



Tremco, Inc.
151 Liberty Street, Fairhope, AL, 36532 Tel: 251-583-1341

An **RPM** Company

September 16, 2014

City of Foley
DC Randy Bishop
Police Station/Justice Ctr
200 E. Section Ave, Foley, AL 36535

Dear Mr. Bishop and Staff,

Thank you for allowing Tremco Roofing and Weatherproofing Technologies Inc. (WTI) to deliver the following roof analysis and recommendations for the Justice Center. The report addresses the six (6) low-slope, SBS-modified bitumen roof sections, totaling approximately 28,000 square feet.

Diagnostics

Infrared Roof Scan diagnostics were completed at the facility on August 9th, with final reporting and analysis provided back to the Owner on August 22nd. The primary goal was to identify the areas where water was entering the roof system and building, so those areas could be repaired or replaced. The secondary goal was to determine if the roof system was a viable restoration candidate based on those same findings.

Scan Results

Scan results confirmed that approximately 1,700 square feet of existing roof system is saturated and in need of immediate removal and replacement. A total of fourteen (14) separate areas were identified, with only two (2) of those areas being small enough for our techs to repair on-site. The remaining twelve (12), more sizeable areas were left to be addressed by the Owner at a later date.

Analysis & Conclusions

When diagnostics conclude that a roof is more than 20% saturated, then the only option is tear-off and replacement. In that regard, too many design flaws exist to be rectified through remedial measures. Fortunately in this instance, despite the high number of wet areas found, our 6% calculation falls well below that benchmark. Therefore, this roof has been categorized as a legitimate restoration candidate. Benefits of that process include:

- ❖ **Cost:** Restoration is approximately 30%-40% of the cost of full replacement, with comparable warranty terms. A positive ROI is realized through monies saved, as those funds can now be put towards revenue-producing opportunities.
- ❖ **Time:** Restoration can be completed in under half the time of a re-roofing project and can often be completed in phases.
- ❖ **Financial:** Restoration projects are totally deductible in the year the work is completed. No need to amortize cost over 39 years according to current IRS law.
- ❖ **Operations:** Restoration will not cause the noise or disruption in everyday operations at the facility like a full-scale, re-roofing construction project would.
- ❖ **Environment:** Restoration helps achieve a "green" solution, by keeping existing roof materials out of the local landfill.





Recommendations

The action items listed below have been prioritized based on anticipated level of urgency. Budget estimates have been provided below each. A “phased” type of approach such as this will help with budget planning, and at the same time stop leaks and help get the roof back to satisfactory condition.

Phase 1: Wet Replacement

Targeted Completion Date: October '14: Saturated areas to be removed and replaced with specified materials in order to stop active leaks and create a compatible, waterproof base before coating application. Modifications to existing design include adding tapered insulation system and crickets, to prevent reoccurring issues in the same problem areas.
Phase 1, Cost Estimate= \$79,000

Phase 2: Remedial Repairs

Targeted Completion Date: December '14: Remedial maintenance items include removal of failed sealants and re-sealing of coping joints, repair of roof membrane blisters, repair of damaged wall flashings, replacing missing drain strainers and stripping-in drain flashings.
Phase 1, Cost Estimate = \$15,000

Phase 3: Preventative Maintenance

Targeted Completion Date: Spring '14: Once wet areas have been removed and remedial repairs completed, the roof will be ready to place under a “leak-protection warranty and maintenance program” until funds are made available for restoration. The program can be implemented up to 2 years if needed. Maintenance & Inspections will take place quarterly.
Phase 3, Cost Estimate = \$11,500

Phase 4: Roof Restoration

Targeted Completion Date: November '15- November '16: Perform 2nd Infrared Scan to ensure roof has remained dry during this process. Remove any wet areas if found. Reinforce all horizontal field laps with mastic and polyester as prep. for top coating. Apply an aliphatic urethane coating to all roof surfaces and flashings. Provide a 10-15 Year Labor & Materials Warranty. Phase 4, Cost Estimate @ \$7.25 sf = \$203,000

Adverse weather conditions may accelerate the depreciation of this roof beyond our control, and unfortunately we cannot predict future weather patterns. So should any of these “targeted completion dates” become unattainable, it will become imperative that they are fast-tracked at the very next available opportunity. The end result worth achieving here is complete restoration, and our primary goal going forward will be to **minimize the risk of water infiltration** for this roof and building.

Additional Attachments

Please find technical specs and proposal for “Phase 1: Wet Replacement”, attached for your review.

Thank you for the opportunity to serve you!!! Sincerely Yours,

Patrick C. Williamson
Senior Field Advisor- Gulf Coast
Tremco Roofing and Building Maintenance
<http://www.rpminc.com/hpbs/>
Cell: (251) 583-1341



SECTION 075216 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, COLD-APPLIED

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including all Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing system over steel roof deck, including but not limited to:
 - a. Roof insulation.
 - b. Roof membrane and membrane base flashings.
 - c. Roof surfacing consisting of fire-rated, mineral granulated cap sheet.

1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer, and based on testing and field experience.
- C. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.
 - 1. Roof System Classification: 1A-90.
 - 2. Hail Resistance Rating: SH.
- D. Flashings and Fastening: Provide base flashings, perimeter flashings, detail flashings, component materials, and installation techniques that comply with requirements and recommendations of the following:
 - 1. FMG 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 - 2. FMG 1-29: Loss Prevention Data Sheet for Above Deck Roof Components. The number of roof fastener beads at the perimeters and corners will be increased to comply with ratings.
 - 3. NRCA Roofing and Waterproofing Manual (most recent edition) for construction details and recommendations.
 - 4. SMACNA Architectural Sheet Metal Manual (most recent edition) for construction details.

1.5 QUALITY ASSURANCE

- A. There shall be no deviations made from these specifications or drawings without the prior written approval of The Owner and the authorized manufacturer's representative.
- B. Manufacturer Qualifications: Qualified manufacturer shall be UL listed, FM approved, and certified as ISO 9001:2008 for built-up roofing identical to that used for this Project.
- C. Installer Qualifications: A commercial roofing contractor certified by the manufacturer to install new membrane roofing system.
 - 1. Licensed to perform in state or jurisdiction where Project is located.

2. Contractor must include a full-time on-site supervisor with a minimum of five (5) years of experience installing similar work.
3. No sub-contractors will be permitted to perform work on site for this project.
- D. Roofing Inspector: Roofing Inspector's quality assurance inspections shall comply with criteria established in ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."
 1. Inspector Qualifications: Authorized, full-time technical representative of the manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification.
 2. Daily Inspections: Inspector shall provide Daily Field Reports and Pictures of the Work as deemed appropriate by the Owner and the manufacturer's field representative.
 3. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion. Provide 72-hours advanced notice to Owner, Technical Inspector, and Manufacturer's Field Advisor.
- E. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- F. Pre-Construction Meeting: Conduct conference at Project site prior to work beginning.
 1. Meet with Owner, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 5. Review all bonding, insurance, and any other required certifications.
 6. Review temporary protection requirements for roofing system during and after installation.
 7. Review roof observation and repair procedures after roofing installation.

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, approval and listing agency markings, 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.
- 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. The plastic shipping wrap is not intended as a waterproof cover.
- E. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of roof deck.
- F. Materials damaged in handling or storage shall not be used. Unsalvageable materials shall be replaced at the contractor's expense.
- G. Material Safety Data Sheets shall be provided and reviewed.

1.7 JOB SITE CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to warranty requirements.
- B. Roof systems shall not be installed during periods of precipitation, or under other certain adverse weather conditions (temperature, humidity). Contact manufacturer for precautions that should be followed.

- C. Only as much of the new roofing as can be made weather-tight each day shall be completed in accordance with the technical specifications, including all field flashings.
- D. All surface areas to receive new insulation, membrane, or flashings, shall be thoroughly dry. Should surface moisture occur, the contractor shall provide necessary materials and equipment to dry the surface area affected prior to installation.
- E. All areas contaminated by dirt, debris, and dust shall be cleaned from surfaces by vacuuming, sweeping, or power blowing.
- F. The roofing contractor shall take measures necessary to avoid damage to the roof system during construction.
- G. When storing material on the roof and during application, the roofing contractor shall ensure that overloading of the deck and structure does not occur.
- H. Temporary water-stops shall be installed at the end of each day's work, and shall be removed before proceeding with the next day's work. Water-stops shall be compatible with all materials and shall not emit dangerous or incompatible fumes.
- I. Any deteriorated deck or flashing substrate which is discovered shall be promptly reported to the owner and the authorized manufacturer's representative.
- J. The roofing contractor shall investigate all existing roof drain lines. Non-functioning drains shall be reported to the owner's representative prior to job start. It is the responsibility of the roofing contractor to insure adequate connection of the drain to the drain lines.
- K. The roofing contractor shall investigate the structural deck on the building to determine the type and length of fastener required.
- L. If waste products, petroleum, grease, oil, solvents, mineral oil, or other contaminants come into contact with the roofing membrane, contact manufacturer for proper cleaning procedures. Site clean-up, including both interior and exterior building areas that have been affected by the roof installation, shall be completed to the Owner's satisfaction. All landscaped areas affected shall be raked clean and seeded, as required.

1.8 INFORMATION SUBMITTALS

- A. MSDS sheets for any products used during Project, as per request by Owner.
- B. Inspection Reports: Daily reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1.9 WARRANTY

- A. Installer's Warranty: Submit roofing Installer's warranty, signed by Installer, covering the Work of this Section and related Sections indicated above, including all components of built-up roofing such as built-up roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, and vapor retarders, for the following warranty period:
 - 1. Warranty Period: Two (2) years from date of Substantial Completion.

1.10 EXAMINATION REQUIREMENTS

- A. Contractor shall visit the site and carefully examine the areas in question as to conditions that may affect the proper execution of the work. All dimensions and quantities shall be determined or verified by the contractor. No claims for extra costs shall be allowed for lack of full knowledge of the existing conditions.

PART 2 - PRODUCTS

2.1 GENERAL

- A. New Products Only
 - 1. Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products and may not be used.

2. Items not stored as part of contractor's inventory. Products stored in a warehouse or off-site storage facility may not be used.

2.2 SBS-MODIFIED ASPHALT SHEET MATERIALS

- A. Base & Ply Sheet: Burmastic Composite Ply HT: Non-perforated, SBS modified, asphalt-coated, fiberglass/fiberglass/polyester reinforced sheet dusted with fine mineral surfacing on both sides which meets the requirements of ASTM D 4601, Type II, and the following properties:
 1. Tensile Strength, minimum, ASTM D 5147: machine direction, 165 lbf/in (28.9 kN/m); cross machine direction, 150 lbf/in (26.3 kN/m).
 2. Tear Strength, minimum, ASTM D 5147: machine direction, 210 lbf (0.9 kN); cross machine direction, 185 lbf (0.8 kN).
 3. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D 5147: machine direction, 6 percent; cross machine direction, 6 percent.
 4. Thickness, minimum, ASTM D 146: 0.055 inch (1.4 mm).
 5. Weight, minimum, ASTM D 228: 35 lb/100 sq. ft. (1.7 kg/sq. m.).
 6. Asphalt, minimum, ASTM D 228: 10 lb/100 sq. ft. (480 g/sq. m.).
- B. Cap Sheet: Powerply Standard Plus FR: ASTM D 6163, Grade G, Type II, glass-fiber-reinforced, SBS/SEBS/SIS modified asphalt sheet; granular surfaced; suitable for application method specified, and as follows:
 1. Exterior Fire-Test Exposure, ASTM E 108: Class A.
 2. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D 5147: machine direction 140 lbf/in (24 kN/m); cross machine direction 140 lbf/in (24 kN/m).
 3. Tear Strength at 73 deg. F (23 deg. C), minimum, ASTM D 5147: machine direction, 200 lbf (880 N); cross machine direction 200 lbf (880 N).
 4. Elongation at 73 deg. F (23 deg. C), minimum, at 5 percent maximum load ASTM D 5147: machine direction 40 percent; cross machine direction 40 percent.
 5. Low Temperature Flex, maximum, ASTM D 5147: -25 deg. F (-31 deg. C).
 6. Thickness, minimum, ASTM D 5147: 0.130 inch (3.3 mm).

2.3 FLASHING MATERIALS

- A. Backer Sheet: Burmastic Composite Ply HT: Non-perforated, SBS modified, asphalt-coated, fiberglass/fiberglass/polyester reinforced flashing sheet dusted with fine mineral surfacing on both sides which meets the requirements of ASTM D 4601, Type II, and the following properties:
 1. Tensile Strength, minimum, ASTM D 5147: machine direction, 150 lbf/in (26 kN/m); cross machine direction, 140 lbf/in (24 kN/m).
 2. Tear Strength, minimum, ASTM D 5147: machine direction, 210 lbf (0.9 kN); cross machine direction, 185 lbf (0.8 kN).
 3. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D 5147: machine direction, 6 percent; cross machine direction, 6 percent.
 4. Thickness, minimum, ASTM D 146: 0.055 inch (1.4 mm).
 5. Weight, minimum, ASTM D 228: 35 lb/100 sq. ft. (1.7 kg/sq. m.).
 6. Asphalt, minimum, ASTM D 228: 10 lb/100 sq. ft. (480 g/sq. m.).
- B. Flashing Sheet: Powerply Standard Plus FR: ASTM D 6163, Grade G, Type II, glass-fiber-reinforced, SBS/SEBS/SIS modified asphalt sheet; granular surfaced; suitable for application method specified, and as follows:
 1. Exterior Fire-Test Exposure, ASTM E 108: Class A.
 2. Tensile Strength at 73 deg. F (23 deg. C), minimum, ASTM D 5147: machine direction 140 lbf/in (24 kN/m); cross machine direction 140 lbf/in (24 kN/m).
 3. Tear Strength at 73 deg. F (23 deg. C), minimum, ASTM D 5147: machine direction, 200 lbf (880 N); cross machine direction 200 lbf (880 N).
 4. Elongation at 73 deg. F (23 deg. C), minimum, at 5 percent maximum load ASTM D 5147: machine direction 40 percent; cross machine direction 40 percent.

5. Low Temperature Flex, maximum, ASTM D 5147: -25 deg. F (-31 deg. C).
6. Thickness, minimum, ASTM D 5147: 0.130 inch (3.3 mm).
- C. Flashing Paint: Alumination 301: Premium-grade metallic pigmented, industrial maintenance coating, formulated from specially processed asphaltic liquids, non-drying oils, natural and synthetic fibers, and aluminum pigments for rust inhibiting.
 1. Asbestos Content: ASTM D 276: None.
 2. Solids by Weight: Minimum 62%
 3. Solids by Volume: Minimum 48%
 4. Reflectance (ASTM C 1549-02): Greater than 60%
 5. Metallic Content: Minimum 15%

2.4 SBS MODIFIED, COLD-APPLIED ADHESIVE MATERIALS

- A. Insulation Adhesive: Tremco Low-Rise Foam Adhesive: Solvent-free, cold fluid-applied, bituminous-urethane adhesive formulated to adhere roof insulation to substrate, with the following physical properties:
 1. Asbestos Content, EPA 600/R13/116: None.
 2. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 20 g/L.
 3. Non-Volatile Content, minimum, ASTM D 1644: 98 percent.
 4. Density at 77 deg. F (25 deg. C), minimum: ASTM D 1875: 8.5 lb/gal (1.01 kg/L).
 5. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D 412: 1200 percent.
 6. T-Peel Strength at 77 deg. F (25 deg. C), minimum: ASTM D 1876: 15 lbf (66 N).
 7. Adhesion Strength in Shear at 77 deg. F (25 deg. C), minimum, ASTM D 816: 80 psi (552 kPa).
 8. Low-Temperature Flexibility, maximum, ASTM D 816: -60 deg. F (-51 deg. C).
- B. Base and Ply Sheet Adhesive: Burmastic Adhesive: One-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with specified roofing membranes and flashings, with the following physical properties:
 1. Asbestos Content, EPA 600 R-93/116: None.
 2. Volatile Organic Compounds (VOC), maximum, ASTM D 6511: 320 g/L.
 3. Non-Volatile Content, minimum, ASTM D 6511: 72 percent.
 4. Flash Point, minimum, ASTM D 93: 100 deg. F (38 deg. C).
 5. Density at 77 deg. F (25 deg. C), minimum, ASTM D 6511: 8.5 lb/gal (1.0 kg/L).
 6. Uniformity and Consistency, ASTM D 6511: Pass.
 7. Asphalt Content, minimum, ASTM D 6511: 50 percent.
 8. Viscosity at 77 deg. F (25 deg. C), ASTM D 2196: 25,000 to 75,000 cP (25 to 75 Pa*s).
- C. Cap Sheet Adhesive: Burmastic Adhesive: One-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with specified roofing membranes and flashings, with the following physical properties:
 1. Asbestos Content, EPA 600 R-93/116: None.
 2. Volatile Organic Compounds (VOC), maximum, ASTM D 6511: 320 g/L.
 3. Non-Volatile Content, minimum, ASTM D 6511: 72 percent.
 4. Flash Point, minimum, ASTM D 93: 100 deg. F (38 deg. C).
 5. Density at 77 deg. F (25 deg. C), minimum, ASTM D 6511: 8.5 lb/gal (1.0 kg/L).
 6. Uniformity and Consistency, ASTM D 6511: Pass.
 7. Asphalt Content, minimum, ASTM D 6511: 50 percent.
 8. Viscosity at 77 deg. F (25 deg. C), ASTM D 2196: 25,000 to 75,000 cP (25 to 75 Pa*s).

2.5 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation:
 1. Tremco Trisotech-G: ASTM C 1289, Type II, Class 1, Grade 2, HCFC-free, with felt or glass-fiber mat facer on both major surfaces.
- C. Cover Board:

1. Tremco GP Dens-Deck Prime: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch (13 mm) thick, factory primed.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated or where defined by manufacturer for sloping to drain. Fabricate to slopes indicated.
- E. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions.
- F. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- G. Wood Cant Strips: Minimum #2 lumber, wolmanized or pressure-treated for rot resistance with a salt-based preservative. No creosote or asphaltic type preservations shall be allowed.
- H. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- I. Substrate Joint Tape: 6- or 8-inch-(150- or 200-mm-) wide, coated, glass-fiber joint tape.

2.6 AUXILLARY MATERIALS

- A. Sheet Metal Fasteners: Stainless Steel ring shank nails, min. 1.0" penetration into wood.
- B. Metal Flashing Sheet: Metal flashing sheet as recommended by manufacturer.
- C. Elastomeric Mastic: Polyroof LV: One-part, asbestos-free, trowel-grade, elastomeric roof mastic specially formulated for compatibility and use with specified roofing membranes and flashings, with the following properties:
 1. Asbestos Content, EPA 600/R13/116: None.
 2. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 300 g/L.
 3. Nonvolatile Matter, minimum, ASTM D 4586: 70 percent.
 4. Elongation at 77 deg. F (25 deg. C), minimum, ASTM D 412: 1000 percent.
 5. Recovery from 500 percent Elongation, minimum, ASTM D 412: 500 percent.
 6. Flexibility at -40 deg. F (-40 deg. C), ASTM D 3111: No cracking.
- D. Flashing Paint: Double-Duty Aluminum: Non-fibered, aluminum pigmented roof coating with the following physical properties:
 1. Asbestos Content, EPA/600/R-93/116: None.
 2. Non-volatile Matter, minimum, ASTM D 1644: 48 percent.
 3. Metallic Aluminum Content, minimum, ASTM D 2824: 15 percent.
 4. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 495 g/L.
- E. Joint Sealants
 1. Tremseal-D Polyurethane Sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements.
 4. Verify that deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.
 5. Verify that existing insulation and substrate is sound and dry.

3.2 ROOF TEAR-OFF

- A. General: Notify Owner and Inspector each day of extent of roof tear-off proposed for that day.
- B. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.

3.3 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 - 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

3.4 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Follow deck repair and replacement procedures recommended for substrate where needed, prior to roof installation. Unit pricing should be utilized when the appropriate course of action is identified. Intent to utilize unit pricing must be discussed with inspector and Owner daily, and an ongoing log should be kept in order to validate any such claims. Otherwise, claims for unit pricing may be considered null and void.
- D. Proceed with installation only after all unsatisfactory conditions have been corrected.

3.5 INSTALLATION, GENERAL

- A. Install roofing membrane, base flashings, wood cants, blocking, curbs, and nailers, and component materials in compliance with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system as listed in FMG's "Approval Guide" for fire/windstorm classification indicated. Comply with recommendations in FMG Loss Prevention Data Sheet 1-49, including requirements for wood nailers and cants, and to resist wind uplift forces as required.
- B. Install roofing system in accordance with the following NRCA Manual Plates and NRCA recommendations; modify as required to comply with requirements of FMG references above.

3.6 INSULATION INSTALLATION (Steel deck)

- A. Comply with built-up roofing manufacturer's written instructions for installing roof insulation.
- B. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation with long joints of insulation 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 insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- E. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
 - 1. Install insulation at minimum thickness of 1-1/2 inches (38 mm).
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- H. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
 - 2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.
- I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together. Tape joints if required by roofing manufacturer.
 - 1. Adhere cover boards to resist uplift pressure at corners, perimeter, and field of roof.
 - 2. Set cover board in low-rise foam adhesive at rate defined by roof system manufacturer.

3.7 ROOF MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
 - 1. Base Sheet: One.
 - 2. Cap Sheet: One.
 - 3. Surfacing Type: M (mineral-granule-surfaced sheet).
- B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Coordinate installation of roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
 - 1. At end of each day's work, provide tie-offs to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement, with joints and edges sealed.
 - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
 - 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- E. The membrane shall be cut to fit neatly around all penetrations and roof projections.

3.8 BASE-SHEET INSTALLATION

- A. Install lapped base-sheet course, extending sheet over and terminating beyond cants. Attach base sheet as follows:
 - 1. Adhere to substrate in cold-applied base sheet adhesive at rate required by roofing manufacturer.

3.9 INTERPLY-SHEET INSTALLATION

- A. Install interply sheets according to roofing system manufacturer's written instructions starting at low point of roofing system. Align sheets without stretching. Extend sheets over and terminate beyond cants.
 - 1. Shingle side laps of interply sheets uniformly to ensure that required number of interply sheets covers substrate at any point. Shingle in direction to shed water.
 - 2. Embed each interply sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer, to form a uniform membrane without ply sheets touching.

3.10 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
 - 1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
 - 2. Embed cap sheet in cold-applied membrane adhesive applied at rate required by roofing manufacturer.
- B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Install sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.
 - 2. Apply roofing granules to cover exuded bead at laps.

3.11 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
 - 1. Prime substrates with asphalt primer if required by roofing system manufacturer.
 - 2. Backer Sheet Application: Adhere backer sheet to substrate in cold-applied flashing sheet adhesive.

3. Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive. Apply cold-applied flashing sheet adhesive to back of flashing sheet.
- B. Extend base flashing up walls or parapets a minimum of 8 inches and a maximum of 18 inches above built-up roofing and 6 inches (150 mm) onto field of built-up roofing.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
1. Seal top termination of base flashing with a metal termination bar.
 2. Seal top of termination bar with Roofing Mastic as recommended by roofing manufacturer.
 3. Install 2-piece metal counter-flashing over term bar as recommended by manufacturer.
- D. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.
- E. Roof Drains: Set 30-by-30-inch-(760-by-760-mm-) square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inches (150 mm) beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamp ring.
1. Install stripping according to roofing system manufacturer's written instructions.
 2. Use minimum 4 lb. lead, primed and set in roofing cement.
 3. Sump all drains 4' X 4'

3.12 FASTENERS

- A. Fasteners shall be driven perpendicular to the work surface.
- B. The following guidelines provide the appropriate uses for approved fasteners:
1. Fasteners (#14 HD coated screws): Steel decks 24 gauge, or heavier, wood 1 5/32" minimum.
 2. For all other deck types not included in this specification, ask manufacturer's representative.
- C. Fasteners that are improperly installed shall be removed or corrected. Improper application may be characterized as:
1. Over-driven: Fastener is driven to the point that it is causing the stress distribution plate to become concave or has stripped the deck and is no longer engaged.
 2. Under-driven: Fastener head is not properly seated on the metal stress plate or is not snapped into the locking position when using the locking plate.
 3. Snapped: Fastener breaks under the driving load.
 4. Bent: Fastener is bent to the point that it adversely affects the installation.
 5. Not Engaged: Fastener is improperly located or of insufficient length.

3.13 WOOD NAILERS

- A. New treated wood nailers shall be installed at the perimeter of the roof and around other projections and penetrations that are to be flashed with modified flashings.
- B. Nailers shall be securely anchored to the structural members at edges to resist 300 lbs. per foot in any direction.
- C. The thickness of the nailer shall be provided such that the top of the nailer is flush with the surface to which the membrane is to be applied.

3.14 ROOF PENETRATIONS

- A. All penetrations (pipes, supports, soil stacks, curbs, etc.) passing through the roofing membrane shall be flashed in accordance with standard manufacturer's details. Refer to detail drawings where needed.
- B. Existing flashing shall be removed before new flashings are installed.

3.15 FASCIA

- A. The fascia shall be fabricated from 0.040 Aluminum, Kynar-painted to match existing aesthetics, installed and secured to the treated wood nailers as shown in manufacturer's detail drawings.

WEATHERPROOFING TECHNOLOGIES, INC.**TCPN CONTRACT # R132205****TREMCO LINE ITEM PRICELIST**

Effective Date: 3/1/2014

This price is valid for 60 days. After that time, project conditions are subject to reassessment.



CONFIDENTIAL

Name

CITY OF FOLEY ALABAMA

Description

JUSTICE CENTER RE-ROOFING REPAIR

Quote #

5025233

Date

9/18/2014

CPN R132205 - AL - 2423

Line Item #	Description	Unit of Measure	New Price	Quantity	Project Amount
47f	Minor roof repair calls	Day	\$ 714.04	84	\$ 59,979.36
46q	Per diem rate per worker per 24 hour period of time	Per Day	\$ 41.31	84	\$ 3,470.04
	Roof inspection services (visual inspection of roofing service/membrane, flashings, counterflashings, copings, parapets, trims, hatches, penetrations, curbs, roof-mounted equipment, etc. with a written report of findings and recommendations)				
46g		Day	\$ 647.77	6	\$ 3,886.62
				SUBTOTAL	\$ 67,336.02
	State multiplier/Factor for Alabama		1.02		\$ 68,682.74
48a	Additional and occasional services Roofing supplies Discount off Retail Price List	Discount	N/A		\$ 12,111.25
				SUBTOTAL	\$ 80,793.99
				Project Specific Efficiencies	\$ (4,821.02)
				TOTAL PROJECT COST	\$ 75,972.97