

DESIGNING FOR STEEL ROOFING & CLADDING

Glare

BUILDING MATERIALS
AND REFLECTIVITY



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Introduction

Good building design requires some thought in the selection and use of materials. Reflective building materials benefit the occupants and the environment. However, in limited cases highly reflective materials or surfaces, if not properly used, can cause some annoyance to immediate neighbours (note: highly reflective materials could include glazing and swimming pools, amongst other things). The challenge, therefore, is to develop an understanding of the key issues, to allow a balanced assessment of material choice, in the interests of the occupants, the neighbours and the environment.

Important factors to be considered in appraising a building include:

1. The orientation. A simple sketch of the house in question, the typical position of the sun and the position of any neighbouring dwellings (see Figure 1) can be a great help in determining whether any neighbours can receive directly reflected sunlight. If they cannot, then glare will not be an issue. It is mainly when viewed from the south that roofs can result in glare for any extended period of the day. Furthermore, due to the sun's ever changing path, glare will normally only be present for a small part of the year.
2. Issues such as roof pitch and the slope of the ground (topography) need to be considered in drawing a sketch such as that in Figure 1. Any vegetation or other screening that is present or could be used to shield the view of the roof should also be considered (see Figure 2).
3. The time of year and the effects of weathering. If glare can occur, it will often be worst in summer time, when the sun is at its most intense. New roofs built in summer time cause the most glare for all roofing colours and materials. As the seasons change, the position of the sun will move in the sky and the observer may no longer receive direct reflection. Furthermore, in the case of a COLORSTEEL® prepainted steel roof, some weathering will occur over time and also the build up of dirt and dust means that by the following year, the amount of reflected light will reduce. While this weathering process reduces glare, it occurs in a manner that does not substantially affect the thermal performance of the roofing system.

Irrespective of the roofing material (COLORSTEEL® prepainted steel, tiles etc) most colours in any product range will probably have a similar gloss level and might be expected to give similar amounts of mirrored reflection.

Therefore, while the colour will influence the amount of perceived glare to an extent, changing from a lighter to a darker colour in any given material may not have the desired effect of considerably reducing the perceived glare, if indeed direct reflection to the observer is likely to occur.

Please note that the information in this bulletin is intended as a guide only and we recommend that you seek third party professional advice in all instances and before undertaking your construction project.

Figure 1: Direction tendency of mirrored sunlight to the North and to the South.

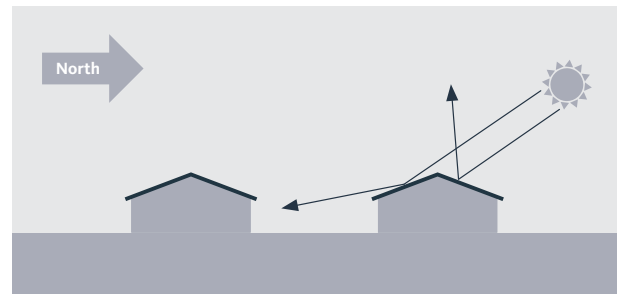
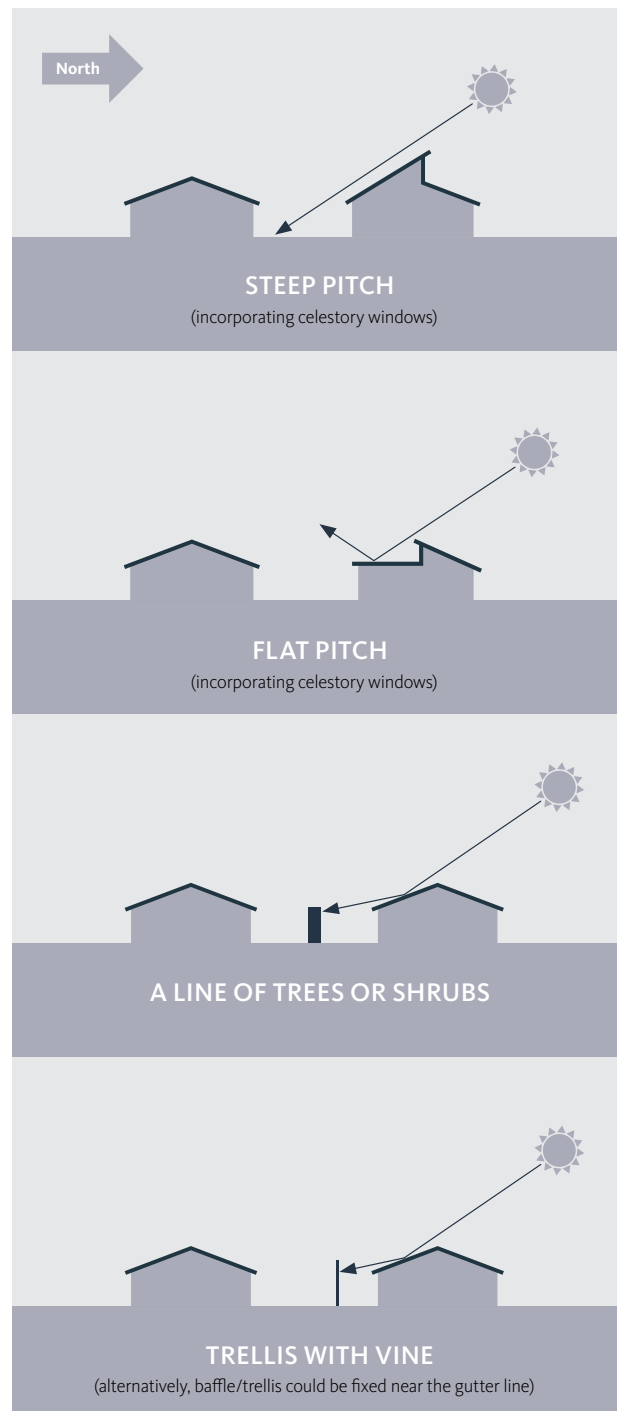


Figure 2: Modifying roof pitch or shielding to avoid directly reflected sunlight.





KEY POINTS TO REMEMBER:

1. All materials are reflective.
2. A simple case-by-case assessment is the most effective means of ensuring a good environmental outcome while addressing relevant concerns and allowing appropriate materials to be used. Alternative assessment methods have shortcomings for the owner, the neighbours and the broader environment.
3. Orientation is quite important in the assessment process. The most critical case is a view from the south. A simple sketch of the direction of mirrored sunlight, the slope of reflective surface (such as a roof) and the position of the sun at any time, should establish whether there may be an issue.

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