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LYSAGHT®

Maintenance Manual for Roofing & Rainwater Goods

TATA BLUESCOPE STEEL

Maintenance Manual for Roofing and Rainwater Goods

Contents

1 General

Scope

This manual provides information and guidelines on the maintenance of the installed roof cladding and rainwater goods to ensure maximum life of roofing and rainwater goods. It forms a part of the Installation Warranty Terms and Conditions: This manual contains requirements and guidelines to ensure that:

a. The performance and life of the installed roof cladding is optimised.
b. The installed roof cladding is maintained in a manner such that the warranty remains valid.
c. The installed roof cladding satisfies both the performance and warranty criteria of the specification.

Failure to adhere to the requirements and guidelines of this maintenance manual may, render the warranty for the installed cladding null and void.

2 Inspection and Maintenance

1. Maintenance Requirements & Frequency

Maintenance should be carried out at least every four months, preferably including the end of autumn and end of spring. In the case of extreme events (storm, tempest or other "acts of God"), inspection should be carried out and abnormal maintenance carried out as required.

Building Location	Maintenance Period
Upto 5 miles from the sea	3 months
High pollution industrial area	3 months
Medium pollution industrial area	6 months
Areas of high humidity	6 months
Low pollution industrial area	9 months
Dry desert areas	12 months

Preventive Maintenance

Preventive maintenance should commence immediately after a project is erected, modified or repaired.

a. Check for any debris that may have been left on top of panel or trim. Example of this are ferrous items such as screws, pop rivets nails, sheet metal off-cuts, tin cans, etc. large or heavy items should be removed by hand to avoid damaging the paint or zinc layer on the panel. The remaining smaller items may be swept-off with a soft nylon brush. Please note this check should be made after any tradesman has worked on the building e.g. electricians, plumbers, air conditioning technicians and steel erectors.
b. Check for sand or dirt build up. These retain salt and moisture and will rapidly break down the paint and zinc layers resulting in corrosion of the base metal.
c. The most vulnerable areas of building are:
    a. Gutters
    b. Roof sheets
    c. Shelters areas under eaves or canopies
    d. Top portion of walls sheltered by roof overhangs or gutters sand and dirt should be washed off with clean water and a soft nylon brush. Clean from top to bottom and give a final rinse with water when completed. Ensure no water is trapped anywhere

d. If building is in an area of high industrial pollution or close to marine environment then water alone may not be enough. Salt and other deposits build up at formed corners of panels and quickly breakdown the paint and zinc layers and finally corrode the base metal. As such deposits build up, the hardness of the layers increases making removal more difficult. In these cases the period between maintenance operations should be shortened and a mild detergent should be added to the initial washing water.

All maintenance work is to be undertaken within the recommendations of this book and such work is to be fully documented in accordance with Section 15.

2. Safety/ Walking on roof

Whenever you perform maintenance on the roof system, safety must be a prime concern. Building maintenance personnel should have fall protection and other personnel protection equipments. Failure to follow can result in serious personal injury or even death of the maintenance personnel.

A completed roof system is a safe working surface except near the edge of the roof and when any moisture (such as dew, frost, snow etc.) makes the surface of the roof very slippery. Roof installations with steep slopes can also be hazardous without proper safety equipment. Appropriate safety measures and extra caution should be exercised whenever these conditions are present.

Make sure maintenance personnel are adequately instructed in safety and that they are provided with appropriate safety equipment. Working off the ground, even a few feet, can be dangerous and fall from any height can be fatal.

Whenever performing building maintenance, the following precautions must be taken:

- All relevant OH&S, statutory and regulatory body requirements are to be followed when inspecting a roof

- When walking on unprotected roofing, soft soled shoes should be worn, and walking on at least two ribs, as close to supports as possible is recommended. Point heel and toe loads should be avoided
- When moving between supports, do not walk in the pan immediately adjacent to flashings or translucent sheeting. Walk at least one pan away
- Avoid dragging the product and any other hard materials across the surface of the cladding, as this may result in scratching
- Always use fall protection, especially near building edges or eaves
- Do not walk on FRP sheets or translucent panels
- Do not walk on wet roof panels
- Do not walk, step or sit on skylights or ridge cap
- Do not walk in gutters
- Guard all skylights and other roof openings or holes

3. Access

When maintaining the roof, care should be taken not to damage the surface of the cladding, gutters and flashings.

- Soft protection should be placed on any equipment used to provide access, where it impacts on the roof cladding
- Some roofs (ie patios and verandahs) are not designed for foot traffic, and these roofs should not be walked on
- In high traffic areas of the roof, protection of the cladding with a proprietary roofing system

4. Inspection

Inspection is required to identify any breakdown in the performance of the installed products, and recording and documenting the observations of the inspections in Section 15. This section includes internal roof box gutters, eave gutters and any other gutter situations.

3 Gutters

1. Inspection

All gutters are to be inspected for the deposition of any debris, dust, pollutants or organic growth. In particular, care is to be taken in the inspection of gutters for these points:

- Staining of gutter at possible ponding locations
- Build up of dust and debris at the high end of box gutters
- Build up of leaves and debris in general along gutter runs
- Metallic staining of the gutter, surface rust
- Build up of debris at rain heads, water spouts, overflow locations and in general around the downpipe entry

Record and document the observations of the inspections in Section 15.

2. Maintenance

Twigs, dust, leaves and fungal matter (debris) should be removed using the following recommended procedure,

taking care to ensure no damage occurs to the gutter during debris removal. We recommend that the following procedure be adopted to remove the dust, debris and fungal matter.

- Sweep debris into a pile using a stiff, soft bristled brush (shovels or hard tools should not be used)
- Place debris into a receptacle and lower to the ground.
- The whole roof and gutter should then be washed down with a hose, including high ends of gutters possibly protected by overhangs, rain heads, water spouts and overflow locations
- If significant fungal growth is found, please contact Tata BlueScope Steel office for assistance
- Any metallic staining should be investigated to determine whether the cause is from a metallic deposit on the surface, or from the breakdown of the coating. Metallic deposits on the surface should be completely removed immediately. Breakdowns in the coating would generally result from poor maintenance techniques and scratching and can be restored as deemed necessary in accordance with Tata BlueScope Steel guidelines. Please contact Tata BlueScope Steel office for assistance
- Stubborn stains and dirt not removed in the hosing can be removed in accordance with Tata BlueScope Steel guidelines.

4 Downpipes

This section includes the whole stormwater pipe disposal system from the gutter to the street water table.

1. Inspection

The downpipes and stormwater disposal pipes are to be inspected for cleanliness and free flow of water. Growth of fungus and other matter and collected debris at the inlet and outlet locations is to be noted. Complete testing of the system for blockage at each downpipe is recommended.

Record and document the observations of the inspections in Section 15.

1) A typical suburban gutter clogged with leaf litter prior to cleaning.

2) Wear correct protection when clearing leaves and twigs.

3) When litter is removed, the layer of hardened dirt is revealed below.

4) Spray the gutter & downpipes with water to soften and break up the dirt.

5) Use a soft bristle brush and sweep the dirt out. Rinse again.

6) When the gutter has been cleaned, it should look like this.

2. Maintenance

- Downpipes made from Tata BlueScope Steel products should be cleaned using a pressure water hose directed down each of the downpipes
- The hose should then be fed into the pipe from the inlet down to the outlet, to ensure there are no obstructions

- Constrictions in the downpipe system may make it necessary to access the pipe from inspection points downstream of the downpipe inlet location
- Any noted blockages should be removed immediately, to avoid water back-up in the gutters

5 Penetrations, Flashings, Cappings

This section includes; all penetrations, flashings and all general ridge, valley, barge and fascia cappings including flashings;

1. Inspection

All penetrations and cappings are to be inspected for the build-up of debris or organic material located between the flashings or cappings and the cladding materials, visually noted to be protruding from, or staining the joint. Care is to be taken in noting any staining at the high side of penetrations. All observations are to be recorded and documented in accordance with Section 15.

2. Maintenance

- Build-up of debris or organic matter (debris) should be completely removed, using a stiff bristled soft brush to sweep the debris into a receptacle and remove from the roof. No hard tools should be used.
- The area should then be washed down with a pressure hose. Care should be taken to ensure that debris is not lodged between sheets or the sheeting and flashing and that water from the pressure hose is not driven into the building.

- Stubborn stains and dirt not removed in the hosing can be removed in accordance with Tata BlueScope Steel guidelines.

6 Joints, Platforms & Walkways

This section includes all joints that occur in the installed roof cladding; all cladding mounted access walkways, and elevated platforms supported on frames that penetrate the cladding.

1. Inspection

All joints are to be inspected for the build-up of debris or organic material located between jointed materials and the cladding materials visually noted to be protruding from the joint. In particular, for expansion joints, build-up of debris and organic matter is to be checked both above and below the flashing, against the overlapping and underlapping sheets respectively. For walkways and platforms, inspect the high side of the support frame for rust due to possible ponding, metallic staining or a build up of debris.

All observations are to be recorded and documented in accordance with Section 15.

2. Maintenance

- Build-up of debris or organic matter (debris) should be completely removed, using a stiff bristled soft brush to sweep the debris into a receptacle and remove from the roof. No hard tools should be used.
- The area should then be washed down with a pressure hose. Care should be taken to ensure that debris is not lodged between sheets or the sheeting and flashing and that water from the pressure hose is not driven into the building.
- Stubborn stains and dirt not removed in the hosing can be removed in accordance with Tata BlueScope Steel guidelines.
- The application of soaps and detergents are detailed in this document.

7 Unwashed areas

This section includes all areas of the external cladding that are sheltered from rain washing, e.g under eaves, underside of exposed gutters, exterior ceilings, upper sections of walls and doors partially protected by overhangs.

1. Inspection

All naturally unwashed areas are to be inspected for build-up of dust, debris and airborne pollutant fall out.

All observations are to be recorded and documented in accordance with Section 15.

2. Maintenance

- All unwashed areas are to be effectively hand washed using a pressure hose

8 Fasteners

This section applies to all fasteners, including washers, used in the fixing of the cladding material to the supporting structure.

1. Inspection

All fasteners are to be inspected for breakdown of the rubber washers and/or the deterioration of the head of the fastener.

All observations are to be recorded and documented in accordance with Section 13.

2. Maintenance

- All deteriorated washers and fasteners are to be removed and replaced. Replacement fasteners and washers are to be placed in accordance with the recommendations of Chapter 3, of the LYSAGHT® Roofing and Walling Manual: Install LYSAGHT® Steel Roofing & Walling current at the time of installation.

9 Roof Sheeting

1. Inspection

All claddings are to be inspected for the deposition of any debris, dust, pollutants or organic growth. In particular, care is to be taken in the inspection of cladding for these points:

- Staining of cladding at possible ponding locations
- Build up of dust and debris
- Metallic staining of the gutter, surface rust

- Record and document the observations of the inspections in Section 15

2. Maintenance

Twigs, dust, leaves and fungal matter (debris) should be removed using the following recommended procedure, taking care to ensure no damage occurs to the cladding during debris removal. We recommend that the following procedure be adopted to remove the dust, debris and fungal matter

- Sweep debris into a pile using a stiff, soft bristled brush (shovels or hard tools should not be used)
- Place debris into a receptacle and lower to the ground
- The whole roof and gutter should then be washed down with a hose, including high ends of gutters possibly protected by overhangs, rain heads, water spouts and overflow locations
- If significant fungal growth is found it should be identified and removed in accordance with the Tata BlueScope Steel guidelines
- Investigate metallic staining of the roof or gutter to determine if it is caused by a metallic deposit, or by breakdown of the coating on the cladding. If it is a metallic deposit, completely remove it immediately. Breakdowns in coating would generally result from poor maintenance techniques and scratching and are to be restored as deemed necessary in accordance with BlueScope Steel guidelines
- Stubborn stains and dirt not removed in the hosing can be removed in accordance with Tata BlueScope Steel guidelines

10 Maintenance of Accessories

1. Personal Doors

a. Occasionally lubricate the hinges and locksets
b. Remove any dirt or grit from the threshold
c. Make sure the door is not allowed to swing back against the wall; this can spring the hinges, and damage the panels

2. Sliding Doors

Regular cleaning of bottom door guide by removal of stones and sand will ensure smooth running.

3. Roll Up Doors

a. Occasionally clean and lubricate and chain and reduction drive gears
b. Lightly grease the vertical guides

4. Power Vents

Periodically clean the blades to avoid build-up of dust and dirt. Check electrical connections and check tightness of all fasteners.

5. Building with Cranes

a. Every three months, check the diagonal rod bracings are tight
b. After one month of operation, check the high strength bolts on crane beams are tight. Also, this check is to be carried out every 3 months subsequently
c. Crane rails checking to be done every 3 months for the weldments
d. End stoppers to be checked once every 3 months

11 Following Trades & Services

Persons involved in following trades and services need to be made fully aware of the consequences of their work. Warranties and guarantees previously issued may be rendered null and void if work conducted damages the roof. Additionally, all following trades must check the compatibility of their products and associated discharge by these products when installed on the roof system. Air conditioning system waste and condensate is not to discharge on the roof. This waste and condensate should be directed to the sewer system in accordance with the requirements of the relevant statutory authority.

Care must be taken not to use CCA treated timber on or above roof cladding; not to use unpainted copper flashings and not to spill mortar onto the cladding.

A full register of persons and reasons for trafficking the roof must be documented and maintained.

12 Records and Documentation

A full log of all inspections and the maintenance work undertaken is to be kept in the building detailing the date of the inspection and maintenance, all of the observations made and the extent of the site maintenance works undertaken.

Where following trades have changed the roof environment, causing new penetrations, creating new platforms or the like, photographic documentation of the alterations and inspection of the site by BlueScope LYSAGHT® is required. Additional fees may apply.

13 Inspection Sheet

Roofing and Rainwater Goods maintenance requirements

Photocopy this page and set up a binder to collate these reports, as any warranty claim will require this documentation.

Inspection Date:

Inspection by:

Gutters:

Downpipes:

Penetrations:

Flashings/Cappings:

Expansion/End Joints:

Platforms/Walkways:

Unwashed Areas:

Fasteners:

Roof Sheeting:

Comments/drawings:

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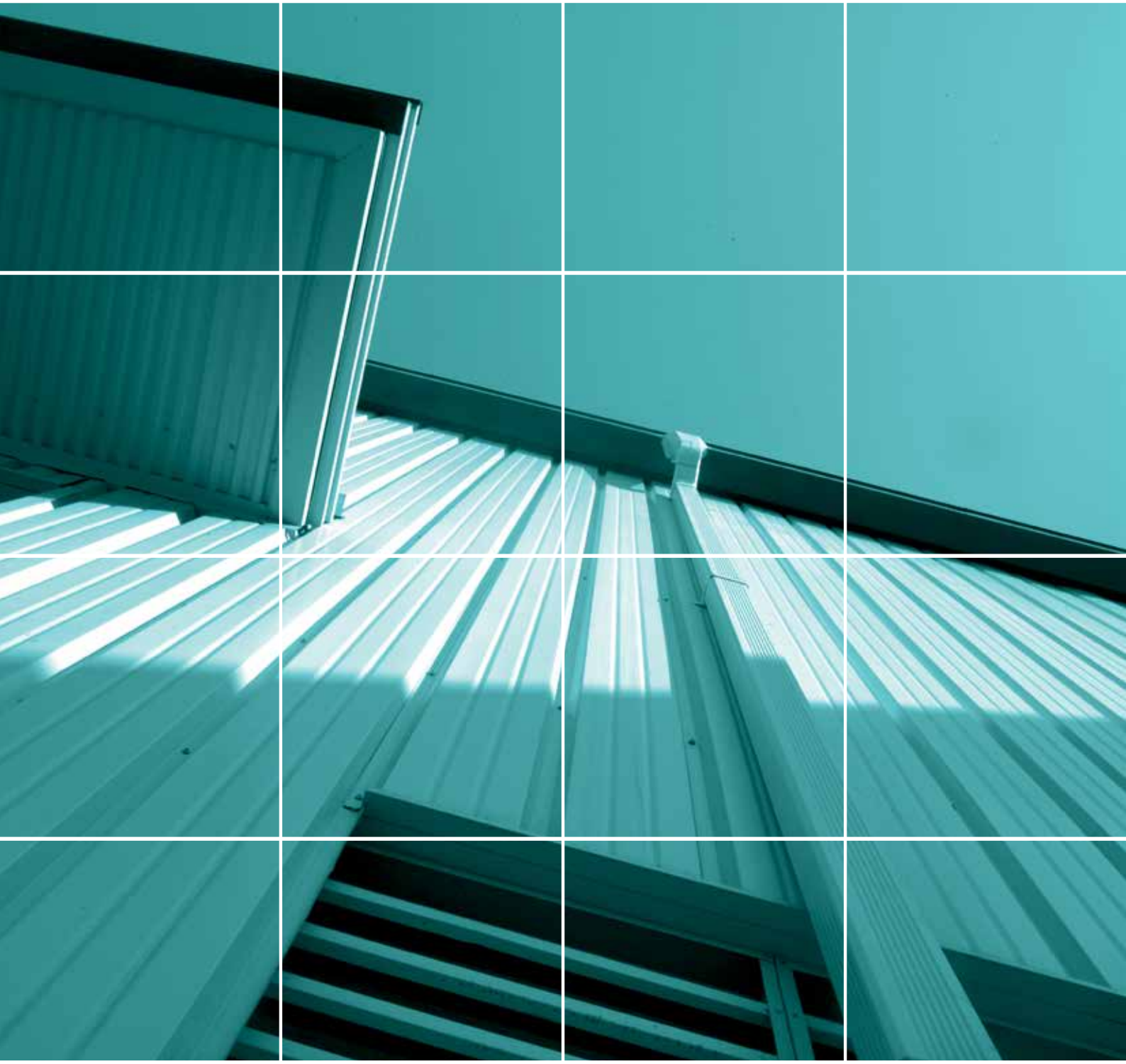

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