Tombstone Repair Tips and Suggestions

Watch: Training Video

See: "Before & After" Photo Gallery and FAQ

1) Addressing Seasonal Temperatures and Conditions

Cool-Cold Weather:

- Always store your TSR around room temperature; never let it freeze.
- You can set your TSR in an old cooler with a warm brick or a warm bottle or two of water.
- If you have a small generator, workability can be much better and cure times significantly shortened by using inexpensive hairdryers, flood lights, or heat lamps to warm the stone pieces and the TSR before and after mixing. Warm only! Never get anything hot! A heat lamp on each side to gently warm is ideal.

Warm-Hot Weather:

- Air-conditioned room temperature is ideal. A bottle or two of cold water will cool the TSR for plenty of work time.
- Simple repairs require very little work time therefore no external cooling of TSR is necessary

2) Surface Preparation for New Breaks and Previously Repaired Breaks

- Very new breaks may require little or no cleaning
- Old breaks always have mud, muck, algae, and other on surfaces that will have to be primed, puttied and stacked or squeezed together. The breaks must be well cleaned to enable the well mixed TSR to saturate the pores of the stone during priming thus insuring a strong bond when the layer of TSR putty is applied and the pieces are put back together.
- Clean all break surfaces with minimal chipping and adequate brushing with a wire brush. Yes, a wire brush. This assures getting all the mud, muck, algae and whatever out of those pores. We get comments criticizing our use of a wire brush on an old stone but we are not cleaning the outside of the stone with a wire brush, only the broken surfaces to ensure a strong bond.
- Most previous repair attempts were well intended by wonderful people with awful products.
- Chip as gently as practical when old repair material is hard enough to break. Remove soft or gummy old repair material with a small screwdriver or old pocket knife.

- Once the larger pieces are removed from all surfaces that are to be bonded together, scrub with a wire brush until reasonably free of discoloration and foreign matter.
- If you think headstone will "dry stack", try it. Place the top piece back where it came from and see if it will remain in place. If it does you may not need to use any bracing.
- Often larger pieces of headstones are nowhere to be found. For a number of very good reasons, filling larger voids as much as practical with a foreign piece of quality stone is often recommended. Small and large voids can be filled with TSR putty.
- It may be necessary to pre-level the base to help plumb the bottom part of the tablet.
- It is often necessary to clamp strongbacks to hold everything together while TSR putty gels and then adequately cures. It is most often overnight before clamps can be removed.
- If you must avoid a return trip, consider external heat with lamps and a small generator.
- One of the best aids for tombstone restoration projects is 91% isopropanol (rubbing alcohol). 91% is best because it only has 9% water.
- Small amounts of alcohol will "loosen" the TSR for better priming and it will spread better in cold weather.
- Wooden or metal strongbacks can be mold released with a coating of silicone caulk and gasoline. Coat pieces away from headstone to be bonded and let dry and cure at least an hour. Epoxy will not bond to the dry silicone rubber film.

3) How, Why, What and When

- Ideal temperature range is about 50°F - 90°F. Any colder, all epoxy systems are sluggish; will cure overnight but you may want to add heat.
- Any higher that 90°F, try to shade best you can and if you have a generator, a fan can help cool everything including you!
- A claw hammer claw end can be used carefully to gently nibble off old repair material attempts.
- A simple paint brush is best for scrubbing in primer to broken surfaces.
- Measuring: a most important step! TSR is specifically designed to be a 2 to 1 system. 2 measures of epoxy to 1 measure of hardener. Put a neat pile of hardener on a piece of cardboard or plywood and then place an equal size pile of epoxy on each side of the hardener pile. Mix the 3 piles scraping and mixing until no streaks and completely mixed.
- 2:1 means 2:1. Extra hardener will slow down cure and lessen properties. Too little hardener will do the same. The closer to 2:1 the better.

- If headstone is white, mix enough Ti02 white pigment to yield a fairly bright white putty. The better it is mixed in the brighter the white.
- If headstone is some shade of gray, use a small amount of the black pigment to very gently go from white to desired shade of gray. The better it is mixed the darker the shade.
- If you get it too dark with black pigment, it is very difficult to lighten with more white so add the black in very small amounts.
- If you see your repair is too dark, before it cures, apply Ti02 on a paint brush and scrub into the repair. If your repair is too light, mix black and Ti02 together and then use paint brush to scrub in.
- For black stones, just use the marble black but note it is harder to disperse, so it will take more when using just black pigment.
- The Priming Step is simply dipping a paint brush in the well mixed TSR putty and scrubbing a thin layer into the porous broken surfaces of the stone being repaired.
- Once Primed, a fairly even and generous layer of well mixed TSR is applied to one or both surfaces being put together. Excess TSR will squeeze out and can easily be cut to grade with a plastic putty knife and used elsewhere.
- Forms, braces, and clamps should be placed away from cracks and repair areas if possible. If not, some type of plastic film (trash bag or plastic sheeting) can be placed between repair and braces to prevent their adhering or prepare ahead of time by coating your forms with silicone caulk or silicone caulk mixed with gasoline a few hours or more prior to use. This will prevent them sticking to the stone.

4) Follow up, Touchups, and Photographs

- Try not to rush by putting too much stress on your repairs. Just after setting and even when dry to the touch, epoxy can creep (cold flow) a little and could separate.
- Let cure overnight, especially in cool/cold weather or if this is not possible, apply a little external heat to speed cure time.
- Photographs or records are very useful in discerning letters and numbers that may have been lost or chipped during the damage to the stone.
- Recessed or raised letters and numbers can be restored with a Dremmel or similar tool and a diamond bit.
- Careful sanding a few days or more after completing repairs can make an even more beautiful repair.