KERRY BUILDING CONSERVATION
GUIDELINES
No. 3

Comhairle Contae Chiarraí
Kerry County Council

IRONWORK REPAIR

An Chomhairle Oidhreachta
The Heritage Council

JCA Architects

KERRY BUILDING CONSERVATION
GUIDELINES

No. 3 Ironwork Repair

Funded by The Heritage Council
and supported by Kerry County Council

Written by Gareth O'Callaghan & Katherine McClatchie, JCA Architects
Designed by Sean Coughlan, JCA Architects
Edited by Victoria McCarthy, Conservation Officer, Kerry County Council

Comhairle Contae Chiarraí
Kerry County Council

JCA Architects

An Chomhairle Oidhreachta
The Heritage Council

Denny Street, Tralee

FOREWORD

The fabric of our historic built environment is a diminishing resource. This particularly applies where the common everyday details such as stone slate roofs and timber windows continue to be lost. Through this advice series, Kerry County Council seeks to provide building owners with information on building conservation best practice approaches to repair and maintenance.

LEGISLATIVE PROTECTION

Under the Planning and Development Acts, a structure which forms part of the architectural heritage can be protected either by being designated a Protected Structure or by being located within an architectural conservation area (ACA). This protection extends to the features of the building which contribute to its character such as natural slate roofs, historic ironwork and joinery. It is important that these elements are repaired rather than replaced.

Works which would alter the special character of a Protected Structure require Planning Permission.

In an architectural conservation area, any works which would affect the character of the area also require planning permission

CONSERVATION PRINCIPLES

The aim of conservation is to protect and prolong the life of the features of a building that contribute to its special character.

Minimum intervention into historic fabric of a structure is the guiding principle. In this we mean '**doing only what is necessary**'.

It is worth noting that some later alterations may also carry historic significance so a building should be carefully surveyed and documented before work is planned.


A cast iron rainwater pipe, Denny Street, Tralee

Wrought Iron Railings with cast iron finials on Denny Street, Tralee

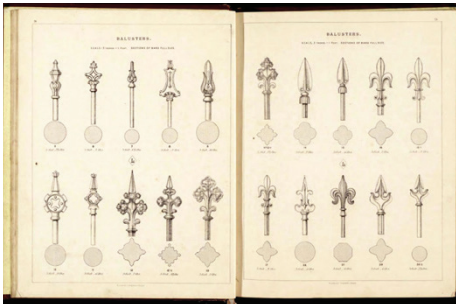
HISTORIC CONTEXT

Historic ironwork on buildings takes many forms. It varies from simple cast iron rainwater gutters and hoppers to the more decorative cast work seen on railings or on surviving features such as boot scrapers and door knockers. All of these features contribute greatly to the character of historic buildings and it is important that they are retained and repaired and not replaced.

Many of Co. Kerry's historic buildings date from a time when decorative architectural iron work was a popular enhancement to domestic and commercial buildings. As the craft and industry of iron work reached a peak during the 19th century, ironwork of a very high standard, often locally produced, became affordable and accessible. Before the middle of the 19th century, most architectural iron work was executed in wrought iron, and was costly to produce. With the introduction of mass-produced cast-iron in the 19th century, decorative architectural ironwork became much more affordable, and functional cast-iron elements, such as rainwater gutters and hoppers, became standard features.

Cast iron as its name suggests was cast in a mould and generally used for decorative elements such as finials to railings and rainwater hoppers where strength was not an issue. It is brittle and can easily fracture. Wrought iron is malleable, can be shaped (forged) and has greater tensile strength than cast iron and was generally used for railings and gates. Wrought iron requires more skilled and intensive labour, and is more expensive as a result.

In urban areas, railings were commonly used to demarcate and guard the property boundary to the front of a house. Houses with basements might have a similar cast-iron handrail to the basement steps. Railings generally followed a standard pattern of construction: straight vertical standards, set directly into the pavement or into the copings of a low wall, tied with a cross-bar at the top and finished with decorative finials. Each of these elements could be mass-produced either by local foundries or ordered from the catalogues of larger foundries, often in England or Scotland.



Catalogue of cast iron goods c1900 from Scottish ironfounders J & A Law.

Poorly maintained wrought iron railings on Denny Street, Tralee
Note where concrete has been used with existing stone to set the railings in place, contrary to conservation best practice.

COMMON PROBLEMS

Rust, vehicular damage and poor maintenance are the enemies of historic ironwork!

RUST

Rust is formed when iron reacts to a combination of air and water. Rust can do significant damage to ironwork over time. Water traps, joints, masonry sockets and horizontal elements of ironwork are particularly vulnerable to water intrusion. Even if rust has been allowed to develop to double the thickness of the underlying iron, repair is still possible. Rust can cause the iron to expand to more than ten times the volume of the original material, so there may be enough sound iron remaining under the rust to make replacement unnecessary.

VEHICULAR DAMAGE

Iron railings and especially gates are vulnerable to damage from vehicles. An impact from car or other vehicle can cause wrought iron to be deformed or cast iron to fracture and shatter.

POOR MAINTENANCE

Proper maintenance is the most important part of ensuring that ironwork remains durable and avoids the need for more extensive repair work. Ironwork should be inspected annually for signs of corrosion, distortion or fracturing and to ensure that the paintwork is in good condition. To maintain ironwork, it is recommended that it is cleaned and painted every five years. Litter, dead leaves and other debris which can trap water should be cleared away from rainwater goods and the base of railings. Loose fixings can cause damaging strain to ironwork, and should be fixed as soon as possible.

Damaged and rusted finials, Denny Street, Tralee

HOW DO I CARRY OUT REPAIRS?

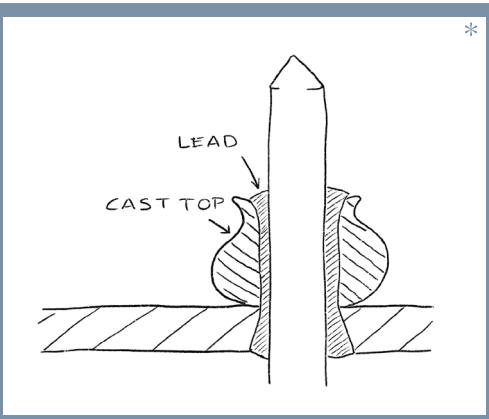
In cases of substantial damage or decay, repair of cast-iron is by specialist welding techniques.

The repair of wrought iron can be undertaken by cutting back the rusted element to sound metal and welding in new metal (either salvaged wrought or mild steel) in a V profile joint, so as to retain the structural integrity of the wrought iron which is a laminate.

As a temporary measure, small cracks in cast iron can be filled with linseed oil putty to prevent them from trapping water and growing into major problems, until a permanent repair can be carried out.

Cast iron which has been eaten away by rust but which is still reasonably sound can be made good using a steel and epoxy resin filler.

Decorative iron railings are typically housed in pockets in stone plinths with the iron members surrounded molten lead in the pockets which allows a secure connection with a degree of flexibility. When rehousing railings it is preferable to use epoxy resins rather than molten lead which can shatter the stone.



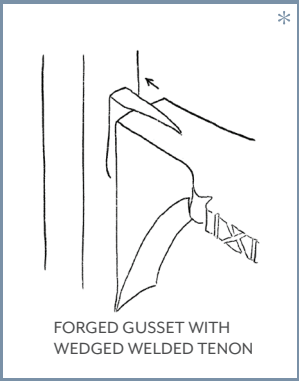
Decorative features such as finials can be recast using an existing finial in good condition as a template. When replacing missing finials these are usually housed by leading into the uprights. This involves forming a pocket in the finial into which the iron upright is inserted. Heads and finials can be fixed into place with a stainless steel dowel or a threaded fixing.

* Sketch from Irish Artist Blacksmith's Association's Guide to the Best Practices for the Restoration of Irish Historic Ironwork

Often the top and bottom rails of railings are prone to rust as rainwater can gather on the horizontal surfaces. Replacement elements can be successfully bolted and riveted retaining the uprights. Mortice and tenon joints are often employed similarly to joinery techniques

MORTICE & TENON JOINTS

(there are many different types to be found in Ireland)



* Sketch from Irish Artist Blacksmith's Association's Guide to the Best Practices for the Restoration of Irish Historic Ironwork

The best way to protect iron once it has been cleaned is to give it a sound paint coat. The key to successful painting is correct surface preparation. It is not necessary to strip layers of sound paint back to the bare metal: they can simply be rubbed down and used as a base for a new coat of paint. In cases of rusty iron, this must be more thoroughly cleaned back to the sound metal. Small areas can be cleaned with a wire brush and steel wool. Chemical strippers may also be used, but should be removed using white spirit rather than water, which encourages rust. Shot blasting should only be carried out by a skilled operative, with a test section carried out first.

Cast-iron should be primed straight after cleaning, so rust does not have on opportunity to develop. This can be followed with up to four applications of top coat. It is a good idea to consult paint manufacturers' own advice with regard to the compatibility of paints when new paints are to be used over old. While black and white are generally chosen as colours for architectural ironwork now, paint scrapes often indicate that dark green, dark blue, red and chocolate brown were used in the 19th century.

DO	DON'T
Repair rather than replace Carry out periodic maintenance to prevent the structure falling into disrepair (eg. Guttering clearing and painting) It is recommended that you contact the Architectural Conservation Officer in Kerry County Council before starting works Engage a Blacksmith with a proven track record in heritage ironwork Seek expert advice of a building professional accredited in Architectural Conservation	Replace original fabric with replicas as the original always has more historic value and is a finite resource

GRANT ASSISTANCE

Conservation grants are available for the conservation and repair of protected structures and are administered by the planning authorities. You should contact Kerry County Council for guidance on whether the works you are planning are eligible for a grant and, if so, how to apply. These grants are not available for routine maintenance works, alterations, or improvements. The type of works must fit within the schedule of priorities set out by the planning authority. In order for works to qualify for these grants, they must be carried out in line with good conservation practice. Repair work following the guidance set out in this booklet should be considered as satisfying this requirement.

Other bodies also provide grants for building conservation projects. These include the Heritage Council and the Irish Georgian Society

USEFUL REFERENCES:

THE DEPARTMENT OF ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT ADVICE SERIES
covers a range of topics to advise owners of best practice for the maintenance and repair of heritage elements

www.chg.gov.ie/heritage/built-heritage/architectural-heritage-advisory-service/advice-for-owners/

IRISH ARTIST BLACKSMITHS ASSOCIATION
for detailed examples on how to repair historic ironwork

http://irishblacksmiths.com

CATALOGUE OF CAST IRON GOODS C1900 FROM SCOTTISH IRONFOUNDERS J & A LAW.

https://issuu.com/hspubs/docs/illustrated_catalogue_of_cast_iron_goods/3

KERRY BUILDING CONSERVATION

GUIDELINES

No. 1 Roofs, Chimneys & Rainwater Goods

No. 2 Windows & Doors

No. 3 Ironwork Repair

No. 4 Lime Plaster & Stucco

No. 5 Interior Joinery and fireplaces

Comhairle Contae Chiarraí
Kerry County Council

JCA Architects

An Chomhairle Oidhreachta
The Heritage Council