

## OPERATIONS & MAINTENANCE MANUAL



## HANDRAILING, BALUSTRADE & THE LIKE

**This O&M must be read in conjunction with the detailed manufacturing drawings**

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## 1. Introduction

Our railing and balustrade products have been supplied to designs that have been proven over years of development and installation. From 31<sup>st</sup> May 2017 our railing and balustrade systems have been CE marked in accordance with the recently introduced Construction Products Regulation (Execution Class EXC2).

Our products are supplied in a base material of either mild steel, stainless steel or aluminium using grades of material that ensures they are fit for purpose for many years to come.

To aid in ensuring the maximum life can be realised with the system, along with minimising the costs for major refurbishment, this manual has been created to assist in the ongoing maintenance requirements along with identifying important points that should be followed at all times.

Street Structures are accredited to BS EN 1090 Execution Class 2. The standards have been utilised during the design, manufacture, processing and delivery of the product. Our commitment to providing a service of quality that takes into consideration the effects of the environment during its manufacture and life plus the health and safety of the Customers has been fully considered.

Other standards that have also been considered during product design and manufacture are:

- BS EN 1993-1-1:2005 (Euro code 3. Design of Steel Structures).
- BS EN 1090-1:2009+A1:2011 (Execution of Steel Structures & Aluminium Structures).
- BS EN ISO 3834-3:2005 (Quality Requirements for Fusion Welding of Metallic Materials).
- BS EN ISO 1461:2009 (Hot Dip Galvanized Coatings on Fabricated Iron & Steel Articles).
- BS EN ISO 12944-2:1998 (Paints & Varnishes – Corrosion Protection of Steel Structures by Protective Paint Systems).
- BS EN 13022-1:2006+A1:2010 (Glass in Buildings. Structural Sealant Glazing).

## 2. Health & Safety Information

UDDL railing and balustrade systems have no specific operating instructions once it has been installed. However, there is a need for certain Health and Safety notes to be considered at all times during its use and ongoing maintenance. These being:

- When routine maintenance is being undertaken there is a requirement for the customer to observe the required Health & Safety information for the materials / products being used. UDDL identify that: It is the Customer's responsibility to ensure that full care, responsibility, correct operation / use, and training are adhered to at all times.
- Before any works are carried out risk assessments must be carried out for each operation in turn. Control measure must be taken if disclosed by the result of the risk assessment.
- All maintenance work must be carried out in accordance with the Health & Safety at work Act 1974 and also in accordance with any other relevant and current legislation and HSE guideline publications relevant to the work being undertaken.

**It is the Customer's responsibility to ensure that at all times when working at height and by whatever method chosen, full care, responsibility, correct operation, training and supervision must be adhered to as a minimum.**

- Street Structures cannot accept any responsibility for any damage or injury to persons or property as a result of not working in a safe and proper manner.
- Should any structural concerns, product failure, product quality or issues relating to ongoing maintenance and repair of the product be necessary, then it is strongly recommended that in the first instance contact is made directly with ourselves.

### 3. Materials & Processes

As the product is designed to utilise various customer requirements, the following is a list of materials and processes that could have been used during its processing:

#### Materials

- Mild steel in grades S235, S275 or S355
- Stainless Steel – Grades 303, 304 or 316
- Toughened or Laminated glass
- PETg
- Aluminium guttering and downpipes
- Fixings are galvanized, stainless steel or BZP
- Rivets and / or TekScrews
- Ground anchors – Sleeve or resin type
- Trespa Panelling
- Twinfix Glazing Bar System
- Glazing Strips/Fixings
- Glazing Rubbers

#### Processes Used

- Bending, forming, fabrication and welding.
- Hot dip galvanizing
- Polyester powder coating
- Wet painting

**FIND ATTACHED THE DATA SHEETS FOR INDIVIDUAL PRODUCTS/PROCESSES USED**

## 4. Cleaning, Maintenance and Repair Guidelines

This section gives a generic overview of the inspection and cleaning regimes, solutions, methods and techniques which will preserve the aesthetic finish of the product.

### Inspection & Cleaning

To maximise life expectancy the product should be visually inspected, on a regular basis, for any signs of damage, vandalism, breakdown of surface finish, build-up of salt, dirt or atmospheric residue, and loose fixings.

During these inspections, should any concerns be noted, then the Customer's attention is brought to the following pages whereby suitable maintenance and repair methods are described for the various materials used.

In the event of serious damage to any main, or structural, component then Street Structures should be contacted immediately for detailed technical advice.

In addition to the visual inspection, a regular cleaning regime is also required.

The required frequency of visual inspection and cleaning will be dependent on the environment in which the product is situated:

- In rural and urban environments, the products should be visually inspected monthly, and cleaned every 3 months.
- In harsh industrial or coastal environments, where the products may come into contact with concentrated atmospheric pollutants (chemical, marine), the visual inspection frequency should be increased to weekly, and the cleaning frequency increased to monthly (or as required).

Note – this document is not designed to be exhaustive and extensive in the exacting requirements of every case. If you consider your cleaning or repair circumstances to be outside of the scope of this document, then please contact Street Structures and we will be happy to help you keep our products looking as new.

**All cleaning and maintenance should be recorded, detailing the method of cleaning, what products have been used, and what repair work has been undertaken. In the case of a warranty claim against Street Structures, this information will be requested. Failure to provide such information will inundate any claim**

**Please note inspections/call outs are chargeable at our standard rates. In the event that failure to maintain correctly, accidents or acts of vandalism to the product are deemed by ourselves to be the cause of/or reason for any issues arising.**

## 5. Individual Elements

### Galvanized Coating

The Galvanizing used on the product has been processed in accordance with the requirements specified in BS EN ISO 1461:2009. Galvanizing is a hot dip chemical reaction of molten zinc onto a steel substrate. At the time of the process taking place the appearance will be one of shiny silver, however, this will not last and over a period of several weeks this will dull off to a grey colour. This is the natural finish of the Galvanized surface.

Note - due to the nature of the Galvanizing process some surface irregularities may occur on the surface of finished products. Although these will be finished flat, where possible, this will not be undertaken where it may breach the zinc coating. Some visual irregularities may therefore be present on galvanized products, including those finished with a polyester powder coating – these do not compromise the durability and performance of either the product or the coatings in any way.

The cleaning of any exposed Galvanized surfaces should be undertaken using:

1. A low pressure water wash e.g. hosepipe.
2. A soft brush, with warm soapy water, to remove any surface dirt.

Scourers, wire brushes, and abrasive cleaners must not be used during cleaning as they may compromise the protective surface and result in premature rusting. After cleaning ensure the product is rinsed thoroughly.

Galvanizing has the ability to “self-heal” any minor knocks or scratches. However, there will be occasions whereby the coating has been damaged to base steel at a size that will not allow for self-healing. Based on this there are several proprietary repair paints on the market. In our experience, we have found 2 that give a satisfactory repair and finish for ongoing use. The 2 methods are either Galvafroid or Zinga with both being available in either a paste / brush application or an aerosol spray.

## Aluminium

As the name suggests, this process involves the application of a polyester powder onto the product using an electrostatic gun. This is then oven cured to create the hard wearing outer layer that can be seen on the finished product.

Powder coating can last many years, but its life expectancy depends on a variety of factors, including site location, atmospheric conditions and cleaning regime. The recommended cleaning frequency is detailed at the start of this section.

The cleaning of powder coated surfaces should be undertaken using either:

1. Warm mild soapy water and soft brush, sponge or natural bristle brush. Rinsed with clean water.
2. A proprietary car wash and wax system. Rinsed with clean water.

At no time during the cleaning process is it advisable for any abrasive cleaners, solvents, or other chemicals, to be used:

To enhance the appearance of the powder coating, an annual treatment with car wax would be acceptable, but not considered mandatory.

Where Graffiti is present, then it is recommended that no solvent cleaners are used in an attempt to remove it. The method of removal should be with the use of either a car 'T-Cutting' compound or through a specialist cleaner. This should be tested on a small, inconspicuous area first to assess its efficiency.



## Stainless Steel

Stainless steels are selected in applications where their inherent corrosion resistance, strength and aesthetic appeal are required.

Surface contamination and the formation of deposits must be prevented. These deposits may be minute particles of iron or rust from other sources and not removed until after the stainless-steel items have been installed.

Industrial and even naturally occurring atmospheric conditions can cause deposits that can be equally as corrosive.

A working environment which offers more aggressive conditions, eg hot and humid, such as swimming pools, increases the speed of discolouration and therefore requires maintenance on a more frequent basis.

All grades and finishes of stainless steel may in fact stain, discolour or attain an adhering layer of grime in normal service. To achieve maximum corrosion resistance the surface of the stainless steel must be kept clean. Providing the correct grade is specified, any contamination from handling, manufacturing and installation is removed, and cleaning schedules are carried out regularly, good performance and long life will be achieved.

The two grades of stainless steel used in our products are grade 316 or grade 304:

**Grade 316 (1.4401)** - has a greater chromium and nickel content than grade 304, and includes molybdenum. This increases its corrosion resistance properties and makes it less susceptible to surface pitting and staining. It is therefore suited to all external areas, especially marine locations where there is a high level of sodium chloride in the air.

**Grade 304 (1.4301)** – is more suited to rural and urban locations where there is less risk of sodium chloride contamination.

Advice is often sought concerning the frequency of cleaning stainless steel and the answer is quite simple: “clean the metal when it is dirty in order to restore its original appearance”. This may vary from one to four times a year for external applications.

Recommended maintenance schedules for the two grades differ slightly due to the differences in the chemical make-up.

The table below shows the recommended cleaning frequencies for the two grades in each type of atmosphere:

Location	Grade 304	Grade 316
Internal	As required to maintain appearance	
Suburban or rural	6-12 Months intervals (As appropriate to location)	
Industrial or urban	3-6 Month intervals	6-12 Month intervals
Coastal - Marine	Not Recommended	3-6 Month intervals

Stainless steel is easy to clean. Washing with soap or a mild detergent and water, followed by a clear water rinse, is usually quite adequate for domestic and architectural products. An enhanced aesthetic appearance will be achieved if the cleaned surface is wiped dry.

On brushed (satin) finishes, nylon abrasive blocks may be used to remove minor surface imperfections, ground in dirt and scratches. These blocks are flexible and are impregnated with grit. Note – they must always be used in the same direction as the original polishing marks.

Where stainless steel has become extremely dirty, with signs of surface discolouration, (perhaps following a period of neglect or misuse) alternative methods of cleaning will be required. These are detailed in the table below:

Problem	Cleaning Agent	Comments
Routine cleaning	Soap or mild detergent (eg. Fairy Liquid) and water	Sponge, rinse with clean water; wipe dry if necessary
Fingerprints	Soap or warm water or organic solvent (eg. Acetone, Alcohol)	Rinse with clean water; wipe dry if necessary
Stubborn stains/discolouration	Mild non-abrasive cleaning solutions or creams (eg. Jif, Cif)	Rinse well with clean water and wipe dry
Oil/grease marks	Organic solvents (eg. Acetone, Alcohol)	Clean afterwards with soap and water and wipe dry
Localised rust	Proprietary gels, 10% Phosphoric Acid or Oxalic Acid solution. Apply with a swab and allow to stand for 15 minutes before being washed away with water. May continue using Jif to give final clean	Rinse well with clean water. For Phosphoric Acid rinse first with Ammonia solution. (precautions for acid cleaners should be observed)
Mortar/Cement splashes	10% Phosphoric Acid solution. Use warm.	Rinse first with Ammonia solution, then clean water and wipe dry.
Badly neglected surfaces with accumulated grime deposits	A fine, abrasive paste as used for car body refinishing (eg. T-cut)	May brighten dull finishes. To avoid a patchy appearance, the whole surface may need to be treated
Paint/Graffiti	Alkaline or solvent paint stripper according to type of paint	Use soft nylon or bristle brush. Follow manufacturer's instructions.

## PETg

PETg is a material proven to work well an alternative to glass. The product has a certain amount of flex and therefore, allows for it to be used easier on slightly curved roofing.

PETg is considered a dimensionally stable material and moves very little due to the differences experienced with temperature. However, so as to prevent issues being seen, all fixing holes are drilled at a size larger than the required fixing along with spacers utilised to prevent fixing grab when tightened.

Cleaning should be undertaken with the use of a soft cloth and warm soapy water. It is not recommended to use a broom or similar on the surface of the PETg as this will result in scratches to the surface.

**At no time during the cleaning process should any abrasive cleaners, solvents or other chemicals be used i.e. Ajax / Cif Scourer, Nylon scouring pads, Thinners, White Spirits, Methylated Spirits etc.**

Should any cracks appear in the surface of the PETg or holes be knocked through due to vandalism or misuse then:

- The shelter should be isolated with immediate effect
- The faulty sheet/s must be removed by either – drilling out the rivets or removing the tekscrews
- Replacement sheets can be sourced from Street Structures along with the option of installation also

**The reason for the above actions to be taken is to prevent the possible injury to any third party due to the resultant fracture surfaces being sharp.**

Consideration should be given to the surrounding area and its usage.

Repairs can only be effected by the replacement of the damaged panel which can be sourced from Street Structures direct.

**In area's and times when snow fall is heavy and a skin forms over the shelter roof, then it is a mandatory requirement for the snow build up to be removed. This activity will need to be completed in a proper and safe manner so as to reduce the risk to the operative carrying out the task or causing damage to the PETg affected.**

## Glass Panels

The installed product may have been glazed partially or fully. The glass used would be either laminated or toughened; this would be dictated by the design requirements. Both of these glasses are considered safer than traditional glass and therefore, no major maintenance will be required.

The key points to observe are:

- The glass should be cleaned regularly to maintain its appearance. This operation can be completed using any proprietary glass cleaner and soft cloth.
- In the case of the roof area, the external of such could be cleaned using a low pressure hose pipe or through the use of an appointed window cleaning contractor. Any person that is tasked with cleaning the glass, must operate and observe all safety requirements and be informed that **under no circumstances must the glass roof area be walked on.**
- Should any cracks be noted in the glazing, then the area should be fenced off from use with immediate effect. Repair or replacement of the panel can be achieved through the use of a specialist glazing contractor or by contact with Street Structures directly.
- All fixing clamps should be checked for being secure / tampered with. In the event that they have come loose, then they should be tightened up to a point whereby they give sufficient clamping force and the support required.

## 5. Spares & Accessories

Please note, it is recommended that any items requiring replacement are sourced by and installed by Urban Design & Developments Limited.

Regarding prices on items that may require replacement in the future, it is not possible to provide such information due to the following reasons:

- 1) Subject to quantity purchased.
- 2) Prices will not apply unless sourced through Urban Design & Developments Limited due to them having set up bulk purchase deals with suppliers (NB – some fixed for 3 mths, 6 mths etc and of which are subject to a specific quantity being purchased during that period).
- 3) An un-stable market on certain products i.e. prices fluctuating frequently

Urban Design & Developments Limited are committed to quality and service and will ensure their maintenance team attend site within 24 hours to both make safe, install temporary protection (if required) and take necessary measurements to allow procurement of replacement materials.

Additional 24hr emergency contact telephone numbers for Urban Design & Developments Limited representatives are as follows:

<b>Mr S. Kitching (Construction Director)</b>	-	<b>Mobile: 07879 445581</b>
<b>Mr P. Dawson (Managing Director)</b>	-	<b>Mobile: 07900 955983</b>
<b>Mr D. Newton (Commercial Director)</b>	-	<b>Mobile: 0795 116 2386</b>

**Please note inspections/call outs are chargeable at our standard rates in the event that failure to maintain correctly, accidents or acts of vandalism to the product are deemed by ourselves to be the cause of/or reason for any issues arising.**

## 6. Drawing Register

**Copies of all manufacturing drawings which relate specifically to this project are enclosed in the attached folder and listed below.**

Drawing Number	Revision	Title
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Detailed manufacturing drawings -