

**INSPECTION OF THE BELL INSTALLATION AT
ALL SAINTS CHURCH – FINDERN
30th AUGUST 2002**

The inspection was requested by Mrs. Nora Durricott on behalf of the PCC and was carried out by Mike Banks and John McCartney.

TOWER.

The stone built tower is situated at the West end of the church and appears to be in good condition although there is some minor cracking at the corner of the West window and above it. The North wall also shows evidence of minor cracking. It is buttressed at all four corners and features clock faces on the West and North sides.

GROUND FLOOR

The ground floor of the tower is accessed from the nave though an arch however most of the ground floor area is occupied by the organ. Entry to the 'ringing room' is via very narrow passage to a raised floor at the rear of the organ adjacent to the West window. The area available is too restricted to allow safe full circle ringing of the bells, see figure #.

The bell ropes are drawn out of the vertical plane and pass through holes in the wooden ceiling. These holes do not feature rope bosses and as a result rope wear will occur even if the bells are only swing chimed.

Access to the clock room is via a ladder against the South wall leading to a trap door in the South/West corner. The bottom two rungs are missing and should be replaced to avoid potential injury to anyone entering the clock room.

CLOCK ROOM

The clock room is heavily contaminated with pigeon droppings as a result of bird entry though the only window in the South wall. The leaded window is damaged sufficient to allow bird entry and although the aperture has been covered with netting this has deteriorated leaving an unprotected area currently blocked by a paint tin. It is recommended that the window be repaired or at least the netting renewed.

The floor adjacent to the trapdoor is suspect and some rotting is suspected, a detailed examination was not possible because of the pigeon droppings.

In the centre of the room there is a timber frame, which once supported a mechanical clock this has been removed and replaced with an electric motor driving the rods through a gearbox to the two clock faces. Contamination of the clock motor and its control box is prevented by cardboard cartons however there is no similar protection for the gearbox.

Access to the bell chamber is via a ladder again against the South wall leading to a trapdoor above. Figure # shows the layout.

For health reasons it is strongly recommended that after repair or netting of the window the clock room be cleaned of all bird debris the woodwork examined and any suspect areas replaced. All the wood should then be given a liberal coating of creosote.

BELL CHAMBER

First impressions on entering the bell chamber are that it has served as a very comfortable pigeon sanctuary for a considerable time. The level of contamination with pigeon droppings is excessive with many eggs awaiting hatch, a young bird as yet unable to fly and at least two carcasses. Free bird entry to the chamber is afforded through the louvres which were at one time were protected by wire netting however this has long since rusted away. It is evident that the bell installation has been neglected for many years and is now in an almost derelict state.

BELL FRAME

The bell frame is a convention low sided 'A' frame design constructed of pine instead of the usual oak. It features three bell pits but only two are occupied, see figure #. Despite the neglect it appears to be in a satisfactory condition and will certainly carry the loads imposed by the bells when they are swing chimed. The top sills do show evidence of woodworm attack and softening of the wood indicating the onset of rot. This is predominately on the South facing side and will be the result of exposure to wind driven rain/snow through the open louvres.

The beams that carry the frame run East/West and will be grouted into the walls. Examination of the beam-ends was not possible due to the depth of the pigeon droppings covering them.

Even if restorative work on the bell installation is delayed urgent action is required to exclude the birds and wind driven rain, clean out the debris and examine and treat the bell frame.

It is recommended that the louvres be covered with 'Galebreaker', which is a tough, porous plastic material that should be stretched across the louvres and held in place with timber batons. This will prevent the entry of birds and wind driven rain whilst still allowing a free flow of air for ventilation. It is coloured black and cannot be seen from the outside and does not reduce the passage of sound from the bells. Approval from the church architect will be required before proceeding.

Stocks of Galebreaker are available from the Association.

One of the stone louvre slats is missing from the South window and will need to be replaced before installation of the Galebreaker.

Removal of the pigeon droppings will require those involved to wear facemasks to avoid inhalation of the dust generated since this is a health hazard.

With all the bird droppings removed the frame supporting beams can be examined and if satisfactory they and the frame should be given a liberal coating of creosote.

BELLS

Details of the two bells are as follows:

Bell 1: Inscribed THOMAS MEARS FOUNDER LONDON 1841

Weight: 2cwt-1qtr-4lb Diameter: 22.5ins.

Bell 2: Inscribed JOHN COOKE : JOHN PORTER 1704 D:H

Weight: unknown Diameter: 25.25ins.

The D:H are the initials of the founder Daniel Hedderly and is an early example of his work. The bell appears on the Diocesan list of bells scheduled for preservation.

Both bells feature canons, which are the cast loops on the top of the bells from which they are suspended. In the publication (The Church Bells of Derbyshire) by Patricia A M Halls and George A Dawson the bells are described as being suspended from the canons by iron straps held in place on the headstocks by wedges. This is not now the case, these have relatively recently been replaced with rods and steel straps secured by modern self-locking nuts. The bells are securely attached.

The clappers on both bells are suspended on 'cast in crown staples' these are iron loops cast into the crown of the bell at the time of original manufacture. When restoring bells it is general practice to drill out these staples and fit a new clapper suspended from an independent crown staple bolted through the top of the bell and the headstock. The reason for this is that corrosion of the iron can result in bells becoming cracked.

The bells are currently crack free.

Indentation of the sound bow of the bells due to clapper contact is moderate and appears on both sides of each bell indicating that in the past that they have been rung full circle however recent wear is on one side only due to the bells only being swing chimed. If restoration of the installation were undertaken it would be prudent to have the bells rotated though 90 degrees to present an unworn face to the new clappers.

HEADSTOCKS

The headstocks on both bells are made from pine and feature hoop gudgeons rotating in plain bearings let into the top sills of the frame. They both show evidence of woodworm attack and the onset of rotting however they retain sufficient structural integrity to cope with the loads imposed by the bell when being swing chimed.

If the installation is to be restored it is recommended that new steel or cast iron headstocks are installed to run in ball bearings. If restoration is to be delayed it is recommended that the headstocks be cleaned and coated with creosote and the steel retaining straps/rods be wire brushed and painted to slow corrosion.

WHEELS

The wheels are nearing the end of their useful life and are beyond restoration, failure of the wheels will be the limiting factor preventing continued swing chiming of the bells in their current condition. During restoration for continued swing chiming new half wheels would be fitted to the new headstocks.

CLAPPERS

These are wrought iron and are crudely suspended from the crown staples such that there is no lateral restriction to movement i.e. they can swing not only in the plane of the bell but equally easily at 90 degrees to that plane. This results in a wide arc of contact against the bell when it is chimed and a dulling of the resultant sound.

As indicated earlier, restoration would involve fitting new clappers properly located at their pivot points and resulting in an improved sound from the bells.

PULLEYS

Each bell has a ground pulley mounted on the floor of the bell chamber to guide the rope from the wheel. These are completely seized and are beyond repair and would be replaced with new in a restoration.

The bells can however continue to be swing chimed however rope wear will occur due to rubbing on the seized pulleys.

STAYS and SLIDERS

The stays are bolted to the headstocks using the original bolts but both are too thick for the weight of the bells, this is of no concern since they serve no purpose during swing chiming.

The conventional sliders are seized due to bird debris however like the stays they serve no purpose during swing chiming.

During a restoration for continued swing chiming both sliders and stays would be removed.

SUMMARY AND RECOMMENDATIONS

The bell installation is in a near derelict condition and a health hazard due to the pigeon infestation of the bell chamber and clock room. Since the installation of the organ there has been insufficient space to permit full circle ringing and the installation has suffered neglect for many years.

Swing chiming of the bells has continued but this results in a less than satisfactory volume level, which is further compromised by the inadequate clapper location within the bells.

Installation of a third bell in the vacant pit could not be justified if the installation were to continue to be swing chimed. If the space could be found to restore the installation to full circle ringing then augmentation would be highly desirable. The feasibility of this will be the subject of a separate report.

Irrespective of the level of restoration ultimately chosen the work to exclude the pigeons and the rain by the methods outlined above is urgent. This work can be completed with local volunteer labour, the installation of Galebreaker requires only basic DIY skills.

With the installation clean and with the frame protected, attention can be turned to the level of restoration:

OPTIONS

1. Continue swing chiming without any further work; it is anticipated that this will ultimately result in wheel failure at which point wheel replacement will be required. The condition of the headstocks would preclude this course of action.
2. Restore the installation for continued swing chiming; this work would have to be carried out by a professional bell hanger and would comprise the following:
Drill out the 'cast in crown staples'.
Rotate the bells through 90 degrees and fit to new metal headstocks rotating on ball bearings.
Fit new independent clappers.
Fit new half wheels.
Fit new ground pulleys.
Fit rope bosses in the clock room floor.
3. Restore the installation with the bells hung 'dead', with the bells being sounded either by external rope operated hammers or the ropes attached directly to the clappers. This would be less expensive than option 2 however the sound volume would be further reduced.

It is anticipated that the cost of option 2 would be in the region of £3-4000 however this would have to be confirmed by obtaining quotes from bellhangers.

Advice is given in good faith but no liability is accepted.

Report prepared by J McCartney
Bell consultant to the DDACBR.

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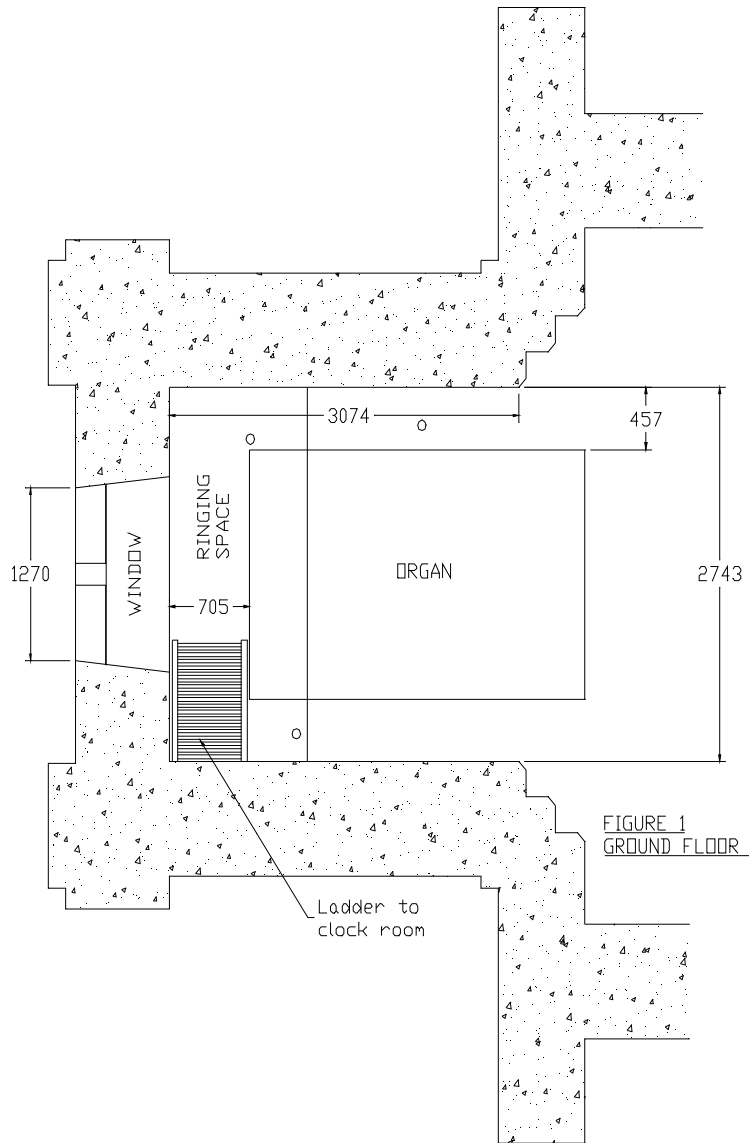
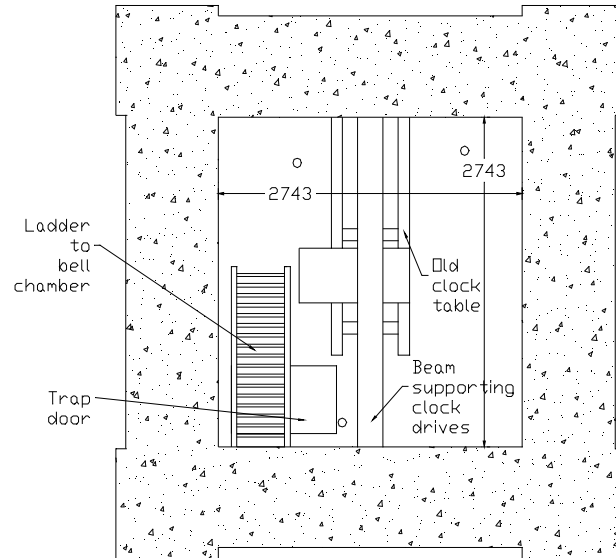


FIGURE 1
GROUND FLOOR LAYOUT

FIGURE 2
CLOCK ROOM
LAYOUT



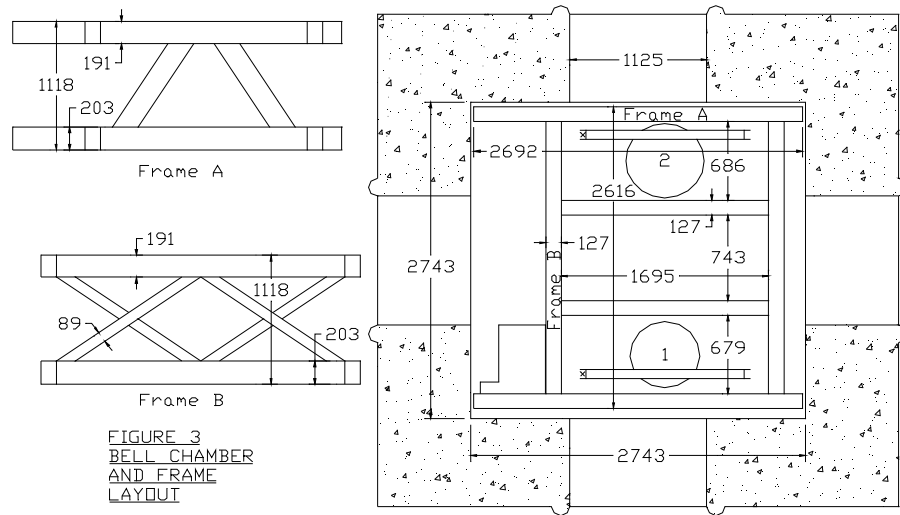


FIGURE 3
 BELL CHAMBER
 AND FRAME
 LAYOUT