



Recommended Fastening Patterns for Rmax Insulation in Low Slope Roofing Applications

INTRODUCTION

Rmax recommends that any insulation which is laid over a steel or wood roof deck be attached with mechanical screw and plate fasteners. This type of fastener must be approved for use by FM Global in a Class 1 roof deck assembly. Fasteners must also be acceptable to the membrane supplier. The selection and use of any particular fastener is the responsibility of the roofing contractor.

This Technical Bulletin presents Rmax's recommendations for attachment of insulation under various types of built-up and single ply roofing systems. For specific Factory Mutual and membrane supplier recommendations for a particular system refer to the current edition of FM Global RoofNav and membrane supplier application literature.

GENERAL NOTES ON WIND UPLIFT RATINGS

Wind uplift ratings of insulated roofing system assemblies are based on specifications developed by FM Global Research and Engineering of Norwood, Massachusetts. Ratings are noted as "I-60", meaning an ultimate uplift force of 60 pounds per square foot, and "I-90", meaning an ultimate uplift force of 90 pounds per square foot. Consideration must be given to the anticipated wind loadings on field, perimeter, and corner areas to provide adequate uplift resistance of the roofing system with allowances for appropriate factors of safety. Refer to Factory Mutual "Loss Prevention Data Sheet 1-28/ 1-29" for special considerations at perimeters and corners.

GENERAL NOTES ON INSULATION THICKNESS

The minimum thickness of Multi-Max®-3 or Multi-Max® FA-3 is 1.5 inches for FM Class I-90 uplift ratings. These thicknesses are specified minimums regardless of the membrane covering or the roof deck. Minimum thicknesses for each Rmax insulation type and application are listed in the table on page 3 of this document.

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GENERAL NOTES ON DOUBLE-LAYER INSULATION SYSTEMS

Rmax insulation may be installed in two layer systems when specified as part of the job conditions. Rmax recommends that both layers of insulation be mechanically attached to steel decks. A two layer system may be installed on a roof deck by mechanically attaching the first layer and then attaching the second layer in hot bitumen. The minimum thickness of insulation in a multi-layer system must be 1.5" in order to maintain Factory Mutual Class I approvals, including the I-90 Wind Uplift approval.

GENERAL NOTES ON APPLICATION OF INSULATION UNDER BUILT-UP AND SINGLE-PLY MEMBRANE SYSTEMS

Refer to Rmax publication "TR-0101A", "General Notes for Use of Rmax Roofing Insulations in Low Slope Applications" for details concerning the application of all roofing insulations.

1. Rmax recommends that insulations used under built-up or hot-bitumen attached modified bitumen membrane systems be protected by an overlay of wood fiber board, perlite or a vented base sheet as specified in Technical Bulletin #9 of the NRCA. A venting-type base sheet should be applied prior to application of built-up roof membranes over the perlite side of Thermarroof® Composite-3.
2. Fully adhered single ply membrane systems shall not be attached directly to the perlite faced side of Thermarroof® Composite-3.
3. Rmax requires an overlay of wood fiberboard, perlite or heavy vented base sheet suitable and approved by the membrane supplier for torch-applied modified bitumen membrane systems placed over Multi-Max®-3, Multi-Max® FA-3, Tapered Thermarroof®-3, Ultra-Max®, or the mat facer of Thermarroof® Composite-3. Consult with the membrane supplier and/or overlay supplier for approved fasteners and required fastening pattern.
4. For mechanically attached single-ply systems, the insulation shall be pre-attached to steel decks with one (1) mechanical fastener every eight (8) square feet. The attachment of the membrane shall provide the additional fastening required to restrain the system. Consult membrane supplier for specifications for any additional fastener requirements on insulation. Fastener placement shall be as shown in "Diagram D", furnished with this document. Fasteners may be selected from the lists presented under built-up or single ply membrane fastening details.

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5. The following table summarizes the recommended fastening patterns for Rmax insulation in some specific applications. The diagrams for the “A”, “B”, “C”, and “D” referenced patterns are included on the following pages. The fastener density for pattern “A” is 8 fasteners per 4’ x 8’ panel, “B” is 11 fasteners per 4’ x 8’ panel, “C” is 16 fasteners per 4’ x 8’ panel, and “D” is 4 fasteners per 4’ x 8’ panel.

Rmax Recommended Fastening Density Meeting I-90

Product	Minimum Thickness	BUR	FULLY ADHERED	MECHANICALLY ATTACHED
Multi-Max®FA-3 or Ultra-Max®	1.5	8 per 4x8	16 per 4x8	4 per 4x8
Multi-Max®FA-3 or Ultra-Max®	2.0	8 per 4x8	11 per 4x8	4 per 4x8
Multi-Max®-3	1.5	8 per 4x8	NA	4 per 4x8
Thermarroof® Composite-3	1.5	8 per 4x8	NA	4 per 4x8
RDeck®-3	1.5	8 per 4x8	8 per 4x8	4 per 4x8
Nailable Base-3	2.0	8 per 4x8	NA	4 per 4x8

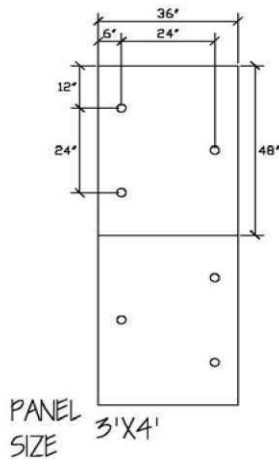
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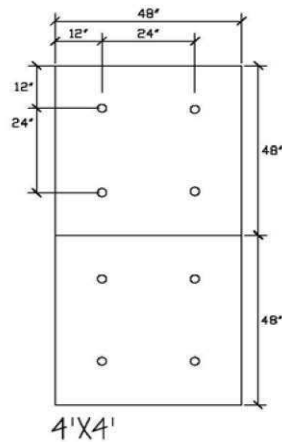
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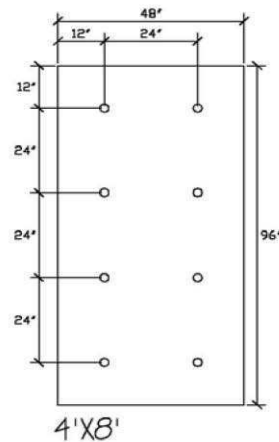
DIAGRAM "A"



A1

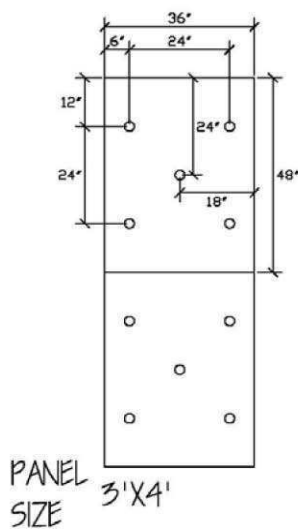


A2

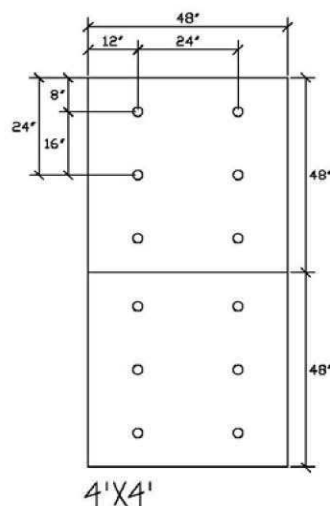


A3

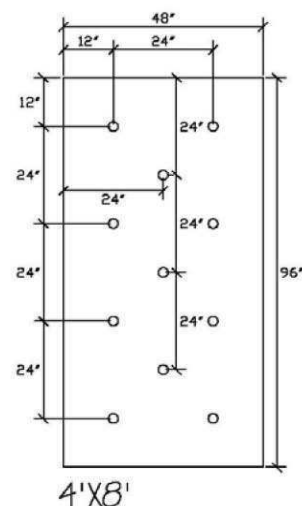
DIAGRAM "B"



B1



B2



B3

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DIAGRAM "C"

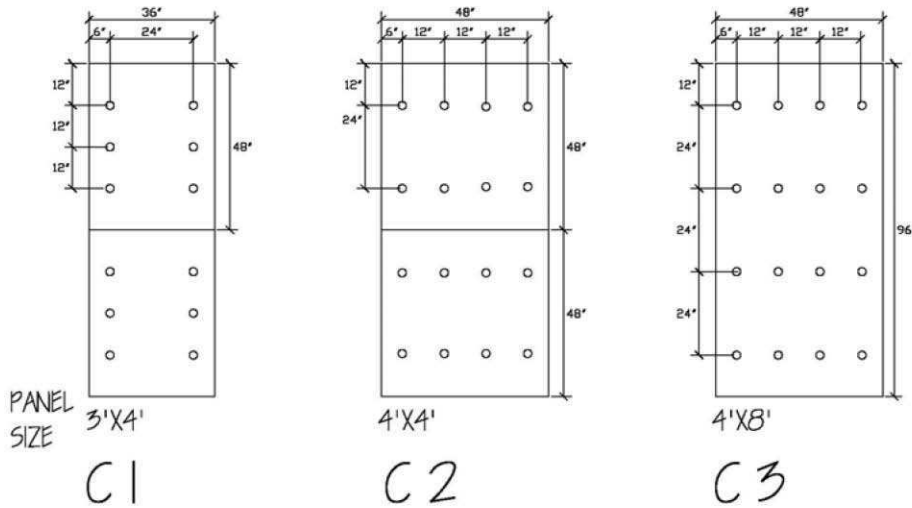
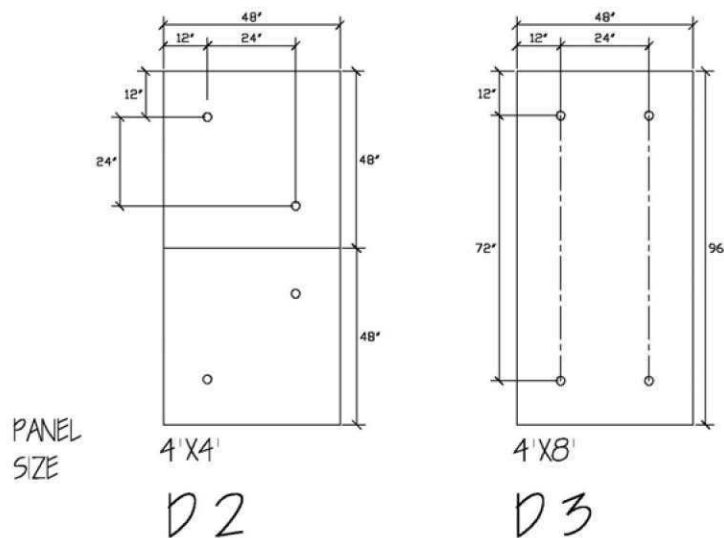


DIAGRAM "D" FM "PRELIMINARY" FASTENING



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