

Charmborough Bells

Risk Assessment and Method Statement

Introduction

This risk assessment and method statement has been prepared to outline the procedures adopted in assembling, using and dismantling the Charmborough Ring. It also considers the key health and safety risks and the control measures designed to minimise these risks.

The Charmborough ring is a small ring of tower bells hung in their own steel structure. See photographs. A video of the assembly process can also be viewed [here](#)

The Charmborough ring is checked for defects prior to assembly and on dismantling, and any defects rectified. The trailer is also serviced periodically by GT Towing.

Pre-planning

The Charmborough Ring is hired for use at public events for about 12 to 15 days per year. Each hirer is responsible for providing the details of the proposed location to the booking coordinator and highlighting any site-specific risks in advance. The supervisor may then prepare an addendum to address site specific risks.

We check proposed pitches using Google Streetview and if necessary, a site inspection is undertaken by one of the experienced supervisors before the booking is confirmed.

On arrival, the supervisor will double check the site and ensure that it is safe to drive the vehicle and trailer on to the site. The Charmborough ring needs to be erected on reasonably level firm ground. The presence of lightweight manhole covers, overhead power cables, and other similar site-specific hazards will also be checked and addressed. We will also check where the trailer can be left whilst the event takes place.

Transport

The mobile belfry is transported in a dismantled state on a four-wheeled trailer which measures approximately 4m long, 2.1m wide and 2m high with a laden weight of about 1 ton. Prior to towing there will be a safety check of the trailer and towing vehicle, using the checklist provided (appendix 2). This method statement and risk assessment considers the issues once the trailer has reached the site.

Supervision

The belfry is assembled and dismantled under the supervision of an experienced erector. The ring is erected in two stages the first taking about three quarters of an hour. For the first stage, a team of five able bodied adults will assist with carrying the components and the assembly and dismantling process generally. No person will need to lift a weight greater than about 25kg.

The second stage involves hoisting the bells into position using an electric hoist and involves working at height. Only one assistant is required at this stage, and it is preferable that other people are not present underneath the ring. This stage will about half an hour.

Safety

Prior to erection the supervisor will give a toolbox talk and safety briefing to the assembly team. Personal protective equipment (PPE) in the form of five pairs of stout gloves and hard hats are stored in the toolbox on the trailer. Hard hats will be worn whenever operations are being undertaken overhead. The team will also wear appropriate footwear.

Members of the public will be kept out of the site whilst assembly and dismantling takes place.

The area needed measures 8m x 5m.

Assembly - overview

The ring is assembled in three stages for full details of the erection sequence see Appendix 1.

First two 225 x 50mm x 2400mm lengths of timber will be used as load spreaders on the surface. If the surface is not entirely level, additional timber packers will be used to bring the two lengths of timber level.

The steel framework will be unloaded from the trailer and bolted together. The largest items are the portal legs and each weighs approximately 70kg and needs to be carried by three people. Fully assembled, each portal contains three components and weighs a total of about 200kg.

Each portal is raised manually from horizontal to vertical by the five person team, and diagonal braces fixed to restrain the structure. This completes the first stage of the erection sequence.

The trailer is then rolled under the two portals to act as a safe working platform. The upper parts of the frame and uprights for the tubular lifting gantry are then bolted on, and two timber duck boards are put into position either side of bells 5 and 6, for the supervisor to stand on to complete assembly of the hoist and then hoist the bells.

The third stage is for the lifting gantry to be assembled. Then each pair of bells will be lifted into position using the electric scaffold hoist provided. Power will be taken from portable generator. Care will be taken to ensure that electric cables do not become snagged. The hoist has a lifting capacity of 250kgs. Each pair of bells weighs a maximum of about 200kg. The hoisting operation is undertaken by the supervisor who stands on the duck boards at bell level.

A blue tarpaulin cover may then be fitted over the top of the belfry and a second translucent cover around the sides at high level, if wet. Once the ring has been assembled all bolts are then checked for tightness, the ring can be used. Before use the supervisor will carry out a visual check and sign the inspection checklist (Appendix 4)

Dismantling

Dismantling is undertaken as the reverse of this process.

As the components are dismantled and stored on the trailer, their condition is checked, using the checklist provided (Appendix 3). Any defects are rectified before the next use.

Assembly takes about one and a quarter hours; dismantling takes about one hour.

Feedback

We encourage feedback from each event, so that we can continuously improve our procedures.

Risk assessment

Risk	Party responsible for managing risk	Risk management action/mitigations	After risk management		Action period/deadline
			Likelihood of risk	Impact	
Delivery to site and return to depot afterwards	Supervisor	The ring will be transported to site on the trailer. This will be checked before towing.	Low	Low	
Safety of erection team	Supervisor	Prior to erection the supervisor will give a toolbox talk and safety briefing to the assembly team. The team are also encouraged to view the video beforehand. Personal protective equipment (PPE) in the form of five pairs of stout gloves and hard hats are stored in the toolbox on the trailer. The team should also wear appropriate footwear.	Low	Medium	
Manual handling	Supervisor	To be covered in toolbox talk. All beams are to be lifted by at least two people. The legs will be erected by five people. As they are assembled on the ground, and prior to lowering afterwards, the legs will be resting on timber packers, to help avoid fingers becoming trapped.	Low	Medium	
Falling objects	Supervisor	As components are handed up or taken down from high level there is a risk of falling objects. No work is to be carried out at low level during this stage and assistants to wear hard hats.	Low	Medium	
Risk of slips, trips and falls	Supervisor	Those carrying the steel beams need to check their route and ensure that there are no trip hazards.	Low	Medium	

Falling from height	Supervisor	Falling from the ring during stage 3 of the erection sequence, and the reverse at dismantling is a risk. The trailer will be used as a standing platform for stage 2 and two wide moveable timber duck boards will be fitted from the trailer before the supervisor ascends to the top level for stage 3. Only one person (the supervisor) will be working at high level for the final stage. He will ascend and descend using the two-section ladder, which will be properly footed and extended past the top level.	Low	Medium	
Catching fingers	Supervisor	There is a risk of fingers becoming caught in between beams as they are assembled and in the pulley on the hoist during operation. Stout gloves must be worn and hands kept clear of the pulley during hoisting.	Low	Medium	
Generator	Supervisor	If no mains supply, a small electrical generator will be used. This is quiet and as it is used in the open air and only for a few minutes, there is no risk of fume build up. The electrical equipment and the hoist and its cables will be checked visually before and after each use. Care will be taken with the routing of electric cables to ensure that they do not become snagged or damaged during the lifting operation. No lifting will take place in wet weather. Petrol for the generator will be stored in a sealed container.	Low	Medium	
Ringing of the bells	Supervisor	The bells will only be rung under the supervision of a competent bellringer. The bells are sufficiently light for there to be very little risk of any damage to people misusing them. A video of the bells being rung can be viewed here.	Low	Low	

Erection Sequence



Stage 1 - Assembly on ground

1. Loosen the canopy and take the contents off the trailer and lay to one side or the other. Not where the portal frame is to be erected on the ground.
2. Lay two of the long boards on the ground. approximately 4050mm apart. Use the spirit level in the toolbox to check that each one is level. Also, using a third board, make sure that they are level with each other. Use the small pieces of timber, or a second or third board to achieve this.
3. Put the each of the floor angles on these boards. The flanges need to be 4030mm apart.
4. Lay some of the short pieces of timber out on the ground to support the portal frame and make lifting easier later
5. Take out one of the portal frames from one side of the trailer. Lay the top beam on the packing. Ensure that there is timber packing underneath each end.
6. Lay the two legs out on the ground and offer each leg up to the top beam. **All three components are lettered A and B or C and D and 'This side up'**
7. Connect the two floor angles to the legs as shown, using two M30 bolts.
8. Fit three long M24 bolts-to the upper side of each joint A and B, or C and D and leave finger tight.
9. Repeat the operation for the other portal frame.

10. Attach the four cross braces with long M24 bolts. The cranked end is attached to the floor angle and goes on the outside flange.



Lifting the two portal frames

11. A minimum of five people are needed to lift each portal frame member into position. It becomes easier the nearer to the vertical it gets, so two people on each leg can easily hold it in position whilst the diagonal braces are fitted with long M24 bolts.
12. Once both diagonal braces are fixed, the second portal frame can be lifted. There is no danger of the first one toppling after its diagonal braces are fitted as it will be restrained by the weight of the second portal, which is attached to the two floor angles.
13. Before lifting ensure that the team are fully briefed. Start with everyone at the top and then as the frame rises move to the two legs. Make sure people bend their knees, not their backs, and can go backwards if there is a problem. One person at the side can attach the first diagonal cross brace quickly so that all is safe.



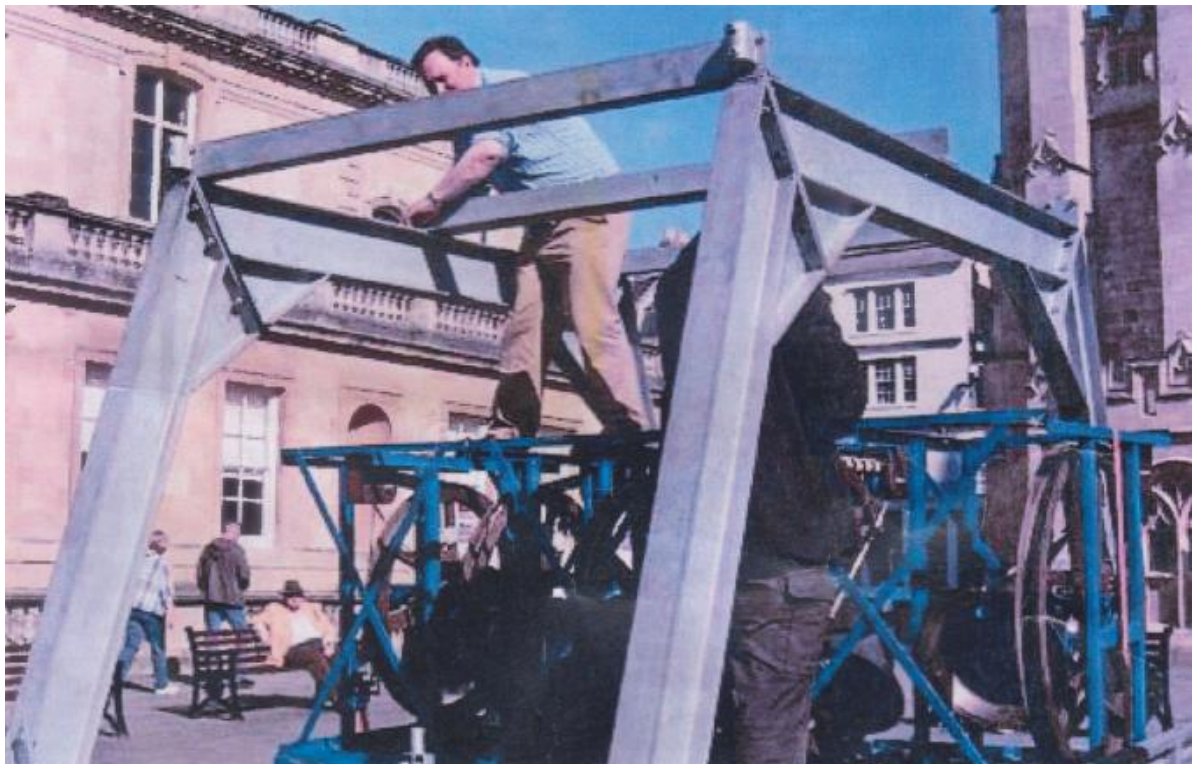
Stage 2 - Preparing to hoist the bells

14. Remove the canopy and its frame in one piece from the trailer. This requires a minimum of four people one to lift each corner. There are six posts and the fixings need to be loosened with the 6mm Allen key first. Set the canopy to one side.

15. Move the trailer underneath the erected portals to act as a working platform
16. Fit the two side cross members with short M24 bolts. The connectors for the gantry poles are on the outside. The ends of the cross members are numbered 1 -2, 3-4 and 5-6 to indicate where they go.
17. Lift and fit the middle cross member. It is fairly heavy, so land the end on the bells to take the weight and lift up one stage at a time. **Fit In position with the short M24 bolts**
18. **Before tightening the nuts and bolts ensure that the structure is square.** There is an aluminium collapsible square which can be used to see how far out the structure is. Three or four people on the legs can slide the portal frames along one of the boards till all is square (if not square the bells will not fit).
19. Once square, the eight nuts and bolts securing the cross members and those securing the diagonal braces Can be tightened Don' t tighten the others (A B C & D) at this stage.
20. Lay the two wide moveable timber duck-board platforms between the side and middle cross member. They go either side of bells 5 and 6. This will be used by the supervisor as a standing platform during the final stage, and moved as necessary.

Stage 3 – Assemble the lifting gantry and hoist the bells

21. Insert the four gantry poles. Tighten each one with an Allen key. Do not over tighten.
22. Fit the two gantry transoms. Each has a 90° coupler on the end. Tighten the Alien screws.



23. Pass-up the electric hoist and runners to the person working at high level. Lay the long pole with the fixed runners on one of the transoms. Thread the hoist on to the pole and then attach the

2nd set of runners. Ensure that this runs smoothly and then tighten the Alien screw on the 2nd set of runners, and ensure that all is made secure.

24. Attach the electric cable to the hoist and the generator **When hoisting take care not to pinch the live electric cables anywhere. Pass them over the top of the frame containing the pulleys.**
25. The bells are normally transported with ropes looped around the clapper so that the bells are at about 45° to the horizontal, so that they do not make a noise whilst being transported Un-attach the ropes from the clappers before lifting.
26. Loosen the clamp attached to the orange strap which secures the bells on the trailer. Grip the handle and pull up straight. Remove the orange strap through the lifting eyes.

Lifting the bells

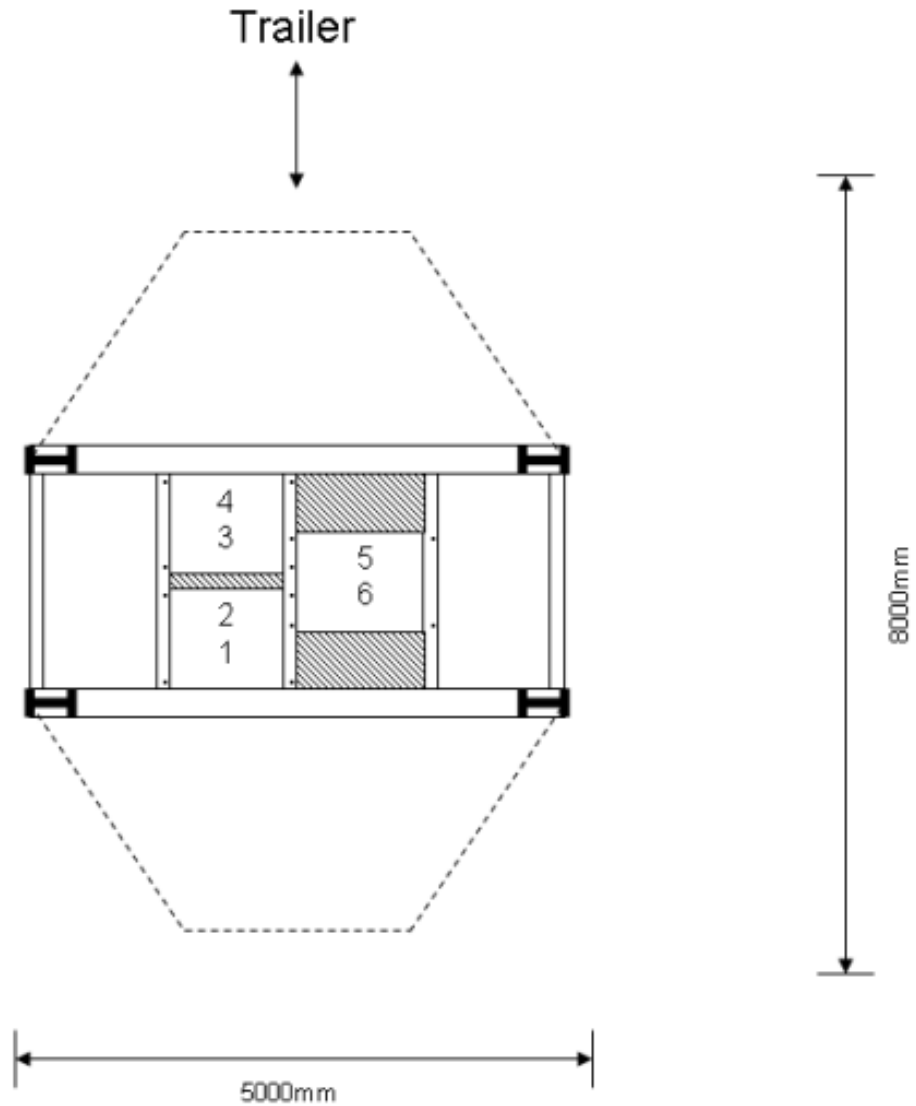
27. Position the bellframe containing bells 1 and 2 on the trailer under the space for 1-2 and 3-4. The other bells need to be moved to ends of the trailer (make sure the tailgate is up). Rotate 1-2 through 90°, so that the side of the bells is close to the end of the opening.
28. The frames are on castors and two of the castors have brakes which may need to be released by pressing on them.
29. Start the generator. The wire choke needs to be pulled out and the red lever moved up to the 'I' position. Push the choke in as soon as the generator starts.
30. There is a green clock weight usually stored underneath one of the bells **Use this to keep the wire tight on the drum whenever the bells are not attached.** Otherwise, the wire does not come off the drum smoothly when under load.
31. Lower the hoist and attach the hook to the lifting eye on 1-2. The hook has a spring loaded clip which needs to be pressed to attach it to the lifting eye, and can only be released once the hook is on the eye.
32. Hoist the bells up through the opening. Turn through 90° and lower. Make sure that 1-2 are the right way round.
33. Slide the hoist on the pole and lift and lower again till 1-2 reach their final position. There is no need to bolt the bells in position, but the holes are a good guide.
34. Position the bellframe containing bells 3 & 4 on the trailer under the space for 5 & 6 and so that the gantry can travel across to their final position. Rotate 3-4 through 90°. so that the side of the bells is close to the end of the opening.
35. Lower the hoist and attach the hook to the lifting eye on 3-4. Hoist through the opening. Turn through 90° and make sure that 3-4 are the right way round.
36. Then travel across to the 3-4 position and lower.
37. Slide the hoist on the pole and lift and lower again till 3-4 are in the correct place.
38. Adjust the position of the duck boards as necessary and repeat the operation for-bells 5 & 6, which can be lifted straight to their final position.



Getting ready to ring

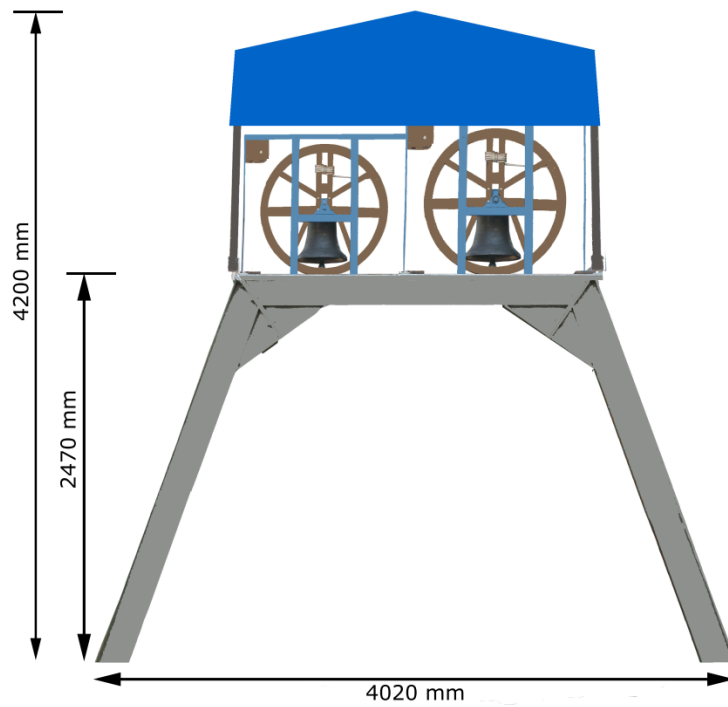
39. Unattach the power supply and wrap the cables and handset out of the way so that they are not damaged by the bells.
40. Now the 12 remaining nuts and bolts in corners A, B C & D can be fixed and all 24 tightened.
41. If it going to rain, attach the 'tent' roof. The frame is rectangular, so make sure it is the right way round.
42. There are also translucent sides which can be used, if necessary
43. Pack away all the surplus material and tools on the trailer and refit the canopy.
44. The bells are now ready for ringing.

Space needed for assembly and dismantling



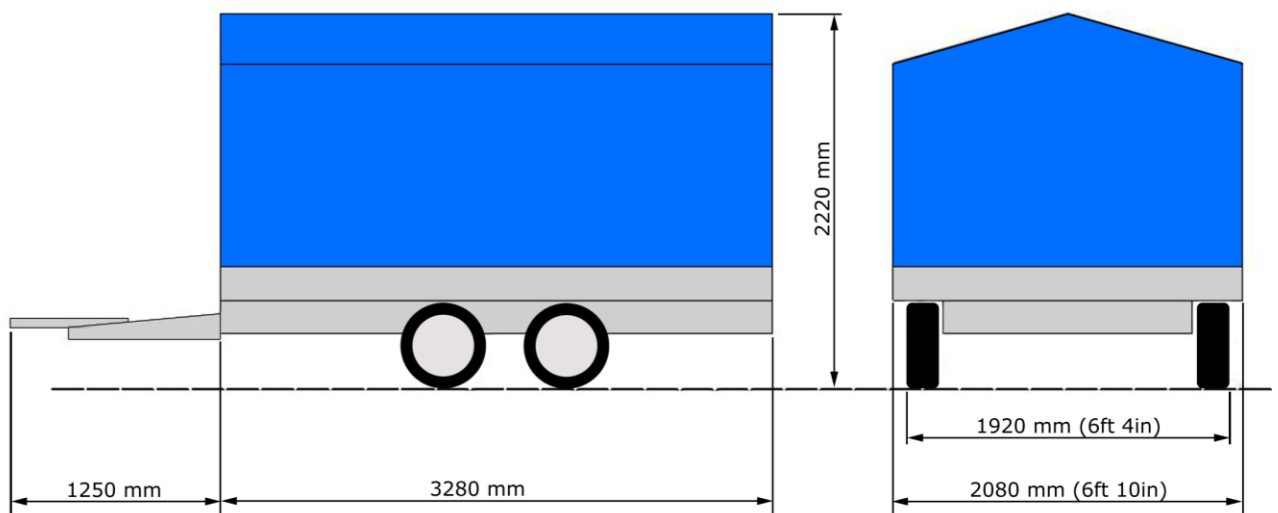
If there is limited space on site, it is possible to assemble both pairs of legs one on top of the other, on the same side of the ring, so that as space of only about 5m x 5m is required.

Charmborough Ring overall dimensions



Area plan after erection: 4020 mm x 2030 mm

Trailer dimensions



Laden weight: 2,100 kg

Towing Checklist

	Yes	No
Is lock fitted?	<input type="checkbox"/>	<input type="checkbox"/>
Is safety chain attached?	<input type="checkbox"/>	<input type="checkbox"/>
Is load secure?	<input type="checkbox"/>	<input type="checkbox"/>
Is load spread evenly?	<input type="checkbox"/>	<input type="checkbox"/>
Is cover secured?	<input type="checkbox"/>	<input type="checkbox"/>
Is correct number plate fixed to trailer?	<input type="checkbox"/>	<input type="checkbox"/>
Are indicator lights working?	<input type="checkbox"/>	<input type="checkbox"/>
Are brake lights working	<input type="checkbox"/>	<input type="checkbox"/>
Are side lights working	<input type="checkbox"/>	<input type="checkbox"/>
Are tyres properly inflated and in good condition?	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Dismantling Checklist

	Yes	No
Are bells and wheels secure on their headstocks?	<input type="checkbox"/>	<input type="checkbox"/>
Are contents of toolbox correct (tools & nuts and bolts)?	<input type="checkbox"/>	<input type="checkbox"/>
Is electric hoist satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>
Is petrol generator satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>
Are electric cables, plugs and sockets satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>
Is there fuel and oil for generator	<input type="checkbox"/>	<input type="checkbox"/>
Is plywood and timber protection satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>
Is trailer satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>
Are bell ropes satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>

Comments/repairs needed

Erection Checklist

Event _____

	<i>Yes</i>	<i>No</i>
Are the legs supported on firm ground?	<input type="checkbox"/>	<input type="checkbox"/>
Are the legs reasonably level, using timber packing, if necessary?	<input type="checkbox"/>	<input type="checkbox"/>
Have all the nuts and bolts been inserted into the legs?	<input type="checkbox"/>	<input type="checkbox"/>
Have all nuts and bolts been tightened?	<input type="checkbox"/>	<input type="checkbox"/>
Is each pair of bells properly seated on frame?	<input type="checkbox"/>	<input type="checkbox"/>
Generator cable and handset unplugged and wrapped around gantry?	<input type="checkbox"/>	<input type="checkbox"/>
If canopy over bells used, have bungees been fitted to prevent wind uplift?	<input type="checkbox"/>	<input type="checkbox"/>
If leather muffles needed to reduce volume, are Velcro straps tight?	<input type="checkbox"/>	<input type="checkbox"/>
Has all surplus equipment been placed back on the trailer, including canopy?	<input type="checkbox"/>	<input type="checkbox"/>
Test each bell and check tail ends for length?	<input type="checkbox"/>	<input type="checkbox"/>
Explain that bells have no stays and procedure if rope goes round wheel?	<input type="checkbox"/>	<input type="checkbox"/>
Two section ladder ready, and volunteers instructed in its proper use?	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

The ring has been assembled correctly and is ready for use:

Signed: _____

Name: _____

Date: _____

Site specific considerations

Please read separate annexe