

Basics in Iron Fencing Care



Basics for Iron Fencing Care

*Jason W. Church
National Center for Preservation
Technology and Training*



Objectives

After this workshop, learners should be familiar with:

- Identification of differences between cast iron and wrought iron
- Documentation of historic iron fencing
- Original construction techniques



Objectives

Additionally, learners will be able to

- Reset fences with few complications
- Stabilize corroded iron surfaces
- Apply surface treatments to iron fences.

Basics in Iron Fencing Care

 **National Park Service** 



**National Center for Preservation
Technology and Training
(NCPTT)**

 **Historic Iron Work Fencing** 



 **What is Cast Iron?** 

Cast Iron is;

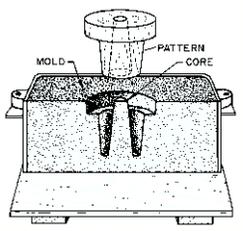
- An iron based alloy containing at least 2% carbon.
- Heated to a fluid state and poured into a mold.



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What is Cast Iron?

- Original pattern is made
- Mold is made from the original
- Parts are cast from mold



What is Cast Iron?

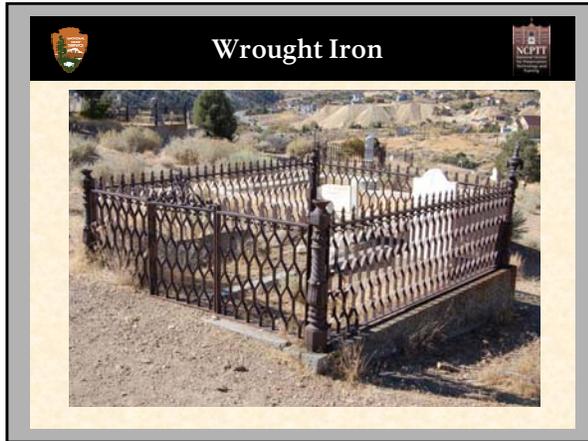


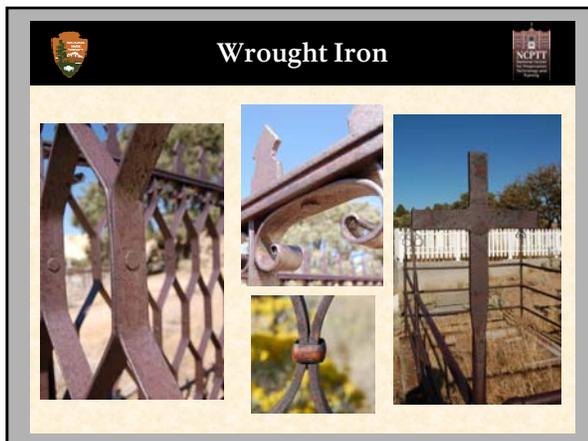
Cast Iron



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 **Cast Verse Wrought** 

Cast Iron	Wrought Iron
<ul style="list-style-type: none">• Heavier• More detailed• Cheaper to make• Mechanical fasteners• Held in tension	<ul style="list-style-type: none">• Lighter and more delicate• Simpler shapes• Labor intensive• Skilled craftsman needed• Riveted or fused

 **Mixed** 



 **Drawn Wire** 



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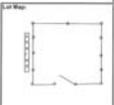
Documentation

- Identify cast or wrought
- List any manufacturers labels
- Paint color(s) found on fence
- Current condition
- Note any missing features

Cemetery Fencing Survey

Cemetery Name: Laurel Grove North Cemetery
Cemetery Address: 202 W. Anderson St., Savannah, Ga. 31416
Lot / Section Number: 1030
Lot Physical Location: West of aisle 17
Lot Name (Predecessors): Mulholland
Fencing Type: Wrought with cast iron details
Fence Manufacturer and Date: Unknown

Fence Description: Round cast posts are spaced to a square. Each panel is wrought iron with a top rail and one pattern which connects to the square with a cast panel. The casting has the top 1/2 inch above the top rail. The gate is a double iron Mulholland.



Documentation



Documentation



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Documentation



Look for paint or plating remnants

Documentation



Bronze Elements Lead Elements

Conservation

- Reset and level
- Replace/ repair fasteners
- Repair breaks and bends
- Clean up rust
- Clean (wash)
- Treat
- Prime
- Paint



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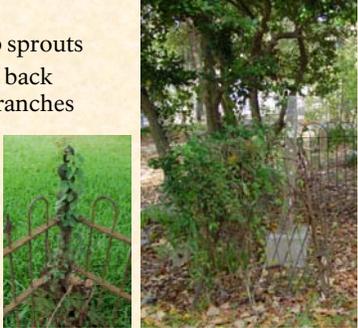
First Priority



- All adjacent materials must be covered before work can begin
- Fragile plants should also be protected

Remove Potentially Harmful Vegetation

- Cut back vines
- Remove stump sprouts
- Cut back or tie back overhanging branches
- Remove small invasive trees and shrubs



Preventing Further Damage

- Leave the captured fence
- Cut the outlying fence free of the tree
- Make new supports for fence ends



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Resetting and Leveling Posts

- Posts may be ground supported or set in stone / concrete
- May require excavation to move
- Posts must be plumb and level to properly support fencing



Resetting and Leveling Posts



Resetting and Leveling Posts



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 **Resetting and Leveling Posts** 

Set in Stone

- Usually set in lead
- Occasionally set in molten sulfur
- Can be reset with molten lead or lead wool



 **Resetting and Leveling Posts** 

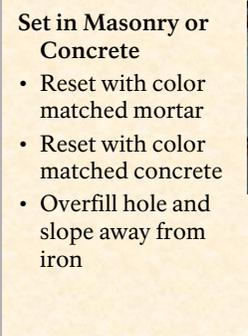
- Overfill the hole
- Should shed water away from iron
- Do not leave any voids for water



 **Resetting and Leveling Posts** 

Set in Masonry or Concrete

- Reset with color matched mortar
- Reset with color matched concrete
- Overfill hole and slope away from iron



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 **Replace Any Missing, Damaged Hardware** 

- Replace with like size and style
- Iron rivets
- Iron or stainless steel bolts



 **Replace Any Missing, Damaged Hardware** 

- Drill out failed fasteners
- Re-tap rusted or damaged holes with same thread count or next size up



 **Wrought Iron Repair** 



- Can be bent back into shape cold or with heat
- Heat with a low Oxyacetylene flame or propane torch
- Can be welded with torch or electric welder

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 **Cast Iron Repair** 

Repair Methods

Cold Repair

- Stitching

Hot Repair

- Welding



 **Cast Iron Repair** 



Cold Stitching

- Stainless steel pins
- Can be threaded or adhered with epoxy into place

 **Cast Iron Repair** 



- Welding should *only* be done by a specialized professional with knowledge of cast iron
- Welding can crack and weaken the iron

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Surface Prep

- Remove loose rust and scale from surface
- *Fine wire* brush by hand or power tool



Surface Prep

- Sandblasting is not recommended
- Do not use heavy corded wire brushes
- Do not grind metal



Surface Prep

Once rust is removed with a brush, wash surface of fence with water and non-ionic detergent or non-ionic detergent and solvent



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Rust Conversion



Two main types of rust converter

- Tannic acid base
- Phosphoric acid base
- Chemically converts the iron oxide into a stable iron tannate or iron phosphate

Rust Conversion



- Use PPE when using Rust Converter
- Goes on white but dries to a flat black
- Will permanently stain stone

Prime



- Use an oil based primer that is designed for metal
- Rust Converter should be dried to the touch before applying primer

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Finish Coat

- Two coats of an oil based paint that is designed for metal
- Paint color should match original or be historically accurate



Video Presentation

Questions?

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Contact
Jason Church
Materials Conservator
645 University Parkway
Natchitoches, LA 71457
jason_church@contractor.nps.gov
318- 356- 7444 ext. 236
318- 356- 9119 fax



Course Credit

Take the on- line evaluation at

- www.nps.gov/training/tel
- Click on the DOI Learn tab
- Go to the link under Class Evaluations for *Basics for Iron Fencing Care*.
- Please complete the evaluation within 2 weeks of the course, by February 1, 2008
