Method Statement

Repair and Restoration of Metal Window Frames

To be read in conjunction with commentary and schedule of work submitted with this discharge application for Discharge of Planning Condition 5 of Planning Permission SMD/2019/0105 for the Conversion of Offices/Workshops to a Large House in Multiple Occupation at 1, Chorley Mill, West Street, Leek.

Assessment and Recording.

Assessment and recording condition of cast iron and steel window frames to be carried out on site to fully inspect and record the condition of all metal frame windows. Where condition of window frames is generally acceptable and free from serious or structural defects minor repairs, paint removal, hardware maintenance, glazing and cleaning of frames will be carried out with frames in-situ.

Testing Metal

Use a wire brush for testing paintwork and a scraper to check if metal is rusted. Test the condition of the frame both outside and inside. Check to see if the drain or weep holes at the base of steel frames are open or clogged. Check that the casement hinges, stays or catches or pivots work but do not force them if they are stuck or open only partially. A number of signs of corrosion are visible on this window, especially on the casement (lower left of the window). This may require specialist repair. Elsewhere paint is failing, but the metal does not seem to be badly affected yet Iron or steel expands when moisture attacks it. Paint may blister indicating the start of expansion, the putty may be lifting, the surface may distort, or jacked layers of rusted iron may be apparent if corrosion is advanced. The underside of lower rails should be probed, as the visible faces of the metal may be intact while moisture is eating out the metal from underneath.

Galvanised Metal Frames

Remove excess paint from all moving parts and components including hinges, using either a hand-held mini grinder or rasping file, taking care not to damage the galvanising gently clean off any debris and loose paint with a wire brush using a wrench, ease and adjust casements that may have become distorted oil and lubricate hinges and all working parts repair damaged hinges and fittings and replace those which have been lost or which have been too badly damaged to repair either from stock or by having copies made to match. Apply weather-stripping. Once on-site servicing is complete, properly applied paint systems and regular maintenance will ensure these windows will give many more decades of excellent service.

Ungalvanised Steel Frames

In the case of older ungalvanised metal windows made of iron, cast iron or steel, the restoration process is more involved, due to the higher probability of severe corrosion. Where the condition of frames allows frames are to be serviced and restored on in-situ on site. Where condition of frames requires remove rusting metal frames from site for refurbishment in the workshop by approved specialist. This must be properly planned and carefully carried out with expert guidance and supervision to avoid further damage.

Removing Paint and Repainting

Do not use a hot air gun to remove paint – metal conducts heat and increasing the temperature makes the historic glass vulnerable to cracking. Mechanical or chemical methods of removing paint are better used where there is no historic glass present which might be damaged and no layers of lead paint present on the metal. Use a mini-grinder or rasp (coarse file) to remove built-up paint and a wire brush, or drill with brush attachment, for light rust. If lead paint is present, use wet methods of removal to prevent dust rising. Patented rust-removing gels or liquids (phosphoric acid-based compounds) are available for light to medium rust levels. Chemical removal should be carefully considered, as the residue must be fully neutralised and thoroughly dried off, but washing can soak the metal and could lead to further corrosion (chemicals may also damage glass). Low-pressure air or grit blasting techniques will take off large-scale rust products. Use a handheld pencil nozzle, so that the user can control the impact, and shield the glass with adhesive plastic film. Remove the film immediately afterwards very carefully so as not to damage the glass. Where work is done in situ, care must be taken to prevent damage to nearby surfaces. Immediately after cleaning and drying bare metal, apply rust-inhibiting, zinc-rich primer. Apply undercoat and topcoat to seal the surfaces, taking care to fully seal the putty. Paint should be applied in a dry atmosphere.

Reglazing

Putty based on fish oil should not be used on metal windows. A bed of siliconised latex (known as painter's caulk) can be used backing the glass and steel putty to the exterior, to give the necessary flexibility. Trim with a sharp knife when set. (Note that silicone can lift if it gets damp, so the paint seal must remain perfect.) There are some patented sealants on the market that claim to be very durable, flexible, paintable, and suitable for metals. For use on historic windows be sure (a) they will not peel off if damp penetrates the paint coats and (b) they can be removed safely for future reglazing. When reglazing, locate the spring clips for holding the panes and reuse them to secure the glass.

Removal and Restoration Off Site

Where frames are removed for refurbishment remove any old putty from the metal frames, paint and rust should be cleared from the surface of the metal to enable its condition to be inspected . Neither wire brushes nor grinders can remove all surface rust effectively. Suitable alternatives include the use of air-borne abrasives. Air abrasives range from the use of a fine grit such as copper slag to G24 grade 'chilled iron grit' (described as a 'small, crushed steel ball bearing') which will leave a clean roughened surface, as a preparation for further treatment. Generally, pressure should be kept below 60-70 psi.

Steel and wrought iron sections may be repaired by cutting out the corroded section and welding in place a replacement section made from a similar material to the same profile. For cast iron use cold metal stitching for repair of excessive deterioration of frames. A protective coating should be applied as soon as possible. Apply flame sprayed zinc primer to BS 5493 as pre-paint treatment for ferrous metalsWy hot dip galvanising to BS 729. This simple process takes only minutes to carry out. The frames are fully immersed in a bath of molten lead and zinc at temperatures reaching 450ºC, so that complete surface coverage is therefore achieved, including inner and outer surfaces, awkward corners and narrow gaps. However, be warned: hot dip galvanising is a harsh process and can result in historic windows turning into 'metal spaghetti'. Advice should therefore be taken from a Galvanisers Association member beforehand. Galvanised metal frames can be polyester powder coated to BS 6497 in a range of colours and finishes, matt, semi or high gloss.

Refitting Restored Windows

When re-fitting the restored metal windows it is important to use the correct materials: putty is traditional and preferable, but recently developed mastics and butyls may be acceptable if they will be painted. Silicone as an external perimeter seal is not normally appropriate although its qualities are commendable. In the past, metal windows or their wood surrounds which fitted direct to masonry would have been bedded and pointed using mortar. A common practice was to mix lime and sand as a bedding compound similar to that used for re-pointing brickwork or masonry. Lime mortars used today should match the original as closely as possible, without the addition of Portland cement.