

Headstone Repair Guidelines

Who Should Repair: Repairing grave markers should be left to the professionals. There are just too many possible scenarios for which to train volunteers. Trained volunteers can handle cleaning and releveling, but save resetting and repair for experts. The Oregon Commission on Historic Cemeteries has a good bulletin on what to consider when [hiring a contractor](#). For a current list of contractors doing cemetery work, contact the [Oregon Commission on Historic Cemeteries](#). Difficulty varies drastically by situation and it is always good to get input from a contractor as to how much time a marker is likely to take to repair before doing your estimates.

Priorities: Repair of severely damaged or broken markers is a specialized task. Each stone type and material must be evaluated prior to proceeding with any repairs. Incompatible adhesives or epoxies, such as Portland cement, concrete, or construction adhesives, will cause further damage. Markers have to be carefully matched horizontally as well as vertically to ensure proper bonding of the parts.

Epoxy: Stone epoxy is the best material available to repair stone breaks. Use epoxy on tablet breaks where there is not enough surface area and thickness for mortar to make a long-lasting, sturdy bond. Use epoxy on obelisk bases where there is a small contact surface when compared to overall mass. The stone epoxies have now evolved to a point where they are effective and versatile.

Akepox 2010 by AKEMI is the preferred epoxy for cemetery stone work and the current standard for repairing a break in a stone. It is a two-part epoxy mixed at a 2:1 ratio. The epoxy comes in a pair of tubes which is ideal when making repairs in the field.

It is best to make repairs in position so that the stone does not have to be moved after the repair. Gravity-assisted vertical curing makes for a stronger joint. First, make sure the pieces are clean and dry. Use a very soft wire brush on the faces of the joint that will not be visible to really clean the surface to be epoxied and to slightly abrade it. This is the only time you will use a wire brush in a cemetery.

Second, dry fit the two pieces of stone to be epoxied. Mark with a pencil where the two pieces do not touch. Third, lift off the stone and apply the epoxy, thinly and sparingly to the areas on the lower stone where the two stones will touch. Do not spread epoxy to every place the stones touch, as you want to leave plenty of escape routes for future moisture in the stone, and you definitely do not want epoxy squeezing out from the joint when weight is applied.

Any epoxy that does squeeze out of the joint, immediately and carefully scrape off and do not smear it on the stone. Epoxy is a one shot deal and is best left to the experienced professionals. Immediately brace the stone and leave it undisturbed. We use 3/8" sash cord and 1"x2" stakes to secure our repairs, keeping the stone straight and immobile. Epoxy



will set quickly so that the stone repair can be touched within 30 minutes; however, ideally braces should remain in place for a full seven days while the epoxy cures.

Casting A New Base: A common problem in Oregon cemeteries are sandstone bases. Headstones are usually made of marble or granite, but the base is often fragile sandstone. The sandstone base will delaminate at the corners or simply fall apart over time. A broken base is a case for a replacement base of either stone or concrete. Concrete provides a good, economical base replacement especially when very little of the base will be visible above ground. For a slotted tablet stone, follow these steps:

1. Measure the headstone's height, width, and thickness. Make a box form for the concrete that is 7" greater than the measured width and 7" greater than the measured thickness. The height of the form should be at least 6" plus an additional 1/2" for each 10" of stone height beyond 36".
2. Construct a block to form a recess in the box. The length and width of the block should be 1" greater than the width and thickness of the headstone. The depth of the block will be 3" plus an additional 1/2" for each 10" of stone height beyond 36".
3. Thoroughly saturate the interior surfaces of the box and the block with "form release" so that the casting will release from the box once it has cured. Silicone spray works well.
4. Secure the block to the box form and pour in your concrete mix, tamping frequently. After about an hour, remove your block and finish the concrete. Cover the casting to retain moisture and wait at least three days for the concrete to fully cure.
5. Set the cured base on a bed of gravel so that the top is nearly hidden at grade. Water the slot thoroughly and sponge out the excess. Center the headstone in the slot on a bed of NHL mortar and then tuck point in all sides to the top of the slot so that water slopes away from the headstone. Brace the headstone for at least three days.

Infill: Patching, piecing-in or consolidation of historic stone features is preferred over the substitution of new materials or pieces. If new materials must be introduced, all effort should be made to match the historic feature with material compatible in texture, color, and design. Color matching is very difficult. The [Cemetery Conservators for United Standards](#) have a great webpage on achieving good results with infill while doing no harm. Infill is definitely an area that should be left to the professionals.

Consolidation: Porous stones that are delaminating or crumbling have experienced a loss of binder material. Delamination is especially evident on the sandstone markers and bases. These stones may require consolidation treatment. This is a specialized treatment and should only be performed by a qualified stone conservator or mason. Consolidation enhances the cohesion of the stone by filling its pore structure with a binding material. It is irreversible and should only be a method of last resort.

Resources: For Akepox 2010, we buy from Atlas Preservation (<https://atlaspreservation.com/products/akemi-akepox-2010-450-gram-tubes>)

