



Document Name: Clock Works Schedule

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Appendix A: Manchester Town Hall. - Proposed scope of works and costs: The Cumbria Clock Company

Revision History:

REV.	DATE	DESCRIPTION OF CHANGE
-	13/09/2019	First Issue.
01	11/11/2020	Status updated to construction, no change to details

CLOCK WORKS SCHEDULE

Revision: 01

Issue Date: 11/11/2020

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Note: The following schedule is based on a report prepared by Cumbria Clock Co. dated 27/08/2019 which is appended to this schedule.

Location	Level	Item of work	Method	Responsibility	Associated builders / additional site works
Removal of Clock					
Clock Tower Spire	Level 11	Remove hammer assembly, which weighs in the region of 300kgs from the bell frame	Use block and tackle hung from the bell frame itself. Move onto the external scaffold and bring down to ground level via the proposed goods lift.	Clock Contractor	
		Remove the two bell cranks and all the associated pull wires	Move onto the external scaffold and bring down to ground level via the proposed goods lift.	Clock Contractor	
		Remove the three frames from which the top weight pulleys and weight line tie-off points are suspended	Move onto the external scaffold and bring down to ground level via the proposed goods lift.	Clock Contractor	
Dial Room	Level 10	Remove the four sets of hands from the clock faces	Move onto the external scaffold and bring down to ground level via the proposed goods lift.	Clock Contractor	
		Dismantle the four sets of dial motion works which are situated behind the dials that give the 12:1 reduction between the hour and minute hand	Move onto the external scaffold and bring down to ground level via the proposed goods lift.	Clock Contractor	
		Remove bevel gears, roller support bearings and connecting rods	Move onto the external scaffold and bring down to ground level via the proposed goods lift.	Clock Contractor	
		Undertake the necessary works to the wooden support structure in the dial room as specified by the Structural Engineer	Move onto the external scaffold and bring down to ground level via the proposed goods lift.	Clock Contractor	Stengthening works to be undertaken to the existing support structure following removal of clock
Bell chamber	Level 09	Remove two sets of bevel gearing including the associated connecting rods and the night silencing system	Lower into the clock room below via the weight shafts	Clock Contractor	Weights shafts to be opened and cleaned prior to use. Existing buffer systems to be removed from the dial room and the cases made good
		Bells, clock hammers, Carillion hammers and all associated bell cranks and pull wires to be covered for the duration of the works	Method to be determined	Lendlease	
Clock Room	Level 08	Dismantle clock movement	Lower to level 5 via the bell hatches in the clock room and bell ringing chamber and bring down to ground level via the proposed goods lift.	Clock Contractor	
		Remove all the bearing fixing bolts etc from the clock case and store off site		Clock Contractor	
		Dismantle existing pneumatic Carillion and store off site	Lower to level 5 via the bell hatches in the clock room and bell ringing chamber and bring down to ground level via the proposed goods lift.	Clock Contractor	
		Lower Pendulum assembly into the ringing chamber, dismantle and store off site	Lower to level 5 via the bell hatches in the bell ringing chamber and bring down to ground level via the proposed goods lift.	Clock Contractor	
Ringling Chamber	Level 07	Remove the two weight pulleys and store off site, dispose of associated cage protection.	Lower to level 5 via the bell hatches in the bell ringing chamber and bring down to ground level via the proposed goods lift.	Clock Contractor	
Off site	n/a	Undertake full clean of existing clock mechanism prior to re-installation	To be undertaken whilst items are in storage	Clock Contractor	
		It is a requirement that all items associated with the clock that have been removed are recorded to allow them to be located and tracked at all stages of the project	Method to be determined	Clock Contractor	

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Location	Level	Item of work	Method	Responsibility	Associated builders / additional site works
Various	n/a	Undertake inspection of all items associated with the clock and create an inventory documenting location, description and importance of these items.	Site inspection to be undertaken by Cumbria Clocks prior to works commencing in the Clock Tower	Clock Contractor	
Reinstatement of Clock					
Various		Re-instatement of clock movement	All items removed from the Clock Tower to be re-instated once the areas have become dust free	Clock Contractor	
		Installation of new automatic winding system following recommendations from Cumbria Clock Co. The proposed system results in lower maintenance and lifecycle costs, smaller weights and is more cost effective than overhauling the existing winding system.		Clock Contractor	
Clock Room		Re-assessmble pneumatic Carilion in the original case and connect back to the bell hammers via the original route.		Clock Contractor	

Appendix A

Manchester Town Hall. - Proposed scope of works and costs

The Cumbria Clock Company



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Manchester Town Hall. - Proposed scope of works and costs.

27th August 2019.

Removal of clock installation.

There are many reasons why I would strongly advise that the clock installation is removed from the tower during the proposed building works, one being that it would be very hard to protect the clock mechanism etc from ingress of dust and dirt, but also that there are areas in which the clock mechanism is situated where access is required and to ensure that damage does not occur to the clock components and that the building works can be undertaken efficiently and without causing possible injury to the operative, then there is no other option but to dismantle the clock installation and store it off site until the environment is suitable for re-installation.

Starting at the top of the tower where the bell Great Able is situated the hammer assembly, which weighs in the region of 300kgs should be removed from the bell frame. This can be undertaken using block and tackle hung from the bell frame itself. It could then be moved onto the external scaffold and brought down to ground level via the proposed goods lift.

We would also remove the two bell cranks and all the associated pull wires. In doing so we will be removing a trip hazard within the base of the spire.

The three frames from which the top weight pulleys and weight line tie-off points are suspended can be removed if the proposed new automatic winding system is incorporated.

In the dial room we will have to dismantle the four sets of dial motion works, these are the sets of gears situated behind the dials that give the 12:1 reduction between the hour and minute hand. To do so we will need to remove the four sets of hands.

The bevel gears, roller support bearings and connecting rods will also be removed.

With these components removed it will then be possible to undertake the necessary works to the wooden support structure in the dial room.

Again, all these components can be taken out onto the exterior scaffold through the balcony doors and brought down the scaffold to ground level via the goods lift.

The only clock components in the bell chamber are two sets of bevel gearing and the associated connecting rods.

We would also remove the night silencing system situated in the bell chamber. These can be lowered into the clock room below via the weight shafts.

I understand that no decision has been made in respect to the works to the bells, clock hammers, Carillion hammers and all associated bell cranks and pull wires. I would strongly advise that at the very least that the bells are covered and protected during the proposed works.

I am more than happy to advise on how this can be undertaken and any scope of works that might be considered.

The clock movement can be completely dismantled and lowered to Level 6 via the bell hatches in the clock room and bell ringing chamber. These hatches will need to be lifted, the necessary safety rails constructed and a lifting beam installed. The cost of which is not included in the following quotations.

Once the clock components have been lowered to Level 6, they can be brought to ground level using the internal lifts.

The existing pneumatic Carillion can also be dismantling and stored off site until required.

The pendulum assembly can also be lowered into the ringing chamber, dismantled and lowered down to Level 6 and then out of the tower.

The only other clock components in the ringing chamber that will need to be removed are the two weight pulleys and associated cage protection.

All components can then be transported to our workshops and placed into secure, alarmed storage until required.

All the bearing fixing bolts etc will be removed and stored so that contractors can work within the clock case without hindrance or any chance of causing damage to the remaining items.

**The cost to remove the clock installation as above would be.....£27,650.00
(TWENTY SEVEN THOUSAND. SIX HUNDRED AND FIFTY POUNDS).**

Storage would cost£150.00 per week.

Automatic winding system.

The existing automatic winding system operates by winding the existing weights which are suspended from three frames situated in the base of the spire below Great Able.

The winding system is actuated from a switch on the clock mechanism at 20 minutes passed the hour and the weights are wound up in the dial room.

There are dampers placed at floor level in the dial room should the weight fail or if the winding system fails to operate allowing the clocks to land slowly at that level. This winding system does require a considerable amount of maintenance and in the past the weight lines have been replaced every 5 years. This procedure was at a cost of £2,650.00.

The three existing winding units are in need of a full overhaul at a cost of...£4,500.00 per unit making a total of £13,500.00

The existing dampers will also require replacing at a cost of....£11,950.00

The tie-off points will also need to be tested for a sum of.....£890.00 which should also be done every 5 years.

The total cost for overhauling the existing system would be.....**£28,990.00**

I therefore think it would be worth considering have a new winding system installed that would have the weights hanging down into the bell ringing chamber below the clock movement.

A Budget price for this system would be **£15,000.00 - £20,000.00.**

The weights would be reduced in size but would still be quite considerable.

At present the existing going weight is 474 kgs, this could be reduced to 150 kgs
The quarter chime weight would reduce from 1,104 Kgs to approximately 400 kgs
and the strike weight from 1,120 kgs to 450 kgs.

It is possible that we can reduce the amount of driving weight further, but I need to undertake more calculations which will involve another site visit.

Clock Assets/Itinerary.

There are many items associated to the clock installation spread throughout the tower from the ringing chamber all the way to the bottom of the spire. Some of these are of great importance to the clock others not so.

It has been suggested that that a full itinerary is compiled with photos which list all items giving a full description and their importance.

The cost for undertaking this and supplying a full report would be.....**£1,580.00**

Cleaning of clock installation.

The clock installation is in very good working condition and showing very little signs of wear. However, as it will be dismantled for a number of years and placed in storage it would be wise to fully clean it before it is re-assembled. A budget cost for undertaking this work would be.....**£25,000.00**

Re-instatement of clock movement.

This depends how the re-instatement of the clock movement is fitted into the program, but I would strongly advise that it's done when the areas become dust free.

A budget cost for re-instatement.....**£35,000.00**

Moving of Carillion.

The pneumatic Carilion can be re-assembled in the case that was originally made for the mechanical version which sadly has been removed and connected back to the bell hammers via the same original route.

The cost for undertaking this work would be.....**£5,825.00**

Price Maintenance

These prices are firm for a period of six months from the date of this letter and thereafter, subject to price increase to accord with increased costs of labour, materials and travelling costs if necessary.

Guarantees

All new parts made by us carry our ten-year guarantee against failure through faulty workmanship or materials. Repair work is similarly guaranteed for a period of twelve months. Suspension springs and electrical or electronic components of units not of our manufacture, are specifically excluded from our guarantees, but carry the manufacturers own warranty.

Terms Payment

30% with orders over £ 1,000.00, the balance within 14 days of the date of invoice following completion of the work.

In some cases progress payments may be asked for.

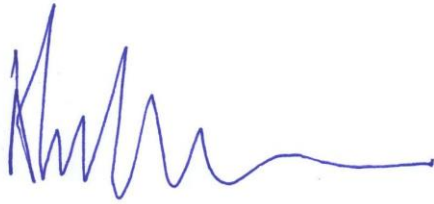
All goods remain the property of the vendor until full payment has been made and any relevant cheques cleared. Risk passes on delivery.

The above quotation is exclusive of Value Added Tax at 20%.

Trusting the above information is helpful to you, but in the event you should have any questions to ask, please do not hesitate to contact us.

We assure you of our best care and attention at all times and look forward to hearing from you in the near future.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Keith Scobie-Youngs', with a stylized, cursive script.

Keith Scobie-Youngs.

Director.

FBHI. (Fellow of the British Horological Institute).

ACR. (Accredited Conservator Restorer)