

## **Tuscaloosa Police Station**

3801 Trevor S Phillips Ave  
Tuscaloosa, AL 35401

### **Core Cut:**

- Spray Foam Roof- ½” thick +-
- Single Ply Membrane
- Tapered EPS Insulation 2”-6”
- Metal Deck

## **PART 1 GENERAL**

### **1.1 SCOPE OF WORK**

1. Contractor shall prepare the existing roofing system for the 60 mil PVC membrane to be installed. The contractor shall tear off the existing spray foam roof system and the existing single ply membrane down to the existing tapered EPS Insulation. This insulation shall be left in place and mechanically attached to the manufactures specifications. If any wet or damaged insulation is found provide a unit price per sq ft for the replacement.
2. Contractor shall install a new 1/4" Dexcell Coverboard or equal mechanically attached over the existing tapered EPS Insulation with #14 HD screws to Duro-Last specifications or equivalent.
3. Contractor shall furnish and install a new white 60 MIL Duro-Last Roofing system (Basis of Design) to be mechanically attached to Duro-Last specifications. The membrane must have a minimum of 31mils above the scrim or equivalent.
4. Remove the existing flat seam coping cap and stage accordingly not to damage. Install new wall flashing membrane and wrap up and over to the wall to the outside edge of the building. Reinstall the existing standing seam coping cap by installing a standing seam panel at the coping seams to specifications.
5. Remove the existing lightning rod system and coordinate with the City of Tuscaloosa about the recertification of this system. Reinstall the lightning rod system to specification.
6. Add new 4x4 treated wood sleepers underneath all gas and conduit lines on roof.
7. Install pre-manufactured flashings on all roof penetrations as specified by roof membrane manufacturer.
8. Contractor to coordinate with the City of Tuscaloosa to ensure all drains are cleaned out and free flowing prior to starting the project.
9. All penetrations shall extend a minimum 8" above finished roof system.
9. Contractor must install the roofing system and dispose of all debris in accordance with all local, state, and federal regulations.
10. After the installation is complete, a manufacturer representative shall inspect the visible details of the roofing system for acceptability of warranty issuance. Any deficiencies shall be corrected by the Contractor and made ready for re-inspection within five (5) working days. Upon acceptance, the 20-year roofing warranty shall be promptly issued.

## 1.1 SYSTEM DESCRIPTION

- A. General: Provide installed roofing membrane and base 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. Cool Roof Rating Council (CRRC):
  - 1. Membrane must be listed on CRRC website.
- D. Insulation
  - 1. Provide overall thermal resistance for roofing system as follows:
    - a. Minimum R-value: 19.
  - 2. Tapered Insulation Slope: 1/8 inch per foot.
  - 3. Configuration as indicated on the Drawings.

## 1.2 SUBMITTALS

- A. Data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
  - 4. Maintenance requirements.
- B. Shop Drawings: Indicate insulation pattern, overall membrane layout, field seam locations, joint or termination detail conditions, and location of fasteners.
- C. Verification Samples: For each product specified, two samples, representing actual product, color, and finish.
  - 1. 4 inch by 6 inch sample of roofing membrane, of color specified.
  - 2. 4 inch by 6 inch sample of walkway pad.
  - 3. Termination bar, fascia bar with cover, drip edge and gravel stop if to be used.
  - 4. Each fastener type to be used for installing membrane, insulation/recover board, termination bar and edge details.

- D. Installer Certification: Certification from the roofing system manufacturer that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- E. Manufacturer's warranties.

### 1.3 QUALITY ASSURANCE

- A. Perform work in accordance with manufacturer's installation instructions.
- B. Manufacturer Qualifications: A manufacturer specializing in the production of PVC membranes systems and utilizing a Quality Control Manual during the production of the membrane roofing system that has been approved by and is inspected by Underwriters Laboratories.
- C. Installer Qualifications: Company specializing in installation of roofing systems similar to those specified in this project and approved by the roofing system manufacturer.
- D. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer.
- E. There shall be no deviations from the roof membrane manufacturer's specifications or the approved shop drawings without the prior written approval of the manufacturer.

### 1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable code for roof assembly wind uplift and fire hazard requirements.
- B. Fire Exposure: Provide membrane roofing materials with the following fire-test-response characteristics. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
  - 1. Exterior Fire-Test Exposure:
    - a. Class B; ASTM E 108, for application and roof slopes indicated.
  - 2. Fire-Resistance Ratings: Comply with ASTM E 119 for fire-resistance-rated roof assemblies of which roofing system is a part.
  - 3. Conform to applicable code for roof assembly fire hazard requirements.
- C. Wind Uplift:
  - 1. Roofing System Design: Provide a roofing system designed to resist uplift pressures calculated according to the current edition of the ASCE-7 Specification *Minimum Design Loads for Buildings And Other Structures*.

### 1.5 WARRANTY

- A. Contractor's Warranty: The contractor shall warrant the roof application with respect to workmanship and proper application for two (2) years from the effective date of the warranty issued by the manufacturer.
- B. Manufacturer's Warranty: Must be no-dollar limit type and provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then-current material and labor prices throughout the life of the warranty. In addition the warranty must meet the following criteria:

1. Warranty Period: 20 years from date issued by the manufacturer.
2. Must provide positive drainage (no ponding water).
3. No exclusion for damage caused by biological growth.
4. Issued direct from and serviced by the roof membrane manufacturer.
5. Transferable for the full term of the warranty.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURER**

- A. All roofing system components to be provided or approved by manufacturer.
- B. Substitutions: Not permitted.

### **2.2 ROOFING SYSTEM COMPONENTS**

- A. Roofing Membrane: Membrane properties as follows:
  1. Thickness:
    - a. 60 mil, nominal.
  2. Exposed Face Color:
    - a. White.
  3. Recycled at end of life into resilient flooring or concrete expansion joints.
- B. Accessory Materials: Provide accessory materials supplied by or approved for use by manufacturer.
  1. Sheet Flashing: Manufacturer's standard reinforced PVC sheet flashing.
  2. Manufactured using Manufacturer's standard reinforced PVC membrane.
    - a. Stack Flashings.
    - b. Curb Flashings.
    - c. Inside and Outside Corners.
  3. Sealants and Adhesives: Compatible with roofing system and supplied by manufacturer.
    - a. Caulk.
    - b. Strip Mastic.
    - c. Pitch Pocket Filler.
  4. Slip Sheet: Compatible with roofing system and supplied by Duro-Last Roofing, Inc.
  5. Fasteners and Plates: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane and insulation to substrate. Supplied by manufacturer.
    - a. #14 Heavy Duty Fasteners.
    - b. Cleat Plates.
    - c. 3 inch Metal Plates.
  6. PV Anchors

7. Termination and Edge Details: Supplied by manufacturer.
    - a. Termination Bar.
    - b. Universal 2-Piece Compression Metal System.
  8. Vinyl Coated Metal: Supplied by manufacturer. 24 gauge, hot-dipped galvanized, grade 90 metal with a minimum of 17 mil of membrane laminated to one side.
  9. Two-Way Roof Vents: Supplied by manufacturer. Install a minimum of 1 vent for each 1,000 ft<sup>2</sup> (93 m<sup>2</sup>) of roof area.
- C. Walkways:
1. Provide non-skid, maintenance-free walkway pads in areas of heavy foot traffic and around mechanical equipment.

## 2.3 ROOF INSULATION

- A. General:
1. Provide preformed roof insulation boards that comply with requirements and referenced standards, as selected from manufacturer's standard sizes.
  2. Provide preformed saddles, crickets, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Expanded Polystyrene (EPS) Board Insulation: Material as supplied by manufacturer.

## 2.4 ROOF INSULATION ACCESSORIES

- A. General: Provide roof insulation accessories approved by the roof membrane manufacturer and as recommended by insulation manufacturer for the intended use.
- B. Fasteners: Provide factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening insulation and/or insulation cover boards in conformance to specified design requirements.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Verify that the surfaces and site conditions are ready to receive work.
- B. Verify that the deck is supported and secured.
- C. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.
- D. Verify that the deck surfaces are dry and free of standing water, ice or snow.
- E. Verify that all roof openings or penetrations through the roof are solidly set.
- F. If substrate preparation is the responsibility of another contractor, notify owner of unsatisfactory preparation before proceeding.

## 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Surfaces shall be clean, smooth, free of fins, sharp edges, loose and foreign material, oil, grease, and bitumen.

### 3.3 INSTALLATION

- A. Install insulation in accordance with the roof manufacturer's requirements.
- B. Insulation: Duro-Guard® EPS Type II (tapered).
  - 1. Install insulation in accordance with the roof manufacturer's requirements.
  - 2. Insulation shall be adequately supported to sustain normal foot traffic without damage.
  - 3. Where field trimmed, insulation shall be fitted tightly around roof protrusions with no gaps greater than ¼ inch.
  - 4. Tapered insulation boards shall be installed in accordance with the insulation manufacturer's shop drawings.
  - 5. No more insulation shall be applied than can be covered with the roof membrane by the end of the day or the onset of inclement weather.
  - 6. If more than one layer of insulation is used, all joints between subsequent layers shall be offset by at least 6 inches.
  - 7. Mechanical Attachment: Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements.
    - a. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed must be replaced or corrected.
  - 8. Mechanically attach Duro-Guard® EPS Type II (tapered) insulation boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.
- C. Insulation Cover Board: DEXCell Glass Mat Roof Board.
  - 1. Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements.
    - a. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed must be replaced or corrected.
    - b. Attach boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.
- D. Roof Membrane: 60 mil, nominal, Duro-Last® Duro-Tuff™ membrane.
  - 1. Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet the applicable design requirements.
  - 2. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed shall be replaced or corrected.
  - 3. Mechanically fasten membrane to the structural deck utilizing fasteners and fastening patterns that in accordance with the roof manufacturer's requirements.
  - 4. Cut membrane to fit neatly around all penetrations and roof projections.
  - 5. Unroll roofing membrane and positioned with a minimum 6 inch overlap.
- E. Seaming:

1. Weld overlapping sheets together using hot air. Minimum weld width is 1-1/2 inches.
  2. Check field welded seams for continuity and integrity and repair all imperfections by the end of each work day.
- F. Membrane Termination/Securement: All membrane terminations shall be completed in accordance with the membrane manufacturer's requirements.
1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
  2. Provide securement at any angle change where the slope or combined slopes exceeds two inches in one horizontal foot.
- G. Flashings: Complete all flashings and terminations as indicated on the drawings and in accordance with the membrane manufacturer's requirements.
1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
    - a. Do not apply flashing over existing thru-wall flashings or weep holes.
    - b. Secure flashing on a vertical surface before the seam between the flashing and the main roof sheet is completed.
    - c. Extend flashing membrane a minimum of 6 inches (152 mm) onto the main roof sheet beyond the mechanical securement.
    - d. Use care to ensure that the flashing does not bridge locations where there is a change in direction (e.g. where the parapet meets the roof deck).
  2. Penetrations:
    - a. Flash all pipes, supports, soil stacks, cold vents, and other penetrations passing through the roofing membrane as indicated on the Drawings and in accordance with the membrane manufacturer's requirements.
    - b. Utilize custom prefabricated flashings supplied by the membrane manufacturer.
    - c. Existing Flashings: Remove when necessary to allow new flashing to terminate directly to the penetration.
  3. Pipe Clusters and Unusual Shapes:
    - a. Clusters of pipes or other penetrations which cannot be sealed with prefabricated membrane flashings shall be sealed by surrounding them with a prefabricated vinyl-coated metal pitch pan and sealant supplied by the membrane manufacturer.
    - b. Vinyl-coated metal pitch pans shall be installed, flashed and filled with sealant in accordance with the membrane manufacturer's requirements.
    - c. Pitch pans shall not be used where prefabricated or field fabricated flashings are possible.
- H. Roof Drains:
1. Coordinate installation of roof drains and vents specified in Section 15146 - Plumbing Specialties.
  2. Remove existing flashing and asphalt at existing drains in preparation for sealant and membrane.
  3. Provide a smooth clean surface on the mating surface between the clamping ring and the

drain base.

I. Edge Details:

1. Provide edge details as indicated on the Drawings. Install in accordance with the membrane manufacturer's requirements.
2. Join individual sections in accordance with the membrane manufacturer's requirements.
3. Coordinate installation of metal flashing and counter flashing specified in Section 07620.
4. Manufactured Roof Specialties: Coordinate installation of copings, counter flashing systems, gutters, downspouts, and roof expansion assemblies specified in Section 07710.

J. Walkways:

1. Install walkways in accordance with the membrane manufacturer's requirements.
2. Provide walkways where indicated on the Drawings.
3. Install walkway pads at roof hatches, access doors, rooftop ladders and all other traffic concentration points regardless of traffic frequency. Provided in areas receiving regular traffic to service rooftop units or where a passageway over the surface is required.
4. Do not install walkways over flashings or field seams until manufacturer's warranty inspection has been completed.

K. Water cut-offs:

1. Provide water cut-offs on a daily basis at the completion of work and at the onset of inclement weather.
2. Provide water cut-offs to ensure that water does not flow beneath the completed sections of the new roofing system.
3. Remove water cut-offs prior to the resumption of work.
4. The integrity of the water cut-off is the sole responsibility of the roofing contractor.
5. Any membrane contaminated by the cut-off material shall be cleaned or removed.

### 3.4 FIELD QUALITY CONTROL

- A. The membrane manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.

### 3.5 PROTECTION

- A. Protect installed roofing products from construction operations until completion of project.
- B. Where traffic is anticipated over completed roofing membrane, protect from damage using durable materials that are compatible with membrane.
- C. Repair or replace damaged products after work is completed.

END OF SECTION