State Claims Agency

Goal Post Safety in Schools

Background

Many of the goal frames used in Ireland are unsafe because they are improperly designed, manufactured, or installed (unstable and are either unanchored or incorrectly anchored or counterbalanced). These goal frames have caused three child fatalities in Ireland in the last three years. Similar experiences are reported in the U.K., US and Australia. In addition they also report a large number of injuries requiring hospitalisation associated with goal frames. These injuries, more than likely, occur in Ireland also but are not recorded.

The issue of goal frame safety is far from a new one, and as long ago as 1991, the BBC's 'That's Life' programme, with Esther Rantzen, highlighted the problem.

Many of the deaths were caused by the goal frames tipping over on to the victim. Others resulted from the mechanical failure of improperly designed or maintained crossbars. Almost all of the goals involved in these incidents were homemade and not professionally manufactured to an appropriate design specification or recognised technical standard.

Community & Comprehensive Schools Goal frame Survey

In May of 2003 the State Claims Agency carried out an assessment of goal posts in a sample of Community & Comprehensive Schools.

The objective of the assessment was to:

- establish the type and number of goal frames in use
- establish the extent to which the goal frames meet relevant safety standards (where such standards exist)
- identify deviations from such standards where noted
- identify risks associated with unsafe goal frames and the source of these risks (i.e. caused by poor design, incorrect installation, lack of maintenance, improper storage etc.

Six schools were surveyed.

Of the goal posts examined:

- 52% were soccer – 80% full-size permanent, 20% practice-size portable
- 40% were GAA – 40% permanent, 60% practice-size portable
- 4% were rugby – full-size permanent
- 4% were hockey – full-size permanent.

The survey found that nearly all the goal frames were made locally and to no particular standard. A wide variety of materials were used; aluminium, gun barrel steel, rectangular steel hollow section, light gauge steel tubing, softwood and plastic (PVC).

GAA goal frame – frame not sufficiently rigid, back tie bar sagging

In nearly all cases the goal design, manufacture or installation did not take account of the environment in which they were to be used and basic safety features were not in place. In many cases the goal frames design, manufacture or installation failed on more than one issue.

Hockey goal. Frame with rectangular section having sharp edges. Frame rusty. Upright buried directly in concrete – should have ground anchors.

In particular the following defects were noted:

- In 30% of the goals the frames' elements were not secured together
- 35% of the goal frames were inadequately anchored
- 43% used inappropriate material – material that was too heavy (usually material which wore or corroded easily, had an inappropriate gauge [too small] or section [square instead of circular]) etc.
- 30% were not installed in ground sockets

GAA goal – weld and bolt are rusty on the cross bar.

Portable GAA goal – no anchoring provided. When upper posts in place the goal frame is unstable.

Other issues noted:

- Goal frames designed for indoor use being used outside
- Dismantled goal frames improperly stored (left outside, not secured and prone to unauthorised use)
- Goal frames which were damaged but still in use.

Soccer goal frame with square section having sharp edges.

GAA goal post constructed of timber. Inappropriate for outdoor environments.

In general schools had no procedures in place to ensure that goal frames are regularly inspected for defects or damage. There was no clear guidance, instructions or signage dealing with the safe use of goals in any of the schools visited.
The report made general recommendations to improve goal frame safety and set out specifications for the design of fixed GAA and rugby goal frames.

Risk Management Recommendations

Purchasing and Safety Standards

Homemade goal frames are not recommended. Instead goal frames should be purchased from specialist sports equipment suppliers or manufacturers where possible.

Certain internationally recognised technical standards exist for soccer and hockey goal frames. These are:

BSEN 748:1996 Playing field equipment – Football goals – functional and safety requirements, test methods
BSEN 750:1996 Playing field equipment – Hockey goals – functional and safety requirements, test methods

The standards deal with portable and fixed type goal frames. When purchasing these type goals you should request that they conform to the above or equivalent standards and the supplier/manufacturer should provide documentary evidence.

There are no agreed technical design and safety standards, which apply to GAA

and rugby goal frames. This booklet provides a suggested design specification for fixed GAA and rugby goal frames. When purchasing these frames, it is recommended that they would conform to these design specifications or a design which will provide an equivalent level of safety and which has been approved as such by a suitably qualified engineer. As before the supplier/manufacturer should provide the necessary documentary evidence.

Instructions

All manufacturers must provide written instructions for assembly, installation, use, storage, maintenance and anchorage. The safety guidance from the manufacturers instructions should be incorporated in to the School Safety Statement.

Warning Labels

All goals should have labels bearing appropriate safety information (see specifications for details). Goal frames should also show the standard to which it was manufactured (where applicable), its size, the name of the manufacturer, and the year of manufacture.

Professional Socketed Aluminium Soccer Goals to BS EN: 748

Installation/Erection/Dismantling

Ideally equipment should be initially installed (particularly in the case of fixed goal frames requiring ground socket set in concrete) by the supplier/manufacturer. This is an opportunity for the relevant persons in the school to be instructed as to how to assemble/disassemble, inspect and maintain the goal frame.
Where the goal frame is first installed and erected by the school the instructions of the manufacturer must be followed.

Subsequent assembly/disassembly should again follow the manufacturers instructions and must always be supervised by an adult. Assembly must be carried out by a sufficient number of people. Never try to assemble large or heavy products with only one person, a second person as a minimum is required and sometimes a third to support the parts while fixings are being secured. Never leave a goal frame unanchored during assembly/disassembly while the next goal is being put into position.

Care must be taken when moving the product when it is still assembled. If no transportation wheels are provided it must be lifted by a sufficient number of competent persons to prevent injury, or damage to the product.

All involved with assembly of a goal frame should wear the appropriate Personal Protective Equipment (PPE) – a hardhat, steel toe-cap boots and rigger type gloves (see PPE purchasing specifications).

Freestanding equipment should always be adequately secured with the required number of anchoring points as per manufacturer's instructions.

Counterbalance weights

Multi-surface u-anchor

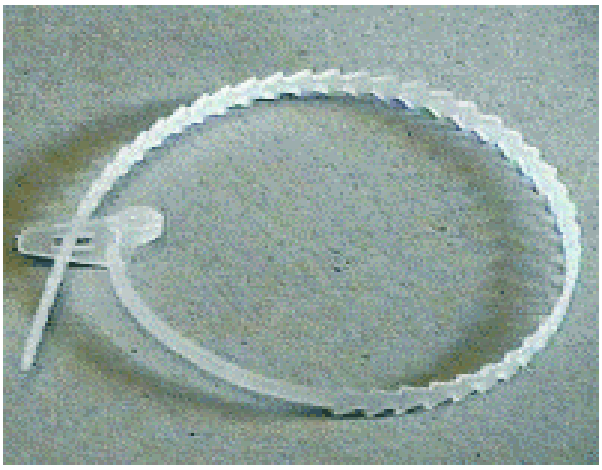
Use

General

Goal frames should only be used for their intended purpose. Goal frames for indoor use should not be used out door and visa versa.

All the pupils in the school should be warned of the dangers associated with goal frames. Swinging or climbing on the goal frame or nets should be strictly prohibited.
Pupils should be supervised at all times by an adult when using games equipment.

Before Use
Check that all goal frame fastenings/securings are fully tightened before each use.
Check that the anchors for securing freestanding goal frames are in place, intact and in good working order.
Check for and repair any minor damage to nets as and when they occur.



Easy fit net ties

Adults should test the goal frames to make sure they are stable by exerting a downward force on the crossbar, backward force on both upright posts forward force on both upright posts. Ensure that the area is clear before carrying out these tests.

Inspection & Maintenance

Inspect the equipment on a regular basis for any damage and remove any damaged equipment immediately from the playing area and store securely. Particular attention should be paid to critical points such as fixing points, joints, welds, bends etc., which are more prone to wear and damage. Any chips or scratches to paint work must be treated to prevent the corrosion to these points. A formal log should be kept of these checks.

At least one annual competent inspection should take place and a written report prepared subsequently. Any maintenance highlighted in the report should be acted on promptly.
A record should be kept of any inspections and repairs carried out.

Storage

When the game is out of season goal frames will not be in use for a long period of time. To prevent possible damage, corrosion and/or misuse it is recommended that they should be dismantled and stored inside in a safe and secure location.

Goal frames that need to be stored vertically should be securely positioned against a fence/wall. They must be attached in a way that they cannot fall over. It should not be possible for unauthorised persons (in particular pupils) to remove and install the equipment without the presence of an authorised adult.

Nets must be stored out of sunlight and away from rodents.

After the removal of goal frames to storage, ensure that all ground sockets

are suitably covered to eliminate trip hazards.

End.

Appendix 1 – Specification for GAA Goal frames – fixed and permanent

Appendix 2 - Specification for Rugby Goal frames – fixed and permanent

Appendix 1

Specifications for GAA Goal frames – fixed and permanent

Introduction:

This specification is for fixed and permanent GAA Goalposts.

GAA Goalpost Specification:	
Goalpost elements	4 x Uprights 2 x Crossbars 4 x Ground Sockets 4 x Netposts
Upright	Bottom section 89 mm diameter galvanised steel tube, 5m over ground, 3.25 mm wall thickness. Inserted at least 1200 m deep in ground sockets.
Crossbar	89 mm diameter galvanised steel tube, 3.25 mm wall thickness.
Upright	Top section 76 mm Aluminium tube, 3 mm wall thickness, 5m above steel section and inserted a minimum of 1000 mm into the steel section
Netposts	Uprights 50 mm diameter galvanised steel tube, 3 mm wall thickness, sockets 400 mm deep. See detail in figure 3.
Net tie hook	To comply with EN748.
Edges	All exposed edges to have a minimum radius of 3mm.
Metal Treatment	All metal sections including ground sockets to be galvanised and all welded parts to be galvanised after fabrication and to be painted.
Distance between uprights	6.4m
Height of underside of crossbar over playing surface	2.44m
Overall height of upright over playing surface	10m
T-Collar	The composite T-collar for fixing of crossbar to uprights is made of 2 sliding fit circular sections welded together. Details of composite collar and assembly of uprights to crossbar is shown in figure 2.
Ground sockets	Ground sockets for uprights to be embedded in concrete to a minimum depth of 1200mm. See details in figure 1. All sockets to be 25mm under playing surface and have a lockable cap with artificial grass bonded to it.

Warning label:

A permanent warning label shall be fixed to the goal with the following wording:
This goal is designed for the playing of football and no other purpose.
Check that all fastenings/securings are fully tightened before using and check periodically thereafter.
Do not climb on the net or goal framework.

Marking:

Goals shall be marked with the following information:

a) The name or trademark of the manufacturer, retailer or importer and the year of manufacturing of the frame.

b) A warning giving details of use that the goal is designed for and the type of net in accordance with the warning label above.

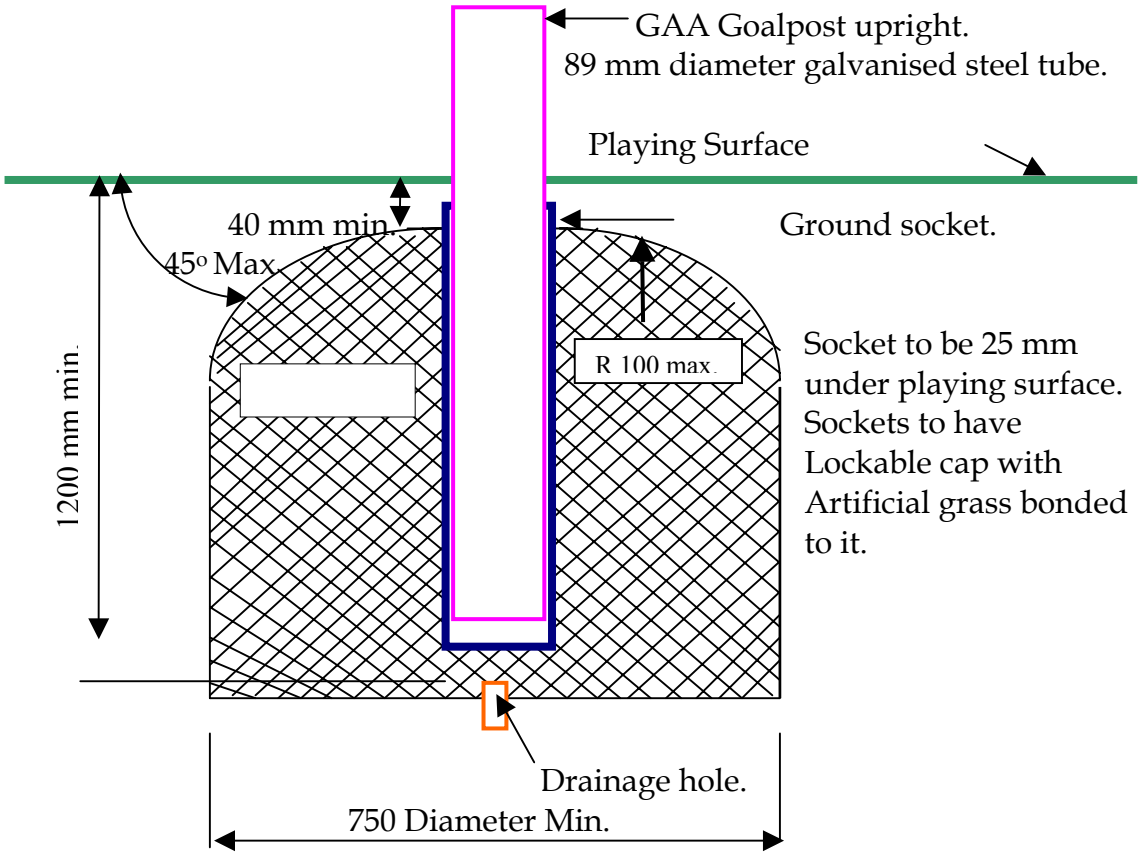
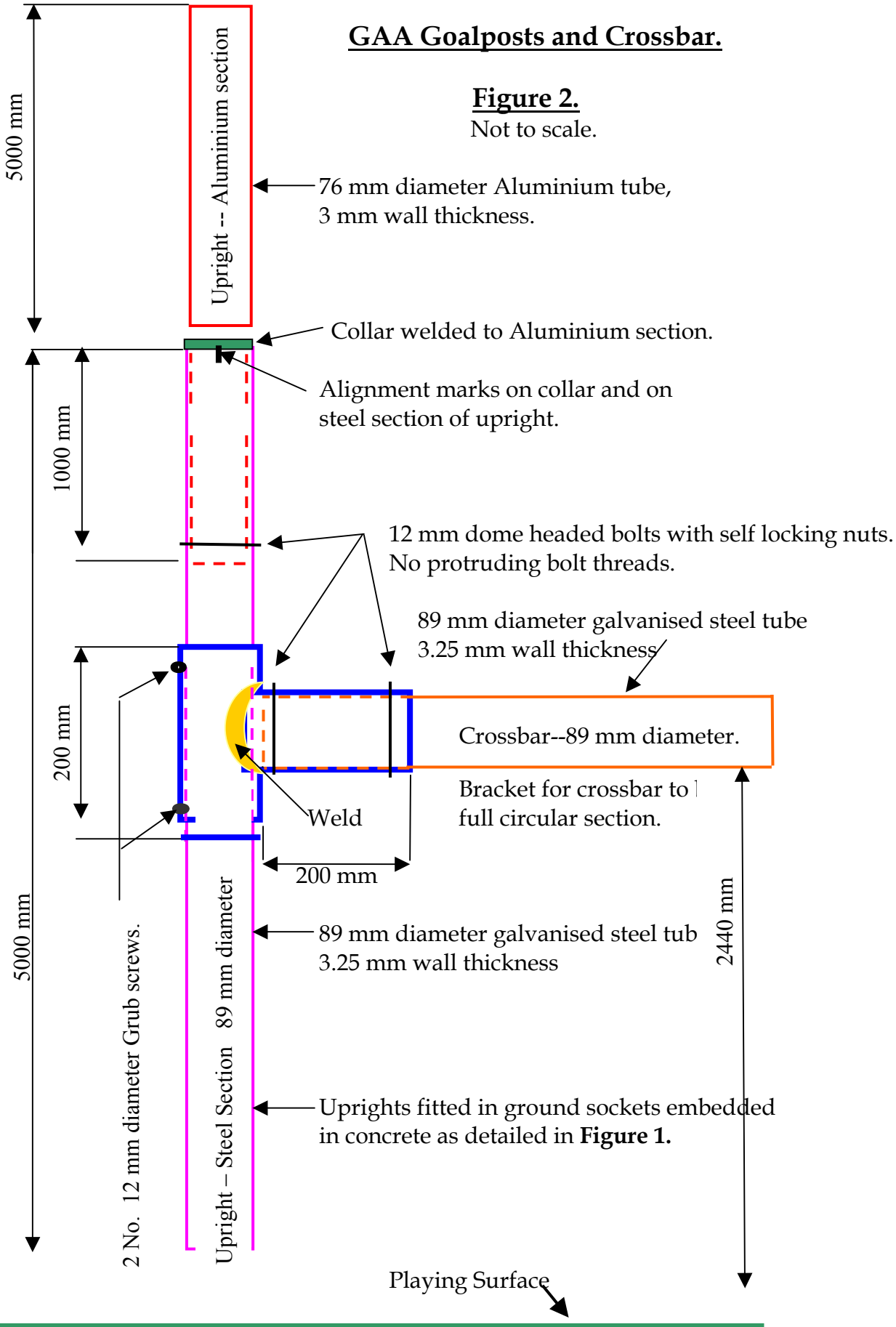


Figure 1.
Not to Scale

Foundation Details and fitting of Ground Sockets for GAA Goalposts.

GAA Goalposts and Crossbar.

Figure 2.
Not to scale.



Details of Uprights and Crossbar with method of fixing of Crossbar to Upright.

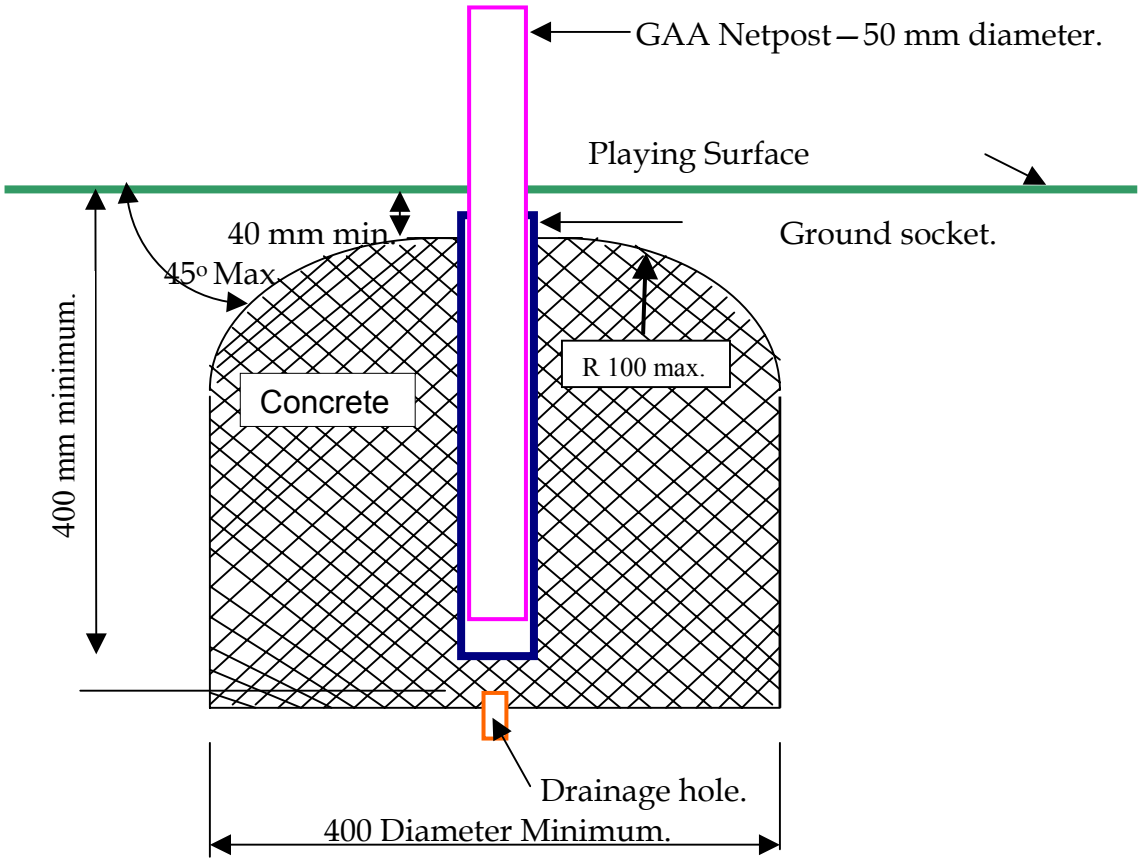


Figure 3.
Not to scale.

Foundation Details and fitting of Ground Sockets for GAA Netposts.

Appendix 2

Specifications for Rugby Goal frames – fixed and permanent

Introduction:

This specification is for fixed and permanent Rugby Goal frames.

Rugby Goalpost Specification:	
Goalpost elements	4 x Uprights 2 x Crossbars 4 x Ground Sockets
Upright	Bottom section 89 mm diameter galvanised steel tube, 3.25mm wall thickness. Inserted at least 1200 m deep in ground sockets.
Crossbar	89 mm diameter galvanised steel tube, 3.25 mm wall thickness.
Upright	Top section 76 mm Aluminium tube, 3 mm wall thickness, 5m above steel section and inserted a minimum of 1000 mm into the steel section
Edges	All exposed edges to have a minimum radius of 3mm.
Metal Treatment	All metal sections including ground sockets to be galvanised and all welded parts to be galvanised after fabrication and to be painted.
Distance between uprights	5.6m
Height of underside of crossbar over playing surface	3m
Overall height of upright over playing surface	10m
T-Collar	The composite T-collar for fixing of crossbar to uprights is made of 2 sliding fit circular sections welded together. Details of composite collar and assembly of uprights to crossbar is shown in figure 2.
Ground sockets	Ground sockets for uprights to be embedded in concrete to a minimum depth of 1200mm. See details in figure 1. All sockets to be 25mm under playing surface and have a lockable cap with artificial grass bonded to it.

Warning label:

A permanent warning label shall be fixed to the goal with the following wording:
This goal is designed for the playing of football and no other purpose.
Check that all fastenings/securings are fully tightened before using and check periodically thereafter.
Do not climb on the net or goal framework.

Marking:

Goals shall be marked with the following information:

c) The name or trademark of the manufacturer, retailer or importer and the year of manufacturing of the frame.

d) A warning giving details of use that the goal is designed for and the type of net in accordance with the warning label above.

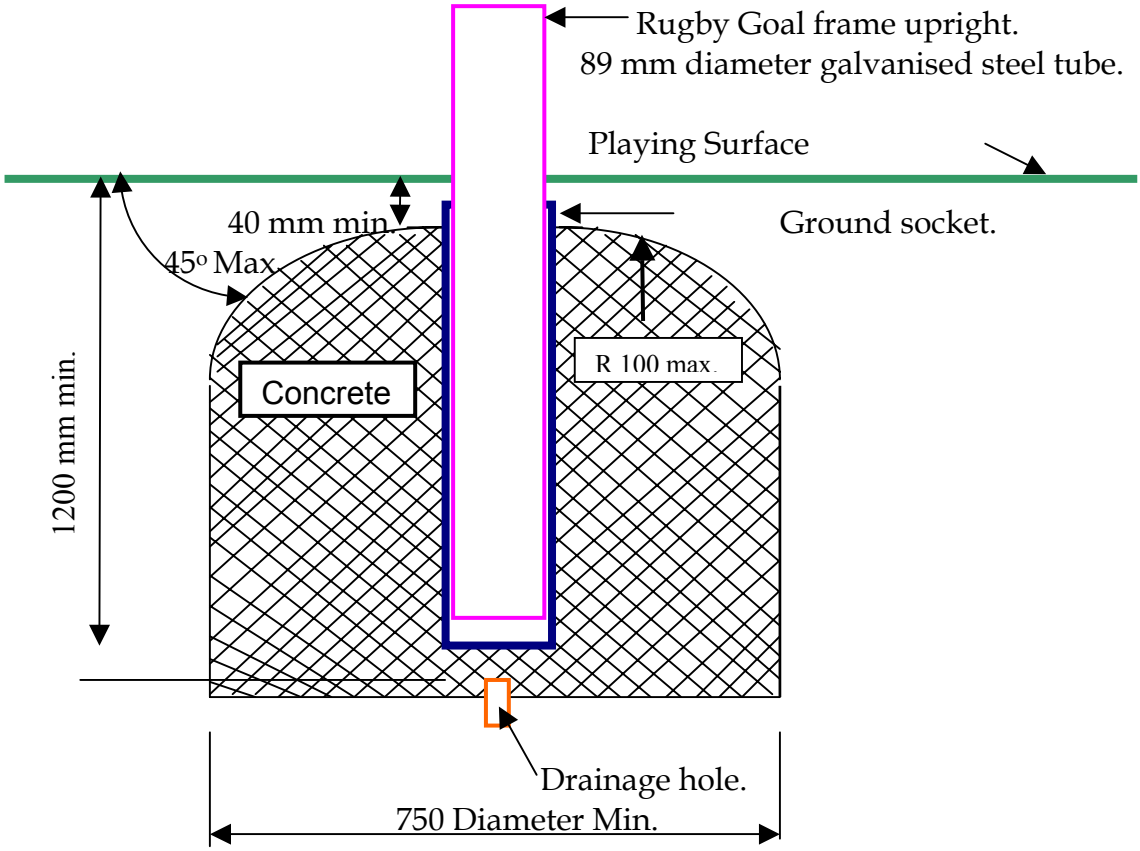


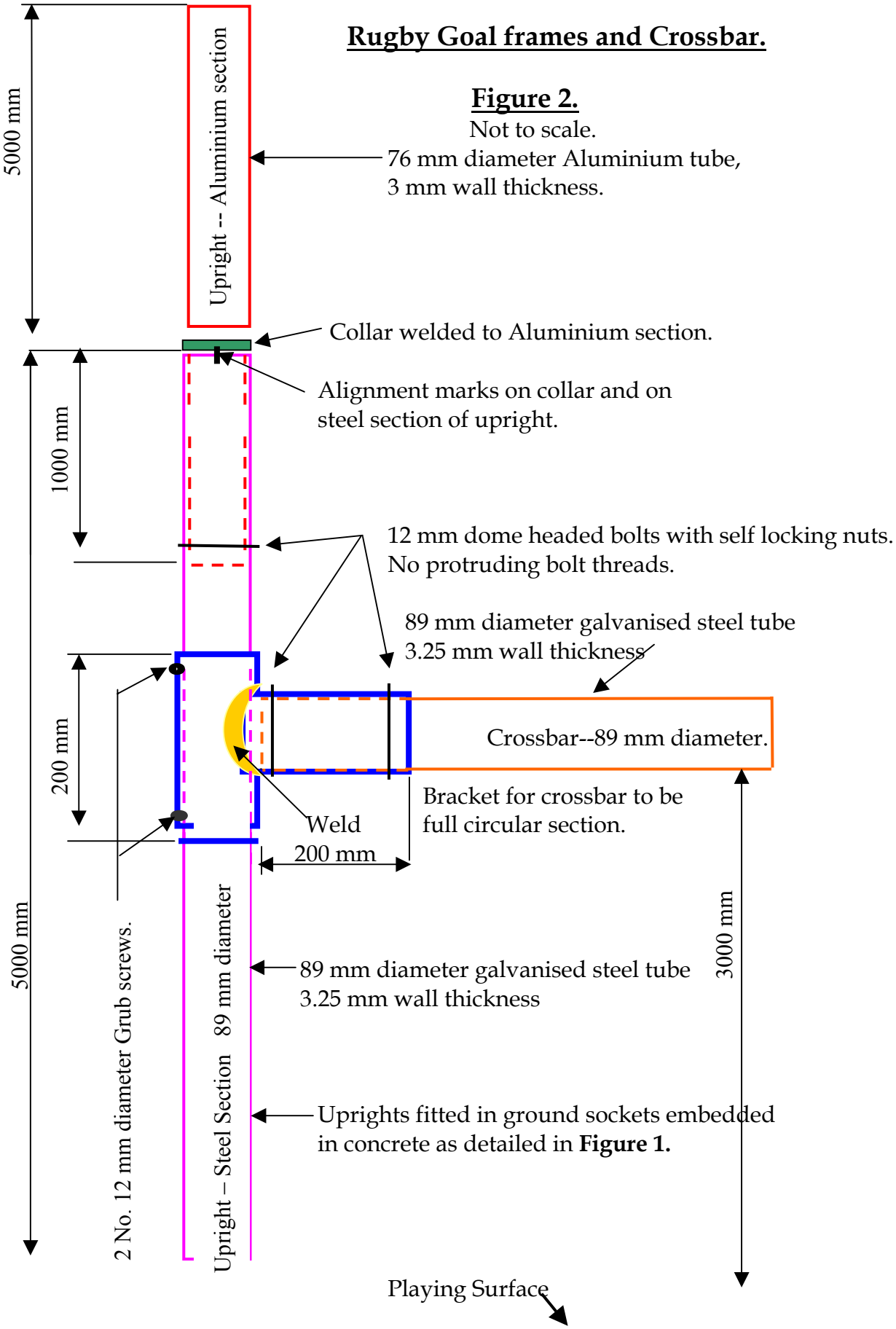
Figure 1.
Not to Scale

Foundation Details and fitting of Ground Sockets for Rugby Goal frames.

Rugby Goal frames and Crossbar.

Figure 2.

Not to scale.



Details of Uprights and Crossbar with method of fixing of Crossbar to Upright.