

COMMON ROOFING DEFECTS AND WAYS TO PREVENT THEM

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INTRODUCTION

The roof is part of a building envelope which covers the top part of a building. It provides protection against sunlight, rain, extreme temperatures, snow and wind. Thus, the roof is said to be one of the important structural elements of a building. Owing to the long term exposure of the roof to weather hazards and other elements, some defects will definitely appear during its course of life. It is crucial for the owners to understand the common roof defects, as well as the most likely location where the defects will occur and how to prevent them. This article has discussed several roof defects and their prevention methods.

COMMON ROOFING DEFECTS AND THEIR PREVENTION METHODS

1. Weathering defects in roofs

Weather conditions such as heavy winds or storms can lead to roof defects. For example, the strong wind will cause the roof tiles to slip out of their original positions, causing damage to the roof. Furthermore, corrosion of the nail on the roof and the decay of wood that fixed by slate due to rainfall will lead to the displacement of ceramic tile from their original position, which will bring damage to the building. Corrosion and rotting process will accelerate during the exposure to pollutants and industrial atmosphere. Besides, the falling of branches to the roof during bad weather leads to damage to roof and the falling of leaves to the gutters can cause blockage. When the blockage happens, water cannot flow to the drain and it will start to seep into the building, resulting in water leakage. Moreover, the clogged water in the gutters provides a breeding ground for the Aedes mosquitoes and will bring health hazards to the residents. In addition, algae and moss will start to grow in the gutters, which will cause damage to the roofing system.



Figure 1: Clogged Gutter^[1]

To prevent weathering defects in roofs:

- Inspect the roof at least once a year.
- Clean the downspouts more frequently.
- Check the roof after every downpour or storm.
- Trim the trees away from the roof's edges to prevent falling of branches onto the roof.
- Check the gutter and clean them regularly.
- Install screens on gutter openings to prevent twigs and leaves fall into the gutter.

2. Roof Alligating

Roof alligating happens on flat roofs as a result of prolonged exposure to sun. The UV rays from the sun dry the membrane and coating on the flat roof. The asphalt used to build the roof lost its elasticity, causing roof alligating appears. Roof alligating develops when the flat roof ages. Temperature changes and internal heating and cooling will lead to more cracks. If the roof alligating is left unrepaired, it will result in premature failure. There are few procedures to fix the roof alligating. Firstly, clean the roof thoroughly to make sure there is no dust or loose particles on it. Secondly, apply a primer to the roof's original surface. Next, embed strips of fiberglass mesh in the coating. Finally, apply the coating when the primer has dried.



Figure 2: Roof Alligating ^[2]

To prevent roof alligating:

- Inspect the roof more often so that repairing can be done earlier.
- Apply UV protectant or reflective roof coating on a regular schedule.
- Carry out regular maintenance.
- Repair the roof although there are only small cracks.

3. Roof defects due to improper installation

Poor workmanship of the installer is the key factor of improper installation. If a roof is not installed properly by the skilled workers, there will be some defects such as roof leakage, roof sagging and weak shingles, which will destroy the structural integrity of roof. In addition, improper installation of roof will cause damage to roof especially in the event of heavy rain or

storm. The defective roof allows water to seep into the buildings. When roof leakage happens, the moisture will cause mold growth and corrosion on the roof layers and rafters which will may bring damage to property. This is because the rusted or corroded rafters will cause the buildings to collapse when it can no longer support the weight of the roof. In fact, the position of roof leakage is easy to be identified. It can be done by looking for wet spots on ceiling or a place where drip buckets are always needed when raining.



Figure 3: Roof Leakage ^[3]

To prevent roof defects due to improper installation:

- Prepare proper material before installation.
- Hire contractors that are experienced in installation of roof.
- Use proper equipment for installation.
- Pre- and post-inspections for work on roof.

4. Roof defects due to improper repairs

Inadequate understanding of the roofing problems by contractors, insufficient experiences of contractors, improper roof repair materials and attempts by owners to repair themselves are among the factors that cause improper roof repair. Inappropriate repair works can lead to water ponding and leakage problems. The area is considered as water ponding when water accumulates for more than 48 hours. The water will react with the roof membrane and damage the integrity of roof. The ponding water will seep into the building and cause internal damage. Besides, the stagnant water increases the weights to the roof, where the roof deck and structural members are not designed to hold this additional loads previously. This increases the chances of the roof collapsing. In addition, the ponding water also increases the slip and fall hazards. Therefore, improper repair works should be avoided. In addition to the problems of water ponding and leakage, more time and manpower are needed to repair the wrong repair work again which will increase the repair costs.



Figure 4: Water Ponding ^[4]

To prevent roof defects due to improper repairs:

- Call for licensed contractors to repair the roof.
- Owner can ask contractors if having any questions on repairing the roof.
- The repair product and application methods should follow the manufacturer's instructions to avoid any improper usage.
- Have regular inspections and maintenance of the roof.

CONCLUSION

Roof is one of the important structures of a building as it protects the building from weathering. Roof defects are very common in every building and the repair works can be very costly. A defective roof has adverse effect upon many elements in the building. Thus, owner must fix the defective roof when it is only a minor problem to prevent it from becoming a bigger problem in the future. If the roof repair works can be done earlier, the owner can also save a lot of money. It is recommended that the owners to hire professional roof contractor to repair the roof as they have more knowledge and experiences on doing it. To ensure the lifespan of a roof can be longer, regular inspection, maintenance and repair of the roof should be done by the owners. If neglected, the lifespan of a roof can be greatly shortened.

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