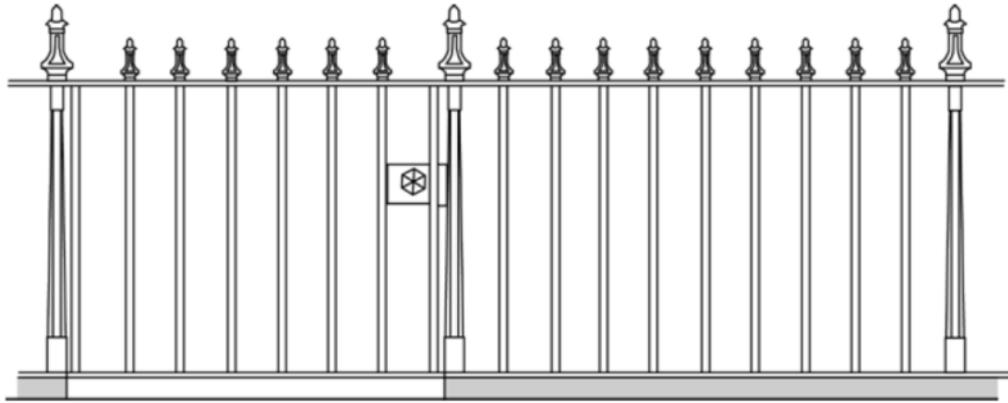




Technical Advice Note

Topic: Repair or reinstatement
of cast iron railings

Reference Number: TAN2



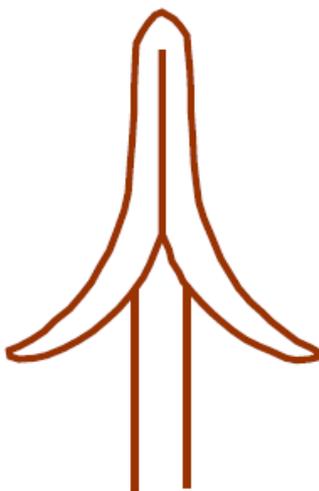
Introduction

Prior to 1940, Aberdeen had retained most of the cast iron railings that 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, purportedly to provide material for munitions, but which, in the event, was simply a morale boosting exercise.

Many of the railings that remain are in need of repair or replacement. There is much interest in re-instating 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 time.

Although, because 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 aluminum, 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-leveling 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 re-priming 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 and suspect areas cleaned off, re-primed and re-painted. Overzealous, regular repainting should be avoided, as this can lead to a loss of ornamental detail through an excessive buildup 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 that 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 that were removed some time ago.

Further Information

If you require any further information, please contact:

Aberdeen City Council

Business Hub 4
Planning & Sustainable
Development Marischal College
Broad Street
Aberdeen AB10 1AB
Tel. 03000 200292

Aberdeen Library and Information Services

Local Studies Central
Library Rosemount
Viaduct AB25 1GW
Tel. 01224 652512

www.aberdeencity.gov.uk/planning_environment/planning_and_environment.asp

[p](mailto:pi@aberdeencity.gov.uk)

E-Mail: pi@aberdeencity.gov.uk

www.aberdeencity.gov.uk/Library_Service/Services/lib_local_home.asp

E-mail: LocalStudiesLibrary@aberdeencity.gov.uk

Cast iron railings manufacturers and installers

The following list of contractors that 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:

Aberdeen Foundries

23-41 Willowdale Place, Aberdeen
AB24 5AQ
Tel. 01224 768088
www.aberdeenfoundries.co.uk

Alpha Fencing

Broomiesburn Road, Ellon AB41 9RD
Tel. 01358 723788
www.alphafencing.co.uk

Ballantine Bo'ness Iron Company Ltd

Links Road, Boness, West Lothian
EH51 9PW
Tel. 01506 822721
www.creativeironworks.co.uk

Britannia Architectural Metalwork Ltd

Units N1-N4 Andoversford Link
Andoversford Industrial Estate
Cheltenham GL54 4LB
Tel. 01242 820037
www.britannia.uk.com

A.J. Dunbar Engineering Ltd

Greenford Farm, Oldmeldrum,
Aberdeenshire AB51 0BH
Tel. 01651 872040

Alex Geddes Blacksmiths

'The Smiddy', Station Road,
Bucksburn, Aberdeen AB21 9PB
Tel. 01224 710222

Charles Laing and Son Ltd

Beaverbank Place, Edinburgh EH7
4ET
Tel. 0131 5563160
www.laingsfoundry.co.uk

Heritage Engineering and Restoration Ltd

East End Farm
Carstairs ML11 8PQ
Tel. 01454 261522
www.heritageengineering.com

Archibald Young (Brassfounders) Ltd

Milton Road, Kirkintilloch G66 1SY
Tel. 0141 7767701
www.archibaldyoung.co.uk

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

