



This design guide provides the information necessary to help our engineering professionals design your nVent RAYCHEM Roof Ice Melt (RIM) System. For other applications or for design assistance, contact your nVent representative or call (800) 545-6258. Also, visit our web site at nVent.com.

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### INTRODUCTION

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The RIM System maintains a continuous path for roof snow melt to drain from the roof through the gutter and downspout and is ideal for the following applications:

- Roofs made from standard roofing materials, including shake, shingle, rubber, tar, wood, metal, and plastic.
- Gutters made from standard materials, including metal, plastic, and wood.
- Downspouts made from standard materials, including metal and plastic.

## How to Use this Guide

Our nVent design professionals work with Customers—architects, contractors, or building owners—to understand the design requirements for a project.

This design guide presents the key design and performance data that we need to collect in order to design your system.

For questions, please contact your nVent representative, or call 888.313.5666, or email: [RIMCustomerCare@nVent.com](mailto:RIMCustomerCare@nVent.com).

## Warranty

nVent's standard limited warranty applies to nVent RAYCHEM Roof and Gutter De-icing Systems.



An extension of the limited warranty period to twenty (20) years from the date of installation is available, except for the control and distribution systems, if a properly completed online warranty form is submitted within thirty (30) days from the date of installation. You can access the complete warranty on our web site at [nVent.com](http://nVent.com).

The RIM System is our premier engineered, aesthetically elegant, concealed roof & gutter de-icing solution to prevent ice dams, icicles, and frozen gutter problems. The RIM System mechanically protects the self-regulating cable, provides high power output along the entire roof edge, and is ideal for new construction or renovation of buildings for all snow load areas, for residential or commercial buildings.

RIM System panels secure the heating cables in a fixed heat transfer position. They are specifically designed for eaves, valleys, channels, rakes and flat roof sections and come in a variety of aesthetically pleasing colors and finishes as standard or custom options to meet any project need.

Typically the performance requirements of a system vary based on the severity of the annual snow load and snow accumulation in a given area as well as other design factors, including the weather patterns and temperature cycles, ambient temperatures, wind speeds, lake effects, elevation, northern/southern roof exposures, type of roof and roof material, overhang distance and roof features such as dormers, towers and valleys.

Snow load is the amount of snow on a roof for a large portion of winter, whereas snow accumulation is the actual depth of snow on the ground from a single or series of snow storms. Both conditions play a role in the severity of roof and gutter challenges you may face.

	<b>Annual Snow Load in (cm)</b>	<b>Annual Snow Accumulation in (cm)</b>
Light	under 20 (51)	<6 (15)
Moderate	20 - 100 (51 - 254)	6 - 15 (15 - 38)
Heavy	over 100 (254)	>15 (38)

## Typical RIM System

**RIM** System embeds multiple runs of high wattage IceStop self-regulating heating cable offering the highest performing heating system with the most efficient heat transfer and cable protection. It is designed for heavy snow load areas with roof snow accumulation over 15 inches, and annual snowfall of over 100 inches.

A typical RIM System includes the following:

- RIM panels and connection kits
- Control system
- Power distribution

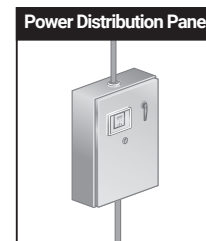
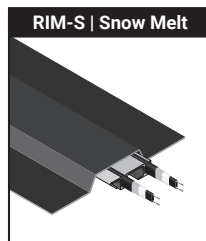
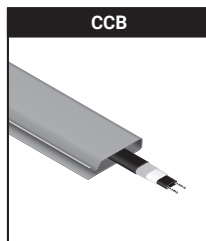
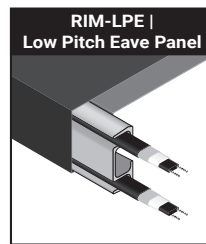
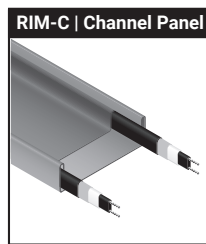
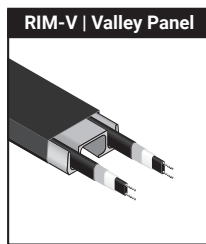
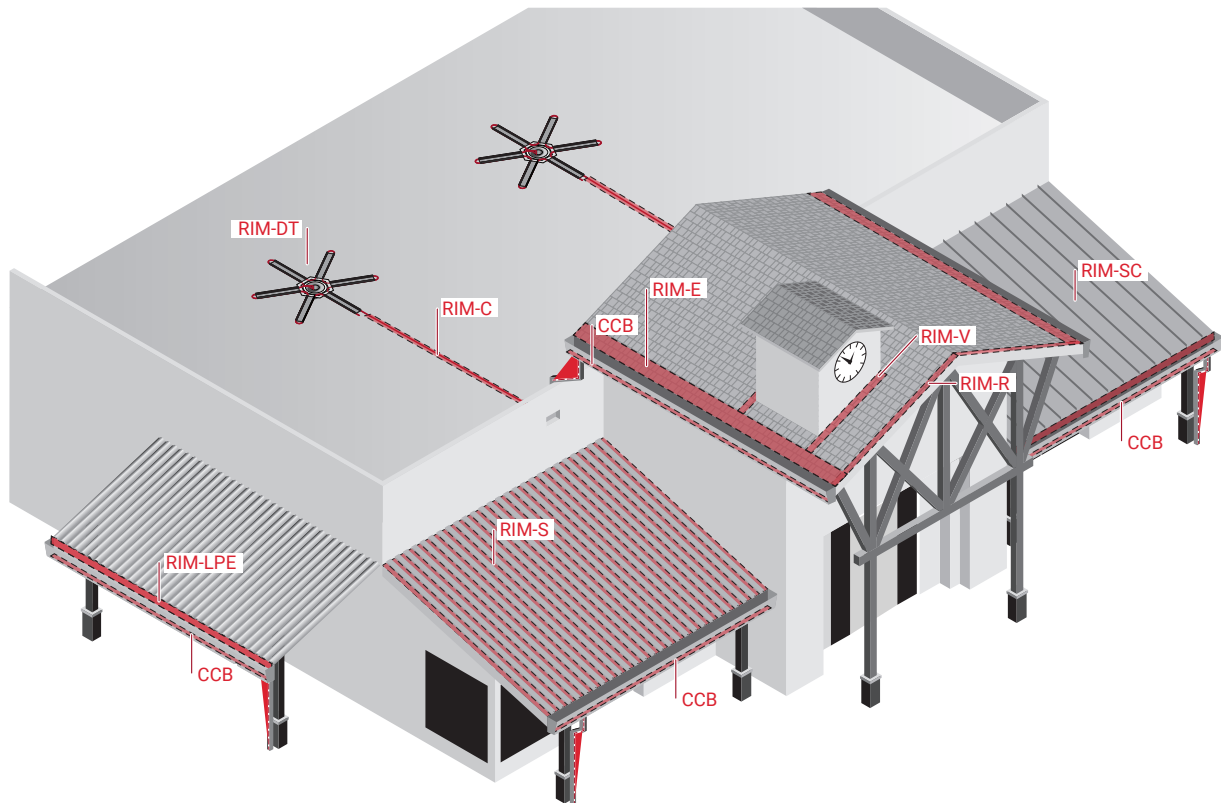


Fig. 1 Typical RIM System

## Typical RIM2 System

**RIM2** System embeds 2 runs of energy-efficient WFP self-regulating heating cable and is designed for light to moderate snow load areas with roof snow accumulation under 15 inches, and annual snowfall of under 100 inches.

A typical RIM2 System includes the following:

- RIM2 panels and connection kits
- Control system
- Power distribution

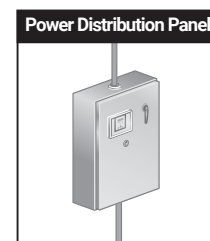
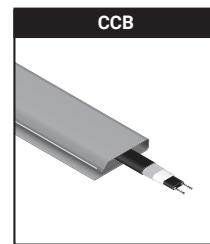
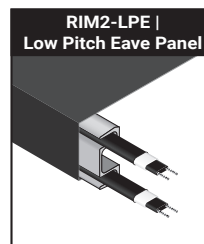
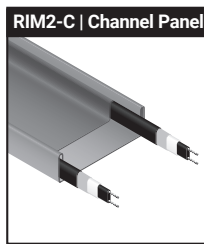
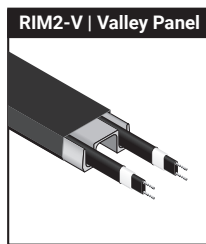
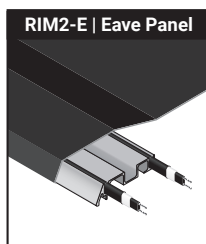
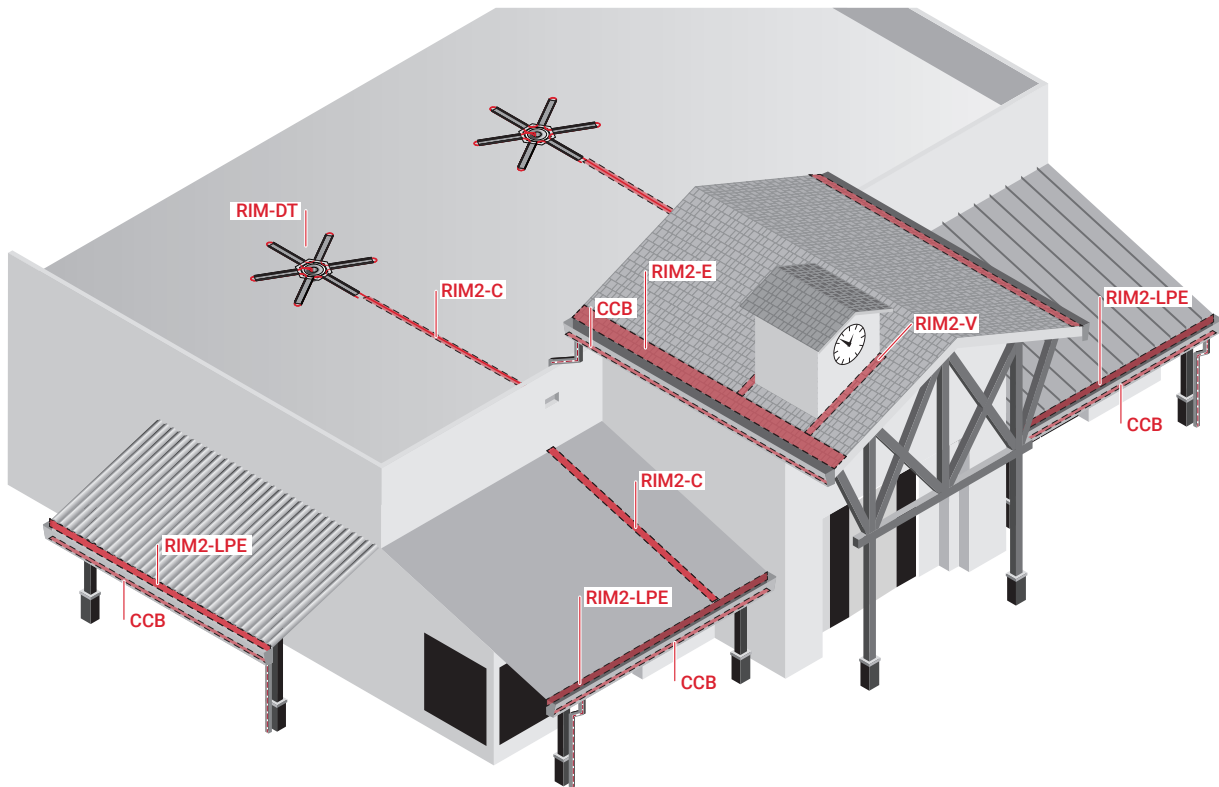


Fig. 2 Typical RIM2 System

### Design Step by Step

These simple steps depict how Customers work with nVent design professionals to incorporate the RIM System into a project.

#### Step 1 Customer Provides Preliminary Design Inputs

**For new construction or retrofits, provide the following to our nVent design professionals:**

- Site plan locating walkways, decks and driveways
- Roof plan, power distribution
- Building elevations and recommendations
- Complete the Estimate Form that will determine the basis for the design
- For color options with Aluminum cover panel please refer to RIM color guide H59379

#### Step 2 nVent Prepares a Budgetary System Proposal

- Prepare the design with recommended scope, RIM materials layout and power requirements.

#### Step 3 Customer Reviews RIM System Budgetary Proposal

- Review the proposal and either confirm the scope or specify changes to the proposal as needed for the RIM System installation you desire.
- Specify wiring for future RIM System additions, as needed  
(Note: A retrofit RIM System installation can cost 25 – 40% more than the cost of installing a RIM System initially)

#### Step 4 nVent Finalizes the RIM System Proposal

- Implement the requested changes and make any final recommendations that are appropriate, such as a control and monitoring solution or any relevant Field Support / Engineering Services that are best suited for the project.

#### Step 5 Customer Approves Final System Design

Approve the final system design and Field Support / Engineering Services, as applicable.

### **Step 6 nVent Provides the Materials for the Project**

- Supply the RIM materials to the customer, including:
  - Metal base panel for attachment to the roof
  - Safe, self-regulating heating cable
  - Copper or painted aluminum cover panel
  - Accessory components as required (end caps, splice covers, etc.)
  - Appropriate control system, as applicable.
- Provide the following details to the project's Engineer and/or Contractor:
  - Engineering designs and installation instructions
  - Junction box locations (per design recommendations)
  - Control panel loads and location, circuit breaker sizing
  - Material layout plans with circuit design loads and circuit breaker sizing
  - Control panel layout and system testing procedures

### **Step 7 Field Support Services Provide Project Support, as applicable**

- Perform the electrical evaluation/ testing procedure
- Train the installer to install the RIM System
- Commissioning, supervision and troubleshooting

### **Step 8 Installer Installs and Tests the RIM System**

- Install the RIM System per the installation instructions as per design layouts
- Conduct control panel layout and system testing procedures
- Perform commissioning tests and complete warranty documentation

# Roof & Gutter System Estimate Form

Email completed form to your nVent Sales Rep for a complete Bill of Materials and quote!

**Need Quote For:**  HEATING CABLE SYSTEM  RIM CONCEALED SYSTEM  BOTH

**CHECK OUT OUR ONLINE ROOF & GUTTER DE-ICING DESIGN TOOL** at [www.nVentthermal.com](http://www.nVentthermal.com) by selecting the Commercial or Residential segment -> Resources and click on the **Roof & Gutter De-Icing Calculator** design tool.

1. Building Type & Conditions: (check all that apply)	<input type="checkbox"/> House	<input type="checkbox"/> Small shop / strip mall	<input type="checkbox"/> High-rise residential /multi-use bldg.	<input type="checkbox"/> Commercial building
	<input type="checkbox"/> New Construction	<input type="checkbox"/> Retrofit		
	Annual Snow Fall	<input type="checkbox"/> less than 100 inches	<input type="checkbox"/> more than 100 inches	
2. Area Name:				
3. Type of Roof:	<input type="checkbox"/> Sloped Roof Shingle	<input type="checkbox"/> Sloped Roof Shingle	<input type="checkbox"/> Sloped Roof Shingle	<input type="checkbox"/> Sloped Roof Shingle
	Metal Roof-Seams <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> _____"	Metal Roof-Seams <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> _____"	Metal Roof-Seams <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> _____"	Metal Roof-Seams <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> _____"
	<input type="checkbox"/> Don't Trace Roof	<input type="checkbox"/> Don't Trace Roof	<input type="checkbox"/> Don't Trace Roof	<input type="checkbox"/> Don't Trace Roof
4. Roof Pitch:	<input type="checkbox"/> Less than 3/12	<input type="checkbox"/> Less than 3/12	<input type="checkbox"/> Less than 3/12	<input type="checkbox"/> Less than 3/12
	<input type="checkbox"/> Equal to or more than 3/12	<input type="checkbox"/> Equal to or more than 3/12	<input type="checkbox"/> Equal to or more than 3/12	<input type="checkbox"/> Equal to or more than 3/12
5. Length of Roof Edge:	_____ feet	_____ feet	_____ feet	_____ feet
6. Eave Overhang Distance:	<input type="checkbox"/> 0" <input type="checkbox"/> 12" <input type="checkbox"/> 24" <input type="checkbox"/> 36"	<input type="checkbox"/> 0" <input type="checkbox"/> 12" <input type="checkbox"/> 24" <input type="checkbox"/> 36"	<input type="checkbox"/> 0" <input type="checkbox"/> 12" <input type="checkbox"/> 24" <input type="checkbox"/> 36"	<input type="checkbox"/> 0" <input type="checkbox"/> 12" <input type="checkbox"/> 24" <input type="checkbox"/> 36"
	<input type="checkbox"/> _____"	<input type="checkbox"/> _____"	<input type="checkbox"/> _____"	<input type="checkbox"/> _____"
7. Gutters:	Total Length: _____ ft	Total Length: _____ ft	Total Length: _____ ft	Total Length: _____ ft
	Depth: _____ inches	Depth: _____ inches	Depth: _____ inches	Depth: _____ inches
	Width: _____ Inches	Width: _____ Inches	Width: _____ Inches	Width: _____ Inches
	<input type="checkbox"/> No Gutters <input type="checkbox"/> Use CCB (Cable Cover Bracket) in gutters	<input type="checkbox"/> No Gutters <input type="checkbox"/> Use CCB (Cable Cover Bracket) in gutters	<input type="checkbox"/> No Gutters <input type="checkbox"/> Use CCB (Cable Cover Bracket) in gutters	<input type="checkbox"/> No Gutters <input type="checkbox"/> Use CCB (Cable Cover Bracket) in gutters
8. Downspouts:	Number of Downspouts: _____	Number of Downspouts: _____	Number of Downspouts: _____	Number of Downspouts: _____
	Average Downspout Length: _____ ft	Average Downspout Length: _____ ft	Average Downspout Length: _____ ft	Average Downspout Length: _____ ft
	<input type="checkbox"/> Single Run in Downspout <input type="checkbox"/> Loop Run in Downspout <input type="checkbox"/> No Preference	<input type="checkbox"/> Single Run in Downspout <input type="checkbox"/> Loop Run in Downspout <input type="checkbox"/> No Preference	<input type="checkbox"/> Single Run in Downspout <input type="checkbox"/> Loop Run in Downspout <input type="checkbox"/> No Preference	<input type="checkbox"/> Single Run in Downspout <input type="checkbox"/> Loop Run in Downspout <input type="checkbox"/> No Preference
9. Valleys:	Number of Valleys: _____	Number of Valleys: _____	Number of Valleys: _____	Number of Valleys: _____
	Average Valley Length: _____ ft	Average Valley Length: _____ ft	Average Valley Length: _____ ft	Average Valley Length: _____ ft
10. Roof Drains:	Number of Drains: _____	Number of Drains: _____	Number of Drains: _____	Number of Drains: _____
	Roof Drain Diameter (Largest): _____	Roof Drain Diameter (Largest): _____	Roof Drain Diameter (Largest): _____	Roof Drain Diameter (Largest): _____
	<input type="checkbox"/> Use RIM-DT for drains	<input type="checkbox"/> Use RIM-DT for drains	<input type="checkbox"/> Use RIM-DT for drains	<input type="checkbox"/> Use RIM-DT for drains
11. Voltage:	<input type="checkbox"/> 120 V <input type="checkbox"/> 208 V <input type="checkbox"/> 240 V <input type="checkbox"/> 277 V	<input type="checkbox"/> 120 V <input type="checkbox"/> 208 V <input type="checkbox"/> 240 V <input type="checkbox"/> 277 V	<input type="checkbox"/> 120 V <input type="checkbox"/> 208 V <input type="checkbox"/> 240 V <input type="checkbox"/> 277 V	<input type="checkbox"/> 120 V <input type="checkbox"/> 208 V <input type="checkbox"/> 240 V <input type="checkbox"/> 277 V
12. Circuit Breaker Size:	<input type="checkbox"/> 15 A <input type="checkbox"/> 20 A <input type="checkbox"/> 30 A	<input type="checkbox"/> 15 A <input type="checkbox"/> 20 A <input type="checkbox"/> 30 A	<input type="checkbox"/> 15 A <input type="checkbox"/> 20 A <input type="checkbox"/> 30 A	<input type="checkbox"/> 15 A <input type="checkbox"/> 20 A <input type="checkbox"/> 30 A
13. RIM Cover Panel:	<input type="checkbox"/> Kynar® Painted Aluminum	<input type="checkbox"/> Kynar® Painted Aluminum	<input type="checkbox"/> Kynar® Painted Aluminum	<input type="checkbox"/> Kynar® Painted Aluminum
	<input type="checkbox"/> Copper	<input type="checkbox"/> Copper	<input type="checkbox"/> Copper	<input type="checkbox"/> Copper
14. Controllers:	<input type="checkbox"/> Ambient Temperature Only	<input type="checkbox"/> Ambient Temperature Only	<input type="checkbox"/> Ambient Temperature Only	<input type="checkbox"/> Ambient Temperature Only
	<input type="checkbox"/> Ambient & RIM Panel Temperature (HECS)	<input type="checkbox"/> Ambient & RIM Panel Temperature (HECS)	<input type="checkbox"/> Ambient & RIM Panel Temperature (HECS)	<input type="checkbox"/> Ambient & RIM Panel Temperature (HECS)
	<input type="checkbox"/> Gutter Moisture & Temperature Sensor	<input type="checkbox"/> Gutter Moisture & Temperature Sensor	<input type="checkbox"/> Gutter Moisture & Temperature Sensor	<input type="checkbox"/> Gutter Moisture & Temperature Sensor
15. Notes:				
16. Customer name:				<b>BUSINESS CARD</b>
Company:				
Phone:				
Email:				
Project name:				
Project location:				

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[nVent.com](https://www.nvent.com)

Our powerful portfolio of brands:

**CADDY ERICO HOFFMAN RAYCHEM SCHROFF TRACER**

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