



J1273 CASTLE STREET ALMSHOUSES

Scope of Work

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1. INTRODUCTION

- 1.1. A visual assessment was carried out of all existing external windows where possible on Wednesday 18th May 2022. On the day, access was possible to the vast majority of windows. The survey included checking sash frames, sash boxes, glazing bars and beads for signs of damage or decay. A summary inspection of the existing modern casement was also carried out.
- 1.2. The existing windows are of three distinct time periods and corresponding styles:
 - 1865 - Original Sash Windows (with some repairs carried out and some elements replaced over the past 140 years).
 - 1961-2 – This modernisation is commemorated in the stones mounted on the wall of the Almshouses. Crittall windows were installed in extensions which projected into additional land acquired from neighbouring properties. These were installed to both East and West Wings. However, they only remain on the East Wing.
 - 2001 – Timber double glazed casements installed, mainly to West wing which was remodelled to create some larger flats. The 1960s rear extensions of the West Wing were rebuilt and all Crittall windows replaced throughout with double glazed timber casements.
- 1.3. The document: J1273 Window Schedule – contains an assessment on the repairs to the sash windows and for the other window types, where appropriate, their replacement. Combined with this document and drawings listed below they provide a complete scope works for the overhaul and repairs to the existing windows

2. SUMMARY

- 2.1. All workmanship is to be commensurate with the quality of the existing building.
- 2.2. This document should be read in conjunction with the following drawings and documents:
 - J1273-BA-SH-A-001_Window Schedule-P01
 - J1273-BA-RP-A-001_Design Access and Heritage Statement-P02
 - J1273-BA-DR-A-0001 Location and Site Plans-P01
 - J1273-BA-DR-A-0101 to 0104 Existing Plans
 - J1273-BA-DR-A-0201 to 0209 Existing Elevations
 - J1273-BA-DR-A-0301 to 0306 Existing Window Details
 - J1273-BA-DR-A-1001 to 1004 Proposed Plans
 - J1273-BA-DR-A-2001 to 2009 Proposed Elevations
 - J1273-BA-DR-A-3001 to 3006 Proposed Window Details
- 2.3. For all existing original sash windows, every reasonable effort should be undertaken to retain the entire existing window assembly. Carry out resin repairs as described below or locally splice in new timber. The opening mechanisms should be repaired to be fully functional.
- 2.4. When overhauling windows, make sure to draft proof all sashes, (see detailed drawings), replace all panes of glass to improve thermal performance and ensure that all mechanisms are freed up and move easily.
- 2.5. Where it is necessary to replace a single component of the window assembly, e.g., replacing a sill or a single rail of a sash frame, the component should be manufactured to exactly match the existing profiles.

- 2.6. All existing Crittall windows should be replaced with thermally broken steel windows with the same glazing and opening pattern.
- 2.7. All existing timber casements, except where otherwise indicated, should be replaced with timber double glazed casements of better design and proportions.
- 2.8. Overall, the impact of the proposals will enhance the Listed building by improving the thermal performance of the building while repairing the significant historic fabric and improving the appearance of the building. This application, if permitted, will help to ensure the continued viability of the original intended use as Almshouses. This is the most desirable way to ensure ongoing care and maintenance of a historic building.

3. OVERHAUL WORKS TO EXISTING TIMBER SASH WINDOWS

3.1. Works to existing windows should be carried out by a contractor specialising in traditional window refurbishment.

3.2. Preparation (to be carried out before frame repairs)

- Remove any excess metalwork or timber from the window frame, e.g., winding opening devices for hopper lights, internal blind fixings, curtain rails, metal window stays, cill boxes, raised cill linings, etc. Any fittings not original to the timber sash window are to be carefully removed.
- Remove sash pulleys and place in labelled boxes for later re-use, restore to full functionality.
- Remove parting beads and sash beads and, retaining a sound section for reproduction of profiles, discard remainder.
- Remove and discard existing sash cords throughout.
- Remove sash frames from sash box.
- Strip off existing paint, to lower third of each sash frame, lower 500mm of sash box linings and all paint from retained window sills from frame. Strip off any flaking paint back to a sound base. Feather into existing paint. **NB: Existing coatings may contain lead. Take all associated precautions.**
- Knot and prime all newly exposed timber surfaces.
- Carefully remove all existing hardened and cracked putty using a heat gun or an infrared heater on a low to medium heat and a putty knife or equivalent method. Carefully pry out any metal glazier's points. Remove existing glass panes and discard.
- Any sash frame or sash bar joints opened up during removal of existing glazing to be temporarily closed up to allow accurate sizing of new glass panes. Check frames are straight, and that rails and stiles are at 90 degrees to each other.
- Dimension new glass panes for fabrication.

3.3. REPAIRS TO EXISTING TIMBER SASH WINDOWS

3.3.1. Historic joinery is often repairable by a skilled joiner with targeted removal of decayed timber and insertion of timber splices and resin repairs in its place. These methods can be briefly described as:

- Timber Splicing: The defective / rotten wood is cut out by the joiner back to an angled edge of sound healthy timber. A new piece of timber in the correctly detailed profile, usually in hardwood or durable softwood for dimensional stability, is added in place of the defective timber. It's fixed by bedding in a resin adhesive and screwed into place. Joints between new and old timber are smoothed with a resin, screw heads are capped, and the surface is sanded flush ready for repainting.



Figure 1. Joint of a sash rail and stile repaired with a timber splice, screwed and plugged. (Source: Historic Scotland)



Figure 2. Half cill replacement, outer lining replaced, and part of the pulley lining replaced with new timber splices (Source: Historic England)

- Resin repairs: For minor repairs a small area is routed out using a precise handheld routing tool back to sound healthy timber. A two-part resin is mixed then applied to fill the area of removed defective timber and shaped in to match the existing window frame profile exactly. Once dry the surface can be treated like timber, sanded flush and repainted.



Figure 3. Decayed timber can be removed with a small handheld power tool. (Source: Repair Care International)



Figure 4. Sound timber primed to receive resin repair. (Source: Repair Care International)



Figure 5. Resin Repair Ready to Paint. (Source: Repair Care International)

- 3.3.2. Joints can be repaired in place. The sash frame can be released from the sash box by removal of the staff beads if just the lower/inner sash needs to be removed and parting beads if the upper/outer sash must also be removed. Rotten timber can be removed and repaired using the above methods. The joints can be tightened with screws, or steel plates can be recessed into the sash frame edges and then screwed in place to reinforce them. The plate can be painted to match the sash frame.
- 3.3.3. Elements such as the parting bead and staff bead which hold the moving sashes in place were historically regularly removed and replaced in order to carry out maintenance tasks

related to sash movement such as waxing the pulley lining, replacing cords, re-balancing the counter weights and when full repainting of the sash was required. These beads can generally be replaced as part of routine maintenance.

3.4. **MATERIALS:**

- Wood used in repairs to be sustainably sourced English Oak or Sapele generally to BE EN 942, free from decay and insect attack.
- Resin/adhesive to be used in sash window repairs to be a 2-part resin; to be agreed.

3.5. **CATEGORIES OF REPAIRS**

The following categories of repair are referred to in the Window Schedule. The larger the repair works required, the more specific each category must be to each component.

- **C1**

Cosmetic Repairs. Filling of exposed grain with 2-part wood filler. Plugging and filling holes from removed fixings. All repairs to be flush with sound timber.

- **C2**

Application of Resin Repairs

SILL: Two-part resin repair to the junction of the sill and pulley stiles.

SASHES: Two-part resin repair to restore damaged profiles of sash rails or stiles to match sound sections of profiles.

- **C3**

Application of Spliced Timber Repairs

SILL: Remove short widths of full sill sections up to 300mm in length. No splicing of sill fronts is to be allowed.

SASH BOX: Applies to lower box frame only and must always accompany the replacement of a sill. Renew lower section of pulley stile up to 300mm and renew lower section of outer lining up to 300mm.

BOTTOM/TOP SASH: remove up to 20 mm of bottom rail of bottom sash and plant on new hardwood timber to match original profile.

- **C4**

Full replacement of a single timber element.

SILL: Renew full timber sill the whole width of the box frame with new hardwood cill, to be accompanied by C3 works to sash box. No splicing of sill fronts is to be allowed.

SASH BOX: Full replacement of a pulley stile or lining element. N.B. This will require the removal of the sash box from the opening.

BOTTOM/TOP SASH: Full replacement of a single rail or stile.

- **Joint Repair**

Rake, remove old filler / rot to tenon joint and apply two-part resin to joint and screw side stile to bottom rail, sand down joint and prime.

Provide joint repairs to ALL bottom rail/stile tenon joints as a preventative measure.

Note: it is likely that joints will open up during the removal of existing glazing. An allowance has been made to each sash window with this regard.

3.6. RE-GLAZING

- *Removal of existing glazing requires care and special tools to warm and more easily remove the glazing putty without damaging the glass.*
- *All glazing to be replaced with new thermally improved single glazing. Please refer to schedule.*
- *As per Part N of the building regulations, all glazing under 800mm above floor height within critical locations should be treated as per requirement N1 of the same regulation and be toughened.*
- *Re-glazing requires the rebate to be cleaned and primed, a bed of linseed oil putty applied and then the glazing is applied with glaziers' pins to hold it in place, this is then finished with a wedge-shaped bead of putty.*
- *The putty must always be painted to protect it from the elements*

3.7. IRONMONGERY

- *Refurbish or replace existing pulleys. Ensure they are fully functional. Where possible reuse existing pulleys. However, in any one window arrangement the finishes of all ironmongery should be the same.*
- *Refurbish, where present, existing sash fasteners. Replace missing or damaged fasteners to match existing fasteners for windows of the same type. However, in any one window arrangement the finishes of all ironmongery should be the same.*
- *Refurbish, where present, existing sash lifts. Replace missing or damaged sash lifts to match existing fasteners for windows of the same type. Where possible reuse existing sash lifts. However, in any one window arrangement the finishes of all ironmongery should be the same.*
- *Refurbish, where present, existing sash stops. Replace missing or damaged sash stops to match existing for windows of the same type. Where possible, reuse existing sash stops where present. However, in any one window arrangement the finishes of all ironmongery should be the same.*

3.8. RE-HANGING SASHES AND INSTALLING DRAUGHT PROOF BEADS.

- 3.8.1. Following repairs to the sashes, sills and pulley lining, the penultimate step is to restore original easy functionality of the sash windows. This can be achieved by fixing/replacing stiff or corroded pulleys, changing the sash cords, and accurately rebalancing the counterweights. The pulley linings can be waxed to also improve the sash's vertical movement.
- 3.8.2. The final step will be to re-apply the parting bead and staff beads, with a draught excluding pile strip. The strips reduce heat loss through uncontrolled air changes. As most modern windows have two seals, the draught stripping can be doubled up by adding them to the edges of the sash frame too.



Figure 6. Access pocket to weights (Source: Historic Scotland)



Figure 7. Brass Pulleys and Sash Cords. (Source: Historic England)

3.8.3. Works to complete the overhaul prior to full redecoration:

- *Plane down where required to the sashes & box frame to create the gaps around the sashes for free movement.*
- *Prime bare timbers.*
- *Re-hang & re-balance top sash on new sash cords where needed.*
- *Rout out a profiled groove into the bottom sash meeting rail and bottom rail and prime.*
- *Fit pile carriers into the bottom sash meeting rail and bottom rail.*
- *Re-hang & re-balance bottom sash on new sash cords where needed.*
- *Temporarily fit the staff beads on the inside.*
- *Timber parting beads to be left on site to be painted.*
- *Sashes are painted by others but not the staff beads.*
- *Fit parting bead with brush seals into the pulley stile groove.*
- *Fit brush seals into the pile carriers to the bottom sash meeting rail & bottom rail.*
- *Remove staff beads and fit brush/pile carrier with temporary pins.*
- *Re-fit staff beads in correct position.*
- *Mastic seal around the staff beads.*
- *Staff beads are then painted.*
- *Rehang sash frames with new sash cords where needed.*
- *Reuse existing lead weights and add new weights to account for heavier glazing.*
- *Check and adjust sash frames for smooth operation.*
- *Screw fix new brush sealed parting beads and staff beads.*

- *Reseal all around existing sash case externally, removing and replacing existing bedding and mastic seals.*

3.9. **REDECORATING**

- 3.9.1. The whole sash window may need to be redecorated. The sashes and pulley linings should be checked for an excessively thick build-up of paint layers. These can interfere with the proper operation of the sashes. Remove the sashes and sand them back to remove excessive paint.
- 3.9.2. Historic England suggest the use of lead-free modern linseed oil paints for restoring traditional sash windows but also suggest 100% acrylic resin-based paints as an acceptable alternative. Linseed oil paint can be difficult to work with and time consuming to apply. We propose to use 100% acrylic resin-based paint in a white colour to match existing.
- 3.9.3. Painting of exterior joinery will need to be carried out strictly in accordance with the chosen paint type and manufacturer's instructions for the product used.

4. STEEL CASEMENTS (c. 1960)

- 4.1. The existing steel windows were installed as part of the 1960s modernisation works to both wings. Following rebuilding of extensions on the West Wing, they survive only on the East Wing's rear elevations.
- 4.2. The steel windows are of the Homelight / Universal Range and design which was advertised in sales catalogues by Crittall between 1912 and 1964. The absence of any corrosion suggests the frames are galvanised, which was added to Crittall manufacturing process from 1939 onwards.

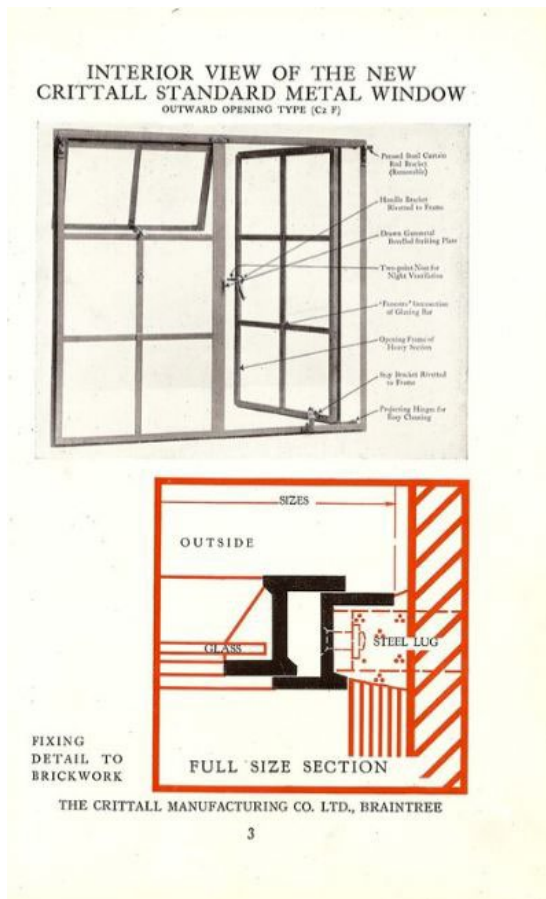


Figure 8. Page from 1928 Crittall Catalogue showing the “New Standard Metal Window” (Source: Building Technology Heritage Library)

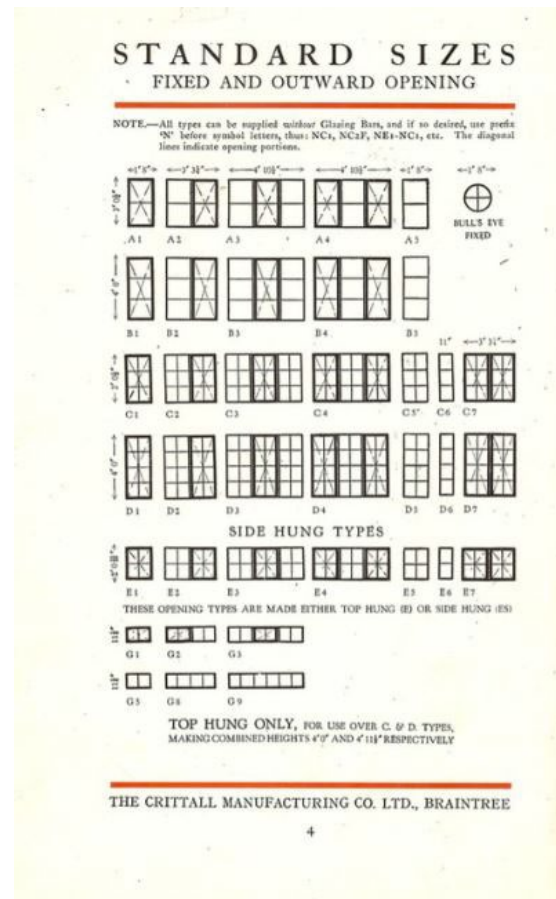


Figure 9. Page from 1928 Crittall Catalogue showing standard sizes (Source: Building Technology Heritage Library)

- 4.3. The possibility of using secondary glazing was explored. However, it was felt that in several scenarios sliding secondary glazing would be the only sensible solution. The horizontal sliders can be difficult to operate, especially when reaching across furniture.
- 4.4. As the Crittall windows date from the 1960s they are of limited historic significance. However, they are an appropriate form of fenestration, and it would make sense to retain the character of the 1960s extensions as distinct from the later 2000 extensions to preserve legibility.
- 4.5. We propose to replace the existing single glazed steel windows, which do not have any form of draught seals, with modern thermally broken steel windows with double glazing designed to replicate the appearance of Crittall windows.



Figure 10. Thermally Broken Steel Window, achieves near identical sightlines to original Crittall windows (Source: Met therm Website)



Figure 11. Projecting hinges and original ironmongery can be replicated. (Source: Met therm Website)

5. TIMBER CASEMENTS (c. 2000)

- 5.1. The existing double glazed timber casements date from works undertaken circa 2000. These windows are of poor design and detract from the overall character and appearance of the listed building.
- 5.2. We propose a new double glazed timber casement as a replacement. These can have ovolo glazing bars of a correct style and width. These can achieve a more refined and elegant appearance. These windows can accommodate slim and standard double-glazing units.
- 5.3. We would consider the proposals like-for-like with the existing and proposed being a modern timber double glazed casement, but with enhanced aesthetic properties.



Figure 12. More finely detailed modern casement window. (Source: Bereco)



Figure 13. Thick and intrusive glazing bars of existing windows. (Source: Bridges Associates)

6. CONCLUSIONS

- 6.1. This application is intended to improve the thermal performance of the Almshouses at a time when fuel prices are volatile, fuel poverty is rising and there is no end to fuel price inflation in sight. The residents of the almshouses may be vulnerable to these financial pressures.
- 6.2. The proposed changes retain and restores the most historically significant windows. Windows from the mid to late 20th century onwards are less significant and we proposed to swap them for windows which will perform better and achieve a very similar appearance.
- 6.3. This application, if permitted, will help to ensure the continued viability of the original intended use as Almshouses. This is the most desirable way to ensure ongoing care and maintenance of a historic building.

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