
CONSERVATION TALK

Michael Trinkley

The Top Five Cemetery Fence Problems

While iron may seem indestructible, cemetery fences would argue otherwise. More often than not they are corroded, damaged by trees or automobiles, partially buried, wired together or fallen down. Sometimes they exhibit the most outrageous examples of what passes for repairs or painting. Below are the top 5 cemetery fence problems. While I hope none exist at your cemetery, if they do I'm also suggesting some solutions.

Problem—Burial in soil or masonry

In many cemeteries the bottom rails are today covered by soil. The soil holds moisture that promotes the corrosion of the iron. The bottom rail corrodes, eliminating the support of individual pickets and promoting their vulnerability to other forces, such as vandalism or even simple lawn maintenance.

The soil in cemeteries builds up from erosion or by allowing excess soil from burials to spread across the grounds. The cure is simple: remove the soil. This may require creating a swale or other landscaping feature to change the topography, but the fence must be above the soil and grass line.

A variation of this problem is when the fence is buried in concrete or other masonry. Sometime the fence was originally set this way, but often concrete was added "to

stabilize" an already deteriorating fence. The new concrete—like soil—holds moisture against the iron and promotes rapid deterioration. While the problem is essentially the same, the solution is far more difficult, since it entails untangling the fence—or what is left of it—from the concrete and then attempting repair.



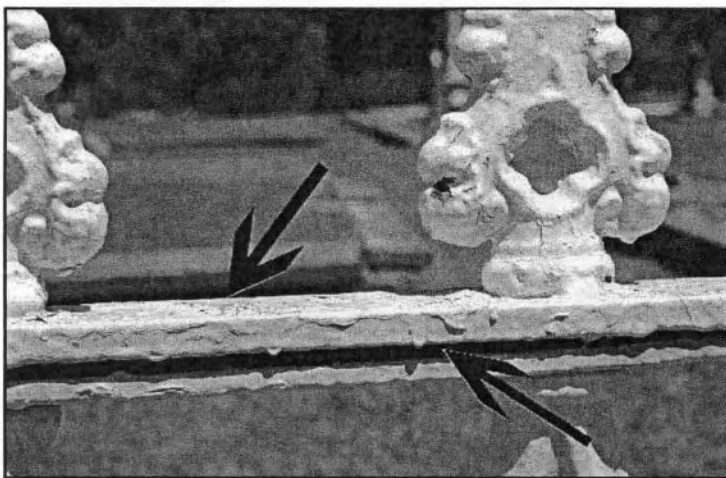
This photo shows the bottom rail and pickets buried in the soil. The arrow points out where the bottom rail has corroded away because of the ground contact. The ground level here needs to be lowered by about 6 inches.

Problem 2—Paint, the lack of it or inappropriate application

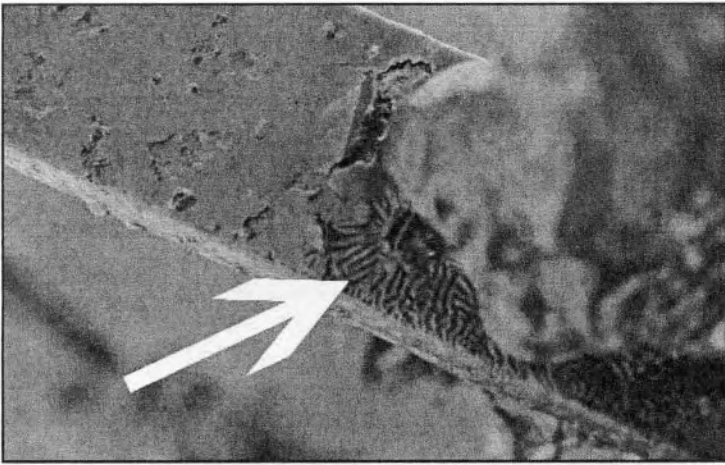
Fences are either not painted or painted incorrectly. Some haven't been painted in so long that no paint remains. Here the solution is simple—paint the fence. The best protection a fence can receive is a coat of good paint.

If there is no paint a good choice of primer is Rust Oleum's Rust Reformer (available in 1-gallon containers; avoid the spray cans). While there are lots of rust convertors (typically using either phosphoric or tannic acid or a combination of the two), Rust Reformer is the only one that has been tested (by the Canadian Conservation Institute) and found to perform well in accelerated corrosion conditions. If any paint exists, then select a suitable oil-based primer. Follow with two top coats of a good quality alkyd flat enamel compatible with the primer used.

Sometimes owners get talked into using strange paint concoctions. Recently I saw a coal tar epoxy paint used on a cemetery fence—it was a mess. Stick with simple oil-based paints. Remember the Secretary of Interior's



Here the arrows show alligatoring on the top and drips on the side. The paint was applied too thickly, resulting in the drips and incomplete cure. These are sure signs of sloppy painting.



This shows alligatoring where the paint has been applied too heavily and was not able to correctly cure. You can also see some of the paint lifting, with no primer below.

Standards that instruct us to use the gentlest means possible. Coal tar and other epoxies are difficult to remove and perform no better than ordinary oil-based paints.

When fences are painted, there are often problems with the paint job itself. The fence may have been poorly prepared for painting (inadequately scraped and brushed, for example), or the paint may have been applied too thickly or before the first coat was fully cured (resulting in what is called alligatoring).

Preparing fences for painting involves caulking. There may be places on iron fences where two or more metal rails are combined. Often gaps allow water to be pulled into the small spaces by capillary action. If not caulked, these areas will collect moisture and the corrosion will continue, in spite of painting. Avoid silicon caulks—they are difficult to remove and can't be painted over. A better choice is an elastomeric caulk such as Sikaflex 1a.



Here is an example of an inappropriate repair that detracts from the beauty of the fence and promotes additional damage. Spot welds allow moisture to migrate between the metal and cause additional corrosion.

Problem 3—Inappropriate repairs

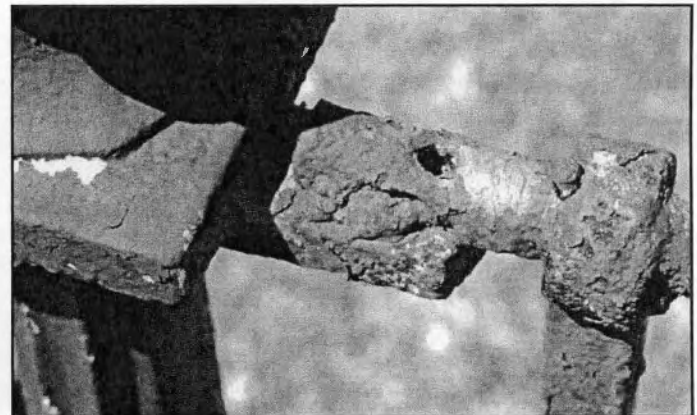
Anyone with a welder from a big box store immediately feels empowered to go out and begin welding. It can do considerable damage to cemetery fences.

Fences were originally set using primarily slip joint connections. Nuts and bolts or similar connectors allowed the fences not only to be adjusted when being set, but also allowed them to move a little afterwards.

I talked about the coefficient of thermal expansion in a previous column, but let's look at it for an iron fence. In general the increase in length is about 0.00000686 foot per degree for each foot of fence. For a fence section 6 feet in length, the change in temperature from freezing weather to a hot summer afternoon (30°F to 90°F or 60° difference) is "only" 0.0025 foot or 1/32 inch. Not much admittedly, but the stress can damage connectors after years. So, if it was meant to be a slip joint, you'd be wise to try to repair it in a way to preserve the fence's ability to move.

Welds, where they must be used, should be continuous and ground smooth. Avoid spot welds and rough joints that can collect water and promote additional corrosion.

Two types of welding are used on fences. The first is gas tungsten arc welding (GTAW), also known as tungsten inert gas (TIG) welding. In general, silicon-bronze wire and stainless steel wire will be used for the repairs, with the selection based on compatibility, ductility and liquidity with the base metal. Shielded metal arc welding (SMAW; often called stick welding) is also appropriate in some circumstances. It usually works best with a nickel welding electrode such as NiRod Ni-99, composed of 99% pure nickel with scavenger elements used for arc stabilization.



Originally connected with a pin to allow some movement, this rail was welded, limiting movement of the fence section. Note also that the weld included a gap that allowed water to collect. There is extensive corrosion and loss of paint.

Although every job presents different challenges, you always want to select a welder with demonstrable experience and solid skills. Don't let a novice experiment on your irreplaceable fence.

Problem 4—Failure to repair damage

Just as many cemeteries avoid maintaining their property by claiming that families (now long gone) are responsible for the upkeep of stones, so too are fences ignored by management. We see damaged parts stacked up and ignored. This neglect degrades the appearance of the entire cemetery and promotes additional damage. One deteriorated fence makes the entire cemetery appear uncared for and neglected.

If it isn't possible to immediately repair damage, you should at least expect the cemetery caregivers to collect,



When you see fences like this what do you think? Are they loved or ignored? Most cemetery visitors see this and assume that the cemetery is uncaring and a poor steward of the resource.



This photo shows a gap between the top rail with decorative spikes and the fence panel inset. This gap requires caulk to prevent moisture from entering and causing corrosion. Sometimes there is already corrosion – like here – which requires treatment prior to caulking.

label and safely store the fence parts. I recall a cemetery where extensive sections of a Wood and Perot fence were damaged and partly stolen, an unconscionable failure in stewardship. Damaged fences can be marked using aluminum tags

(http://www.forestry-suppliers.com / product_pages / View_Catalog_Page.asp?mi=1179&title=PermaTags)

or can be marked on using paint markers

(http://www.forestry-suppliers.com / product_pages / View_Catalog_Page.asp?mi=4092&title=563+Speedry+Paint+Markers).

Problem 5—Unsecured gates

Nearly a decade ago I wrote an article on how to secure cemetery gates (still available at <http://crm.cr.nps.gov/archive/25-02/25-2-15.pdf>). It remains the only widely available advice on how to slow down gate thieves. Yet I continue to visit cemeteries where not a single gate is protected. Many gates are already gone.

Securing a gate takes only about 10 minutes and \$10, so there is no excuse for putting it off and it is a great project for friends groups or Eagle Scouts.

Summary

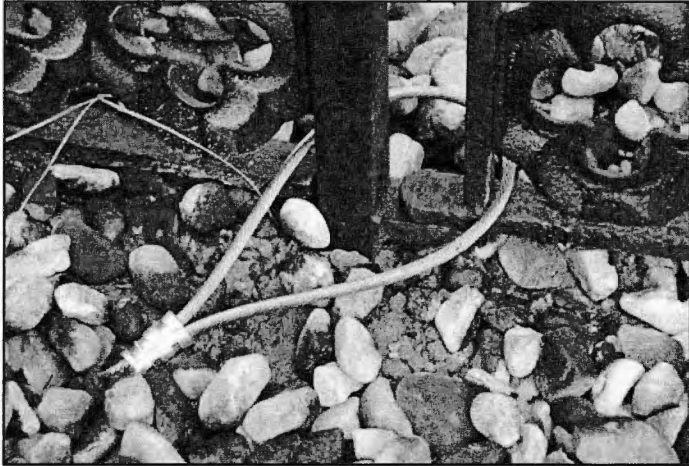
There are other problems in cemeteries across the country. For example, the corrosion of mounting posts set using sulfur (historically called brimstone) or lead (we



This cast fence may originally have been set on brick coping. Eventually the coping and the bottom of the pickets were encased in concrete. Over time the iron has continued to corrode, causing iron jacking. The deterioration will continue until the fence is freed from the concrete and appropriately repaired.

generally recommend the use of an epoxy setting compound today), the presence of lead-based paint that requires remediation and broken cast iron. But, these are more specialized problems—and far more difficult to fix. Maybe we can take them up in a future column.

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Gates can be quickly and inexpensively secured using ¼ inch or thicker stainless steel wire rope and two zinc / copper sleeves. While this won't stop a determined thief, it will slow him down or perhaps even encourage him to steal from a different cemetery.



If it's this easy to remove a gate, why haven't you protected it?



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