

# Repair or reinstatement of cast iron railings

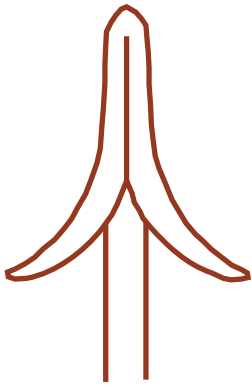


## Introduction

Prior to 1940 Aberdeen had retained most of the cast iron railings which enclosed the front gardens and basement areas of many of its Georgian and Victorian buildings. Unfortunately many of these were removed during the Second World War, to help the war effort.

Many of the railings that remain are in need of repair or replacement. There is much interest in reinstating the original type of railings where these had previously been removed.

This leaflet gives guidance on appropriate methods of repair and on suitable specifications for new railings.



## Characteristics of Cast Iron

Cast iron's most useful property was its ability to be cast into a wide variety of shapes at low cost for both practical and ornamental applications. In the 19th and early 20th centuries the large number of foundries in

and around Glasgow produced highly intricate designs of railings and items of street furniture such as lamp standards. Many of the ornate patterns of cast iron railings can still be seen in Glasgow today although much of it is in need of repair. The railings used in other Scottish cities, Aberdeen included, were, in comparison, much simpler.

Whilst being very hard and durable, cast iron is also extremely brittle, and is therefore highly vulnerable to impact damage. Being brittle it does not tolerate movement very readily and subsidence of the plinth wall into which railing balusters are set, is liable to cause cast iron work to snap under stress. Fortunately the coping rails are generally formed in wrought iron and can accommodate movement more readily over a period of time.

Although, as a result of its high carbon content, cast iron is less prone to corrosion than other ferrous metals, it must nevertheless, be checked regularly for signs of rusting, and repainted as required. Failures due to corrosion commonly occur at the base of the balusters, and at the junction with the wrought iron where electrolytic action between the wrought and cast iron can arise.

Any component of a railing system requiring to be replaced, should be substituted in an identical material. Cast aluminium, glass reinforced plastic or mild steel are not normally suitable substitutes although mild steel can replace wrought iron in the coping rail. Mild steel balusters which have been hot dipped galvanised, can replace cast iron ones, but this is generally not recommended.

## Repairs and Restoration

### General

Before any repair work is carried out, the cause of the damage to the railing must first be rectified. This may entail the re-levelling of the stone plinth or the relieving of any stress applied to the railing from any other source.

### Cold repairs

Bridging fractured cast iron with metal straps is not an ideal repair. If however it is the only practical method in the circumstances then the strap should be non-ferrous, should follow the profile of the cast iron and should be fixed to the rear of the railing with an epoxy resin adhesive mixed with a compatible epoxy based metal filler. Fixing the strap with pins or bolts is to be avoided. The metal should be scraped free of paint and rust before the adhesive is applied. Minor repairs or filling in small cracks of a cosmetic nature can be carried out with an epoxy based metal filler.

### Welded repairs

Welded repairing of cast ironwork is possible although it should be confined to minor repairs. If for example, a cast iron component is broken in several places, it may be cheaper and simpler to replace the component rather than repairing it. Welding cast iron requires certain skills and the area to be welded should be preheated to avoid cracking caused by unrelieved sudden expansion. The joint must be thoroughly prepared prior to welding and nickel alloy electrode rods should be used so that the weld can be easily ground down afterwards.

### Dismantling and reassembly

Where damage to a railing is extensive it may be simpler to dismantle the railing to carry out repairs. Badly damaged sections should be replaced using original railings and finials as patterns. Old iron stumps in the plinth stones should be carefully removed with a diamond-tipped core drill, and the new balusters set into the sockets with molten lead. The lead should be poured slightly proud of the top of the plinth stone to prevent water collecting and possibly leading to corrosion. When railings are being dismantled the opportunity should be taken to thoroughly clean off old paint and rust, before repriming and painting.

## Reinstatement with new cast ironwork

Where the original railings have been completely removed the new railings should be as faithful a copy of the original railings, as possible. If none of the original railings can be obtained for use as a guide, then photographic or other archive evidence should be obtained to ascertain the nature of the original railings. In this connection the Local Studies section of the Public Reference Library on Rosemount Viaduct may be of some assistance. If all such enquiries prove unsuccessful then a reasoned estimate of what the pattern of the railings had originally been can sometimes be made by examining the railings on similar, or nearby streets, or those erected at other properties of the same era.

## General guidance matters

1. The conservation principle of minimal intervention should be borne in mind when undertaking work to existing railings
2. Where possible, repair is preferable to replacement
3. Any repair should be reversible
4. When reinstating original railings or fitting new replicas, any opportunity to correct original constructional design weaknesses should be taken
5. Constructional details which could result in the retention of water should be avoided, as this may lead to corrosion
6. The individual pieces of a railing should be separately primed before fixing into position, particularly the ends of balusters which are to be set into the plinth sockets
7. Once fitted the railings should be regularly inspected, suspect areas cleaned off, reprimed and repainted. Overzealous, regular repainting should be avoided, as this can lead to a loss of ornamental detail through an excessive build up of paint



## Authenticity

It is important that any railings scheme is as near to the original in all respects as is possible. Most remaining original railings in Aberdeen have a simple but robust design. If, in any restoration scheme, the original pattern of railing cannot be established,

it is generally safer to copy existing original railings from elsewhere in the city, than to choose something from a catalogue. In the interests of authenticity it is extremely important that uprights of adequate thickness are specified. Left to their own devices contractors will frequently fit uprights of 19mm diameter or less, when the minimum diameter of upright should be 24mm. Even a 5mm difference can result in railings which appear too spindly and the whole effect can be compromised.

## Consents

Planning permission and/or listed building consent may be required for the reinstatement of railings which were removed some time ago. It is worth noting however, that where listed building consent is required for the reinstatement of railings, the obtaining of this consent may enable the work to be zero rated for VAT. The VAT office should be consulted for verification on this matter.

## Grants

Grants for the repair or reinstatement of cast iron railings may be available from Aberdeen City Heritage Trust.

For information about grants please contact:

**Project Officer**  
**Aberdeen City Heritage Trust**  
**Telephone: 01224 522755**  
**E-mail: [info@aberdeenheritage.org.uk](mailto:info@aberdeenheritage.org.uk)**  
**Web: [www.aberdeenheritage.org.uk](http://www.aberdeenheritage.org.uk)**

## Further Information

If you require any further information please contact:

**Masterplanning, Design and Conservation  
Enterprise, Planning and Infrastructure  
Aberdeen City Council  
Business Hub 4  
Marischal College  
Broad Street  
Aberdeen AB10 1AB**

**Telephone: 01224 522155  
Fax: 01224 523180  
E-mail: pi@aberdeencity.gov.uk**

**Aberdeen Library and Information  
Services:  
Local Studies  
Central Library  
Rosemount Viaduct AB25 1GW**

**Telephone: 01224 652512  
Fax: 01224 624118  
E-mail:  
LocalStudiesLibrary@aberdeencity.gov.uk**

## Cast Iron railings: manufacturers and installers

The following list of contractors which manufacture and/or install cast iron railings is provided for information only, and no endorsement of any of the companies or their products, is either expressed or implied. When obtaining quotations for the repair or replacement of cast iron railings you should compare the specifications of the railings under consideration with the information given in this leaflet.

Please note that the list is not comprehensive and your choice is not limited to the contractors listed:

1. Aberdeen Foundries, 23-41 Willowdale Place, Aberdeen Tel. 01224 635435
2. Alpha Fencing, Broomiesburn Road, Ellon AB41 9RD Tel. 01358 723788
3. Ballantine Bo'ness Iron Company Ltd., Links Road, Bo'ness, West Lothian EH51 9PW Tel. 01506 822721
4. Britannia Architectural Metalwork Ltd., The Old Coach House, Draymans Way, Altons GU34 1AY Tel. 01420 84427
5. A.J. Dunbar Engineering Ltd., Greenford, Oldmeldrum, Aberdeenshire Tel. 01651 872040
6. Alex Geddes Blacksmiths, 'The Smiddy', Station Road, Bucksburn, Aberdeen AB21 9PB Tel. 01224 710222
7. Charles Laing and Son Ltd., Beaverbank Brass and Iron Foundry, 28 Beaverbank Place, Edinburgh EH7 4ET Tel. 0131 5563160
8. Heritage Engineering, 22 Carmyle Avenue Glasgow G32 8HJ Tel. 0141 763 0007
9. Archibald Young (Brassfounders) Ltd., Milton Road, Kirkintilloch, Glasgow G66 1SY Tel. 0141 7767701
10. Giulliano, 6 Rubislaw Terrace Lane, Aberdeen Tel. 01224 624644

# Repair or re-instatement of cast iron railings - detail drawings

