

8. Roofs and Roof Covers

Roof designs include hip, mansard, flat, gable (two planes sloping to meet at a ridge), gambrel (“barn” look), a modified gable roof which has two planes at each side of the ridge. Each plane has a low slope at the top, changing near the outer limits of the building walls to a sharp slope downwards to the eave. A hip roof has four planes, sloped downwards from the ridge, (one per building side). A mansard roof has a combination of flat upper roof and a sharply sloped plane on each building side. See diagrams below. Gambrel and mansard roof materials used along upper floor building sides also perform as siding.

Roof drainage is the primary consideration in selecting an appropriate covering. Low slope roofs have less than a one foot rise per three feet of horizontal run (known as a 1:3 or 4:12 slope). The resulting slow drainage is easily obstructed and low slope roofs require covers with less seams than higher slope roofs to reduce risk of water entry. Slow draining water can also freeze, particularly at colder outer edges, resulting in ice buildup (damming). Ice damming lifts the edges of shingles allowing water into eaves, attics and walls.

It commonly forms if roofs are snow covered and melt occurs due to interior heat losses or exterior thawing.

When the slope is less than 2:12 the roof is a “flat” roof. Its very slow drainage requires further reduction in seams. A common approach is installing successive bitumen coated layers of overlapped rolled tar paper at right angles (commonly called a built-up roof cover). The number of layers, or plies, is usually three to five. The higher the number of plies

the longer the life, the greater the cost of installation and the more difficult to repair if leakage occurs. Leakage/seepage paths are more complex with higher numbers of plies making it increasingly difficult to locate a water entry point. Continuous membrane polymeric materials are increasingly used as covers reducing seams further. The reliability of membrane fastening is extremely important due to risk of extensive loss of protection in high winds. Built-up and membrane roof covers are usually covered by crushed stone to protect the roof cover from premature loss of water resistant oils due to exposure to ultraviolet light. The stone cover also helps reduce risk of membrane wind loss/damage. A truly “flat” roof should not exist due to the absence of drainage.

As roof slopes increase, loading effects change dramatically. Wind loading increases and loading due to precipitation is reduced; rain, snow and sleet slide off more readily. Roof cover and roof board (decking) considerations are different under these conditions (e.g. thin metal roof covers may be installed on strapping without decking for high slope roofs).

Roof cover materials cover a wide range: asphalt shingles, slate, corrugated metal, concrete, built-up (pitch and gravel), cedar shakes, cedar shingles, roll metal, roll tar paper, etc.. Primary concerns are the conditions of materials and implications for leakage, remaining life, maintenance and safety. The condition of roof planes, ridge lines and appropriateness of materials are further concerns (e.g. sags, frame or roof distortion with heavy roof covers (e.g. slate), matching of slopes and roof covers, etc.).



Gable



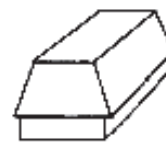
Gambrel



Flat



Hip



Mansard



Shed

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Roof type(s): flat , hip , shed , gambrel , mansard , gable , sloped (low , medium , high) or _____

Conditions observed using binoculars , from roof edge , by walking over , from higher level windows and/or _____
Not observed , partially observed
Approximate percentage visible _____
due to height , snow cover , vegetation
or _____

Cover type(s) and conditions:

- (a) asphalt shingle good condition or: curled , lifted , torn , shingle(s)/shingle portion(s) missing , exposed fiber , stone covering sparse or _____
at _____
- (b) built-up good condition or: bubbled/lifted , irregular drainage , exposed bitumen , water puddling , central drain (blocked , damaged , absent), bitumen (cracked , faded) exposed fiber or _____
at _____
- (c) corrugated or factory formed metal good condition or: sections (deformed , loose , missing) or _____

- (d) wood shakes or shingles good condition or split , misaligned , portions missing , rot , moss , mildew , cupping or _____
at _____
- (e) roll metal good condition or: fasteners (loose or missing), deformed section(s) , surface damage , open solder seams , perforation(s) , rust through , surface rust , discoloration , or _____
at _____
- (f) roll asphalt , polymer membrane good condition , or: exposed fibre , open seams , loose , tar/bitumen coating (faded , cracked) or _____
at _____

(g) other roofing material

Ridges are straight or have waviness , sag
or _____
at _____
Slopes have waviness , sag
or _____
at _____

Sag and waviness arise from roof decking and/or frame deformation. Conditions need to be checked at the interior before seriousness can be determined.

Conditions good or indicate:

- (a) high risk of leakage or wind loss/damage in the roof covers. Prompt repair and/or replacement recommended. The roof cover should be regarded as at, or approaching, the end of its life cycle .
- (b) need for preventative maintenance (rebonding , tightening , stone re-spreading , drainage improvement , shingle repair or _____)

Other observations or comments:

