

# ROOFING



# MATERIALS WARRANTY

## SOPREMA ROOF

### Owner contact information:

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City PRINCE GEORGE  
Province BC  
Postal code V2L 0E5

### Project site name and address:

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Postal code V2L 0E5

### Specialized contractor contact information:

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Postal code V2N 6H9

Completion date: 15/06/2020  
day/month/year

SOPREMA, Inc., a legally incorporated body with its head office located at 1688, rue Jean-Berchmans-Michaud, Drummondville, Québec, J2C 8E9, hereinafter called "SOPREMA", guarantees the Owner that the Products covered by this certificate for the building and the sections covered by this warranty comply with its current specifications, are free from all manufacturing defects, and will serve their purpose for the period mentioned in this document, starting on the Completion Date, subject to GENERAL TERMS AND RESTRICTIONS described below.

### GENERAL TERMS AND RESTRICTIONS

1. During the term of this warranty, stakeholders designated by SOPREMA must have access to the project site as needed, within a reasonable period, as agreed with the Owner.
2. In the event that the Products covered by this warranty are no longer available, SOPREMA reserves the right to provide other products compatible with the work to be carried out.
3. This warranty is valid only provided that all Products, installation services and warranty costs have been paid in full to SOPREMA, the specialized contractor, and the Product distributor affiliated with SOPREMA, if applicable. Proof of purchase of SOPREMA Products indicating the names of the Products installed, the quantities and the date of installation must be provided to the Owner with this warranty certificate.
4. Under this warranty, SOPREMA cannot in any way be held responsible for any direct, indirect or consequential damage. More specifically, SOPREMA cannot be held responsible for the loss of use of the building or any other part of its equipment and/or its content, the loss of profits due to production shutdowns and/or any other consequential damage, whatever the nature, caused to the Owner of the building, its users and/or its customers.
5. Subject to the other provisions of this warranty and without limiting the scope thereof, SOPREMA will not be held liable in the following cases:
  - a. Improper or abnormal use of SOPREMA Products, such as excessive foot traffic, dropping of materials or objects, use as a storage area, or exposure to substances that may affect SOPREMA Products;
  - b. Design defects or faulty construction;
  - c. Insufficient ventilation of the attic in the case of a ventilated attic building;
  - d. Insufficient positive slope or inappropriate drainage, causing premature loss of granules;
  - e. Defects or poor performance of any kind, displacement, or deterioration of a material adjacent to the Products, as well as defects or abnormal movement of the building structure;
  - f. Modifications, transformations, additions, or repairs made to the roof after the date of issue of the above-mentioned warranty and without prior written agreement from SOPREMA;
  - g. Damage caused by the fall of various objects, whatever their nature;
  - h. Damage caused by vegetation, animals, insects, or other living organisms;
  - i. Force majeure and, including, but not limited to, acts of war, riots, civil commotion, terrorist acts, and natural disasters, including, but not limited to, floods, lightning, hail, earthquakes, and windstorms;
  - j. Poor maintenance of the roof.
6. The recourse provided for by this warranty constitutes the one and only recourse which can be brought by the beneficiary in the event of any complaint submitted under the present contract or having any connection with the Products, and thus excludes all other complaints, in particular those relating to normal wear and tear, degraded appearance, and colour or tone variation. In the event of a claim, the beneficiary of the warranty must notify in writing the Warranty Agent of SOPREMA Technical Services at the address mentioned above, within thirty (30) days following the discovery of the problem related to the SOPREMA Products. When submitting the claim, the beneficiary must provide proof of purchase stating the exact name of the SOPREMA Product(s) as well as the installation date of the Product(s).

# MATERIALS WARRANTY

## SOPREMA ROOF

7. If a dispute arises concerning the interpretation or application of this warranty, the competent court is in the province where the Project building is located and the city or judicial district of the province where SOPREMA has offices closest to the Project building. In the absence of a SOPREMA office in said province, the recourse must be brought in the city or the judicial district where the Project building is located.
8. The Owner is presumed to have fully understood and accepted the nature and extent of each of the terms of this warranty if they do not request any explanation from SOPREMA in writing within thirty (30) days from the date on which it is issued. It is also the exclusive responsibility of the Owner to carry out reasonable maintenance of the roof, as recommended by SOPREMA's PREVENTIVE MAINTENANCE GUIDE. Stakeholders of SOPREMA (including agents, suppliers, representatives, and employees) are not authorized to make any changes to this warranty. No statement or additional warranty, whether oral or written, can bind SOPREMA beyond the conditions of this warranty. If a term of this warranty is declared invalid or unenforceable by a court of law or an International Arbitration Centre, the other terms of the warranty remain in force and enforceable.

### TERMS AND RESTRICTIONS SPECIFIC TO THE TYPE OF MATERIALS WARRANTY

#### I. MATERIALS WARRANTY – ROOFING PRODUCTS

In the event of manufacturing defects in SOPREMA Products and, provided that said Products have been installed and incorporated in accordance with the current standards, prescriptions and specifications of SOPREMA, SOPREMA's liability will be limited, for the duration of the warranty, to the following: providing SOPREMA replacement products. "Materials – Roofing Products" warranties cover the quality of manufacture only and apply to accessory products other than reinforced roofing waterproofing membranes. Here are the eligible products: sealants, mastics, liquid membranes, roofing underlayments, paver pedestals, root barriers, drainage panels, filter cloths, capillary mats, empty caissons, and similar accessories.

Duration: Five (5) year warranties (sealant and mastic products\*) or ten (10) year warranties (liquid membranes, underlayment membranes, drainage panels, accessories, etc.).

\*SOPRAMASTIC BLOCK penetration-waterproofing systems are eligible for a 10-year warranty.

The Owner must, at their own expense, carry out the necessary work to remove the elements that cover the Product(s) and install the replacement products supplied by SOPREMA.

#### II. MATERIALS WARRANTY – ROOFING MEMBRANES

In the event of manufacturing defects in SOPREMA Products and, provided that said Products cause water infiltration and have been installed and incorporated in accordance with the current standards, prescriptions and specifications of SOPREMA, SOPREMA's liability will be limited, for the duration of the warranty, to the following:

- i. Providing SOPREMA replacement products;
- ii. Covering the costs for removing the defective Products;
- iii. Taking charge of the installation of new products to replace the defective Products.

"Materials – Roofing Membranes" warranties cover water infiltrations caused by a manufacturing defect of the membranes and apply only to reinforced roofing waterproofing membranes. Here are the eligible membranes: prefabricated SBS-modified bitumen membranes, PVC membranes, organic felts, glass (Types IV and VI) and polyester mats made of oxidized bitumen, and cold-applied liquid membranes (ALSAN RS and ALSAN FLASHING only) or heat-welded membranes (COLPHENE H) reinforced on site.

Duration: Ten (10) year warranties.

The Owner must, at their own expense, carry out the necessary work to remove the elements that cover the Product(s) and reinstall these elements, if necessary. These elements include, but are not limited to, snow, ice, concrete, pavement, fill, and vegetation. The removal of these elements is necessary so that SOPREMA workers can carry out the repairs.





# ROOF MAINTENANCE GUIDE

Roofing. It's what we do.

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# **ROOF MAINTENANCE GUIDE**

## **RCABC Guarantee Corp. (RGC)**

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## 1. **OVERVIEW**

The most important reason for establishing a program of regular roof maintenance is to protect the owner's investment. A properly executed maintenance program will add years to the life of the roof by detecting minor problems before they become major, as well as providing better protection for, and avoiding interruption of, the internal functions of the building.

A roof system is exposed to all manner of chemical and physical stress. The long term effects of these forces are called "Normal Aging". In reality, small isolated problems caused through abuse, stress concentration, inadequate ventilation, error, or other factors result in a shortened lifespan of the roofing system.

Small problems or defects, if not detected and repaired, inevitably become major problems affecting the performance of the whole roof system.

Roofs represent approximately 5 to 7% of capital building costs - but roofs cover 100% of the building and its contents.

### 1.1 **ROOF TYPES (DEFINITIONS)**

#### **MEMBRANE ROOFING**

##### **Conventional Uninsulated**

Roof membrane is installed directly to the deck (usually wood or concrete), and is exposed to the weather. There is no insulation directly below the membrane. In a wood deck of this type the insulation, if used, is typically installed in the supporting joist space, which must be cross-vented.

##### **Conventional Insulated**

Roof membrane is installed directly over insulating materials, which are installed on the deck (wood, concrete or steel). The membrane is exposed to the weather.

##### **Protected (or Inverted) Membrane**

Roof membrane is installed directly to the deck (wood, concrete or overlaid steel). Extruded polystyrene is installed over the membrane covered by filter fabric and appropriate ballast. Ballast is required to counteract insulation flotation and wind uplift, and to provide ultraviolet resistance for the insulation. A modified protected membrane includes insulation both above and below the membrane. It is often used to provide slope to the membrane in order to improve drainage or to move the dew point away from the membrane.

#### **STEEP ROOFING**

In the context of this guide, steep roofing may be defined as roofs with asphalt shingles, cedar shakes or shingles or metal roofing on slopes that exceed 1:6 (2" in 12").

## 1.2 MEMBRANE TYPES (MOST COMMON)

### **Built-Up Roofing (also called "Tar & Gravel" or "BUR")**

A continuous, relatively inflexible roof assembly consisting of plies (usually 3 or 4) of saturated felts or fabrics between which layers of bitumen (asphalt, pitch, or modified rubberized asphalt) is applied. The roof is usually surfaced with gravel to provide ultraviolet protection.

### **Flexible Membranes**

Flexible membranes encompass a large number of unique membranes installed in single or multi-ply applications. The materials may be bituminous or non-bituminous and offer a wide choice of physical properties and performance.

The key point with these membranes — from a maintenance and repair standpoint — is that each type is unique. The building owner must be aware of the specific type and product in place in order to know what maintenance is required and what specialized repair materials and methods should be used.

Remember: "This Roof May Be Different"

### **Common Types of Flexible Membranes are:**

#### ***Modified Bitumen***

A generic description for pre-manufactured sheet membranes consisting of asphalt, modified with a polymer, which improves the physical properties of the asphalt and coated on a reinforcing mat or carrier. Different polymers offer different physical properties. Sheets may be installed either in hot asphalt or by heating with a propane torch, and in some cases they may be self-adhesive. Applications normally consist of 2 plies but may be a single ply in certain well sloped applications. Modified Bitumen Membranes are used in all roof types.

#### ***EPDM (Ethylene Propylene Diene Monomer)***

A generic description for synthetic rubber sheet membranes. Applied only in single-ply applications on all roof types. Seams are accomplished with proprietary adhesives.

#### ***PVC (Polyvinyl Chloride and TPO (Thermoplastic polyolefin)***

Generic descriptions for a plastic sheet membrane. Applied in single-ply applications on all roof types. Seams are accomplished by fusion either with solvent or hot-air welding techniques.

Although these are the most commonly used generic flexible membranes, there are other types on the market (each of which, as mentioned, requires special knowledge and techniques). Make sure you know what you are dealing with.

## **2. BASIC PREVENTIVE MAINTENANCE**

### **2.1 MAINTENANCE PROGRAM**

A preventive maintenance program is simply a program of scheduled inspections and subsequent corrective action. The purpose is to maximize the life expectancy of the roofing system, thus providing maximum protection to building and contents and minimizing overall costs.

The basic elements of a preventive maintenance program for roofs are:

- Regular visual inspections to determine the current condition of the roof membrane and flashings.
- Immediate repair of any defect before it allows moisture to enter the roof system or building interior.
- Non-destructive moisture detection to determine if moisture has infiltrated into the insulation of the roof system.

A vital part of the condition of the roof system is whether or not the insulation remains dry. A roof may appear to be in excellent condition from the surface, but may have areas of saturated insulation, which severely affect the thermal efficiency of the roof.

Non-destructive moisture detection of roof systems has developed into a sophisticated technique that can provide accurate analysis of roof insulation condition. Two commonly used systems are nuclear meter and infrared thermography. Both systems require trained skilled operators, specific weather conditions, specific roof types, and professional analysis. Visual inspection by a trained person is the key to a successful maintenance program.

### **2.2 INSPECTION**

Roofs should be inspected at least twice a year — spring and fall — and also after any significant weather or construction event.

The inspection should be preceded by the preparation of a detailed roof plan on which all defects or notes can be marked. If the inspection indicates that more than minor work is required, an inspection checklist is necessary to ensure thoroughness. Call your professional roofing contractor to perform the required maintenance work.

A typical roof plan and an inspection checklist are included in this guide for your convenience.

Begin the inspection by looking at the underside of the deck, if accessible, and also at the outside of the building. Look for cracks, stains, rusting, watermarks, efflorescence, wet spots, spalled mortar etc. or other signs of excessive moisture or deterioration. The observations may give clues to not only roofing problems but also other conditions affecting the performance of the building envelope.

The final and most important part is inspecting the roof itself. The keys to a competent roof inspection are thoroughness and attention to detail — be prepared to get dirty!



## 2.3 DO'S AND DON'TS OF ROOF MAINTENANCE

### ***DO's:***

- *Do* be aware that wise maintenance will prolong the life of any roof — even the best of them.
- *Do* perform inspections at least twice a year, preferably at the end of winter and right after summer, when roofs have passed through the periods of severest stress.
- *Do* conduct additional inspections immediately after unusual occurrences such as extremely heavy rains, high winds, hail, nearby fires, explosions, etc.
- *Do* check the building exterior for settlement or movement. Cracks in the wall are a warning of possible cracks in the roofing and flashing. Are overhangs, cornices, fascias and edging in good condition? Are gutters and downspouts satisfactory? Breaks in roof edge elements can cause leaks and also let wind get under the roofing membrane and cause blow-offs. Damaged or clogged gutters, roof drains, and downspouts can cause water back up on the roof.
- *Do* be certain that equipment servicemen going on the roof are warned against penetrating or dropping tools on the roof. They should be accompanied by your trained maintenance man to ensure no damage to the roof assembly occurs.
- *Do* assure that your roof is kept clean and free from debris.
- *Do* recognize that exposure of roof felts (bare spots) on a gravel surfaced roof can lead to quick deterioration. This requires immediate attention by qualified personnel.
- *Do* be advised that flashings, gum pans, gravel stops and all other roof penetrations are the source of most leaks. Pay extreme and careful attention to these items.

### ***DON'TS:***

- *Don't* allow unqualified personnel to maintain your roofs.
- *Don't* allow traffic on your roof unless accompanied by your informed maintenance man.
- *Don't* allow equipment servicemen to penetrate your roof without being certain that qualified personnel flash the penetrations. If your roof is covered by a RoofStar Guarantee, RGC or the membrane manufacturer should be notified prior to cutting the roof or altering it in any manner.

## WHEN IT'S TIME TO REROOF:

### ***DON'TS:***

- *Don't* permit products of unproven quality to be used on your roof.
- *Don't* be taken in by "Cure-All" products, which can be applied by anyone.
- *Don't* take bids on projects without adequate, uniform specifications.
- *Don't* reroof over an existing roof unless a careful evaluation is made, and a qualified consultant or standards authority gives prior approval.
- *Don't* expect a guarantee to keep the water out of your buildings. Guarantees do not cover many of the problem areas of your roof.
- *Don't* think that the lowest price is always the best. Be certain you will not be faced with a number of change order requests for extras after a project is awarded.
- *Don't* deal with firms who cannot stand behind their work and will not be available when you need them. Remember that no product is better than the applicator.

### ***DO's:***

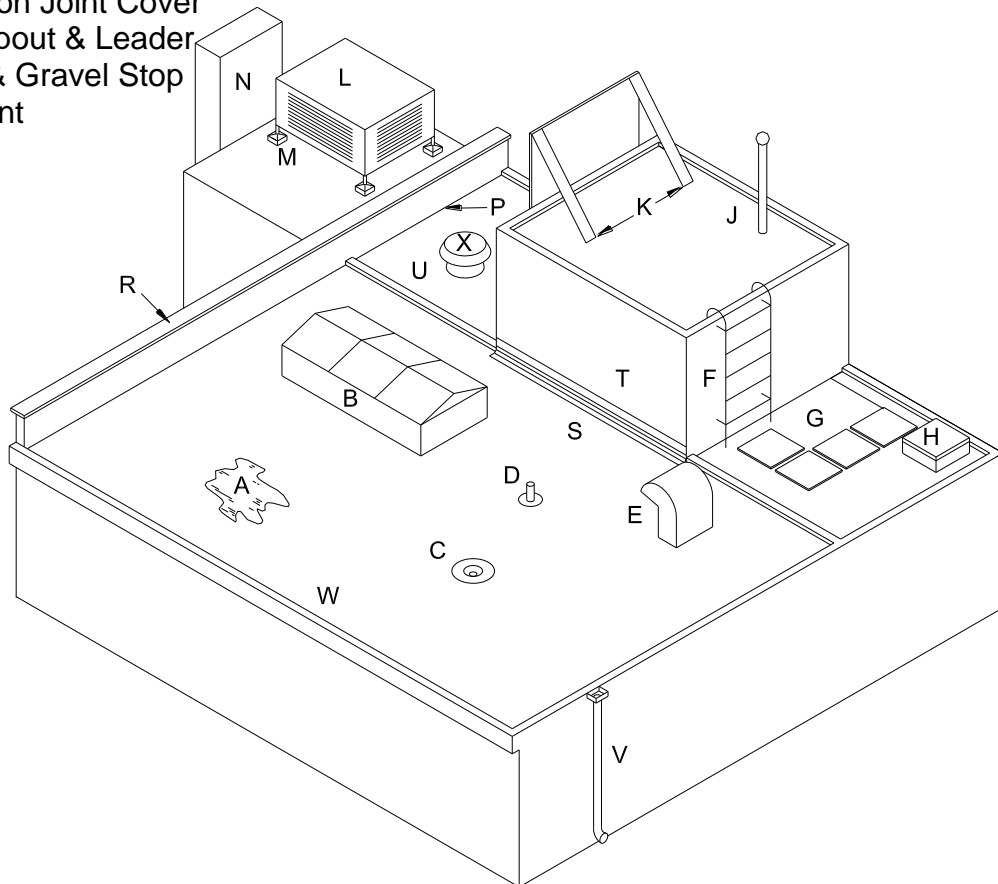
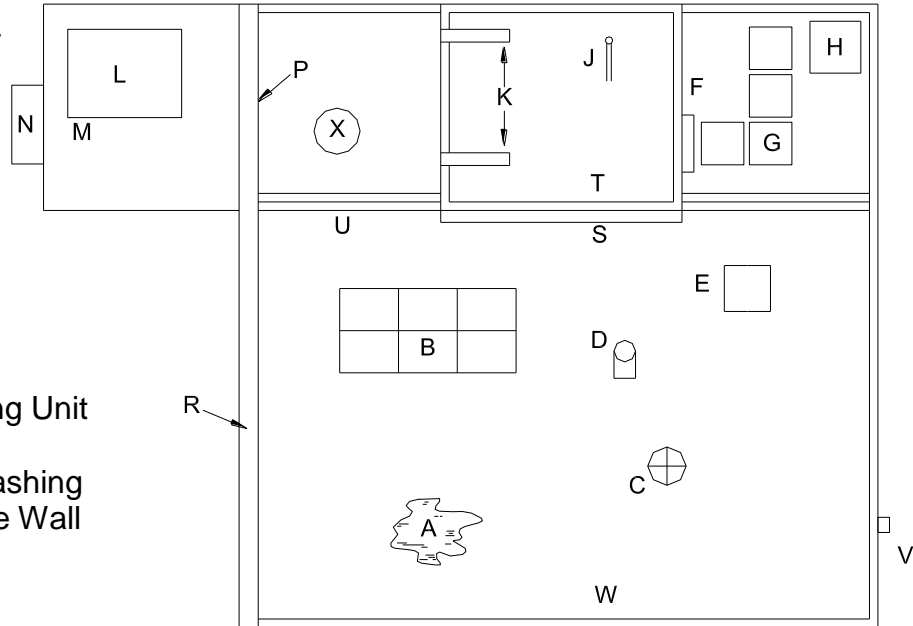
- ✓ *Do* hire a professional roofer.
- ✓ *Do* call a member of RCABC.
- ✓ *Do* request the RoofStar Guarantee
- ✓ *Do* benefit from:
  - Independent Inspections
  - RGC Accepted Materials
  - RGC Guarantee Standards

## 2.4 ROOF PLAN

Each roof covered by the RoofStar Guarantee comes with a complete "Roof System Record", which includes a roof plan and a copy of this maintenance guide. If you set up your own roof maintenance file, you should prepare a roof plan using the following as a guide.

### Key To Potential Roof Top Problems

- A - Ponded Water
- B - Skylight
- C - Roof Drain
- D - Vent Pipe
- E - Vent or Fan
- F - Ladder
- G - Walkway
- H - Hatch
- J - Flag Pole
- K - Sign Support
- L - Air Conditioning Unit
- M - Pitch Pan
- N - Chimney & Flashing
- P - Parapet or Fire Wall
- R - Coping
- S - Base Flashing
- T - Cap Flashing
- U - Expansion Joint Cover
- V - Down Spout & Leader
- W - Fascia & Gravel Stop
- X - Roof Vent



## 2.5 ROOFING MAINTENANCE CHECKLIST (page 1)

BUILDING _____	DATE _____
LOCATION _____	INSPECTOR _____

	Problem			Observation	Date of Repair
	O.K.	Major	Minor		
<b>I. ROOF CONDITION</b>					
A. General Appearance					
Debris					
Drainage					
Physical Damage					
General Condition					
New Equipment / Alterations					
Other					
B. Surface Condition					
Bare Spots in Gravel					
Alligating / Cracking					
Slippage					
Other					
C. Membrane Condition					
Blistering / Splitting / Ridging					
Physical Damage					
Other					
<b>II. FLASHING CONDITION</b>					
A. Membrane Flashing					
Physical Damage					
Deterioration / Blistering / Open Laps					
Attachment					
Other					
B. Metal Flashings					
Physical Damage					
Attachment / Fasteners					
Corrosion					
Drainage					
Other					

**2.5 ROOFING MAINTENANCE CHECKLIST (page 2)**

	Problem			Observation	Date of Repair
	O.K.	Major	Minor		
<b>I. ROOF PENETRATIONS</b>					
A. Equipment					
1.					
2.					
Open Laps					
Punctures					
Attachment					
Other					
B. Equipment Housing					
_____					
_____					
C. Equipment Operation					
_____					
_____					
D. Roof Jacks / Vents					
_____					
_____					
E. Roof Drains					
Type					
Condition					
Quantity					
Overflows					
<b>IV. EXPANSION JOINT COVERS</b>					
_____					
_____					
<b>V. GUM PANS</b>					
Fill Material Shrinkage					
Other					
<b>VI. OTHER OBSERVATIONS</b>					
1.					
2.					
3.					

### 3 IDENTIFYING POTENTIAL ROOFING PROBLEMS OR DEFECTS

#### 3.1 DEFECTS IN BUILT-UP BITUMINOUS ROOFING

<u>Defect Observed</u>	<u>Possible Cause</u>	<u>Required Maintenance</u>
<i>Blueberry blisters in surface of bitumen</i>	Expansion of volatile fractions of bitumen or of air or water, in sunny weather. More common with low meltpoint bitumens particularly with heavy coatings and poor gravel cover.	Initially apply additional opaque gravel. If many blisters occur and are broken to expose felts, recoat with bitumen and apply heavy layer of opaque gravel.
<i>Blisters between layers of felt</i>	Expansion in sunny weather of entrapped air or water in areas of poor adhesion.	Cut blister, trim excess material, re-adhere and patch. Heavy layer of opaque gravel may help to prevent re-occurrence.
<i>Blisters between felt membrane and substrate</i>	Expansion in sunny weather of entrapped air or water, usually over decks with concrete fills, or with wetted insulation.	Where possible, cut blister, trim excess material, re-adhere and patch. Venting (if possible) may help. Heavy layer of opaque gravel may help.
<i>Ridging or buckling</i>	Movement of either the felts or the deck or substrate under moisture or thermal effects, causing long ripple ridges especially where felt not well bonded, often over insulation or deck joints.	Usually little can be done. If of small size and elevation, a heavy application of gravel will make it less conspicuous and give some protection. If wide and high, cutting and relaying is necessary. May re-occur if movement persists.
<i>Lifting at laps (fishmouths)</i>	Poor adhesion initially due to wrinkled felt or workmanship, or pulling as a result of blister or ridging formation.	Re-adhere if not wrinkled. Where wrinkles or fishmouths, cut, remove excess material, re-adhere and patch.
<i>Cracking or breaking</i>	Breaks in unsupported felt. Cracking of blisters or ridges by traffic. Breaks at sharp bends in felt.	Cut out, provide support and patch. Cut blister, re-adhere felts and patch. Round off and patch.
<i>Felt penetrating top pour and gravel at laps</i>	Poor workmanship initially resulting in poor adhesion. Curling of felt edges when left exposed too long during construction.	Re-adhere if possible, or cut away. Cover with bitumen and gravel. Felt edge must not be exposed.
<i>Deterioration due to ponding</i>	Improper design with no, or inadequate, slopes to drains. Drains at high points on roof or obstructed.	Clear drains. Use additional bitumen and gravel in the low areas, which may help to limit damage. Add additional drains if possible.

<b><u>Defect Observed</u></b>	<b><u>Possible Cause</u></b>	<b><u>Required Maintenance</u></b>
<i>Bare spots from loss of gravel</i>	Gravel applied in adverse weather. Too thin a layer of too-fine gravel. Inadequate adhesion of gravel at edges and corners.	Recoat with adequate bitumen and apply a heavy dressing of properly sized gravel.
<i>General weather deterioration of bitumen</i>	Inadequate gravel or other surface protection, inadequate bitumen, lack of maintenance.	If felt strength affected, cannot be rejuvenated with coatings. If felts not affected, apply new bitumen and gravel protection.
<i>Flashing failures</i>	Inadequate allowance for movement. Inadequate fixing into reglets. Poor adhesion or inadequate protection of stripping felts. Movement at roof drains or vent pipes. Damage to capping at parapets and expansion joints. Loss of mastic or damage to mastic pans.	Repair with allowance.  Re-fix and caulk. Apply new felts and protect. Allow movement and repair. Repair to allow movement and shed water. Repair, add fresh mastic, counter-flash.
<i>Ponding</i>	Insufficient slope to drains. Building settlement. Structural movement.	Where ponding cannot be eliminated, pumping is sometimes used to remove water from roof after rain. Add new drains if possible.
<i>Windscour</i>	Inadequate adhesion of gravel. Ballast too small for application.	Where bare spots are due to wind scour at corners, it may be necessary to use concrete slabs as the protective cover in the area affected.
<i>Alligator Cracking</i>	When alligator cracking of surface bitumen occurs on bare spots or on smooth-surface roofs without protective covering, adding more bitumen is only a short-term remedy; cracks will recur.	Remove alligatored material and recoat if possible. Use a felt-reinforced recoating. Protect the recoating with gravel or a paint coating.
<i>Slippage</i>	Slippage of gravel, felts or complete membrane on sloping roofs is due to improper choice of bitumen, thick layers of bitumen, phased construction, excessively heavy protective covering, lack of mechanical fastening where required.	If not too severe, may correct itself by change in bitumen properties on exposure. Mechanically fasten if possible, or remove and reroof with stiffer bitumen and adequate fastening of components.
<i>Sealing</i>	Deterioration due to U.V. degradation, ozone or other atmospheric contaminants, physical abuse, normal wear and tear etc.	For skylights and similar roof construction, new gasketing or sealants may be required.

## 3.2 DEFECTS IN FLEXIBLE MEMBRANES

The most important thing to remember when dealing with maintenance or repair to any flexible membrane (be it TPO, PVC, EPDM or modified bitumen) is that you must understand and know the specific system, its components and required repair materials and techniques. Do not mix and match materials without specific instructions from the membrane manufacturer.

### 3.2.1 Modified Bitumen Membranes

Modified bitumens are in many ways similar to built-up roofing for inspections, maintenance and repairs. Similar defects may appear such as blisters, ridging, buckling and fishmouths. Follow the manufacturer's published repair methods.

- Particular attention should be given to seam inspection especially at end-laps and "T" joints where moisture may penetrate and migrate.
- Severe granule loss may result in ultraviolet degradation of the sheet membrane. Recoat the bare spots with new granules in adhesive.
- Watch for chemical contamination near roof top units and vents.
- Watch for deterioration or slipping of base flashings.
- Wrinkles are not uncommon to the systems; provided they are small and isolated and do not cause an opening across a lap seam, they may not affect performance.

### 3.2.2 EPDM, TPO and PVC Single Ply Membranes

- Referring to the checklist, report the general appearance of the roof and the surface conditions of the membrane.
- General appearance is primarily a function of housekeeping. Debris, poor drainage, or ponding may be evidence of physical damage.
- Any discolouration, cracking or splitting, as well as punctures, should be noted and repaired.
- Seams should be observed for open joints, fishmouthing or ridging.
- On fully-adhered systems, it is important to note any unadhered areas. On mechanically-fastened systems, a check should be made to be sure that there is no evidence of fasteners backing out or popping. On ballasted systems, the weight and depth of stone ballast should be checked against the design specifications.
- Any signs of scouring should be noted and all gravel redistributed evenly.
- If increased foot traffic becomes necessary, be sure to provide walkways.



The following troubleshooting guide for TPO, PVC and EPDM membranes identifies some defects and the possible causes.

<b><u>Defect Observed</u></b>	<b><u>Possible Cause</u></b>
<i>Discolouration of Membrane</i>	Chemical or atmospheric contamination
<i>Cracking, crazing, or splitting of membrane</i>	Possible defective membrane. Call manufacturer immediately.
<i>Fishmouthing or open joints</i>	Improper seam welding or adhesive.
<i>Loss of adhesion in fully-adhered system</i>	Interlaminar separation between insulation and facing indicating failure of insulation. Separation between membrane and insulation indicating improper application of adhesive. Call manufacturer immediately.
<i>Loose fastening in mechanically-fastened system</i>	Fasteners not properly installed. Fasteners too short. Buckling, warping, shifting or corrosive deterioration of deck or structure. Heavy foot traffic.
<i>Movement of ballast in loosely laid system</i>	Ballast too small for wind uplift conditions. Foot traffic or vandalism.
<i>Ridging or buckling of membrane at insulation joints</i>	Movement of substrate due to moisture or thermal effects.

### **3.3 MAINTENANCE FOR STEEP ROOFING**

- Do keep drains and gutters clean.
- Foot traffic on steep roofs should be minimized both for safety reasons and to avoid physical damage.
- Granule erosion on asphalt shingles will lead to early deterioration of the shingle.
- Caulking of flashings must be regularly inspected and maintained.
- Improper ventilation of attic spaces may result in curling and blistering/buckling of asphalt shingles.
- Install zinc strips to prevent moss build-up. Power washing the roof removes moss and other debris but may erode granules on asphalt shingles, and may also promote premature degradation of cedar roofing.
- If asphalt shingle tabs are loose, re-tab with a cement recommended by the shingle manufacturer.

## **CEDAR SHAKE & SHINGLE MAINTENANCE**

- Ensure ventilation is available, year round. Areas with louvers, ridge vents, roof vents, and soffit vents need to be kept clear and never blocked off. Adequate ventilation ensures heat and moisture do not build up in the attic area. Adequate ventilation also prevents water from accumulating at the bottom of the roof and then freezing (ice damming).
- Zinc or copper strips nailed at the ridge cap can be effective to control moss. Reaction between rain and the zinc or copper forms a mild solution that is carried down sections of the roof. The optional use of these strips can be eliminated if you are using preservative treated cedar.
- Overhanging branches should be kept trimmed away from the roof. This will prevent leaves, small branches and other debris from building up and keeping the roof wet.
- Gutters and downspouts need to be cleaned regularly, usually in the spring and fall. Downspouts (leaders) should run directly to the ground or to another gutter below. Never let a downspout drain directly onto a lower roof surface.
- Do not allow leaves, branches or other debris to build up on the roof. Both surface areas and keyways (spaces between shakes and shingles) need to be kept clear. Cedar needs to breathe, and therefore needs to be kept clean.
- High-pressure power washing will cause significant roof damage and is therefore not recommended. Garden hose pressure and a soft bristle brush can easily remove most debris.
- Topical treatment of installed cedar roofing is not recommended. Many treatment products may damage cedar roofs. Products that make erroneous claims of 10-year effectiveness, provide fire-retardant claims, are a sealant, waterproofer or plasticizer and should not be used on cedar roofing.

## **CEDAR REPAIRS**

It is natural to expect some replacement of shakes or shingles as cedar roofs mature. It is possible to replace and repair parts of a cedar roof. Individual cedar shakes or shingles can be replaced with matching products by trained roofers.

Contact an RCABC professional roofing contractor for your cedar repairs or maintenance requirements.

## 4 **THE ROOFSTAR GUARANTEE**

Five (5) Year and Ten (10) Year RoofStar Guarantees are unique third party guarantees that cover workmanship and materials, including the flashing. Jobs guaranteed by RGC require that work is:

- Performed to RGC Guarantee Standards
- Applied by an RCABC member contractor
- Meet the specifications
- Inspected by an RGC accepted independent inspection firm
- Include only RGC accepted materials and systems

### 4.1 **REQUIRED MAINTENANCE ITEMS**

In order to maintain the validity of a RoofStar Guarantee, the building owner must properly maintain:

#### **Drains, Gutters and Downspouts**

Clear away any debris that may impede their function. In addition, if they are clogged and cannot be readily cleared, get professional help. Make sure that any drain screens installed are still in place and functioning as intended.

#### **Gravel Surface or Ballast Erosion**

If the gravel has been eroded in certain areas, the unprotected bitumen coating will start to deteriorate. This erosion is common in corners of the roof that face the prevailing winds. Other causes are foot traffic, forced air discharge from ventilators, ice action, and water spillage from higher roof elevations washing gravel away. The eroded areas should be regravelled as soon as possible.

#### **Reglets**

These joints are designed to be the first line of defence against water penetration. Proper caulking should always be maintained in these reglets.

#### **Caulking of Metal Flashing**

Caulking of joints in metal flashings such as copings, counter flashing, roof top units, curbs, expansion joints etc., requires regular inspection, cleaning and recaulking, or replacement caulking. Always use a caulking material that you have checked out to be compatible with all components in contact with the caulking.

#### **Gum Pans / Pitch Pockets**

A potential source of trouble, these high maintenance items should always be filled and "crowned" with roofing cement or compatible sealant to shed water. Their waterproofing ability depends on keeping them full and free of cracks.

## **Plumbing Caps**

Check to make sure plumbing caps on vents are in place. Replace if necessary. Do not just hammer or bend lead stacks. Use the proper cap.

## **Insulation Boards**

In a protected membrane assembly, the insulation and ballast system may be designed to "float" under heavy rainfall conditions. If, under these circumstances, some of the gravel ballast is displaced and the scrim sheet is exposed, ballast can be added or moved to prevent floatation and to provide cover. Cautionary Note: If ballast is added, ensure that the added weight does not compromise the integrity of the roof structure. If there is any doubt at all, contact a structural engineer for a professional opinion.

## **Roof Traffic**

It is important to ensure that maintenance personnel who require access to roof-top equipment do not cause any damage while working on the roof. A roof should never be used as a patio or sun deck unless proper protection has been provided.

In addition, roof-top equipment and protrusions such as ventilators, plumbing stacks, etc., should never be used as anchors to tie down aerials, satellite dishes and the like.

## **Rooftop Alterations**

Always contact your professional RCABC roofer to seal and flash any new rooftop equipment or for any other alterations to the roof system. Any unauthorized alterations to the roof could result in voiding the RoofStar Guarantee. Alterations must be inspected and reported for conformance to RGC Guarantee Standards.

## **Roof Spills**

Your professional roofer should clean any accidental spills of material to the roof system, such as oil-based products, as soon as possible. If there is an on-going potential for this kind of spill, such as around a vent from a kitchen exhaust, call your roofing professional to recommend a long-term solution.

## **Change in Use / Occupancy**

If the use of a building has changed due to a change in owner or tenant, consider its effect on the roof system. For example, an increased humidity condition beyond the limits of the roof system's vapour retardant could allow moisture transmission from within the building's interior into the roof system. This, in turn, could lead to premature problems and the possible failure of the roof system.

## 4.2 SUGGESTED INSPECTIONS

- Regular walk-over inspections should be made at least twice a year - once in the Spring, and once in the Fall.
- Spring inspections permit observation of possible winter damage and allow for maintenance to be scheduled and completed during the best possible weather.
- Fall inspections can disclose requirements for preventative measures that should be taken in preparation for the oncoming winter.
- Extra inspections should be made after major storms or after any construction activity that could affect the roofing system.
- If you need help:

### **CALL A PROFESSIONAL CALL A MEMBER OF RCABC**

## 4.3 FIVE (5) YEAR AND TEN (10) YEAR GUARANTEE PROGRAM GUIDELINES

To maintain the validity of the RoofStar Guarantee the building owner must:

- ENSURE** that the roof and its components are properly maintained. Items such as caulking of flashings, maintenance of gum pans, clearance of drains and debris, wind scouring of gravel, etc., are considered maintenance items and are the building owner's responsibility. Ask your RCABC professional roofing contractor for assistance.
- ENSURE** that any modifications or repair work done on the roof during the guarantee period is performed to RGC Guarantee Standards by an RCABC member and inspected by an RGC accepted independent inspection firm. RGC must be notified in writing of any modifications or repairs to the roof under guarantee.
- UNDERSTAND** that the guarantee is not negotiable or transferable without the written consent of the guarantor(s).
- UNDERSTAND** that access to the roof must be granted to an RGC accepted independent inspection firm in order to carry out the mandatory two-year re-inspection on Five (5) Year and Ten (10) Year Guarantees, as well as the 5-year and 8-year maintenance inspections on the Ten (10) Year Guarantee.
- UNDERSTAND** that if a claim under the guarantee proves not to be within coverage, then the costs of inspection, investigation and subsequent repairs will be to the building owner's account.
- UNDERSTAND** that "reused" materials (typically reused metal flashings) are specifically excluded from coverage by the RoofStar Guarantee.
- UNDERSTAND** that the guarantee may be voided if the building use changes to any other purpose than that for which it was originally designed.
- UNDERSTAND** that the guarantors do not assume liability for any leakage resulting from usual and ordinary effects of wear and weather; fire; construction failures, distortions, settlement or faulty design; hail, lightning, earthquake, windstorms, or any other acts of God; nor does this guarantee include liability for damage to the building or contents therein.

## 5 GLOSSARY OF COMMON ROOFING TERMS

- Alligatoring:** Shrinkage cracking of the bituminous surface of built-up roofing or the exposed surface of smooth-surface roofing, producing a pattern of deep cracks with the scaly look of an alligator's hide.
- Asphalt:** A highly viscous hydrocarbon produced from the residuum left after the distillation of petroleum used as the waterproofing agent of a built-up roof.
- Ballast:** An anchoring material (such as rounded river rock, gravel, or pre-cast concrete pavers), which is used to resist wind, uplift forces and hold roof membranes in place.
- Bitumen:** A generic term for either the asphalt or coal tar pitch used in the roofing industry.
- Blister:** A spongy, raised portion of roofing membrane, ranging in size from 25 mm (1") in diameter and barely detectable to as much as 4.6 m<sup>2</sup> (50 ft<sup>2</sup>) in area and 300 mm (12") high. Blisters result from the pressure of entrapped air or water vapour.
- Built-up Roofing: (BUR)** A continuous, semi-flexible roof covering, consisting of laminations or plies of saturated or coated felts alternated with layers of bitumen. Surfaced with bitumen, and in some cases covered with aggregate.
- Cant Strip:** A continuous strip of triangular cross-section, fitted into the angle formed by a structural deck and a wall or other vertical surface. Used to provide a gradual transition for base flashing and horizontal roof membrane.
- Emulsion:** An intimate mixture of bitumen and water, with uniform dispersion of the bitumen globules, achieved through a chemical or clay emulsifying agent.
- EPDM (Ethylene Propylene Diene Monomer):** A synthetic rubber sheet used in single-play roof membranes.
- Felt:** A fabric made by the interlocking of fibres. Roofing felts are manufactured from cellulosic fibres (organic felts), asbestos fibres (asbestos felts), or glass fibres (glass-fibre felts). Felts are either saturated, or saturated and coated with bitumen.
- Fishmouth:** An opening formed by an edge wrinkle in a felt where it overlaps another felt in a built-up roofing membrane.
- Flashing:** Connecting devices that seal membrane joints, drains, gravel stops and other places where the membrane is interrupted. Base flashing forms the upturned edges of the watertight membrane. Cap or counterflashing shields the exposed edges and joints of the base flashing.
- Flood Coat:** The top layer of bitumen in an aggregate-surfaced built-up roofing membrane.

<b>Gravel:</b>	Coarse granular aggregate, having rounded edges, resulting from the natural erosion of rock.
<b>Gravel Stop:</b>	Flanged device, normally metallic, designed to prevent loose aggregate from washing off the roof; it also provides a finished edge detail for the built-up roofing assembly.
<b>Gum Pan (or Pitch pocket): Pitch pocket):</b>	A flanged, metal container placed around a column or other roof penetrating element and filled with bitumen or flashing cement to seal the joint.
<b>Loosely Laid Membrane:</b>	Membranes, which are not attached to the substrate except at the perimeter of the roof. They are held in place with appropriate and adequate ballast.
<b>Modified Bitumen:</b>	Asphalt enhanced by the addition of polymer modifiers to increase cold temperature flexibility and warm temperature flow resistance and stability. The most common modifiers are SBS (styrene butadiene styrene) and APP (atactic polypropylene).
<b>Parapet:</b>	The part of any wall entirely above the roof.
<b>Ply:</b>	A layer of roofing membrane. A four-ply membrane has at least four plies of felt at any vertical cross section cut through the membrane.
<b>Primer:</b>	A liquid bituminous material applied to a surface to improve the adhesion of heavier application of subsequently applied bituminous materials.
<b>PVC (Poly Vinyl Chloride):</b>	A thermoplastic sheet material used for single ply roofing membranes.
<b>Reglet:</b>	A groove in a wall or other vertical surface adjoining a roof surface for the embedment of counterflashing.
<b>Single Ply Membrane:</b>	Roofing membranes that are field-applied using a pre-manufactured sheet of single-layer membrane materials (either homogenous or composite) rather than multiple layers.
<b>Slope:</b>	The ratio between the measure of the rise and the horizontal span.
<b>Smooth-Surfaced Roof:</b>	A built-up roofing membrane surfaced with a coating of hot asphalt, asphalt emulsion or asphalt cutback.
<b>Square:</b>	A roof area of one hundred square feet.
<b>Substrate:</b>	The surface upon which the roofing membrane is placed — structural deck or insulation.

**Vapour Retarder:** A material designed to restrict the passage of water vapour through a wall or roof assembly.

Disclaimer

*The ROOF MAINTENANCE GUIDE is intended to be a general overview only. While every attempt to ensure completeness and accuracy has been made, this guide should be used as a reference only. The author of this guide accepts no responsibility for any errors or omissions with respect to the subject matter contained herein and expressly disclaim any such responsibility. The guide is not intended to provide legal advice and if legal advice or other expert assistance is required, the services of the appropriate professional should be sought.*

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## WHY CHOOSE A PROFESSIONAL ROOFING CONTRACTOR?

When selecting a contractor to construct, renovate or repair a commercial, industrial or residential roofs, the lowest bidder is not always the best, or the most economical choice for the building owner. The roof over your school, office, factory, store or home is an extremely important investment.

Since everything important to you is under that roof, keep the following criteria in mind when searching for a roofing contractor, developing a tender or reviewing a quote:

1. Does the contractor have experience with the specified roofing system and do they have the equipment necessary to install it?
2. Does the contractor have both a proven financial and technical track record?
3. Can the contractor provide you with the RGC Guarantee Certificate? (available only to RCABC members)
  - A. Can they obtain the required bonding and provide proof of insurance coverage?
  - B. Do they have a paid up Worker's Compensation Board account?
  - C. And a proper business license to perform work in the jurisdiction involved?

4. Does the contractor have sufficient trained and qualified staff to do the job properly?

RCABC contractor members will have no problem providing you with background information about each of these points because they are qualified to handle the jobs they bid on.

The reason we can say this with such confidence is that contractor membership in RCABC is only granted after an extensive qualification process.

- All aspects of the contractors experience are reviewed and audited.
- When we grant membership to a contractor we can assure you that they have the "right stuff" to handle your jobs.
- We back our words with the best guarantee in the industry!

For further information on any of the programs and services we offer or to locate an RCABC Member in your region, please visit our website [rcabc.org](http://rcabc.org)

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