

ADDENDUM NO. 1

New Regional Office for
First Community Bank
HWY. 62/412 AND BIG CREEK ROAD
Jonesboro, AR

Roark · Perkins · Perry · Yelvington
Architects
713 W. 2nd Street
Little Rock, AR 72201
501-372-0272

Project #1711

January 17, 2023

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated December 7, 2022 as noted below. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This addendum consists of 2 pages, a reissued bid Form Supplement (3 pages), 3 new specification Sections 05 73 13 (9 pages), 07 52 00 (7 pages) and 07 53 00 (11 pages).

I. CHANGES TO PROJECT MANUAL

A. Table of Contents:

1. Change Section 05 57 13 to 05 73 13, which is attached in this addendum.
2. Change Section 07 53 00 – TPO Roofing, to 07 52 00 – Modified Bitumen Roofing, which is included in this addendum.

B. Document 00 43 00 - Bid Form Supplement: Replace the original document with the attached revised document. (Alternate has been added)

C. Include the attached new spec Sections 07 52 00 – Modified Bitumen Roofing and Section 07 53 00 – TPO Roofing.

D. Section 01 20 00:

1. Paragraph 1.2.F.1: Change the allowance from 2,5000 to 2,500 cubic yards.
2. Add a new Paragraph 1.7 as follows:

1.7 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work.

C. Schedule of Alternates:

- 1. Alternate No. 1: Change roofing system from Modified Bitumen to TPO.*

E. Section 28 31 00: Add VSC Fire and Security as an acceptable vendor for the fire alarm system.

II. CHANGES TO DRAWINGS

A. Sheet A5.2:

1. Storefront frames D and P can be 1-3/4" x 4" with 1/4" glass.
2. Storefront to be centerset.

END OF ADDENDUM

BID FORM SUPPLEMENTS

To: First Community Bank
Mr. Dale Cole

Project: A New Facility for
First Community Bank
Hwy. 62/412 and Big Creek Road
Jonesboro, AR

Date:

Submitted by:
(full name and address)

In accordance with Document 00 21 13 and Document 00 41 13, we include the Appendices to Bid Form Supplements listed below. The information provided shall be considered an integral part of the Bid Form.

The following Appendices are attached to this document:

Appendix A - List of Unit Prices: Include listing of unit prices specifically requested by Contract Documents.

Appendix B – List of Alternates: Include cost variation to Bid Sum applicable to the Work described in the Addendum.

BID FORM SUPPLEMENTS SIGNATURES

.....
(Bidder - print the full name of your firm)

.....
(Authorized signing officer)

.....
(License Number)

APPENDIX A - LIST OF UNIT PRICES

The following is the list of unit prices referenced in the bid submitted by:

(Bidder)

To (Owner) First Community Bank, Mr. Dale Cole

Dated and which is an integral part of the Bid Form.

The following are Unit Prices for specific portions of the Work as listed, and are applicable to authorized variations from the Contract Documents.

ITEM DESCRIPTION	UNIT	UNIT VALUE
1. Removal and replacement of unstable soil, compacted in place.	Cu. Yd.	

APPENDIX B - LIST OF ALTERNATES

The following is the list of alternates referenced in the bid submitted by:

(Bidder)

To: First Community Bank, Mr. Dale Cole

Dated and which is an integral part of the Bid Form.

The following amounts shall be added to or deducted from the Bid Sum.

Alternate # 1: Change roofing system from Modified Bitumen to TPO.	(Add) (Deduct)	\$
--	----------------	----

END OF DOCUMENT

SECTION 05 73 13

GLAZED DECORATIVE METAL RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Interior railings with glass-infill panels.

1.2 DEFINITIONS

- A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor areas and for pedestrian guidance and support, visual separation, or wall protection.

1.3 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver items to Project site in time for installation.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not meet structural performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data:
 - 1. Metal railings assembled from standard components.
 - 2. Grout and anchoring cement products.
- B. Shop Drawings: Include plans, elevations, sections, and attachment details.
- C. Design Calculations: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

- A. Installer Requirements: Installed by manufacturer or manufacturer-certified installer.
- B. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
 - 1. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."
- C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
 - 1. Build mockups as one section of rail.
 - 2. Build mockups for each form and finish of glass-infill panel railing consisting of top rail, handrail, glass-infill panel, and anchorage system components that are full height and are not less than 24 inches in length.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Glazed decorative metal railing manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide VIVA Railings, LLC; SHOE or comparable product by one of the following:
 - 1. CraneVeyor Corp.
 - 2. InvisiRail.
 - 3. Tri Tech, Inc.
- B. Source Limitations: Obtain each type of railing and glass from single source from single manufacturer.
- C. Product Options: Drawings indicate size, profiles, and dimensional requirements of railings and are based on the specific system indicated. See Section 016000 "Product Requirements."
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.
 - 2. Hand Rail: Metal pipe with round cross-section shape.
 - 3. Infill Panel: Tempered glass.

2.2 PERFORMANCE REQUIREMENTS

- A. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Stainless Steel: 60 percent of minimum yield strength.
 - 2. Glass: 25 percent of mean modulus of rupture (50 percent probability of breakage), as listed in "Mechanical Properties" in AAMA CW-12, "Structural Properties of Glass."
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails:
 - a. Uniform load of 50 lbf/ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Structural Glass Baluster Railings and Guards:

- a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
 - b. Infill load and other loads need not be assumed to act concurrently.
3. Structural Glass Baluster Railings and Guards: Support each section of top rail and handrail by a minimum of three glass panels or by other means so railings will remain in place if any one glass panel fails.
 - a. Support baluster top rail and handrail ends such that railings remain in place if end glass panel fails.

2.3 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.
 1. Provide cast-stainless steel wall brackets with flange tapped for concealed anchorage with vertical and horizontal adjustment capability.

2.4 STAINLESS STEEL

- A. Tubing: ASTM A554, Grade MT 316.
- B. Pipe: ASTM A312/A312M, Grade TP 316.
- C. Castings: ASTM A743/A743M.
- D. Sheet, Strip, Plate, and Flat Bar: ASTM A666 or ASTM A240/A240M, Type 316.
- E. Bars and Shapes: ASTM A276, Type 316.

2.5 ALUMINUM

- A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.
- B. Extruded Bars and Shapes, Including Extruded Tubing: ASTM B221, Alloy 6063-T5/T52.
- C. Extruded Structural Pipe and Round Tubing: ASTM B429/B429M, Alloy 6063-T6.
 1. Provide Standard Weight (Schedule 40) pipe unless otherwise indicated.
- D. Drawn Seamless Tubing: ASTM B210, Alloy 6063-T832.
- E. Plate and Sheet: ASTM B209, Alloy 5005-H32.
- F. Die and Hand Forgings: ASTM B247 (ASTM B247M), Alloy 6061-T6.
- G. Castings: ASTM B26/B26M, Alloy A356.0-T6.

2.6 GLASS AND GLAZING PRODUCTS, GENERAL

- A. Glazing Publications: Comply with written instructions of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. NGA/GANA Publications: "GANA Laminated Glazing Reference Manual" and "GANA Glazing Manual."
- B. Safety Glazing: Glazing shall comply with 16 CFR 1201, Category II.
- C. Safety Glazing Labeling: Permanently mark glass with certification label of certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- D. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.
- E. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Class 1 and low-iron clear, or Class 2 (tinted) as indicated, Quality-Q3.
- F. Ceramic-Coated Glass: Heat-strengthened float glass, Condition C; with ceramic enamel applied by silk-screened process; complying with Specification No. 95-1-31 in GANA's "Engineering Standards Manual" and with other requirements specified.
- G. Glazing Cement and Accessories for Structural Glass Railings: Glazing cement, setting blocks, shims, and related accessories as recommended or supplied by railing manufacturer for installing structural glazing in metal base channels.
- H. Sealant and Accessories for Structural Glass Railings: Sealant, gaskets, setting blocks, shims, and related accessories as recommended or supplied by railing manufacturer for installing structural glazing in metal base channels.
- I. Glazing Gaskets for Glass-Infill Panels: Glazing gaskets and related accessories as recommended or supplied by railing manufacturer for installing glass-infill panels in post-supported railings.

2.7 STRUCTURAL GLASS BALUSTERS

- A. Tempered Glass: Provide products that have been tested for surface and edge compression in accordance with ASTM C1048 and for impact strength in accordance with 16 CFR 1201 for Category II materials.
 1. Glass Color: Clear.
 2. Thickness for Structural Glass Balusters: As required by structural loads, but not less than 0.51 inch (13 mm).
 3. Glass Thickness: As indicated on Drawings.
- B. Laminated Glass: ASTM C1172, Type II with two plies of clear glass bonded together by an interlayer.
 1. Construction: Laminated glass with interlayer.
 2. Kind: LT (laminated tempered).
 3. Glass Plies for Structural Glass Balusters: Thickness required by structural loads, but not less than 0.24 inch (6 mm) thick each.

2.8 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
 1. Stainless Steel Components: Type 316 stainless steel fasteners.
 2. Dissimilar Metals: Type 316 stainless steel fasteners.

- B. Fasteners for Anchoring to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Provide concealed fasteners for interconnecting railing components and for attaching railings to other work unless otherwise indicated or exposed fasteners are unavoidable or exposed fasteners are the standard fastening method for railings indicated.
 - 1. Provide hex, hex socket, or hex button machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to design load, in accordance with an evaluation report acceptable to authorities having jurisdiction.
 - 1. Material for Stainless Steel: Alloy stainless steel bolts, ASTM F593, and nuts; ASTM F594.

2.9 MISCELLANEOUS MATERIALS

- A. Handrail Brackets: Cast stainless steel, center of rail 3-1/8 inches from face of structural glass balusters.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- C. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
 - 1. Water-Resistant Anchoring Cement: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.10 FABRICATION OF METAL RAILINGS

- A. Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate. Locate weep holes in inconspicuous locations.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- H. Form changes in direction by inserting prefabricated elbow fittings.
- I. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- J. Close exposed ends of hollow railing members with prefabricated end fittings.
- K. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, handrail brackets, miscellaneous fittings, and anchors to interconnect railing members to other work where indicated.
 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and to prevent bracket or fitting rotation and crushing of substrate.
- L. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- M. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

2.11 FABRICATION OF STRUCTURAL GLASS BALUSTERS

- A. Fabricate glass to sizes and shapes required; provide for proper edge clearance and bite on glazing panels.
- B. Structural Glass Balusters: Provide tempered structural glass balusters.
 1. Edge Finish: Grind smooth and flat polish exposed edges of glass, including those at open joints, to produce smooth, square edges with glass edge finishes.

2.12 METAL FINISH REQUIREMENTS, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.13 STAINLESS STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Stainless Steel Finish: Dull Satin Finish: No. 6; ASTM A480, No. 6.

- C. When polishing is completed, rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- D. Stainless Steel Tubing Finishes:
 - 1. 180-Grit Polished Finish: Uniform, directionally textured finish.
 - 2. 320-Grit Polished Finish: Oil-ground, uniform, fine, directionally textured finish.
 - 3. Polished and Buffed Finish: 320-grit finish followed by buffing to match Architect's sample.
- E. Stainless Steel Sheet, Strip, Plate, and Bar Finishes: Submit samples for selection.
 - 1. Polishing Process: When polishing is completed, rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Contractor to examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.
- B. Installation Tolerances: Structural steel and concrete slabs to be within 1/8 inch in 10 feet horizontally and 1/8 inch vertically. Correct out-of-tolerance conditions to meet railing manufacturer's requirements.

3.2 INSTALLATION, GENERAL

- A. Comply with Drawings and manufacturer's written instructions for installing glazed decorative metal railings, accessories, and other components.
- B. Perform cutting, drilling, and fitting required for installing metal railings.
 - 1. Fit exposed connections together to form tight, hairline joints.
 - 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 - 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 - 4. Do not weld, cut, or abrade surfaces of metal railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
 - 1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with bituminous paint.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 METAL RAILING CONNECTIONS

- A. Nonwelded Connections:
 - 1. Use mechanical or adhesive joints for permanently connecting railing components.
 - 2. Use wood blocks and padding to prevent damage to railing members and fittings.
 - 3. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.
- B. Expansion Joints: Install expansion joints at locations indicated, but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.4 INSTALLATION OF STRUCTURAL GLASS BALUSTERS

- A. Structural Glass Baluster Railings and Guards: Install assembly to comply with railing manufacturer's written instructions and with requirements in other Part 3 articles.
- B. For field-assembled structural glass balusters, attach base channel to building structure, insert glass in base channel, and mechanically secure structural glass balusters to aluminum base and top-rail channels using railing manufacturer's "dry-set" continuous compression mounting system.
- C. Adjust spacing of glass balusters so gaps between balusters are equal before securing in position.
 - 1. Erect glass railings under direct supervision of manufacturer's authorized technical personnel.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and to prepare test reports.
- B. Extent and Testing Methodology: Testing agency will randomly select completed railing assemblies for testing that are representative of different railing designs and conditions in the completed Work. Test railings in accordance with ASTM E894, ASTM E935, ASTM E2353, and ASTM E2358 for compliance with performance requirements.
- C. Remove and replace railings where test results indicate that they do not comply with specified requirements unless they can be repaired in a manner satisfactory to Architect and comply with specified requirements.
- D. Perform additional testing and inspecting, at Contractor's expense, to determine compliance of replaced or additional work with specified requirements.

3.6 CLEANING

- A. Clean aluminum and stainless steel by washing thoroughly with water and soap, rinsing with clean water, and wiping dry.
- B. Clean copper alloys in accordance with metal finisher's written instructions in a manner that leaves an undamaged and uniform finish matching approved Sample.
- C. Clean and polish glass as recommended in writing by manufacturer. Wash both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion.
- D. Clean wood rails by wiping with a damp cloth and then wiping dry.

3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

SECTION 07 52 00

MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Modified Bitumen roofing, torch applied with mineral surface, including insulation and accessories as outlined below and shown on Drawings.
- B. Related Sections:
 - 1. Section 01 20 00 – Price and Payment Procedures.
 - 2. Section 07 52 00 – Modified Bitumen Roofing
- C. Alternate #1: Change roofing from Modified Bitumen to TPO.

1.2 SUBMITTALS

- A. Product Data: Within 5 days of receipt of "Notice to Proceed", submit 5 typewritten copies of a material list of all items proposed to be furnished and installed on this project. Include a photocopy of the manufacturer's qualified applicator certificate.

1.3 QUALITY ASSURANCE

- A. Installer: Licensed applicator of specified system, approved by manufacturer; must have completed at least 3 projects equal in size and scope.
- B. Review project requirements with manufacturer's representative. Pay all required fees and secure all required inspections.

1.4 DELIVERY, STORAGE AND HANDLING

- A. No materials are to be delivered to the site without proper arrangements for placement, storage and protection from the weather.
- B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.
- C. Storage: Store in enclosed trailer, van or truck storage on the job site. Store out of direct exposure to the elements. Store roll goods on end on a clean, flat surface. Protect against moisture. Plastic sheeting is not acceptable.

1.5 PROJECT / SITE CONDITIONS

- A. Do not install membrane during inclement weather (including any precipitation) or when air temperature may fall below 40 degrees F, including wind chill.

- B. Do not proceed if roofing cannot be installed without phasing, as specified below.

1.6 PHASING

- A. Do not phase the application of the roofing system. Schedule and regulate roofing activities in order to complete each day's Work in a weathertight condition. Application of roofing must immediately follow application of insulation as a continuous operation.
- B. Schedule Work to cause no disruption of the Work by other trades. Do not move or haul equipment over finished areas of new Work.
- C. At the end of day's work, or when precipitation is imminent, build a water cut-off at all open edges. Build using asphalt or plastic cement and roofing felts, to withstand protracted periods of service. Remove completely prior to the resumption of roofing.
- D. Suspend application in situations where the adhesive cannot be kept at temperatures allowing for even distribution.

1.7 WARRANTIES

- A. Installer's and General Contractor's Co-signed Warranty:
 - 1. Furnish, in duplicate, on company's printed letterhead, the following written warranty before final payment will be made.

ROOFING AND SHEET METAL GUARANTEE

First Community Bank
Lepanto, AR

We guarantee to promptly repair and replace, without further cost to the Owner, the whole or any part of the materials which prove defective through workmanship or improper materials within 2 years of the date of final acceptance of the building. This includes damage to the building, caused by defective workmanship and/or improper materials or that which is caused by repair or replacement of defective materials or workmanship.

This guarantee is jointly and severally warranted by:

(Roofing Subcontractor)

(General Contractor)

- 2. Document any problems including location and corrective action needed or taken.

- B. Manufacturer's Warranty and Responsibilities:
 - 1. Upon acceptance of the roofs, issue a continuance of material's manufacturer's

approved 20 year warranty with no dollar limit starting from date of final acceptance of the completed roofing system, for the renovation.

2. Submit one copy on manufacturer's standard printed form to the Architect with one copy for the Owner. Surety company bonds are not acceptable as a warranty.
3. Inspect Work during installation and at final completion for conformance to warranty. Make a follow-up inspection 60 days prior to expiration of installer's 2 year guarantee.
4. If requested by the Owner, document any problems concerning leaks or defects, including location and corrective action taken or needed to prevent future occurrences.

PART 2 PRODUCTS

2.1 ROOF SYSTEM

- A. Paradiene 20/30 by Siplast is specified.
- B. Substitutions:
 1. Holcim (Firestone), SBS Premium Base Sheet, SBS Metal Flash-Al, and SBS Cap Sheet Premium FR Cap.
 2. Manville, Dynaply base sheet, flashing and DynaKap cap sheet.
 3. Tamko, Awaplan Versa Smooth Base Sheet, and Awaplan Premium FR Cap Sheet, and approved metal flashing.

2.2 ROOFING MATERIALS

- A. Base Sheet: Glass-reinforced asphalt elastomer sheet having a minimum weight of 58 lbs./sq., type Paradiene 20.
- B. Roof Membrane: Glass-reinforced asphalt elastomer sheet with mineral surfacing having a minimum weight of 58 lbs./sq., type Paradiene 30.
- C. Flashing:
 1. Flashing Membrane: Aluminum clad asphalt elastomer glass-reinforced sheet of 90 pounds/square minimum weight; type Veral.
 2. Reinforcing Membrane: Glass reinforced asphalt elastomer sheet having a minimum weight of 58 lbs./square, type Paradiene 20.

2.3 ACCESSORIES

- A. Installer's Warranty Sign: Ten inches high by fourteen inches wide. 0.040" thickness, mill finish aluminum. Paint with white, gloss enamel, alkyd paint, with gloss black alkyd paint lettering to read:

"DO NOT MAKE REPAIRS OR ALTERATIONS TO THIS ROOF WITHOUT WRITTEN APPROVAL FROM THE OWNER OR AUTHORIZED REPRESENTATIVE. THE ROOF IS MAINTAINED UNTIL (insert the month and two years after the date of final acceptance) BY (insert Contractor's name, address, and telephone)."
- B. Plastic Cement: Asphalt cutback, reinforced with non-asbestos fibers, type PA-1021.

- C. Pitch Pan Filler: Two component, cold applied, polymeric asphalt compound of pouring consistency, type PS-174.
- D. Roof Protection Material: Chopped, rubber particles and synthetic binders; roll width of 30.7 inches, minimum thickness of 310 mils, type Trafbloc.
- E. Roof Hatch: Bilco Model S, 30" x 36", 11 gage aluminum, with Ladder-UP safety post, or approved equal.
- F. Refer to Section 07 62 00 for Sheet Metal. Install roof metal that is embedded in or in contact with, and is an integral part of the roofing system.

2.4 INSULATION MATERIALS

- A. Manufacturers: Products by Manville are specified. Equal or superior products will be considered for substitution.
- B. Insulation:
 - 1. Insulating Layers: AC Foam II, as manufactured by Atlas; rigid insulation board composed of a closed cell polyisocyanurate foam core bonded in the foaming process to universal fiber glass reinforced facer.
 - 2. Top Layer: ½" Dens Deck Prime.
 - 3. Provide crickets as detailed and as required. Taper crickets 1/4"/ft min.
- C. Total insulation R value must be a minimum of R-20. A minimum of two layers must be provided with joints staggered. Final layer must be mopped on.

2.5 EQUIPMENT

- A. Provide equipment, barricades and flagging to protect other trades and workmen. Flag or barricade around equipment and work areas, ladders, scaffolding and vehicles used in debris removal.

PART 3 EXECUTION

3.1 PROTECTION

- A. Roof Top Protection:
 - 1. Protect roof surfaces over which Work is to be performed. Exercise caution and care that roofing materials placed on roof top do not overload structure, damage deck or roof top equipment.
 - 2. Take care to prevent aggregate and debris from running into and clogging roof drains and water conductors.
- B. Building Protection:
 - 1. Protect building and Work of other trades from damage by roofing materials during the installation of the Work.
 - 2. Prevent any damage to the roof system or interior of the building in use of power-driven or heavy equipment.

- C. Grounds Protection: Protect grounds from damage during roofing Work.
- D. Provide a working fire extinguisher on the roof for each workman using a torch and at the asphalt kettles.

3.2 PREPARATION

- A. Fully adhere first layer of insulation to new deck. Lay second layer of insulation with joints staggered from first layer.
- B. Mechanically attach layer of protection board in accordance with insulation manufacturer's instructions.
- C. Apply flexible flashings to seal membrane to vertical elements. Extend base flashing up back side of wall approximately 8" above cants. Coordinate installation of related flashings.
- D. Flash lead jacks into roof system per membrane manufacturer's recommendations. Fold down all lead jacks into top of pipes 3/4" minimum. Plumbing pipes broken by workmen shall be replaced or repaired.

3.3 INSTALLATION

- A. Application of roofing system must be in accordance with manufacturer's instructions and the following requirements.
- B. Prime metal flanges with a uniform coating of asphalt primer. Set all flanges in a smooth, even continuous coating of plastic cement.
- C. Lay all layers of roofing free of wrinkles, creases or fishmouths and at right angles to the slope of the deck. Lay sheets directly behind the asphalt/adhesive applicator. Exert sufficient pressure on the roll during application to ensure prevention of air pockets. Paradiene 20 must be fully bonded to the prepared substrate and have a minimum of three inch side and end laps. Fully bond Paradiene 30 to Paradiene 20 surface with a minimum of three inch side and end laps. Stagger lap seams in the Paradiene 20 layer to ensure they do not coincide with the laps of the Paradiene 30 layer.
- D. Flashing:
 - 1. Lap reinforcing sheet minimum three inches to itself and extend a minimum of four inches onto the Paradiene 20 surface and three inches up the parapet wall.
 - 2. Lap the flashing sheet a minimum of three inches to itself and extend a minimum of six inches onto the Paradiene 30 surface and eight inches up the parapet wall.
 - 3. Lap seams in the reinforcing layer must never coincide with the laps of the Veral layer.

4. Adhere reinforcing sheet by a mopping of asphalt and mechanically attach to wall at the leading edge.
 5. Adhere flashing sheet and mechanically attach to wall at the leading edge. Cut off all flashing sheets from the end of the roll and apply vertically, always working to a selvage edge.
 6. Apply flashings to seal membrane to vertical elements, curbs, items penetrating membrane, and other surfaces indicated, and where required to complete the installation in accordance with roofing materials manufacturer's specifications for the warranty required.
- E. Apply roof protection material over roofing membrane as shown on Drawings, and as required for access to rooftop units. Cut panels from roll in lengths not exceeding 6 feet, invert and apply in the inverted position. Install with open joints to allow free drainage.
- F. Clean and prime interior of all pitch pans and the projection passing through the pitch pan. After primer has dried thoroughly, completely fill with pitch pan filler, sloped to channel water to the roof.
- G. Flash lead jacks into roof system per membrane manufacturer's recommendations. Fold down all lead jacks into top of pipes 3/4" minimum. Plumbing pipes broken by workmen shall be replaced or repaired.
- H. Seal all edges of roofing membrane exposed at gravel stops, waste stacks, vent stacks etc. Coordinate with Section 07900 for sealer.

3.4 FIELD QUALITY CONTROL

- A. Provide safe access to the roof for observation by the Architect.
- B. When necessary to determine compliance, cut test samples of installed roof. Immediately repair roof to conform to adjacent construction.
- C. Correct any defective Work as determined by inspection or analysis of test samples, at no cost to the Owner.
- D. Designate an installer-approved representative to be responsible for the following:
 1. Follow application of roofing Work from start to finish.
 2. Attend pre-installation conference and be informed of the scope and procedures of Work.

3.5 CLEANING

- A. Remove trash and debris from the site periodically.
- B. Remove all equipment and surplus material from the grounds prior to final acceptance of the Work. Rake the grounds to its previous condition.

- C. Permanently post installer's warranty signs where directed by the Architect prior to submission of, and as a condition for final application for payment.

END OF SECTION

SECTION 07 53 00

THERMOPLASTIC-POLYOLEFIN ROOFING (ALT. #1)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Adhered membrane roofing system.
 - 2. Cover board.
 - 3. Rigid insulation board.
 - 4. Roof hatch.
 - 5. Walkway protection pads.
- B. Related Sections:
 - 1. Section 01 20 00 – Price and Payment Procedures.
 - 2. Section 07 52 00 – Modified Bitumen Roofing
- C. Alternate #1: Change roofing from Modified Bitumen to TPO.

1.2 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 “Terminology Relating to Roofing and Waterproofing”; glossary of NRCA's "The NRCA Roofing and Waterproofing Manual"; and the Roof Consultants Institute “Glossary of Roofing Terms” for definition of terms related to roofing work in this Section.
- B. Sheet Metal Terminology and Techniques: SMACNA Architectural Sheet Metal Manual.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and Flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Jobsite Safety: Execute all operations and provide a safe work environment in accordance to OSHA standards and regulations. This requirement applies to all contractor personnel, associated subcontractors, workers in other trades, and jobsite visitors.
 - 1. Follow all industry fire prevention guidelines for storage of materials, staging areas, roof access, and application means and methods.
 - 2. Any applicable local fire codes supersede industry guidelines.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Flashings and membrane terminations.
 - 2. Insulation fastening patterns.
 - 3. Sheet layout with perimeter and corner defined.
- C. Installer Certificates:
 - 1. Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system as specified. Provide documentation complying with "Quality Assurance" as specified in Paragraph 1.5 of this Section.
 - 2. Installer shall submit documentation that there are no undocumented workers being employed by their company and that all workers on this project are covered by workmen's compensation.
- D. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of meeting performance requirements.
- E. Qualification Data: For Installer and manufacturer.
- F. Maintenance Data: For roofing system to include in maintenance manuals.
- G. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive the specified manufacturer's warranty.
- B. Manufacturer Qualifications: A qualified manufacturer for membrane roofing system identical to that used for this Project.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain all components from single source roofing manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.
- E. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.
- F. Consult container labels and material safety data sheets (MSDS) for specific safety instructions.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.8 WARRANTY

- A. Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections.
- B. Red Shield no dollar limit, non-prorated warranty from the manufacturer of the roofing membrane as follows with no exceptions.
 1. Warranty Coverage: 20-years, no dollar limit.
 2. Warranty shall be transferable and transfer cannot be at manufacturer's discretion nor require an inspection but shall be transferable upon notification in writing to manufacturer and payment of the standard transfer fee.
 3. Warranty coverage to include: roofing membranes, insulation, fasteners, clips, adhesives, accessories, and edge metal/coping system.
 4. The warranty shall cover metal finishes, materials, labor and correct and incorrect workmanship on system installation, seaming and/or flashing. Manufacturer cannot exclude unapproved details or workmanship. Also includes accidental cuts and punctures
 5. All roofing systems tie-ins, flashing and terminations must be covered under the Warranty.
 6. Warranty will begin upon completion of the project and warranty application procedures and cannot defer warranty coverage to installing contractor for any period of warranty coverage.
- C. Inspect roof system at completion of installation. Manufacturer cannot deny coverage for any items not installed in compliance with manufacturer's application requirements and standards after warranty is issued or as a part of terms and conditions of the warranty. The manufacturer's technical field representative/inspector will conduct final inspections. The manufacturer field representative must be a non-sales employee of the roofing system manufacturer who is responsible for field quality control and contractor training.
- D. General Contractor and Roofing Subcontractor: Required to jointly and separately provide written guarantee that the roofing and flashing will be weathertight and free from defects in materials and workmanship for a period of 2 years from Final Acceptance Date.
 1. Leaks and defects include blistering, fishmouths, ridging, splits, open laps, buckles, wrinkles and slippage. Make corrections at Contractor's expense during guarantee period.
 2. Roofing inspection and written acceptance by manufacturer, Architect, and Owner will be required. In addition, roofing subcontractor is to schedule a joint inspection by above named parties 60 days prior to expiration of 2 year guarantee and correct defects complying with original specifications.

PART 2 - PRODUCTS

2.1 ROOFING SYSTEM

- A. Manufacturer: Holcim (formerly Firestone)
- B. Description: Reinforced, ULTRAPLY TPO synthetic single-ply membrane composed of Thermoplastic Polyolefin polymer, and Ethylene Propylene Rubber.
 - 1. Membrane Type: .060 Reinforced TPO OR .060 Reinforced TPO SA

Testing	Minimum Values	Typical values (SI Units)
Thickness, min, mm (in.)		
Sheet-overall	1.0 (0.039)	0.060± 10%
Coating over scrim	0.015"	0.021"± 10%
Tensile strength, min, MPa (psi)	NA	
Breaking strength, min, kN (lbf)	220 lbf	390 lbf
Elongation, ultimate, min, %	NA	
Elongation at break, min, %	15%	25%
Tensile set, max, %	NA	
Tear strength, min, kN/m (lbf/in.)	NA	
Tearing strength, min, N (lbf)	55 lbf	120 lbf
Brittleness point, max, °C (°F)	-40	Pass
Ozone resistance, no cracks	Pass	Pass
Properties after heat aging: (retained values)		
Tensile strength, % min	NA	
Breaking strength, % min	90%	90%
Elongation, ultimate, % min	NA	
Elongation at break, % min	90% ^A	90%
Tear strength, % min	NA	
Tearing strength, % min	60% min	>60%
Weight Change (Mass), max %	±1% max	<1%
Linear dimensional change, max, %	±1% max	<1%
Water absorption, max, mass %	±3%	<3%
Factory seam strength, min, kN/m (lbf/in.)	75% of Sheet strength	75% of Sheet strength

2.2 AUXILIARY MATERIALS

- A. Membrane Adhesive: UltraPly Bonding Adhesive; Butyl-based, formulated for compatibility with the ULTRAPLY TPO membrane and a wide variety of substrate materials, including masonry, wood, insulation facings.

- B. 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.
- C. Formable Flashing: Non-reinforced, flexible, heat weldable sheet, composed of thermoplastic polyolefin polymer and ethylene propylene rubber.
 1. Thickness: 0.060 inch plus/minus 10 percent.
 2. Tensile Strength: 1550 psi (10.7 MPa), minimum, when tested in accordance with ASTM D 638 after heat aging.
 3. Elongation at Break: 650 percent, minimum, when tested in accordance with ASTM D 638 after heat aging.
 4. Tearing Strength: 12 lbf (53 N), minimum, when tested in accordance with ASTM D 1004 after heat aging.
 5. Color: Grey.
 6. Acceptable Product: ULTRAPLY TPO Flashing by Firestone.
- D. Tape Flashing: 5-1/2 inch (140 mm) nominal wide TPO membrane laminated to cured rubber polymer seaming tape, overall thickness 0.065 inch (1.6 mm) nominal; TPO QuickSeam Flashing by Firestone.
- E. Pourable Sealer: Two-part polyurethane, two-color for reliable mixing; Pourable Sealer by Firestone.
- F. Seam Plates: Steel with barbs and Galvalume coating; corrosion-resistance complying with FM 4470.
- G. 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.
- H. Cut Edge Sealant: Synthetic rubber-based, for use where membrane reinforcement is exposed; UltraPly TPO Cut Edge Sealant by Firestone.
- I. General Purpose Sealant: EPDM-based, one part, white general purpose sealant; UltraPly TPO General Purpose Sealant by Firestone.
- J. 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.
- K. Walkways: Firestone UltraPly TPO Walkway material.

2.3 ROOF INSULATION AND COVER BOARDS

- A. Tapered Polyisocyanurate Board Insulation: Tapered, closed cell polyisocyanurate foam with glass-reinforced mat laminated to faces, complying with ASTM C 1289 Type I Class 1, with the following additional characteristics:
 1. Thickness: As required to meet minimum R20; minimum 2 layers.
 2. Size: 48 inches by 48 inches, nominal.
 3. Compressive Strength: 20 psi (138 kPa) when tested in accordance with ASTM C1289.
 4. Ozone Depletion Potential: Zero; made without CFC or HCFC blowing agents.
 5. Recycled Content: 19 percent post-consumer and 15 percent post-industrial, average.

6. Attachment: Fully adhered.

B. Cover Board: Dens Deck with the following additional characteristics:

1. Size: 48 inches by 96 inches, nominal.
2. Thickness: 1/4".
3. Water Absorption: ASTM C 209.
4. Water Vapor Transmission of Materials: ASTM E 96.
5. Compressive Strength: ASTM D 1621.
6. Density: ASTM D 1622.
7. Dimensional Stability: ASTM D 2126.
8. Flame Spread: ASTM E 84.
9. Attachment: Mechanical fastening thru insulation board into roof deck.

2.4 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Provide factory preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and provided by roofing system manufacturer.
- D. Crickets: ASTM C 1289; provide factory-tapered insulation boards fabricated to slope of ¼" per foot unless otherwise indicated. Product must be manufactured by company providing roofing system warranty.

2.5 ACCESSORY MATERIALS

- A. 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 in accordance with Section 06 10 00.
 1. Width: 3-1/2 inches nominal minimum, or as wide as the nailing flange of the roof accessory to be attached to it.
 2. Thickness: Same as thickness of roof insulation.
 3. Reference Standards:
 - a. Southern Pines: PS 20; SPIB Grading Rules.
 - b. Western Woods: PS 20; WWPA Grading Rules
 - c. Plywood: PS 1; APA Grade Stamps.
 - d. Pressure preservative treatment: AWPB LP2.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- C. Roof Hatch: Bilco Model S, 30" x 36", 11 gage aluminum, with Ladder-UP safety post, or approved equal.

- D. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, and other accessories.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine roof deck to determine that it is sufficiently rigid to support roofers and their mechanical equipment and that deflection will no strain or rupture roof components or deform deck.
- B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.
- C. Examine roof substrate to verify that it is properly sloped to drains.
- D. Start work with sealants and adhesives at 60° - 80° F.
- E. Fumes from adhesive solvents may be drawn into the building during installation through rooftop intakes. Appropriate measures must be taken to assure that fumes from adhesive solvents are not drawn into the building through air intakes.
- F. The surface must be clean, dry, smooth, free of sharp edges, fins, loose or foreign materials, oil, grease and other materials that may damage the membrane, All roughened surfaces, which could cause damage, shall be properly repaired before proceeding.
- G. All surface voids of the immediate substrate greater than 1/4" wide must be properly filled with an acceptable insulation or suitable fill material.

3.2 PROTECTION OF OTHER WORK

- A. Protect metal, glass, plastic, and painted surfaces from adhesives and sealants.
- B. Protect neighboring work, property, cars, and persons from spills and overspray from adhesives, sealants and coatings and from damage related to roofing work.
- C. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trade.

3.3 PREPARATION

- A. Proceed with installation only after unsatisfactory conditions have been corrected. Beginning of installation constitutes acceptance of substrate and all conditions.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.4 INSULATION AND COVER BOARD INSTALLATION

- A. General:
 - 1. 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.

2. Lay roof insulation in courses parallel to roof edges.
 3. Neatly fit insulation to all penetrations, projections, and nailers. Fit insulation tightly, with gaps not greater than 1/4". Fill all gaps greater than 1/4" with acceptable insulation. Under no circumstances shall the roofing membrane be left unsupported over a space greater than 1/4". Install tapered insulation around roof drains so as to provide proper slope for drainage. Miter roof insulation edges at ridge, valley and other similar non-planar conditions.
 4. Stagger all joints between layers at least 6 in.
- B. Attach base layer, top layer, crickets, and cover board with Firestone Insulation Adhesive at a rate specified by the roofing manufacturer to meet the required Warranty requirements.
 - C. Place board into the adhesive while it is still tacky. If adhesive reaches its tack-free state, remove and re-apply adhesive.
 - D. Press the thermal protective layer into the adhesive to a firm and uniform bearing.
 1. Use ballast on all four corners of the board for a minimum of 30 minutes to ensure contact of material and adhesive, if necessary.
 - E. Comply with membrane roofing system manufacturer's written instructions for installing roof cover board.
 - F. Install cover board with long joints of cover board in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with cover board.
 1. Cut and fit cover board within 1/4 inch of nailers, projections, and penetrations.
 - G. Trim surface of cover board where necessary at roof drains so completed surface is flush and does not restrict flow of water.
 1. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

3.5 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Starting at the low point of the roof, place the membrane panels without stretching over the acceptable substrate. Position subsequent membrane sheets in the same manner, overlapping the ends of adjoining sheets a minimum of 3" and side laps a minimum of 6". Install panels to ensure that laps shed water.
- C. Where UltraPly TPO Membrane has been cut to expose reinforcing membrane, Firestone's UltraPly TPO Cut Edge Sealant or UltraPly TPO General Purpose Sealant must be used to encapsulate exposed edge.

3.6 MEMBRANE LAP SPLICING

- A. Lap splice areas that have been contaminated must be wiped down with a dry or damp (water only) clean cloth prior to heat welding and allow to completely dry.

- B. All field and flashing splices on the horizontal surface shall be completed using an automatic heat welder that has been designed for hot air welding of thermoplastic Olefin membranes.
- C. Hand held welders are only to be used on vertical welds or where an automatic welder is not practical or cannot be used.
- D. Seams made with the automatic welder shall be a minimum of 1-1/2" wide. Seams made with hand welders shall be a minimum of 2" wide. Use 2" side silicone or silicone coated steel hand rollers to assure proper mating of surfaces as hand heat welding proceeds.
- E. Probe all completed welds using a slotted screwdriver or cotter pin puller type tool to verify seam integrity. Do not probe welds until they have had time to cool to ambient conditions. Any welds found to be insufficiently welded need to be repaired on a daily basis.

3.7 MEMBRANE SECUREMENT

- A. Secure membrane at all locations where the membrane terminates or goes through an angle change greater than 1" in 12" except for round pipe penetrations less than 18" in diameter and square penetrations less than 4" square.
 - 1. Mechanically fasten Firestone Seam Plates with Firestone Fasteners in accordance with Firestone Details.
 - 2. Install UltraPly membrane as flashing.

3.8 FLASHING - PENETRATIONS

- A. General:
 - 1. Flash all penetrations passing through the membrane.
 - 2. The flashing seal must be made directly to the penetration.
- B. Pipes, Round Supports, etc.:
 - 1. Flash with Firestone Pre-Molded UltraPly TPO Pipe Flashings where practical
 - 2. Flash using UltraPly TPO unsupported Flashing membrane when Pre-Molded Flashing is not practical.
- C. Structural Steel Tubing:
 - 1. Use a field fabricated pipe-flashing detail provided that the minimum corner radius is greater than 1/4" and the longest side of the tube does not exceed 12". When the tube exceeds 12": use a standard curb detail.
- D. Roof Drains:
 - 1. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.
 - 2. Taper insulation around the drain to provide a smooth transition from the roof surface to the drain. Use pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope. Slope shall not exceed Firestone recommendations.
 - 3. Position the UltraPly TPO membrane, then cut a hole for the roof drain to allow 1/2" - 3/4" of membrane extending inside the clamping ring past the drain bolts.
 - 4. Make round holes in the UltraPly TPO membrane to align with clamping bolts. Do not cut the membrane back to the bolt holes.
 - 5. Place Water Block Seal on top of drain bowl where the clamping ring seats below membrane.

6. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve constant compression.
- E. Pipe Clusters and Unusual Shaped Penetrations:
 1. Fabricate penetration pockets to allow a minimum clearance of 1" between the penetration and all sides.
 2. Secure penetration pockets per Firestone Details.
 3. Fill penetration pockets with Pourable Sealer, so as to shed water.
 - F. Hot Pipes:
 1. Protect the UltraPly TPO components from direct contact with steam or heat sources when the in-service temperature is in excess of 140 °F. In all such cases flash to an intermediate insulated "cool" sleeve per Firestone details.
 - G. Flexible Penetrations:
 1. Provide a weather tight gooseneck set in Water Block Seal and secured to the deck.
 2. Flash in accordance with Firestone Details.

3.9 FLASHING - WALLS, PARAPETS, MECHANICAL EQUIPMENT, CURBS

- A. General: Using the longest pieces practical, flash all walls, parapets, curbs, etc., a minimum of 8" high per Firestone Details.
- B. Evaluate the substrate and overlay per Firestone specifications as necessary.
- C. Apply UltraPly TPO Bonding Adhesive at about the same time to both the membrane flashing and the surface to which it is being bonded so as to allow approximately the same drying time. Apply Bonding Adhesive by rolling the adhesive on to the mating surfaces evenly, avoiding globs or puddles.
- D. Allow UltraPly TPO Bonding Adhesive to flash off until tacky. Touch the Bonding Adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, pushing straight down to check for stringing, also push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating. Flash off time will vary depending on ambient air conditions.
- E. Roll the flashing into the adhesive evenly and carefully so as to minimize wrinkles.
- F. To ensure proper contact, compress the flashing to the substrate with a stiff push broom.
- G. Complete the splice between membrane flashing and the main roof sheet by hot air welding. Provide lap splices in accordance with Firestone Details.
- H. Provide termination directly to the vertical substrate as shown in Firestone Details.
- I. Install UltraPly TPO T-Joint covers at field and flashing splice intersections as required by Firestone.
- J. Install intermediate flashing attachment as required by Firestone Specifications and Details.

3.10 FLASHING - GRAVEL STOPS OR ROOF EDGE METALS

- A. Flash all gravel stops or roof edges using as outlined in Firestone Details.

3.11 TEMPORARY CLOSURE

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

3.12 ROOF WALKWAYS

- A. Heat weld the perimeters of the walkway material to the UltraPly TPO membrane per Firestone specifications. Refer to Drawings for location.

3.13 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed as required by the manufacturer.
- B. Correct identified defects or irregularities.

3.14 CLEAN-UP

- A. Clean all contaminants from building and surrounding areas.
- B. Remove trash, debris, equipment from project site and surrounding areas.
- C. Repair or replace damaged building components or surrounding areas to the satisfaction of the building owner.

END OF SECTION