

S P E C I F I C A T I O N S



***Oxford – USD 358***

***Oxford Jr/Sr High School  
Oxford, KS***

**ROOF  
REPLACEMENT**

**2023**



HANNEY & ASSOCIATES ARCHITECTS

▪ 1726 S. HILLSIDE ▪ WICHITA, KANSAS 67211 ▪ (316) 683-8965 ▪



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**USD # 358 OXFORD, KANSAS**  
**JR/SR HIGH SCHOOL ROOF REPLACEMENT 2023**

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SECTION 00100

**INVITATION TO BID & INSTRUCTIONS TO BIDDERS**

**1. SCOPE OF PROJECT**

The Specifications and the accompanying drawings are intended to provide for all materials and labor necessary to complete the re-roof project at the Oxford Jr/Sr High School, Oxford, Kansas.

- 1.1 The Roofing Contractor will be considered the General Contractor for this project.
- 1.2 The bid shall include all labor and materials necessary for a complete and operational system. Including work necessary to restore the site, and removing debris after the project is complete.

**2. CONTRACT DOCUMENTS**

- 2.1 The General Contractor may obtain electronic plans and specifications from the office of the Architects, **HANNEY & ASSOCIATES ARCHITECTS**, 1726 South Hillside, Wichita, Kansas 67211, (316) 683-8965 Phone.
- 2.3 Contract Documents are on file and may be viewed at the Architect's website, and;
  - 2.3.1 Kansas Construction News, 230 Laura, Wichita, Kansas
  - 2.3.2 Dodge Data and Analytics, Kansas

**3. PROPOSAL PROCEDURE**

**3.1 BID DATE**

- 3.1.1 Sealed proposal for this project will be received by the Owner:  
Oxford USD 358 District Office, 515 N. Water St., Oxford, Kansas 67119-9620,  
on or before **Wednesday, December 21, 2022, up to and until 2:00 p.m.**
- 3.1.2 At which time proposals received will be opened **publicly**. Any proposals received after closing time will be returned unopened.

- 3.2 Should a proposer find discrepancies in, or omissions from the drawings or documents, or should the proposer be in doubt as to their meaning, the proposer shall at once notify the Architect, who will send written instructions to all proposers. Neither Owner nor Architect will be responsible for any oral instructions.

**3.3 PRE-BID MEETING**

- 3.3.1 A Pre-Bid Meeting will be held at Oxford Jr/Sr High School at 515 N. Water St., Oxford, KS 67119, on Tuesday, December 13, 2022 at 11:00 a.m. CST. We will gather in the school office.
- 3.3.2 Attendance is not required, but encouraged.

- 3.4 All proposers / roofing contractors shall be added to the Plan Holders list, by notifying the Architect that they have received the plans, and intend to bid. The Architect's office can be reached at (316) 683-8965, or by email at: [angela@haarchitects.com](mailto:angela@haarchitects.com).

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- 3.5 Proposals shall be made upon the PROPOSAL FORM or exact copy thereof bound into the specifications.
- 3.6 Fill in all blanks on the PROPOSAL FORM clearly with ink. Erasures or other changes in a proposal must be explained or noted over the signature of the proposer. Signatures shall be in longhand by a principal duly authorized to sign contracts, and if proposal is by a corporation, the signature shall be accompanied by the corporate seal impression. Proposals shall contain neither alterations nor recapitulation of work to be done.
- 3.7 Should the Contractor fail to complete all of the work required by the Contract Documents on or before the date bid by this contractor for substantial completion, the Contractor shall pay as liquidated damages, the sum of **\$200.00** for each consecutive calendar day thereafter, Sundays and holidays excluded.
- 3.8 Each proposer is required to bid all alternates included in the Proposal Form except that should the proposer desire not to bid an alternate he/she may insert the words “no bid” in the space provided for prices for such alternate. In such case, if it is determined to use such alternate, the fact that the cost of the type or method bid in the proposal may be lower than that chosen shall not constitute the basis of a claim by the proposer that the contract shall be awarded to them. If an alternate price called for involves no change in price, the proposer shall so indicate by writing the words “no change” in the space provided.
- 3.9 No oral or telephonic proposals or modifications will be considered. No telegraphic proposals will be considered, but modification by telegraph of proposals already submitted will be considered if received prior to time set for proposal opening.
- 3.10 Before submitting their proposal, each proposer shall carefully examine all documents pertaining to the work, visit the site of work, and fully inform themselves as to all existing conditions under which the work will be performed. Submission of a proposal will be considered presumptive evidence that the proposer is fully aware of the Contract Documents, pertinent state and markets, and has made allowances in their proposal for all work and all contingencies.
- 3.11 Any addenda issued during the time of preparation of proposals are to be acknowledged in the Proposal Form and in closing a contract, they will become a part thereof.
- 3.12 Enclose the proposal along with the required Proposal Security, in an opaque envelope:  
Proposal For: (State category of the work)

Oxford Jr/Sr High School Roof Replacement

**Oxford Unified School District 358**

**515 N. Water**

**Oxford, Kansas 67119-9620**

Name of Bidder

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**4. PROPOSAL SECURITY**

- 4.1 Proposal Security, consisting of a bid bond, certified check, or cashier's check on a solvent bank, must be enclosed with each proposal for at least five percent (5%) of the Base Proposal.
- 4.2 Proposal Security shall be made payable, without condition to **Oxford Unified School District 358**, as a guarantee that the bidder, if awarded the contract, will promptly execute the formal contract in accordance with the proposal and as required by the other Contract Documents, and that he/she will furnish good and sufficient bonds for the faithful performance in each category of work. Such bond will be retained until the contract is awarded or other disposition is made thereof. Deposit checks shall be refunded if bidding documents are returned to the Architect in satisfactory condition within sixty (60) days after awarding the contract. If bidding documents are not returned, applicable deposit checks shall be returned to the Owner and deposited into their account. The successful contractor's deposit shall be returned after the award of the contract.
- 4.3 Performance Bond and Statutory Bond will be required in an amount of 100% of the contract amount. Such bonds shall be in such form as indicated in the Revisions in the General Conditions and registered at the **Sumner County District Court**.

**5. PROPOSAL WITHDRAWAL**

A Proposal may be withdrawn on written or email request received from proposer prior to time for proposal opening. No proposal may be altered or withdrawn for a period of at least thirty (30) days after opening of proposals.

**6. SUBSTITUTIONS**

- 6.1.1 The materials, products and equipment described in the bidding documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.
- 6.1.2 No substitution will be considered unless written request for approval has been submitted by the bidder and has been received by the architect at least ten (10) days prior to the date for receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a completed description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changed in other materials, equipment or work which incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitute shall be final.
- 6.1.3 If the Architect approves any proposed substitute, such approval will be set forth in an addendum. Bidders shall not rely upon approvals made in any other manner.

**7. AWARD OF CONTRACT**

Contract will be awarded to the responsible proposer submitting the lowest responsible proposal (i.e. combination of Base Proposal and accepted alternates, with due consideration to unit prices), provided:

- 7.1.1 Evidence of the experience, qualifications, and financial responsibility of the bidder and their subcontractors, and the time of completion are all-acceptable to the Owner.

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- 7.1.2 Manufacturer's Guarantee, Service Warranty, and financial responsibility of manufacturer.
- 7.1.3 The total of acceptable proposals is within the financial budget for the project.
- 7.1.4 The Owner reserves the right to reject any or all proposals, to accept or reject alternate proposals and unit prices, and to waive all technicalities concerning the proposals received when it may be in the Owner's best interest to do so.

**End of Section 00100**

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**SECTION 00150**

**GENERAL PROPOSAL**

**FOR**

**OXFORD JR/SR HIGH SCHOOL**

**ROOF REPLACEMENT**

Oxford Jr/Sr High School  
Unified School District 358  
Oxford, Kansas

Date: \_\_\_\_\_

The undersigned, in compliance with your invitation for bids for the **Replacement of Roofs 1, 2, 3, 4, and 5**, having examined the site of the work, and being familiar with all the conditions surrounding the work, hereby propose to furnish all labor, materials and supplies and do all work necessary for the project in accordance with the contract documents at the price stated below. These prices are to cover all expenses incurred in performing the required work under the Contract Documents, of which this Proposal is a part.

**PROPOSAL: ROOF 1 – LOCKER ROOMS**

For all the work described in the specifications and shown on the plans for the **Replacement of Roof 1**, for the Oxford Jr/Sr High School, Oxford, Kansas; I or (we) agree to perform all the work and furnish all materials complete for the sum of:

\_\_\_\_\_  
Dollars (\$) \_\_\_\_\_).

**PROPOSAL: ROOF 2 – GYM**

For all the work described in the specifications and shown on the plans for the **Replacement of Roof 2**, for the Oxford Jr/Sr High School, Oxford, Kansas; I or (we) agree to perform all the work and furnish all materials complete for the sum of:

\_\_\_\_\_  
Dollars (\$) \_\_\_\_\_).

**PROPOSAL: ROOF 3 – COMMONS UPPER ROOF**

For all the work described in the specifications and shown on the plans for the **Replacement of Roof 3**, for the Oxford Jr/Sr High School, Oxford, Kansas; I or (we) agree to perform all the work and furnish all materials complete for the sum of:

\_\_\_\_\_  
Dollars (\$) \_\_\_\_\_).

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**PROPOSAL: ROOF 4 – COMMONS LOW ROOF**

For all the work described in the specifications and shown on the plans for the **Replacement of Roof 4**, for the Oxford Jr/Sr High School, Oxford, Kansas; I or (we) agree to perform all the work and furnish all materials complete for the sum of:

\_\_\_\_\_  
Dollars (\$) \_\_\_\_\_.

**PROPOSAL: ROOF 5 – CLASSROOM**

For all the work described in the specifications and shown on the plans for the **Replacement of Roof 5**, for the Oxford Jr/Sr High School, Oxford, Kansas; I or (we) agree to perform all the work and furnish all materials complete for the sum of:

\_\_\_\_\_  
Dollars (\$) \_\_\_\_\_.

**TIME OF COMPLETION: Work can begin immediately.**

The undersigned agrees, if awarded the Contract; to complete all work by **Friday, April 7, 2023**.

The undersigned further agrees that, from the compensation otherwise to be paid; the Owner may retain the sum of Two Hundred Dollars (\$200.00) for each consecutive calendar day thereafter, Sundays and Holidays excluded, that the Contract remains incomplete, which sum is agreed upon as the proper measure of liquidated damages which the Owner will sustain per diem by the failure of the undersigned to complete the work at the time stipulated. This amount is not to be construed as in any sense as a penalty.

**DECLARATION**

The undersigned declares that he/she has carefully examined and understands all Bid Documents, including Invitation to Bid, Instructions to Bidders, Drawings, Specifications, and Addenda, that he/she has visited the location of the work and has familiarized themselves with all conditions under which the work is to be performed, including all pertinent codes and the conditions of labor and material markets, that he/she has checked quantities and prices, that he/she has made allowance in his bid for all work and all contingencies, and understands that in signing this bid he/she waives all right to plead any misunderstanding regarding the same.

\_\_\_\_\_  
Respectfully Submitted, (signature)

\_\_\_\_\_  
(legal name of bidder)

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

\_\_\_\_\_  
(address of bidder)

\_\_\_\_\_  
(Signed by authorized officer)

Seal (If bid is by a corporation)

**End of Section 00150**



SECTION 00300

SPECIAL CONDITIONS

1. **EXISTING CONDITIONS**

- 1.1 This project is re-roofing the existing Oxford Jr/Sr High School Building located at 515 N. Water, Oxford, Kansas.
- 1.2 The building consists of Roof Sections 1, 2, 3, 4, and 5, as follows:  
Roof 1 – Locker Rooms  
Roof 2 – Gym  
Roof 3 – Commons Clerestory  
Roof 4 – Commons Low Roof  
Roof 5 – Classroom.  
This Roofing contract will include the re-roofing of any of, or all of five sections of the building.
- 1.2 This Roofing contract will include all tear off and removal ALL of the existing roofing material(s), down to the deck, as indicated on the Drawings, and proper preparation of the substrate for the new roof.
- 1.3 This project can begin immediately and must be completed prior to the following date:  
**Friday, April 7, 2023.**
- 1.4 This Roofing Contractor shall review proposed the locations for trash, material storage and staging with the USD #358 grounds manager prior to utilization. Generally, the staging area will be identified prior to the project start.
- 1.5 The Roofing Contractor shall provide their own trash and waste receptacles.
- 1.6 Products or manufactures approved, as “Equals” shall meet all requirements of the plans, specification, standards of performance and construction as established by the product or manufacture originally specified.

2. **WORK INCLUDED**

These Specifications and the accompanying Drawings are intended to provide for all materials and labor necessary for the **re-roofing of the existing building at the Oxford Jr/Sr High School.**

3. **CONTRACT DOCUMENTS**

The Contract Documents consist of: The Agreement, the conditions of the Contract (General Conditions, Revisions in General Conditions and Supplementary General Conditions), the Drawings, the Specifications, all Addenda issued prior to the execution of the Agreement, and Change Orders thereafter.

4. **CHANGES**

It is understood that the Owner shall have the right during the progress of construction to make any alterations, additions, or omissions that he may desire to work, or material herein specified or shown on the Drawings. The same shall be carried into effect by the Contractor without in any way violating the Contract, but if such changes are made, the value of same must be agreed upon in writing between Owner, Architect, and Contractor. No omissions will be allowed, or extra work paid for unless ordered in writing by the Architect.

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**5. PERMITS**

The Roofing Contractor shall obtain and pay for all permits, surveys, and inspector's fees required by Sumner County.

**6. INSURANCE**

Refer to Section 00400 – Insurance Requirements included with this specification.

**7. FOREMAN**

The Roofing Contractor must have from start to finish one responsible foreman throughout the entire job; in addition, the Roofing Contractor must give the work his personal supervision; the foreman must be on duty during all working hours. Any instructions for notices given to him shall have the same force as if given to the Contractor in person.

**8. MATERIALS AND WORKMANSHIP**

All materials and workmanship are to be the best of their several kinds. The Contractor is to furnish all accessories needed, such as scaffolding, forms, protection, and all other temporary work, unless otherwise specified distinctly.

**9. DEFECTIVE OR IMPROPER WORK**

Any work or materials not conforming to the specifications must be removed by the Contractor and replaced by approved materials or work without extra compensation. All condemned material must be removed from the premises immediately.

**10. VERIFICATION OF UTILITIES**

Before work commences, the Roofing Contractor shall verify all known utilities located on the roof.

**11. PRIVY**

The Roofing Contractor shall provide a temporary privy.

**12. TRASH AND DEBRIS**

The Roofing Contractor shall be responsible for keeping the construction area clean and remove all debris from the site in a consistent manner.

**13. SALES TAX EXEMPTION**

13.1 Materials and equipment incorporated into this project are exempt from payment of Kansas Sales Tax and such Sales Tax shall be excluded from bidder's proposal.

13.2 The Owner will provide the Contractor with a proper exemption certificate number within ten (10) days of Contract date. Upon issuance of a proper exemption certificate number to the Contractor, the Contractor shall assume full responsibility for his own proper use of the certificate number and shall pay all costs of any legally assessed penalties relating to the Contractor's improper use of the exemption certificate number.

13.3 Should the Owner fail to provide a proper exemption certificate number, the amount of the Sales Tax for the project shall be allowed as an extra to the Contract amount.

**14. OMISSIONS**

14.1 The Drawings and Specifications are intended to incorporate anything shown on the Drawings but not mentioned in the Specifications or vice versa, or anything not expressly set forth in either, but which is reasonable implied, shall be furnished as though specifically shown and mentioned in both, without any charge.

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14.2 Should anything be omitted from the Drawings, necessary to the proper construction of the work herein described, it shall be the duty of the Contractor to so notify the Architect before signing the Contract and in the event of the Contractor failing to give such notice, he shall make good any damages of defects in his work caused thereby without extra charge.

**15. PROTECTION OF WORK AND PROPERTY**

The Roofing Contractor shall take charge of and assume general responsibility for proper protection of the building during the re-roofing.

**16. EQUAL EMPLOYMENT OPPORTUNITY**

The contractor shall observe the provisions of the Kansas Act against discrimination and shall not discriminate against any person in the performance of work under the present Contract because of race, religion, color, sex, physical handicap unrelated to such person's ability to engage in the particular work, national origin or ancestry;

**17. REPAIRS**

Unless the Architect grants permission to repair any defective work, remove defective work from project and replace with new work in accordance with Contract Documents. Permission to repair such work shall not constitute a waiver of Architect's right to require complete replacement of defective work if repair operation does not restore quality and appearance of member or surface to Architect's satisfaction. If permission is granted, repair according to Architect's direction.

**18. LAWS AND ORDINANCES**

The Contractor is required to familiarize himself with and observe all laws, ordinances and regulations relating to the work, and such laws, ordinances and regulations are hereby incorporated in and made a part of these specifications and the Contract for this work.

**19. APPROVED EQUALS**

Products or manufactures approved, as "Equals" shall meet all requirements of the plans, specification, standards of performance and construction as established by the product or manufacture originally specified.

**20. DISRUPTION OF OWNERS OPERATIONS**

It is important that the work of this Contractor be executed in a neat and orderly manner. Storage locations of materials and equipment shall be approved by the Owner.

**End of Section 00300**

**SECTION 00400**

**INSURANCE REQUIREMENTS**

**1. GENERAL**

- 1.1 The General Conditions of the Contract for Construction as issued by the American Institute of Architects, A.I.A. Document A201, 2017 Edition, shall be considered as a part of these specifications, as if included herein, subject to the following additions:
- 1.2 The Contractor shall not commence work under this contract until he has obtained all Surety Bonds and Insurance Certificates submitted as required under these specifications and the General Conditions of the Contract, and such Bonds, insurance and coverage has been approved by the Owner, and his Attorney, and his insurance carrier.

**2. INSURANCE COVERAGE AND LIMITS**

The Contractor shall purchase and maintain coverages required by the General Conditions of the Contract, Paragraph 11.1 and these Specifications in the following minimum amounts, and provide the Owner, through the Architect, three copies of a Certificate of Insurance on A.I.A. form G705.

KIND OF INSURANCE	LIMITS OF LIABILITY
A. (1) Workmen’s Compensation (2) Employer’s Liability	Statutory Workmen’s Comp.
Bodily injury by Accident	\$100,000.00 each occurrence
Bodily Injury by Disease	\$500,000.00 each employee
Bodily Injury by Disease	\$500,000.00 policy limit
Aggregate Disease	
B. Commercial General Liability	
Include premises and operations, independent contractors, products/completed operations (maintain completed operations coverage for two years after substantial completion), broad form property damage, blanket contractual liability and explosion, collapse, and underground (XCU) coverage:	
Bodily Injury and Property Damage	\$1,000,000 Each Occurrence
Personal and Advertising Injury	\$1,000,000 Each Occurrence
General Aggregate (other than products/completed operations)	\$2,000,000 Aggregate
Products/Completed Operations	\$2,000,000 Aggregate

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- |    |  |  |
|----|--|--|
| C. | Automotive Liability<br>Bodily Injury and Property Damage  | \$750,000 Combined single limit  |
|    | \$500,000 Each Occurrence<br>\$500,000 Each Occurrence<br>\$500,000 Each Occurrence<br>\$500,000 Aggregate | Independent Contractors<br>Completed Operations<br>Contractual<br>Operations, Independent Contractor Products &<br>Contractual |
| D. | Umbrella Liability   | \$2,000,000 over primary limits;<br>\$10,000 retention   |

**3. CONTRACT PROPERTY INSURANCE**

- 3.1 Builders Risk Insurance shall be carried and paid for by the Contractor. Builders Risk will carry special extended coverage's endorsement (All-Risks Builders Risk including transit and storage) in addition to the normal fire, vandalism, and extended coverage. The Contractor shall be responsible for any deductible.
- 3.2 Builders Risk to be carried for the completed value of the work for the insurable value of the work completed in the names of the Owner, the Contractor and all Sub-contractors as their interest may appear.
- 3.3 Completed products coverage to extend at least one year after final completion of the job.
- 3.4 The Contractor will provide his own Liability Insurance.
- 3.5 All rights of subrogation of the Insurance Company must be waived on all insurance's coverages involved under this contract to all parties including Owner
- 3.6 Contractor's and Sub-contractor's equipment will not be covered by any insurance provided by the Owner.

**End of Section 00400**

SECTION 07540

**FULLY ADHERED TPO ROOFING SYSTEM**

**PART 1 – GENERAL**

**1. SCOPE OF WORK**

The project includes the provision of a complete Firestone Building Products fully adhered TPO Roofing System.

- 1.1 The Work shall include all labor and materials necessary for a complete and operational System, including work necessary to restore the site, and removing debris after the project is complete.
- 1.2 Furnish and install elastomeric sheet roofing system, including:
  - 1.2.1 Roofing manufacturer's requirements for the specified warranty
  - 1.2.2 Preparation of roofing substrates
  - 1.2.3 Treated Wood nailers for roofing attachment
  - 1.2.4 High Density Cover boards
  - 1.2.5 Elastomeric membrane roofing
  - 1.2.6 Metal roof edging and copings, pre-finished metal
  - 1.2.7 Flashings
  - 1.2.8 Walkway pads
  - 1.2.9 Other roofing-related items specified or indicated on the drawings or otherwise necessary to provide a complete weatherproof roofing system
- 1.3 The Work will include all tear off and removal ALL of the existing roofing material(s), down to the metal deck or the acoustical deck, as indicated on the Drawings, and proper preparation of the substrate for the new roof.
- 1.4 Disposal of demolition debris and construction waste is the responsibility of the Contractor. Perform disposal in manner complying with all applicable federal, state, and local regulations.
- 1.5 Comply with the published recommendations and instructions of the roofing membrane manufacturer, at <http://manual.fsbp.com>.
- 1.6 Commencement of work by the Contractor shall constitute acknowledgement by the Contractor that this specification can be satisfactorily executed, under the project conditions and with all necessary prerequisites for warranty acceptance by roofing membrane manufacturer. Any modification of the Contract Sum will be made in accordance with the stipulations of the Contract Documents stated elsewhere.

**2. REFERENCES**

**2.1 BASE BID – REFERENCED STANDARDS**

These standards form part of this specification only to the extent they are referenced as specification requirements.

- 2.1.1 ASTM C177 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2010

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- 2.1.2 ASTM C209 – Standard Test Methods for Cellulosic Fiber Insulating Board; 2012
- 2.1.3 ASTM C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010
- 2.1.4 ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2013
- 2.1.5 ASTM C1549 – Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer; 2009
- 2.1.6 ASTM D638 – Standard Test Method for Tensile Properties of Plastics; 2010
- 2.1.7 ASTM D1004 – Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting; 2009
- 2.1.8 ASTM D1079 – Standard Terminology Relating to Roofing and Waterproofing; 2013
- 2.1.9 ASTM D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2010
- 2.1.10 ASTM D1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics; 2008
- 2.1.11 ASTM D3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012
- 2.1.12 ASTM D6878/D6878M – Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing; 2011a
- 2.1.13 CAN-ULC-S770 – Standard Test Method Determination of L-Term Thermal Resistance of Closed-Cell Thermal Insulating Foams; 2009
- 2.1.14 FM DS 1-28 – Wind Design; Factory Mutual System; 2007
- 2.1.15 FM DS 1-29 – Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2006
- 2.1.16 PS 1 – Structural Plywood; 2009
- 2.1.17 PS 20 – American Softwood Lumber Standard; 2010
- 2.1.18 SPRI ES-1 – Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems; 2003 (ANSI/SPRI ES-1)

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**3. SUBMITTALS**

3.1 Provide membrane manufacturer's printed data sufficient to show that all components of roofing system, including insulation and fasteners, comply with the specified requirements and with the membrane manufacturer's requirements and recommendations for the system type specified; include data for each product used in conjunction with roofing membrane.

3.2 Where UL or FM requirements are specified, provide documentation that shows that the roofing system to be installed is UL-Classified or FM-approved, as applicable; include data itemizing the components of the classified or approved system.

3.3 INSTALLATION INSTRUCTIONS

Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.

3.3.1 Shop Drawings

Provide:

A. The roof membrane manufacturer's standard details customized for this project for all relevant conditions, including flashings, base tie-ins, roof edges, terminations, expansion joints, penetrations, and drains.

B. For tapered insulation, provide project-specific layout and dimensions for each board.

3.4 PRE-INSTALLATION NOTICE

Copy to show that manufacturer's required Pre-Installation Notice (PIN) has been accepted and approved by the manufacturer.

3.5 SPECIMEN WARRANTY

Submit prior to starting work.

3.6 SAMPLES

Submit samples of each product to be used.

**4. QUALITY ASSURANCE**

4.1 APPLICATOR QUALIFICATIONS

Roofing installer shall have the following:

4.1.1 At least five years' experience in installing specified system;

4.1.2 Capability to provide payment and performance bond to building owner.

4.2 PRE-INSTALLATION CERTIFICATE

Before start of roofing work, Contractor shall hold a meeting to discuss the proper installation of materials and requirements to achieve the warranty.

4.2.1 Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work.

4.2.2 Notify the Project Engineer well in advance of meeting.



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**5. DELIVERY, STORAGE AND HANDLING**

Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.

5.1 Store materials clear of ground and moisture with weather protective covering.

5.2 Keep combustible materials away from ignition sources.

**6. WARRANTY**

6.1 Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections.

6.2 WARRANTY

**Firestone 15-year Red Shield Limited Warranty** covering membrane, roof insulation, roof related sheet metal and membrane accessories.

6.2.1 Limit of Liability: No dollar limitation.

6.2.2 Scope of Coverage: Repair leaks in the roofing system caused by:

- A. Ordinary wear and tear of the elements
- B. Manufacturing defect in Firestone brand materials
- C. Defective workmanship used to install these materials
- D. Damage due to winds up to 72 mph. 2.

6.2.3 Not Covered:

- A. Damage due to winds in excess of 55 mph
- B. Damage due to hurricanes or tornadoes
- C. Hail
- D. Intentional damage
- E. Unintentional damage due to normal rooftop inspections, maintenance, or service.

**PART 2 – PRODUCTS**

**7. MANUFACTURERS**

7.1 BASIS OF DESIGN – ROOFING SYSTEM

Firestone Building Products Co., Carmel, IN, [www.firestonebpco.com](http://www.firestonebpco.com).

7.1.1 Firestone Building Products

- A. GenFlex Roofing Systems
- B. Carlisle Syntex, Sure-weld, TPO
- C. Approved equal

7.2 MANUFACTURER OF INSULATION AND COVER BOARDS

Same manufacturer as roof membrane.

7.3 MANUFACTURER OF METAL ROOF EDGING

Same manufacturer as roof membrane.

7.3.1 Metal roof edging / coping cap by other manufactures are acceptable, if approved by the architect and are warrantable by the Roofing Manufacturer.

7.3.2 Field or shop fabricated metal roof edging / coping cap are acceptable.

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- 7.3.3 Substitution Procedures:
- A. See Instructions to Bidders.
  - B. Submit evidence that the proposed substitution complies with the specified requirements.

**8. ROOFING SYSTEM DESCRIPTION**

8.1 ROOFING SYSTEM

8.1.1 Membrane: Thermoplastic Polyolefin (TPO) single-ply membrane

8.1.2 Thickness: .060

8.1.3 Membrane Attachment: Self-Adhering Membrane or Adhered with Bonding Adhesive

8.1.4 Comply with applicable local building code requirements.

8.1.5 Provide assembly having Underwriters Laboratories, Inc. (UL) Class A Fire Hazard Classification.

8.2 COVER BOARD

Acceptable Product shall be **DensDeck Roof Board** by Georgia Pacific, or approved equal.

8.2.1 Thickness: 1/2-inch (12.7mm).

A. Attachment: Mechanically attached.

8.2.2 Crickets and Saddles: Tapered insulation of same type as specified for top layer; slope as indicated.

**9. TPO MEMBRANE MATERIALS**

9.1 ROOFING MEMBRANE

Flexible, heat weldable sheet composed of thermoplastic polyolefin polymer and ethylene propylene rubber; complying with ASTM D6878, with polyester weft inserted reinforcement and the following additional characteristics:

9.1.1 Thickness: 0.060 inch (2.03 mm) plus/minus 10 percent, with coating thickness over reinforcement of 0.030 inch (0.76 mm) plus/minus 10 percent

9.1.2 Puncture Resistance: 415 lbf (1868 N), minimum, when tested in accordance FTM 101C Method 2031

9.1.3 Solar Reflectance: 0.79 minimum, when tested in accordance with ASTM C1549

9.1.4 Color: White

9.1.5 Acceptable Product: 060 TPO by Firestone, or as approved by owner in accordance with section 2.01D

9.2 INSULATION FASTENERS

Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.

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- 9.3 CURB AND PARAPET FLASHING  
Same material as membrane, with encapsulated edge which eliminates need for seam sealing the flashing-to-roof splice; precut to 18 inches (457 mm) wide.
- 9.4 FORMABLE FLASHING  
Non-reinforced, flexible, heat weldable sheet, composed of thermoplastic polyolefin polymer and ethylene propylene rubber.
- 9.4.1 Thickness: 0.060 inch (1.52 mm) plus/minus 10 percent
- 9.4.2 Tensile Strength: 1550 psi (10.7 MPa), minimum, when tested in accordance with ASTM D638 after heat aging
- 9.4.3 Elongation at Break: 650 percent, minimum, when tested in accordance with ASTM D638 after heat aging
- 9.4.4 Tearing Strength: 12 lbf (53 N), minimum, when tested in accordance with ASTM D1004 after heat aging
- 9.4.5 Color: White
- 9.4.6 Acceptable Product: UltraPly TPO Flashing by Firestone
- 9.5 POURABLE SEALER  
Two-part polyurethane, two-color for reliable mixing; Pourable Sealer by Firestone
- 9.6 SEAM PLATES  
Steel with barbs and Galvalume coating; corrosion-resistance complying with FM 4470
- 9.7 TERMINATION BARS  
Aluminum bars with integral caulk ledge; 1.3 inches (33 mm) wide by 0.10 inch (2.5 mm) thick; Firestone Termination Bar by Firestone
- 9.8 CUT EDGE SEALANT  
Synthetic rubber-based, for use where membrane reinforcement is exposed; UltraPly TPO Cut Edge Sealant by Firestone
- 9.9 GENERAL PURPOSE SEALANT  
EPDM-based, one-part, white general-purpose sealant; UltraPly TPO General Purpose Sealant by Firestone
- 9.10 MOLDED FLASHING ACCESSORIES  
Unreinforced TPO membrane pre-molded to suit a variety of flashing details, including pipe boots, inside corners, outside corners, etc.; UltraPly TPO Small and Large Pipe Flashing by Firestone
- 9.11 ROOF WALKWAY PADS  
Non-reinforced TPO walkway pads, 0.130 inch (3 mm) by 30 inches (760 mm) by 40 feet (12.19 m) long with patterned traffic bearing surface; UltraPly TPO Walkway Pads by Firestone

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**10. ROOF INSULATION AND COVER BOARDS**

**10.1 GYPYSUM-BASED COVER BOARD**

Non-combustible, water resistant gypsum core with embedded glass mat facers, complying with ASTM C 1177/C 1177M, and with the following additional characteristics:

- 10.1.1 Acceptable Product: Shall be **DensDeck Roof Board** by Georgia Pacific, 1/2" thick, or approved equal.
- 10.1.2 Size: 48 inches (1220 mm) by 96 inches (2440 mm), nominal.  
Exception: Board to be attached using adhesive or asphalt may be no larger than 48 inches (1220 mm) by 48 inches (1220 mm), nominal.
- 10.1.3 Thickness: 1/2-inch, or as indicated elsewhere.
- 10.1.4 Surface Water Absorption: 2.5 g, maximum, when tested in accordance with ASTM C 473
- 10.1.5 Spanning Capability: Recommended by manufacturer for following minimum flute spans.
- 10.1.6 Surface Burning Characteristics: Flame spread of 0, smoke developed of 0, when tested in accordance with ASTM E 84.
- 10.1.7 Combustibility: Non-combustible, when tested in accordance with ASTM E 136.
- 10.1.8 Factory Mutual approved for use with FM 1-60 and 1-90 rated roofing assemblies.
- 10.1.9 Mold Growth Resistance: Zero growth, when tested in accordance with ASTM D 3273 for minimum of 4 weeks.

**10.2 INSULATION MATERIALS**

Insulation is to be of the type and minimum thickness as listed here.

**10.2.1 Polyisocyanurate:**

- A. Insulation is to be a closed-cell, Polyisocyanurate foam core with factory laminated facers. Foam core is to have a rated flame spread of 25 or less and comprehensive strength of 20 psi (ASTM D-1621). Insulation is to conform to federal specification HH-I-1972/2. Insulation is to be (2) layers of 1-1/2" thick, for a total of 3.0" thick.
- B. Approved Products:
  - 1) E'NRG'Y 2 by N.R.G. Barriers
  - 2) Pyrox by Apache Products
  - 3) AC Foam and AC Foam II by Atlas Energy Products
  - 4) UltraGard by Schuller Roofing Systems Division
  - 5) GAFTEMP Isotherm R by GAF Corporation

**10.2.2 Cover Board**

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**11. METAL ACCESSORIES**

**11.1 METAL ROOF EDGING AND FASCIA**

Continuous metal edge member serving as termination of roof membrane and retainer for metal fascia; watertight with no exposed fasteners; mounted to roof edge nailer.

**11.1.1 Wind Performance**

- A. Membrane Pull-Off Resistance: 100 lbs./ft. (1460 N/m), minimum, when tested in accordance with ANSI/SPRI ES-1 Test Method RE-1, current edition.
- B. Fascia Pull-Off Resistance: At least the minimum required when tested in accordance with ANSI/SPRI ES-1 Test Method RE-2, current edition.
- C. Provide product listed in current Factory Mutual Research Corporation Approval Guide with at least FM 1-270 rating.

11.1.2 Description: Two-piece fascia with 1/8" extruded anchor bar and 24-gauge steel fascia cover.

11.1.3 Fascia Face Height: 5.5 inches (127 mm).

11.1.4 Edge Member Height Above Nailer: 1-1/4 inches (31 mm).

11.1.5 Length: 144 inches (3650 mm).

11.1.6 Functional Characteristics: Fascia retainer supports while allowing for free thermal cycling of fascia.

11.1.7 Metal Accessories, metal edge flashing is not acceptable. The caps on parapet walls shall be a full coping cap, similar to those shown on the drawings.

11.1.8 Aluminum Bar: Continuous 6063-T6 alloy aluminum extrusion with pre-punched slotted holes; miters welded; injection molded EPDM splices to allow thermal expansion.

11.1.9 Anchor Bar Cleat: 20-gage, 0.036-inch (0.9 mm) G90 coated commercial type galvanized steel with pre-punched holes.

11.1.10 Fasteners: Factory-provided corrosion resistant fasteners, with drivers; no exposed fasteners permitted.

11.1.11 Scuppers: TPO Coated Metal

11.1.12 Accessories: Provide matching brick wall cap, downspout, extenders, and other special fabrications as shown on the drawings.

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**12. ACCESSORY MATERIALS**

**12.1 WOOD NAILERS**

PS 20-dimension lumber, Structural Grade No. 2 or better Southern Pine, Douglas Fir; or PS 1, APA Exterior Grade plywood; pressure preservative treated.

12.1.1 Width: 3-1/2 inches (90 mm), nominal minimum, or as wide as the nailing flange of the roof accessory to be attached to it.

12.1.2 Thickness: 1.5"

**PART 3 – INSTALLATION**

**13. GENERAL**

13.1 Install roofing, insulation, flashings, and accessories in accordance with roofing manufacturer's published instructions and recommendations for the specified roofing system. Where manufacturer provides no instructions or recommendations, follow good roofing practices and industry standards. Comply with federal, state, and local regulations.

13.2 Obtain all relevant instructions and maintain copies at project site for duration of installation period.

13.3 Do not start work until Pre-Installation Notice has been submitted to manufacturer as notification that this project requires a manufacturer's warranty.

13.4 Perform work using competent and properly equipped personnel.

13.5 Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.

13.6 Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice; do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application; consult manufacturer for recommended procedures during cold weather. Do not work with sealants and adhesives when material temperature is outside the range of 60 to 80 degrees F (15 to 25 degrees C).

13.7 Protect adjacent construction, property, vehicles, and persons from damage related to roofing work; repair or restore damage caused by roofing work.

13.7.1 Protect from spills and overspray from bitumen, adhesives, sealants and coatings.

13.7.2 Particularly protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.

13.7.3 Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.

13.8 Until ready for use, keep materials in their original containers as labeled by the manufacturer.

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13.9 Consult membrane manufacturer's instructions, container labels, and Safety Data Sheets (SDS) for specific safety instructions. Keep all adhesives, sealants, primers, and cleaning materials away from all sources of ignition.

**14. EXAMINATION**

14.1 Examine roof deck to determine that it is sufficiently rigid to support installers and their mechanical equipment, and that deflection will not strain or rupture roof components or deform deck.

14.2 Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.

14.3 Examine roof substrate to verify that it is properly sloped to drains.

14.4 Verify that the specifications and drawing details are workable and not in conflict with the roofing manufacturer's recommendations and instructions; start of work constitutes acceptable of project conditions and requirements.

**15. PREPARATION**

15.1 Remove and dispose of the existing roofing ballast, membrane, insulation, flashings and sheet metal.

15.2 Dispose of all materials in compliance local, state and federal requirements.

15.3 Protect the existing building and grounds from construction related damage.

15.4 Examine the existing roof deck to ensure it is structurally sound and appropriate to receive new roofing.

15.5 Take appropriate measures to ensure that fumes from adhesive solvents are not drawn into the building through air intakes.

15.6 Prior to proceeding, prepare roof surface so that it is clean, dry, and smooth, and free of sharp edges, fins, roughened surfaces, loose or foreign materials, oil, grease, and other materials that may damage the membrane.

**16. INSULATION AND COVER BOARD INSTALLATION**

16.1 Install insulation in configuration and with attachment method(s) specified in PART 2, under Roofing System.

16.2 Install insulation in a manner that will not compromise the vapor retarder integrity.

16.3 Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.

16.4 Lay roof insulation in courses parallel to roof edges.

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- 16.5 Neatly and tightly fit insulation to all penetrations, projections, and nailers, with gaps not greater than 1/4 inch (6 mm). Fill gaps greater than 1/4 inch (6 mm) with acceptable insulation. Do not leave the roofing membrane unsupported over a space greater than 1/4 inch (6 mm).
- 16.6 Mechanical Fastening: Using specified fasteners and insulation plates engage fasteners through insulation into deck to depth and in pattern required by Factory Mutual for FM Class specified in PART 2 and membrane manufacturer, whichever is more stringent.

**17. SINGLE-PLY MEMBRANE INSTALLATION**

- 17.1 Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time.
- 17.2 Lay out the membrane pieces so that field and flashing splices are installed to shed water.
- 17.3 Install membrane without wrinkles and without gaps or fish-mouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.
- 17.4 Install membrane fully adhered to the substrate using TPO Bonding Adhesive.

**18. FLASHING AND ACCESSORIES INSTALLATION**

- 18.1 Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.
- 18.2 Metal Accessories: Install metal edgings, gravel stops, and copings in locations indicated on the drawings, with horizontal leg of edge member over membrane and flashing over metal onto membrane.
  - 18.2.1 Follow roofing manufacturer's instructions.
  - 18.2.2 Remove protective plastic surface film immediately before installation.
  - 18.2.3 Install water block sealant under the membrane anchorage leg.
  - 18.2.4 Flash with manufacturer's recommended flashing sheet unless otherwise indicated.
  - 18.2.5 Where single application of flashing will not completely cover the metal flange, install additional piece of flashing to cover the metal edge.
  - 18.2.6 If the roof edge includes a gravel stop and sealant is not applied between the laps in the metal edging, install an additional piece of self-adhesive flashing membrane over the metal lap to the top of the gravel stop; apply seam edge treatment at the intersections of the two flashing sections.
  - 18.2.7 When the roof slope is greater than 1:12, apply seam edge treatment along the back edge of the flashing.
- 18.3 SCUPPERS  
Set in sealant and secure to structure; flash as recommended by manufacturer.



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**18.4 FLASHING AT WALLS, CURBS, AND OTHER VERTICAL AND SLOPED SURFACES**

Install weathertight flashing at all walls, curbs, parapets, curbs, skylights, and other vertical and sloped surfaces that the roofing membrane abuts to; extend flashing at least 8 inches (200 mm) high above membrane surface.

18.4.1 Use the longest practical flashing pieces.

18.4.2 Evaluate the substrate and overlay and adjust installation procedure in accordance with membrane manufacturer's recommendations.

18.4.3 Complete the splice between flashing and the main roof sheet with specified splice adhesive before adhering flashing to the vertical surface.

18.4.4 Provide termination directly to the vertical substrate as shown on roof drawings.

**18.5 FLASHING AT PENETRATIONS**

Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.

**18.6 PIPES, ROUND SUPPORTS, AND SIMILAR ITEMS**

Flash with specified pre-molded pipe flashings wherever practical; otherwise use specified self-curing elastomeric flashing.

**18.7 PIPE CLUSTERS AND UNUSUAL SHAPED PENETRATIONS**

Provide penetration pocket at least 2 inches (50 mm) deep, with at least 1-inch (25 mm) clearance from penetration, sloped to shed water.

**18.8 STRUCTURAL STEEL TUBING**

If corner radii are greater than 1/4 inch (6 mm) and longest side of tube does not exceed 12 inches (305 mm), flash as for pipes; otherwise, provide a standard curb with flashing.

**19. FINISHING AND WALKWAY INSTALLATION**

19.1 Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.

**19.2 WALKWAY PADS**

Adhere to the roofing membrane, spacing each pad at minimum of 1.0 inch (25 mm) and maximum of 3.0 inches (75 mm) from each other to allow for drainage.

19.2.1 If installation of walkway pads over field fabricated splices or within 6 inches (150 mm) of a splice edge cannot be avoided, adhere another layer of flashing over the splice and extending beyond the walkway pad a minimum of 6 inches (150 mm) on either side.

19.2.1 Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.

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**20. FIELD QUALITY CONTROL**

**20.1 INSPECTION BY MANUFACTURER**

Provide final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e. not a salesperson).

20.2 Perform all corrections necessary for issuance of warranty.

**21. CLEANING**

21.1 Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.

21.2 Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.

21.3 Remove leftover materials, trash, debris, equipment from project site and surrounding areas.

**22. PROTECTION**

Protect new roofing from foot and construction traffic.

**End of Section 07540**