STRUCTURAL TECHNOLOGIES
THE Gold STANDARD IN BUILDING RESTORATION
103 FESSLER DRIVE
BLOOMINGDALE, IL 60108
OFFICE: (630) 351-8200
STRUCTECINC@GMAIL.COM
STRUCTURALTECHNOLOGIESINC.COM
BUILDING SOLUTIONS | DELIVERING RESULTS

Specification Manual For

Oakton Community College

1600 East Golf Road - Des Plaines, IL 60016

Des Plaines Campus Grounds Building Roof Replacement Project

Date: May 12, 2022
Specification 100-0924-2022

Prepared By:

STRUCTURAL TECHNOLOGIES, INC.
103 FESSLER DRIVE
BLOOMINGDALE, ILLINOIS 60108
PHONE: (630) 351-8200
E-MAIL: STRUCTECINC@GMAIL.COM

STRUCTURAL TECHNOLOGIES INCORPORATED

1. DIVISION 1 -- GENERAL PROVISIONS

1.1. PREPARATION OF PROPOSAL

1.1.1. Proposals must be submitted upon the prescribed Bid Form. All blank spaces on the form must be filled in approximately, in ink or typewritten. Each bidder shall submit as his bid, the bid form, and shall retain a copy for his records. No bid may be withdrawn within thirty (30) days of date bids are due without consent of the Owner (or designated representative).

1.1.2. Erasures or other changes on the Bid Form must be explained or noted over the signature of the bidder. Bids containing any conditions, omissions, unexplained erasures, alterations, irregularities of any kind, or items not called for in the Bid Form, will be rejected as being an informal and incomplete bid.

All bids shall be hand delivered to Oakton Community College - Des Plaines Campus, Sharon Anderson – Purchasing Assistant, 1600 East Golf Road, Des Plaines, IL 60016 in sealed envelopes with the name of the bidder clearly marked. The Contractor Bid Form and all other required information to be submitted shall be placed in a sealed envelope correctly addressed on the outside. The project title 2022 Oakton Community College – Des Plaines Campus Grounds Building Roof Replacement Project shall also appear on the outside of the envelope in the lower left hand corner.

1.2. EXPLANATION TO BIDDERS

1.2.1. No oral explanation in regard to the meaning of the Drawings and Specifications will be made and no oral instructions will be given except at the bid meeting.

1.2.2. Bidders shall act promptly to allow sufficient time for a reply to reach them before the submission of their bids. Any interpretation made will be in the form of an Addendum to the Specifications and/or Drawings which will be forwarded to all bidders.

1.3. AWARD OF CONTRACT

1.3.1. Contracts will be awarded to the lowest responsible bidder. New bids may be requested by the Owner (or designated representative). The Owner (or designated representative) may call upon the Bidders to explain their bid after being submitted and before the contract is awarded. The Owner (or designated representative) reserves the right to accept or reject any and all bids and will award to the Contractor whom in his opinion, will best fulfill the terms of the contract and specification.

1.3.2. Disqualification of Bidders

- Any one or more of the following causes may be considered sufficient for the disqualification of a Bidder and the rejection of their bids.
- Failure to attend the pre-bid meeting.
- Lack of responsibility as revealed by either financial, technical experience or equipment statements requested.
- Lack of expertise as shown by past work, and judged from the standpoint of workmanship and performance history.
- Uncompleted work under other contracts which, in the judgment of the Owner (or designated representative), might hinder or prevent the prompt and/or proper completion of additional work if awarded.
- Being in arrears on existing contracts, in litigation with an Owner (or designated representative), or having defaulted on a previous contract.
- Inability or refusal of the Contractor to post necessary Bonds, Certificates of Insurance and/or documents required by the Owner (or designated representative) as set forth in this Specification.

1.4. OBLIGATION OF BIDDERS

1.4.1. Each Bidder will be required to attend a pre-bid meeting. This is for the purpose of examining the site and conditions under which the Bidder will be expected to execute the specification and contract. Interpretation of specification and drawings will be done at this time.

1.4.2. Each Bidder shall, by careful examination of site or examination of the supplied details and drawings, satisfy himself as to the location of the work, the scope, nature, and character, the quality and quantity of the work to be executed, and the materials to be furnished. Bidders shall also determine what barriers, signs, etc. shall be required to protect property from damage as a result of the project.

1.4.3. After the contract has been entered into, no consideration will be given for any misunderstanding as to the work and materials set forth herein and shown on any of the accompanying Drawings, Details, and Schedules; it being mutually understood that the tender of a bid carries with it an agreement to this and other obligations set forth in the Contract and Specifications, and further implies a full understanding of the Specifications, Drawings and Details, Notes, Scope of Work, Indications and Requirements.

1.4.4. The Bidder is assumed to be familiar with all federal, state and local laws, ordinances, and rules and regulations that may in any manner affect the work. The failure to familiarize himself with applicable laws will in no way relieve the Bidder from responsibility. The Bidder shall post all necessary Performance and Labor Payment Bonds as deemed necessary by the Owner and as required by the State and local authorities. The cost of such Bond shall be itemized and submitted as an extra cost to the Owner (or designated representative).

1.4.5. All enclosed and attached documents, required by Oakton Community College, in conjunction with this project shall be completed and returned with the Contractor's sealed bid. Verification and compliance with Equal Employment Opportunity laws, Prevailing Wage statutes, etc. may be attached and/or required by the Owner (or designated representative).

1.5. PERFORMANCE BONDS/PAYMENT BONDS

1.5.1. The Owner (or designated representative) will require a Performance Bond on this project. In the event a Performance Bond is required, the bidder shall deliver Performance Bond and Labor and Material Payment Bond to the Owner (or designated representative) not later than the date of execution of the Contract or if the Work is to be commenced prior thereto in response to a Letter of Intent, the Bidder shall, prior to commencement of Work, submit evidence satisfactory to the Owner and the Consultant that such bonds will be furnished. Bonding company/surety shall be rated A-/6 or better in current Key Rating Guide as issued by A.M. Best Company, Oldwick, NJ.

1.5.2. Unless otherwise required as stipulated on the Contractor the Bid Form, the Bonds shall be written on the form of Payment and Performance Bonds, conforming to AIA Document 312™ - 2010 or as applicable FHA No. 2452.

1.5.3. In the event a Bid Bond is required by the Owner (or designated representative), the Contractor must submit a Bond in the amount of ten (10%) percent of their total bid in the form of a Cashier's Check, Certified Check or Surety Bond. Upon award of the contract to the Bidder / Contractor, the Contractor shall replace the Bid Bond with a Performance Bond. The bid security will be forfeited by the successful bidder in the event of the bidder's failure to enter into a contract. Checks or drafts of unsuccessful bidders will be returned as soon as practicable after opening and checking the bids.

1.5.4. The winning vendor will be required to submit a 100% Performance/Payment bond from an A-/6 or better rated company (as rated by Best's Rating Service). The College realizes that there may be a charge associated with this bond. Please include the cost of the bond in your bid. This amount is part of the grand total. Vendors DO NOT need to include the actual Performance/Payment Bond with their bid. However, all vendors must include the name, address, and rating of their bonding company when submitting their bid.

1.6. BUILDING PERMITS

The Contractor shall furnish all Building permits, licenses and other governmental or city approvals as required by all agencies or authorized entities in connection with the performance of this project. The cost of Building Permits the portion of work to be completed by the Contractor. Contractor shall submit the cost of the Building Permit shall be itemized by the Contractor and shall be submitted as a separate cost in addition to the Base Bid for Permit as "Change Order No. 1" upon acceptance of the contract.

1.7. TIME FOR COMPLETION

1.7.1. The Bidder that is awarded the contract will be required to stipulate the number of calendar days required to complete the work and the estimated starting date. If upon the sole judgment of the Owner (or designated representative), the Contractor has failed to initiate the project or is failing to complete the project in a reasonable and timely manner, the remainder of the contract may be withdrawn and awarded to an alternate approved Bidder. Failure on the part of the successful Bidder to execute a contract and deposit an acceptable Performance Bond when required within ten (10) days from the date of notice of the "Award of Contract" will be considered just cause for the annulment of the Award and forfeiture of the Proposed Guarantee to the Owner (or designated representative).

1.7.2. The Owner (or designated representative) shall notify the Bidder (Contractor) by written notice three (3) days prior to withdrawing the balance of the contract. Allowances for weather, strikes, material shortages and events beyond the control of the Contractor and in the estimation of the Owner (or designated representative) and Consultant as just cause to extend the period of time allowed the Contractor prior to initiating work in conjunction with this contract shall be reviewed and agreed to in writing and shall amend the terms set forth herein. Substantial completion of all work set forth in these documents or phase of the project as contracted by the Owner (or designated representative) shall be within sixty (60) calendar days from the initiation of the project and not greater than ninety (90) days after Award of Contract. Failure to complete work within this stipulated time period may result in cancellation of all or the remaining portion of the contract and re-award to an alternative contractor without penalty to the Owner (or designated representative) in the event it is demonstrated that the Contractor has failed to properly staff the project or has insufficient personnel or equipment at the project site to complete work in a timely and professional manner. Time for completion may be extended at the option of the Owner (or designated representative) based on the total scope of work to be completed when weather conditions permit proper application of the specified materials. Liquidated damages shall be assessed in the event the Contractor fails to complete all work by the stipulated date of October 31, 2022 unless this completion date is delayed by the Owner, Material Shortages occur or in the case of Force Majeure.

1.8. EVIDENCE OF INSURANCE

1.8.1. The Contractor shall file with the Owner (or designated representative), before commencing work under his Contract, Certificates of Insurance, concerning the insurance coverage herein above provided. If a Bidder fails to comply with the Insurance Provisions set forth in this document, that Bidder may be disqualified from award of the Contract. The Contractor shall include all parties to the Contract as "Additional Insured" and shall be required to include the Consultant – Structural Technologies, Inc. as an additional insured party.

1.8.2. Deductibles and Self-Insured Retentions: Any deductibles or self-insured retentions must be declared to and approved by the Owner (or designated representative). At the option of the Owner (or designated representative), either; the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the Owner (or designated representative), its officers, officials, employees, volunteers and agents; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

1.8.3. Insurance is to be placed with insurers with a Best's rating of no less than A:VII and licensed to do business in the State of Illinois.

1.8.4. Verification of Coverage: Contractor shall furnish the Owner (or designated representative) with certificates of insurance and with original endorsements if applicable effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be received and approved by the Owner (or designated representative) before work commences. The Owner (or designated representative) reserves the right to require complete, certified copies of all required insurance policies, at any time.

1.8.5. Sub-Contractors: The Contractor shall include all Sub-Contractors as insureds under its policies or shall furnish separate certificates and endorsements for each Sub-Contractor. All coverage for Sub-Contractors shall be subject to all of the requirements stated herein.

1.8.6. Names and addresses of insureds.

1.8.7. Titles and locations of the operations to which the insurance applies.

1.8.8. The number of the policy and the type of insurance in force thereunder and the date of the certificate.

1.8.9. The expiration date of the policy and the limit or limits of the liability thereunder.

1.8.10. A statement that the insurance of the types afforded by the policy applies to all of the operations and activities on and at the site of the project or incidental thereto, which are undertaken by the Contractor during the performance of his Contract.

1.8.11. A statement as to the exclusions of the policy, if any.

1.8.12. A statement showing the method of cancellation prescribed by the policy. All coverages afforded by the policy shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the Owner (or designated representative).

1.8.13. Refer to Appendix A and Oakton Community College Requirements for Specific Coverage Limitations and Liability.

1.9. PRE-WORK CONFERENCE

1.9.1. Upon award of the contract to the qualified bidder, a pre-work conference will be arranged prior to the scheduled start of the installation. This meeting will be attended by the Contractor or his representative, the Job-Site Supervisor or Foreman, the Specifying Consultant, the Material Manufacturer's Representative and the Owner (or designated representative). This meeting will provide precise time and location of set-up, dumpster placement, safety precautions, access requirements, facility electrical power location and Customer and Contractor contact personnel and emergency numbers for the Owner (or designated representative) and Contractor.

1.10. SUPERINTENDENT

1.10.1. The Contractor shall keep a competent Superintendent, satisfactory to the Owner (or designated representative), on the job site at all times when work is in progress. The Superintendent shall not be changed without notifying the Owner (or designated representative) unless the Superintendent ceases to be in the employ of the Contractor.

1.10.2. The Superintendent shall represent the Contractor in his absence and all instructions given to the Superintendent shall be as binding as if given directly to the Contractor.

1.10.3. The Superintendent shall be responsible for the conduct of all the Contractor's employees on the premises and shall promptly take necessary measures to correct any abuses called to his attention by the Owner (or designated representative).

1.10.4. The Superintendent shall keep a copy of the specification and detail drawings at the job site at all times. The specification may be called on by the Owner (or designated representative), or the specifying Consultant at any time. If the specification is found not to be at the job site, the Superintendent will immediately send a man to the Contractor's office to get a copy.

1.11. EMPLOYEES/SUB-CONTRACTORS -- JOBSITE REQUIREMENTS

1.11.1. All Contractor personnel must comply with all safety and hygiene measures enforced in the areas where work is to be performed. All workmen shall be thoroughly experienced in the particular class of work in which they are employed. All workmen on the jobsite shall adhere to the following behavioral procedures at all times;

- Absolutely no alcoholic beverages or drugs of any nature (except as prescribed by a doctor) will be allowed on the job site.
- Any workmen using abusive language or presenting an offensive appearance shall be removed from the job site.
- Radios and/or other sound devices will not be allowed at the job site unless approved by the Owner (or designated representative) and only in the event these devices do not interfere with building operations or prevent a safety hazard.
- Failure to comply with these provisions may be cause for termination of the contract.

1.12. INSPECTION AND QUALITY CONTROL

1.12.1. The Owner (or designated representative) will authorize and require a representative of Structural Technologies, Inc. to examine the work in progress, as well as upon completion; in order to ascertain the extent to which the materials and procedures conform to the requirements of these specifications and to the published instruction of the primary material manufacturer.

1.12.2. The project will be inspected periodically by a qualified representative of Structural Technologies, Inc... Inspection by a representative of the Material Manufacturer may be required as stipulated in this specification. Periodic inspections by the appropriate Manufacturers during the preparation and installation phases of the roof project will be required. Suppliers, jobbers, distributors, Contractors, or other agents who might represent the Manufacturers are excluded. The material manufacturer's inspector must have at least three (3) years of field experience in all phases of roofing and roof construction including at least two (2) years of continuous employment with the manufacturer of the primary waterproofing membrane.

The representative of Structural Technologies, Inc. shall be responsible for:

1.12.2.1. Keeping the Owner (or designated representative) informed on a periodic basis as to the progress and quality of work. The inspector shall keep a written log of all visits to the job site, all weather conditions during application and definition of the scope of work undertaken on that day.

1.12.2.2. Calling to the attention of the Contractor those matters which he considers to be in violation of the contract requirements.

1.12.2.3. Reporting to the Owner (or designated representative) any failure or refusal by the Contractor to correct unacceptable practices.

1.12.2.4. Conducting preliminary and subsequent job site meetings with the Contractor's official job representative. (See Superintendent).

1.12.2.5. Rendering any other inspection services which the Owner (or designated representative) may request during the project. These services and/or inspections being subject to additional Project Management fees.

1.12.2.6. Certifying, after completion of the work, the extent to which the Contractor has complied with these specifications as well as to the published instructions of the Material Manufacturer's company. Non-conforming work shall be itemized in a Punchlist / Final Punchlist and corrected by the Contractor. Liability for and correction of any non-conforming work or materials shall be solely the responsibility of the Contractor.

1.13. FINAL INSPECTION

1.13.1. As contracted with the Owner (or designated representative), a final inspection shall be made by the specifying Consultant and Project Inspector for Structural Technologies, Inc. when all work is one-hundred percent (100%) completed. If more than one final inspection is required because of unfinished or unsatisfactory items, the Contractor must make repairs to obtain final approval.

1.13.2. If all the requirements of the contract have been met and all work has been accepted, the Contractor may invoice for one-hundred percent (100%) of all monies owed. If the final inspection is not passed, a punch list will be issued to the Contractor by the Consultant - Structural Technologies, Inc... All "Punch List" items must be corrected before another final inspection takes place. Any monies retained by the Owner (or designated representative) shall be held not longer than sixty (60) days or until the Owner (or designated representative) has satisfied himself that all work was completed satisfactorily and that all material Waivers of Lien have been received, whichever accounts for less delay in the release of the monies retained.

1.13.3. The final inspection, acceptance date, and payment of all invoices will mark the commencement of the guaranty period. Any guaranty / warranty period will be contingent upon the full payment of all material and labor for completed work. The term of the guaranty or warranty shall be stipulated, in writing by the Contractor and/or Material Manufacturer including all limitations, required maintenance and any pro-rated reduction of coverage during the period of the Warranty / Guaranty.

1.14. NON-COMPLIANCE

1.14.1. Noncompliance with the terms of the Specifications and ensuing contract can result in either the cancellation of the contract or complete replacement of the defective areas at the Contractor's expense. In the event of cancellation, the Owner will not be obligated to compensate the Contractor for any work that has not been completed in strict accordance with the specification, details and contract agreement. Furthermore, damages caused by water infiltration into the building or other areas resulting from the failure of the Contractor to secure each day's work in a weather tight manner, will be corrected at the Contractor's expense. Included as damages will be all labor costs incurred by the Owner as a result of such water infiltration.

1.15. MATERIAL SUBMITTALS/ALTERNATES

1.15.1. Whenever a particular make of material or trade name is shown or specified herein, it shall be regarded as being indicative of the standard required. Material trade names and Manufacturer code designations will be strictly adhered to. Any variation from these material designations will be considered in violation of this specification and may be cause for cancellation of the contract unless prior submittals and approvals were issued by the Owner (or designated representative).

1.15.2. A Bidder proposing to quote on the basis of an alternate material shall submit the following information at least one (1) week prior to the bid due date.

- A quart sample of any adhesive, coating, mastic or sealant.
- A complete roll of each material as shipped from the factory, plus a one (1.0) square foot sample showing the manufacturer's label.
- An assemble 2 ft. square sample of any alternative architectural metal roof system including fasteners, interlocking panel design, material and Manufacturer's Product Performance Data, installation requirements and compliance with the required ASCE 7-16 Wind Uplift criteria. Contractor to submit sample roof attachment clips, color chips for selection of finish color and sheen.
- A certificate from any independent accredited testing laboratory comparing the physical and performance attributes of the proposed material with those of the specified material.
- A written application for approval of the proposed material along with an explanation of where it is to be substituted, in what quantities and all application criteria.
- A list of at least five (5.0) jobs where the proposed alternate material is installed under similar conditions and in a similar application. Each job must be at least three (3.0) years old and each must be available for inspection by the Owner (or designated representative), or the specifying Consultant. Include copies of the manufacturer's warranty for each application.
- A printed copy of the Manufacturer's standard guarantee for the term specified herein. Said guarantee must clearly state the dollar amount of coverage for the installed roof system and shall be issued and serviced by the primary waterproofing membrane manufacturer. Any fees, maintenance programs, etc. required by the manufacturer to supply the guarantee will be included with these submittals.
- A copy of the manufacturer's published specifications detailing the installation of the proposed material under similar conditions.
- A certificate from the Manufacturer of the primary waterproofing membrane or Architectural Metal Roof System identifying the installer and certifying that the installer has been approved by the Manufacturer for at least two (2.0) years prior to the date of the bid opening.
- A list of at least three (3.0) projects applied by the installer during the past two (2.0) years incorporating the proposed alternate material as the primary waterproofing membrane under similar conditions and in similar applications. Include copies of the manufacturer's warranty for each application.

1.15.3. Any Bidder proposing an alternate material to the specified primary waterproofing membrane shall submit a notarized statement signed by a corporate officer of the Manufacturer of the alternate material confirming that they have reviewed the project for consideration and have approved the methods and materials for this installation as set forth herein and will subsequently provide a written guarantee for the installation. The manufacturer shall perform all necessary on site inspections and analysis, at his cost, to ascertain the existing conditions and the method(s) of installation required to comply with this specification.

1.15.4. Consideration shall be given only to those materials that have approval prior to the scheduled bid opening date.

1.15.5. The Owner (or designated representative) reserves the right to be the final authority on the acceptance or rejection of any proposed alternate material.

1.15.6. During the course of the work, the Owner (or designated representative) may secure samples of the materials being used from the containers as cured samples prepared by the Contractor at the job site and submit such samples to an independent testing laboratory for comparison. If the results of the testing laboratory prove the materials are not comparable and equal to the specified materials, the Contractor shall pay for the testing, and the Owner (or designated representative) reserves the right to reject any and all of the work previously completed. Substitution of materials during the course of the project is strictly forbidden and may be cause for cancellation of the remainder of the contract.

1.16. OWNER'S OBLIGATIONS

The Owner (or designated representative) shall supply the Contractor with the following services or information:

1.16.1. Electricity for power tools, etc. -- 110 V ONLY -- 20 Amp fusing. Electric power must be pre-arranged with the Owner (or designated representative) prior to attachment. Any extension cords, plugs, etc. will be supplied by the Contractor.

1.16.2. Name and title of person to report directly to on daily and/or emergency basis (Owner / Owner's Representative or designated representative).

1.16.3. Parking and storage on grounds for equipment and materials in areas designated. The Contractor shall assume all liability and responsibility for his equipment and any materials stored at the job site. All equipment shall be secured with chains or cable and a padlock to prevent tampering or theft.

1.16.4. All procedures and equipment used by the Contractor shall conform with most recent O.S.H.A. requirements. The Contractor shall comply with any safety and security procedures additionally stipulated by the Owner (or designated representative).

1.16.5. It shall be the responsibility of the Owner (or designated representative) to isolate the designated areas of and to publish notice to employees, staff, etc. of site work. The Contractor shall be responsible for the protection of structure adjacent to areas where roof work is performed. It being understood that the Contractor may be directed by the Owner (or designated representative) to act on his/their behalf in the application/installation of protective plastic sheeting, structures, etc. and that the Contractor may submit billing for this work unless otherwise included herein.

1.16.6. The Owner (or designated representative) shall notify occupants/employees work has begun. Dust, dirt and debris and chemical fumes generated during the project may be present during the preparation and application of the specified materials. The Owner (or designated representative) shall advise all affected building occupants and personnel and shall instruct them as to the extent of work being undertaken and the exposure to any hazardous materials or dangers associated with the job site. Only qualified personnel will be allowed on the job site.

1.17. PAYMENT TO CONTRACTOR

1.17.1. All payment terms shall be set forth, in writing, prior to the initiation of the project. Both parties shall agree to all terms set forth in this specification and all performance penalties stipulated herein. Payment in the amount of ninety percent (90%) of the total contract amount shall be made upon completion of the work or portion thereof. The balance of ten (10%) percent shall be paid after receipt of final Waivers of Lien for all materials used, sub-contract amounts, etc. and within sixty (60) days of work completion and acceptance of the work by the Owner / Owner (or designated representative). In the event Owner fails to pay any periodic or installment payment(s) due for work completed, Contractor may cease work without breach of contract, pending payment or resolution of any dispute.

1.17.2. The following payment provisions may apply as directed by the Owner (or designated representative);

1.17.2.1. Upon delivery of materials to the job site, the Contractor may submit an invoice for the amount of the materials to the Owner (or designated representative).

1.17.2.2. When the job is in progress, the Owner agrees to pay upon request to the Contractor, a portion of the total contract price equivalent to the percentage of the completed work. The Contractor may submit Pay Requests for completed work not greater than two times per month.

1.17.2.3. Partial payments may be issued to the Contractor by the Owner (or designated representative). Such payments shall be viewed by both parties as progress payments and will not in any way relieve the Contractor of performance obligations under this contract, nor shall such payments be viewed as approval or acceptance of work performed under this contract.

1.17.2.4. All pay requests shall be submitted in duplicate to the Consultant - Structural Technologies, Inc. for review and approval. The Consultant shall inform the Owner (or designated representative) as to the extent of work completed and the accuracy of the billing. Failure of the Contractor to comply with the above will result in holding up the pay request. Partial Waivers of Lien must be submitted with all partial billings. Compliance with this prerequisite will be mandatory.

1.17.2.5. Final payment shall be withheld until all provisions of the specifications and contract are met, including all necessary clean up, and the Owner (or designated representative) receives written verification of completion. The Owner (or designated representative) may retain an amount equal to ten percent (10%) of the monies owed for a period of sixty (60) days after the date of completion of the project or until such point he has assured himself that all Sub-Contractors, manufacturers and suppliers have been paid in full by the Contractor including all accrued charges.

1.17.2.6. Waivers of Lien shall be submitted in duplicate with all invoices. All major material suppliers and Sub-Contractors involved in the job will be identified by the Contractor within their Schedule of Values and Waivers of Lien must be submitted from each of these parties. The Contractor must list all Sub-Contractors and the type of work they performed.

1.17.2.7. Pre-arranged payouts may be negotiated by the Contractor and Owner (or designated representative) prior to the award of the contract. All such payouts will be agreed to in writing prior to the commencement of the project. Any variances or "extras" must be agreed to, in writing, prior to proceeding with the work.

1.17.2.8. All change orders, additions to, or deletions from these documents and specification shall be by written order only. The Owner (or designated representative) is the sole authority regarding change orders and the Contractor shall not change, alter or delete, in any manner, from these specifications without prior written approval. Failure to properly submit the request for any change will void any responsibility on the part of the Owner (or designated representative) to compensate the Contractor or Sub-Contractor for any additional work.

1.17.2.9. In the event of any dispute between the Owner and the Contractor, each party shall agree to submit the dispute to a licensed arbiter or independent party to represent claims of breach or failure to complete work in accordance with the contract documents, specifications, details and all applicable addenda. During the resolution of any dispute the Contractor will be required to secure all materials, construction site, equipment and shall maintain the structure and site in a safe, watertight / weathertight and functional condition. The prevailing party in all disputes shall be reimbursed all costs including but not limited to property damages, material damages, labor, legal fees, court fees and arbitration fees.

1.18. EMPLOYEES AND SUB-CONTRACTORS -- WAGES, ASSIGNMENT, ETC.

1.18.1. This contract may not be assigned or encumbered, nor may the Contractor subcontract the work in whole or part, unless written authorization is first obtained from the Owner (or designated representative). The competence and ability of the Sub-Contractor(s) may be taken into consideration prior to the award of this contract. This and all other writings not withstanding, there shall be no contractual relationship between the Owner (or designated representative) and any Sub-Contractor.

1.18.2. When deemed necessary, the Contractor shall be prepared to submit in writing a list of all Sub-Contractors; their names and business addresses. Sub-Contractors shall be subject to all work related prerequisites set forth in this specification and shall be bound by the contract to perform all work in accordance with this specification to the same extent as the Contractor. Waivers of Lien may be required from all Sub-Contractors prior to release of payment.

1.19. HAZARDOUS MATERIALS

1.19.1. In the event the Contractor encounters on the site material reasonably believed to contain Hazardous Materials (ACM, PIB, etc.), as defined by current E.P.A. or O.S.H.A. regulations, the Contractor shall immediately notify the Owner (or designated representative) and Consultant of the condition and shall suspend all work at the job site until verification of the materials has been performed by a certified professional.

1.19.2. The Contractor may rescind or modify his bid/contract with the Owner (or designated representative) upon the identification of Hazardous Materials at the job site where exposure of his personnel during the performance of the work specified herein involves the removal, containment, isolation or protection from said materials. This provision only applies in the event that these materials were not previously identified and specifically addressed in this Specification and subsequent documents, addenda, etc.

1.19.3. All necessary precautions in accordance with current E.P.A., AHERA and NESHAPS Rules and Regulations shall be implemented by the Contractor upon discovery and/or announcement of such suspicion. Any additional costs associated with monitoring and/or removal of any hazardous materials shall be paid for by the Owner (or designated representative).

1.19.4. The Owner (or designated representative), upon notification by the Contractor or Consultant, agrees to exonerate, indemnify and hold harmless the Contractor and Consultant from and against all demands and lawsuits and all damages, expenses and losses incurred as a result of the removal of Hazardous Materials from the job site by the Contractor.

1.20. UNFORESEEN CONDITIONS

1.20.1. As is the nature of restoration and reconstructive work, not all conditions may be readily apparent and / or indicated in these specifications, bid documents, drawing or details. The Contractor must use reasonable care during all demolition operations to preserve structure which is to remain. Upon the discovery of conditions which may be interpreted to present a structural hazard, Life Safety Hazard or condition which prevents the completion of the work as specified and detailed, the Contractor shall be required to notify the Owner (or designated representative) and the Consultant. Any required modification to the base scope of work, including the performance of work indicated as "Unit Cost" items on the Contractor's Bid Form will be itemized by the Contractor prior to performing these repairs. The Owner / Owner (or designated representative) and the Contractor may agree to a stipulated sum or "not to exceed" value for work performed in conjunction with Unit Cost items. This agreement shall be in written form and shall be signed and authorized by both the Contractor and Owner / Owner (or designated representative).

1.20.2. The Owner / Owner's Representative (or designated representative) acknowledge and accept that work performed beyond the Base Bid value and any stipulated unit quantities and pricing is possible and that increases to the Base Bid price will occur when unforeseen conditions arise. The Owner (or designated representative) may, at their (the Owner's) expense, retain the services of a Structural Engineer, Consultant or licensed professional to provide a peer review regarding any required additional work or repairs necessitated by unforeseen conditions. Conditions which exist that present a "Life Safety Hazard" will be immediately reported to the Owner / Owner's Representative (or designated representative) and may require temporary barricades, shoring, stabilization or removal / demolition. Costs associated with this work shall be set forth by the Contractor, in writing and delivered to the Owner (or designated representative) or their Legal Representative. The Owner (or designated representative) / Owner take full responsibility for conditions which were pre-existing at the property which represent a Life Safety Hazard or structural defect.

1.20.3. The Contractor, the Consultant – Structural Technologies, Inc. and any contracted Structural Engineer, Architect, Sub-Contractor or Sub-Consultant shall be indemnified and held harmless by the Owner (or designated representative)/ Owner for conditions existing at the property / facility which existed prior to the initiation of the specified work. The aforementioned Contractor, Consultant – Structural Technologies, Inc. and any contracted Structural Engineer, Architect, Sub-Contractor or Sub-Consultant shall be indemnified by the Owner (or designated representative) and shall have no liability for the identification of deterioration, including structural damage and Life Safety Hazards which were not readily apparent through visual analysis and could not be identified without invasive demolition or materials testing.

1.21. FORCE MAJEURE

1.21.1. Neither party shall be responsible for any failure to perform or initiate its obligations under this contract, if these services are prevented, obligations or duties are prevented by means of force majeure. Force majeure shall be considered under this contractual agreement any circumstance outside of the control of the Contractor, subcontractor (or) their constituent's control, notwithstanding allowances for acts of god including weather, strikes, material shortages, labor shortages etc. Where there is an event of force majeure, the party prevented from or delayed in performing its obligations under this contract must immediately notify the other party giving full particulars of the event of force majeure and the reasons for the event of force majeure preventing that party from, or delaying that party in performing its obligations under this contract and that party must use its reasonable efforts to mitigate the effect of the event of force majeure upon its or their performance of the contract and to fulfill its or their obligations under the contract. Upon completion of the event of force majeure the party affected must as soon as reasonably practicable recommence the performance of its obligations under this contract. Where the party affected is the contractor, the contractor must provide a revised scheduling of the works to be completed to minimize the effects (both finical and otherwise) on the alternative party and whereas to prevent delay of projects and scope caused by the event of force majeure. An event of force majeure does not relieve a party from liability for an obligation which arose before the occurrence of that event, nor does that event affect the obligation to pay money in a timely manner which matured during the course of negotiations or prior to the occurrence of that event. Examples and definitions of event that may enact force majeure clause included but are not limited to; riots, acts of war, invasion, act of foreign enemies, hostilities (whether war be declared or not) acts of terrorism, civil war, rebellion, revolution, insurrection of military or usurped power, requisition or compulsory acquisition by any governmental or competent authority; (b) mass contagion events including pandemics, ionising radiation or contamination, radio activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive assembly or nuclear component; (c) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds; (d) earthquakes, flood, fire or other physical natural disaster, (e) strikes at national level or industrial disputes at a national level, or strike or industrial disputes by labor not employed by the affected party, its subcontractors or its suppliers and which affect an essential portion of the works as to be completed under the proposed scope of services which are beyond the control of the Contractor and in the estimation of the Owner (or designated representative) and Consultant as just cause to extend the period of time allowed the Contractor prior to initiating work in conjunction with this contract shall be reviewed and agreed to in writing and shall amend the terms set forth herein.

1.22. INDEMNITY

1.22.1. By submission of these documents the Contractor assumes full responsibility and risk for and agrees to indemnify and hold the Owner (or designated representative) and Consultant, their respective officers, officials, employees, volunteers, and agents harmless against any claims, costs, causes, actions and expenses, including but not limited to attorney's fees incurred by reason of a lawsuit or claim for compensation arising in favor of any person, including the employees or officers or independent Contractors or Sub-Contractors of the Contractor or Owner, on account of personal injuries or death, or damages to property occurring, growing out of, incident to, or resulting directly or indirectly from the performance by the Contractor or Sub-Contractor, whether such loss, damage, injury or liability is contributed to by the negligence of the Owner or by premises themselves or any equipment thereon whether latent or patent, or from other causes whatsoever, except that the Contractor shall have no liability for damages or the costs incident thereto caused by the sole negligence of the Owner.

1.23. CONTRACTOR QUESTIONS

1.23.1. All questions regarding these documents should be directed to the Consultant - Structural Technologies, Inc., 103 Fessler Drive, Bloomingdale, IL 60108. The office of the Structural Technologies, Inc. may be contacted at (630) 351-8200 or E-Mail: structecinc@gmail.com. Requests for additional specification booklets, Construction Drawings, diagrams, etc... will be at the discretion of the Owner (or designated representative) and may require an additional deposit/fee. Documents will be available through BHFX Planroom.

1.24. OWNER / CONSULTANT – PROPRIETARY RIGHTS TO DOCUMENTS

1.24.1. These documents have been prepared for the purpose of obtaining competitive bids for the designated project or combination of projects set forth herein. All format, document design, details, drawings and content as prepared by Structural Technologies, Inc., 103 Fessler Drive, Bloomingdale, IL 60108 an independent building restoration consultant firm shall be considered the intellectual property of Structural Technologies, Inc. and shall not be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise except as permitted by the United States Copyright Act without the express prior written permission of Structural Technologies, Inc.. These documents and all attached drawings contain information and specifications which have been prepared for the express purpose of satisfying the contractual agreement between Structural Technologies, Inc. and the client set forth and designated herein. These documents may be copyrighted by Structural Technologies, Inc. and are the intellectual property of Structural Technologies, Inc... Any use of these documents by the client or any other party employed by the client (including their agent) including copying the entirety of this document or any supplied electronic media (CD, floppy disk, etc.) or any part thereof shall be construed as a violation of this agreement. Structural Technologies, Inc. shall take all necessary legal action against any and all parties who shall violate this agreement including the cost of all legal fees, loss of revenue either real or potential that result from the reproduction of these documents, media, drawings, etc...

Structural Technologies, Inc. retains the right to amend or modify the information contained herein and any supplied electronic documents or drawings attached herewith and shall retain the right of usage and reproduction. Only to the extent agreed and authorized in writing by Structural Technologies, Inc. shall the client / end user of this written document, drawings and any supplied electronic media reproduce or otherwise alter or modify these documents. Reproduction of these documents shall be for the sole purpose of preparing a bid package(s) for the purpose of soliciting competitive bids for the designated project set forth herein and/or as required for purpose of review by contracted parties to this agreement.

Structural Technologies, Inc. shall not be held liable for any work performed and based on these documents, drawings or supplied electronic media unless a contractual obligation exists between the client (Building Owner, Architect, Engineer, etc.) and Structural Technologies, Inc. for the specific project referenced and set forth herein. Any contractual limit of liability imposed by State statute for services provided by Structural Technologies, Inc. shall begin on the date of substantial completion of the project or any phase of the project completed in the same calendar year.

1.25. LIMIT OF LIABILITY & CONTRACTUAL OBLIGATIONS

Structural Technologies, whether contracted for inspection, analysis, project design / development and/or periodic or full time on-site inspection of work being performed in conjunction with contracted services set forth in this agreement shall neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work performed by any Contractor awarded work as a result of services provided in this agreement between the Consultant – Structural Technologies, Inc. and the Owner (or designated representative), since these are solely the Contractor's rights and responsibilities under their Contractual Agreement and Contract Documents. The Owner (or designated representative) shall be liable for the selection of the contractor and any negotiated terms not specifically set forth in the specifications and bid documents. Project Management and Project Administration services provided by Structural Technologies, Inc. shall be provided on an advisory capacity and do not supplant the Owner's obligations. Structural Technologies, Inc. shall not be held liable for Contractor related project delays, performance or non-compliance with the specifications and drawings or material failure. The Owner's / Owner's Representative release of payment to the Contractor does not represent acceptance of completed work by Structural Technologies, Inc... Structural Technologies, Inc. makes no warranties for workmanship or materials, express or implied, under this Agreement or otherwise, in connection with their (Structural Technologies, Inc.'s) contracted services. Structural Technologies, Inc.'s limitation of liability shall be not greater than the total aggregate cost of either design or inspection services provided by Structural Technologies, Inc. in conjunction with this project.

1.26. PREVAILING WAGE REQUIREMENT

Please note this project is a prevailing wage job. Not less than the prevailing wage for Cook County shall be paid for any labor on this job in accordance with the Illinois Prevailing Wage Act. As required by Public Act 94-0515, the Contractor shall submit to the College monthly certified payroll records for every worker employed on this job. This information may include the worker's name, address, telephone number, social security number, job classification, hourly wages paid in each pay period, number of hours worked each day, and starting and ending time of each work day. Cook County Prevailing Wages can be found at http://www.state.il.us/agency/idol/rates/rates.HTM

1.27. BID DUE DATE - SUBMITTAL

1.27.1. All bids are due at the offices of the Owner (or designated representative) at the aforementioned location (Section 1.1.2) no later than the time shown below. The Contractor is to include in his pricing all changes, addendum, etc. established by these documents, the Pre-Bid Meeting, and subsequent revisions. Failure to include pricing for revisions prior to the bid opening may be grounds for disqualification of the bidder.

BID DUE DATE: June 16, 2022 by no later than 1:00 pm (CST)

Original Contractor bids must be hand delivered to the Attention of Oakton Community College - Des Plaines Campus – Purchasing Assistant – Ms. Sharon Anderson, 1600 East Golf Road, Des Plaines, IL 60016.

Phone Number: (847) 635-1632
E-Mail: sanderson@oakton.edu

In the event there are questions or the Contractor requires access to the structure to inspect roof areas, perform core cuts, perform field measurements, etc., the Contractor must schedule all access to the roof with the College. Please use the following contact information to schedule access. Contact Person: Mr. Richard Schwass

Phone Number: (847) 635-1783
E-Mail: rschwass@oakton.edu

If the Contractor has questions or requires additional information prior to bid opening which does not constitute and Addendum to the original documents, please contact Structural Technologies, Inc. at the following;

Phone Number: 630-351-8200
E-Mail: structecinc@gmail.com

1.27.2. Any bids and/or changes which are submitted after the times shown above shall be considered invalid, thus rejected by the Owner (or designated representative) and the Contractor disqualified. The Owner (or designated representative) reserves the right to reject any or all bids and/or to accept any bid which, in his opinion, best satisfies the requirements of the project.

1.28. JOB COMPLETION/INSTALLATION REQUIREMENTS

1.28.1. The Contractor, upon award of a written contract issued by the Owner (or designated representative), shall be required to immediately apply for all necessary permits, shall order all products and provide all equipment as necessary to complete the work in the designated time period indicated for completion It is understood by the Contractor and mutually agreed by and between the Contractor and the Owner (or designated representative) that the date of initiation of the project and the date of completion as specified in the Contract is a reasonable time for the completion of the work, taking into consideration delays for issuance of permits which are beyond the control and/or not the responsibility of the Contractor, the average weather and conditions prevailing at this location. If the Contractor shall neglect, fail, or refuse to complete the work within the time specified in the contract or any proper extension thereof granted by the Owner, it in no way relieves the Contractor of his responsibility to complete the work at no additional cost to the Owner. Should it be necessary to extend the completion date in order for the Contractor to complete the work, the Owner and the Contractor shall prepare a written agreement to extend the completion date provided the Contractor shall not be responsible for failure to meet the completion date when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner. The Contractor shall not be charged with any excess cost when the delay in completion of work is due to the following:

1.28.1.1. Any order duly issued by the government (city, county, state or federal).

1.28.1.2. Any unforeseeable cause beyond the control and without fault or negligence of the Contractor including, but not restricted to, Acts of God, severe weather, strikes, acts of the Owner (or designated representative), acts of another Contractor in the performance of a Contract with the Owner (or designated representative).

1.28.1.3. Any delays of Sub-Contractors or suppliers occasioned by any of the causes specified in the above subsections. The Contractor shall notify the Owner (or designated representative) within five (5) days prior to any such delay, when reasonably possible.

1.28.1.4. Due to the nature of the work to be performed in conjunction with this project, the Contractor will be required to mobilize and initiate the work within thirty (30) days after "Award of Contract" **and shall be required to staff the project with competent personnel and a full crew continuously through the duration of the project. All work must be substantially completed by no later than October 31, 2022**. In the event the Contractor does not complete work within the stipulated time period and completion date, a penalty in the amount of $1,000.00 per day for each working day beyond the designated completion date will be incurred in the event no extension due to weather or delays beyond the control of the Contractor have been granted by the Owner / Board. Total damages shall not exceed the percentage of work remaining on any partially completed roof section or roof related component designated for repair or replacement or $20,000.00 whichever is greater.

END OF DIVISION 1 -- GENERAL PROVISIONS

2. DIVISION 2 -- TECHNICAL PROVISIONS

2.1. PROJECT REQUIREMENTS

2.1.1. General -- Scope of Work to be Performed

- Erect necessary barricades, temporary closures, ladders, heated storage areas, scaffolding, mechanical lifts, etc. to access the designated areas and to perform all specified roof replacement. Place protective plywood, tarps, etc. adjacent to building, over roof areas, over walkways and landscaping to protect and preserve existing construction and landscaping.
- Contractor to provide rolling canopy protection for sidewalk areas as well as sidewalk barricades and signage to divert people around the areas of construction. As necessary, additional "ground personnel will be employed to monitor walkway, entry doors and access areas in order to prevent exposure to any falling debris.
- The Contractor shall be required to coordinate the temporary removal of the existing gutter "covers" installed to prevent leaves and debris from entering the gutter. Sequentially number the cover sections and set-aside using care to prevent damage to the covers during removal or storage.
- The Contractor shall be required to erect perimeter safety railing, perimeter wall protection, scaffold protection, construction fencing, plywood protection, etc. as required by OSHA and as stipulated by the Owner to protect all drives and walkways immediately adjacent to the structure throughout the duration of the roofing project. Tarps and other means of protection shall be required to prevent any damage to the structure as a result of the roof removal and replacement project. Dumpsters shall be placed in designated areas adjacent to the building using care to not obstruct doorways or drive areas. Equipment utilized to remove debris and to transport materials to the roof must be located in designated areas and, when in operation, or when lifting / transporting materials to and from the roof area, coordinated with the Owner's representative to prevent any hazard to employees or occupants of the structure or general public.

- **Low Slope Roof Section 1:** Dis-assemble and remove the gutters and perimeter edge metal in all areas. Remove and dispose of all downspouts and strap anchors. Cut-away, remove and properly dispose of all existing roof membranes, flashing membranes, insulation and sheet metal to expose the existing metal roof deck, perimeter nailers and tie-in curb base and flashing substrates.

- **Steep Slope Roof Section 2: Metal Roof Panel Removal:** The Contractor will dis-assemble the existing architectural metal exposed fastener steep slope roof system, flashings, rake edge in the designated area along the north perimeter of the structure. Existing one-half inch thickness foil faced insulation shall be removed in the designated area to expose the underlying wood framing. Remove and set-aside the gutter cover(s) in the designated area using care to sequentially number the cover(s) prior to storage for re-installation. Remove and dispose of the existing metal roof panels, rake trim and insulation in the designated area.

- **Low Slope Roof - Metal Deck Areas:** Replace structurally damaged metal decking with new G-60 galvanized metal decking matching existing deck profile. New decking must be minimum twenty (20) gauge thickness and must be installed to "nest" and overlap surrounding structurally sound metal decking by a minimum of twelve (12.0) inches. All new decking must be secured to structural joists at each end with self-drilling No. 10 or larger stainless steel screw fasteners installed at the base of each deck flute and not greater than six (6.0) inches on-center. Sidelaps in the decking must be secured every twelve (12.0) inches on-center with similar No. 10 or larger stainless steel screw fasteners. The Contractor must document, itemize the total square footage and submit a written Change Order for the exact square footage of deck replacement performed in conjunction with this project.

- **Low Slope Roof - Metal Deck Areas:** Mechanically clean the metal deck surface in all areas where the existing decking exhibits non-structural surface corrosion prior to application of rust inhibitive coating. Remove / sweep debris from all deck flutes. Report any improperly supported or attached deck sections and perform all necessary repairs to secure the decking prior to installation of the vapor barrier membrane. All metal decking must be properly supported by structural steel angle or secured to the load bearing joists. Mechanical cleaning and coating of corroded metal deck surfaces will be measured by the Contractor, itemized and submitted as a written Change Order billed "In Addition" to the Base Bid for this project.

- **Steep Slope Roof Areas:** Upon completing the removal of the existing architectural metal roof system and underlying foil faced insulation in the designated area, the Contractor will perform visual inspection of the wood framing to identify any required replacement due to decay, diminished structural capacity or inadequate capacity to support roof loads as per Building Code. Replacement framing will be dimensional Select Grade No. 1 Kiln dried Douglas Fir. At designated locations at perimeter edges of the steep slope roof system, the Contractor will be required to cut-away damaged / dry rotted wood framing and install new 2 x 4 "sistered" joists on each side of the existing joist extending from the outside fascia rafter to the adjacent rafter. Deteriorated outrigger wood blocking must be identified and new outrigger blocking installed and "sistered" on both side adjacent to the existing wood using a ratio of connection of not less than triple (three times) the length of "new" wood sistered and connected by through bolting with three-eights (0.375) diameter bolts installed at twelve (12.0) inches on-center in two staggered rows. The Contractor shall include a total of one-hundred (100.0) linear feet of 2 x 4 wood joist / wood framing replacement in the base bid for this project. Replacement of outriggers, rake fascia and rafters shall be itemized and any quantity in excess of the base of one-hundred (100.0) linear feet billed "In Addition" to the Contractor's Base Bid for this project. Install new hot dipped galvanized Simpson LUS Face Mounted Hanger secured to the rake board to support the new sistered 2 x 4 outriggers. Secure the face mounted hanger with Simpson Strong-Drive screw fasteners.
- **Low Slope Roof Areas:** Inspect existing perimeter and projection wood nailers and curbs and replace all rotted or structurally damaged wood nailers with new pressure treated wood nailers of the same dimension. Installation of replacement wood nailers and curbs shall be itemized by the Contractor and submitted "In Addition" to the Base Bid for this project. All new wood nailers to be secured with appropriate corrosion resistant screw fasteners. All wood nailers must be secured in accordance with ASCE-7 Wind Uplift requirements, current International Building Code requirements and SMACNA requirements for existing exposure.

2.1.1.1. Construction / Installation

- **Low Slope Roof - Roof Section 1:** Replace structurally damaged metal decking in all areas with new decking configured to match the existing decking. Removal of deteriorated decking and installation of new twenty (20) gauge galvanized metal decking shall be itemized and submitted "In Addition" to the Base Bid for this project. All new decking to be secured with self-drilling corrosion resistant screw fasteners installed at intervals of not greater than twelve (12.0) inches on-center at bar joist connections and not greater than six (6.0) inches on-center at deck overlap / tie-in conditions. All required metal deck replacement shall be itemized and submitted "In Addition" to the Base Bid. Apply surface tolerant corrosion inhibitive coating to all areas of structurally sound steel decking exhibiting surface corrosion. Wire brush and sweep deck surfaces prior to application of paint coating. Make certain areas beneath the deck are protected from any paint flowing between the deck at lap conditions.
- **Steep Slope Roof – Roof Section 2:** Upon completing the required repairs to the 2 x 4 wood joists spanning between the trusses, the Contractor will install a single course of five-eighths (19/32) inch thickness Exterior Grade 1 C-D plywood sheathing directly over the 2 x 4 framing joists. New plywood sheathing / decking shall be aligned with the outside rake edge of the structure. Beginning at the base of the roof slope, install a 4 ft. x 8 ft. section of plywood centering the ends of the plywood sheathing over the 2 x 4 roof joists. Secure the plywood with No. 10 countersunk corrosion resistant wood-to-wood screw fasteners installed every twelve (12.0) inches on-center along the sides and center of the sheathing at the interface with the 2 x 4 joist and every six (6.0) inches on-center at the ends where the plywood is secured to the top of the roof truss. All screw heads shall be set flush with the surface of the plywood sheathing. At all locations where the end of the plywood sheathing is not supported by an underlying wood framing member, the Contractor will be required to install new Simpson Strong-Tie 1-1/4-in 20-Gauge Galvanized Steel Plywood Clips centered between the existing roof joists (16.0 inches on-center). The Contractor's Base Bid shall include the installation of new plywood sheathing at designated locations of the Steep Slope Roof areas.

- **Low Slope Roof - Roof Section 1:** The Contractor shall be required to install new wood blocking nailers at the perimeter of the roof to compensate for the total thickness of "new" insulation. The new wood blocking shall be "structural" grade, free of defects, warp and splits and shall be installed and secured to the existing nailers or substrate (i.e. concrete block or masonry wall) with appropriate screw fasteners as per ASCE 7-16 Wind Uplift requirements. Screws must sufficiently penetrate the substrate to a depth of not less than one and one-half (1-1/2) inch and have a pull-out resistance tested to equal or exceed requirements set forth in ASCE 7-16. Fastener spacing must not exceed eight (8.0) inches on-center.
- **Low Slope Roof - Roof Section 1:** Upon completion of all required deck coating and/or replacement, the Contractor shall install a single ply of non-reinforced 45 mil. EPDM Rubber Membrane directly over the metal deck surface. Align the vapor barrier membrane perpendicular to the slope-to-drain / slope-to-gutter using care to sidelap the membrane a minimum of three (3.0) inches in downslope manner. Endlaps must be staggered by not less than three (3.0) feet and shall be a minimum of six (6.0) inches of overlap. Tape and adhere overlapping seams and extend the membrane over all perimeter wood blocking wrapping the membrane to one (1.0) inch below the base of the perimeter wood nailer. As necessary, temporarily secure the membrane to the wood blocking with plastic cap nails inserted into the vertical face of the membrane where it wraps the wood nailer. Temporarily ballast the EPDM membrane, as necessary, to prevent wind uplift during the construction of the roof and prior to the installation of the base course of mechanically fastened polyisocyanurate insulation.
- **Low Slope Roof - Roof Section 1:** Upon completing the installation of the vapor barrier membrane, the Contractor will install a single course of new polyisocyanurate insulation throughout all low slope areas using care to stagger rows of insulation perpendicular to the slope to gutter edge. The base course of insulation shall be a minimum five (5.0) inch thickness flat stock insulation. A second course of one-half (1/2) inch glass faced gypsum board shall be installed on the "low slope" roof area after completing the installation of the polyisocyanurate insulation. The base course of polyisocyanurate insulation must be mechanically secured to the underling decking with No. 12 screw fasteners fitted with three (3.0) inch galvanized plate washers. Attachment of the insulation boards shall comply with ASCE-7 Wind Uplift Code and shall conform to Factory Mutual FM-1-60 anchoring requirements. A minimum of eight (8) fasteners shall be installed in the roof field, twelve fasteners in Zone 2 – exposed roof edges and sixteen (16) fasteners in Zone 3 exposed outside corners. Install a second course of glass faced gypsum board (DensDeck Prime or equivalent) directly over the base course of insulation adhered with low rise foam insulation adhesive applied in ribbons at six (6.0) inches on-center spacing. Use care to stagger the seams over the base course(s) of insulation. Align the glass faced gypsum board perpendicular to the roof slope-to-gutter edge and secure the overlayment board with low rise foam adhesive applied in ribbons at not greater than six (6.0) inches on-center spacing. Ballast areas of insulation during cure of the insulation adhesive. Fill all gaps of greater than one-half (0.50) inch with rigid insulation or expansion foam.
- **Low Slope Roof - Roof Section 1:** Install new fire resistant perlite cant strips, loose laid or set in asphalt mastic / adhesive, as per membrane Manufacturer's published recommendations. Cant strips will be required at transitions to the metal roof system (tie-in) and at the base of the raised curb perimeter edge curbing that exceed eight (8.0) inches in height above the roof membrane.
- **Low Slope Roof - Roof Section 1:** Install the base ply of smooth surface heat welded Modified Membrane using care to prevent improper alignment. Position the membrane perpendicular to slope beginning at the roof perimeter gutter edge. Unroll the membrane and allow the membrane to "relax" as per the Manufacturer requirements based on temperature. Wrap the base ply of smooth surface Modified Membrane over perimeter wood nailers to encapsulate the roof edge. Apply continuous heat or flame to the underside of the membrane. Adhere the membrane directly to the perimeter wood nailer(s) and glass-faced gypsum board surface. Use a weighted roller and broom to press and adhere the membrane to the substrate. In the event the base ply of smooth surface membrane is not completed with installation of the cap ply of membrane during the same day, the Contractor will be required to protect areas from traffic, dust and debris prior to the installation of the final ply of membrane. Install the final ply of granule surfaced SBS Modified Membrane – Class A Fire Rated roof system heat welded over the base ply as per the specifications. Installation of the roof membrane must comply with the specifications and published installation requirements stipulated by the Material Manufacturer for a fully warranted roof assembly. Install a new two (2) ply SBS Modified Membrane flashing assembly. The base ply flashing membrane will be a smooth surfaced heat welded modified membrane and the granule surfaced cap ply flashing membrane shall be fully adhered by heat welding. Secure vertical flashings with a continuous aluminum metal termination bar. Install fasteners every 8 – 10 inches on-center and apply a continuous bead of one-part polyurethane caulking sealant or asphalt mastic along the upper edge of the flashing membrane where it contacts the wall or curb surface.

- **Low Slope Roof - Roof Section 1:** Where vertical flashing height is less than six (6.0) inches as measured from the surface of the field membrane, the Contractor will be required to apply a base coat of resin coating, embed fleece fabric reinforcement and apply a final coating of resin to encapsulate the fabric. All resin flashing systems to be manufactured by or approved by the primary Roof Membrane Manufacturer. No cant strip will be required in these areas where resin flashings are installed.
- **Low Slope Roof - Roof Section 1:** Apply fibrated aluminum paint coating to all vertical and horizontal field and flashing laps and to all de-granulated, surface abraded or surface damaged membrane. Aluminum coating must also be applied to all resin flashing installed at designated locations.
- **Low Slope Roof - Roof Section 1 – Gutter Installation:** Install new .032 (20 gauge) aluminum flange mounted metal gutters and downspouts at all perimeter edges of the roof. Secure the flange mounted commercial six (6.0) inch box gutters to the perimeter wood nailer using stainless steel countersunk screw fasteners installed not greater than six (6.0) inches on-center in two staggered rows. Secure gutter brackets, splice plates, supports, etc. as required by the gutter manufacturer (pre-fabricated Metal-Era ICG-2) or as stipulated to comply with ASCE 7-16 requirements for wind uplift and attachment to the perimeter wood nailers. Install new 4.0 inch x 6.0 inch pre-finished .032 (20 gauge) aluminum metal downspouts secured to the gutter with stainless steel screw fasteners. Downspouts to be located at current "pre-existing" locations.
- **Low Slope Roof - Roof Section 1:** Prime coat the gutter flange surface and heat weld a single ply of smooth surfaced Modified Membrane over the flange extending not less than eight (8.0) inches beyond the flange over adjacent smooth surfaced (Base Ply) of field membrane. The final ply of granule surfaced Modified Membrane will be installed and terminated approximately one-quarter inch (0.25") from the inside face of the gutter. Where possible, the field membrane will be the final ply of membrane installed to strip-in the gutter flange. Prior to bonding the flashing to the field membrane, the Contractor will heat the field ply at the lap condition and embed the granules to achieve optimal bond between the flashing ply and field ply. At the termination of the granule surfaced flashing ply on the inside face of the gutter, the Contractor must apply and tool finish a continuous bead of one-part polyurethane caulking.
- **Low Slope Roof - Roof Section 1 – Perimeter Edge Metal Installation:** Fabricate and install G-90 twenty-two (22) gauge galvanized metal cleats and new pre-finished twenty-four (24) gauge galvanized raised metal edge flashing (gravel stop) at designated / existing locations. Sheet metal shall be configured and installed to comply with current SMACNA and Factory Mutual wind uplift, design and attachment requirements. Secure all metal cleat sections with corrosion resistant screw fasteners installed at not greater than twelve (12.0) inches on-center. The new perimeter edge metal / gravel stop must be attached to the continuous metal cleat and the horizontal flange secured with corrosion resistant countersunk No. 12 screw fasteners installed not greater than twelve (12.0) inches on-center in two staggered rows. Alternative attachment with 8D double dipped galvanized corrosion resistant ring shank nails installed every six (6.0) inches on-center will be accepted. Perimeter edge metal must be configured to provide a vertical face with reinforced "break" to prevent oil canning when face dimension is greater than eight (8.0) inches. Pre-fabricated or shop fabricated perimeter edge metal must comply with ASCE 7-16 Wind Uplift / Wind Load requirements.

- **Steep Slope Roof - Roof Section 2 – Metal Roof:** As required and as discovered as a result of the removal of the existing metal roof system, roof trim, insulation and metal roof details, the Contractor will be required to replace sections of deteriorated wood rake board, eave / gutter fascia board, and, in designated areas, replace or repair damaged structural framing. The Contractor shall include a total of one-hundred (100) linear feet of 2 x 4 x 4.0 ft. length "sistered" roof joists / outriggers in the Base Bid for this project. Pricing for installation of the new support truss and sistered joist sections shall include all hot dipped galvanized screw fasteners, 3/8 inch diameter hex bolts, washers and lock nuts, labor and material and all galvanized Simpson LUS Hangers.

- **Steep Slope Roof - Roof Section 2 – Metal Roof:** Upon completing all wood framing replacement / framing restoration, a single course of five-eighths (5/8) inch thickness Exterior Grade C-D plywood sheathing will be installed extending four (4.0) feet from the outside rake edge of the roof. The entire exposed surface of the new plywood sheathing will then be encapsulated / covered with a single ply of self-adhered high temperature synthetic rubberized membrane. The membrane will be installed in widths of thirty-four (34.0) inches or greater aligning the membrane parallel to the gutter edge. Extend the waterproofing membrane not less than three (3.0) inches beneath the existing metal roof panel(s) installed adjacent to the area of reconstruction.

- **Steep Slope Roof - Roof Section 2 – Metal Roof:** Upon completing the installation of the self-adhered waterproofing membrane, the Contractor shall install new pre-finished striated twenty-six (26) gauge galvanized architectural metal roof panel system, fasteners and accessories. Beginning at the outside rake edge of the roof, the Contractor shall align the metal panels with the raised rib of the panel aligned perpendicular to the roof eave / gutter edge. As required by the Material Manufacturer, the Contractor will install the metal rake edge cleat and closure in conjunction with the installation of the "starter" roof panel. All roof panels must be *continuous length* with no field laps or head seams. Place the metal roof panel directly over the installed waterproofing membrane and secure the panel to the underlying plywood sheathing and 2 x 4 wood joists with neoprene gasketed stainless steel metal-to-wood self-drilling No. 10 screw fasteners. Installation of the new roof panels shall comply with UL 90 / FM-1-90 Wind Uplift. Screw fasteners to penetrate and pass through existing plywood sheathing not less than one (1.0) inch. Penetration into existing 2 x 4 / 2 x 10 wood framing members to be not less than one (1.0) inch. Attachment of metal panels shall comply with the Material Manufacturer's published requirements for compliance with UL 90 Wind Uplift criteria. As required by the Metal Roof Material Manufacturer, the Contractor shall arrange and perform fastener "pull-out" testing to ensure adequate attachment of the floating metal clips to which the metal roof panels are attached.

- **Steep Slope Roof - Roof Section 2 – Metal Roof:** At exposed rake edges of the metal roof, the Contractor shall install a new pre-finished galvanized rake closure secured to the roof sheathing with No. 10 screw fasteners. Install new pre-finished twenty-four (24) gauge galvanized cleat mounted metal "box" rake closure as required by the Material Manufacturer. All laps between sections of the metal rake closure shall be formed in a downslope fashion and shall not be less than two (2.0) inches of overlap. Two continuous beads of one-part polyurethane or butyl sealant must be applied at all downslope lap conditions to achieve a watertight condition. Install all high-density rubber end closures, sealants, closed-head stainless steel rivets, etc. as required to comply with the Material Manufacturer's warranted design criteria.

- **Steep Slope Roof - Roof Section 2 – Metal Roof:** At perimeter gutter edges, the Contractor must strip-in the upslope flange of the gutter with an additional ply of self-adhered waterproofing membrane extending from the base of the flange to not less than six (6.0) inches beyond the upper edge of the flange. Endlaps between sections of the stripping ply shall not be less than two (2.0) inches. Secure the new metal roof clips and metal roof panels at the base of the roof slope as per the Material Manufacturer's requirements. Use self-piercing metal-to-wood countersunk No. 10 stainless steel screw fasteners to secure the gutter flange to the underlying sheathing or roof truss framing.

- **Steep Slope Roof - Roof Section 2 – Metal Roof:** Upon completing the installation of the architectural metal roof system, flashings and sheet metal accessories in the designated area, the Contractor will remove any / all protective film from the exposed sheet metal. Use care to prevent scratching coated surfaces when using utility knives or tools to remove the film. As necessary, the Contractor shall "touch-up" any surface scratches in the coated sheet metal with the Material Manufacturer's supplied coating. Remove excess caulking and clean panels with Dawn dishwashing soap and water to remove oils or dirt using a clean white rag.

- **All Roof Areas:** Clean-up and remove all debris, containers, waste, etc. from the roof surface and grounds surrounding the job site and staging areas daily as specified and upon completion of the project. All sheet metal scrap, fasteners, plywood sheathing scrap, etc. must be removed from the project site. The Contractor shall rake and clean areas adjacent to the structure upon completing the work and shall broom pavement and walkway areas to remove any debris, nails, screws, etc..

- Project Base Bid will include all items in the Specification Documents, Construction Drawings, Addendum's (if applicable), Pre-Bid Meeting and any other correspondence during the bidding process. Any discrepancies in any of the aforementioned documents will be brought to the attention of Structural Technologies, Inc. prior to submitting the project bid. Any questions / concerns regarding the scope of work, materials, etc. to be included in the Base Bid, will be brought to the attention of Structural Technologies, Inc. prior to the submittal of the project bid and approval of the project contract documents.

2.2. REQUIREMENTS/JOB SITE CONDITIONS

2.2.1. Existing Site & Building Conditions

The plans do not entirely show the existing building and site in total detail. The Contractor must visit the existing building and site of construction and ascertain for himself the exact conditions existing and the extent of the work required. It is to be understood that his failure to do so will be no excuse for claims resulting from his lack of knowledge of the existing conditions, and he is to base his bid on the conditions of the site and existing building "AS IS". He is to provide a fully completed project in accordance with the plans. It is the Contractor's responsibility to make any investigations he feels necessary to determine the exact existing conditions. Conditions existing that were undetermined at the time of inspection and could not be anticipated with reasonable inspection procedures will be reviewed with the Owner (or designated representative) and any "extra" charge determined to be necessary to amend the deficiencies to ensure a quality installation will be agreed to in writing prior to proceeding with any work.

2.2.2. Measurements

Before ordering any material or doing any work, each Contractor shall verify all measurements or scope of work indicated at the site and shall be responsible for contacting the Consultant and Owner regarding any discrepancy. The Base Scope of work shall be as indicated in the written specifications and as indicated on the Drawings and Details. No extra charge or compensation will be allowed on account of error in obtaining actual dimensions or failure to include the designated scope of work and restoration indicated in the specifications, details and drawings provided for the project. If unforeseen conditions are discovered, or additional work is required beyond the Base Bid, this information and scope of work shall be submitted to the Consultant - Structural Technologies, Inc. for consideration before proceeding with the work. Additional area or work negotiated with the Contractor while on-site shall be "bid" and accepted by the Owner (or designated representative) and will be agreed to in writing prior to proceeding with the work. All measurements for these additional areas will be verified by the Owner (or designated representative) as well as the Consultant - Structural Technologies, Inc...

2.2.3. Interpretation

Reference must be made to the drawings for all measurements. The measurements given on the plans shall be checked by the Contractor before proceeding with his work and any discrepancy reported to the Owner and the Consultant.

2.2.4. Cleaning

The Contractor is responsible for and shall keep the premises clean at all times, and remove all rubbish regularly without fail and immediately upon direction, insofar as applicable to his work. Upon completion of the work, the Contractor or each Sub-Contractor shall clean up around the new work and leave the structure and grounds in a neat, clean and uncluttered condition. Debris will not be stored on the roof deck except during the process of removing the material. Debris boxes shall be covered at the end of each day with a protective tarp secured to the box with ropes. Debris boxes shall be immediately removed from the job site when filled.

2.2.5. Miscellaneous Utilities

2.2.5.1. Electrical power will be furnished by the Owner for small tools only. All connections to the electrical system will be furnished by the Contractor. Any temporary lights necessary to perform the work will be furnished by the Contractor. Where extension cords may come in contact with water or other conductive surfaces, the Contractor shall supply necessary GFI (Ground Fault Interrupted) plugs and connections to avoid any potential hazard or electrical shock to personnel. All electrical cords shall be in good condition and shall be sized sufficiently to accommodate electrical load without overheating.

2.2.5.2. Water for cleaning of roof areas, mixing of paint, washing of paint brushes or rollers and drinking purposes will be furnished by the Owner. Any connections to the water system shall be completed by the Contractor. The quality of the water supplied for the mixing of mortars shall be reviewed prior to proceeding with the mixing process.

2.2.5.3. At the completion of the work, or when the above connections are no longer required, the Contractor shall remove all connections and leave the facilities in a condition at least as satisfactory as prior to the commencement of his work.

2.2.5.4. Temporary toilet facilities will be provided by the Contractor upon request by the Owner (or designated representative). Temporary toilets will be delivered to the job site and shall be located in a manner so as not to create a sanitary or environmental hazard. The Owner's facilities shall only be used by the Contractor personnel in the event that the Owner (or designated representative) has granted prior permission to access the building for use of their facilities. Any debris, cleaning chemicals, coatings, etc. which are "tracked" over the floor surfaces in the interior of the building and directly attributable to the Contractor's personnel will be cleaned or removed to the satisfaction of the Owner (or designated representative) at the Contractor's expense.

2.3. SCOPE OF WORK, STORAGE AND SITE CONDITIONS

2.3.1. General -- Scope of Work to be Performed

Furnish all materials, equipment, perform all labor and operations to remove the existing roof membrane(s), insulation, perimeter edge sheet metal, flashings, etc. and inspect the underlying metal o decking. Remove damaged or deteriorated metal decking and replace sections, as required. Apply corrosion resistant coating to structurally sound metal decking exhibiting surface rust. Install new pressure treated wood nailers at perimeter edges of each roof section to compensate for the new insulation thickness. Install a vapor barrier membrane in all areas prior to the installation of new polyisocyanurate insulation and glass faced gypsum board. All insulation must be mechanically secured or adhered per ASCE-7 Wind Uplift requirements and must conform to published criteria for Factory Mutual 1-60 requirements. Install a two-ply Modified Membrane roof system and flashings throughout all areas as per the specifications. Install new pre-finished perimeter edge commercial gutters and downspouts and continuous cleat mounted pre-finished raised metal edge adjacent to the low slope roof sections. Apply fiber reinforced aluminum coating to all lap seams and degranulated areas of the roof system upon completion.

Restoration of the steep slope metal roof system shall be limited to the designated area located along the north rake edge perimeter of the structure. In this area, the existing metal roof system will be removed, underlying insulation removed, structural framing repairs completed and installation of new five-eighths (5/8) inch thickness plywood sheathing, waterproofing membrane and new architectural metal roof panels and rake metal installed.

Alternate 1: A continuous coating of elastomeric acrylic paint will be applied to the entire existing metal roof system (including the new panels) with a double coat application of one-hundred (100%) percent solids acrylic elastomer coating. Contractor to replace and damaged screws throughout the roof field with new neoprene gasketed stainless steel No. 10 screw fasteners. The Alternate Bid shall include the replacement of a total of five (500) hundred screws and nail fasteners throughout all areas.

2.3.2. Storage of Materials

Storage: In order to promptly execute the work, the Contractor must Order, Receive and Store certain materials "on-site" during the project preparation and installation phases. The storage of these materials will be in designated areas as agreed upon by the Owner (or designated representative) prior to commencement of the project.

The materials stored on-site shall be secured in such a manner as to prevent tampering by personnel, employees, etc... All materials shall be stored on pallets, where possible, to provide for ease of transport to and from the job site. Damaged material containers shall be removed from the job site and replaced with new materials. Materials shall be distributed over the roof area(s) in a manner so as not to exceed deck load or deflection limitations for concentrated loads. The Contractor shall be responsible for verifying the capacity of the deck and structure to prevent "point" loading or overloading of any deck areas.

2.3.3. Protection of Structure

At all times Contractor personnel shall use care to prevent tracking asphalt, caulking, coatings, etc. over adjacent surfaces. All necessary barricades, signs, etc. required to prevent personnel, employees, tenants, general public, etc. from accessing the work areas will be immediately erected by the Contractor insofar as is applicable to his work. At all times, and on a daily basis, the Contractor shall make certain all drives are cleared of debris, nails, metal scrap, etc. as this is a critical use facility. Coordination with the Owner regarding work over sensitive equipment, drive areas, ingress/egress, etc. shall be required and included within the Contractors' base scope of work.

2.3.4. Material Safety Requirements

All cleaning chemicals, coatings, insulation, roofing materials, asphalt and caulking products shall be stored in areas designated by the Owner (or designated representative). Flammable products shall be clearly designated on the outside of each container. Material Safety Data Sheets (MSDS / SDS) shall be supplied to the Owner (or designated representative) prior to admittance of any products into the facility.

2.3.5. Equipment

Equipment necessary for the removal of the roof, preparation of the roof deck surface and perimeter walls will be located at the job site immediately adjacent to the designated areas. During the removal of the existing roof and preparation and installation of the roof system, the Contractor will be required to protect the building and adjacent structures from damage.

As necessary, the Contractor shall supply any portable generator equipment, supplemental heating equipment, mixing equipment, wet vacuums, tarps, etc. as deemed necessary to complete the job in accordance with this specification. All power hand tools, hand tools, and power equipment stored on-site shall be secured at the end of each day's operation. The Contractor shall be responsible for his equipment and shall insure that no equipment can be used or tampered with by personnel, employees, etc... Secured equipment storage areas may be arranged with the Owner (or designated representative) prior to the commencement of the project.

2.3.6. Protective Clothing, Etc.

During the course of the project, personnel on the job site will be required to wear protective clothing including safety goggles, protective ear plugs, etc... Workmen shall wear protective clothing including high top shoes laced to the top, gloves (extending over the wrist area), long pants -- without cuffs.

2.3.7. Daily Clean-Up of Job Site

The Contractor shall be responsible for the daily clean-up of the job site and the removal or containment of all debris. The Contractor shall cover all materials and equipment with tarps or plastic sheeting to prevent tampering or damage. Tarps and plastic sheet will be perimeter weighted and secured with rope to prevent wind uplift.

2.4. START & COMPLETION DATES

2.4.1. The following regulations shall be applicable to all projects upon award of the contract by the Owner (or designated representative):

2.4.1.1. Contractor shall order materials and be prepared to commence work within thirty (30) calendar days after the award of contract, or as soon as weather conditions permit, unless otherwise noted on the Bid Form or stated within the Bid Proposal submitted by the Contractor. Failure to begin this project in an expeditious manner may result in cancellation of this contract.

2.4.1.2. Contractor shall advise the Owner (or designated representative) and designated representative of the Consultant - Structural Technologies, Inc. a minimum of three (3) working days prior to the start date. Should the Contractor be unable to meet the scheduled start date(s) the Owner (or designated representative) reserves the right to cancel all pending contracts with said Contractor.

2.4.1.3. All judgments associated to weather, material availability, etc. will be reviewed by the Owner (or designated representative) and the Consultant - Structural Technologies, Inc. to determine cause of delay and appropriate action. Delays determined to be the direct responsibility of the Contractor due to insufficient staffing of the job, insufficient material supplied to the job site, etc. may be cause for cancellation of the remaining balance of the contract.

2.4.1.4. Substantial completion of all work set forth in these documents or phase of the project as contracted by the Owner (or designated representative) shall be within sixty (60) calendar days from the initiation of the project and not greater than ninety (90) days after Award of Contract. Failure to complete work within this stipulated time period may result in cancellation of all or the remaining portion of the contract and re-award to an alternative contractor without penalty to the Owner (or designated representative) in the event it is demonstrated that the Contractor has failed to properly staff the project or has insufficient personnel or equipment at the project site to complete work in a timely and professional manner. Time for completion may be extended at the option of the Owner (or designated representative) based on the total scope of work to be completed when weather conditions permit proper application of the specified materials. Liquidated damages shall be assessed in the event the Contractor fails to complete all work by the stipulated date of October 31, 2022 unless this completion date is delayed by the Owner, Material Shortages occur or in the case of Force Majeure. The provisions set forth in this section may be enforced by the Owner (or designated representative) at his / their discretion. The Contractor shall be compensated only for work completed.

END OF DIVISION 2 -- TECHNICAL PROVISIONS

3. DIVISION 3 -- SPECIFIER/CONSULTANT REQUIREMENTS

3.1. GENERAL SERVICES PROVIDED

Structural Technologies, Incorporated is an independent Consulting Firm and as such is not licensed nor engaged in the practice of Engineering, Architecture, Life Safety Monitoring, Hazardous Material Identification, Air Quality Monitoring or any other regulated or licensed practice. Structural Technologies, Incorporated has made every attempt to research all applicable local Building Code requirements and has prepared these documents, addenda and attached drawings of the existing conditions and construction requirements to complete the specified work in compliance with local Building Code. Any required review or certification by a licensed structural engineer or architect shall be awarded by separate contract either through the Owner (or designated representative) or the Contractor independent of the contractual agreement with Structural Technologies, Inc. unless otherwise stated in the contract documents or through sub-contracted agreement. All professional firms certifying and/or approving these documents shall be licensed in the applicable State where work is to be performed. In the event the Contractor or the Owner (or designated representative) believes or discovers that existing conditions or proposed conditions of construction would not comply with Building Code, they shall immediately suspend all work and shall submit written notification to the Consultant - Structural Technologies, Incorporated.

Structural Technologies, whether contracted for project design / development and/or periodic or full time on-site inspection of work being performed by the Contractor shall neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents. Structural Technologies, Inc. makes no warranties for workmanship or materials, express or implied, under this Agreement or otherwise, in connection with their (Structural Technologies, Inc.'s) contracted services. Structural Technologies, Inc.'s limitation of liability shall be not greater than the total aggregate cost of either design or inspection services provided by Structural Technologies, Inc. in conjunction with this project.

3.2. PRE-CONSTRUCTION MEETING

3.2.1. A Pre-Construction meeting shall be conducted prior to the start of this project. This meeting shall be attended by the Contractor, a representative of the Owner (or designated representative), the Consultant and the Contractor's designated Foreman. At this meeting, the existing conditions of the structure, grounds, etc. will be recorded and procedures for protecting these areas and areas adjacent to the areas of set-up or installation will be reviewed.

3.3. INSPECTIONS & SERVICES

3.3.1. The Consultant - Structural Technologies, Inc. shall examine all work in progress on a periodic basis. This service is provided to assist in ascertaining the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the material manufacturer.

3.3.2. During the course of the work, the Specifying Consultant or Owner (or designated representative) may secure samples of the materials being used from the containers at the job site, and submit them to an independent testing laboratory for comparison. If the results of the independent testing laboratory prove that the materials are not comparable and equal to the specified materials, the Contractor shall pay for the testing and the Owner (or designated representative) reserves the right to reduce the amount of the bid by an amount commensurate with the infraction. If the contract work is not completed when the test results become known, then the Owner (or designated representative) shall impose a penalty commensurate with the infraction and all remaining work shall be completed with the specified materials.

3.3.3. The Consultant - Structural Technologies, Inc. shall be employed by the Owner (or designated representative) to act in his interests to enforce the provisions set forth in this document. It is understood that the Owner (or designated representative) retains the ultimate authority to change, amend, accept or reject any work not performed in strict accordance with this specification and all associated details and documents.

3.3.4. The Consultant shall prepare and provide all Construction Drawings, documents, details, written amendments, etc. as required to define the conditions of the project. Any questions regarding any specific work or requirements stipulated herein will be directed in writing to the Consultant for review.

3.3.5. The acceptability of completed repair work will be based on its conformance to the contract requirements. The guarantor is not obligated to accept non-conforming work, and such non-conforming work may be rejected. The rejected work shall be promptly replaced or corrected in a manner and by methods approved by the Manufacturer of the repair materials. Any deficiencies or deviations from the specified work as observed by the Consultant will be immediately reported to the Owner (or designated representative) along with recommended corrective actions necessary.

3.3.6. The Consultant – Structural Technologies, Inc., if contracted for Project Management services, shall provide periodic site inspections for the purpose of observing work in progress, documenting conditions at the project site and identifying non-conforming work or installation of materials which do not comply with the specifications, drawings, bid documents and contractual agreement between the Owner and Contractor. The Contractor shall indemnify the Consultant – Structural Technologies, Inc., its personnel, subcontractors, heirs and officers from any liability associated with non-conforming work or substitution of unauthorized materials.

3.4. FINAL INSPECTIONS

3.4.1. A final inspection will be conducted by the Specifying Consultant and the Owner (or designated representative). Such inspection shall be conducted immediately after notification of completion by the Contractor. The acceptability of completed roofing work will be based on its conformance to the contract documents and specifications.

3.4.2. All items noted during the final inspection shall be corrected by the Contractor immediately upon notification by the Consultant. Failure to correct items found to be deficient or improper shall be reason to withhold the Final Payment and to deduct from all payouts the equivalent amount associated with the remaining work to be performed to complete the project in the manner set forth in these documents.

3.4.3. The Owner (or designated representative) reserves the right to withhold final payment until such time as all items related to the final inspection are completed to the satisfaction of the Consultant, Owner (or designated representative), and the Material Manufacturer

3.4.4. If more than two (2) Final Inspections must be performed, Structural Technologies, Inc. may elect to assess an "Inspection Charge" not to exceed three-hundred fifty dollars ($350.00) per man per hour to re-inspect the work to assure compliance with the Specification and Details and completion of all Punchlist Items. This additional charge will be deducted from retained monies owed the Contractor prior to the Final Payment to the Contractor.

3.5. ROOF SYSTEM WARRANTY/CONTRACTOR GUARANTY

3.5.1. The Contractor shall, upon completion of the project, provide a completed and signed copy of a Contractor's Guaranty and the Material Manufacturer's Warranty. Structural Technologies, Inc. shall have no contractual obligation, liability and makes no warranties for workmanship or materials, express or implied, under this Agreement;

3.5.1.1. The Material Manufacturer of the Low Slope Modified Membrane Roof System shall issue a non-prorated Limited written material and labor Warranty for a period of not less than fifteen (15.0) years from the date of completion and issuance of the Warranty. The Manufacturer shall make written record of their inspections and record any deficiencies which require correction prior to issuance of the Warranty. The Manufacturer will not be held liable for non-conforming work which is not corrected by the Contractor. The Contractor shall be required to submit a "Sample" of the Material Manufacturer's Warranty for the selected roof membrane / roof system to be reviewed by the Owner prior to commencement of the project.

3.5.1.2. The Low Slope Roof System / Waterproofing Membrane Warranty shall provide for all labor and replacement materials to correct conditions which have resulted in moisture infiltration into the roof system. The enforcement of the Warranty shall be determined by visual inspection and any objective analysis, tests, etc. as directed by the Consultant, Owner (or designated representative) and Manufacturer. There shall be no limitation or proration of this Warranty coverage for the duration set forth herein other than as specifically stated in written form and supplied by the Material Manufacturer. All Manufacturer Warranties for the installed roofing / waterproofing system shall be duly executed and authorized by a representative of the Material Manufacturer.

3.5.1.3. A Contractor's Guaranty for Workmanship provided in conjunction with this project shall be issued for a period of five (5.0) years from the date of completion and acceptance of the installed roof system (Low Slope and Steep Slope Roof) and shall be submitted to the Owner (or designated representative) to run concurrent with the Manufacturer's Warranty. This Contractor Guaranty shall indicate that all work completed by the Contractor shall remain free of defects in workmanship or materials for the duration of the guaranty. Upon written notification to the Contractor, the Contractor agrees to repair or replace and materials including all required labor to perform repairs to restore areas without additional cost to the Owner (Oakton Community College). Normal weathering, abuse or neglect / failure to maintain roof areas in accordance with provisions set forth in the Manufacturer Warranty documents shall be accepted. The Contractor's Guaranty shall provide coverage without limitation or proration for all workmanship related to this project for the installation of the roof system for the duration specified herein. The Contractor's Guaranty shall be in the form of a written / certified document prepared on the Contractor's letterhead.

3.5.1.4. The Material Manufacturer (Metal Roof Panel inclusive of Rake Metal Edge and Drip) shall issue a Product Warranty stating that the specified and installed products are free from any manufacturing defects and will conform to the written technical data and performance properties set forth in the Manufacturer's published literature. The period of this warranty shall be one (1.0) year from the date of delivery of the product to the job site. The Manufacturer shall replace, at their expense, any material found to be defective at no additional cost to the Contractor or Owner. In addition to the Product Warranty, the Coating Manufacturer shall provide a twenty (20) year coating / finish warranty covering fading, chalking and film integrity as per the published product data supplied by the Metal Roof System Manufacturer.

3.5.1.5. Alternative 1: The Material Manufacturer of the acrylic coating system shall issue a Material Warranty to include disbonding, blistering, peeling, discoloration or Material Failure due to product formulation or pigment dispersion for a period of two (2) years after completion of the coating. This Material Warranty shall include supply of new material to replace or repair defective or damaged areas at no cost to the Owner.

3.5.1.6. The issuance and enforcement of all Warranties and Guaranties shall be contingent upon the full payment of all invoices submitted by the Contractor, Sub-Contractors, etc. for all work related to this project.

END OF DIVISION 3 -- SPECIFIER/CONSULTANT REQUIREMENTS

4. DIVISION 4 -- DETAILED SPECIFICATIONS

4.1. PROJECT LOCATION

4.1.1. Building / Site Location

Oakton Community College - Des Plaines Campus Grounds Building
1600 East Golf Road
Des Plaines, IL 60016

4.2. ROOF CONDITIONS & PREPARATION

4.2.1. Existing Conditions

The existing roof system(s) consisting of:

Roof Section 1 – Low Slope Roof System

Deck:	Type B/F - 20 gauge metal deck
Base Insulation:	1.0 inch polyisocyanurate, 1/2 inch wood fiberboard
First Roof:	Two-ply Granule Surfaced Modified Membrane

Roof Section 2 – Steep Slope Metal Roof System

Deck:	None – Metal Roof System direct installed to framing
Base Insulation:	1/2 inch thickness foil faced polyisocyanurate
Roof System:	Exposed Fastener – Agricultural Metal Roof System

4.3. GENERAL REQUIREMENTS

Furnish all materials, equipment, perform all labor and operations to remove the existing roof membrane(s), insulation, perimeter edge sheet metal, flashings, etc. and inspect the underlying metal o decking. Remove damaged or deteriorated metal decking and replace sections, as required. Apply corrosion resistant coating to structurally sound metal decking exhibiting surface rust. Install new pressure treated wood nailers at perimeter edges of each roof section to compensate for the new insulation thickness. Install a vapor barrier membrane in all areas prior to the installation of new polyisocyanurate insulation and glass faced gypsum board. All insulation must be mechanically secured or adhered per ASCE-7 Wind Uplift requirements and must conform to published criteria for Factory Mutual 1-60 requirements. Install a two-ply Modified Membrane roof system and flashings throughout all areas as per the specifications. Install new pre-finished perimeter edge commercial gutters and downspouts and continuous cleat mounted pre-finished raised metal edge adjacent to the low slope roof sections. Apply fiber reinforced aluminum coating to all lap seams and degranulated areas of the roof system upon completion.

Restoration of the steep slope metal roof system shall be limited to the designated area located along the north rake edge perimeter of the structure. In this area, the existing metal roof system will be removed, underlying insulation removed, structural framing repairs completed and installation of new five-eighths (5/8) inch thickness plywood sheathing, waterproofing membrane and new architectural metal roof panels and rake metal installed.

Alternate 1: A continuous coating of elastomeric acrylic paint will be applied to the entire existing metal roof system (including the new panels) with a double coat application of one-hundred (100%) percent solid acrylic elastomer coating. Contractor to replace and damaged screws throughout the roof field with new neoprene gasketed stainless steel No. 10 screw fasteners. The Alternate Bid shall include the replacement of a total of five (500) hundred screws and/or existing nail fasteners throughout all areas.

4.4. LANDSCAPING / GROUNDS / BUILDING - PROTECTION

The Contractor shall be required to include in his base bid necessary protective sheeting, tarps, plywood, etc. to effectively protect the structure and grounds from damage during all roofing operations. This placement of roofing materials and equipment adjacent to the structure shall be reviewed with the Owner (or designated representative) and Consultant and shall be limited to designated areas away from access doors and Emergency Drives. The debris box must be placed on a canvas tarp, plywood or similar protective covering to prevent staining of concrete or asphalt. The exposed wall of the structure immediately adjacent to areas where debris is being lowered to the ground or material lifted to the roof will be covered with canvas or plastic sheeting secured in a manner which shall prevent damage during a wind storm.

At all times the Contractor shall be required to use reasonable care to prevent damage to the sod, shrubbery, trees or exterior of the structure. Any damage to the landscaping, grounds or building shall be the responsibility of the Contractor and shall be repaired, cleaned or replaced at the Contractor's expense.

Prior to mobilization to the job site, the Contractor shall visit the property and shall make digital record by means of photographs or video to document existing site conditions and to record any pre-existing damage to either the structure or grounds surrounding the area(s) of staging, set-up or debris removal.

4.5. DAMAGES / EXEMPT DAMAGES

The Contractor shall be liable for all damages to any of the aforementioned items in the event that it can be proven that the Contractor failed to notify the Owner (or designated representative) and Consultant prior to initiating the work or failed to act responsibly in the execution of the work set forth in this Specification.

Damages which shall be exempt under this section and heading shall be as follows; 1) Nail pops from drywall ceilings as a result of normal roofing tear-off and installation procedures, 2) Dirt and debris, including textured paint or drywall which disbonds from the ceiling or wall surfaces within the structure as a result of normal roofing procedures, 3) damage to artwork including pictures, wall hangings, sculptures, decorative fixtures, etc. resulting from vibration as a result of normal roofing operations, 4) drywall seams or cracks which develop as a result of normal roof removal or roof installation.

The Contractor shall perform a "Pre-Job" inspection of the facility and grounds and shall photograph and document existing / pre-existing conditions of the building, grounds and interior elements prior to initiating work at the project site to prevent disputes arising from alleged or actual damage caused by the Contractor in conjunction with the work completed in conjunction with this project.

4.6. ROOF DEMOLITION

Tear-off of the existing roof systems, flashing systems and insulation shall be performed on the designated roof sections as indicated on the Construction and Plan View Drawings. Prior to performing any complete roof removal, the Contractor shall be required to perform an inspection of the interior of the building directly beneath the area of roof removal to locate electrical, plumbing, or mechanical systems beneath the deck and/or any existing conditions which may be impacted by the tear-off operations including damage to suspended ceilings or lighting. Any damage will be immediately brought to the attention of the Owner / Owners (or designated representative) and Consultant. All necessary precautions and temporary protective measures to prevent damage to the interior of the structure shall be included in the "base bid" for tear-off and replacement of the existing roof system.

All tear-off operations shall be carried out in a safe and proper manner, protecting existing construction that is to remain. During any operations of this nature, the Contractor will utilize protective plastic sheeting and any other precautionary means to prevent (or absolutely minimize) the release of debris or water to the interior of any building.

The Contractor will advise the Owner (or designated representative) as well as the Consultant of proposed procedures for such work and obtain his agreement on the methods before proceeding with any operations of this type. It is again pointed out that proper temporary protection and covering (tarps, plastic sheeting, rubber membrane, etc.) shall be available for the open roof area at all times. Any damage that occurs to the interior of the building or to the roof structure during the roof replacement project shall be the responsibility of the Roofing Contractor. The Contractor shall be required to make all necessary repairs to any damaged areas to equal the existing conditions.

Debris must not be allowed to accumulate at the job site but must be regularly removed from the site as the operation progresses. Debris shall be lowered to the ground in a manner which prevents debris from falling to the ground or surrounding areas. A closed "chute" or other device must be used to contain and lower debris to the ground during removal. The side of the building must be protected with a canvas or plastic tarp to prevent damage or staining of the exterior of the structure. Debris boxes / dumpsters shall be placed on protective plywood sheeting to prevent damage to the sod, concrete or asphalt areas. Dumpsters and debris boxes must be secured and covered at the end of each day's work. The Contractor shall inspect the grounds around the project site and shall sweep parking lot areas and remove all related construction debris at the end of each day's work.

Disposal of all tear-off materials shall be in accordance with all local and State regulations for said materials. Hazardous materials including those containing mineral asbestos fibers must be documented and handled in accordance with published E.P.A. and O.S.H.A. regulations. On-site verification by an independent accredited testing firm will be required and insisted upon in the event that hazardous materials will be disturbed or removed from the job site. Verification and receipt of all disposal of such materials as deemed to be hazardous or special waste will be required by the Building Owner / Designated Representative. The Contractor is to maintain all pertinent records and documentation as is required by the State of Illinois and/or any other authority to prove compliance with all published statutes and regulations governing removal and disposal of hazardous or special waste.

Caution shall be used when working adjacent to any existing gas pipe lines, electrical conduit, sanitary stacks or PVC pipes. In all cases the conduit/piping shall remain in place during all roofing procedures and should connection, or disconnection, be necessary it shall be done by the Owner and at the Owner's expense. Unless specifically directed by the Owner (or designated representative), the Contractor is not to disturb, disconnect or alter any piping, conduit, etc. with the exception of increasing the height of the piping to accommodate the new roof system. If work is performed by the Contractor, as directed by the Owner (or designated representative), to alter piping, perform disconnects/reconnects, etc., the Contractor shall submit an itemized separate billing for such work.

4.7. APPROVED PROJECT MATERIALS

Note: To the extent possible, Structural Technologies, Inc. has researched products and manufacturers with similar performance attributes, industry experience and compliance with regulatory agencies. The selection of these material manufacturers is based on industry experience, manufacturer warranties, contractor familiarity, contractor training programs, material availability and material performance. Structural Technologies, Inc. does not warrant the performance of the products or published attributes of any company / manufacturer providing product(s). Structural Technologies, Inc. shall not be liable for material manufacturer defects or material performance. In the event a specified material, as determined by the Material Manufacturer, is inappropriate for the designated application or installation, the Contractor and/or Material Manufacturer shall contract Structural Technologies, Inc. and through written documentation, indicate the reasons the product is inappropriate for the application as well as providing a substitution of an alternate product which shall meet or exceed the performance requirements set forth in this specification.

4.7.1. Deck Repairs / Replacement - Approved Manufacturers:

Metal Deck Coating:

Manufacturer:	Sherwin Williams Paint Cleveland, Ohio 44101
Product:	Kromik Metal Primer Water Based Catalyzed Epoxy Primer Zinc-Clad IV Primer
Manufacturer:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061
Product:	9100 System High Performance Epoxy 9400 System Rust-O-Thane Polyurethane

Metal Decking:

Manufacturer:	National Steel Corporation 4100 Edison Lakes Parkway Mishawaka, IN 46545 (219) 273-7000
Manufacturer:	Joseph T. Ryerson & Son, Inc. 2558 West 16th Street Chicago, IL 60608 (312) 762-8452

4.7.2. Approved EPDM Membrane Manufacturer's – Metal Deck – Vapor Barrier

Manufacturer:	Firestone Building Products Company 525 Congressional Blvd. Carmel, IN 46032-5607 Phone: (317) 575-7000
System:	Firestone RubberGard® .045 Non-Reinforced Fire Retardant EPDM Rubber Membrane
Manufacturer:	Johns Manville 717 17th Street Denver, CO 80202
System:	JM EPDM .045 FR Non-Reinforced Fire Retardant EPDM Rubber Membrane
Manufacturer:	Versico / Carlisle Construction Materials P.O. Box 1289 Carlisle, PA 17013 Phone: 1-800-992-7663
System:	VersiGuard® EPDM .045 Non-Reinforced FireRetardant EPDM Rubber Membrane

4.7.3. Approved EPDM Membrane Fasteners

Manufacturer:	ITW Buildex, Inc. 1349 West Bryn Mawr Avenue Itasca, Illinois 60143
Products:	Roofgrip No. 12 Screws 3.0 inch galvanized metal plate washer
Manufacturer	Construction Fasteners, Inc. 4851 West 115th Street Unit E Alsip, Illinois 60658
Products:	Dekfast No. 12 Screws 3.0 inch galvanized metal plate washer
Manufacturer:	Olympic Fasteners P.O. Box 508 153 Bowles Road Agawan, MA 01001
Products:	No. 12 Heavy Steel Deck Fastener 3.0 inch galvanized metal plate washer

4.7.4. EPDM Lap Area Cleaning Approved Materials

Firestone Building Products:	QuickPrime
Johns Manville:	JM Tape / Primer Wash
Versico Roofing Systems:	EPDM Primer

4.7.5. EPDM Lap Area Splicing Approved Materials

Firestone Building Products:	Splice Tape Lap Sealant
Johns Manville:	JM Seam Tape JM Lap Caulk
Versico Roofing Systems:	VersiGard Quick Applied Seam Tape Lap Sealant

4.7.1. Approved Manufacturers - Insulation

Polyisocyanurate Insulation

Manufacturer:	Johns Manville 717 17th Street Denver, CO 80202
Products:	ENRGY Flat Stock
Manufacturer:	Hunter, Inc. 15 Franklin Street Portland, ME 04101
Products:	H-Shield Flat Stock
Manufacturer:	Firestone Building Products 525 Congressional Blvd. Carmel, IN 46032
Products:	Iso 95+ Polyisocyanurate Insulation
Manufacturer:	Soprema Roofing and Waterproofing, Inc. 3200 Gilchrist Road Suite 220 Mogadore, OH 44260
Products:	SOPRA-ISO® Polyisocyanurate Insulation

Glass Faced Gypsum Board

Manufacturer:	G-P Gypsum Corporation 133 Peachtree Street N.E. Atlanta, Georgia 30303
Products:	Dens-Deck Prime Roof Board – 1/2 inch thickness
Manufacturer:	Firestone Building Products 525 Congressional Blvd. Carmel, IN 46032
Products:	1/2" Dens-Deck Prime

4.7.2. Approved Insulation Adhesives – Cold Applied

Manufacturer:	Firestone Building Products 525 Congressional Blvd. Carmel, IN 46032
Products:	I.S.O. Stick Insulation Adhesive
Manufacturer:	Johns Manville P.O. Box 5108 Denver, CO 80217-5108
Products:	Urethane Insulation Adhesive
Manufacturer:	The Dow Chemical Company Polyurethane Systems – North American Headquarters 1881 West Oak Parkway Marietta, Georgia 30062
Products:	Insta-Stik – single component polyurethane adhesive
Manufacturer:	OMG, Inc. 153 Bowles Road Agawam, MA 01001
Products:	OlyBond 500 Adhesive Fastener
Manufacturer:	Soprema Roofing and Waterproofing, Inc. 3200 Gilchrist Road Suite 220 Mogadore, OH 44260
Products:	Duotack polyurethane adhesive DuoTack 365

4.7.3. Approved Insulation Fasteners

Manufacturer:	ITW Buildex, Inc. 1349 West Bryn Mawr Avenue Itasca, Illinois 60143
Products:	Roofgrip No. 12 Screws 3.0 inch galvanized plate washer
Manufacturer	Construction Fasteners, Inc. 4851 West 115th Street Unit E Alsip, Illinois 60658
Products:	Dekfast No. 12 Screws 3.0 inch galvanized plate washer
Manufacturer:	OMG, Inc. 153 Bowles Road Agawam, MA 01001
Products:	No. 12 Heavy Steel Deck Fastener 3.0 inch galvanized metal plate washer

4.7.4. Approved Materials - Roof Field Membrane and Flashing Membrane

Manufacturer:	Johns Manville 717 17th Street Denver, CO 80202 Phone: (800) 922-5922
Products:	JM DynaFast 250 HW - base ply roof field & flashing JM DynaWeld Cap 250 FR - final ply & flashing
Manufacturer:	Firestone Building Products 525 Congressional Blvd. Carmel, IN 46032
Products:	SBS Poly Torch Base - base ply roof field & flashing SBS Premium FR Torch - final ply & flashing
Manufacturer:	Soprema Roofing and Waterproofing, Inc. 3200 Gilchrist Road Suite 220 Mogadore, OH 44260
Products:	Sopralene Flam 180 – base ply of field and flashing membrane – heat welded Sopralene Flam 250 FR GR – final ply of field and flashing membrane – heat welded

4.7.5. Approved Materials – Liquid Resin Flashing Membrane

Manufacturer:	Johns Manville 717 17th Street Denver, CO 80202 Phone: (800) 922-5922
System:	PermaFlash System
Manufacturer:	Firestone Building Products 525 Congressional Blvd. Carmel, IN 46032
Products:	Ultra Flash Two Part Liquid Flashing
Manufacturer:	Soprema Roofing and Waterproofing, Inc. 3200 Gilchrist Road Suite 220 Mogadore, OH 44260
Products:	Alsan RS 260 LO Field Alsan RS Fleece Alsan RS Detailer

4.7.6. Metal Termination Bar - Approved Materials

Manufacturer:	Tru-Fast Corporation 02105 Williams County Rd. 12-C Bryan, Ohio 43506-9804 Phone: 1-800-443-9602
Products:	Termination Bar - TB-125 Pre-drilled 8.0" on-center
Manufacturer	Firestone Building Products 525 Congressional Blvd. Carmel, IN 46032
Products:	Termination Bar – Aluminum pre-drilled 8.0" on-center

4.7.7. Approved Caulking Sealants

Manufacturer:	Tremco Sealant/Weatherproofing Division 3735 Green Road Beachwood, Ohio 44122
Product(s):	Vulkem 116
Manufacturer:	Sika Corporation 201 Polito Avenue Lyndhurst, NJ 07071
Product(s):	Sikaflex 1a
Manufacturer:	BASF Corporation Construction Systems 889 Valley Park Drive Shakopee, MN 55379
Product:	MasterSeal NP-1

4.7.8. Roof Membrane Coating - Approved Manufacturers

Manufacturer:	Karnak Corporation 330 Central Ave. Clark, NJ 07066
Products:	#97 Fibered Aluminum Coating
Manufacturer:	Monsey Bakor, Inc. Cold Stream Road Kimberton, PA 19442
Products:	810-18 Aluminum Asphalt Roof Coating

4.8. METAL ROOF SYSTEM - RESTORATION

4.8.1. Metal Roof Panels - Approved Manufacturers

Manufacturer:	Peterson Aluminum Corporation 1005 Tonne Road Elk Grove Village, IL 60007
Product:	Pac-Clad R-36 Panel – 24 Gauge Galvanized
Manufacturer:	Firestone Building Products Company 525 Congressional Boulevard Carmel, IN 46032-5607
Product:	HR Ultra Omega – 24 Gauge Galvanized
Manufacturer:	MBCI Division of NCI Group, Inc. P.O. Box 692055 Houston, TX 77269-2055
Product:	MBCI Perma-Clad – 26 Gauge Galvanized Galvalume Plus

Note: All pre-finished galvanized metal rake, drip edge and trim shall be supplied by the Primary Metal Roof System Manufacturer.

4.8.2. Approved Manufacturers & Materials- Wood Deck and Wood Framing

Replacement Wood decking shall not exceed a maximum moisture content of nineteen percent (19%) by weight on a dry weight basis.

Plywood Decking to conform with the following;

Manufacturer:	Georgia-Pacific Building Products 133 Peachtree Street NE Atlanta, GA 30303
Product:	Plytanium 19/32 - 5/8 inch APA (American Plywood Association) Rated Sheathing Exposure 1 Rated PS-1-83 (Dept. of Commerce Standard)
Manufacturer:	Plywood Company of Fort Worth, Inc. 4301 N. Sylvania Avenue Fort Worth, TX 76137
Product:	Rated Sheathing 19/32" APA – 5/8 inch APA (American Plywood Association) Rated Sheathing Exposure 1 Rated PS-1-83 (Dept. of Commerce Standard)

Various Manufacturers to supply the following;

Product	Select Grade – No. 1 Dimensional Lumber

4.8.3. Approved Self-Adhered Waterproofing Membrane – Metal Roof System

Manufacturer:	Firestone Building Products Company 525 Congressional Blvd. Carmel, IN 46032-5607 Phone: (317) 575-7000
System:	CLAD-GARD SA Metal Underlayment
Manufacturer:	GCP Applied Technologies Inc. 2325 Lakeview Parkway Alpharetta, GA 30009
System:	Grace Ice & Water Shield HT
Manufacturer:	Henry Company 999 N. Pacific Coast Highway – Suite 800 El Segundo, CA 90245
System:	Blueskin PE200HT

4.8.4. Approved Materials – Roof Joist Connections

Manufacturer:	Simpson Manufacturing Corporation 4120 Dublin Blvd. Suite 400 Dublin, CA 94568
Product:	Simpson LUS Joist Hanger Assembly Simpson Strong-Tie Screw Connectors Simpson Strong-Drive SDS Screw for Deck Ledgers

4.8.1. Approved Materials – Alternate 1 – Metal Roof Coating

Manufacturer:	Henry Company 999 N. Pacific Coast Highway – Suite 800 El Segundo, CA 90245
Product:	587 100% Acrylic Dura-Brite
Manufacturer:	Gardener-Gibson, Inc. PO Box 5449 Tampa, FL 33675
Product:	AP 724 Cool-Tan Premium Elastomeric Roof Coating

4.8.2. General Requirements – Sheet Metal Accessories

Sheet Metal: All sheet metal to be supplied in conjunction with this project shall be approved by the primary manufacture of the roofing membrane. All sheet metal shall be a minimum G-90 galvanized or Galvalume metal base with baked enamel finish (Kynar or equivalent). All exposed sheet metal shall be a minimum twenty-four (24) gauge thickness. Sheet metal design configurations and installation procedures shall meet current NRCA, Factory Mutual and SMACNA requirements. All outside edges shall be hemmed to prevent exposure of uncoated metal to weather.

Metal Termination Bar: Fabricated from 3003-H14 aluminum metal or T6 aluminum metal with a minimum thickness of .087 inch. Pre-punched or pre-drilled holes at a maximum spacing of ten (10.0) inches on-center. Maximum length of termination bar sections not to exceed ten (10.0) feet per section.

Continuous Metal Cleat: Minimum twenty-two (22) gauge thickness, G-90 Galvanized Steel, break formed to provide a minimum three (3.0) inch face dimension. Maximum length not to exceed ten (10.0) feet per continuous cleat section.

Raised Metal Edge: Minimum twenty-four (24) gauge thickness, pre-finished G-90 galvanized or Galvalume metal, break formed and sized to provide a return of not less than two (2.0) inches below the base of the perimeter wood nailer. All gravel stops shall be formed to provide for attachment to a continuous metal cleat with a four (4.0) inch flange return for attachment to the perimeter wood nailer. Maximum length not to exceed ten (10.0) feet per gravel stop section. Concealed splice junction shall be fabricated from compatible galvanized sheet metal and shall not be less than three (3.0) inches in width.

Metal Gutters & Downspouts: New gutters supplied for this project shall be Commercial Grade Box style gutters and shall be a minimum of twenty gauge (.032 inch) pre-finished aluminum metal. Gutters shall be configured to provide a four (4.0) inch flange dimension, a six (6.0) inch trough opening, a minimum six (6.0) inch trough base and an inside vertical wall dimension of not less than five (5.0) inches. All downspout discharges shall be mechanically fastened to the new gutter with a minimum of three (3) stainless steel hex washer headed No. 12 screw fasteners. Downspouts shall be fabricated from twenty (.032 inch) gauge pre-finished aluminum sheet metal. Downspout discharges shall be rivet fastened to the gutter base at designated locations. Downspouts and all elbows must provide a three (3.0) inch by four (4.0) inch cross-section and shall be supplied in ten (10.0) foot maximum lengths. Downspout attachment straps shall be formed from twenty (.032 inch) gauge pre-finished aluminum sheet metal and shall be installed at intervals not exceeding ten (10.0) foot on center (minimum of two straps per downspout section). Gutter sections shall be supplied in maximum of twenty-five (25) foot lengths. The Contractor shall provide a concrete or polymer splash at the base of all gutter downspouts discharging to landscaped areas. Cover caps shall be installed at junctions between adjacent sections of the gutter. All gutters, downspouts and anchor straps to be supplied with pre-finished coating – Color to be selected by Owner.

Note: The existing gutter "covers" are to be removed and set-aside for re-installation. The Contractor shall sequentially number the covers and use care to prevent damage to the covers during removal and site storage.

4.9. DECK INSPECTION, REPAIRS AND REPLACEMENT

4.9.1. Metal Deck Inspection -- Repair/Replacement

Upon removal of the existing roof membrane and insulation in designated areas, the Contractor shall perform a visual inspection of the exposed metal decking. Any areas of structurally damaged metal decking will brought to the attention of the Consultant and Owner (or designated representative). All deck replacement shall be reviewed by a licensed Structural Engineer and all procedures, etc. shall be certified as complying with safe engineering practices.

Sections of structurally damaged metal decking shall be cut-away and removed. New galvanized G-60 metal decking matching the configuration, pan and flute dimensions of the existing deck will be installed. New metal decking will be secured to the surrounding metal decking with corrosion resistant self-drilling screw fasteners inserted every twelve (12.0) inches on-center in the sidelap (pan) and every six (6.0) inches on-center in the endlap (flute). New metal decking shall overlap the surrounding decking a minimum of eight (8.0) inches. All sides of the new metal decking must be supported by the existing decking. Screw fasteners shall penetrate the decking or joist a minimum of one-half (0.5) inch.

Structurally sound metal deck areas which exhibit surface corrosion will be mechanically wire brushed clean to remove all loose rust and scale. All deck flutes will be cleaned to remove debris and insulation. A single coat application of corrosion inhibitive primer / coating shall be applied to the metal deck surface with a brush, roller or airless paint gun at a rate of 75 - 100 square feet per gallon. The Contractor must use care to prevent spilling or splashing the primer / coating over the side of the building or allowing the coating / primer to flow into the structure. Protective measures, including plastic sheeting, tarps, etc. shall be utilized to protect the structure and interior of the building during application of the coating / primer.

4.10. WOOD NAILERS -- INSTALLATION, INSPECTION AND REPLACEMENT

4.10.1. Wood Nailer - Description

All new wood nailers or blocking supplied in conjunction with this project shall be No. 2 or better southern yellow pine, kiln dried, Wolmanized, conforming to Federal Specification TT-550, TT-W-517 and American Wood Preservers Institute Standard LP-2. Wood nailers shall not exceed a maximum moisture content of nineteen percent (19%) by weight on a dry weight basis. Alternative installation of Select Grade No. 1 Dimensional Fir lumber shall be acceptable in lieu of pressure treated lumber provided the wood will not be exposed to weather, frequent wetting or ground contact.

4.10.2. Wood Nailer Replacement

Inspect all existing wood nailers and replace all damaged sections with new pressure treated Wolmanized wood or Dimensional Lumber appropriately sized to match existing dimensions.

Cut-away and remove the damaged sections of the existing wood nailer and discard. Install new pressure treated wood nailers of the same length, width and height as the existing nailers. Secure the replacement nailer to the underlying deck or substrate with the appropriate corrosion resistant masonry screw anchor. Insert fasteners every eight (8.0) to ten (10.0) inches on center in a staggered fashion down the top of the nailer. Fasteners must penetrate the concrete deck a minimum of one (1.0) inch. The Contractor shall itemize the total number of linear feet of wood nailer that is replaced and submit a separate invoice that will be in addition to the "base bid".

4.10.3. Perimeter Edge Elevation

Install new pressure treated Wolmanized wood nailers or alternative Select Dimensional Fir lumber at roof perimeter edges to elevate the wood blocking to accommodate the new insulation. Secure the new wood nailer to the existing wood nailer with corrosion resistant No. 14 screw fasteners inserted every eight (8.0) to ten (10.0) inches on center in two staggered rows through the top of the wood nailer. The screws or anchors must be countersunk flush with the board surface. Fasteners shall be of sufficient length to penetrate the existing wood nailer a minimum of one (1.0) inch.

** The installation of new wood nailers at the roof perimeter and projections to facilitate the new insulation height (as a result of the increased insulation) shall be included in the base quotation.

4.11. VAPOR BARRIER INSTALLATION

4.11.1. Metal Deck - Vapor Barrier Installation

A single ply of ASTM D-4637 non-reinforced 45 mil fire rated EPDM rubber membrane shall be installed directly over the metal deck roof areas. The membrane shall be installed parallel to the deck flutes, thus providing support along the lap edge for adhesion. The EPDM membrane shall be laid out over the roof area cutting out all curbs and penetrations. Positioning the sheet at the edge of the roof, secure the corners of the membrane with corrosion resistant No. 14 screw fasteners installed in conjunction with three (3.0) inch galvanized plate washers. The fasteners shall be of sufficient length to penetrate the metal deck a minimum of one-half (.5) inch at the base of the flute.

The EPDM membrane shall be mechanically fastened to the metal deck utilizing Factory Mutual approved corrosion resistant screw fasteners and three (3.0) inch galvanized plate washers spaced in staggered fashion at a rate of one (1) fastener per twenty-five (25.0) square feet. Attachment of the EPDM rubber roof membrane will be required in the event the Contractor does not / cannot complete the installation of the roof insulation and base ply of Modified Membrane during the same day. In the event all areas can be completed within the same day, the Contractor may "loose lay" the EPDM membrane and mechanically attach the polyisocyanurate insulation board over the membrane to secure both the insulation and membrane simultaneously.

4.11.2. EPDM Membrane -- Lap Area Cleaning Requirements

Position the EPDM Membrane to allow for an overlap of not less than four (4.0) inches. Upon completing the installation of the EPDM membrane over the metal deck surface, fold back the top layer of EPDM membrane along the lap to expose the underside of the membrane for cleaning. Clean the lap splice area with manufacturer's Tape Primer. Utilize a clean white cotton rag or scrubbing pad to remove all dusting agent, dirt or other contaminants from the splice area. Allow all cleaning solvent to completely flash off prior to application of adhesives.

Additional cleaning of the membrane may be required around factory formed splices. The Contractor must not use Splice Wash to clean the membrane surfaces. Excess dusting agent will be wiped or broomed from the surface of the EPDM Membrane prior to application of the Primer. The Primer shall be applied with a scrubber using long strokes along the length of the seam. The rubber surfaces must be observed to be clean and dark gray in color with no streaking or puddling. The Primer must be allowed to completely flash off prior to application of Splice Tape / Seam Tape.

4.11.3. EPDM Membrane -- Lap Area Splicing Requirements

The Contractor shall install a single layer of Splice Tape / Seam Tape along the entire length of the lap area. The Splice Tape / Seam Tape will be installed in a manner which positions the tape to extrude beyond the edge of the top ply of EPDM Membrane approximately 1/8 - 1/2 inch.

Marking and Alignment: Mark the bottom sheet of EPDM Membrane with a lumber crayon or chalk pencil every five feet approximately 1/2 inch from the edge of the top sheet. Tack the top sheet back with Primer as necessary to hold the membrane back after marking and prior to splicing the area.

Primer Application and Cleaning: Apply Primer to the lap seam area utilizing the scrubber to remove excess amounts of dusting agent or contaminants on the membrane surface. Use care to avoid removing the markings on the bottom sheet. During application of the Primer, the Contractor must frequently stir the material. The scrubber pad shall be changed every 200 feet of splice area or when it becomes filled with dusting agent and can no longer hold the proper amount of primer. Additional hand-cleaning of the factory splice areas will be required to insure complete removal of all dusting agent. During periods of cold or high humidity, the Contractor will allow additional time for "flash-off" of the primer prior to application of the tape adhesive.

Splice Tape / Seam Tape Application: Position the Splice Tape / EPDM Seam Tape on the bottom sheet. DO NOT REMOVE THE SEPARATION PAPER ... AT THIS TIME. Align the edge of the Splice Tape / Seam Tape with the markings on the bottom sheet. The Splice Tape / Seam Tape will be positioned to extrude beyond the edge of the closed seam approximately 1/8 - 1/2 inch. Overlap / endlap sections of the Splice Tape / Seam Tape a minimum of one (1.0) inch. After positioning the Splice Tape / Seam Tape, immediately roll the Splice Tape / Seam Tape with a 3 - 4 inch silicone or silicone sleeved steel hand roller. A short nap 3.0 inch paint roller may be substituted for the silicone roller. Loose lay the top layer of EPDM Membrane over the Splice Tape / Seam Tape and trim the top sheet of EPDM Membrane as necessary to allow for proper exposure of the Splice Tape / Seam Tape at the edge of the membrane.

Remove the paper backing from the Splice Tape / Seam Tape along the entire length of the field seam. Pull the paper backing from the top of the Splice Tape / Seam Tape by pulling at an approximate 45 degree angle to the tape and parallel with the roof surface. Allow the top sheet of EPDM Membrane to fall freely onto the exposed Splice Tape / Seam Tape. Broom the entire length of the splice as the release paper is being removed. Use care to avoid creating wrinkles or ridges in the EPDM Membrane while finishing the seam.

Rolling the Splice -- Finishing the Seam: Roll the entire length of the splice using a two (2.0) inch smooth surfaced silicone or silicone sleeved steal roller. The Contractor will roll the seam first across the splice then along the entire length of the splice. Any "air bubbles" within the seam larger than ½ inch diameter will be cut and an additional ply of self-adhesive uncured EPDM membrane applied to the area extending not less than three (3.0) inches from all sides of the cut in the seam.

4.11.4. EPDM Vapor Barrier Membrane -- Perimeter & Projection Details

The EPDM Membrane must be extended to the base of all vertical wall and curb surfaces at which point it shall be wrapped / extended up the curb or wall surface a minimum of two (2.0) inches. The Contractor will be require to apply single component polyurethane caulking sealant to the termination of the vapor barrier membrane on all vertical curb, pitch pan, wall, etc. bases to form a temporary closure of the installed vapor barrier membrane. The caulking sealant will be applied in a continuous one (1.0) inch heavy bead along the edge of the membrane at the termination.

4.11.5. EPDM Vapor Barrier Cover Strip Installation & Repairs

After completing each section of EPDM vapor barrier installation, the Contractor will be required to perform a visual inspection of the installed membrane. Any damaged or improperly bonded seams will be marked and repaired with an additional ply of self-adhesive EPDM membrane. This additional ply of membrane will be a nominal five (5.0) or six (6.0) inch width of self-adhesive / uncured EPDM membrane as supplied by the manufacturer of the primary waterproofing membrane.

The self-adhesive EPDM membrane patch must be centered over the lap seam or damaged area(s) and shall be fully adhered to the EPDM membrane by using a clean rag to press the membrane into position and then rolling the membrane with a two inch smooth surfaced silicone or silicone sleeved roller. The self-adhesive patch membrane must be fully bonded to the field membrane or lap in all areas without voids, wrinkles or blisters.

In the event the EPDM vapor barrier membrane must function as a temporary roof, the Contractor will be required to install self-adhesive EPDM membrane cover strips over all fastener plates utilized to secure the membrane to the underlying metal deck. These cover strips shall extend a minimum of three (3.0) inches to all sides of the metal plate washer and shall be sealed at the termination of the cover strip on the field membrane with a continuous bead of lap sealant.

Note: The vapor retarder is not to be considered a temporary roof and does not preclude the use of additional waterproofing, tarps, etc. to protect the interior of the building in the event of a sudden rain storm. At all times, the Contractor is to protect the interior of the structure by providing temporary tie-ins to the existing roof membrane, projections, etc...

4.12. INSULATION INSTALLATION PROCEDURE

4.12.1. Insulation Adhesive Application

Cold applied insulation adhesives approved for this project must be stored in a heated area prior to use when temperatures are below forty-five (45) degrees Fahrenheit. Application of liquid applied adhesives will be performed only when conditions comply with the Material Manufacturer's published literature. Low rise polyurethane adhesive(s) will be applied in ribbons spaced at six (6.0) inches on-center to achieve approximate one-hundred (100.0) square feet per gallon rate of application. Application of cold applied adhesive shall be suspended when temperatures are below thirty-five (35) degrees Fahrenheit.

4.12.2. Insulation – Mechanical Attachment – Metal Deck Areas

Mechanical attachment of the base course of insulation shall be required in all areas where the insulation is installed over the EPDM rubber membrane vapor barrier and the underlying structural deck system is metal. Secure all new insulation to the underlying metal deck with No. 12 corrosion resistant screw fasteners utilized in conjunction with three (3.0) inch galvanized metal plate washers. Insulation shall be fastened per Factory Mutual FM-1-60 wind uplift requirements. A minimum of two (2) fasteners shall be utilized to secure any section of insulation.

4.12.3. Insulation Installation

Beginning at the perimeter gutter edge, the Contractor will install a base course of three (3.0) inch thickness polyisocyanurate insulation and additional courses of flat stock insulation to promote not less than one-eighth inch per foot slope-to-drain. A second course of flat stock two (2.0) inch polyisocyanurate insulation shall be installed over Roof Section 1. Insulation supplied and installed in conjunction with this project insulation must have a C value of .175 and aged R (LTTR) value of 5.7 per 1.0 inch thickness conforming to Federal Specification HH-I-1972/2-1. Tapered insulation configuration throughout all roof areas must achieve uniform drainage / positive drainage from all roof areas. Polyisocyanurate insulation supplied for this project must conform with ASTM C 1289-13e1, Type II, Class 1, Grade 2, ASTM D-1621 Compressive Strength of 20 psi or greater, ASTM D-1622 Density of 2 pcf or greater, ASTM D-2126 Dimensional Stability of 2% maximum and ASTM E-84 Flame Spread of 25 or less, UL Class A – Roof Systems (UL 1256 Standard), Federal Specifications HH-1-1972/2 Class 1, with aged "R" (LTTR) value equal to 5.7 per inch of thickness. All insulation shall be classified by Underwriters Laboratories Inc. for Class A constructions. Insulation must have been tested and accepted for Class IA-60 and IA-90 construction. Insulation shall be reduced to not less than a minimum thickness of two and one half (2.50) inches within the drain sump areas. As per the Energy Code for commercial structures, average R-value for Roof Section 1 must be equal to or greater than R-30 for the installed roof assembly.

Install the insulation boards with the end seams arranged in a staggered fashion. All edges of the insulation boards must be butted together to minimize any seam gaps. Position the insulation boards with the longest dimension of the board perpendicular to the slope-to-drain. Additional layers of "flat" stock (non-tapered) insulation will be installed over the base course of insulation to provide a nominal / average R-value throughout all areas of not less than thirty (30.0).

Metal Deck Areas: Secure the base course of insulation to the metal deck with No. 12 corrosion resistant screw fasteners utilized in conjunction with three (3.0) inch galvanized metal plate washers. Insulation shall be fastened per Factory Mutual FM-1-60 wind uplift requirements. A minimum of two (2) fasteners shall be utilized to secure any section of insulation. Fastening of the insulation at all exposed edges of the roof will be increased by fifty (50%) percent and at all corners by one-hundred (100%) percent. All gaps of greater than 1/4 inch will be filled with additional insulation prior to the installation of the second course of insulation.

Where the metal deck system is already tapered to provide positive slope of one-eighth (1/8) inch per foot, the Contractor shall install a second course of two (2.0) inch thickness polyisocyanurate insulation fully adhered to the base course of mechanically fastened polyisocyanurate by means of cold applied insulation adhesive applied in ribbons at not greater than six (6.0) inches on-center spacing. The installed insulation system shall provide positive drainage from all sections and areas of the roof. The Contractor shall install additional layers of tapered insulation or roofing membrane to "elevate" any areas where water is retained on the completed roof membrane surface for a period of greater than forty-eight (48.0) hours. Additional insulation or membrane will be installed at no additional cost to the Building Owner above the Base Contract price for this project to effectively divert and drain water from all roof areas within a forty-eight (48) hour period after a rainfall based on 70 deg. Fahrenheit.

As per the International Energy Code, the average "R" value of the installed insulation over any occupied / conditioned air space must be equal to or greater than R = 30.0 provided said installation of insulation does not require an excessive burden to the Owner for modifications to the structure, perimeter walls or terminations of the roof.

4.12.4. Glass Faced Gypsum Recover Board Installation

Install a single course of 1/2 inch glass faced gypsum board directly over the installed polyisocyanurate insulation. The isolation recovery board supplied for the project shall be delivered to the project with original shrink wrapping and shall be labeled, conforming with UL - Class A Roof Systems, UL 790 and UL 12567, FRMC Class 1 (FM4450), with aged "R" value equal to 0.56 per one-half (0.50) inch. All glass faced gypsum board shall be classified by Factory Mutual as an approved component for FM 1-60 and FM 1-90 roof assemblies.

Install the single course of glass faced gypsum recovery board with the manufacturer's approved cold applied low rise polyurethane foam adhesive applied directly over the installed polyisocyanurate insulation. Prior to installation of the overlay board, all polyisocyanurate insulation board must be dry with all loose dirt and debris removed. Any gaps between the polyisocyanurate insulation boards must be filled with additional expansion foam insulation or rigid polyisocyanurate insulation. The glass faced gypsum recover board shall be installed with the longest dimension of the isolation board perpendicular to the slope-to-drain. The ends of the glass faced gypsum recover board shall be staggered a minimum of two (2.0) feet. All boards shall be fitted together to prevent gaps of greater than 1/4 inch. Gaps of greater than 1/4 inch must be filled with additional recover board prior to installation of roof system. During installation of the glass faced gypsum board, the Contractor will use care to compress each board into the adhesive to obtain maximum uniform adhesion.

Application of the low rise foam adhesive will be with a wand, spreader or spray equipment. Ribbons of adhesive must be applied at not greater than six (6.0) inches on-center spacing. Spray application of adhesive with foam applicator equipment will be performed to achieve one-hundred (100%) percent coverage of the base insulation surface. Adhesive application must conform with Factory Mutual FM-1-60 Wind Uplift requirements. Additional adhesive ribbons will be applied at the outside corners and exposed edges of the roof to comply with the adhesive manufacture's requirements to comply with FM-1-60 Wind Uplift. As necessary, the Contractor shall provide temporary ballast of the insulation boards during initial set and cure of the insulation adhesive.

4.12.5. Installation - Cant Strips

Install new perlite cant strips at the perimeter of the roof areas along the base of all vertical walls and curb surfaces. This cant strip may be loose laid or fully adhered with cold adhesive or asphalt mastic (as required per the selected roof membrane manufacturer) directly over the insulation surface. Cant strip dimension shall be sized not less than one and one-half (1.5) inch by four (4.0) inches. All cant strips must be Class A Fire Rated and must be approved for construction using torch applied roof systems.

4.13. ROOF INSTALLATION PROCEDURE

4.13.1. Roof Membrane Installation Procedure -- General Guidelines

The work under this section should be in keeping with first class workmanship in the best practice of the trade and shall be accomplished by a qualified Contractor who shall be capable of planning and coordinating the entire work. It is specifically pointed out that the coordination and the cooperation with the Owner (or designated representative) and the Consultant - Structural Technologies, Inc. for the inspection as previously mentioned is required and shall be insisted upon. The Contractor shall be responsible for methods and means employed and utilized to complete work as specified and detailed in these specifications and all attached construction documents. Work shall be carried out in a professional and workmanlike manner using care to prevent damage to adjacent roof areas, portions of the structure, landscaping or equipment including vehicles located adjacent to the structure. It shall be the Contractor's responsibility to maintain the work site including all equipment utilized by employees of the Contractor in a safe and operable condition.

The scope of work set forth herein as detailed in this Section and sub-heading is provided in conjunction with the attached Construction Drawings and Details. These written specifications may not include all components or combination of items to be replaced in conjunction with this project. The Contractor shall reference all written documents, drawings, details, etc. as well as all applicable Addenda and Clarifications provided prior to preparing and submitting their bid. Any questions, discrepancies or conflicts between these referenced documents shall be immediately brought to the attention of the Consultant –Structural Technologies, Inc. for review.

4.13.2. Roof Construction -- Installation Coordination

The Contractor shall plan his work so that he prepares and insulates no more than he can finish roofing during the same day. In the event the Contractor installs the vapor barrier membrane in all areas prior to the installation of the insulation, he shall be required to provide drainage from the roof areas by means of a portable sump pump connected to the drain piping. A continuous bead of asphalt mastic, self-adhesive membrane or one-part polyurethane must be applied at all exposed edges of the vapor barrier tie-in to the existing roof system to form a watertight condition at all times.

Any phased construction of the roof system will be allowed only in the event that the Contractor cannot complete the installation of the final ply of waterproofing membrane during that same day. In these areas, the Contractor must provide a waterproof membrane or temporary "cap" to prevent the absorption of moisture into the underlying insulation or exposed portions of the roof assembly. Installation of the SBS Smooth Surface Modified Membrane over the entire roof area prior to the installation of the granular surfaced "final" ply will be allowed provided all areas of the roof are completed within one (1) week after installation of the smooth surfaced membrane and the roof material manufacturer approves this method of installation for Guaranty purposes. All phased areas completed in this manner shall be reviewed by the Manufacturer's Representative and Project Consultant. Rejected or damaged sections of the roof completed by "phasing" shall be completely removed or prepared in accordance with these specifications and the Manufacturer's direction insofar as is applicable to the areas completed in this manner. The Contractor must have on hand adequate covering and protection to cover all areas of partial tear-off (including flashing areas) should an unexpected rapid weather change occur. If there is an exposed area or if the partial assembly becomes wet as deemed by the Consultant or the Manufacturer's Representative, the area will be torn out and replaced at the Contractor's expense.

4.13.3. Cold Weather Special Precautions

Cold weather application procedures shall apply for installation of the SBS Modified Membrane when residual outside air temperatures are below forty degrees (40°F). All SBS Modified Membrane roofing rolls will be stored in a heated area prior to installation -- minimum of fifty-five degrees (55°F). The roofing rolls will be removed from storage and immediately installed to avoid membrane cooling to below forty-five degrees (45°F). If membrane cracking occurs at any time during cold weather installation, immediately discontinue installation and repair any damaged membrane with asphalt mastic. All other special procedures/precautions stated by the manufacturer will be strictly adhered to with respect to cold weather application.

4.14. SCOPE-OF-WORK - ROOF MEMBRANE SYSTEM INSTALLATION

4.14.1. Cleaning Roof Areas & Insulation / Substrate Requirements

Sweep entire insulation or installed base sheet surface to remove all residual matter, debris, and dirt. All installed insulation must be clean, dry and undamaged with no gaps between adjacent insulation boards prior to the installation of the new modified membrane roof system. All insulation board must be properly adhered to the substrate and/or previous installed layers of insulation. There shall be no gaps or unlevel areas of insulation which will result in retention of water or impaired drainage from the completed roof system.

4.14.2. Modified Membrane - Base Ply Installation

Beginning at the low point of the roof adjacent to the perimeter gutter edge, install a single ply of the primary waterproofing membrane manufacturer's specified smooth surfaced Modified Membrane perpendicular to the deck slope-to-drain adhering the ply directly to the glass faced gypsum recover board (Dens-Deck Prime or equivalent) and bonding the membrane to the glass faced gypsum insulation board by heat welding. The field membrane must be shingle lapped downslope in all areas.

As necessary, the surface of the glass faced gypsum board will be continuously prime coated with an asphalt cut-back primer applied with a bush or roller to achieve uniform coverage and application of one-half (0.50) gallon per one-hundred (100.0) square feet. After allowing the primer to "flash-off" and partially cure, the base ply of smooth surfaced Modified Membrane will be continuously bonded to the surface of the insulation/recover board by use of a hand held propane torch or multi-headed torch cart (the use of the multi-headed torch cart will only be allowed with prior approval from the material manufacturer).

The roofing roll will be positioned and a continuous flame will be applied, the asphalt bitumen must be continuously heated to maintain the asphalt at 330°F - 350°F, to completely burn the separation liner away and heat the bitumen until a glossy surface is obtained and the asphalt begins to flow slightly and produce a continuous bond to the surface of the glass faced gypsum board or previous ply of smooth surfaced membrane. Slowly roll the membrane forward using care to prevent overheating the membrane. Care should be taken not to induce stretch into the membrane or to trap air under the membrane.

The smooth surfaced torch weldable Modified Membrane base ply shall be installed directly over the glass faced gypsum board (DensDeck Prime or equivalent) overlay board and polyisocyanurate insulation. Sidelaps shall be a minimum of three (3.0) inches with endlaps of six (6.0) inches. All endlaps between adjacent sheets must be staggered a minimum of thirty-six (36.0) inches. The smooth surfaced torch weldable Modified Membrane base ply shall extend to the top of all cant strips. Fully adhere the base ply of torch weldable Modified Membrane to the glass faced gypsum overlay board surface by continuous heat welding. Extend the base ply beyond the exposed edge of the insulation at all tie-off areas and heat weld or adhere the membrane to the surface of the installed vapor barrier membrane to form a watertight condition at the tie-off. As necessary, to provide a watertight seal at the end of each day's work, the Contractor may utilize a hand held "flameless" hot air welder to weld the sidelaps and endlaps where asphalt adhesive or mastic has been utilized to adhere or repair the membrane. In the event the Contractor utilizes a hot air welder, the Contractor must avoid application of the cold adhesive to the sidelap and endlap areas providing not less than three (3.0) inches of sidelap or endlap to be heat welded.

The Contractor will be required to install the base ply of smooth surfaced torch weldable Modified Membrane in the roof field and the base ply of torch welded smooth surfaced Modified Membrane flashing in the same day. If the Contractor installs only the base ply of Modified Membrane throughout the roof field and cannot complete the installation of the flashings, he will be required to seal the termination of the field membrane at the base of all perimeter walls, curb bases, stacks, internal drains, etc. with asphalt mastic and inorganic mesh reinforcement to keep them watertight until the flashing membrane is installed.

4.14.3. Modified Membrane - Final Ply Installation

Beginning at the low point of the roof adjacent to the internal drain(s), install the final ply of heat welded granule surfaced Modified Membrane perpendicular to the deck slope-to-drain torch welding the ply directly to the surface of the underlying base ply of smooth surfaced Modified Membrane. The field membrane must be shingle lapped downslope on all crickets and drainage saddles installed through the roof section. Unroll approximately ten (10.0) feet of Modified Membrane and position the sheet. The sidelaps in the final ply of Modified Membrane shall be staggered eighteen (18.0) inches from the laps in the base ply. Under no circumstances are the sidelaps in the final ply to coincide with the sidelaps in the base ply. As necessary, allow the granule surfaced membrane to "relax" for a period of thirty (30.0) minutes prior to heat welding to the base ply. This procedure is especially necessary for cold weather installation. The final ply shall then be solidly bonded to the surface of the base ply by use of a hand held propane torch or multi-headed torch cart (the use of the multi-headed torch cart will only be allowed with prior approval from the material manufacturer). The roofing roll will be positioned and a continuous flame will be applied, the asphalt bitumen must be continuously heated to maintain the asphalt at 330°F - 350°F, to completely burn the separation liner away and heat the bitumen until a glossy surface is obtained and the asphalt begins to flow slightly and produce a continuous bond to the previous ply. Slowly roll the membrane forward using care to prevent overheating the membrane. Care should be taken not to induce stretch into the membrane or to trap air under the membrane.

Sidelap the final ply of granule surfaced Modified Membrane a minimum of three (3.0) inches with endlaps of six (6.0) inches. All endlaps between adjacent sheets must be staggered a minimum of thirty-six (36.0) inches. Prior to lapping any sections of membrane over granular surfaced areas, the Contractor must heat the granulated surface and "embed" the granules. The Contractor will insure that the reinforcement scrim is not visible during the granule embedding process. After the laps are torched they will be rolled with a steel roller or hand troweled smooth with a clean trowel to insure complete adhesion. The Contractor inspect and probe all laps with a blunt trowel or screwdriver blade and must use a hand-held torch and smooth finishing trowel to re-heat and re-bond any poorly bonded sidelaps and endlaps at the end of each day's work. A continuous outflow of 1/8 – 1/4 inch of asphalt should be visible at the edge of all heat welded laps. DO NOT BROADCAST GRANULES INTO THE ASPHALT OUTFLOW.

There shall be no evidence of fishmouths or ridges in the Modified Membrane upon completing the installation. If fishmouths or unadhered laps occur, they shall be cut and an additional ply of the Modified Membrane will be torch applied over the entire area. Prior to torching the patch over the area, the granules must be embedded. The Contractor shall insure that the reinforcement scrim is not visible during the granule embedding process.

4.14.4. Fire Watch and Precautions

Contractor personnel and supervisor shall have successfully completed the NRCA Certified Torch Applicator (CERTA) program for application of roofing materials with heat and/or roofing torch. The Contractor shall provide one (1) fire extinguisher per torch used on the job site. Fire extinguishers shall be 4A60BC rated and shall have been recently inspected and fully functional. Fire extinguishers shall be located at a distance of not greater than thirty (30.0) feet from any torch as stated in BOCA 1993 Fire Prevention Code for open flame conditions. A designated man on each roofing crew shall be required to conduct a "Fire Watch". This man shall be trained in the use of all fire extinguishing equipment and he shall have obtained all information and phone numbers for the local fire department. The location of fire alarms and safety equipment shall be reviewed at the Pre-Job Meeting. A "Fire Watch" shall be implemented on a daily basis with the job foreman or designated personnel walking all areas completed during that day checking for signs of smoldering or burning roof materials for a minimum of one (1.0) hour each day after the last roofing torch is shut off. Inspection of the building interior beneath completed roof areas will also be conducted.

THE FIRE WATCH IS A MANDATORY PROVISION OF THIS PROJECT. INSPECTION OF THE ROOF SHALL BE COMPLETED WITH THERMAL IMAGING CAMERA (FLIR C3, C2, E4 OR EQUIVALENT) WITH PICTURE CAPABILITY AND DOCUMENTATION.

4.14.5. Inspection by Manufacturer

During the installation of the roof system, the Contractor shall contact the Manufacturer to schedule job-site inspections to insure compliance with the manufacturer's recommended procedures for installation. Any exceptions to this specification, required by the manufacturer, shall be submitted in writing and shall be reviewed by the Consultant - Structural Technologies, Inc... The Contractor shall in all instances act to correct any deficiencies identified by the manufacturer to assure guaranty coverage provided by the manufacturer.

4.15. FLASHING CONSTRUCTION DETAILS

4.15.1. Flashing Construction & Installation Details – Roof Section 1

New two (2) ply Modified Membrane flashings, consisting of a base ply of smooth surfaced torch weldable Modified Membrane and a final ply of granular surfaced torch weldable Modified Membrane will be installed on all vertical surfaces (i.e. curb bases, roof hatch, rail curbs, etc.). Modified Membrane flashings consisting of one (1.0) ply of smooth surfaced torch weldable Modified Membrane target sheet and the final ply of granule surfaced field membrane will be installed on all flat horizontal surfaces (i.e. gravel stop flashings, furnace stack jack flashings, etc.).

The base field ply of smooth surfaced torch weldable Modified Membrane shall be installed to a height of approximately two (2.0) inches above the top of the cant strip. The flashing membrane consisting of a single ply of smooth surfaced torch weldable SBS Modified Membrane and a final ply granular surfaced SBS Modified Membrane will be installed over the cant strip, extending from the horizontal surface of the field membrane up the vertical curb or wall surface. The base ply of flashing shall be fully adhered by heat welding. The final ply of granular surfaced Modified Membrane flashing will be fully adhered to the base ply of smooth surfaced Modified Membrane using a hand held propane torch. The base and the final ply will be installed so as to extend over the adjacent field membrane surface a minimum of eight (8.0) inches as measured from the base of the installed cant strip. The granules on the field sheet will be fully embedded prior to the installation of the final ply of granular surface flashing membrane. The base ply and final ply of the flashing membrane shall extend to the top of all vertical curb surfaces and a minimum of eight (8.0) inches above the cant at all vertical wall surfaces. Sidelaps between the base ply and final ply shall be staggered a minimum of twelve (12.0) inches and each ply of flashing shall be sidelapped/endlapped a minimum of four (4.0) inches.

The smooth surfaced Modified Membrane field sheet shall be installed over the roof areas. Prior to installation of the granular surfaced "field ply", the Contractor shall install the "base" ply of smooth surfaced self-adhered Modified Membrane flashing. **INSTALLATION OF THE BASE PLY OF SMOOTH SURFACED MODIFIED MEMBRANE FLASHING MUST PRECEDE THE INSTALLATION OF THE GRANULAR SURFACED FIELD PLY AND FLASHING.**

Upon completing the installation of the base ply of smooth surfaced Modified Membrane flashing and the field ply of granular surfaced Modified Membrane, the final ply of granular surfaced Modified Membrane flashing will be installed. The final ply of the granular surfaced Modified Membrane flashing shall be applied in widths of no greater than thirty-six (36.0) inches on all vertical surfaces. The lap seams of the granular surfaced flashing must not coincide with the lap seams of the base flashing membrane. Stagger all sidelaps / endlaps between the base ply and the final ply a minimum of twelve (12.0) inches. The base ply and final ply of flashing membrane shall be installed in lengths of not greater than six (6.0) feet measured horizontally or in thirty-six (36.0) inch width sections cut from the end of the roll as required by the material manufacturer. All sidelaps / endlaps in the Modified Membrane flashing shall be re-torched and troweled to insure complete and uniform adhesion. Both plies of flashing must be secured to the curb surface with the appropriate tin-cap nail fastener(s) installed every 8 – 10 inches on center, one (1.0) inch from the top / termination of the flashing. The Contractor shall be required to apply a continuous bead of single component polyurethane caulking sealant or trowel applied asphalt mastic to the termination of the vertical flashing membrane on the curb surface to prevent moisture penetration into or behind the installed flashings. Where vertical flashings extend less than six (6.0) inches above the complete roof surface, an aluminum termination bar must be installed and secured along the upper edge of the flashing and a continuous bead of polyurethane caulking applied to the upper edge of the termination bar to form a watertight condition. Metal counterflashing will then be installed over the termination bar in these areas of low clearance. If required as a warranted installation, the Contractor may apply fabric reinforced liquid resin flashings at these locations of low clearance.

A corner "gusset" piece of smooth surfaced Modified Membrane must be installed on all inside and outside corners of the base ply of smooth surfaced Modified Membrane flashing prior to the installation of the final ply of the granular surfaced Modified Membrane.

Note: Contractor must use care during application of heat welded flashing membrane when applying the final ply of granule surfaced membrane to any flammable surfaces including wood nailers, insulation facers or substrate. The Contractor shall only use self-adhered membrane as the base flashing ply where flammable substrate surfaces exist or substitute reinforced liquid resin flashings to prevent any exposure to open flame.

4.15.2. Cant Strips

Installation of cant strips at the transition of the horizontal field membrane to a vertical surface will be required for all penetration or projections in excess of twelve (12.0) inches in width. Install new perlite cant strips at the perimeter of the roof areas along the base of all vertical walls and curb surfaces. This cant strip may be loose laid or fully adhered with the manufacturer's cold adhesive (as required per the selected manufacturer) directly over the glass faced gypsum recover board surface. Cant strip dimensions shall be sized not less than one and one-half (1.5) inch by four (4.0) inches. All cant strips must be Class A Fire Rated.

4.15.3. Metal Cleat – Installation

Install a continuous twenty-two (22) gauge G-90 galvanized sheet metal cleat along the outside of all perimeter walls where flange mounted metal gravel stops will be installed. Secure the cleat to the existing wall surface or perimeter wood nailer / fascia nailer with masonry anchors or corrosion resistant No. 14 screw fasteners inserted every twelve (12.0) inches on center. Position the cleat to extend a minimum of 1-1/2 inches below the base of the perimeter wood nailer wood blocking or top of masonry wall surface. In areas where the existing metal fascia is to be retained and incorporated into the new perimeter gravel stop flashing, the cleat will be installed to position the lower edge of the cleat a minimum of two (2.0) inches below the upper edge of the installed metal fascia (overlap of two inches). Do not overlap metal cleat sections. Allow approximately 1/4 – 1/2 inch gap between the ends of adjacent cleat sections.

4.15.4. Perimeter Edge Metal / Gravel Stop Installation – Roof Section 1

At the perimeter of the designated roof areas, the Contractor shall be required to install a continuous cleat mounted pre-finished twenty-four (24) gauge galvanized metal gravel stop /raised metal edge. Additional pressure treated wood nailers or dimensional lumber will be installed at the roof edge(s) to compensate for the additional height of the installed insulation. The Contractor will install new pressure treated 2.0 in. x 6.0 in. wood nailers secured to the existing perimeter nailers with appropriate corrosion resistant screw anchors or ring shank nails installed at a rate of not less than one fastener every six (6.0) inches on center in two staggered rows. The installation of all additional wood nailers to compensate for tapered insulation height shall be included in the Contractor's Base Bid for this project. Attachment of perimeter wood nailers must comply with current ASCE 7-16 Minimum Design Loads for Buildings and Other Structures. Pull-out of fasteners utilized to secure the perimeter wood nailers shall be equal to or greater than 350 lb.

Upon completing the installation of the wood nailers, a twenty-two (22) gauge continuous galvanized metal cleat will be secured to the outside vertical face of the wood nailer securing the cleat to the perimeter nailer with corrosion resistant screws installed every twelve (12.0) inches on center. The cleat will be positioned to extend a minimum of one (1.0) inch below the bottom of the perimeter wood nailer and not less than two (2.0) inches over the upper edge of the installed metal fascia. Install a new twenty-four (24) gauge pre-finished metal gravel stop over the roof membrane at the roof perimeter securing the outside face of the gravel stop to the continuous cleat. Fasten the gravel stop flange / raised metal edge to the underlying perimeter wood nailer with corrosion resistant countersunk screw fasteners inserted every six (6.0) inches on center in two (2.0) staggered rows.

Alternative securement of the gravel stop flange with ring shank tin cap nails IS ACCEPTABLE provided nail fasteners are installed at three (3.0) inch intervals in two staggered rows. Concealed splice plates will be installed between adjacent sections of the gravel stop. A gap of not less than one-quarter (0.25) inch and not greater than one-half (0.50) will be maintained between the ends of adjacent metal gravel stop sections. A continuous bead of polyurethane caulking sealant will be applied and compressed between the splice plate and the gravel stop to form a watertight seal at the splice prior to the installation of the gravel stop flashing membrane.

Note: The Contractor shall coordinate the installation of the metal cleat and cleat mounted edge metal with the installation of the new metal wall panel system (Alternative 1) if contracted by the Owner.

4.15.5. Perimeter Edge Metal / Gravel Stop Flashing Installation

All areas terminated with a metal edge gravel stop will require the installation of new gravel stop / raised perimeter edge flashings consisting of a single ply of smooth surface modified membrane stripped in over the flange and a single ply of the granular surface modified membrane field ply. The gravel stop flange must be coated with an asphalt cut-back primer applied by brush or roller at a rate of 1/2 gallon per 100 square feet prior to the installation of the flashing ply. Pre-cut sections of the smooth surface flashing ply will be fully adhered to the surface of the metal gravel stop flange by heat welding. Sidelap the smooth surface flashing ply a minimum of four (4.0) inches. All endlaps of the gravel stop flashing shall be formed in a downslope (shingle) lap fashion. After the base flashing ply is installed, fully adhere the final ply of granular surface modified membrane field ply extending the membrane to the perimeter edge of the metal gravel stop. Where the field ply laps are perpendicular to the gravel stop edge, an additional single ply of self-adhesive granule surfaced modified membrane cut into a twelve (12.0) inch width must be stripped-in. All sidelaps in the granule surfaced field / flashing ply must be heat welded with a flameless heat gun or hand-held torch.

At the point where the final ply of granule surfaced modified membrane terminates at the raised edge of the gravel stop, a continuous bead of one-part polyurethane caulking must be applied. The caulking must be tooled with a smooth finishing trowel to insure complete adhesion to the metal surface and Modified Membrane surface.

4.15.6. Gutter & Downspout Installation – Roof Section 1

The Contractor will be required to include, in their Base Bid for this project, all additional "new" wood nailers required at the perimeter edge of the roof where the new gutter is to be installed to compensate of the additional thickness of the new insulation and roof membrane. The top horizontal surface of the perimeter wood nailer shall be one-half inch to three-quarters inch "recessed" below the top horizontal surface of the surrounding insulation to provide positive slope to the gutter upon completing the installation of the roof membrane, gutter, stripping ply and final ply of roofing.

The single piece flange mounted gutters shall be secured to the perimeter wood nailer or decking with stainless steel countersunk No. 12 screw fasteners installed at a minimum of one (1) fastener every six (6.0) inches on center in two (2) staggered rows. Downspouts shall be anchored to the structure at intervals of not greater than every six (6.0) foot on center with pre-finished .032 (20 gauge) aluminum metal brackets anchored to the structure with stainless steel screw fasteners. All penetrations into the structure walls will be sealed with a continuous bead of one-part polyurethane caulking sealant. Laps between sections of the pre-finished gutter shall be secured with closed head rivets and sealed with a continuous integral bead of self-leveling gutter sealant or one-part polyurethane caulking sealant or gutter lap sealant applied at the gutter lap conditions.

4.15.7. Gutter Edge Flashings

The wall, roof deck and perimeter nailer surface will be cleaned to remove all mastic residues to provide a smooth surface for installation of the new flange mounted gutter(s) and flashings. Install the self-adhered vapor barrier, insulation and base field ply of smooth surfaced Modified Membrane extending the membrane over the nailer at the roof edge. Install the new pre-finished .032 (20 gauge) aluminum flange mounted commercial "K" style or box metal gutter at the designated locations positioning and securing the metal flange of the gutter over the installed base ply of Modified Membrane and perimeter wood nailer.

Prime the top / exposed surface of the metal flange of the gutter where it extends over the smooth surfaced field membrane with an approved asphalt cut-back primer. Install a single ply of smooth surfaced Modified Membrane over the gutter flange extending the flashing a minimum of twelve (12.0) inches beyond the gutter flange over the field membrane. Install the final ply of granular surfaced Modified Membrane field ply extending the membrane over the base flashing ply and terminating the granular surfaced field ply at the edge of the inside vertical face of the gutter.

At the point where the granule surfaced Modified Membrane terminates on the gutter flange, a continuous bead of one-part polyurethane caulking must be applied. The caulking must be tooled with a smooth finishing trowel to insure complete adhesion to the metal surface and Modified Membrane surface. Apply a continuous bead of color matched one-part polyurethane to all gutter junctions and to any exposed rivets or fasteners. Attach new pre-finished .032 (20 gauge) aluminum metal downspouts to the installed gutters at a minimum of one (1) downspout per gutter section or one (1) downspout per twenty-five (25.0) foot length of gutter. Apply a continuous bead of gutter sealant or one-part polyurethane caulking sealant at each gutter downspout location to form a watertight condition at the connection between the downspout and the interior surface of the gutter trough.

4.15.8. Liquid Applied Resin Flashing Installation Requirements

At pipe penetrations and at roof projections and penetrations where the installation of the modified membrane flashings is not possible due to the configuration of the penetration or projection or the height of the flashing is equal to or less than six (6.0) inches, the Contractor will be required to install fabric reinforced liquid resin applied membrane flashings. In these locations, the cant strip will be omitted.

Prior to the application / installation of the reinforced liquid resin applied flashings, the surface(s) of the projection / penetration must be thoroughly cleaned with a wire brush, angle grinder equipped with wire wheel or hand scraper. Corrosion and contaminants must be removed to expose structurally sound steel surfaces. As required by the liquid flashing membrane material manufacturer, the surfaces will be prime coated with an approved rust inhibitive primer.

Blend / mix the two-component liquid flashing membrane in strict accordance with the Material Manufacturer's requirements. Using a low speed paddle mixer, blend Part A and Part B components. Mixing and application of the material(s) shall be completed within temperature parameters which allow proper curing of the materials. Apply the base coating of the liquid resin directly to the metal surfaces using a brush, roller or trowel applicator. Extend the coating not less than eight (8.0) inches vertically up all pipes or steel tube frame surfaces unless existing construction limits the vertical height to less than eight (8.0) inches. Immediately following the application of the base coating, the polyester fleece fabric will be cut and embedded into the wet resin. Use care to avoid wrinkles in the fabric or trapping air beneath the fabric. Lightly brush the fabric into the base coating with a wetted brush. As required by the Material Manufacturer, allow the base coating to partially cure prior to the application of the final coating. DO NOT BROADCAST GRANULES INTO THE LIQUID FLASHING. After allowing the final coating to fully cure, apply the specified "white" reflective coating to all liquid applied flashing membrane areas.

4.16. ROOF MEMBRANE SURFACING/COATING REQUIREMENTS

4.16.1. Inspection and Aluminum Coating of Lap Outflow

Upon completing the installation of the entire roof membrane and all flashings an inspection shall be scheduled with the Consultant - Structural Technologies, Inc. and a representative of the Manufacturer. Upon completing this inspection, the asphalt outflow evident at the sidelap of the Modified membrane in all roof field areas, all flashing lap reinforcement and any other area where asphalt is evident on the roof surface or flashing, shall be coated with an ASTM D-2824 Type I or Type III fibrated aluminum cut-back coating. The aluminum coating shall be applied with a brush or roller at a rate of approximately two (2.0) gallons per one-hundred (100.0) square feet. Coatings shall be applied only when no rain is forecast for a period of forty-eight (48.0) hours.

4.17. STEEP SLOPE METAL ROOF REPAIR

4.17.1. Demolition of Existing System & Framing Repairs

The Contractor shall remove the existing metal roof panels, rake metal closure, drip edge and ridge cap in the designated area of Roof Section 2. Removal of the existing metal roof panels will be coordinated with the removal and replacement of the low slope roof system in the same area. Perimeter rake edge metal shall be removed in the designated are to expose the fascia board. Removal of the metal roof system shall preserve the existing gutter system, gutter covers and, to the extent possible, any installed waterproofing at the gutter edge. The total area of roof tear-off shall not be greater than four (4.0) feet from the outside rake edge of the structure in the designated area. The Contractor shall use care to prevent damage to surrounding metal roof areas due to traffic over the roof or placement of materials on the roof.

Upon removing the existing metal roof system, the Contractor shall be required to remove the foil faced polyisocyanurate insulation to expose the wood framing joists, trusses and perimeter rake board. Visually examine the wood framing to identify and mark all wood roof joists, outriggers, trusses and rake board requiring removal and replacement, sistering of new joists, etc. The Contractor shall review all procedures for repair and replacement of roof framing with the Consultant. An itemization of the total quantity(ies) of wood replacement shall be provided by the Contractor. The Contractor's Base Bid shall include one-hundred (100.0) linear feet of Select Grade Dimension Fir Lumber (2 x 4) to be installed in lengths of four (4.0) feet "sistered" to each side of the existing wood joists which exhibit structural decay, damage or deterioration. New sistered wood joists must be through-bolted with three-eighths (3/8) inch diameter hot dipped galvanized hex head bolts. Install a flat washer beneath the bolt head and beneath the lock not on each side of the sistered roof joist. Installation of bolt anchors shall be in two (2) staggered rows at not greater than eight (8.0) inches on-center spacing.

Install new galvanized Simpson LUS face-mounted joist hangers *at all roof joist to rake board* locations. Mechanically screw fasten the hanger bracket to the rake board with Simpson Strong-Drive screw fasteners. Secure the vertical flanges of the bracket to the new "sistered" wood joist" or existing structurally sound wood joist.

4.17.2. Plywood Sheathing Installation

New Exterior Grade C-D 19/32 (5/8 inch) plywood sheathing will be installed in the designated area of Roof Section 2 at the north perimeter edge of the roof. The Contractor will be required to install new plywood in all areas where the foil faced polyisocyanurate insulation board was removed to facilitate the repairs to the roof joists. All plywood sheathing must be secured with No. 10 or larger self-drilling wood-to-wood screw fasteners.

Installation and attachment of plywood sheathing with No. 10 corrosion resistant screw fasteners shall be in accordance with ASCE 7-16 Wind Uplift criteria for steep slope roof areas. Screw fasteners shall be installed at intervals of not greater than twelve (12.0) inches on-center spacing at each 2 x 4 joist interface and at six (6.0) inch spacing where supported by the 2 x 10 roof truss. Install Simpson galvanized "H" clips to support any sidelap or endlap between adjacent plywood sections. New plywood sheathing shall be installed aligning the four (4.0) foot width of the board parallel to the gutter edge (longest dimension parallel to the rake edge.

4.17.3. Self-Adhered Waterproofing Membrane Installation

A continuous single ply of self-adhered waterproofing membrane must be applied to the plywood sheathing to completely encapsulate the wood decking. The waterproofing membrane will be wrapped down the outside vertical face of the rake board and will extend beneath the ridge cap and over the gutter flange or drip edge. Insert the membrane beneath the existing corrugated exposed fastener roof panels a minimum of three (3.0) inches. The membrane will be installed in continuous lengths beginning at the base of the steep slope roof. Sidelap the membrane not less than three (3.0) inches. As necessary, temporarily secure the waterproofing membrane with plastic cap ring shank nails inserted along the upper edge of the weatherproof membrane at six (6.0) inches on-center spacing. Roll and compress all sidelaps to ensure complete adhesion. All sidelap and endlap seams must be sealed with mastic or one-part polyurethane sealant in the event the area(s) will remain exposed to weather.

4.17.4. Metal Roof Panel Installation

After completing the installation of the self-adhered waterproofing membrane applied to the plywood sheathing, the Contractor will install the specified pre-finished galvanized metal roof panel at the designated location. Attachment of the metal roof panels with neoprene washered with No. 10 stainless steel screw fasteners installed as per the Material Manufacturer's requirements to achieve UL 90 Wind Uplift will be required. The new metal roof panels shall overlap and interface with the existing / adjacent exposed fastener metal roof panels. A continuous bead of one-part polyurethane or butyl sealant must be applied and compressed between the panels at all overlaps to form a watertight seal. The Contractor will be required to install new pre-finished metal Z-flashing, drip and trim as required to complete the installation of the new metal roof system and ensure a watertight condition. Secure the metal roof panels to the underlying plywood sheathing and underlying 2 x 4 wood joists positioning the screw fastener in the flat "pan" of the metal panel. All metal roof panels must be supplied and installed in *continuous lengths*. The selected color of the metal roof panels shall "approximate" the existing medium bronze roof panels and siding.

4.17.5. Rake Metal Trim Closure Installation

After completing the installation of the new corrugated exposed fastener roof panels, the Contractor will install a new pre-finished galvanized metal rake closure / trim component. The specified metal rake closure must extend over the existing vertical metal wall panels (existing corrugated panels) by a minimum of three (3.0) inches. Install metal rake closure sections beginning at the base of the roof slope to provide downslope lapping of adjacent metal sections. Apply a continuous concealed bead of one-part polyurethane or butyl sealant at lap conditions to achieve a watertight condition. Secure the rake metal closure to the structure and to the roof panels with neoprene washered No. 10 stainless steel screw fasteners. In the event the rake closure is a pre-fabricated "snap-lock" system, the Contractor will be required to install the Material Manufacturer's cleat anchor system or clip anchor system. Attachment of the metal rake edge closure must achieve wind uplift resistance equal to UL 90 or greater.

4.18. ALTERNATE 1 – METAL ROOF COATING

4.18.1. Metal Roof Fastener Replacement

In the event the Owner approves and contracts for work to be performed in conjunction with Alternate 1 – Metal Roof Coating, the Contractor shall include in their pricing for Alternate 1 the removal and replacement of five-hundred (500) existing screw or nail fasteners utilized to secure the existing exposed fastener corrugated metal roof panels to the underlying wood framing. The Contractor will be required to "back-out" existing screw fasteners which exhibit deteriorated gasketing, corrosion, detachment, raised/elevated head conditions or evident moisture penetration around the fastener head. In the event the Contractor identifies and documents additional fasteners in excess of the base five-hundred fasteners included in the Alternate, the replacement of additional fasteners with neoprene washered No. 10 stainless steel screw fasteners shall be itemized and submitted by means of a written Change Order to be billed "In Addition" to the base amount for Alternate 1.

4.18.2. Metal Roof Panel Preparation

In the event the Owner approves and contracts for work to be performed in conjunction with Alternate 1 – Metal Roof Coating, the Contractor shall be required to clean the surface of the existing metal roof panels including the metal ridge cap, metal valley and metal rake closure to remove surface contaminants, oils, stains, etc.. Cleaning of the roof will be performed using tri-sodium phosphate solutions or Simple Green cleaning agents specifically formulated to remove oxidization, contaminants and any organic deposits from the metal roof panel surface. Any panels exhibiting surface rust will require mechanical wire brushing and spot-priming of these areas to encapsulate the rust with a surface tolerant corrosion inhibitive primer.

4.18.3. Metal Roof Coating

In the event the Owner approves and contracts for work to be performed in conjunction with Alternate 1 – Metal Roof Coating, the Contractor shall include in their pricing for Alternate 1 the application of two (2) continuous coats of one-hundred (100%) percent solids elastomeric acrylic coating applied by brush, roller or airless sprayer to achieve complete coverage of all metal roof panels. Coverage rates / application rate and total mil thickness of the applied coating must comply with the Coating Manufacturer's published requirements for a warranted coating application. As necessary, the Contractor will embed mesh reinforcement into the coating in high stress / transition areas or at panel laps.

4.19. CLEAN-UP / REPARATIONS

The Contractor shall remove all empty / partially empty containers from the job site upon completing the application of the materials, etc... All masking, signage, plastic drop clothes, etc. will be removed from the project site upon completion of the project. Disposal of all materials and containers must be strict compliance with State of Illinois dumping laws. The Contractor shall supply their own dumpsters, trash containment devices, etc. and shall be responsible for placement, protection and removal of all trash / debris containers from the job site in a timely manner and as directed by the Owner (or designated representative).

The Contractor, Consultant and Owner (or designated representative) shall visually inspect the roof areas, adjacent wall surfaces and grounds surrounding the building upon completion of the restoration / replacement project and shall identify any areas of the structure or grounds which require repair or replacement attributed to the Contractor's work.

4.20. REFERENCE DIAGRAMS, SUBMITTALS AND INSTALLATION DRAWINGS

Enclosed are reference diagrams depicting the exact details required for installation of the specified roof system and flashing membrane. All details not herein specified or depicted in the enclosed diagrams will be brought to the attention of Structural Technologies, Inc. and will be detailed in writing prior to commencing work. All details must be performed in accordance with these specifications and the roofing membrane manufacturer's approved method of installation. The Contractor will submit all Shop Drawings and details for the replacement of the curb mounted vents, construction / installation of blower curb base and cap, installation of perimeter edge metal and gutter, installation of the metal wall panel system and soffit system to the Owner (or designated representative), the Consultant and the primary roof Material Manufacturer's representative prior to the installation of the roof system or metal wall panel and soffit system. To avoid any possible re-work of any details, any questions or concerns regarding the specific detail in question will be addressed prior to commencement of work.

Any details not specifically set forth in this specification will be performed in accordance with the most recent edition of The NRCA Roofing and Waterproofing Manual. The Manufacturer's details for installation shall take precedence over the NRCA details and the details set forth herein only in the event that performance of said details may alter or void the guaranty from the manufacturer. Construction must comply with the 2015 International Building Code, 2015 International Mechanical Code and the 2015 International Energy Code (2015 IECC). Sheet metal installed in conjunction with this project shall conform to the standards set forth by NRCA and by SMACNA (Sheet Metal and Air Conditioning Contractors' National Association).

END OF DIVISION 4 -- DETAILED SPECIFICATIONS

STRUCTURAL
TECHNOLOGIES
INCORPORATED

APPENDIX A

INSURANCE REQUIREMENTS

STRUCTURAL TECHNOLOGIES INCORPORATED

INSURANCE REQUIREMENTS

The Contractor awarded the contract shall submit a valid Certificate of Insurance to the Owner (Building Tenant, Architect).

Insurance Requirements for Contractors:

Each Contractor shall furnish a valid Certificate of Insurance to:

Oakton Community College – Des Plaines Campus
1600 East Golf Road
Des Plaines, IL 60016

c/o Director of Business Services

Certificates of Insurance shall name as "Additional Insured" the following parties;

Structural Technologies, Inc.
103 Fessler Drive
Bloomingdale, IL 60108
Phone: 630-351-8200
E-Mail: structecinc@gmail.com

No work shall start until this condition is satisfied.

Insurance and Indemnity: The Contractor and each Sub-Contractor shall, until the completion of this Contract (and for at least two years after completion with respect to Products/Completed Operations Liability), procure and maintain at their expense the following insurance in companies acceptable to the Owner (Building Tenant, Architect)

I. Worker's Compensation

Including coverage for Occupational Disease and Employer's Liability.

Limit of Liability

Worker's Compensation	Statutory Benefits:	$1,000,000 per accident
Employer's Liability Limits		$1,000,000 per disease

II. Comprehensive General Liability

Including coverage for contractual liability assumed by the Contractor under Indemnity Agreement set forth below, broad form property damage, product liability, completed operations. The Owner (or designated representative) will be named as an additional insured. Liability insurance may be used to satisfy limits.

Commercial General Liability

$1,000,000.00 each occurrence
$2,000,000.00 each aggregate

Property Damage
$500,000.00 each occurrence

$10,000,000 aggregate where applicable / Catastrophe Umbrella.

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III. Comprehensive Automobile Liability

Including coverage for hired and non-owned automobiles and naming the Owner as an additional insured.

Limit of Liability

$1,000,000 each occurrence bodily injury and property damage combined single limit.

IV. Indemnity Agreement

Contractor shall defend, indemnify and hold harmless the Owner against all damages, claims, or liabilities and expenses (including attorney's fees) arising out of or resulting in any way from any defect in the goods or services purchased hereunder, or from any act or omission of Contractor, its agents, employees, or Sub-Contractors. This indemnification shall be in addition to the warranty obligations of Contractor.

V. Sub-Contractors

Contractor shall be responsible for requiring its Sub-Contractors to provide and maintain the insurance as stipulated above.

VI. Certificate of Insurance

Before commencing any work under this Contract, the Contractor shall furnish the Owner Certificates of Insurance evidencing (a) types and amounts of insurance as required, (b) insurance company or companies carrying said coverages, (c) effective and expiration dates of policies (d) that the Owner is additional insured on the Contractor's policies of insurance and (e) that thirty (30) days advance written notice will be given to the Owner of any material changes or cancellation of coverage. Certificates of Insurance that contain wording that in any way lessens the Insurance Companies' obligation to provide the thirty (30) day advance notice of cancellation or material changes will not be acceptable.

VII. Loss or Damage to Contractor's Property

All property of any kind owned, hired, or supplied by the Contractor or any Sub-Contractor, their employees, servants, or agents not intended to be incorporated into or made a part of the work to be performed under this Contract shall be at the sole risk of the respective Contractor, Sub-Contractor, or their employees, servants, or agents.

Owner: The Owner as herein referred to is the Oakton Community College - Des Plaines Campus.