technical bulletin

Asphalt Roofing
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Cold Weather Recommendations For Built-Up Roofing

Introduction:

Application of any type of bituminous roofing system in cold weather can be achieved successfully if precautions are taken. Understanding that difficulties, such as maintaining the proper asphalt temperature at the point of application, slower cure time of cold applied adhesives, and the increased stiffness of materials, may be encountered during cold weather, following these cold weather procedures will result in greater application efficiency and better-finished system performance.

The Low Slope Roofing Committee of the Asphalt Roofing Manufacturers Association (ARMA), in conjunction with the National Roofing Contractors Association (NRCA), recommends the following procedures to help ensure the completion of a good and safe job in cold weather situations.

Storage and Handling Recommendations:

Keep All Materials Dry and Clean

Regardless of season or type of roofing system, it is very important that all materials are delivered dry, and stored in a manner that assures they remain dry for proper application. It is recommended that, whenever possible, roofing materials are delivered to the job-site just prior to their installation.

When materials are stored outside, they should be placed on platforms that are raised off the ground or roof deck, and they should be covered with breathable water-resistant coverings (such as canvas) that are properly secured.

All roll materials should be stored on end. Rolls with a selvage edges should be stored with the selvage edge facing up to prevent damage. Double stacking of roll materials is not recommended.

Caution should be taken when loading and storing materials on the roof so that the deck is not overloaded. In addition, stockpiles of materials can allow for excessive snow build-up to occur adding to the live load on the deck. Overloading the deck can cause deflection, ponding, and even roof collapse.

Roofing asphalt must always be protected from the weather. Moisture, dirt, snow, and ice must be removed from roofing asphalt before it is heated, otherwise dangerous boiling may occur.

More:

- Canned goods, such as cements and coatings, should be properly stored with tight-fitting lids to prevent moisture intrusion or other contaminations.
- Water-based cements or coatings must be kept warm to prevent freezing.
- Never throw or drop rolls of material.
- Roof insulation materials should be handled with care and stored in accordance with the manufacturer's instructions.
- Some insulation materials are extremely light and must be weighted and/or secured to avoid weather and damage by the wind.

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Storage without adequate protection against the elements can result in moisture being incorporated into the roofing system. Eventually, this could lead to roof defects and/or roof failures. All surfaces to which the roof membrane is to be applied must be dry, firm, smooth, and free of dirt and loose material.

Application Recommendations:

Plan Carefully

Acceptable weather conditions are based not only on the actual ambient temperature, but also the total combination of nature's elements (e.g., wind, humidity, snow, sleet, etc.). Careful planning of work during cold weather can greatly improve the quality of the installation. Laying out the roof area and placing materials where they will be needed prior to application will minimize problems associated with cold weather application.

Use the Right Materials

Where different grades of materials are specified for summer or winter use, the grade specified for cold (or winter) weather should be used (e.g., winter-grade plastic cements).

Prep Materials for Application

Base sheets, plies and cap sheets become less flexible in cold temperatures. Rolls should be stored on end in a warm (>50F) and dry location for a minimum of 24 hours prior to application. Unroll and cut roll materials to a maximum of 18' lengths and allow to relax in the sun before application. Disregard of proper material preparation and handling may lead to material damage and other problems including poor system performance.

Complete Each Roof Section Daily

Unless manufacturer's recommendations indicate otherwise, schedule applications so that there are no partially completed sections of the roof left exposed. As the work progresses on a day-to-day basis, it is essential that each section of the roof be completed as specified. "Phasing-in" or partially completing a section of the roof is not recommended. If a section of the roof is left with just part of the BUR system applied, that section will be prone to water entrapment.

Products Applied with Hot Bitumen

At the point of application of the roofing plies, the mopping asphalt should be at its equiviscous temperature (EVT). Failure to keep the asphalt at the proper application temperature could result in poor ply adhesion. Components of the roofing system must be installed rapidly into the asphalt mopping to avoid fish-mouthing and other forms of inadequate embedment. Mopping asphalt should not precede the roofing plies by more than five feet to prevent premature cooling of the asphalt.

Warning: To compensate for the rapid cooling of mopping asphalt in cold weather, it is extremely important to keep the asphalt within its specified EVT rating range, but never less than 400°F and never greater than 25°F below its stated flash point!!

Proper insulation of all asphalt handling equipment is required to keep asphalt at an appropriate application temperature in cold weather. Insulation of the equipment is equally vital for fuel conservation and reducing make-ready time. The use of insulated tank trucks and rooftop equipment for transporting asphalt, such as hot luggers and mop buckets is recommended. Asphalt lines from the kettle to the roof should also be insulated. This is especially important when asphalt is being transported over long distances.

Safety Tips:

Follow Good Housekeeping Practices

"Good Housekeeping" is always an important safety factor, and is an especially critical factor in the winter. Applicators wearing heavy clothes and bulky jackets are less nimble and agile, and their clothes can be easily snagged by ladders and equipment. Be sure crews are alerted to the health dangers presented by snow, ice, and wind.

Debris may become hidden by snow if daily cleanups are neglected. Falls caused by these hidden objects may result in serious injuries. Additionally, it may be necessary for crews to return to the job-site after the winter season to clean up what would have already been removed if proper housekeeping procedures were followed.

Summary:

- Keep materials dry.
- Do not over load the roof deck with unused roofing materials as this could cause snow accumulation, ponding, and deck fatigue or failure.
- Finish roof sections daily, and apply proper watertight cut-offs and tie-ins.
- Insulate pipes, luggers, asphalt dispensers, and mop buckets.
- Maintain kettle as full as possible and at appropriate temperature to minimize heat loss.
- Keep the kettle as close as possible to the point-of-application of the roofing system.
- Do not overheat asphalt in the kettle. It may be damaged, or it can burst into flames.
- Keep the point-of-application temperature in the upper half of the EVT range to permit better asphalt flow.
- Roll the plies as close as possible behind the asphalt mopping.
- Broom or squeegee plies into asphalt immediately.
- Alert roofing applicators to possible safety hazards due to bulky clothing and/or slippery surfaces.
- Maintain "Good Housekeeping" on roof deck at all times.
- If proper point-of-application temperatures cannot be attained, the roofing system application should be sealed and shut down until weather conditions improve.