

**Date: April 1, 2016**

**ADDENDUM NO. 2  
to the  
Iowa Department of Transportation  
Proposal No. 16114  
For  
Tama Maintenance Garage Roof Replacement**

**Letting Date: 04/13/2016**

**Notice To Bidders:**

This Addendum is issued to incorporate the following additions, deletions, corrections, and/or clarifications to the terms or specifications and shall hereby be considered a part of the final contract documents. This Addendum shall supersede, modify and/or change all statements to the contrary in the bid proposal and shall take precedence over previous terms or specifications.

**Changes: Specifications 07 5300 2.04 has been deleted from the spec and drawing.  
07 5300 2.04 A to read "Type 1 , Glass fiber reinforced foam core"  
07 5300 3.03 A Items 1 and 2 have been deleted from the spec.**

All Bidders must sign and return this Addendum for the bid opportunity referenced above. Failure to do so may subject the Bidder to disqualification. If a bid response has already been submitted, this Addendum shall be signed and emailed or faxed to the Purchasing Section prior to the scheduled Letting Date.

\_\_\_\_\_  
Company Name (*please print*)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

Sincerely,

Jody McNaughton, Purchasing Agent (title)  
Phone No. 515-239-1298 Fax No. 515-239-1538  
[Jody.mcnaughton@dot.iowa.gov](mailto:Jody.mcnaughton@dot.iowa.gov)

**SECTION 07 5300**  
**ELASTOMERIC MEMBRANE ROOFING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Elastomeric roofing membrane, fully ballasted conventional application.
- B. Insulation, flat and to match roof deck slope.
- C. Flashings.
- D. Roofing cant strips and stack boots.

**1.02 REFERENCE STANDARDS**

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2013.
- B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2014.
- C. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension; 2006a (Reapproved 2013).
- D. ASTM D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction; 2008.
- E. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2010).
- F. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2000 (Reapproved 2012).
- G. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2013.
- H. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2005 (Reapproved 2010).
- I. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2013.
- J. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- K. FM DS 1-28 - Wind Design; Factory Mutual Research Corporation; 2007.
- L. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association; Fifth Edition, with interim updates.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, surfacing, and fasteners.
- C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, paver layout, and membrane layout and seam locations.
- D. Samples for Verification: Submit two samples 6x6 inches in size. .
- E. Samples of Aggregate: Submit two one lb containers of aggregate ballast.
- F. Samples of Pavers: Submit two.
- G. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- H. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- I. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, and wind velocity during application.

- J. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### **1.04 QUALITY ASSURANCE**

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
  - 1. Maintain one copy on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- C. Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years experience and approved by manufacturer.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- B. Store products in weather protected environment, clear of ground and moisture.
- C. Protect foam insulation from direct exposure to sunlight.

#### **1.06 FIELD CONDITIONS**

- A. Do not apply roofing membrane during unsuitable weather.
- B. Do not apply roofing membrane when ambient temperature is below 40 degrees F.
- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

#### **1.07 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a two year period after Date of Substantial Completion.
- C. Provide 10 year manufacturer's material and labor warranty to cover failure to prevent penetration of water.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. EPDM Membrane Materials:
  - 1. Carlisle Roofing Systems, Inc; Sure-Seal EPDM: [www.carlisle-syntec.com](http://www.carlisle-syntec.com).
  - 2. Firestone Building Products Co: RubberGard EPDM, [www.firestonebpco.com](http://www.firestonebpco.com).
  - 3. GenFlex Roofing Systems: EPDM, [www.genflex.com](http://www.genflex.com).
  - 4. Versico, a division of Carlisle Construction Materials Inc; VersiGard EPDM: [www.versico.com](http://www.versico.com).
  - 5. Mule-Hide Products Co, Inc: [www.mulehide.com](http://www.mulehide.com).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Insulation:
  - 1. Atlas Roofing Corporation: [www.atlasroofing.com](http://www.atlasroofing.com).
  - 2. GAF: [www.gaf.com](http://www.gaf.com).
  - 3. Dow Chemical Co: [www.dow.com](http://www.dow.com).
  - 4. Owens Corning Corp: [www.owenscorning.com](http://www.owenscorning.com).
  - 5. Versico, a division of Carlisle Construction Materials Inc; SecurShield Insulation: [www.versico.com](http://www.versico.com).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 ROOFING - BALLASTED APPLICATIONS**

- A. Elastomeric Membrane Roofing: One ply membrane loose-laid over insulation with ballast.

- B. Roofing Assembly Requirements:
  1. Insulation Thermal Value (R), minimum: 38; provide insulation of thickness required.
- C. Acceptable Insulation Types- Under Membrane - Constant Thickness Application: Any of the types specified.
  1. Bottom layer of existing insulation covered with minimum 2 layers of polyisocyanurate.
- D. Ballast:
  1. Corners: Use pavers weighing minimum of 22 pounds per square foot in areas within 12 feet of corners of roof measured along edge and perpendicular to edge, to include sacrificial rubber sheet.
  2. Field: Use new round, washed, river rock aggregate ballast of 10 lb/square foot over remaining area of roof.

### **2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS**

- A. Membrane: Ethylene-propylene-diene-terpolymer (EPDM); non-reinforced; complying with minimum properties of ASTM D 4637.
  1. Thickness: 0.060 inch.
  2. Sheet Width: 24 inch, minimum; factory-fabricate into largest sheets possible.
  3. Color: Black.
  4. Tensile Strength: 1305 psi, measured in accordance with ASTM D412.
  5. Ultimate Elongation: 300 percent minimum, measured in accordance with ASTM D412.
  6. Hardness: 65 +/-10, measured in accordance with ASTM D2240, using Type A durometer.
  7. Tear Strength: 150 lbf/in, measured in accordance with ASTM D624.
  8. Water Absorption: +3.6 percent increase in weight, maximum, measured in accordance with ASTM D 471 7 day immersion change in mass.
  9. Brittleness Temperature: -49 deg F., measured in accordance with ASTM D746.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Membrane: Ballasted.
- D. Flexible Flashing Material: Same material as membrane; conforming to the following:
  1. Thickness: 0.060 inch.
  2. Tensile Strength: 1,305 psi.

### **2.04 INSULATION**

- A. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289-11A, Type 1, glass fiber-reinforced foam core and with the following characteristics:
  1. Compressive Strength: 16 psi
  2. Board Size: 48 by 96 inch.
  3. Board Thickness: 2 layers to equal 3 inch.
  4. Thermal Resistance (LTTR): R-value of 38 average insulation value.
  5. Board Edges: Square.
  6. Manufacturers:
    - a. Atlas Roofing Corporation: [www.atlasroofing.com](http://www.atlasroofing.com).
    - b. Dow Chemical Co: [www.dow.com](http://www.dow.com).
    - c. GAF: [www.gaf.com](http://www.gaf.com).
    - d. Hunter Panels, LLC; H-Shield: [www.hpanels.com](http://www.hpanels.com).
    - e. Versico, a division of Carlisle Construction Materials Inc; SecurShield Insulation: [www.versico.com](http://www.versico.com).
  7. Substitutions: See Section 01 6000 - Product Requirements.

### **2.05 BALLAST MATERIALS**

- A. No.4 Aggregate: Sound, hard, washed round river rock, ASTM D448 Size Classification 4,3, 24, 2, or 1.
- B. Pavers: Precast concrete units, 4,000 psi air entrained mix.
  1. Size: 24 by 24 by 2 inch.

## **2.06 ACCESSORIES**

- A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- B. Cant Strips: Wood; pressure preservative treated.
- C. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.
- D. Membrane Adhesive: As recommended by membrane manufacturer.
- E. Insulation Adhesive: As recommended by insulation manufacturer.
- F. Sealants: As recommended by membrane manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and nailing strips are in place.

### **3.02 CONCRETE DECK PREPARATION**

- A. Verify adjacent precast concrete roof members do not vary more than 1/4 inch in height. Verify grout keys are filled flush.
- B. Fill surface honeycomb and variations with latex filler.
- C. Confirm dry deck by moisture meter with 12 percent moisture maximum.

### **3.03 INSULATION - UNDER MEMBRANE**

- A. Attachment of Insulation:
- B. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- C. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- D. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- E. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- F. Do not apply more insulation (minimum insulation R-38) than can be covered with membrane in same day.

### **3.04 MEMBRANE APPLICATION**

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Apply adhesive to substrate at rate required by manufacturer. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. At intersections with vertical surfaces:
  - 1. Extend membrane over cant strips and up vertical surfaces. Secure under metal coping cap.

F. Around roof penetrations, seal flanges and flashings with flexible flashing.

**3.05 BALLAST INSTALLATION**

- A. Install ballast. Evenly distribute aggregate ballast.
- B. Install pavers in accordance with manufacturer's instructions. Provide approximately 1/4 inch space between pavers to permit surface water drainage.

**3.06 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for general requirements for field quality control and inspection.
- B. Require site attendance of roofing and insulation material manufacturers daily during installation of the Work.

**3.07 CLEANING**

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

**3.08 PROTECTION**

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials, using 5/8 inch exterior grade plywood over 1 1/2 inch rigid insulation board.

**END OF SECTION**