposals have been arrived at independently and is submitted without collusion with anyone to obtain information or gain any favoritism that would in any way limit competition or give an unfair advantage over respondents in the award of this proposal.

I. PROJECT SUPERINTENDENT AND PROJECT MANAGER

The undersigned proposes the following project team members (attach resumes).

Project Manager:

Project Superintendent:

II. OFFEROR'S OWN FORCES

The undersigned proposes to provide the following work using their own forces:

It is understood that the right is reserved by the Owner to reject any or all proposals, or waive any informalities in the proposal process.

(Seal, if a Corporation)
State whether Corporation,
Partnership or Individual

Authorized Signature

Title

Name of Contracting Firm

Address

Telephone

Date

Felony Conviction Notification

State of Texas Legislative Senate Bill No. 1, Section 44.034, Notification of Criminal History, Subsection (a), states “a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or owner or operator of the business entity has been convicted of a felony.” The notice must include a general description of the conduct resulting in the conviction of a felony.

Subsection (b) states “a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract.

This notice is not required of a publicly held corporation

I, the undersigned for the firm named below, certify that the information concerning notification of felony convictions has been by me and the following information furnished is true to the best of my knowledge.

Name of Vendor: _____
(please type or print)

Name of Company Official: _____
(please type or print)

A. My firm is a publicly held corporation; therefore, this reporting requirement is not applicable.

Signature of authorized agent: _____ **Date:** _____

B. My firm is not owned or operated by anyone who has been convicted of a felony.

Signature of authorized agent: _____ **Date:** _____

C. My firm is owned or operated by the following individuals who has/have been convicted of a felony.

Name of individual (s): _____

Details of conviction (s): _____

Signature of authorized agent: _____ **Date:** _____

AFFIDAVIT OF NON-COLLUSION

STATE OF TEXAS)
)
COUNTY OF FORT BEND)

AFFIDAVIT

By submission of this proposal, the undersigned certifies that:

- a. This proposal has been independently arrived at without collusion with any other Offeror or with any other competitor;
- b. This proposal has not been knowingly disclosed and will not be knowingly disclosed, to any other Offeror competitor or potential competitor, prior to the opening of proposals for this project;
- c. No attempt has been or will be made to induce any other person, partnership or corporation to submit or not submit a proposal;
- d. The undersigned certifies that he is fully informed regarding the accuracy of the statements contained in this certification, and that the penalties herein are applicable to the Offeror as well as to any person signing in his behalf.

Company

Printed Name

Signature

STATE OF TEXAS)
)
COUNTY OF FORT BEND)

Sworn to and subscribed before me at _____, Texas, this the _____ day of _____, 2017.

Notary Public in and for Fort Bend County, Texas

END OF DOCUMENT

AFFIDAVIT OF NON-DISCRIMINATORY EMPLOYMENT

STATE OF TEXAS)
)
COUNTY OF FORT BEND)

AFFIDAVIT

This Company, Contractor, or Subcontractor agrees to refrain from discrimination in terms and conditions of employment to the basis of race, color, religion, sex, or national origin, and agrees to take affirmative action as required by Federal Statutes and rules and Regulations issued pursuant thereto in order to maintain and insure non-discriminatory employment practices.

Company

Printed Name

Signature

STATE OF TEXAS)
)
COUNTY OF FORT BEND)

Sworn to and subscribed before me at _____, Texas, this the _____ day of _____, 2017.

Notary Public in and for Fort Bend County, Texas

END OF DOCUMENT

DOCUMENT AE

AFFIDAVIT OF NON-ASBESTOS, LEAD, AND PCB USE IN PROJECT

STATE OF TEXAS)
)
COUNTY OF FORT BEND)

AFFIDAVIT

Upon completion of this form, return to the Architect upon close-out of the project.

PROJECT: Roofing and Waterproofing
NAME Maintenance Contract
Address: Multi-Campus Project
 Santa Fe, TX

ARCHITECTS: PBK
11 Greenway Plaza, 22nd Floor
Houston, Texas 77046

OWNER: Santa Fe Independent
NAME School District
Address: 4133 Warpath Ave
 Santa Fe, TX 77510

Architect's Project No: 17287R

The undersigned affirms and certifies that "to the best of their knowledge and belief asbestos, lead, and PCB containing materials have not been used or incorporated into the Work and lead or lead bearing materials have not been incorporated into potable water systems", including, but not limited to those water systems for drinking fountains, all sinks, showers, bath tubs, residential and commercial kitchen equipment, ice machines, and hose bibbs, as applicable to the project, and that lead sheet flashing used in through roof plumbing penetration applications is the only lead on the Project.

Company

Printed Name

Signature

STATE OF TEXAS)
)
COUNTY OF _____)

Sworn to and subscribed before me at _____, Texas, this the _____ day of _____, 2017.

Notary Public in and for _____ County, Texas

END OF DOCUMENT

NOTE: THIS DOCUMENT MUST BE SUBMITTED AT PROJECT CLOSE-OUT

DOCUMENT AG

CONFLICT OF INTEREST QUESTIONNAIRE

INSTRUCTIONS

According to Local Government Code, Chapter 176, a person or an agent of a person who contracts or seeks to contract for the sale or purchase of property, goods, or services with Katy Independent School District must file a completed Conflict of Interest Questionnaire with the District Legal Department not later than the seventh business day after the date that the person begins contract discussions or negotiations with the District or submits to the District an application, response to a request for proposals or bids, correspondence, or another writing related to a potential agreement with the District.

This Conflict of Interest Questionnaire must be filed annually by September 1 as long as the person or the agent of the person continues to contract or seek to contract for the sale or purchase of property, goods, or services with the District or not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.

The completion of the Conflict of Interest Questionnaire is not needed if the person is an employee of a governmental entity and is acting in the employee's official capacity.

Explanation of the Conflict of Interest Questionnaire

1. Name of person doing business with the District.
2. Check the box if you are filing an update to a previously filed questionnaire.
3. Describe each affiliation or business relationship with an employee or contractor of the District who makes recommendations to a District officer with respect to expenditure of money. **If no affiliation or business relationship exists, state "NONE."**

Examples:

If your spouse, parent, or child is the District's Director of Purchasing and a bid is being submitted to the Purchasing Department, this relationship must be reported.

If your spouse, parent, or child is the Principal at a School and your business may sell items directly to that school, this relationship must be reported.

If you or your spouse, parent, or child is in business with a District employee that would be making a recommendation concerning a purchase or sales transaction involving you, the relationship must be reported.

If you employ or do business with a spouse, parent, or child of a District employee that would be making a recommendation concerning a purchase or sales transaction involving you, the relationship must be reported.

If you are a District employee and would be making a recommendation concerning a purchase or sales transaction involving you, the relationship must be reported.

If your spouse, parent, or child is a teacher that does not make recommendations concerning purchasing or sales transactions, this relationship should not be reported.

If your spouse, parent, or child is a Principal at a School and a bid is being considered by a separate department such as Facilities Planning (Construction Department), this relationship should not be reported.

4. Describe each affiliation or business relationship with a person who is a District officer and who appoints or employs a District officer that is the subject of this questionnaire. **If no affiliation or business relationship exists, state "NONE."**

Example:

If you or your spouse, parent, or child is related to, employs, or is in business with a District officer or their spouse, parent, or child, this relationship must be reported.

5. Name of District officer with whom you have an affiliation or business relationship.

For each person listed under question #4, complete page 2. If answers to A, B, and C are NO, indicate the name of the District officer, but do not complete section D.

6. Describe any other affiliation or business relationship that might cause a conflict of interest.

Example:

If your neighbor or friend is a District employee that would be making a recommendation concerning a purchase or sales transaction involving you and you feel that your relationship with this employee could affect their recommendation, this relationship must be reported.

If any other situation exists that would result in a conflict of interest, the relationship must be reported.

7. Sign and date this form.

Submit the completed form to the District. If any disclosures are indicated under questions #3 or #4, the form will be posted on the District's website.

END OF SECTION

DOCUMENT AH

CERTIFICATION OF CRIMINAL HISTORY RECORD INFORMATION

REVIEW BY CONTRACTOR-EMPLOYER

Certifying Affidavit submitted to:

Name of School District: Santa Fe Independent School District

Mailing Address: 13304 Highway 6
P.O Box 370
Santa Fe, Texas 77510

Project: Roofing and Waterproofing Maintenance Contract

STATE OF TEXAS §

COUNTY OF §

(1) The undersigned representative, on behalf of the contracting firm identified below, swears and affirms to Katy Independent School District (the "District") that such firm has obtained, reviewed and verified, from a law enforcement or criminal justice agency or a private entity that is consumer reporting agency governed by the Fair Credit Reporting Act (15 U.S.C. §§ 1681 et seq.) the criminal history record information of all employees hired **before January 1, 2008**, who (a) have or will have continuing duties related to the contracted services, and (b) have or will have direct contact with students. Such employees are identified by name on Schedule **A** attached hereto. The undersigned further swears and affirms no employees who meet the requirements of (a) and (b) herein and/or identified on Schedule **A** have been convicted of any offense identified in Section 22.085 of the Texas Education Code.

(2) The undersigned representative, on behalf of the contracting firm identified below, swears and affirms to the District, that such firm has obtained, reviewed and verified, from the Texas Department of Public Safety criminal clearinghouse, the national criminal history record information of all employees hired **on or after January 1, 2008**, who (a) have or will have continuing duties related to the contracted services, and (b) have or will have direct contact with students. Such employees are identified by name on Schedule B attached hereto. The undersigned further swears and affirms no employees who meet the requirements of (a) and (b) herein and/or identified on Schedule B have been convicted of any offense identified in Section 22.085 of the Texas Education Code.

(3) The undersigned firm swears and covenants that no present or future employee will provide services to the Project that involve direct contact with students unless and until such employee's national criminal history record information has been reviewed and cleared as required by Paragraph (2) above, and an updated Certification has submitted by the contracting firm to the District with an updated Schedule B identifying such employees. In the event of an emergency, an employee who has not been previously certified may only provide services that involve direct contact with students if such employee is escorted by a District representative.

(4) The undersigned firm swears and covenants that, upon receipt of information, directly or indirectly, that any employee of the contracting firm has been convicted of an offense identified in Section 22.085 of

NOTE: THIS DOCUMENT MUST BE SUBMITTED AT PROPOSAL OPENING

CERTIFICATION OF CRIMINAL HISTORY RECORD INFORMATION

the Texas Education Code, the contracting firm will immediately remove such employee from the Project and notify the District.

(5) Furthermore, if requested by the District, the name, driver's license number, and any other information required by the DPS will be submitted to the District for any person on either Schedule A or Schedule B.

_____, being duly sworn, affirms and certifies that he/she is the _____ (position) of _____ (contracting firm), and that all statements and acknowledgements contained herein are true and correct, and that he/she has the authority to bind such firm to the covenants set out above.

SUBSCRIBED AND SWORN TO BEFORE ME this _____ day of _____

Notary Public _____ State of _____

My Commission expires _____

NOTE: THIS DOCUMENT MUST BE SUBMITTED AT PROPOSAL OPENING

DOCUEMENT AI

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND
VOLUNTARY EXCLUSION-LOWER TIER COVERED TRANSACTIONS**

Per Title 34, Code of Federal Regulations, 80.35, "Grantees and subgrantees must not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549, "Debarment and Suspension."

(Before completing certification, read the instructions below.)

Please check one choice below:

The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

When the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name

Name and Title of Authorized Representative

Signature

Date

Instructions For Suspension/Debarment Certification Statement

1. *By signing and dating the certification statement, the bidder certifies that neither it nor any of its principals (e.g., key employees) has been proposed for debarment, debarred or suspended by a federal agency on the date signed.*

2. *The prospective bidder shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective bidder learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.*

3. *Federal and State penalties exist for vendors and districts that knowingly enter into contracts with suspended/debarred persons.*

NOTE: THIS DOCUMENT MUST BE SUBMITTED AT PROPOSAL OPENING

DOCUMENT BA

CONTRACT DOCUMENTS

1.1 CONSTRUCTION CONTRACT AGREEMENT

- A. The Contract for the construction of the project shall be executed by the successful Offeror on the 2007 Edition of AIA Document A101 "Standard Form of Agreement Between Owner and Contractor." Said contract, fully executed, shall be delivered to the Owner within ten (10) days of receipt of "Notice to Proceed."

1.2 CONDITIONS OF THE CONTRACT

- A. The General Conditions of the Contract for Construction, AIA Document A201, 2007 Edition, is hereby specifically made a part of the Contract Documents, whether attached hereto or not; and as supplemented and amended herein, constitutes the General Conditions.
- B. Supplementary Conditions:
 - 1. The Supplementary Conditions contain modifications to the General Conditions of the Contract for Construction, AIA Document A201. Where any part of that document is modified by Supplementary Conditions, the unaltered provisions of the General Conditions shall remain in effect. Refer to Section CB for the Supplementary Conditions of the Contract for Construction.

1.3 AVAILABILITY OF DOCUMENTS

- A. Printed copies of these documents may be examined in the Architect's office. A.I.A. Documents may be obtained from the Houston Chapter of the American Institute of Architects, 315 Capitol Street, Suite 120, Houston, Texas 77002; (713) 520-0155. Copies may also be obtained from local architects' supplies stores.
- B. Failure to obtain and examine these documents in no way relieves the Contractor, Subcontractors, Sub-subcontractors, and material suppliers of responsibilities incorporated in the Agreement.

END OF DOCUMENT

**AIA Document A201
2007 Edition**

(INSERT BEFORE SECTION CB)

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire is being filed in accordance with chapter 176 of the Local Government Code by a person doing business with the governmental entity.

By law this questionnaire must be filed with the records administrator of the local government not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of person doing business with local governmental entity.

2

Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than September 1 of the year for which an activity described in Section 176.006(a), Local Government Code, is pending and not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Describe each affiliation or business relationship with an employee or contractor of the local governmental entity who makes recommendations to a local government officer of the local governmental entity with respect to expenditure of money.

4 Describe each affiliation or business relationship with a person who is a local government officer and who appoints or employs a local government officer of the local governmental entity that is the subject of this questionnaire.

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

FORM CIQ

Page 2

5 Name of local government officer with whom filer has affiliation or business relationship. (Complete this section only if the answer to A, B, or C is YES.)

This section, item 5 including subparts A, B, C & D, must be completed for each officer with whom the filer has affiliation or business relationship. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income from the filer of the questionnaire?

Yes No

B. Is the filer of the questionnaire receiving or likely to receive taxable income from or at the direction of the local government officer named in this section AND the taxable income is not from the local governmental entity?

Yes No

C. Is the filer of this questionnaire affiliated with a corporation or other business entity that the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

Yes No

D. Describe each affiliation or business relationship.

6 Describe any other affiliation or business relationship that might cause a conflict of interest.

7

Signature of person doing business with the governmental entity

Date

SECTION 01 11 00

SUMMARY OF WORK

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. The project of the **Roofing and Waterproofing Maintenance Contract** consists of various roof and exterior building repairs and maintenance to schools for the Santa Fe Independent School District and will be awarded to a single contractor. Repairs will consist of, but not limited to, built-up tar and gravel roofs, multiple ply bitumen (smooth and granulated) roofs and metal roofs. In addition, waterproofing services such as, replacing exterior caulk joints at windows, doors, control joints expansion joints as well as repairs of through wall flashings will be required. Additional repairs/replacement of window/door frames and glazing. Contractor to respond to district notification within two (2) hours of initial contact. All emergency repairs to be completed within twenty-four (24) hours and permanent repairs to be completed within five (5) working/business days. Material mark up shall not exceed a maximum of ten (10) percent.
- B. Contractor (jointly with any subcontractors) shall guarantee that all repair/maintenance work required and performed under this contract will be free from defects in workmanship and materials and that the building will be, and will remain, waterproof for a two (2) year warranty period.
- C. Contractor (jointly with any subcontractors) shall guarantee that all new/replacement work required and performed under this contract will be free from defects in workmanship and materials and that the building will be, and will remain waterproof for a five (5) year warranty period.

1.2 CONTRACTS AND USE OF SITE

- A. Confine operations at site to areas permitted by:
 - 01 Law
 - 02 Ordinances
 - 03 Permits
 - 04 Contract Documents
- B. Do not unreasonably encumber site with materials or equipment.
- C. Assume full responsibility for protection and safekeeping of products stored on premises.
- D. Obtain and pay for use of additional storage or work areas as needed for operations.

1.3 QUALITY ASSURANCE - (CONTRACTOR)

- A. Applicator shall have approval by manufacturer of accepted roofing system for application and issuance of specified warranty for a minimum of three (3) years. Proof of license agreement dated at least three (3) years prior to date of proposal opening.
- B. Applicator shall be an experienced single firm specializing in the type of roofing and sheet metal work specified with a minimum of five (5) years of previous successful experience on projects similar in size and scope.

- C. No subcontracting of sheet metal fabrication or installation will be accepted. Contractor must have a sheet metal shop on the company premises
- D. No subcontracting of waterproofing installation will be accepted. Contractor must have a waterproofing division as part of the company premises.
- E. Applicators must have a competent Superintendent, who is not actually performing roofing work, on site at all times while work is in progress and with full authority to act on behalf of the Contractor as his agent.
- F. All workmen shall be covered by Workman's Compensation insurance (verify upon request) and thoroughly experienced in the particular class of work upon which employed. Use of undocumented workers will not be tolerated – NO EXCEPTIONS.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Refer to Specification Sections.

PART 3 - EXECUTION

3.1 SCHEDULE

- A. The Owner has a critical need for the Contractor to respond to district notification within two (2) hours of initial contact. All emergency repairs to be completed within twenty-four (24) hours and permanent repairs to be completed within five (5) working/business days. Material mark up shall not exceed a maximum of ten (10) percent.
- B. Contract is to be for a period of one calendar year from November 28, 2017 – June 30, 2018. Contract may be extended for four (4) additional years (from July 1st – June 30th each year).

END OF SECTION

SECTION 01 22 00

MEASUREMENT AND PAYMENT

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Measurement and payment criteria applicable to portions of the Work performed under a labor and material basis.
- B. Defect assessment and non-payment for rejected work.

1.2 AUTHORITY

- A. Measurement methods delineated in the individual specification sections complement the criteria of this Section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. The Architect will verify measurements and quantities.

1.3 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Contract Documents are for proposal and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Architect determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.4 MEASUREMENT OF QUANTITIES

- A. Measurement Devices:
 - 1. Weigh Scales: Inspected, tested and certified by the applicable State Weights and Measures Department within the past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
 - 3. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.
- B. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- C. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- D. Measurement by Area: Measured by square dimension using mean length and width or radius.
- E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- F. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

PAYMENT

- A. Payment Includes: Full compensation for all required labor, Products, tools, equipment, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Architect multiplied by the unit/sum price for Work which is incorporated in or made necessary by the Work.

1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.
- C. The authority of the Architect to assess the defect and identify payment adjustment, is final.

1.7 NON-PAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for any:
 - 1. products wasted or disposed of in a manner that is not acceptable.
 - 2. products determined as unacceptable before or after placement.
 - 3. products placed beyond the lines and levels of the required Work.
 - 4. products remaining on hand after completion of the Work.
 - 5. loading, hauling and disposing of rejected Products.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 DOCUMENTATION OF WORK

- A. Contractors employees shall sign in at each buildings main office to establish time arrived at building. After completing the inspection and repair work, contractor shall sign out to establish completion time of work and then notify Architect work is ready for inspection.
- B. Architect will inspect work for accuracy workmanship, and proper billing quantities for each repair within five (5) days
- C. Architect will sign off on acceptable work and submit to owner for processing. Unacceptable work will be rejected; rejected work will be brought to contractor's attention for corrections. Corrections must be completed within five (5) days.

Unit Price No. 1: Replacement of through wall stainless steel receiver and water proofing membrane:

- 1. Unit Price shall be for entire unit cost including overhead and profit to replace through wall receiver and waterproofing membrane which is not shown on the drawings, but which is found to be required.
- 2. The units to be used shall be dollars per linear foot for adding or deleting units of work to or from that required by the Base Proposal.
- 3. Refer to Specification Sections for materials.
- 4. Enter unit price on Proposal Form.

END OF SECTION

MEASUREMENT AND PAYMENT

01 22 00 - 2

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Change procedures.
- B. Defect assessment.

1.2 GENERAL

- A. Coordinate requirements of this Section with the requirements of the General and Supplementary Conditions of the Contract concerning change procedures.

1.3 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Minor Changes: The Architect/Engineer may advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on Minor Change form or by other similar documents in the form issued by the Architect.
- C. Change Proposal Request: The Architect may issue a Change Proposal Request (CPR) or other similar request for proposal in the form issued by the Architect, including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate in the form of a Change Proposal so as to not cause delays in the Project.
- D. Use of allowances must be approved by issuance of Allowance Expenditure Authorization (AEA) by Architect prior to modification of the schedule of values. The AEA may be comprised of a single executed Change Proposal, an accumulation of executed Change Proposals, or other similar documentation in the form allowed by the Architect in accordance with Document CB, Supplementary Conditions of the Contract.
- E. Contractor may propose changes which, in his opinion, will provide value to the Owner, by submitting a request for change to Architect, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors. If accepted by Architect and approved by Owner, submit a Change Order in accordance with the requirements of this Section. This request will not be considered a substitution except as defined by Section 01 25 13, Product Substitution Procedures. Owner is not obligated to accept this request.
- F. Construction Change Directive: Architect/Engineer may issue directive, on AIA Form G713 Construction Change Directive or other similar document in the form issued by the Architect, and signed by Owner, instructing Contractor to proceed with change in the

Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.

- G. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- H. Change Order Forms: AIA G701 - Change Order.
- I. Execution of Change Orders: The Architect will prepare and sign the Change Order, the contractor shall sign the Change Order indicating acceptance of the change, and then the Owner will execute the Change Order.
- J. Correlation Of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
 - 2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
 - 3. Promptly enter changes in Project Record Documents.

1.4 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements at no additional cost to the Owner.
- B. If, in the opinion of the Architect/Engineer or Owner, it is not practical to remove and replace the Work, the Architect will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but sum/price will be adjusted to new sum/price at the discretion of Architect or Owner.
- D. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
- E. Authority of Architect/Engineer, or other appropriate agent identified to perform assessment by the Architect/Engineer or Owner, to assess defects and identify payment adjustments, is final.
- F. Non-Payment For Rejected Products: In addition to replacement of rejected Work, payment will not be made for rejected products for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 29 73

SCHEDULE OF VALUES

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide a detailed breakdown of the agreed Contract Sum showing values allocated to each of the various parts of the work, as specified herein and in other provisions of the Contract Documents for the Work.

1.2 QUALITY ASSURANCE

- A. Use required means to assure arithmetical accuracy of the sums described.
- B. When so required by the Owner, provide copies of the subcontracts or other data acceptable to the Owner, substantiating the sums described.

1.3 SUBMITTALS

- A. Prior to the first Application for Payment, submit a proposed schedule of values to the Owner, as outlined below:
 - 1. Meet with the Owner and determine additional data, if any, required to be submitted.
 - 2. Secure the Owner's approval of the schedule of values prior to submitting first Application for Payment.

1.4 SCHEDULE OF VALUES

- A. The Schedule of Values shall be broken down into item costs for each specification section as a minimum. After review by the Owner, the Schedule of Values shall be broken down into further items as required. (See following list, Supplemental Conditions, and refer to the attached sample.)
 - 1. The Schedule of Values shall be subdivided by Areas, to match the drawings. Each trade must break down their amounts by floor plan area. Refer to the attached sample.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 SCHEDULE OF VALUES

- A. Refer to following sample.

END OF SECTION

SECTION 01 29 73

SCHEDULE OF VALUES - SAMPLE

Item No.	Description of Work	Scheduled Value	Work Completed		Stored Materials	Total Completed	%	Balance To Finish	Retainage
			Previous App.	This App.					
	Div. 1 General								
	General Conditions								
	Supervision								
	Mobilization								
	Bonds and Insurance								
	Permits								
	Cleaning and Dumpsters								
	Final Cleaning								
	Close Out Documents								
	Div. 6 - Wood & Plastics								
	Rough Carpentry - Labor								
	Rough Carpentry - Mats								
	Millwork - Labor								
	Millwork - Mats								
	Div. 7 - Thermal and Moisture Protection								
	Waterproofing - Materials								
	Waterproofing - Labor								
	Metal Roof - Labor								
	Metal Roof - Mats								
	Metal Roof Guarantee								
	Built-up Roofing-Labor(Tear-Off)								
	Built-up Roofing-Labor(Installation)								
	Built-up Roofing-Mats								
	Built-up Roofing Guarantee								
	Building Sheet Metal - Labor								
	Building Sheet Metal - Mats								
	Bldg. Sheet Metal Guarantee								
	Roof Curbs								
	Roof Hatches								
	Pipe Supports on Roof								
	Insulated Skylight - Materials								
	Insulated Skylight - Labor								
	Sealants								
	Close Out Documents								
	Allowances								
	Owners Allowance								
	Unit Price Allowance								
	A. AEA 1								
END OF SECTION									

SECTION 01 35 16

ALTERATION PROJECT PROCEDURES

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. This Section contains general provisions and requirements pertaining to all remodeling, removal and relocation of Work in the existing building and becomes a part of each Section and Division performing remodeling, removal and relocation Work for this Project with the same force and effect as if written in full therein.
- B. Take all necessary precautions to keep trespassers out of the Work areas. Secure Work areas from entry when Work is not in progress.
- C. Perform all alterations, remodeling, demolition, removal and relocation of Work in strict accordance with Owner's instructions and applicable Federal, State and local health and safety standards, codes and ordinances. Where conflicts occur, the more restrictive requirement shall govern.

1.2 RELATED WORK

- A. Section 02050 - Selective Demolition

1.3 EXISTING CONDITIONS

- A. Obvious existing conditions, installations and obstructions affecting the Work shall be taken into consideration as necessary Work to be done, the same as though they were completely shown or described.
- B. Items of existing construction indicated to remain upon completion of the Contract, but which require removal to complete the Work, shall be carefully removed and replaced as required. The replaced Work shall match its condition at the start of the Work unless otherwise required.
- C. Visit the site to determine by inspection all existing conditions, including access to the site, the nature of structures, objects and materials to be encountered, and all other facts concerning or affecting the Work. Information on the Drawings showing existing conditions does not constitute a guarantee that other items may not be found or encountered.
- D. Utilities: Do not interrupt existing utilities serving occupied or used facilities, except when authorized by the Architect in writing two (2) weeks in advance. Provide temporary services during interruptions to existing utilities.

PART 2 - PRODUCTS

2.1 SALVAGED MATERIALS

- A. The Owner reserves the right of first refusal on all salvage items. Remove remaining items from the site as Work progresses. Storage or sale of items on site is not permitted. Burning or burying of removed materials on site is not permitted.

- B. Store salvaged items in a dry, secure place on site.
- C. Salvaged items not required for use in repair of existing Work shall remain the property of the Owner.
- D. Do not incorporate salvaged or used material in new construction except with permission of the Architect.

2.2 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

- A. Contract Documents do not define products or standards of workmanship present in existing construction. Determine products by inspection and by use of the existing. Provide same or similar quality products or types of construction as that in existing structure when needed to patch or extend existing Work.
- B. If reasonably matching products are not obtainable, improve appearance by minor relocating of some existing products and grouping new ones in some pattern arranged by the Architect. Do not replace products scheduled for retaining because matching ones are not obtainable, except as directed by Change Order.

PART 3 - EXECUTION

3.1 PROTECTION OF WORK TO REMAIN

- A. Protect existing Work from damage. Use barricades, tarpaulins, temporary walls, plywood, planking, masking, or other suitable means and methods as approved by the Architect.
- B. If Work to remain in place is damaged, restore to original condition at no additional cost to the Owner.
- C. Concealed Conditions: If conditions cause changes in the Work from requirements of the Contract Documents, the Contract Sum will be adjusted in accordance with the General Conditions.

3.2 PROCEDURES

- A. Refinishing At Removed Work: Cut below surface of substrate materials and patch over area of removal with finish materials so removal is not apparent.
- B. Remove and replace existing ceilings, and cut, patch, or replace existing walls, partitions and floors as may be necessary for access to valves, piping, conduit and tubing by mechanical and electrical trades as directed and approved by the Architect, and performed by the appropriate subcontractor for the Work involved, or by other properly qualified subcontractors.
- C. Patch and extend existing Work using skilled mechanics who are capable of matching existing quality and workmanship. Quality of patched or extended Work shall be not less than that specified for new Work.
- D. Cutting:
 - 1. Concrete and Masonry: Saw cut where feasible.
 - 2. Plaster: Cut back to sound plaster on straight lines, and back-bevel edges of remaining plaster. Trim and prepare existing lath for tying of new lath.
 - 3. Woodwork: Cut back to a joint or panel line. Undamaged removed materials may be reused.

4. Resilient Tiles: Remove in whole units to natural breaking points or straight joint lines with no damaged or defective existing tiles remaining where joining new construction.
 5. Salvaged Materials: Carefully remove to avoid damage, thoroughly clean and reinstall as indicated, or as directed.
 6. Structural Elements: Remove only as shown on the Structural Drawings. If not specifically shown, but removal is required, perform such removal or alteration only upon written approval of the Architect. Do not damage or alter any structural element of the existing building.
- E. Patching:
1. Match existing Work where possible; if unavailable, use salvage material for patching and provide totally new material in areas where salvage has been removed; consult with the Architect concerning locations for salvaging materials.
 2. Repairs or continuations of existing Work shall be relatively imperceptible in the finished Work when viewed under finished lighting conditions from a distance of six (6) feet.
 3. Patching, Repairing and Finishing of Existing Work: Perform in compliance with the applicable requirements of the Specification Section covering the Work to be performed and the requirement of this Section.
- F. Erect scaffolding as necessary to gain access to the various parts of the Work. Provide structurally sound, rigidly braced and properly constructed scaffolding, shoring and bracing as necessary to positively protect the affected elements and building, and to support the activities or workmen and loads. Design and construction of scaffolds and supports shall be in accordance with applicable safety regulations. Material used shall be adequate to support anticipated loads with a properly calculated margin of safety.
- G. Noise Producing Equipment: Minimize use of noise producing equipment. Limit excessive noise to periods of vacancy or provide sound control. Arrange schedules in advance with the Architect.

3.3 DISPOSAL OF DEBRIS

- A. Remove material, debris and rubbish resulting from Work of this Section from the building and site as it accumulates. Keep all areas of Work in "broom clean" condition as the Work progresses.
- B. At completion of renovation and remodeling Work in each area, provide final cleaning and return space to a condition suitable for use by the Owner.

END OF SECTION

SECTION 01 41 00

CODES, REGULATIONS AND STANDARDS

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality Assurance.
- B. References Standards.
- C. Definitions.
- D. Abbreviations.
- E. Format and Specification Context Explanations.
- F. Drawing Symbols.
- G. General Requirements.

1.2 QUALITY ASSURANCE

- A. General:
 - 1. For products or workmanship specified by a standard of an association, trade, or Federal standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable code authorities having jurisdiction.
 - 2. The contractual relationship of the parties to the Contract should not be altered from the Contract Documents by mention or inference otherwise in any reference standard.
 - 3. Obtain copies of standards when required by Contract Documents.
 - 4. Maintain copy of standards at jobsite during submittals, planning, and progress of the specific work for which the standards pertain, until the date of Substantial Completion.
 - 5. In the absence of specific instructions in the specifications, materials, products, equipment and their installation shall conform to the applicable codes, regulations and standards specified therein. When a conflict exists between the applicable code, regulation and standard and that specified, the more stringent code regulation or standard shall prevail, except as authorized by applicable authorities having jurisdiction.
- B. Specifications and Drawings: The Drawings and Specifications are correlative and have equal authority and priority. Base disagreements in themselves or in each other on the most expensive combination of quantity and quality of work indicated. In the event of such disagreement bring it to the attention of the Architect, who will determine the appropriate method to perform the work.
- C. Industry Standards: Where compliance with two (2) or more industry standards or sets of requirements are specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement is intended and will be enforced, unless specifically detailed language written into Contract Documents clearly indicates that a less stringent requirement is to be fulfilled.

- D. Refer apparently equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to the Architect for a decision before proceeding.
- E. Contractor's Option: Except for overlapping or conflicting requirements, where more than one (1) set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether or not it is specifically indicated as such.
- F. Minimum Quality/Quantity: In every instance, the quality level or quantity shown or specified is intended to be the minimum for the work to be performed or provided. Except as otherwise specifically indicated, the actual work may either comply exactly with the minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of requirements. Refer instances of uncertainty to Architect for decision before proceeding.
- G. Specialists; Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists, who are engaged for performance of work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with applicable regulations, union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of requirements remains with the Contractor.

1.3 REFERENCE STANDARDS

- A. Dates of codes, regulations and standards specified shall be the latest date of issue of that code, regulation or standard prior to the date of issue of this Project Manual or Document, except as modified or otherwise directed by the applicable codes and their supplements and amendments adopted by the code authorities having jurisdiction.
 - 1. Date of Issue - The "date of issue" as it appears in the statement above, means the date which appears on the cover of the Project Manual or Document corresponding to the date of issue of the Contract Documents.
 - 2. Code Authorities: The "code authorities" as it appears in the statement above, means the authorities responsible for code enforcement.

1.4 DEFINITIONS

- A. General Explanation: A substantial amount of specification language consists of definitions for terms found in other Contract Documents, including those in the AIA A201 General Conditions of the Contract for Construction, Supplementary Conditions, the Drawings, and the Specifications. Drawings must be recognized as being diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in the Contract Documents are defined in the General Conditions, Supplementary Conditions, and in this Section. Definitions and explanations contained in this Section are not necessarily either complete or exclusive, but are general for this Work to the extent that they are not stated more explicitly in another element of the Contract Documents. In the event of a conflict in definitions or explanations within the Contract Documents or whenever there is need of clarification or interpretation of definitions within or between the Contract Documents, notify the Architect immediately and proceed as directed. Except in cases where definitions are determined by code authorities having jurisdiction, the Architect's interpretation of all definitions will take precedence.

- B. General Requirements: The provisions or requirements of Division 1 - Sections apply to entire Work of Contract and, where indicated, to other elements which are included in the Project.
- C. Special Conditions: Wherever the term "Special Conditions", appears in the Contract Documents, it refers collectively to all requirements of the Owner in addition to the sections in Division 1, General Requirements, and to Articles contained in the General Conditions and Supplementary Conditions.
- D. Architect: Wherever the term "Architect" appears in the Contract Documents, it means PBK Architects, Inc., 11 Greenway Plaza, 22nd Floor Houston, Texas 77046, (713) 965-0608, or their authorized representative(s).
- E. Bid, Competitive Bid Proposal (CBP), Response, Offer, etc.: Wherever the term "Bid", "Competitive Bid Proposal (CBP)", "Response", "Offer", "Proposal", or "Competitive Sealed Proposal" appears in the Contract Documents, they mean one and the same, and shall mean Competitive Sealed Proposal, which by definition allows Owner to accept the "best value" for the school district based on factors other than cost in selecting the Contractor.
- F. Contractor, General Contractor, etc.: Wherever the term "Contractor", "General Contractor", "Prime Contractor", "Bidder", "Bidder/Vendor", "Vendor", "Installer", "Integrator", "Subcontractor", "Respondent", "Offeror" or any derivative thereof, or similar term appears in the Contract Documents, they mean one and the same, and shall refer to the entity (person or firm) licensed and meeting all applicable regulations of the State of Texas and Department of Labor to perform the Work, or their authorized representative(s).
1. Responsibilities: To avoid any misunderstanding or lack of interpretation, the responsibility for performing the Work is totally that of the entity defined above, and the resolutions proposed in his shop drawings and related documentation shall be demonstrated throughout the Work and specified warranty period.
 2. In the event of a controversy involving the Contract Documents or interpretation of Project requirements, the decision of the Architect will take precedence.
- G. Consultant: Wherever the term "Consultant", or any derivative thereof appears in the Contract Documents, it means the following to whom that portion of the work applies.
1. Consultants:
 - a. Facility Consultant: PBK Facility Consultants, 11 Greenway Plaza, 22nd Floor, Houston, Texas 77046, (713) 965-0608, or their authorized representative(s).
- H. Indicated: Wherever the term "indicated", or any derivative thereof appears in the Contract Documents, it means a cross-reference to graphic representations, notes, or schedules on Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for the purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- I. Directed, Requested, Etc: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" or any derivative thereof appears in the Contract Documents, it means as "directed by the Architect", "requested by the Architect", and similar phrases with actions taken by the Architect. However, no meaning or otherwise shall be interpreted to extend the Architect's responsibility into Contractor's area of construction supervision.

- J. Approve: Wherever the term “Approve”, or any derivative thereof appears in the Contract Documents, it means only the Architect, or an individual designated by him as his representative, can approve or disapprove contract actions. Even if the specifications indicate that an individual other than the Architect, such as the “Engineer” or “Consultant” will approve or disapprove an action, it is understood that only the Architect has this authority unless the individual is so designated by him in writing. Even when an individual is so designated, the Contractor may appeal the action to the Architect and the Architect’s decision will be final. In no case will “approval” by the Architect be interpreted as a release of the Contractor from responsibility to fulfill requirements of the Contract Documents.
- K. Furnish: Wherever the term “Furnish”, or any derivative thereof appears in the Contract Documents, it means supply or deliver to Project site, ready for unloading, unpacking, assembly, erection, placing, installing, anchoring, applying, curing, finishing, protecting, cleaning and similar operations, as applicable in each instance.
- L. Install: Wherever the term “Install”, or any derivative thereof appears in the Contract Documents, it means performing the operations at the Project site, of unloading, unpacking, assembly, erection, placing, installing, anchoring, applying, curing, finishing, protecting, cleaning and similar operations, as applicable in each instance.
- M. Provide: Wherever the term “Provide”, or any derivative thereof appears in the Contract Documents, it means furnish and install at the Project site, complete and ready for intended use, as applicable in each instance.
- N. Project, Site: Wherever the term “Project”, “Site”, or similar such term appears in the Contract Documents, it means the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing work as part of the Project. The extent of project or site is shown on the Drawings, and may or may not be identical with description of land upon which Project is to be built.
- O. District, School District, Owner, etc.: Wherever the term “District”, “School District”, “Owner”, “Katy ISD”, “KISD”, or similar such term appears in the Contract Documents, it means the Katy Independent School District, 20380 Franz Road Katy, Texas 77449 or its authorized representative(s).
- P. Installer: Wherever the term “Installer”, or any derivative thereof appears in the Contract Documents, it means the entity (person or firm) engaged by the Contractor or its subcontractor or sub-subcontractor for performance of a particular unit of work at the Project, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in operations they are engaged to perform.
- Q. Specialist: Wherever the term “Specialist”, or any derivative thereof appears in the Contract Documents, it means an individual or firm of established reputation (or if newly organized, whose personnel have previously established a reputation in the same field), which is regularly engaged in, and which maintains a regular force of workmen skilled in either (as applicable) manufacturing or fabricating items required by the Contract, installing items required by the Contract, or otherwise performing work required by the Contract. Where the Contract Specification requires installation by a specialist, that term shall also be deemed to mean either the manufacturer of the item or firm who will perform the work under the manufacturer’s direct supervision.
- R. Testing Laboratory: Wherever the term “Testing Laboratory”, or any derivative thereof appears in the Contract Documents, it means an independent entity engaged to perform

specific inspections or tests of the work, either at the Project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

1.5 FORMAT AND SPECIFICATION CONTEXT EXPLANATIONS

- A. Underscoring: Is used strictly to assist reader of specification text in scanning text for key words (for quick recall). No emphasis on or relative importance is intended where underscoring is used.
- B. Capitalization: Except for manufacturer, product, or trademark names, capitalization is used strictly to assist reader of specification text in scanning text for key words (for quick recall). No emphasis on or relative importance is intended where capitalization is used.
- C. Imperative language: Is used generally in specifications. Except as otherwise indicated, requirements expressed imperatively are to be performed by Contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or when so noted, by others.
- D. Section Numbering: Is used to facilitate cross-reference in Contract Documents. Sections are placed in Project Manual in numeric sequence; however, numbering sequence is not complete, and listing of sections at beginning of Project Manual must be consulted to determine numbers and names of specification sections in Contract Documents.
- E. Page Numbering: Pages are numbered independently for each section. The section number is shown preceded by the project number and followed by the page number at the bottom of each page, to facilitate the location of text. The project number is given to identify the project, for which specification was written, should the section become separated from the Project Manual.
- F. Specifying Methods: The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive, "open-generic descriptive", "compliance with standards", "performance", or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
- G. Abbreviations: The language of Specifications and other Contract Documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Actual work abbreviations of a self-explanatory nature have been included in texts. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in section at first instance of use. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the Contract Documents so indicates. A list of typical abbreviations, includes, but is not limited to the following trade associations and organizations. Refer to Drawings and other Contract Documents for other abbreviations.

Acoustical Society of America	ASA
Adhesive & Sealant Council, Inc.	ASC
Air Conditioning & Refrigeration Institute	ARI
Aluminum Association	AA
American Association of State Highway and Transportation Officials	AASHTO
American Concrete Institute	ACI

American Council of Independent Laboratories	ACIL
American Hardboard Association	AHA
American Hotdip Galvanizers Association	AHGA
American Institute of Architects	AIA
American Institute of Steel Construction	AISC
American Institute of Timber Construction	AITC
American Iron & Steel Institute	AISI
American National Standards Institute, Inc.	ANSI
American Plywood Association	PA
ASTM International	ASTM
American Society of Civil Engineers	ASCE
American Society of Heating, Refrigeration, and Air Conditioning Engineers	ASHRAE
American Society of Mechanical Engineers	ASME
American Society of Professional Engineers	ASPE
American Subcontractors Association	ASA
American Welding Society	AWS
American Wood Preserver's Institute	ASPI
Architectural Aluminum Manufacturer's Assn.	AAMA
Architectural Woodwork Institute	AWI
Asphalt Institute	AI
Associated General Contractors of America	AGC
Brick Institute of America	BIA
Building Research Institute	BRI
California Redwood Association	CRA
Chain Link Fence Manufacturers Institute	CLFM
Concrete Reinforcing Steel Institute	CRSI
Construction Specifications Institute	CSI
Door and Hardware Institute	DHI
Facing Tile Institute	FTI
Federal Specifications	FS
Flat Glass Marketing Association	FGMA
Gypsum Association	GA
Hardwood Plywood Manufacturers Association	HPMA
International Conference of Building Officials	ICBO
Institute of Electrical and Electronic Engineers	IEEE
Joint Sealer Manufacturers Association	JSMA
Maple Flooring Manufacturers Association	MFMA
Metal Lath Association	MLA
National Association of Architectural Metal Manufacturers	NAAMM
National Association of Mirror Manufacturers	NAMM
National Bureau of Lathing & Plastering	NBLP
National Clay Pipe Institute	NCPI
National Concrete Masonry Association	NCMA
National Electrical Manufacturers Assn.	NEMA
National Environmental Systems Contractors	NESC
National Fire Protection Association	NFPA
National Forest Products Association	NFPA
National Hardwood Lumber Association	NHLA
National Ornamental Metal Manufacturers Assn	NOMMA
National Paint, Varnish and Lacquer Assn.	NPVLA
National Ready Mixed Concrete Assn.	NRMCA
National Roofing Contractors Association	NRCA
National Society of Professional Engineers	NSPE
National Woodwork Manufacturers Assn., Inc.	NWMA

Painting and Decorating Contractors of America	PDCA
Perlite Institute, Inc.	PI
Portland Cement Association	PCA
Resilient Floor Covering Institute	RFCI
Rubber and Vinyl Floor Council	RVFC
Southern Building Code Congress	SBC
Southern Forest Products Association	SFPA
Southern Hardwood Lumber Manufacturing Assn.	SHLMA
Sheet Metal and Air Conditioning Contractors National Association	SMACNA
Steel Deck Institute	SDI
Steel Door Institute	SDI
Steel Joist Institute	SJI
Steel Structures Painting Council	SSPC
Tile Council of America, Inc.	TCA
Underwriter's Laboratories, Inc.	UL
Venetian Blind Institute	VBI
Vinyl Fabrics Institute	VFI
West Coast Lumber Inspection Bureau	WCLIB
Western Red Cedar Lumber Association	WRCLA
Western Wood Products Association	WWPA

1.6 DRAWING SYMBOLS

- A. General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols defined by "Architectural Graphic Standards", published by the American Institute of Architects (AIA) and John Wiley & Sons, Inc., latest edition. Refer instances of uncertainty to Architect for clarification before proceeding.
- B. Mechanical/Electrical Drawings: Graphic symbols used in Mechanical/Electrical Drawings are generally aligned with symbols recommended by American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE). Where appropriate, those symbols are supplemented by more specific symbols as recommended by other recognized technical organizations, including, but not limited to American Society of Mechanical Engineers (ASME), American Society of Professional Engineers (ASPE), Institute of Electrical and Electronic Engineers (IEEE) and similar organizations. Refer instances of uncertainty to Architect for clarification before proceeding.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. Definition: "Cutting and Patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original undamaged condition, including original fire rating of fire rated construction.
 - 1. Cutting and patching is performed for coordination of the work for access or inspection, to obtain samples for testing, as indicated or required, to permit alterations to be performed, or for other similar purposes.
 - 2. Cutting and patching performed during the manufacture of products or during the initial fabrication, erection, or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching".
- B. Refer to other Sections of these Specifications for specific cutting and patching requirements and limitations applicable to individual units of work.
 - 1. Unless otherwise specified, requirements of this Section also apply to mechanical and electrical work.

1.2 QUALITY ASSURANCE

- A. Visual requirements - Do not cut and patch work exposed on the building's exterior or in its occupied spaces, in a manner that would, in the Architect's opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and repair or replace work judged by the Architect to be cut and patched in a visually unsatisfactory manner

1.3 RELATED WORK

- A. All Sections of Work requiring cutting and patching, including electrical requirements.

1.4 SUBMITTALS

- A. Procedural Proposal for Cutting and Patching - Where prior approval of cutting and patching is required, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal.
 - 1. Describe nature of the work and how it is to be performed, indicating why cutting and patching cannot be avoided. Describe anticipated results of the work in terms of changes to existing work, including structural, operational, and visual changes as well as other significant elements.
 - 2. List products to be used and firms including their qualifications, that will perform the work.
 - 3. Give dates when work is expected to be performed.
 - 4. List utilities that will be disturbed or otherwise be affected by work, including those that will be relocated and those that will be disconnected or out-of service temporarily. Indicate how long utility service will be disrupted.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General - Except as otherwise indicated or as directed by Architect, use materials for cutting and patching that are identical to materials being cut and patched. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal or better performance characteristics.
 - 1. The use of trade name and supplier's name and address is to indicate a possible source of the material or product. Product of the same type from other sources shall not be excluded provided they possess like physical and functional characteristics, except where specified as no substitutions allowed or where a material or product is specified as the basis of specification and no other approved manufacturers are listed.
 - 2. Use materials, products, and devices to maintain integrity of fire rating of existing fire rated construction which comply with the requirements of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Before starting work, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.
 - 1. Before the start of cutting work, meet at the work site with all parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict between the various trades. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

3.2 PREPARATION

- A. Provide temporary support to prevent failure of the work to be cut.
- B. Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions of that part of the Project that may be exposed during cutting and patching operations.
- C. Take precautions not to cut existing pipe, conduit, ducts, or wires serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General - Employ only skilled workmen to perform the cutting and patching work. Except as otherwise indicated or as approved by Architect, proceed with cutting and patching at the earliest feasible time and complete the work without delay.
- B. Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible, review proposed cutting and patching procedures with the original installer and comply with original installer's recommendations.
 - 1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a Carborundum saw or core drill to insure a neat hole. Cut holes and slots neatly to size required with minimum

- disturbance of adjacent work. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.
2. Comply with requirements of other applicable sections where cutting and patching requires excavating and backfilling.
 3. By-pass utility services such as pipe and conduit, before cutting, where such utility services are shown or required to be removed, relocated, or abandoned. Cut-off conduit and pipe in walls or partitions to be removed. After by-passing and cutting, cap, valve, or plug and seal tight remaining portion of conduit and pipe to prevent entrance of moisture, vermin, or other foreign matter.
- C. Patching - Patch with seams which are durable and as invisible as possible. Comply with specified tolerance, if any, for the work.
1. Where feasible, inspect and test patched areas to demonstrate integrity of work.
 2. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.
 3. Where removal of walls or partitions extends one finished area into another finished area, patch and repair floor, wall, and ceiling surfaces in the new space to provide an even surface of uniform color and appearance. If necessary to achieve uniform color and appearance, remove existing floor and wall coverings or materials, and ceiling finish materials and replace with new materials.
 - a. Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing patch, after patched area has received prime and base coats.
 4. Patch, repair, or reinstall existing ceilings as necessary to provide an even plane surface of uniform appearance.
- D. Fire Rated Construction - Where cutting and patching is necessary in existing fire rated construction, use sealants and other fire resistive materials, products, and devices as required and acceptable by the authorities having jurisdiction to repair, patch, and otherwise restore original fire rating and integrity of construction.

3.4 CLEANING

- A. Thoroughly clean area and spaces where work is performed or used as access to work. Remove completely paint, mortar, cement, oils, putty, sealants, and items of similar nature. Thoroughly clean piping, conduit, and similar features before painting or other finishes are applied. Restore damaged pipe covering to its original undamaged condition.

END OF SECTION

SECTION 02 41 13

SELECTIVE DEMOLITION

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Partial demolition of existing building(s) as required to accommodate work including, but not limited to:
 - 1. New roofing, flashing and related work.
 - 2. Removal of existing mechanical, electrical, and plumbing items and associated utilities indicated or required, except for electrical work performed by Owner.

1.2 SUBMITTALS

- A. Submit the following items.
 - 1. Itemized Demolition Schedule.
 - 2. Detail all demolition methods to be used.

1.3 PERMITS

- A. Procure and pay for all necessary permits or certificates required to complete the work specified. Make any and all required notifications and comply with all applicable Federal, State and local ordinances.

1.4 QUALITY ASSURANCE

- A. Provide at least one person who shall be present and in charge of the Demolition Work at all times and who shall be thoroughly familiar with all phases of all work performed under this section.
- B. Comply with all pertinent codes and regulations applying to this work. Where cutting or modifications are to be made to existing fire-rated construction, provide temporary closures of fire-resistive materials as required to maintain fire rating until such time as permanent fire-rated improvements are completed.

1.5 JOB CONDITIONS

- A. Use all means necessary to prevent the spread of dust during performance of this work. Provide additional clean filters for the existing air handling system serving those areas to remain to protect them from construction dust.
- B. Use all means necessary to protect the existing building to remain from all types of damage, including fire, water damage, and unnecessary interruption of utility services. In the event of damage of any kind, immediately make all repairs and replacements necessary to the approval of the Owner at no additional cost to the Owner.
- C. Motor driven equipment shall have functional mufflers.
- D. Visit the site and examine the existing structure. Note all conditions as to the character and extent of work involved.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide all barricades, shoring, and bracing necessary to protect the tenants, workmen, and Public from danger. Barricades shall be sufficiently designed to protect and or exclude the public from all hazards.
- B. All other materials not specifically described but required for proper completion of Work of this Section, shall be as selected by the Contractor subject to the approval of the Owner.
- C. Summary: Provide selective demolition as required.
 - 1. Demolish existing construction, finishes and building components designated to be removed.
 - 2. Protect portions of building adjacent to or affected by selective demolition, providing temporary shoring and other support as required to prevent unwanted collapse or movement or other damage.
 - 3. Remove and legally dispose of demolished materials off-site.
 - 4. Notify Owner at least 24 hours prior to shut-off of existing utilities. Cap off utilities, if any, that are discontinued in use.

2.2 DEMOLITION WORK

- A. Perform demolition work as required to complete the new construction.
- B. Perform demolition work in manner so as to allow Owner's use of existing facility.
- C. Perform demolition work in order to maintain Owner's construction schedule.

2.3 REMOVAL OF ROOF MATERIAL AND DECKING

- A. Roofing debris shall not be permitted to fall on adjoining roof deck in masses to exceed safe carrying capacity of decks. Existing roofs and decks shall be properly protected with plywood under area to be demolished.
- B. Structural or load-supporting members shall not be cut or removed adjacent to existing structures to remain until all loads carried by members have been removed or adequately supported.
- C. The Contractor shall take all precautions necessary to ensure the safety of the building occupants and workers.

PART 3 - EXECUTION

3.1 DEMOLITION

- A. Before commencing the Work of this Section, verify with the Owner that all items to be removed by the Owner have been removed. Schedule the work in a careful manner with all necessary consideration for the Public and the Owner. The owner reserves the right to salvage any items scheduled to be removed. All items of existing equipment and materials or any other item of value shall be brought to the Owners attention prior to demolition.

- B. All material removed under this Contract, which is not to be salvaged or reused, shall become the property of the Contractor and be promptly removed from the site. At all times use movable debris boxes, covered, to convey the material through the building. Do not store or permit debris to accumulate on the site.
- C. Conduct operations so as not to interfere with adjacent occupied spaces, roads, streets, drives, walks, service lines and the like.
- D. Disconnect electric, telephone, gas, water, steam, or other lines as required in accordance with rules and regulations of authorities having jurisdiction, as specified, or as directed by the Architect. Coordinate all disruptions in utility services with Owner. Verify that the utility services to the existing building to remain will continue operation. Relocate and reconnect existing utilities as needed to maintain operation of the existing facility.
- E. Remove all debris from the building premises and leave the construction site "Clean" each day. All debris shall be dumped in an approved disposal facility and all fees for this shall be paid by the Contractor.
- F. Dumpsters shall not overflow and shall be emptied on a regular basis.
- G. Contractor may retain any materials he desires if the Owner has not requested them to be salvaged. Contractor is responsible for completely removing all demolished materials from the site and disposing of them in accordance with all local, State and Federal Regulations.
- H. Keep all pedestrian areas clear for passage at all times.

3.2 MAINTAINING TRAFFIC

- A. Do not close or obstruct streets, sidewalks, parking lots, drives, trash truck passageways, without obtaining Owner's permission. Do not store materials in streets, drives, or outside of construction limits.
- B. Conduct operations with minimum interference with streets, driveways, sidewalks, and adjacent facilities.
- C. Provide, erect, maintain lights, barriers, fences as required to maintain strict security at construction site and prevent unauthorized access to area of construction site. Refer to Section 01501, Temporary Facilities.

3.3 UTILITY LINES

- A. Until acceptance, maintain, preserve existing utilities traversing premises.

3.4 PROTECTION OF STRUCTURES, PROPERTY

- A. Execute demolition work to insure adjacent property against damage which might occur from falling debris or other causes.
- B. Take precautions to guard against movement, settlement, or be liable for such movement, settlement, or collapse; repair promptly such damage when so ordered.

- C. Repair damage to Owner's property or any other person or persons on or off premises by reason of required work.

3.5 DEBRIS

- A. Remove, as it accumulates, debris, except as otherwise specified, resulting from demolition operations. Do not store or permit debris to accumulate on site. If Contractor fails to remove debris promptly, Owner reserves the right to have it be removed at Contractor's expense.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. All rough carpentry items including, but not limited to:
 - 1. Wood blocking for support of items supported on or recessed into wood framing or requiring wood blocking for support.
 - 2. Wood cants, nailers, curbs, and other items associated with roofing work.
 - 3. Miscellaneous framing items and plywood sheathing.

1.2 RELATED WORK

- A. All Sections of Work supported on or recessed into wood framing or requiring wood blocking for support, such as wall trim, wall cabinets, handrails, lockers, toilet compartments, toilet and bath accessories, markerboards, tackboards, projection screens, fire extinguisher cabinets, etc., as applicable to the Project.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's data on wood treatment materials.

1.4 STANDARDS AND GRADING

- A. All lumber used structurally shall be graded and marked with grade and trademark of a lumber grading organization approved by the Architect, except that a certification of grade from such a grading organization may be accepted in lieu of grade and trademarks when approved by Architect. Trademark of manufacturer shall also appear on each piece.
- B. Each piece of plywood used structurally shall carry the American Plywood Association trademark.
- C. Grading Rules: Conform with all applicable requirements of American Lumber Standards "Simplified Practice Recommendations R-16" and to grading rules of manufacturer's association under whose rules the lumber is produced.
- D. Reference Standards: Conform with all requirements.
 - 1. U.S. Dept. of Commerce Product Standards (PS)
 - 2. American Plywood Association (APA)
 - a. Standards and Construction Guide
 - 3. American Wood Preservers Association (AWPA)
 - a. Standards, as they apply.
 - 4. Architectural Woodwork Institute (AWI)
 - a. "Quality Standards"
 - 5. National Woodwork Manufacturers' Association (NWMA)
 - a. Standards
 - 6. Western Wood Products Association (WWPA)
 - a. Manual

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Lumber:
1. Treated No. 2, S4S Southern Yellow Pine, #1 kiln dried.
 - a. Comply with NWMA Standards
 - b. Use for blocking, stripping, grounds, cants and miscellaneous wood items in contact with concrete, roofing, or exposed to the weather.
 2. No. 2, S4S Southern Yellow Pine: Use for framing, blocking, stripping and miscellaneous concealed interior lumber not exposed to concrete, roofing weather or moisture, when FRS lumber is not required by building code.
 3. Fire Retardant No, 2, S4S Southern Pine: Refer to Fire Retardant Treatment below. Use for framing, plates and blocking in all walls and partitions where required by building code or noted on drawings.
- B. Plywood:
1. General: Comply with APA Standards.
 2. APA A-D, Group 1 Interior used where appearance of only one side is exposed to view for interior locations. Use for wall liner at MDF/IDF closets and telephone boards in mechanical and telephone rooms where shown or required. 3/4 inch thick unless required or shown otherwise. Paint as scheduled in Section 09 91 00.
 3. Exterior plywood, Group 1, APA rated sheathing. Use where miscellaneous plywood is exposed to concrete, weather, or at roof construction as sheathing.
 4. Fire Retardant Treated Plywood: Refer to Fire Retardant Treatment below. Use when required by building code or noted on drawings.
 5. Underlayment: If shown or required, APA rated Sturdi-floor, exterior grade, tongue and groove edges.
- C. Rough Hardware:
1. Nails, Spikes, and Staples: Galvanized for exterior locations, high humidity locations, and treated wood; plain finish for other interior locations: Size and type to suit application. Do not use to resist "pull-out" loads.
 2. Bolts, Nuts, Washers, Lags, and Screws: Medium carbon steel; size and type to suit application. Galvanize for exterior locations, high humidity locations, and treated wood. Plain finish for other interior locations.
 3. Fasteners: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry and concrete. Bolts or power activated type for anchorage to steel.
- D. Wood Treatment:
1. Preservative Treatment (Concealed Conditions):
 - a. Micronized Copper Quaternary (MCQ): Pressure impregnate preservative to net retention of 0.25 lbs./cu.ft., in plant licensed by manufacturer in accordance with the following standards:
 - 1) Preservative Treatment Standard: AWPA P5
 - 2) Structural Lumber Treatment Standard: AWPA C31
 - 3) Plywood Treatment Standard: AWPA C9
 - b. Brush two (2) coats of preservative on bored or sawn surfaces of treated lumber.
 - c. Provide Quality Mark Stamp on treated wood for identification.
 - d. Fasteners: Metal fasteners in contact with preservative treated wood shall be G-90 galvanized, minimum, or stainless steel in accordance with manufacturer's instructions. No uncoated steel shall come in contact with preservative wood.

- e. ACQ and CCA preservatives not permitted.
 - f. Acceptable Manufacturers: Osomose "MicroPro" Smart Sense; or Architect approved equal.
2. Fire Retardant Treatment:
- a. Lumber shall be pressure-impregnated with non-combustible fire retardant chemicals in accordance with U.L. FRS Fire Hazard Classification. All lumber must be dried following treatment in accordance with AWPA Standard C20.
 - b. Plywood shall be pressure-impregnated with non-combustible fire retardant chemicals in accordance with U.L. FRS Fire Hazard Classification. All plywood must be dried following treatment in accordance with AWPA Standards C27.

PART 3 - EXECUTION

- A. Wood Framing:
- 1. Framing and blocking shall be accurately cut and fitted true to line and levels, avoiding shims and wedges.
 - 2. Spiking and nailing shall be done using largest size spikes and nail practicable.
 - 3. Unless otherwise shown, use 2 inch by 4 inch wood studs spaced 16 inches o.c. with 4 inch face perpendicular to direction of wall or partition. Provide single bottom plate and double-top plates 2 inches thick by width of studs.
 - 4. Bolt nailers and blocking to steel, masonry or concrete members with bolts or proportionate strength of members attached from each end, except as otherwise noted on plans.
 - 5. Provide blocking, bucks and framing as necessary and for other trades as required.
 - 6. Drill lumber accurately for bolts and fit all bolts with suitable washers.
 - 7. Perimeter wood blocking to be attached 2'-0" staggered with 1/2" galvanized bolts through both nailers.
 - 8. Screws are to be used for perimeter edge nailers. No nailing permitted.
- B. Plywood:
- 1. Install plywood over framing in accordance with instruction of American Plywood Association Construction Guide Form No. E30C.
 - 2. Install underlayment plywood as shown in accordance with instructions of American Plywood Association. Space panel joints and edges 1/32 inch. Fill and sand panel edge joints, surface roughness, and damaged or open areas. Nail with 4d ring-shank nails spaced at six (6) inches at edges and eight (8) inches in field each way.

END OF SECTION

SECTION 07 52 19

MODIFIED BITUMEN MEMBRANE ROOFING SYSTEM

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Providing coordination for the entire roofing assembly, including, but not limited to:
 - 1. Tapered edge strips, cant strips, and wood nailers. (Refer to this Section and Section 06 10 00)
 - 2. Modified bitumen membrane roofing
 - 3. Flashings, including sheet metal perimeter edge (fascia) (Refer this Section and Section 07 62 00).
 - 4. Work incidental to, the complete and proper installation of a watertight modified bitumen membrane roofing system as shown on the drawings or specified herein, and in accordance with all applicable requirements of the Contract Documents.
- B. It is the intent of this Section that the Work shall:
 - 1. provide a watertight facility;
 - 2. conform to all applicable building code requirements and of authorities having jurisdiction;
 - 3. include Section 07 62 00, Roof Related Sheet Metal as part of the Work of this Section; and be performed to obtain a single responsibility total system warranty.
- C. Work and materials hereinafter specified shall be best of kind described and, unless specified otherwise, shall be new and of best quality. All roofing materials utilized in performance of each type of work shall be the products of one (1) manufacturer or supplier.

1.2 RELATED WORK

- A. All Sections of Work relating to the roofing system, including mechanical, plumbing and electrical items penetrating the roof system.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. C920, Standard Specification for Elastomeric Joint Sealants
 - 2. D41, Standard Specification for Asphalt Primer Used in Roofing, Damproofing, and Waterproofing
 - 3. D312, Standard Specification for Asphalt Used in Roofing
 - 4. D2178, Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing
 - 5. D4479, Standard Specification for Asphalt Roof Coatings - Asbestos-Free
 - 6. D4586, Standard Specification for Asphalt Roof Cement, Asbestos-Free
 - 7. D4601, Standard Specification for Asphalt-Coated Glass Fiber Sheet Used in Roofing
 - 8. D5147, Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material
 - 9. D4897, Standard Specification for Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing
 - 10. D6163, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements

MODIFIED BITUMEN MEMBRANE ROOFING SYSTEM

- B. ASCE-7 Wind uplifts requirements for geographical area.
- C. Federal Specifications (FS)
 - 1. SS-R-620B
 - 2. TT-S-00230C
- D. National Roofing Contractors Association (NRCA)
 - 1. Roofing and Waterproofing Manual
- E. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)
 - 1. Architectural Sheet Metal Manual
- F. 2006 International Building Code
- G. Underwriters' Laboratories (UL)
 - 1. Fire Hazards Classifications
 - 2. Class 90 wind uplift, roof deck construction No. 90

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's printed instructions, schedules, charts, literature, and illustrations to indicate the performance, fabrication procedures, product variations, fastener pattern layout, and accessories to be used in the Work.
- B. Certifications:
 - 1. Manufacturer's written certification that installer is approved and licensed to install specified roofing system.
 - 2. Manufacturer's affidavit that materials used in Project contain no asbestos.
 - 3. Installer shall submit resume and project experience list for proposed system for Project Manager and job site superintendent.
 - 4. Installer shall submit written certification that there are no undocumented workers being employed by them or by any subcontractor on this project and that all workers on this project are covered by workmen's compensation.
 - 5. Installer shall submit list of all subcontractors with evidence of subcontractor's insurance coverage in compliance with contract requirements.
 - 6. Manufacturer's written certification of approval / acceptance of these specifications and details.
 - 7. Warranty: Submit letter from manufacturer signed by agent authorized to do so, stating acceptance of warranty as specified and detailed.
- C. Referenced Standards: Two (2) copies of each referenced standard and retain approved copies at site.
- D. Shop Drawings: Furnish from copies of the manufacturer's literature or from copies of NRCA "Roofing and Waterproofing Manual", fourth edition.
 - 1. Furnish for approval any proposed details which differ from those included with this proposal package. All proposed details shall first be approved in writing by roofing manufacturers prior to submitting to Architect for approval.
 - 2. Furnish detail project sequencing, staging, material loading, manpower plans, and project construction schedule for approval.
- E. Samples:
 - 1. Submit sample copy of job specific warranty that is to be issued upon project completion.

2. Submit mock-up of all fabricated sheet metal items.
 3. Submit 12 inch x 12 inch sample of all types of roof membranes to be installed.
- F. Temperature Charts: Bitumen heating devices 24 hour temperature charts.
- G. Test Reports: Bitumen manufacturer's test reports relative to the following for each batch of bitumen furnished:
1. Softening Point: ASTM D312.
 2. Flashpoint: ASTM D92.
 3. Acceptable Bitumen Temperature: As recommended by the bitumen manufacturer and EVT label on containers.
 4. Thermometers: Two (2) hand held, "8F" thermometers complying with ASTM E1 to Architect for his checking kettle temperature.
- H. Upon Substantial Completion of Work, submit the following to Architect for his submission to Owner:
1. Manufacturer's Warranty: Manufacturer's written warranty as specified.
 2. Maintenance Procedures: Three (3) copies of manufacturer's printed instructions for Owner's use regarding care and maintenance of roof.

1.5 PROJECT CONDITIONS

- A. Weather Condition Limitations: Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with manufacturer's recommendations and warranty requirements. Roofing application with moisture present will not be accepted. Do not attempt construction of the roofing system when the reported or calculated dew point are within three (3) degrees of each other
- B. Do not allow waste products, petroleum, grease, oil solvents, mineral oil, and other contaminants to come into contact with the roofing system before or during installation. Advise Owner if there is a possibility of his facility emitting such contaminants in the future.

1.6 INSPECTIONS / TESTS

- A. The Architect's and Manufacturer's representative shall at all times have access to the job site and work areas. The contractor will provide proper and safe facilities for such access and inspection.
1. Architect Inspections: The Architect will be providing periodic inspections throughout the duration of the project. Architect's Representative shall be required to inspect after completion of each major phase of construction for approval.
 2. Manufacturer Inspections:
 - a. An inspection shall be made by a representative of the material manufacturer a minimum three (3) times monthly during performance of Work to ensure that said project is installed in accordance with the manufacturer's specifications and illustrated details. Written reports by the manufacturer shall be turned over to the Architect, on each Monday following the prior week.
 - b. The authorized material manufacturer's field representative shall be responsible for:
 - 1) Keeping the Architect's representative informed after periodic inspections as to the progress and quality of the work observed.
 - 2) Calling to the attention of the contractor those matters observed which are considered to be in violation of the contract requirements.

- 3) Reporting to the Architect's representative, in writing, any failure or refusal of the contractor to correct unacceptable practices called to his attention.
 - 4) Confirming, after completion of the work and based on his observation and test, that he has observed no application procedures in conflict with these specifications.
- B. Any failure by the Architect's or Manufacturer's Representative to detect, pinpoint, or object to any defect or noncompliance of these specifications of work in progress or completed work shall not relieve the contractor, or reduce, or in any way limit, his responsibility of full performance of work required of him under these specifications.
- C. Architect may require tests and inspections as necessary to verify quality of roofing materials and workmanship. Laboratory tests will be performed in accordance with ASTM standard procedures.
1. Owner will select testing laboratory and will pay for Work required by testing laboratory.
 2. Re-tests for work which fail initial tests or inspections shall be paid by contractor.
 3. Non compliance with contractor requirements will result in the Architect/Owner to assign full time quality control and will be subject to reimbursement by the construction manager/contractor.

1.7 QUALITY ASSURANCE

- A. General:
1. Unless otherwise indicated, the materials to be used in this specification are those specified and denote the type, quality, performance, etc. required. All proposals shall be based upon the use of the specified material.
 2. Install materials in accordance with the manufacturer's current published application procedures and the general recommendations of the National Roofing Contractor's Association.
 3. It will be the contractor's responsibility to obtain and/or verify any necessary dimensions by visiting the job site, and the contractor shall be responsible for the correctness of same. Any drawings supplied are for reference only.
 4. Contractor shall plan and conduct the operations of the work so that each section started on one day is complete, details installed and thoroughly protected and in watertight condition before the close of work for that day.
 5. Materials will be securely fastened in place in a watertight, neat and workmanlike manner. All workmen shall be thoroughly experienced in the particular class of work upon which employed. Work shall be performed in accordance with these specifications and shall meet the approval in the field of the Architect.
 6. All waste materials, rubbish, etc., shall be removed from the Owner's premises as accumulated. Rubbish shall be carefully handled to reduce the spread of dust, and shall be deposited at an approved disposal site. At completion, all work areas shall be left broom clean and all contractors' equipment and materials removed from the site.
 7. Work and materials hereinafter specified shall be best of kind described and, unless specified otherwise, shall be new and of best quality. All roofing materials utilized in performance of each type of work shall be the products of one manufacturer or supplier. Unless otherwise indicated, the materials to be used in this specification are those specified and denote the type, quality, performance, etc. required. All proposals shall be based upon the use of the specified material.
- B. Applicator:
1. Applicator shall have approval by manufacturer of accepted roofing system for application and issuance of specified warranty for a minimum of three (3) years. Proof of license agreement dated at least three years prior to date of bid opening.

2. Applicator shall be an experienced single firm specializing in the type of roofing and sheet metal work specified, with a minimum of five (5) years of previous successful experience on projects similar in size and scope.
 3. No subcontracting of sheet metal fabrication or installation will be accepted. Contractor must have a sheet metal shop on the company premises.
 4. Applicators shall have a competent Superintendent, who is not actually performing roofing work, on site at all time while work is in progress, with full authority to act on behalf of the Contractor as his agent.
 5. All workmen shall be covered by Workmen's Compensation insurance (verify upon request) and thoroughly experienced in the particular class of work upon which employed. Use of undocumented workers will not be tolerated - No Exceptions.
- C. Regulatory Requirements:
1. Classification by Underwriters' Laboratories, Inc. as a Class A roof covering.
 2. Follow local, state, and federal regulations of safety standards and codes. Refer to applicable building code or International Building Code for roofing system installation requirements and limitations.
- D. Laboratory Testing and Samples:
1. Architect may require tests and inspections as necessary to verify quality of roofing materials and workmanship. Laboratory tests will be performed in accordance with ASTM procedures.
 2. Owner will select testing laboratory and will pay for Work required by testing laboratory. Contractor shall assume all costs for extraction and patch of all samples.
 3. Re-tests for work which fail initial tests or contractor shall pay inspections.
 4. Contractor shall correct all deficiencies in accordance with manufacturers recommended procedures at no cost to Owner.
- E. Installation:
1. Unless otherwise indicated, the materials to be used in this specification are those specified and denote the type, quality, performance, etc. required. All proposals shall be based upon the use of the specified material.
 2. Install materials in accordance with the manufacturer's current published application procedures and the general recommendations of the National Roofing Contractor's Association.
 3. It will be the contractor's responsibility to obtain and/or verify any necessary dimensions by visiting the job site, and the contractor shall be responsible for the correctness of it. Any drawings supplied are for reference only.
 4. Contractor shall plan and conduct the operations of the work so that each section started on one day is complete, details installed and thoroughly protected and in watertight condition before the close of work for that day.
 5. Materials will be securely fastened in place in a watertight, neat and workmanlike manner. All workmen shall be thoroughly experienced in the particular class of work upon which employed. Work shall be performed in accordance with these specifications and shall meet the approval in the field of the Architect.
 6. All waste materials, rubbish, etc., shall be removed from the Owner's premises as accumulated. Rubbish shall be carefully handled to reduce the spread of dust, and shall be deposited at an approved disposal site. At completion, all work areas shall be left broom clean and all contractors' equipment and materials removed from the site.

1.8 PERFORMANCE REQUIREMENTS

- A. Roofing system shall be installed in accordance with ASCE-7 wind uplift requirements for geographical location and a 105 MPH 3-second gust wind speed zone with an importance factor of 1.15 based on IBC requirements.
 - 1. Zone 1 Field
 - 2. Zone 2 Perimeter
 - 3. Zone 3 Corner
- B. Fire Resistance: Meet Underwriter's Laboratory Class "A" fire rating.
- C. Energy Performance: Provide roof materials with Solar Reflectance Index not less than 78 for slopes less than or equal to 2:12; when calculated according to ASTM E1980 based on testing identical products by a qualifying testing agency.
- D. Contractor shall ensure that base fastener pull out resistance tests on new lightweight insulating concrete fill were performed and approved by Architect and coordinated with Roofing Consultant prior to starting roofing application.

1.9 PRE-INSTALLATION CONFERENCE

- A. Refer to Section 01 31 13 – Project Coordination.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original unopened packaging with all tags and labels intact and legible. Carton and can labels shall indicate appropriate warnings, storage conditions, lot numbers, and usage instructions. Handle and store materials and equipment in such a manner as to avoid damage. Coordinate material storage with school Principal.
- B. Manufacturer's packaging and/or roll plastic is not acceptable for exterior storage. Tarpaulin with grommets shall be minimum acceptable for exterior coverings. All materials stored as above shall be minimum of four (4) inches off the substrate, and the tarpaulin tied off with rope.
- C. Products liable to degrade as a result of being frozen shall be maintained above 40 degrees F in heated storage.
- D. Moisture sensitive products shall be maintained in dry storage areas or properly covered. Roofing insulation and felts must always be covered or stored in a dry area when not being used.
- E. The proper storage of materials is the sole responsibility of the contractor. Materials damaged in shipping or storage shall not be used. Wet or damaged roofing materials shall be discarded, removed from job site, and replaced with new materials prior to application.
- F. No storage of materials shall be permitted on roof areas other than those materials that are to be installed the same day. Any exception must be in written form. Do not place materials or equipment in such a manner as to overload structure.

1.11 PRECAUTIONS

- A. Some of the indicated materials are extremely flammable and/or toxic. Use precautions indicated on can and carton labels.

- B. Due caution should be exercised so as not to alter the structural integrity of the deck. When cutting through any deck, care should be taken so as not to damage the deck or any part of the deck, such as post tension cables, etc.
- C. If torches are used, Contractor shall maintain a three (3) hour fire watch after completion of torching of each day's work. Provide a 20 lb. fire extinguisher near torch at all times. Use a thermal infrared thermometer to monitor all roof areas.
- D. The contractor is to verify the location of all interior ducts, electrical lines, piping, conduit, and/or similar obstructions. The contractor is to perform all work in such a manner as to avoid contact with the above mentioned items.

1.12 WARRANTY

- A. Roofing Manufacturer: Warrant the roofing and associated Work for 20 years from date of Substantial Completion as follows:
 - 1. The warranty shall be a NDL "No Dollar Limit" / no penal sum type, with total replacement cost.
 - 2. The warranty shall guarantee the entire roof system and associated work against defective materials and workmanship of installation, with NO exclusion for ponding water.
 - 3. The roof system shall include roof insulation, flashing, metal work, labor, and material shall be guaranteed against failure of workmanship and materials. Repair of the system, including materials and labor, shall be done at no cost to the Owner.
- B. Roofing Contractor: Jointly with any subcontractors employed by him, shall guarantee the work required and performed under this contract will be free from defects in workmanship and materials, and that the building will be and remain waterproof for a five (5) year warranty period, after the Architect accepts the work as substantially complete. The warranty shall be in approved notarized written form, to obligate the Contractor, and subcontractors, to make good the requirements of the warranty. The warranty will be held jointly with the Bonding Company for the first two (2) years and the manufacturer for the remaining three (3) years.
- C. Make arrangements with the materials manufacturer to provide required inspections for issuance of warranty. Final warranty shall be submitted to Owner at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All materials shall be manufactured, specified, or accepted in writing by membrane manufacturer issuing the warranty. Proposed materials shall ensure full system warranty from said manufacturer.
- B. Samples of all materials used on the project, which are not supplied by the membrane manufacturer, shall be submitted to the membrane manufacturer for written approval prior to starting work.
- C. All materials used on the project shall be asbestos free.

2.2 APPROVED PRODUCTS/MANUFACTURERS

- A. Unless noted otherwise, specifications are based on products of manufacturers listed below. Manufacturers whose products meet or exceed the specifications, who have

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manufactured and installed roof materials and systems of the type specified for a minimum of ten (10) years, and who maintains a single source responsibility for the total roofing system, as described herein, may apply for approval as a substitution in accordance with Division 1 requirements regarding substitutions. The following are pre-approved optional manufacturers.

1. GAF Wayne, NJ (800) 766-3411
2. Soprema, Wadsworth, OH; (800) 356-3521
3. Siplast, Inc., Irving, TX; (800) 922-8800
4. JM Denver, Colorado (800) 922-5922
5. Firestone Building Products Company, Carmel, IN (800) 428-4442

2.3 ROUGH CARPENTRY

- A. All nailers, cants and wooden curbs shall be No. 2 or better treated lumber selected to meet design details and field dimensions and requirements of Section 06 10 00, Rough Carpentry.

2.4 ROOF MEMBRANE ASSEMBLY/SYSTEM DESCRIPTION

- A. System Description: A roof membrane assembly consisting of two (2) plies of a prefabricated, reinforced, homogeneous polymer modified asphalt membrane, secured to specified insulation. The assembly shall possess waterproofing capability, such that a phased roof application, with only the modified bitumen base ply in place, can be achieved for prolonged periods of time without detriment to the watertight integrity of the entire roof system. Contractor option to install using hot asphalt "mopped", cold adhesive, torched, or any combination – confirm special membrane types with manufacturer. Provide components of the roof membrane assembly meeting the following physical and mechanical requirements.
 1. Modified Bitumen Base Ply: A high performance modified bitumen base ply consisting of a reinforcing mat impregnated and coated with high quality modified bitumen: (Coordinate with manufacturer for special membrane type requirements when installed over insulation.)
 - a. GAF: Ruberoid 20 FR
 - b. Soprema Product: Elastophene
 - c. Siplast Product: Paradiene 20
 - d. JM Product: DynaBase
 - e. Firestone Product: SBS Base
 2. Modified Bitumen Finish Ply: A high performance modified bitumen finish ply consisting of a reinforcing mat impregnated and coated with high quality modified bitumen, and surfaced with white ceramic granules:
 - a. GAF: Ruberoid 30 FR
 - b. Soprema Product: Elastophene FRGR
 - c. Siplast Product: Paradiene 30 FR
 - d. JM Product: DynaGlas FR
 - e. Firestone Product: SBS FR Cap
 3. STRIPPING PLY: Same as Modified Bitumen base ply.

2.5 FLASHING MEMBRANE ASSEMBLY

- A. A flashing membrane assembly consisting of two (2) plies of reinforced, polymer modified asphalt membrane with a foil face for protection from ultraviolet degradation:
 1. Modified Bitumen Flashing Sheet:
 - a. GAF: Ruberoid Ultraclad
 - b. Soprema Product: Sopralast 50 TV "Alu"
 - c. Siplast Product: "Aluminum" Veral

- d. JM Product: DynaClad AL
- e. Firestone Product: SBS Metal Flash AL
- 2. Reinforcing PLY: Same as roof system base ply.

2.6 ROOFING SHEET METAL

- A. Refer to Section 07 62 00, Roof Related Sheet Metal.

2.7 ROOF INSULATION

- A. Roofing Insulation:
 - 1. All insulation shall be approved in writing by the membrane manufacturer as to thickness, type, and manufacturer. All insulation must be approved for the specific application with UL and FM Global approval.
 - 2. Polyisocyanurate Roof Insulation: Shall comply with ASTM C1289 and Federal Specification (FS) HH-I-1972/Gen and HH-I-1972/2, with a 20 psi minimum compressive strength. Insulation shall be surfaced on both sides with a non-asphaltic fiberglass facers. Thickness shall be to match existing over all conditioned air space. Approved product shall be Enrgy 3 as manufactured by Johns Manville or pre-approved equal.
 - 3. Recover Board (Unless noted otherwise): Glass-Faced Gypsum Roof Board equal to UL rated Type X "Dens Deck Prime" as produced by Georgia-Pacific. Board sizes shall be 48" x 96" x 1/2" or as indicated on drawings for roof assembly. Provide as required by manufacture recommendation primer for Roof System. Approved substitute, SECUROCK by USG.
 - 4. Tapered Iso. Insulation (as required): Factory cut 48 inches x 48 inches polyisocyanurate board cut to 1/4 inch per foot slope; thickness varies; ASTM C1289, UL Class A, Factory Mutual Class 1. Approved product shall be Tapered E'NERG'Y 3 manufactured by Johns Manville or pre-approved equal. Provide 1/2 inch recovery board similar to that specified above over tapered polyisocyanurate board insulation if used.
 - 5. Tapered Perlite Insulation (as required): Tapered perlite insulation board cut to 1/4 inch per foot slope; thickness varies; conforming to ASTM C728. Approved product shall be Tapered Fesco Board manufactured by Johns Manville or Architect pre-approved equal.
 - 6. Tapered Edge Strip: 1-1/2 inches to 0 inches (or as required), 18 inches x 48 inches, install at all expansion joints, curbs, projections, crickets, saddles and base flashings. Approved material shall be as manufactured by Cant Products or pre-approved equal.

2.8 ROOFING ACCESSORIES

- A. Roofing Adhesives:
 - 1. Mopping Asphalt: Asphalt that has been certified for full compliance with the requirements for Low Fume Type IV asphalt listed in Table I, ASTM D312. Each container or bulk shipping ticket shall indicate the equiviscous temperature EVT, the finished blowing temperature, FBT, and the flash point, FP.
 - a. Approved Product: Trumbull Low Fume asphalt or as required by membrane.
 - 2. Cold Adhesive (if applicable): An asphalt based adhesive formulated especially for adhering polymer modified asphalt roofing membranes and base plies. Adhere shall be UL & FM listed and approved.
 - a. GAF Product: Matrix
 - b. Soprema Product: FMA
 - c. Siplast Product: PA-311 Adhesive
 - d. JM: MBR

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- e. Firestone Product: MB Cold Adhesive

- B. Bituminous Cutback Materials:
 - 1. Primer: A high flash, quick drying, asphalt solvent blend which meets or exceeds ASTM D41 requirements.
 - 2. Plastic Cement: An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges and conforming to ASTM D4586 Type II requirements.
 - 3. Flashing Cement: A heavy-bodied all-weather trowel grade mastic, used as a base for laying-up cold process flashing membrane where fast setting adhesives are required.

- C. Sealants: A single component, high performance, elastomeric sealant conforming to ASTM D232 or ASTM C920 requirements. Acceptable types are as follows:
 - 1. Sonolastic NP 1 manufactured by Sonneborn Building Products; Minneapolis, MN (612) 835-3434

- D. Ceramic Granules: No. 11 Grade Specification Ceramic granules of color scheme matching the granule surfacing of the finish ply.

- E. Walkpads/Protection Pads: Provide cut sections of granule surfaced polyester reinforced modified bitumen sheet, similar to "Dyna Tred Plus".
 - 1. Walk pads shall have contrasting granule color from surfacing.
 - 2. Provide walk pads shall be installed at point of roof access, at service points of all roof mounted equipment requiring periodic maintenance.
 - 3. Protection pads shall have rounded corners and extend minimum four (4) inches beyond edge of overlying element.
 - 4. Provide new protection pads under all pipe supports, at HVAC and mechanical access points, in front of all roof top doors and openings.

- F. Fasteners:
 - 1. Shall be Factory Mutual approved and as recommended by the manufacturer for the specific application.
 - 2. Fastener for Brick: Shall be 1/4 inch x 2 inches, stainless steel nail, one piece unit, flat head, as manufactured by Rawl Zamac Nailin, or approved equal.
 - 3. Fastener for Wood and Insulation (over steel decks): Shall be a minimum #14 Factory Mutual approved fastener, fluorocarbon coated, with CR-10 coating. A minimum 0.200 inch diameter shank and 0.250 inch diameter thread. To be used with Factory Mutual approved, round pressure plates or bar, and having a fluorocarbon CR-10 coating, when subjected to 30 Kesternich cycles (DIN 50018) shows less than ten percent (10%) red rust which surpasses Factory Mutual Approval Standard 4470 as manufactured by Olympic Manufacturing Group, Inc., or pre-approved equal. Stainless Steel 304 when used with ACQ treated lumber.
 - 4. Nails: Stainless Steel ring shank, size as required to suite application, minimum 11 gauge with 3/8 inch diameter head.
 - 5. Iron-Lok Toggle: Shall be a toggle bolt with minimum 0.215 inch diameter shank and minimum 20 threads per inch, with a 2-1/2 inch wing span, with wing activated adhesive and pressure plate, as manufactured by Olympic Manufacturing Group, Inc.

2.9 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Other materials shall be as shown, specified or required and be of the best grade for the proposed use as recommended by the manufacturer.
 - 1. Expansion Joint: As detailed on drawings and outlined in NRCA and SMACNA

- manuals.
2. Low Level expansion joints, as noted on the drawings, to be fabricated similar to Situra Inc. "Red Line" Low level expansion joint details. Install as per manufactures recommendations.
 - a. Approved Substitute Soprema's "Sopra Joint". Install as per manufactures recommendations.
 3. Sealant Backer Rod: Provide compressible rod stack of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive material as recommended by sealant manufacturer for back-up of and compatibility with sealant. Where used with hot-applied sealant, provide heat-resistant type which will not be deteriorated by sealant application temperature as indicated.
 4. Pipe Hangers and Supports: Provide and install all necessary supports for gas lines, conduit, chilled water lines, duct work, condensate lines, etc. Refer to Section 07 72 00, Roof Accessories.
 5. Cant Strips: Shall be wood fiber where used for non-structural purposes. Shall be treated solid wood where used for structural purposes meeting NRCA, Factory Mutual and Underwriters Laboratory guidelines. If solid wood cant is used where insulation exists, cant is to be toe nailed into treated solid wood nailer the same height as insulation.
 6. Termination Bar:
 - a. Material: Extruded aluminum bar with lip profile.
 - b. Size: 0.090 inch thick by 3/4 inch wide with 3/16 inch lip width and a 45 degree lip angle, factory punched 1/4 inch x 3/8 inch oval holes spaced six (6) inches on center.
 - c. Approved Product/Manufacturer: "LIPTB 06" manufactured by Olympic Manufacturing Group, Inc., or approved equal.

PART 3 - EXECUTION

3.1 SITE CONDITIONS

- A. Environmental Requirements:
 1. Apply roofing in dry weather.
 2. Do not apply roofing when ambient temperature is below 45 degrees F.
 3. Refer to manufacturers recommendations.

3.2 ROOFING AND FLASHING - GENERAL

- A. Membrane Application: Install roofing in accordance with roofing system manufacturer's current published instructions and the following requirements. Application of roofing membrane components shall immediately follow installation of insulation as a continuous operation.
- B. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this Project. Make necessary preparations, utilize recommended application techniques, apply the specified materials and exercise care in ensuring that the finished application is acceptable to the Owner.
- C. Application of materials shall be in strict accordance with the manufacturer's recommendations except where more stringent requirements are shown or specified. In the instance of a conflict between these specifications and those of the manufacturer, the more stringent specifications shall take precedence.
- D. General Installation:
 1. Protect adjacent areas with tarpaulin or other durable materials.

2. Contractor shall prevent overspray, and be responsible for parking lot areas and/or adjoining areas not part of this contract.
3. Contractor shall be responsible for sealing, as required, all openings that may allow bitumen migration or drippage, i.e. pitch dams, envelopes, and filler strips.
4. Prepare surfaces according to manufacturer's or applicator's published instructions. All metal that is to receive bitumen, or come in contact with bitumen or adhesive, shall be first primed with appropriate primer. All Kynar 500 or Hylar 5000 finished metal shall be buff sanded on the surface which is to be primed prior to the application.
5. Use cleaning materials or primers necessary to render an acceptable surface/substrate.
6. All surfaces/substrates shall be clean and dry prior to application of materials. Roof deck substrates shall be inspected for moisture in accordance with the manufacturer's recommendations. Architect's representative shall witness inspection. Roofing installed before inspection by Architect's representative shall be removed to allow inspection.
7. Prior to application of felts and membrane, all foreign matter, gravel, etc., shall be removed from the substrate. Gravel or debris between the substrate and plies is not acceptable.
8. Ambient temperature shall be 45 degrees F and rising.
9. Bitumen kettles or tankers shall have a visible thermometer and thermostatic control to provide positive monitoring of the bitumen temperature when it is heated in accordance with manufacturer's instructions. Kettle shall be kept a minimum of 20 feet away from building, placed so that fumes, odors, and smoke, do not enter building through windows, doors, fresh air vents or similar entrances; are not directed towards freshly painted or anodized surfaces, glass or other glazing materials. Do not place kettle under trees or near vegetation. The assigned kettle man shall remain in close attendance, within 25 feet of ground level, while burners are lit. Kettle lids are to remain closed except for loading. Level of bitumen shall be kept within eight (8) inches from top of kettle. All kettles are to have afterburners installed to reduce fume emissions.
10. Asphalt Bitumen Heating: Heat and apply bitumen in accordance with equiviscous temperature method ("EVT Method") as recommended by the manufacturer. Discard bitumen that has been held at temperature, exceeding finished blowing temperature (FBT) for a period exceeding three hours. Do NOT heat bitumen to a temperature higher than 25 degrees F (14 degrees C) below flash point.
11. Asphalt Temperatures: If the EVT information is not provided, the following asphalt temperature shall be observed. Maximum heating temperature shall be 525 degrees F. Minimum application temperature shall be 400 degrees F.
12. Asphalt Moppings: Ensure that all moppings do not exceed a maximum of 25 pounds per square. Mopping shall be total in coverage, leaving no breaks or voids.
13. Membrane Adhesive Application: Apply cold adhesive in a smooth, even, continuous layer without breaks or voids at the rate of 1-1/2 gallons per square per ply. (The porosity of some substrates may require a heavier application to ensure full adhesion.)
14. Bitumen Consistency: Cutting or alterations of bitumen, primer, and sealants will not be permitted.
15. Circulate bituminous materials, do not allow bituminous materials to stand in luggers for long periods.. Use insulated hot transport lines and luggers.
16. Keep kettle lid closed except when adding bitumen.
17. Wrinkles, buckles, kinks, and fishmouths are not acceptable when laying felt and membrane.
18. Dry voids of felt on felt are not acceptable.
19. Primed cant strips shall be installed at the intersection of the deck and the vertical surfaces.

20. All flashings shall be mechanically top-fastened with a termination bar a minimum of six (6) inches on center at the top leading edge, and be a minimum of eight (8) inches in height above the finished membrane height.
21. On slopes greater than one (1) inch in 12 inches, refer to NRCA and/or manufacturer's guidelines for backnailing procedures and follow the more stringent guidelines for all specified materials.
22. Correct all errors in application the same work day they occur, including voids, fishmouths, dry laps or spots, wrinkles, ridges, blisters, bare spots, improper application, physical damage and all work not meeting specifications.
23. Follow manufacturer's recommendation for application of cold adhesive due to slope requirements.

3.3 NAILERS

- A. Wooden nailers shall be installed at perimeter edges or drip edges on outside perimeter of building in accordance with FM Global 1-49 securement requirements. All deck penetrations (soil stacks, mechanical curbs, etc.) shall receive wooden nailers stacked minimum 3/4 inch above designed deck thickness.
- B. All Construction: Nailers shall be the same height as the finished height of the insulation layer. Nailers shall be anchored to resist a pull-out force of 175 pounds per foot. Fasteners shall be no less than two (2) per nailer, and be spaced at three (3) feet on center maximum or as required by FM Global 1-49 requirements. Provide nailers at all penetrations. Install/Raise all curbs, etc, a minimum of ten (10) inches above roof deck.

3.4 SUBSTRATE PREPARATION

- A. Ensure decking to receive insulation is clean (including flutes), dry, even and properly secured.
- B. Structural concrete decks shall have existing fully adhered roof membrane removed to the greatest extent possible and without exception all loose, poorly bonded roofing plies, dirt, dust and debris shall be removed completely.

3.5 APPLICATION OF BASE SHEET

- A. Lightweight concrete deck shall be covered with a base sheet, mechanically fastened as follows:
 1. Install in accordance with manufacturer's current published application instructions and to meet ASCE-7 wind uplift requirements. Fasteners and fastening patterns shall be determined by building height, pull out values from lightweight insulating concrete decks (more stringent applies), location and geographical area of the United States. It is the contractor's responsibility to consult current ASCE-7 publications, literature, and bulletins that are in effect at the time of this project. Submit perimeter, field and corner fastening patterns and cite all ASCE-7 data pertaining to the fastening pattern to the Architect for review.

3.6 APPLICATION OF INSULATION

- A. General:
1. Manufacturer's Instructions: In regard to attachment, the manufacturer's instructions or specifications shall determine the suitability for an application.
 2. Insulation shall be tapered or feathered at drains and scuppers to provide proper drainage (if applicable).
 3. No more insulation shall be installed than can be covered by the completed roof system by the end of the day or the onset of inclement weather.
 4. Tapered insulation and crickets, when specified, shall be placed in accordance with the drawings and/or as required NRCA standards.
- B. (Steel decks); Specified rigid insulation shall be mechanically fastened to the steel deck meeting ASCE-7 wind uplift requirements as dictated by wind zone applicable to location of project. Fasteners and fastening patterns shall be determined by building height, location and geographical area of the United States. It is the contractor's responsibility to consult current publications, literature, and bulletins of current codes and the manufacturer that are in effect at the time of this project.
- C. For subsequent layer or layers of insulation or specified recovery board, the top surface of the underlying layer of insulation shall be coated with hot asphalt using a minimum of twenty-five pounds (25#) per one hundred (100) square feet of surface, and subsequent layers of insulation shall be applied using offset joints, so that all individual insulation layers joints are offset a minimum of six inches (6") both ways with the preceding layer, and immediately walked in place.

3.7 ROOF MEMBRANE INSTALLATION

- A. Membrane Application: Install roofing in accordance with roofing system manufacturer's current published instructions and the following requirements. Application of roofing membrane components shall immediately follow application of insulation as a continuous operation.
- B. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this Project. Make necessary preparations, utilize recommended application techniques, apply the specified materials (i.e. granules, metallic powder, etc.) and exercise care in ensuring that the finished application is acceptable to the Owner.
- C. Adhesive Application: Apply cold adhesive with a spray equipment or squeegee in a smooth even, continuous layer without breaks or voids at the rate of 1 ½ to 2 gallons per square per ply. (The porosity of some substrates may require a heavier application to ensure full adhesion. Refer to manufacturer's requirements.)
- D. Bitumen Consistency: Cutting or alterations of bitumen, primer, and sealants will not be permitted.
- E. Roofing Application: Apply all layers of roofing free of wrinkles, creases or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets. Lap seams between the base ply layer and the finish ply layer shall not coincide. Stagger the courses to ensure this.
1. Apply all layers of roofing so that water flows over or along lap seams, but never against laps.
 2. Fully bond the base ply to the insulation with cold adhesive, torch, or hot asphalt. Each sheet shall have minimum three (3) inch side laps and six (6) inch end laps. Each sheet shall be applied directly behind the adhesive applicator. Stagger end laps a minimum of three (3) feet.

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3. Fully bond the finish ply to the base ply with cold adhesive, torch, or hot asphalt. Each sheet shall have a minimum of three (3) inch side and six (6) end laps. Each sheet shall be applied directly behind the adhesive applicator. Stagger end laps of the finish ply a minimum of three (3) feet. Stagger side laps of the finish ply a minimum of 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum of three (3) feet from end laps in the underlying base ply.
 4. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds 1/2 inch per foot. The manufacturer shall provide acceptable sheet lengths and the required fastening schedule for all roofing sheet applications to applicable roof slopes.
 5. Lap Treatment: A 20-pound roller shall be used on all side and end laps, following immediately behind application, apply uniform pressure across lap area to achieve a continuous visible bleed out.
- F. Granule Embedment: Broadcast mineral granules over all bitumen overruns on the finish ply surface, while the bitumen is still hot, to ensure a monolithic color and adhesion.

3.8 ROOF FLASHING MEMBRANE INSTALLATION

- A. Flashing - General:
1. Flashings shall be installed using the manufacturer's flashing membrane, with length of run not to exceed manufacturer's recommendations.
 2. Wooden nailers or curbs shall be installed at all edges and openings in the roof, mechanically fastened to the deck. The nailers should be of exterior grade wolmanized timber, and of the same thickness as any insulation to be used on the roof.
 3. Cant strips shall be installed at the intersection of the deck and/or all vertical surfaces. Prime all cants.
 4. The roofing field membrane shall extend up over and to the top of cant strips at all vertical intersections or out to the roof's edge.
 5. All substrates receiving flashing membrane shall be clean and primed with asphalt primer, prior to application.
 6. All flashings shall be mechanically fastened with a termination bar a maximum of six (6) inches on center, be a minimum of eight (8) inches above finished roof height (seal top with three (3) coursing), extend a minimum of nine (9) inches onto the field of horizontal roof membrane, and not exceed ten (10) linear feet of run in length.
 7. Install flashing membrane in accordance with drawings and/or material manufacturer's guarantee requirements, whichever is the most stringent.
 8. Exert sufficient pressure on the flashing membrane to ensure the prevention of air pockets. This can be accomplished by using a damp, kitchen type sponge mop or a damp, heavy duty cotton nap paint roller.
 9. Prime all end laps of the flashing membrane with a uniform coating of the specified asphalt primer and allow to thoroughly dry prior to overlapping of adjoining sheets.
 10. Probe laps using a clean, heated roofing trowel and heat fuse dry laps of the flashing membrane to ensure a complete seal.
- B. Flashing Application - Masonry Surfaces: Flash masonry parapet walls and curbs using the reinforcing sheet and the metal foil flashing membrane. After the base ply has been applied to the top of the cant, fully adhere the reinforcing sheet, utilizing minimum three (3) inch side laps and extend a minimum of three (3) inches onto the base ply surface and three (3) inches up the parapet wall above the cant. After the final roofing ply has been applied to the top of the cant, prepare the surface area that is to receive flashing

coverage by torch heating granular surfaces or by application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three (3) foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the metal foil flashing layer from lap seams in the reinforcing layer. Extend the flashing sheet a minimum of four (4) inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing

air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on nine (9) inch centers. (See manufacturer's schematic for visual interpretation.)

- C. Flashing Application - Wood Surfaces: Flash wood or plywood parapet walls and curbs using the reinforcing sheet and metal foil flashing membrane. The reinforcing sheet shall have minimum three (3) inch side laps and extend a minimum of three (3) inches onto the base ply surface and to the top of the parapet wall, curb, etc. Nail the reinforcing sheet through the field of the sheet to the vertical wood surface on 12 inch centers from the top of the cant to top of wall curb, etc. Fully adhere the remainder of flashing reinforcing sheet that extends over the cant and roof level. After the finish ply has been applied to the top of the cant, prepare the surface area that is to receive flashing coverage by torch heating granular surfaces or application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three (3) foot widths (cut off the end of roll) always lapping the factory selvage edge. Extend the flashing sheet a minimum of four (4) inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on nine (9) inch centers. (See manufacturer's schematic for visual interpretation.)
- D. Projection Flashings:
1. Plumbing Vents: Soil vent stack pipes shall receive lead flashings installed in accordance with practices set forth in the NRCA Roofing Manual. The lead shall be carried up and over the top of the stack, and crimped down into the pipe to form a watertight seal. Projections shall be flashed as recommended by the roof membrane manufacturer. Strip-in flange with specified stripping ply and cap with finish ply. Provide flashing membrane target.
 2. Square Projections: Strip in all flanges on square projections with specified stripping ply and cap with finish ply. Provide flashing membrane target. Provide tapered edge strips around base. Cricket up-side slope.
 3. Prime all flanges prior to setting in a bed of mastic. Install to manufacturer's specifications. Provide tapered edge strips around base as required. Cricket up-side slope.
 4. Round Projections: Strip in all flanges on round projections with specified stripping ply and cap with finish ply. Provide flashing membrane target.
 5. Prime all metal prior to setting in mastic. Install to manufacturer's specifications.
- E. Wall and Curb Flashings:
1. The flashing substrate shall be free of all dirt and loose material.
 2. The underlayment ply or plies shall be brought to the top of the cant strip and adhered.
 3. Starting on the roof at least six (6) inches from the roofside edge of the cant strip, adhere two (2) plies of flashing extending over the cant and up the vertical a

- minimum of eight (8) inches. Each lap of the ply sheet shall be a minimum of three (3) inches.
4. Starting two (2) inches past the flashing plies, install one (1) ply of SBS flashing membrane in hot asphalt. Laps shall not coincide with previously installed plies. The top of the SBS flashing shall be one (1) inch past the previously installed plies above the cant strip.
 5. Fasten the top edge of the flashings on six (6) inch centers using approved termination bar and fasteners.
 6. An NRCA-approved metal counterflashing shall extend down over the flashing a minimum of four (4) inches.
 7. Cricket the up-side slope at all curb projections.
- F. Perimeter Edge Flashing: Refer to Section 07 62 00.
- G. Bleed out of flashing membrane: Broadcast bulk aluminum powder over all bitumen overruns on the flashing membrane surface while the bitumen is still hot to ensure a monolithic surface color. With approval of manufacturer, a premium glossy aluminum paint may be used.

3.9 OVERNIGHT SEAL / WATER CUT-OFF

- A. Over Night Seal: Shall be performed according to accepted roofing practice as outlined in the NRCA Roofing Manual.
- B. Water Cut-Off: At the end of day's work or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to resumption of roofing.

3.10 ROOF SYSTEM INTERFACE WITH RELATED COMPONENTS

- A. The following is a list of descriptions for correct installation of components integrated into the roof membrane assembly. In all cases, unless otherwise approved, incorporate flanged components into the system between the application of the base ply and finish ply. The flange must be primed with a uniform coating of approved ASTM D41 asphalt primer and allowed to dry thoroughly; all flanges must be set in approved mastic.
- B. Sealant: Caulk all exposed finish ply edges at gravel stops, waste stacks, pitch pans, vent stacks, etc., with a smooth continuous bead of approved sealant.
- C. Sheet Metal: Refer to Section 07 62 00, ROOF RELATED SHEET METAL.

3.11 FIELD QUALITY CONTROL AND INSPECTIONS

- A. Roof cuts shall be performed and repaired at contractor's expense. Cuts shall be made in the areas as indicated by the Architect's representative. Send required roof cuts to roof membrane manufacturer for laboratory examination. Roof cuts required by the Architect's representative shall be furnished to the Architect's representative for testing.
- B. Remove not more than one (1) 12 inch x 12 inch cut per 5,000 square feet of roof area or fraction thereof.
- C. Field audit will follow criteria outlined in current roof membrane manufacturer's Reference Manual.

- D. Repair sampled areas with "feathered in" patch consisting of same number of plies as in the roof specification.
- E. Correct deficiencies in roof as prescribed in current roof membrane manufacturer's Reference Manual and as approved by Architect's Representative.

3.12 CLEANING AND PROTECTION

- A. Contractor shall keep the job clean and free from all loose materials and foreign matter. Contractor shall take necessary precautions to keep outside walls clean and shall allow no roofing materials to remain on the outside walls.
- B. Leave all areas around job site free of trash, debris, roofing materials, equipment, and related items after completion of job.
- C. All bituminous or roofing related materials shall be removed from ladders, stairs, railings, and similar parts of the building.
- D. Remove bitumen stains from walls, walkways, and driveways.

END OF SECTION

SECTION 07 59 02

THERMOPLASTIC ROOFING SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Providing the entire roofing assembly, including, but not limited to:
 - 1. Tapered edge strips, cant strips, and wood nailers. (Refer to this Section and Section 06 10 00)
 - 2. Curbs (Refer to Section 07 72 00)
 - 3. Fully adhered thermoplastic single-ply membrane roofing
 - 4. Flashings, including sheet metal perimeter edge (fascia) (Refer this Section and Section 07 62 00)
 - 5. Walkway pads, expansion joints, and other work incidental to, the complete and proper installation of a watertight roofing system as shown on the drawings or specified herein, and in accordance with all applicable requirements of the Contract Documents.

- B. It is the intent of this Section that the Work shall:
 - 1. Provide a watertight facility.
 - 2. Conform to all applicable building code requirements and of authorities having jurisdiction.
 - 3. Include Section 07 62 00, and Section 07 72 00, as part of the Work of this Section; and be performed by a single source contractor.
 - 4. Coordinate with General Contractor of temporary equipment and conduit on roof and protection of installed roof membrane.

1.2 RELATED WORK

- A. All Sections of Work relating to the roofing system, including mechanical, plumbing and electrical items penetrating the roof system.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. A385, Practice for Providing High-Quality Zinc Coatings (Hot-Dip)
 - 2. D471, Resistance to water absorption
 - 3. D638, Tensile Properties of Plastics
 - 4. D751, Method of Testing Coated Fabrics
 - 5. D1149 Ozone resistance
 - 6. D1204 Linear Dimensional Change
 - 7. D 2137 Brittleness point, max,
 - 8. D 4637/6878(annex A1) Thickness over scrim
 - 9. E 96 Water vapor permeance, Perms
 - 10. E 903 Solar Reflectance (albedo X 100), %
 - 11. G 151/154 Accelerated weathering
 - 12. FTM 101C method 2031 Puncture resistance

- B. ASCE-7 Wind uplifts requirements for geographical area.

- C. Federal Specifications (FS)
 - 1. TT-S-00230C

- D. National Roofing Contractors Association (NRCA)
 - 1. Roofing and Waterproofing Manual
- E. Single Ply Roofing Institute (SPRI)
- F. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)
 - 1. Architectural Sheet Metal Manual
- G. Underwriters' Laboratories (UL)
 - 1. Fire Hazard Classifications
 - 2. Class 90-wind uplift.
- H. International Building Code

PART 2 - PRODUCTS

2.1 GENERAL

- A. The components of the roof system are intended to be products of a single manufacturer as required providing the specified system warranty. Products not manufactured by the membrane manufacture, but are required in the roofing assembly, will be recognized by the roofing manufacture and covered under the manufactures warranty.
- B. Install all materials in accordance with manufacturer's current written specifications and details. Deviations shall not be made without prior written approval from the manufacturer and the Owner's Representative. Should any specifications or details conflict with the Contract Documents, submit to Owner the recommended alternative that provides the best long term moisture protection and complies with manufacturer's warranty requirements for approval.

2.2 APPROVED MANUFACTURERS

- A. Specifications are based on "G410 EnergySmart Feltback" Sarnafil's, fully adhered PVC single-ply roofing system manufactured by Sika Sarnafil. Manufacturers whose products meet or exceed the specifications, who have manufactured and installed roof materials and systems of the type specified for a minimum of ten (10) years and who maintains a single source responsibility for the total roofing system, as described herein, may apply for approval as a substitution in accordance with Division 1 requirements regarding substitutions.
 - 1. Carlisle, Inc.
 - 2. Seaman Corporation
 - 3. Johns Manville
 - 4. GAF Everguard
 - a. All materials shall be manufactured, specified, or accepted in writing by membrane manufacturer issuing the warranty. Proposed materials shall ensure full system warranty from said manufacturer. Installer shall be an applicator licensed by the manufacturer.
 - b. Samples of all materials used on the project, which are not supplied by the membrane manufacturer, shall be submitted to the membrane manufacturer for written approval prior to starting work.
 - c. All materials used on the project shall be asbestos free.

2.3 ROOF MEMBRANE ASSEMBLY

- A. Thermoplastic Sheet: Uniform, flexible sheet formed from polyvinyl chloride, complying with ASTM D 4434, of the following type, thickness, and exposed face color:
1. Classification Type III, polyester-reinforced Thermoplastic.
 2. Thermoplastic Polymer Thickness:
 - a. Base Proposal: 60 mils
 3. FM Approved
 4. UL Class A.
 5. Exposed Face Color: White
 6. Initial SRI, 104. 3-Year SRI, 85.

B. Physical Properties:

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
Min. Polymer Thickness, inch	0.0480	ASTM D 638
Thickness Above Scrim, mil	30	
Felt Weight, oz. per sq. yd.	9	
Tensile Strength, min. psi, MD	1575	ASTM D 638
Tensile Strength, min. psi, CD	1550	ASTM D 638
Elongation at break, MD (%)	250	ASTM D 638
Elongation at break, CD (%)	220	ASTM D 638
Seam Strength, min. percent of tensile or breaking strength	Pass	ASTM D 638
Retention of properties after heat aging;		ASTM D 3045
Tensile Strength, min. (% of original)	Pass	ASTM D 638
Elongation, min. (% of original)	Pass	ASTM D 638
Tearing Resistance (min. lbf)	17.5	ASTM D 1004
Low Temperature Bend at -40 degrees F	Pass	ASTM D 2136
Accelerated Weathering Test (Fluorescent) - 10, 000 hours	Pass	ASTM G 154
Cracking (7x magnification)	None	
Discoloration (by observation)	Negligible	
Crazing (7x magnification)	None	
Linear Dimensional Change, max. percent	-0.02%	ASTM D 1204
Weight Change after Immersion in Water, percent	1.9%	ASTM D 570
Static Puncture Resistance 33 lbf	Pass	ASTM D 5602
Dynamic Puncture Resistance		ASTM D 5635

7.3 ft-lbf	Pass	
Fungi Resistance	No sustained growth or discoloration after 21 days	ASTM D 21

2.4 ROOF INSULATION

- A. Light Weight Insulating Concrete. Refer to Section 03321
- B. All insulation shall be approved in writing by the membrane manufacturer as to thickness, type, and manufacturer. All insulation must be approved for the specific application, with UL and FM approval.
- C. Recover Board: Glass-Faced Gypsum Roof Board equal to UL rated Type X "Dens Deck Prime" as produced by Georgia-Pacific. Board sizes shall be 48" x 96" x 1/2" or as indicated on drawings for roof assembly. Provide as required by manufacture recommendation primer for Roof System. Approved substitute, SECUROCK by USG.
- D. Polyisocyanurate Roof Insulation: (As Needed) Shall comply with ASTM C1289 and Federal Specification (FS) HH-I-1972/Gen and HH-I-1972/2, with a 20 psi minimum compressive strength. Insulation shall be surfaced on both sides with a non-asphaltic fiberglass facers. Thickness shall be a minimum 3" (or size specified on drawings). Approved product shall be E'NERGY 2 as manufactured by Johns Manville or pre-approved substitute.
- E. Tapered Insulation: Factory cut 48 inches x 48 inches Polyisocyanurate board cut to 1/8 inch per foot slope; thickness varies; ASTM C1289, UL Class A, Factory Mutual Class 1. Approved product shall be Tapered E'NERGY 2 manufactured by Johns Manville or pre-approved substitute. Provide 1/2 inch recovery board similar to that specified above over tapered Polyisocyanurate board insulation if used.
- F. Tapered Edge Strip: 1-1/2 inches to 0 inches (or as required, field verify), 18 inches x 48 inches, install at all expansion joints, curbs, projections, crickets, saddles and base flashings. Approved material shall be as manufactured by Johns Manville or pre-approved substitute.

2.5 ACCESSORIES

- A. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing materials.
 - 1. Furnish liquid-type auxiliary materials that meet VOC limits of authorities having jurisdictions.
- B. Flashing and Flashing Accessories: As recommended by the Thermoplastic sheet manufacturer's printed instructions for reinforced sheet flashing of same material, type, thickness, and color as sheet membrane.
- C. Lightweight Insulating Concrete Base Sheet Fasteners: Shall be approved by the fastener manufacturer, membrane manufacturer and FM for use with lightweight insulating concrete as follows:
 - 1. Fastener shall be a single unit, precision formed, of electro zinc coated steel having a 2.7 inch diameter rib reinforced cap and 1.7 inch long rectangular legs, designed to expand when fully driven into the lightweight insulating concrete. Fasteners for lightweight insulating concrete shall meet ASCE wind uplift requirements for corrosion resistance. As manufactured by Olympic Fasteners, or approved substitute.

- D. Cementitious Wood Decks Fasteners shall be a twin lock type fastener suitable to secure a base sheet and shall be approved by the fastener manufacturer, membrane manufacturer and FM for use with this type deck.
- E. Base Sheet: (as required) heavy-duty base sheet mechanically fastened to Maintain a FM 1-90 wind up-lift rating.
- F. Bonding Adhesive: As recommended by thermoplastic sheet manufacturer's printed instructions to develop a bond between the membrane and the substrate to which the membrane is to be attached. Sure-Weld Bonding Adhesive or approved substitute.
- G. Metal Termination Bars: Manufacturer's standard aluminum bars, approximately 1-inch (25-mm) wide, roll formed and pre-punched.
- H. Metal Battens: Manufacturer's standard aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, pre-punched.
- I. Metal Flashings, Copings, Edge Trim and Accessories: Provide all roofing manufacturer's metal required for a complete roofing system covered under the manufacturer's warranty.
- J. Sealants: Membrane manufacturer's approved sealant shall be used to seal penetrations through the membrane system and at miscellaneous sealant applications that come in contact with roof systems components.
- K. Air Seal Membrane: If required by manufacturer to meet wind design requirements. Air seal membrane shall be a minimum 4 mil. Polyethylene sheeting or as required by roof system manufacturer.
- L. Sealing Tape Strip: Compressible foam with pressure-sensitive tape on one side. Sealing tape strip is to be used with metal flashing as a preventive measure against air and wind blown moisture entry.
- M. Miscellaneous Accessories: Provide pourable sealants, performed cone and vent sheet flashings, pre-formed inside and outside corner sheet flashings, T-joint covers, termination reglets, and other accessories as recommended by roofing system manufacturer for intended use.
- N. Other miscellaneous materials shall be of the best grade available and approved in writing by roof system manufacturer, prior to use, for the specific application.

PART 3 - EXECUTION

3.1 GENERAL:

- A. The manufacturer's Technical Specifications and the NRCA Repair Manual for Low-Slope Membrane Roof Systems shall be considered a part of this specification and should be referred to for more specific application procedures and recommendations.
 - 1. Prepare surfaces according to manufacturers or applicator's published instructions. Remove all wet and loose material back to dry and fully adhered materials.
 - 2. Use cleaning materials or primers necessary to render an acceptable surface/substrate.
 - 3. Protect adjacent areas with tarpaulin or other durable materials.
 - 4. Contractor shall prevent overspray, and be responsible for parking lot areas and/or adjoining areas not part of this contract.

5. Contractor shall be responsible for sealing, as required, all openings that may allow bitumen migration or drippage, i.e., pitch dams, envelopes, filler strips.
 6. All materials shall be applied using trowels and/or tools designed for application. Hand application of materials shall be cause for rework.
 7. All surfaces/substrates shall be clean and dry prior to application of materials.
- B. Leak Repair: The intent of these specifications is for the contractor to identify and correct all roof leaks in the facility. Materials and methods employed shall be on an as required basis, based upon the specific conditions encountered.
- C. Match new materials with manufacturer's existing materials on each project.
- D. If deck or substrate damage is suspected, promptly notify Owner for proper course of action.
- E. Contractor may be asked to document repairs made with sketches, photos, measurements, or other means at owners request at no additional fee.
- F. Contractor is responsible for identifying the type of existing materials in order to ensure that the repair materials are fully compatible with the existing materials. Repairs made with incompatible materials will be torn out and replaced with proper compatible materials at the contractors expense.

3.2 PROVIDE MISCELLANEOUS REPAIRS TO BASE FLASHINGS AS FOLLOWS:

- A. General repair procedures for "Loose or Displaced Wall and Base Flashings to Thermoplastic Membranes:
1. After preparing the membrane (see steps 4-5), cut back flashing materials that are unadhered, wrinkled or displaced until reaching adhered material. If the cut will interface with the field of the roof, mechanically attach the field membrane prior to cutting the flashing.
 2. Sweep and scrape clean the existing substrate to be flashed. Wipe down the underside of the membrane (surface to be adhered to the substrate) with solvent and allow to dry.
 3. Re-adhere loose materials by hot-air welding or bonding adhesive recommended by the membrane manufacturer.
 4. Install a patch to repair the cut location. To promote thorough adhesion of a patch, it is essential to begin preparing the surface by removing debris, contaminants and ballast from the area of the membrane and flashing to be repaired. The area prepared should extend beyond the perimeter of the patch to provide an ample sized clean work area.
 5. Scrub the repair area with a solution of detergent and water, such as Spic 'n Span™ or other detergent containing trisodium phosphate. Use warm (if available) water and a stiff bristle brush to scrub the membrane.
 6. Rinse thoroughly with clean water and allow the membrane to dry. A rubber bladed squeegee and clean, absorbent, lint-free cloths may be used to facilitate drying.
 7. Cut a patch from a piece of new membrane material large enough to extend 4 inches (103mm) beyond any part of the defect. Round all corners of the patch to limit peeling of square corners.
 8. Wipe the area of the existing membrane to receive the patch and the underside of the patch material with a clean, absorbent, lint-free cloth dampened with a solvent such as methyl ethyl ketone (MEK) or acetone. Do not pour the solvent directly on to the membrane. Wipe the area with the solvent dampened cloth.
 9. Allow the surface of the membrane and patch to air dry.
 10. Weld the patch in place by using the three-step thermoplastic welding steps: tack-

weld, pre-weld and final-weld as described in the following:

Tack-weld the patch to the existing membrane by using a hot-air welder to weld the membrane sufficiently to hold the patch in place taking care to not wrinkle the patch material.

Pre-weld the patch by inserting the hot-air nozzle under the patch and forming a continuous pre-weld approximately 2 inches (51mm) from the edge of the patch. This pre-weld will prevent heat leakage during the final-welding and is achieved by following the welder nozzle closely with a rubber-faced hand roller to provide pressure to adhere the back of the weld area.

Final-weld the outer 2 inches (51mm) by concentrating the heat on the remaining unadhered outer portion of the patch until the membrane and patch have reached the welding temperature. The hot-air welder should be moved quickly enough to avoid scorching the membrane, yet slowly enough to achieve a complete weld. Immediately behind the welder, roll the material to be bonded with the rubber faced hand roller, rolling parallel to the outside edge of the welder nozzle and pressing firmly to adhere and mate the materials.

11. After the welded area has cooled, check seams for voids with a rounded tip probe such as a screwdriver or awl with the tip rounded.
 12. Where patches are made with reinforced membrane material, seam seal the outer perimeter with seam sealant or caulking paste compatible with the membrane. This will prevent water from wicking through the exposed edge of the reinforcement.
 13. If the ballast was removed, redistribute the ballast over the exposed area.
- B. General repair procedures for "Termination of Base Flashings to Thermoplastic Membranes":
1. Remove length of loose termination bar and examine substrate integrity.
 2. If substrate is sound, resecure flashings using fasteners of sufficient length and either of a larger diameter or fastened into an adjacent location (new hole).
 3. Remove any sealant along the top of the termination bar.
 4. Use a stiff, short-bristled brush to remove residual sealant and wipe the upper "caulking-lip" of bar and substrate with a solvent moistened cloth and allow to dry.
 5. Apply and tool a continuous bead of new sealant along the caulking-lip of the bar to seal the base flashing.

3.3 PROVIDE MISCELLANEOUS REPAIRS TO FIELD OF ROOF MAT AS FOLLOWS:

- A. General repair procedures for "Patching Thermoplastic Membranes":
1. To promote thorough adhesion of a patch, it is essential to begin preparing the surface by removing debris, contaminants and ballast from the area of the membrane or flashing to be repaired. The area prepared should extend beyond the perimeter of the patch to provide an ample sized clean work area.
 2. Scrub the repair area with a solution of detergent and water, such as Spic 'n Span™ or other detergent containing trisodium phosphate. Use warm (if available) water and a stiff bristle brush to scrub the membrane.
 3. Rinse thoroughly with clean water and allow the membrane to dry. A rubber bladed squeegee and clean, absorbent, lint-free cloths may be used to facilitate drying.
 4. If the existing membrane surface is excessively contaminated or degraded, carefully enlarge the hole (make round) to allow the insertion of the new patch material under the existing membrane so that welding of the patch may be accomplished to the underside (unexposed, less degraded side) of the existing membrane.
 5. Cut a patch from a piece of new membrane material large enough to extend 4 inches (103mm) beyond any part of the defect. Round all corners of the patch to limit peeling of square corners.

6. Round the ends of the defect in the existing membrane.
 7. Wipe the area of the existing membrane to receive the patch (the underside if necessary, and ensure moisture is not present) and the underside of the patch material with a clean, absorbent, lint-free cloth dampened with a solvent such as methyl ethyl ketone (MEK) or acetone. Do not pour the solvent directly on to the membrane. Wipe the area clean with the solvent dampened cloth.
 8. Allow the surface of the membrane and patch to air dry.
 9. Weld the patch in place by using the three-step thermoplastic welding steps: tack-weld, pre-weld and final-weld as described in the following:
Tack-weld the patch to the existing membrane by using a hot-air welder to weld the membrane sufficiently to hold the patch in place taking care to not wrinkle the patch material.
Pre-weld the patch by inserting the hot-air nozzle under the patch and forming a continuous pre-weld approximately 2 inches (51mm) from the edge of the patch. This pre-weld will prevent heat leakage during the final-welding and is achieved by following the welder nozzle closely with a rubber-faced hand roller to provide pressure to adhere the back of the weld area.
Final-weld the outer 2 inches (51mm) by concentrating the heat on the remaining unadhered outer portion of the patch until the membrane and patch have reached the welding temperature. The hot-air welder should be moved quickly enough to avoid scorching the membrane, yet slowly enough to achieve a complete weld. Immediately behind the welder, roll the material to be bonded with the rubber faced hand roller, rolling parallel to the outside edge of the welder nozzle and pressing firmly to adhere and mate the materials.
 10. After the welded area has cooled, check seams for voids with a rounded tip probe such as a screwdriver or awl with the tip rounded.
 11. Where patches are made with reinforced membrane material, seam seal the outer perimeter with seam sealant or caulking paste compatible with the membrane. This will prevent water from wicking through the exposed edge of the reinforcement.
 12. If the ballast was removed, redistribute the ballast over the exposed area.
- B. General repair procedures for "Patching Holes, Tears, Splits or Abrasions to Thermoplastic Membranes":
1. Check for any foreign debris; remove if present.
 2. If water infiltration is suspected, open the membrane and inspect the insulation and deck for damage. Remove wet or damaged insulation and repair or replace the deck as required. Properly attach new, dry insulation consistent with the thickness of the existing insulation and compatible with the other roof system components.
 3. In addition, if a slip sheet is present, inspect the slip sheet and restore by taping as necessary.
 4. To promote thorough adhesion of a patch, it is essential to begin preparing the surface by removing debris, contaminants and ballast from the area of the membrane to be repaired. The area repaired should extend beyond the perimeter of the patch to provide an ample sized clean work area.
 5. Scrub the repair area with a solution of detergent and water, such as Spic 'n Span™ or other detergent containing trisodium phosphate. Use warm (if available) water and a stiff bristle brush to scrub the membrane.
 6. Rinse thoroughly with clean water and allow the membrane to dry. A rubber bladed squeegee and clean, absorbent, lint-free cloths may be used to facilitate drying.
 7. If the existing membrane surface is excessively contaminated or degraded, carefully enlarge the hole (make round) to allow the insertion of the new patch material under the existing membrane so that welding of the patch may be accomplished to the underside (unexposed, less degraded side) of the existing

- membrane.
8. Cut a patch from a piece of new membrane material large enough to extend 4 inches (103mm) beyond any part of the defect. Round all corners of the patch to limit peeling of square corners.
 9. Round the ends of the defect in the existing membrane.
 10. Wipe the area of the existing membrane to receive the patch (the underside if necessary, and ensure moisture is not present) and the underside of the patch material with a clean, absorbent, lint-free cloth dampened with a solvent such as methyl ethyl ketone (MEK) or acetone. Do not pour the solvent directly on to the membrane. Wipe the area with the solvent dampened cloth.
 11. Allow the surface of the membrane and patch to air dry.
 12. Weld the patch in place by using the three-step thermoplastic welding steps: tack-weld, pre-weld and final-weld as described in the following:
Tack-weld the patch to the existing membrane by using a hot-air welder to weld the membrane sufficiently to hold the patch in place taking care to not wrinkle the patch material.
Pre-weld the patch by inserting the hot-air nozzle under the patch and forming a continuous pre-weld approximately 2 inches (51mm) from the edge of the patch. This pre-weld will prevent heat leakage during the final-welding and is achieved by following the welder nozzle closely with a rubber-faced hand roller to provide pressure to adhere the back of the weld area.

Final-weld the outer 2 inches (51mm) by concentrating the heat on the remaining unadhered outer portion of the patch until the membrane and patch have reached the welding temperature. The hotair welder should be moved quickly enough to avoid scorching the membrane, yet slowly enough to achieve a complete weld. Immediately behind the welder, roll the material to be bonded with the rubber faced hand roller, rolling parallel to the outside edge of the welder nozzle and pressing firmly to adhere and mate the materials.
 13. After the welded area has cooled, check seams for voids with a rounded tip probe such as a screwdriver or awl with the tip rounded.
 14. Where patches are made with reinforced membrane material, seam seal the outer perimeter with seam sealant or caulking paste compatible with the membrane. This will prevent water from wicking through the exposed edge of the reinforcement.
 15. If the ballast was removed, redistribute the ballast over the exposed area.
- C. General repair procedures for "Repairs for Laps and Splices to Thermoplastic Membranes":
1. Pull back the material in the unbonded lap until an area is reached where a strong bond exists.
 2. If water infiltration is suspected, open the membrane and inspect the insulation and deck for damage. Remove wet or damaged insulation and repair or replace the deck as required. Properly attach new, dry insulation consistent with the thickness of the existing insulation and compatible with the other roof system components.
 3. Clean and reweld the open lap as best as possible to adhere the seam.
 4. Strip in the rewelded seam with a nominal 8-inch (203mm) wide patch.
 5. To promote thorough adhesion of a patch, it is essential to begin preparing the surface by removing debris, contaminants and ballast from the area of the membrane to be repaired. The area prepared should extend beyond the perimeter of the patch to provide an ample sized clean work area.
 6. Scrub the repair area with a solution of detergent and water, such as Spic 'n Span™ or other detergent containing trisodium phosphate. Use warm (if available) water and a stiff bristle brush to scrub the membrane.
 7. Rinse thoroughly with clean water and allow the membrane to dry. A rubber

bladed squeegee and clean, absorbent, lint-free cloths may be used to facilitate drying.

8. Cut a patch from a piece of new membrane material large enough to extend 4 inches (103mm) beyond any part of the defect. Round all corners of the patch to limit peeling of square corners.
9. Wipe the area of the existing membrane to receive the patch and the underside of the patch material with a clean, absorbent, lint-free cloth dampened with a solvent such as methyl ethyl ketone (MEK) or acetone. Do not pour the solvent directly on to the membrane. Wipe the area with the solvent dampened cloth.
10. Allow the surface of the membrane and patch to air dry.
11. Weld the patch in place by using the three-step thermoplastic welding steps: tack-weld, pre-weld and final-weld as described in the following:
Tack-weld the patch to the existing membrane by using a hot-air welder to weld the membrane sufficiently to hold the patch in place taking care to not wrinkle the patch material.
Pre-weld the patch by inserting the hot-air nozzle under the patch and forming a continuous pre-weld approximately 2 inches (51mm) from the edge of the patch. This pre-weld will prevent heat leakage during the final-welding and is achieved by following the welder nozzle closely with a rubber-faced hand roller to provide pressure to adhere the back of the weld area.

Final-weld the outer 2 inches (51mm) by concentrating the heat on the remaining unadhered outer portion of the patch until the membrane and patch have reached the welding temperature. The hot-air welder should be moved quickly enough to avoid scorching the membrane, yet slowly enough to achieve a complete weld. Immediately behind the welder, roll the material to be bonded with the rubber faced hand roller, rolling parallel to the outside edge of the welder nozzle and pressing firmly to adhere and mate the materials.
12. After the welded area has cooled, check seams for voids with a rounded tip probe such as a screwdriver or awl with the tip rounded.
13. Where patches are made with reinforced membrane material, seam seal the outer perimeter with seam sealant or caulking paste compatible with the membrane. This will prevent water from wicking through the exposed edge of the reinforcement.
14. If the ballast was removed, redistribute the ballast over the patch.

D. General repair procedures for "Repair Membrane Shrinkage to Thermoplastic Membranes":

1. After preparing the membrane (see steps 4-5), cut the membrane a short distance from and parallel with the perimeter, base of the wall, curb, or termination point to relieve the tension.
2. Allow the membrane to relax for a minimum of 30 minutes.
3. Secure the membrane to the deck or wall by mechanically fastening with rigid batten bars or seam plates fastened at 6-12 inches on center (152-300mm), or as recommended by the membrane manufacturer.
4. To promote thorough adhesion of a patch, it is essential to begin preparing the surface by removing debris, contaminants and surface coating from the area of the membrane or flashing to be repaired. The area prepared should extend beyond the perimeter of the patch to provide an ample sized clean work area.
5. Scrub the repair area with a solution of detergent and water, such as Spic 'n Span[™] or other detergent containing trisodium phosphate. Use warm (if available) water and a stiff bristle brush to scrub the membrane.
6. Rinse thoroughly with clean water and allow the membrane to dry. A rubber bladed squeegee and clean, absorbent, lint-free cloths may be used to facilitate drying.
7. If the existing membrane surface is excessively degraded, insert the new patch

material under the existing membrane so that welding of the patch may be accomplished to the underside (unexposed, less degraded side) of the existing membrane.

8. Cut a patch from a piece of new membrane material large enough to extend 4 inches (103mm) beyond the batten bars, seam plates or membrane cut edges in all directions. Round all corners of the patch to limit peeling of square corners.
9. Wipe the area of the existing membrane to receive the patch and the underside of the patch material with a clean, absorbent, lint-free cloth dampened with a solvent such as methyl ethyl ketone (MEK) or acetone. Do not pour the solvent directly on to the membrane. Wipe the area with the solvent dampened cloth.
10. Allow the surface of the membrane and patch to air dry.
11. Weld the patch in place by using the three-step thermoplastic welding steps: tack-weld, pre-weld and final-weld as described in the following:
Tack-weld the patch to the existing membrane by using a hot-air welder to weld the membrane sufficiently to hold the patch in place taking care to not wrinkle the patch material.
Pre-weld the patch by inserting the hot-air nozzle under the patch and forming a continuous pre-weld approximately 2 inches (51mm) from the edge of the patch. This pre-weld will prevent heat leakage during the Final-welding and is achieved by following the welder nozzle closely with a rubber-faced hand roller to provide pressure to adhere the back of the weld area.
Final-weld the outer 2 inches (51mm) by concentrating the heat on the remaining unadhered outer portion of the patch until the membrane and patch have reached the welding temperature. The hot-air welder should be moved quickly enough to avoid scorching the membrane, yet slowly enough to achieve a complete weld. Immediately behind the welder, roll the material to be bonded with the rubber faced hand roller, rolling parallel to the outside edge of the welder nozzle and pressing firmly to adhere and mate the materials.
12. After the welded area has cooled, check seams for voids with a rounded tip probe such as a screwdriver or awl with the tip rounded.
13. Where patches are made with reinforced membrane material, seam seal the outer perimeter with seam sealant or caulking paste compatible with the membrane. This will prevent water from wicking through the exposed edge of the reinforcement.

3.4 PROVIDE MISCELLANEOUS REPAIRS TO PERIMETER EDGE AND PENETRATIONS AS FOLLOWS:

- A. General repair procedures for "Loose Metal Edge Flashings to Thermoplastic Membranes":
 1. Remove unbonded flashing membrane.
 2. Replace damaged sheet metal edging or sections that are severely corroded (e.g., holes rusted through the metal).
 3. Clean surface rusted/lightly corroded metal. Prime and paint with corrosion resistant paint.
 4. Refasten loose metal edging by removing fasteners that are backing out and renailling into solid locking with annular ring shank or screw-shank nails.
 5. To promote thorough adhesion of a patch, it is essential to begin preparing the surface by removing debris, contaminants and ballast from the area of the membrane and flashing to be repaired. The area prepared should extend beyond the perimeter of the patch to provide an ample sized clean work area.
 6. Scrub the repair area with a solution of detergent and water, such as Spic 'n Span™ or other detergent containing trisodium phosphate. Use warm (if available) water and a stiff bristle brush to scrub the membrane.
 7. Rinse thoroughly with clean water and allow the membrane to dry. A rubber bladed squeegee and clean, absorbent, lint-free cloths may be used to facilitate

- drying.
8. Cut a coverstrip/stripping ply from a piece of new membrane material large enough to extend 4 inches (103mm) beyond any part of the defect. Round all corners of the patch to limit peeling of square corners.
 9. Wipe the area of the existing membrane to receive the coverstrip/ stripping ply and the underside of the patch material with a clean, absorbent, lint-free cloth dampened with a solvent such as methyl ethyl ketone (MEK) or acetone. Do not pour the solvent directly on to the membrane. Wipe the area with the solvent dampened cloth.
 10. Allow the surface of the membrane and patch to air dry.
 11. Weld the patch in place by using the three-step thermoplastic welding steps: tack-weld, pre-weld and final-weld as described in the following: Tack-weld the patch to the existing membrane by using a hot-air welder to weld the membrane sufficiently to hold the patch in place taking care to not wrinkle the patch material. Pre-weld the patch by inserting the hot-air nozzle under the patch and forming a continuous pre-weld approximately 2 inches (51mm) from the edge of the patch. This pre-weld will prevent heat leakage during the final-welding and is achieved by following the welder nozzle closely with a rubber-faced hand roller to provide pressure to adhere the back of the weld area. Final-weld the outer 2 inches (51mm) by concentrating the heat on the remaining unadhered outer portion of the patch until the membrane and patch have reached the welding temperature. The hot-air welder should be moved quickly enough to avoid scorching the membrane, yet slowly enough to achieve a complete weld. Immediately behind the welder, roll the material to be bonded with the rubber faced hand roller, rolling parallel to the outside edge of the welder nozzle and pressing firmly to adhere and mate the materials.
 12. After the welded area has cooled, check seams for voids with a rounded tip probe such as a screwdriver or awl with the tip rounded.
 13. Where patches are made with reinforced membrane material, seam seal the outer perimeter with seam sealant or caulking paste compatible with the membrane. This will prevent water from wicking through the exposed edge of the reinforcement.
 14. If the ballast was removed, redistribute the ballast over the exposed area.
- B. General repair procedures for "Loose Penetration Flashings to Thermoplastic Membranes":
1. If the material is unbonded, pull back the loose membrane until a strong bond is reached. Clean and dry the surfaces of the sheet and reweld or rebond the membrane to the metal. Strip in a cover patch over the readhered flashing.
 2. To promote thorough adhesion of a patch, it is essential to begin preparing the surface by removing debris, contaminants and surface coating from the area of the membrane and flashing to be repaired. The area prepared should extend beyond the perimeter of the patch to provide an ample sized clean work area.
 3. Scrub the repair area with a solution of detergent and water, such as Spic 'n Span™ or other detergent containing trisodium phosphate. Use warm (if available) water and a stiff bristle brush to scrub the membrane.
 4. Rinse thoroughly with clean water and allow the membrane to dry. A rubber bladed squeegee and clean, absorbent, lint-free cloths may be used to facilitate drying.
 5. Cut a patch from a piece of new membrane material large enough to extend 4 inches (103mm) beyond any part of the defect. Round all corners of the patch to limit peeling of square corners.
 6. Wipe the area of the existing membrane to receive the patch and the underside of the patch material with a clean, absorbent, lint-free cloth dampened with a solvent such as methyl ethyl ketone (MEK) or acetone. Do not pour the solvent directly on to the membrane. Wipe the area with the solvent dampened cloth.

7. Allow the surface of the membrane and patch to air dry.
 8. Weld the patch in place by using the three-step thermoplastic welding steps: tack-weld, pre-weld and final-weld as described in the following: Tack-weld the patch to the existing membrane by using a hot-air welder to weld the membrane sufficiently to hold the patch in place taking care to not wrinkle the patch material. Pre-weld the patch by inserting the hot-air nozzle under the patch and forming a continuous pre-weld approximately 2 inches (51mm) from the edge of the patch. This pre-weld will prevent heat leakage during the final-welding and is achieved by following the welder nozzle closely with a rubber-faced hand roller to provide pressure to adhere the back of the weld area. Final-weld the outer 2 inches (51 mm) by concentrating the heat on the remaining unadhered outer portion of the patch until the membrane and patch have reached the welding temperature. The hot-air welder should be moved quickly enough to avoid scorching the membrane, yet slowly enough to achieve a complete weld. Immediately behind the welder, roll the material to be bonded with the rubber faced hand roller, rolling parallel to the outside edge of the welder nozzle and pressing firmly to adhere and mate the materials.
 9. After the welded area has cooled, check seams for voids with a rounded tip probe such as a screwdriver or awl with the tip rounded.
 10. Where patches are made with reinforced membrane material seam seal the outer perimeter with seam sealant or caulking paste compatible with the membrane. This will prevent water from wicking through the exposed edge of the reinforcement.
 11. If the ballast was removed, redistribute the ballast over the exposed area.
- C. General repair procedures for "Pitch Pan Flashings to Thermoplastic Membranes":
1. If the filler material has cracked, pulled away from the side(s) of the pocket, or is below the level of the top of the pan, remove the loose or damaged sealant material.
 2. Where the membrane flashing does not extend into the pan, wire brush and clean the penetration extending through the existing metal pan.
 3. Check the membrane flashing, evaluate if extending the membrane over and down one to two inches into the pan would extend the service life of the detail. If so, apply the additional flashing.
 4. Thoroughly mix and pour-in the new two-component sealant.
 5. Crown the sealer above the top of the penetration pocket to provide drainage away from the penetration.
- D. General repair procedures for "Interior Drains to Thermoplastic Membranes":
1. If leaks are suspected at interior drains, ensure the drain is free flowing, then check (water test, if necessary) the drain bowl and plumbing from the underside of the deck (if access is possible) to determine if plumbing parts are cracked, if condensation is a problem, or if the plumbing joints are leaking. If there are no problems evident, inspect membrane-to-drain bowl interface for voids/problems.
 2. If water-block sealant is continuous, check clamping ring bolts and snug-down in sequence to tighten clamping ring. If sealant is not continuous, or leak persists:
 3. Remove the drain clamping ring. Repair or replace all drain parts that are missing or are broken. Drilling and retapping of drain bolts and receivers may be necessary.
 4. Lift the membrane and inspect the membrane-to-drain surface. If the membrane is found to be deteriorated, install a new membrane flashing ply.
 5. Remove existing sealant and wire brush the drain bowl thoroughly to remove rust and provide a surface for new waterblock sealant to adhere.
 6. Check the parts of the drain for high or rough edges; file or wire brush if rough to prevent these parts from abrading or cutting the membrane flashing.
 7. Clean, dry, and solvent wipe the underside of membrane and wire brush flange

- surrounding drain bowl. Allow to dry.
8. Apply new water-block sealant around the drain bowl flange in a continuous bead.
 9. Lightly rub the membrane into the sealant, and set clamping ring evenly over the flange.
 10. Secure the clamping ring by tightening the bolts finger tight, then snug bolts in alternating sequence to evenly compress sealant.

END OF SECTION

SECTION 07 62 00

ROOF RELATED SHEET METAL

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable to this Section.

PART I - GENERAL

1.1 SECTION INCLUDES

- A. It is the intent of this Section that the Work shall:
 - 1. conform to all applicable building code requirements and of authorities having jurisdiction;
 - 2. include all shop and field formed sheet metal work shown on drawings, specified or required, including, but not limited to:
 - a. Roof penetration sleeves and hood and umbrella counterflashing
 - b. Metal counterflashing
 - c. Expansion joint
 - d. Roof drains
 - e. Scuppers
 - f. Metal perimeter edge
 - g. Gutters, Downspouts, Splash Blocks and Splash Pans
 - h. One-way roof moisture relief vents
 - i. Metal gravity vents
 - j. Metal heat exhaust vents
 - k. Sanitary vent pipes
 - l. Pipe box
 - m. Copings, trim and miscellaneous sheet metal accessories.
 - 3. be part of the Work of Section 07 52 19, Modified Bitumen Membrane Roofing System; and
 - 4. be performed by a single source contractor.

1.2 RELATED WORK

- A. Section 07 52 19 - Modified Bitumen Membrane Roofing System
- B. Section 07 72 00 - Roof Accessories
- C. All Sections of Work relating to or affecting the roofing system, including mechanical, plumbing and electrical items.

1.3 REFERENCES

- A. ASTM International (ASTM)
 - 1. A525, Standard Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
 - 2. A526, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality
 - 3. A527, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Lock-Forming Quality
 - 4. A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
 - 5. B32, Standard Specification for Solder Metal
 - 6. C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)

- B. FM Global (FM)
 - 1. Loss Prevention Data Sheets: I-49, Perimeter Flashing
- C. Federal Specifications (FS)
 - 1. QQ-L-201
- D. National Association of Architectural Metal Manufacturers (NAAMM)
- E. National Roofing Contractors Association (NRCA)
 - 1. Roofing and Waterproofing Manual
- F. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)
 - 1. Architectural Sheet Metal Manual

1.4 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's specifications and other data needed to prove compliance with specified requirements.
 - 2. Manufacturer's installation instructions.
- B. Shop Drawings: Indicating sizes, configurations, details of attachment to related and adjacent work, materials, and finishes.
- C. Samples:
 - 1. Full range of finish colors for Architect's selection.
 - 2. 12 inch long sample of each specified item with approved finish.
 - 3. Provide full size mockup of all shop built assemblies.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility: Fabricator and installer of roof-related flashing and accessories shall be the same as the membrane roof installer.
- B. Comply with governing codes and regulations of authorities having jurisdiction.

1.6 INSTALLATION CONFERENCE

- A. Refer to Section 01 31 13, Project Coordination.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, handle and store materials in accordance with manufacturer's instructions.
- B. Handle and store materials and equipment in such a manner as to avoid damage.
- C. No storage of materials shall be permitted on roof areas other than those materials that are to be installed the same day. Any exception must be in written form. Do not place materials or equipment in such a manner as to overload structure.

1.8 WARRANTIES

- A. Manufacturer's Product Warranty:

1. Manufacturer's standard 20 year Kynar 500 or Hylar 5000 Finish warranty signed by the manufacturer, with guarantee covering any failure of the fluoropolymer finish during the warranty period.
 2. Failure is defined to include, but not be limited to:
 - a. Deterioration of finish, such as fading, discoloring, peeling, cracking, corroding, etc.
 3. Correction may include repair or replacement of failed product.
- B. Roofing Contractor's Warranty:
1. Contractor shall warrant the sheet metal work and related work to be free from defects in workmanship and materials, and that the metal flashings will be and remain watertight, for a period of five (5) years from date of Substantial Completion.
 2. Defects shall include, but not be limited to:
 - a. Leaking water or bitumen within building or construction.
 - b. Becoming loose from substrate.
 - c. Loose or missing parts.
 - d. Finish failure as defined above.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

- A. Manufacturers named within specification are approved for use on the Project providing:
1. their products meet or exceed the specifications;
 2. company has a minimum of five (5) years experience manufacturing products of the type specified;
 3. products have been tested in conjunction with roofing membrane system as an assembly and as such has obtained the same approval and rating as the roofing membrane system; and
 4. products are approved for use by the roofing membrane manufacturer.
- B. Substitutions shall be in accordance with Division 1 requirements regarding substitutions.

2.2 SHEET METAL MATERIALS

- A. General Requirements: Roofing sheet metal system shall have been tested in conjunction with roofing membrane system as an assembly and have the same approval and rating as the roofing membrane system.
- B. Prefinished Aluminum Sheet:
1. Precoated type, aluminum conforming to Fed. Spec. QQ-A-250, ASTM B209.
 2. Finish: Kynar 500, color as selected by Architect from manufacturer's standard colors.
 3. Thickness: Minimum 0.040 inch, except as otherwise indicated.
- C. Sheet Lead:
1. Comply with FS QQ-L-201, Grade B
 - a. Four (4) pound minimum for use at roof drains and soil stacks.
- D. Stainless Steel: ASTM A167, Type 302/304 Soft Temper, No. 2D finish. Minimum thickness 24 gauge, except as otherwise noted.

2.3 FASTENERS

- A. Same metal as flashing/sheet metal or other non-corrosive metal or as noted below.
- B. Exposed fasteners shall be self-sealing and gasketed for weathertight installation. (ZAC type)
- C. Match finish of exposed heads with material being fastened.
- D. Mechanical Fasteners:
 - 1. Nails: Stainless Steel Ring shank, minimum 1-1/2 inches in length with 1/2 inch diameter head.
 - 2. Washers: Steel washers with bonded rubber sealing gasket.
 - 3. Screws: Self-tapping sheet metal type of stainless steel or compatible with material being fastened, with hooded integral EPDM washers (ZAC type).
 - 4. Rivets: Stainless steel and cadmium plated material, closed end type of sizes recommended by sheet metal manufacturer to suit application.
- E. Clips:
 - 1. Continuous Cleat (coping/fascia): Minimum 20 gauge, G-90 galvanized, stainless steel, or aluminum. Match material of coping/fascia and provide one (1) gauge heavier.

2.4 RELATED MATERIALS

- A. Solder: ASTM B32, alloy grade 58, 50 percent tin, 50 percent lead.
- B. Flux:
 - 1. Phosphoric acid type, manufacturer's standard.
 - a. For Use with Steel or Copper: Rosin flux
 - b. For Use with Stainless Steel: Acid-chloride type flux, except use rosin flux over tinned surfaces.
- C. Underlayment:
 - 1. 40 mil thick SBS modified bituminous product of self-adhering type with non-stick surface conforming to "TAMKO TW-Metal and Tile Underlayment" manufactured by Tamko Roofing Products, Inc., or Architect approved equal.
- D. Adhesives: Type recommended by flashing sheet manufacturer seaming and adhesive application of flashing sheet to ensure adhesion and watertightness.
- E. Metal Accessories: Sheet metal clips, straps, anchoring devices, clamps and similar accessories required for the complete installation of work, matching or compatible with material being installed, non-corrosive, size and gauge recommended by installer to suit application and performance.
- F. Sealant:
 - 1. Type A:
 - a. Type: One-part, non-sag, moisture-curing polyurethane sealant.
 - b. Approved Products / Manufacturers: "Chem-Calk 900" manufactured by Bostik Construction Products Division, "Vulkem 921" manufactured by Mameco International, Inc., "Dynatrol I" manufactured by Pecora Corporation, "MasterSeal NP 1" manufactured by BASF, or approved equal.
 - 2. Type B:
 - a. Type: One-part, neutral-curing, medium-modulus silicone sealant for sealing metal to metal surfaces, i.e. metal edge, cover plates, etc.
 - b. Approved Products / Manufacturers: "Chem-Calk 1200" manufactured by Bostik Construction Products Division, "795 Silicone Building Sealant"

manufactured by Dow Corning Corporation, "895 Silicone" manufactured by Pecora Corporation, "Omniseal" manufactured by Sonneborn Building Products, "Spectrem 2" manufactured by Tremco Incorporated, or approved equal.

- G. Grout - Pitch Pans:
 - 1. Type: Quick-setting, non-shrink, non-metallic, high strength formula complying with ASTM C1107.
 - 2. Approved Products / Manufacturers: "Sure Grip High Performance Grout" manufactured by Dayton Superior Corporation, "Premier Quick-Trim" manufactured by L & M Construction Chemicals, Inc., "MasterFlow" manufactured by BASF, or approved equal.
- H. Pitch Pan Filler:
 - 1. Type: Pourable polyurethane sealer, approved by roofing system manufacturer.
 - 2. Approved Products / Manufacturers: "Quick Pitch Sealer" manufactured by U.S. Intec, "SPM Pourable Sealer" manufactured by Johns Manville, or approved equal.
- I. Termination Bar:
 - 1. Material: Extruded aluminum bar with flat profile.
 - 2. Size: 1/8 inch thick by one (1) inch wide with factory punched 1/4 inch x 3/8 inch oval holes spaced six (6) inches on center.
 - 3. Approved Product / Manufacturer: "TB 125" manufactured by TruFast Corp., or approved equal.
- J. Pipe Hangers and Supports: Refer to Section 07 72 00, Roof Accessories.
- K. Splash Blocks: Concrete type, of size and profiles indicated; minimum 3,000 psi compressive strength at 28 days, with minimum five (5) percent air entrainment. Use at locations where roof drainage dumps on ground.
- L. Splash Pans: 22 gauge stainless steel, of size and profiles indicated. Use at locations where roof drainage discharges over adjoining, lower roof level(s).
- M. One-Way Moisture Relief Vents: Shall be fabricated from spun aluminum as recommended by Roofing Manufacturer.

2.5 FABRICATION

- A. Except as otherwise indicated, fabricate work in accordance with SMACNA Architectural Sheet Metal Manual and other recognized industry practices and reviewed shop drawings. Form all flashings, receivers and counterflashings in accordance with standards set forth in the NRCA roofing manual and SMACNA.
- B. Comply with manufacturer's installation instructions and recommendations.
- C. Unless noted otherwise, fabricate perimeter edge/fascia, scuppers, gutters, downspouts, copings, counterflashings, wind clips, and trim from pre-finished aluminum sheet steel.
- D. Shop fabricate work to greatest extent possible. Fabricate inside and outside corners for metal edges, counterflashing, and coping caps of equal length – minimum 2 foot lengths.
- E. Fabricate items to size and dimensions as indicated on the drawings. Limit single-piece lengths to ten (10) feet.

- F. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work sufficient to permanently prevent leakage, damage or deterioration of the work.
- G. Integrate flashing in a manner consistent with detailing. Form work to fit substrates.
- H. Make angle bends and folds for interlocking metal with full regard for expansion and contraction to avoid buckling or fullness in metal after installation.
- I. Fabricate items with straight lines, sharp angles, smooth curves, and true levels. Avoid tool marks, buckling, and oil canning.
- J. Fold back edges on concealed side of exposed edge to form hem.
- K. Unless noted otherwise, lap joints minimum one (1) inch. Rivet and solder joints on parts that are to be permanently and rigidly assembled.
- L. Seams:
 - 1. Wherever possible, fabricate non-moving seams in sheet metal with flat-lock seams and end joints.
 - 2. Pre-finished Galvanized Steel: Seal pre-finished metal seams with rivets and silicone sealant.
 - 3. Metal Other than Aluminum: Tin edges to be seamed, form seams, and solder.
- M. On Kynar 500 or Hylar 5000 pre-finished metal, surface sand metal flanges prior to applying any primers. Prime all metal in contact with bituminous material.
- N. Backpaint all concealed metal surfaces with bituminous paint where expected to be in contact with cementitious materials or dissimilar metals.
- O. Expansion Provisions: Where lapped or bayonet type expansion provisions in work cannot be used or would not be sufficiently waterproof or weatherproof, form expansion joints of intermeshing hooked flanges, not less than one (1) inch deep filled with mastic sealant concealed within joints.

2.6 FABRICATED ITEMS

- A. Metal Flashings: (Minimum ten (10') foot lengths)
 - 1. Through wall Receiver Tray: Minimum 24 gauge stainless steel, through wall receivers shall not extend past the face of the exterior veneer more than $\frac{3}{4}$ ".
 - 2. Counterflashing: Minimum 24 gauge stainless steel.
- B. Wind Clips: Minimum 24 gauge stainless steel (or match material of counterflashing), one (1) inch wide by length to engage counterflashing a minimum of 1/2 inch. To be installed at all wall flashings and at curb flashing lengths longer than 5 feet.
- C. Roof Penetrations:
 - 1. Umbrella Counterflashing: Two-piece construction of minimum 24 gauge stainless steel, fabricated in accordance with drawings or project requirements.
 - 2. Pitch Pans:
 - a. 24 gauge stainless steel.
 - b. Fabricate to provide installed minimum clear inside perimeter dimension of two (2) inches on each side of penetrating element.
 - c. Fabricate pans to at least six (6) inches above the finished roof membrane and with 1/4 inch hem at top edge and with four (4) inch flanges. Round all corners of flange.

- d. Fabricate metal bonnets for all pans, NO EXCEPTIONS. Fabricate bonnets with metal compatible with metal to which bonnet is to be attached. On beams and other steel, weld in place bonnets fabricated from 1/4 inch steel plate. Draw band bonnets fabricated from 22 gauge stainless steel may be used on circular projections.
- D. Metal Edge:
1. Minimum 0.040 inch thick pre-finished aluminum formed in maximum ten (10) foot lengths, with six (6) inch wide cover plates of same profile, four (4) inch flange, maximum seven (7) inch fascia, 3/4 inch gravel stop.
 2. Provide expansion slip joints at maximum 20 feet on center.
 3. Shop fabricate all interior and exterior corners. Fabricate exterior corners with 18 inch minimum to four (4) foot maximum legs. Lap, rivet, and seal prior to delivery to jobsite.
 4. Fabricate to sizes and dimensions as indicated on drawings with a minimum one (1) inch coverage past top of wall. Refer to SMACNA Fig. 2-5A.
 5. Provide mock-up for Architect's approval prior to fabrication.
- E. Continuous Cleats: Continuous strips, same material and profile, minimum one gauge heavier of item which cleats attach.
- F. Vent Hoods, Sleeves, Penetration Flashings, and Accessories: Minimum 24 gauge stainless steel, or as shown or directed otherwise.
- G. Angle Termination Bar: Aluminum pressure bar 1/8 inch x one (1) inch.
- H. Vent Pipe Flashing: Four (4) pound lead. Provide proper size to fold down inside of pipe a minimum of one (1) inch.
- I. Roof Drain Flashing: Four (4) pound lead, minimum 30 inches by 30 inches.
- J. Coping:
1. Minimum 0.040 inch thick pre-finished aluminum, with six (6) inch wide cover plates of same profile.
 2. Fabricate as outlined in SMACNA; Refer to Figure 3-4 A.
 3. Provide tapered substrate to slope to one (1) side, and cover with waterproof membrane.
 4. Install with continuous cleat one (1) side and fasten other side.
- K. Gutters/Downspouts/Collector Heads:
1. Gutters and Downspouts: Minimum 0.040 inch thick pre-finished aluminum formed in maximum ten (10) foot lengths, with six (6) inch wide cover plates. Minimum five (5) inch by six (6) inch box gutter (verify size meets rainfall data per SMACNA).
 2. Gutter/Downspout Straps: Minimum 0.040 inch thick pre-finished (match color) aluminum. Hem both sides.
 3. Gutter Supports: Minimum 0.040 inch thick pre-finished (match color) aluminum hemmed around 1/8 inch galvanized bent steel bracket.
 4. Downspout Screen: Stainless steel 1/4 inch diamond wire screen enclosed in a pre-finished steel frame. Pop riveted to outside face of gutter.
 5. Collector Heads: Minimum 0.040 inch thick pre-finished (match color) aluminum. As outlined in SMACNA; Refer to Figure 1-25F and Figure 1-28 with alternate Section A-A.
- L. Pipe Box Cover: 24 gauge stainless steel.

- M. Heat Exhaust Curbs and Hoods: 22 gauge stainless steel.
- N. Expansion Joint Cover: Minimum 24 gauge stainless steel (Provide pre-finished metal at perimeter edge end termination.)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify substrates are smooth and clean to extent required to perform sheet metal work.
- B. Verify roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set in place.
- C. Verify that reglets, nailers, cants, and blocking to receive sheet metal are in place and free of concrete and soil.
- D. Do not start work until conditions are satisfactory.

3.2 PREPARATION

- A. Field measure site conditions prior to fabrication work.
- B. Install starter and edge strips and cleats before starting installation.

3.3 INSTALLATION

- A. Install sheet metal with lines, arises, and angles sharp and true, and plane surfaces free from objectionable wave, warp, or buckle. Exposed edges of sheet metal shall be folded back to form 1/4 inch hem on concealed side from view. Finished work shall be free from water retention and leakage under all weather conditions. Pre-fabricated corners or transitions are required at changes in direction, elevation, or plane and at intersections. Locate field joints not less than 12 inches, nor more than three (3) feet from actual corner. Laps shall be one (1) inch, riveted and soldered at following locations:
 - 1. Pre-fabricated corners;
 - 2. transitions;
 - 3. changes in direction, elevation, and plane; and
 - 4. at intersections.
- B. Anchor units of work securely in place to prevent damage or distortion from wind or buckling. Provide for thermal expansion of metal units; conceal fasteners wherever possible; and set units true to line and level as indicated. Install work with laps, joints, and seams which are permanently watertight and weatherproof.
- C. Install fabricated sheet metal items in accordance with manufacturer's installation instructions and recommendations and with SMACNA Architectural Sheet Metal Manual.
- D. Separations: Provide for separation of metal from dissimilar metal or corrosive substrates by coating concealed surfaces with zinc chromate, bituminous coating, or other permanent separation at locations of contact as recommended by manufacturer or fabricator. Do not use materials which are incompatible with roofing system.
- E. Continuous Cleat: At exposed edges of perimeter edge, fascias, cap flashings, and where required, attach continuous cleat at six (6) inches on center with appropriate fasteners.

- F. Gravel Guard/Fascia:
1. Install with expansion joints 10 feet o.c., 1/2 inch expansion leeway, with cover plate.
 2. Set in asphalt mastic and fasten into nailer at 3 inches o.c. staggered.
 3. Buff sand Kynar surface of flange and prime.
 4. Strip in flange with specified stripping plies set in hot bitumen extending 3 inches from outer edge of flange to at least 3 inches inward towards gravel stop. Provide finish stripping ply of modified bitumen base ply in hot bitumen extending 6 inches from the outer edge of the flange and butt base of gravel stop.
 5. At raking edge where metal runs into gutter, extend rake metal 2" minimum into gutter.
- G. Counterflashing:
1. Do not use surface mount counterflashing except as noted in drawings.
 2. Set in through wall with receiver and spring lock counterflashing, as detailed in drawings and to NRCA roofing manual, SMACNA standards.
 3. Coordinate installation of through-wall flashing with the masonry contractor.
 4. Seal through-wall in conjunction with masonry wall waterproofing.
 5. Install wind clips 30 inches o.c. at all counterflashing over five (5) feet in length.
- H. Pitch Pans, Metal Flanges:
1. Apply mastic under pitch pan or metal flashing flange at least 1/2 pound per linear foot.
 2. Prime all metal flanges with asphalt primer prior to flashing installation.
 3. Clean all projections enclosed in pitch pans in any manner suitable and coated with a rust inhibitive coating as approved by the Architect. Coating shall be allowed to dry prior to pitch pan fill.
 4. Fill base of pitch pans with grout or cementitious binder and allow to cure.
 5. Top Finish Fill: Self-leveling, one-part urethane; at least two (2) inches to top of pitch pan sides.
 6. Strip in pitch pan flanges with two strips of specified stripping plies set in hot bitumen extending three (3) inches from the outer edge of the flange to at least three (3) inches inward toward base of pitch pan. Provide finish stripping ply of SBS modified bitumen membrane in hot bitumen extending six (6) inches from the outer edge of the flange and butt to base of pitch pan.
- I. Sanitary Vent Stacks:
1. Prime top and bottom flanges of lead flashing sleeve. Set flange in uniform troweling of plastic roof cement. Prime top side of flange to receive strip-in membrane.
 2. Fold lead sleeve down inside of pipe a minimum of one (1) inch. Apply a continuous bead of sealant on inside of pipe prior to folding lead sleeve.
- J. Roof Drains:
1. After membrane installation, prime bottom of lead flashing sheet and set in uniform bed of plastic roof cement at specified locations.
 2. Extend lead flashing into drain bowl or pipe a minimum of two (2) inches and over top of piping/bowl connection, if possible. Apply a continuous bead of specified Type A sealant, at intersection of pipe and drain bowl.
 3. If drain bowl and pipe connection is contaminated with bituminous material, strip-in area with three (3) coursing of plastic roof cement and fabric.
 4. Prime top of lead flashing sheet to receive strip-in membrane.
- K. Gutters/Downspouts:
1. Install gutters as detailed.

2. Install downspouts plumb and level, attached to columns or wall with straps located at top and bottom of downspout and maximum ten (10) feet on center.
 3. Install splash pad or block under discharge port of downspouts. Install splash pan over a protection (walkway) pad for downspouts located at roof level.
 4. End Caps, Downspout Outlets, Gutter and Downspout Straps, Support Brackets and joint fasteners to be manufactured to suit profile and dimension of gutter and downspout.
 5. Install all anchoring devices as outlined in SMACNA.
 6. Expansion Joints: Lap or Butt type per SMACNA, locate every 50 linear feet.
- L. Expansion Joint:
1. Construct wood curbs as shown on drawings and as outlined in the NRCA and SMACNA Manuals.
 2. Install underlayment, form envelope, and secure underlayment to curb. Fill envelope with compressible insulation.
 3. Securely fasten expansion joint cover to curb with grommetted fasteners spaced six (6) inches on center.
 4. Taper expansion joint down at the metal edge.
- M. Coping:
1. Install wood nailers as shown on drawings.
 2. Install metal cleats with appropriate fasteners spaced six (6) inches on center.
 3. Install underlayment over the wood substrate. Lap ends minimum of six (6) inches and secure membrane in place. Seal laps with appropriate adhesive.
 4. Install metal coping allowing 1/2 inch spaces between segments. Lock coping onto cleat and install appropriate fasteners through the interior fascia spaced 24 inches on center in enlarged holes.
 5. Install cover plate centered over coping joint in continuous beads of specified Type B sealant, placed approximately one (1) inch from cover edges. Refer to SMACNA for alternate joints as required by length.
 6. Install appropriate fastener through neoprene washer and cover plate between coping segments.
 7. Accommodate building wall expansion joints by terminating coping joints and cleats either side of expansion joint. Do not run coping or cleats continuous across joints. Install coping cover plate to span across joint and lap coping on each side of joint a minimum of four (4) inches. Fasten cover plate on one (1) side of joint only. (Provide wall flashing membrane up and over parapet wall in accordance with manufacturer's detail.)

3.4 CLEANING AND PROTECTION

- A. Remove flux and residual acid immediately by neutralizing with baking soda and washing with clean water. Leave work clean of stains.
- B. Remove scraps and debris and leave work area clean.
- C. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes. Paint areas where finish is damaged on pre-finished metal by painting with a compatible paint in color to match undamaged finish.
- D. Prime soldered area of phosphatized metal after cleaning to prevent rusting.
- E. Paint metal flashings that have been soiled with bitumen with aluminized paint.
- F. Clean other work damaged or soiled by Work of this Section.

- G. Protect finished work from damage.

END OF SECTION

SECTION 07 72 00

ROOF ACCESSORIES

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 INSTALLATION RESPONSIBILITY

- A. In addition to the items normally a part of this Section, coordinate the installation of roof accessory curbs and pipe flashings and equipment supports that may be specified elsewhere.
- B. Coordinate the Work specified herein with the following Work:
 - 1. Roofing
 - 2. Roofing sheet metal
 - 3. Mechanical equipment
 - 4. Plumbing

1.2 REFERENCES

- A. Federal Specifications (FS)
 - 1. TT-S-00227E
- B. National Roofing Contractors Association (NRCA)
- C. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)
 - 1. Architectural Sheet Metal Manual

1.3 SUBMITTALS

- A. Product Data: Submit schedules, charts, literature, and illustrations to indicate the performance, fabrication procedures, product variations, and accessories.
- B. Shop Drawings: Indicate size, material, and finish. Show locations and installation procedures. Include details of joints, attachments, and clearances.

1.4 PRE-INSTALLATION CONFERENCE

- A. Refer to Section 01 31 13 – Project Coordination.

1.5 WARRANTY

- A. Warranty the Work specified herein for one (1) year against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and workmanship.
- B. Defects shall include, but not be limited to, the following:
 - 1. Noticeable deterioration of finish
 - 2. Leakage of water into the building or within the construction.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Specifications are based on products of named manufacturers. Other manufacturers must have a minimum of five (5) years experience manufacturing products meeting or exceeding the specifications and comply with Division 1 requirements regarding substitutions to be considered.

2.2 PREFABRICATED ROOF CURBS

- A. Frames:
 - 1. Material: ASTM A 653 G90 hot-dipped galvanized steel.
 - a. Minimum 18 gauge, and as engineered by manufacturer.
 - b. Minimum 18 gauge for curbs supporting HVAC units
 - c. Minimum 20 gauge for expansion joint curbs.
 - 2. Corners: Mitered and welded (welds are micro sealed and prime painted after fabrication). Bolted connections not accepted.
 - 3. Base Plates: Integral to frame and welded.
 - 4. Internally reinforced with galvanized 1 inch by 1 inch by 12 gauge angles for curbs exceeding 3 foot length. Reinforce internal bulkhead at equipment curbs to support lateral loads.
 - 5. Wood Nailers: Factory installed, pressure treated. Size and width as suitable for support of items installed on curbs.
- B. Insulation: Factory installed 1-1/2 inch thick three-pound density fiberglass insulation.
- C. Curb Height: Minimum 8 inch above finished roof.
- D. Construct curbs to match roof slope with plumb and level top surface for mounting mechanical equipment.
- E. Gasketing: 1/4 inch thick, one (1) inch wide at roof top units.
- F. Counterflashing: 24 gauge stainless steel
- G. Counterflashing Cap: Stainless steel.
- H. Cants:
 - 1. Non-canted curb style installs either under or on top of metal decks with insulation.
 - 2. Cants shall be provided under Section 07 52 19 - Roofing
- I. All insulated roof curbs shall be structural and shall include calculations signed and sealed by a registered Structural Engineer. Refer to installation drawings for any additional structural requirements. If curbs do not span a minimum of two bar joists, only two angles will be required. Coordination mechanical equipment weight loading on the roof with Structural Engineer.
- J. Approved Manufacturers:
 - 1. Custom Curb, Inc.
 - 2. Roof Products, Inc.

2.3 PIPE SUPPORTS (Cannot be contractor built supports)

- A. Gas Pipe Supports:
 - 1. Provide strut and hanger type support with recycled plastics and carbon black for UV protection bases (10 inches x 16 inches x 3 inches; 6 lbs. each); Model Type PP-10 with strut & hanger for lines 2-1/2 inches and smaller, Model Type PS-1-2 with hanger for lines 3 inches and larger.
 - 2. As manufactured by PHP Systems Design; Miro Industries Inc.; MAPA Products; Advanced Support Products or Architect approved equal.
- B. Electrical Conduit / Condensate Lines:
 - 1. Provide strut type support with recycled plastics and carbon black for UV protection bases (10 inches x 16 inches x 3 inches; 6 lbs. each), install with hold clips ordered as an accessory; Model Type PP-10 with strut. Model Type PS-1-2 with hanger for lines 3 inches and larger.
 - 2. As manufactured by PHP Systems Design; Miro Industries Inc.; MAPA Products; Advanced Support Products or Architect approved equal.
- C. Chill Water Lines:
 - 1. Provide strut and hanger type support with recycled plastics and carbon black for UV protection bases (size as required); Model Type PS-1-2 and Model Type PSE-2-2 as required.
 - 2. As manufactured by PHP Systems Design, Inc.; Miro Industries Inc.; MAPA Products; Advanced Support Products or Architect approved equal.
- D. Installation:
 - 1. Locate as indicated by Drawing at no greater than 8 feet-0 inches o.c.
 - 2. Provide protective traffic pads below each support, tacked in place with approved mastic or adhesive.
 - 3. Install hold down clips if indicated on the drawings or required.

2.4 ROOF TO ROOF EXPANSION JOINT

- A. Stainless Steel expansion joint covers on new wood curbs, as detailed on drawings and outlined the NRCA and SMACNA manual.

2.5 RETROFIT ROOF DRAINS

- 1. Retrofit Roof Drains: "Hercules RetroDrain" for built up or modified roof and "Alumaweld RetroDrain" for thermoplastic roof, Inc. or Architect approved equal.
 - 2. Size: To match existing roof drain sizes. [3 inches] [4 inches] [5 inches] [6 inches]
 - 3. Compliance:
 - a. ANSI / SPRI RD-1.
 - b. ULC / ORD-C790.4.
 - 4. Drain Body:
 - a. Material: 1-piece, 11-gauge (0.125-inch) spun aluminum.
 - b. Flange: 17-1/2-inch diameter.
 - 5. Drain Stem Length: 12 inches
 - 6. Flange Includes: Six 2-1/2-inch-long aluminum studs.
 - 7. Sump Area: Depressed.
- A. Strainer Dome:
 - 1. Material: Cast aluminum.
 - 2. Height: 7.25 inches.
 - 3. Outside Base Diameter: 9.77 inches.

- B. Clamping Ring:
 - 1. Material: Cast aluminum.
 - 2. Gravel Stop Height: 1.2 inches.
 - 3. Drainage Slots: 18 V-shaped.
 - 4. Bosses: 6, to accept studs on flange.
- C. Backflow Seal:
 - 1. Compression Seal: Watertight, "U-Flow" mechanical seal.
 - 2. Material: Polyamide and EPDM rubber.
 - 3. Required for Activation: "U-Flow" screwdriver.
- D. Hardware:
 - 1. Locknuts: 6, stainless steel, for studs.
 - 2. Screws: 3, stainless steel, to attach strainer to clamping ring.
- E. Overflows:
 - 1. At overflow locations; provide overflow collar extension
 - 2. Constructed of spun aluminum

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install roof accessories in accordance with manufacturer's printed instructions and approved shop drawings. Installation of Portable Pipe Hangers shall not exceed six (6) feet on center.
- B. Coordinate with roofing operation for watertight integrity.
- C. Finished installation shall be water and air tight. Install sealant conforming to FS TT-S-00227E, Type II, Class A.

END OF SECTION

SECTION 07 72 33

ROOF SCUTTLE (HATCHES)

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 RELATED WORK

- A. Section 06 10 00 - Rough Carpentry
- B. Section 07 52 19 - Modified Bitumen Membrane Roofing System

1.2 SUBMITTALS

- A. Product Data: Submit schedules, charts, literature and illustrations to indicate the performance, fabrication procedures, product variations, and accessories.
- B. Shop Drawings: Include materials, opening sizes, fabrication details, hardware, attachments, related and adjacent work, and finishes.

1.3 WARRANTY

- A. Warrant the work specified herein for five (5) years, against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and workmanship.
- B. Defects shall include, but not be limited to, the following:
 - 1. Faulty, improper or inadequate attachment or installation.
 - 2. Difficult or noisy operation.
 - 3. Noticeable deterioration of finish.
 - 4. Leakage of water into the building or within the construction.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Specifications are based on products manufactured by The Bilco Company

- A. Manufacturers listed below whose products are equivalent to those specified are approved for use on the Project. Other manufacturers must have a minimum of five (5) years experience manufacturing equivalent products to those specified and comply with Division 1 requirements regarding substitutions to be considered.
 - 1. Babcock-Davis Hatchways, Inc.

2.2 ROOF SCUTTLES (HATCHES)

- A. Size: 2 feet-6 inches x 3 feet-0 inches, unless shown otherwise.
- B. Cover: Shall be 11 gauge aluminum with a three (3) inch beaded flange and formed reinforcing members welded to support a minimum live load of 40 lb / sq.ft. Insulation shall be glass fiber one (1) inch in thickness, fully covered and protected by an 18 gauge aluminum liner.

- C. Curb: Shall be 12 inches in height and of 11 gauge aluminum. It shall be formed with a 3-1/2 inch flange with holes provided for securing to the roof deck. Curb shall be equipped with an integral metal capflashing of the same gauge and material as the curb, full welded at the corners for weathertightness. Capflashing shall be equipped with the Bilclip™ flashing system, including stamped tabs and Pak-Rope. Insulation on the exterior of the curb shall be rigid fiber board one (1) inch in thickness.
- D. Scuttle (Hatch): Shall be completely assembled with heavy pintle hinges, positive snap latch with turn handles, padlock hasps inside and outside, and a mechanically retained thermoplastic rubber gasket. Compression spring operators enclosed in telescopic tubes shall be provided for smooth, easy and controlled door operation throughout the entire arc of opening and closing. Operation shall not be affected by temperature. Cover shall be equipped with an automatic hold-open arm complete with red vinyl grip handle to permit easy release and one-hand control of the cover to its closed and latched position. All hardware shall be stainless steel. Scuttle factory finish shall be mill finish aluminum.
- E. Approved Model / Manufacturer: Type No. "S-50" Roof Scuttles (Hatches) for ladder access, or Architect approved equal.
- F. Ladder: As specified in Section 05500, Miscellaneous Metals. Ladder shall be oriented and mounted along the short dimension of the hatch.
- G. Fall Protection Safety Rail and Ladder Extension: 30"x36" Model SP-3036 Made by **SafePro L.C.**

2.3 HEAT AND SMOKE VENTS

- A. Size: 4 feet-0 inches x 8 feet-0 inches, unless shown otherwise.
- B. Covers: Shall be 11 gauge aluminum with three (3) inch beaded flange and formed reinforcing members welded to support a minimum live load of 40 lb / sq.ft. Insulation shall be of glass fiber, one (1) inch in thickness, fully covered and protected by an 18 gauge aluminum cover liner.
- C. Curb: Shall be of 11 gauge aluminum, 12 inches in height on hinge sides with a five (5) degree pitch to the fixed center channel. Curb shall be formed with a 3-1/2 inch flange with holes for securing to the roof deck and with an integral metal capflashing of the same gauge and material as the curb, full welded for weathertightness. Capflashing shall be equipped with the Bilclip™ flashing system, including stamped tabs and Pak-Rope. Insulation on the exterior of the curb shall be rigid fiberboard one (1) inch in thickness. All hardware shall be zinc plated and chromate sealed. Factory finish shall be mill finish aluminum.
- D. Vent: Shall be completely assembled with a pull-pin and clevis on each door to allow roof-top-fire-fighter to release doors by freeing winching cables from door leaves. Provide winch and cables for closing leaves from inside. The fusible link shall be curb mounted on non-hinged end allowing the latch to be easily reset from the roof level. Each cover shall have a minimum of three (3) heavy pintle hinges, a mechanically retained thermoplastic rubber gasket, heavy duty shock absorbers and pull handles for inside and outside operation. All handle bolts shall be stainless steel. Compression spring operators enclosed in telescopic tubes shall be provided to open the covers to the vertical position where they will lock automatically. Vent shall open automatically when heat breaks the 165 degree fusible link.

- E. Approved Model / Manufacturer: Fire Vent Type DSH4896 Double Leaf Fire Vents, or Architect approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Roof hatches and heat/smoke vents shall be welded to structural steel frame of building.
- B. Install hatches and heat/smoke vents in accordance with details on drawings, approved shop drawings, and manufacturer's instructions.

END OF SECTION

SECTION 07 92 00

BUILDING SEALANTS

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Exterior sealants and sealants for moving joints, except for joints in those systems listed under Related Work.
- B. Interior caulking.

1.2 RELATED WORK

- A. Section 03 30 00 - Cast-In-Place Concrete: Sealants used in conjunction with concrete paving.
- B. Section 07 41 13 - Prefinished Metal Roofing: Sealants used in conjunction with prefinished metal roofing.
- C. Section 07 52 19 - Modified Bitumen Membrane Roofing System: Sealants used in conjunction with roofing system.
- D. Section 08 80 00 - Glazed Systems: Sealants used in conjunction with glazed systems.

1.3 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's specifications and other data needed to prove compliance with specified requirements.
 - 2. Manufacturer's installation instructions
- B. Sample: On site sample for Architect's approval of colors.
- C. Certification: Manufacturer's affidavit that materials used in Project contain no asbestos.

1.4 INSTALLATION CONFERENCE

- A. Refer to Section 01 31 13 – Project Coordination.

1.5 REFERENCES

- A. Federal Specifications (FS)
 - 1. TT-S-00227E
- B. ASTM International (ASTM)
 - 1. C793, Standard Test Method for Effects of Accelerated Weathering on Elastomeric Joint Sealants
 - 2. C794, Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants
 - 3. C834, Standard Specification for Latex Sealants
 - 4. C920, Standard Specification for Elastomeric Joint Sealants

1.6 WARRANTY

- A. Warrant the work specified herein for two (2) years against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and workmanship.
- B. Defects shall include, but not be limited to:
 - 1. Leaking
 - 2. Cracking, splitting or releasing from substrate
 - 3. Deterioration or color change

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

- A. Specifications are based on products and manufacturers named. With the exception of where listed as No Substitutions, other manufacturers must have a minimum of five (5) years experience manufacturing equivalent products to those specified and comply with Division 1 requirements regarding substitutions to be considered.

2.2 MATERIALS

- A. Caulking for Exposed Non-Working Interior Locations:
 - 1. Type: Paintable Acrylic Latex conforming to ASTM C834, vertical grade as manufactured by Bostik Construction Products, Huntington Valley, PA; (800) 221-8726, Pecora Corp., Harleysville, PA; (800) 664-7903, Sika Corp., Lyndhurst, NJ; (800) 933-SIKA (7452), or Architect approved equal.
- B. Sealant for All Working Joints and Exposed Exterior Locations:
 - 1. Type: Single Component, Non-Sag Polyurethane Sealant: Sonneborn^(R)/ChemRex "Sonolastic^(R) NP 1^(tm)" with plus or minus 25 percent movement capability for vertical joints; ASTM C920, Type S, Grade NS, Class 25; FS TT-S-00230C, Type II, Class A; USDA approved; SWRI validated; UL classified (fire resistance) as manufactured by Sonneborn/Chemrex, Shakopee, MN; (800) 433-9517. No substitutions.
 - 2. Refer to drawings and Section 04200, Unit Masonry for locations. Provide full sealant joints at building expansion joints.
- C. Primers, Cleaners, Top Coats: Use only materials listed as suitable in resistance to staining, compatibility and durability before proceeding.
- D. Expanded Polyethylene Joint Filler: Provide flexible, compressible, closed-cell, polyethylene of not less than 10 psi compression deflection (25 percent); except provide higher compression deflection strength as may be necessary to withstand installation forces and provide proper support for sealants, surface water absorption of not more than 0.1 pounds per square foot, as manufactured by Sonneborn, or pre-approved equal.
- E. Sealant Backer Rod: Provide compressible rod stack of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive material as recommended by sealant manufacturer for back-up of and compatibility with sealant. Where used with hot-applied sealant, provide heat-resistant type which will not be deteriorated by sealant application temperature as indicated.
- F. Bond Breaker Tape: Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or

joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Temperatures: Do not install sealants when air temperature is under 40 degrees F. Sealants may be warmed to ease installation when recommended by the manufacturer.
- B. Tooling: Tool exposed joints to a slightly concave surface using slicking materials recommended by the manufacturer. The tooling procedure shall press sealant against the sides of the groove. No materials shall be left "feathered" out or smeared on the abutting materials. If necessary, protect adjacent surfaces with tape. Completed joints shall have a uniform professional appearance. Use an anti-tack compound on sealant that does not set up fast enough to avoid dust collection.
- C. Sealant Back-Up: Provide a back-up filler where groove depth is too great to fill with sealant. Review joint design with Architect.
- D. Compressive Filler: Seal vertical expansion joints with fillers. Provide compressible filler twice the width of the joint and with a depth of 1-1/2 times the compressed width. Lap ends 2 inch minimum.

Seal ends together in such a manner to allow natural drainage. Install filler by compressing material and sliding into joint. Align filler on one face of the joint before it expands to the full joint width.

END OF SECTION