TECHNICAL PUBLICATION
MODIFIED BITUMEN ROOFING SYSTEM

The Modified Bitumen Roofing System was introduced into the United States several decades ago and has had a significant impact on replacing the Built-Up Roofing System. Modified Bitumen Membranes are a lightweight and highly flexible membrane with superior resistance to the elements. The typical three (3) or four (4) ply fiberglass or rag felt built-up roofing system and gravel has virtually been replaced by the Modified Bitumen Roofing System. Numerous Built-Up Roofing Systems are in existence and performing as intended, however the Modified Bitumen market is by far the leading choice by designers and installers.

WHAT IS A MODIFIED BITUMEN MEMBRANE?

A Modified Bitumen Membrane is comprised of multiple layers of modified asphalt (asphalt that has been introduced with a modifier or polymer) and a scrim sheet. The scrim sheet (reinforcing sheet) is either fiberglass or polyester. The membrane has exceptional elongation and recovery properties and is a sustainable component for the roofing system. The membrane is manufactured with a smooth or granulated surface. The smooth surface is typically installed as an intermediate ply within the roofing system or can be a finished ply. The smooth membrane is typically coated with a reflective coating due to the black color of asphalt if used as a finishing ply. The granulated membrane is installed as a finishing sheet and typically is the top membrane ply of the roofing system.

The quantity of membrane plies vary from one (1) to three (3) plies for the flat roof area and the base flashing (vertical surfaces that interface with the flat roof) vary from one (1) to two (2) plies.

INSTALLATION

The modified bitumen roofing membrane can be installed over roof insulation, wood roof decks, concrete roof decks, Dens Deck and lightweight insulating concrete. Performance of these membranes has proven to be exceptional; however installation is always a key element for performance. The membranes are manufactured to be installed as a heat application, (torch applied) with hot asphalt or with adhesive.

- **TORCH APPLIED APPLICATION**. The torch applied application requires less equipment and manpower; however the quality of the installation is always at the mercy of the workman with the torch. The torch must be evenly and thoroughly passed over the membrane to melt the asphalt for quality adhesion.

- **HOT ASPHALT APPLICATION.** The hot asphalt application requires more equipment and manpower and has less margin of error; however the workman must have experience with mopping to achieve the quantity of asphalt required for adhesion. In addition, a kettle must be used to heat the asphalt and temperatures in the kettle and on the roof at the point of application must be adhered to for performance.

- **ADHESIVE APPLICATION**. The adhesive application requires more finesse. The adhesive is contained in buckets or pails and is applied with a squeegee. Uniformity of the adhesive is required for adhesion and the application can be very messy for the untrained workman.

Following the membrane installation, granules are typically cast into excess bitumen (asphalt or adhesive) that bleeds out between membrane side and end laps. The granules cover the black asphalt for reflectivity and add for aesthetics.

The slope of the roof deck is critical for the application of each installation method and specific roof deck slopes require mechanical fastening to eliminate membrane slippage. Membranes containing polyester require the membrane sheet to be relaxed prior to the installation to eliminate end lap shrinkage.

The flat roof area is typically comprised of one (1), two (2) or three (3) membrane plies in a torch, hot asphalt or adhesive application. The base flashings (vertical surfaces that interface with the flat roof area) are typically comprised of one (1) or two (2) membrane plies with the same application method as the flat roof area.

All three installation methods are acceptable to most manufacturers and strict guidelines are required for performance of the installed process.

QUALITY CONTROL

Quality control in the field is an integral part of a successful application. Thoroughly trained workmen, good equipment and a thorough understanding of the roofing system are required. A prior review of the roof area is required to determine the equipment required and all requirements pertaining to the penetrations on the roof area, including mechanical equipment, solar equipment, etc. On-site inspections will verify site conditions and properly direct the installer should unforeseen items be located to include verifying proper attachment of all components.

Quality control is essential for verification of a properly installed modified bitumen membrane roofing system.

PERFORMANCE

A properly specified, designed and installed modified bitumen roofing system will result in twenty (20) years of service and the important keys to this success are:

- Specifications
- Design
- Detail Drawings
- Products
- Application
- On-Site Inspections

This proven concept will result in an installed roofing system that will deliver long term performance.

WARRANTIES

The typical warranty period for a modified bitumen membrane roofing system is twenty (20) years: labor and material. Material only warranties are available and apply solely to the material and not labor.

Options to consider for warranties are the inclusion of roof insulation, wind speeds, specific penetration flashings, etc. The roof design, specifications and detailing must be implemented to obtain a twenty (20) year warranty that includes roof insulation, specific penetration flashings, wind speeds, etc.

Not all contractors (installers) are certified to install specified components to deliver a twenty (20) year warranty. Manufacturers look for competent contractors who are qualified to install their products and are financially stable.

PROFESSIONAL SERVICES

Professional services create competition in the marketplace with contractors and manufacturers. Alternate pricing can be incorporated into the specifications to examine more than one type of roofing system or products. The consulting fees literally are absorbed into the entire roof replacement cost due to competition and momentum which is created. The design specifications eliminate all guess work and inflated pricing. This results in a savings to the client and the consulting fees really do become irrelevant.

SCOTT D. BONK AND ASSOCIATES, INC.

Scott D. Bonk is the President of Scott D. Bonk and Associates Inc., has more than thirty-three (33) years in the roofing industry and has provided Roof Consulting Services to numerous clients throughout the United States. Projects extend from Sacramento, California to Paradise Island, Nassau, Bahamas. Please visit our website for additional information at www.scottbonk.com or contact our office at 239-768-3654.

By engaging our services you will receive the Quality you expect and the Service you deserve.