



# SAB Drawing & Design

Architectural & Engineering Drawing

26 Marguerite Road, Tiverton, EX16 6TD.

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## SCHEDULE OF WORK

### **New Windows (replacement) To Front Elevation.**

#### **Historic England Guidelines**

Historic England stipulates that a conservation officer must assess the significance of the windows and also that double-glazed units are typically between 22 and 28mm thick, which differs heavily from the traditional glass used in listed buildings that are usually 2-3mm thick. This means that it is often impossible to replace original glass with even slim-profile alternatives, as the frame and glazing bars cannot cope with the thickness and weight of the glazing.

When historic properties do not retain significant glass and can accommodate a double-glazed unit without significant alteration, double glazing may be permitted. It is also permitted when replacing steel windows that can accommodate slim double-glazed units.

However, as many listed buildings have already been altered before they entered into a new owner's hands, different rules can apply. If the windows have already been altered to a non-historic design, you can install new windows that are of a more sympathetic design that have a positive impact. In such cases, there must be no incidental damage caused to the windows from the works.

#### **Window Removal.**

Safe removal of putty-glazed fixed lights is imperative. This should preferably be carried out by removing the putty, glazing sprigs, beads or fixing nails and removing the glazing intact. Alternatively, the glass should be carefully broken, so that the fragments are on the outside of the structure. It is good practice to run a sharp knife between the inside face of the frame and the adjoining plaster, to minimise damage to the plaster when the frame is removed.

Opening casements should be removed first, complete with their glass, by levering the screws from the frames, by unscrewing the hinges, or by cutting through the hinges. After removal of the casements and fixed light glazing, any mullions and transoms should be cut through and removed from the outer frame of the window. If the frame fixing nails or screws cannot be found and removed, it will be necessary to cut through the outer frame at an angle which will allow it to be carefully levered from the surrounding aperture - in the plane of the window - so as to cause the minimum of damage to the aperture. There are often problems with windows under the roof eaves. There may be a brick course resting on the existing frame between the top of the frame and the soffit board. This course is often purely decorative - not load-bearing - and should be wedged into position until the frame has been removed. Also the soffit board - plywood, timber or asbestos cement - is frequently nailed to the existing window frame. This joint should be severed by carefully locating and removing or cutting the nails.

### **Box-sash windows**

Most box-sash windows pre-date cavity walls, and are built into the internal reveals of solid brickwork. The sashes can be removed fully glazed.

- a. Remove the mitred beading from around the frame.
- b. Carefully cut the sash cords to release and lower the weights.
- c. Remove the bottom sash, take off the parting bead and then take out the top sash.
- d. Cut the outer frame from the aperture, leaving the horns in the structure.
- e. Remove the counterweight from the sash box. f. Remove the sub-sill, if this is not part of the outer frame.

### **Suitability of Aperture.**

The existing windows and doorsets shall be removed with care to avoid unnecessary damage to the building structure and its finishings and without permitting any subsidence of the superstructure during or after the installation procedure. The existing lintels shall be inspected to ensure their suitability prior to the installation of new doors and windows.

The Local Authority Building Control shall be consulted with regard to inserting insulated cavity closures around openings.

### **Sub-sills**

Sometimes sub-sills, heads, window boards, and mullions are 'horned' into the fabric of the aperture. This may conceal DPC's, and lead to difficulties in removal. Great care should be taken when cutting and levering these items to reduce damage to plaster, renders, and brickwork to a minimum. If the DPC is damaged, then it must be repaired or replaced.

### **Measurement**

Three measurements of width and height should be taken and the squareness of the aperture determined by taking diagonal measurements. The smallest measurement of width and height is used to determine window/door sizes. The existing sills shall be inspected and replaced where necessary. The difference between internal and external reveal sizes should be determined and checks made to ensure that the operation of any opening light will not be impeded by plaster, render or tiles etc.

### **Window and door fixing**

For correct window and door fixing, each frame member should be fixed to the structure or to an adjacent frame in order to resist all likely imposed loads which could cause the frame to deflect. These loads might be due to:

- Wind loads
- Operating loads
- Weight
- Accidental impact
- Attempted burglary

Fixing methods are affected by

- The presence or absence of a wall cavity
- The nature and condition of any cavity
- The relative position of the frame and cavity

- The position of the plaster line and the need to minimise disturbance and damage to interior decorations
- The design of the reveal
- Any requirements for fire resistance (timber frame)

### **Fixings**

There are two principal methods of fixing available, which may be used separately or in combination. These are through frame fixings and lug fixings. The manufacturer's instructions should always be followed.

If lug fixings are used they should be of a suitable material to resist corrosion and, if used externally, they should be secured to the wall using “one-way” or other suitable security screws.

Screws should be sized to penetrate at least 25mm into timber, or 40mm into plugged holes in brick, block, or masonry, unless equivalent demonstrable provision can be made by other means, for example by complying with an appropriate structural code. Connections to steelwork up to 2mm thick such as folded sheet lintels should be made with appropriate thread cutting screws. Connections to steelwork over 2mm thick should be into pre-tapped holes with machine screws of minimum 5mm diameter or alternatively with power-driven hardened selfdrilling screws.

Other proprietary mechanical fixing methods should be assessed for suitability, preferably by obtaining an appropriate third party assessment.

Fixings should be at least as corrosion-resistant as BS EN 1670:1998, Grade 3.

The presence of pre-cast concrete or steel lintels may make it impracticable or pose severe difficulties in achieving the specified fixing distances. In these instances the use of polyurethane foam has proved a useful adjunct to mechanical fixings. However, foam fixings should never be used as the sole method of fixing the entire frame into the reveal.

### **Fixing distances PVC-U windows and doors.**

Where possible, all four sides of the frame should be secured as follows:-

- Corner fixings should be between 150 mm and 250 mm from the external corner.
- No fixings should be less than 150 mm from the centre line of a mullion or transom.
- Intermediate fixings should be at centres no greater than 600mm.
- There should be a minimum of two fixings on each jamb.

If the head is fixed with polyurethane foam, then the fixings at the head may be as follows:

- Frame width up to 1200mm – no fixings
- Frame width 1201mm to 2400mm – one fixing
- Frame width 2401mm to 3600mm – 2 equally spaced fixings.

### **Frame position**

Replacement windows and doorsets should generally be positioned to minimize the amount of making good, taking into account the following points:-

- a. They should be installed plumb and square within the aperture, without twist, racking or distortion of any member in accordance with the manufacturer's recommended tolerances, to operate correctly after installation and in accordance with the surveyor's instructions.
- b. The new frame should bridge the DPC. Any damaged DPC should be repaired.
- c. The frame should be set as far back in the reveal as is feasible for better weather performance.

d. The correct movement gap should be provided around the perimeter of the window or door.

### **Open cavities**

Open cavities discovered between inner and outer skins of brick or blockwork should be closed with an insulating material. Care should be taken to maintain the integrity of the DPC and adequate purchase for fixing screws should be ensured, if necessary with extended fixing lugs.

### **Finishing off and making good**

Debris or contaminants should be removed and any drainage paths should be cleared. Internal reveals should be made good as agreed, ready for the purchaser to redecorate if necessary. Any materials such as trims or sealant should not be applied on top of loose material. Protective tapes should be removed as soon as practicable, as ageing of tapes can cause difficulties in removal. Refer to the manufacturer's guidance. Sand and cement should not be used to fill the gap between the outer frame and the substrate. Where the replacement product has a smaller front to back dimension than the original, there might be a mastic and/or paint line visible on the substrate which should be removed as much as practicable or covered with a trim. The method of, and responsibility for, repair to any render should be as agreed with the purchaser.

### **Sealing**

The purpose of perimeter sealants is to repel water and prevent air leakage in the face of differential movement between the aperture and the window. Suitable sealants exhibit and retain flexibility. Sealants should be compatible with the frame, substrate and other materials with which it may come into contact. The presence of old oil-based mastics and bituminous DPC's can adversely affect the behaviour or appearance of otherwise correctly specified and applied sealants through the migration of hydrocarbons to the surface of the new sealants. Consequent photo-oxidation of the migrant products can affect sealant performance and produce discoloration. This risk should be avoided by removal of unwanted mastic and by keeping sealant away from DPC's.

Perimeter joints should be sealed on both the outside and the inside, with a sealant appropriate to:

- the frame surface
- the substrate material
- joint size and configuration
- anticipated joint movement
- anticipated exposure to weather.

In situations where sealants rely upon atmospheric moisture to initiate curing, deep filling i.e. over 6mm, should be avoided.

The sealant should be applied against a firm backing e.g. foamed PE rod, so that it is forced against the sides of the joint during application. To avoid failure in service, the sealant should not adhere to the backing because this would restrict the lateral movement of the joint. This can be achieved through the use of a closed-cell foam strip such as a polyethylene foam tube.

Wherever practicable, an insulating fill should be inserted or injected around the full perimeter of the frame, between the frame and the structural opening. Any such insulation should be sufficiently flexible that it does not interfere with any expansion and contraction of the frame.

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