



MASONRY

DESIGN GUIDELINES

- M1** Do not construct new masonry features that are either falsely historical (characteristic of periods prior to the building's actual construction) or are incompatible with the building or historic district in terms of size, scale, material, or color.
- M2** Do not cut new openings into exterior walls on elevations that can be seen from a public way. Creating an opening for the installation of an air conditioning unit, for example, is not appropriate for a facade that is visible from a public way.
- M3** Photographically document architectural features that are slated for reconstruction prior to the removal of any historic fabric.
- M4** Match the existing bonding pattern, coursing, color, size, strength, and pointing mortar of masonry when replacing a section of brick wall. Bricks should always be toothed-in to historic brickwork, to disguise the joint between new and old.

M5 Do not remove or rebuild substantial portions of exterior walls if such an action would adversely impact a structure's historic integrity.

M6 Make sure that any exterior replacement bricks are suited for exterior use.

M7 Do not replace sections of historic brick with brick that is substantially stronger.

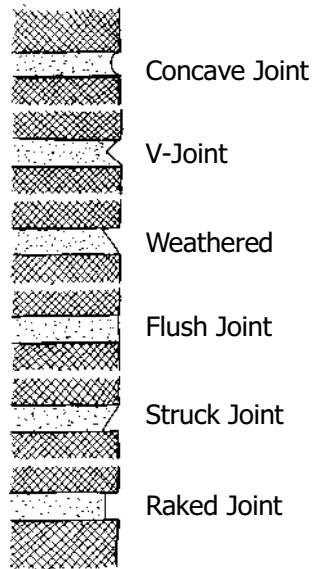
M8 Repoint only those joints that are no longer sound. Do not remove all joints, sound and unsound, in an effort to achieve a uniform appearance when repointing. Large-scale removal of mortar joints often results in damage to historic masonry.

M9 Remove unsound mortar joints carefully with hand tools that are narrower than the mortar joint. Power tools should not be used, because they have the potential to scar adjacent masonry.

Where bricks are not "toothed-in" to the original masonry, patches are obvious.



TYPES OF MORTAR JOINTS



The type of mortar joint selected can affect the visual appearance of a masonry wall and the way the wall sheds water.

- M10** Remove unsound mortar to a depth of two-and-one-half times the width of the joint or to sound mortar, whichever is greater.
- M11** Match historic mortar joints in color, texture, joint size, and tooling when repointing.
- M12** Use a mortar mix that is compatible with historic masonry. Repointing mortar should be equivalent to or softer than the original mortar. When repointing mortar is harder than the surrounding masonry, as is the case with many modern mixtures, moisture cannot escape through the joints. Trapped moisture will crystallize within the walls and fragment surrounding brick and stone.
- M13** If possible, have your mortar analyzed. In order to determine an appropriate mortar mix for individual historic structures, it is recommended that property owners have a sample of the original mortar sent to a lab for analysis. If this is not feasible, a high lime and low Portland cement content mortar mix (1 part cement, 1 part lime, and 6 parts sand) is frequently acceptable.

M14 Do not attempt to remove joints that have been repointed using a very hard mortar or in an unworkmanlike manner until natural weathering has begun to weaken and crack them. Removal prior to that time would likely damage the masonry units.



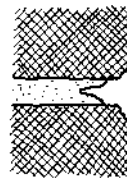
Mortar bonds masonry together, permits movement, and acts as a conduit for moisture transpiration. Walls, such as the one seen above, that have damaged or inappropriate mortar are at risk of freeze-thaw deterioration.

M15 Do not use synthetic caulking compound to repoint historic masonry.

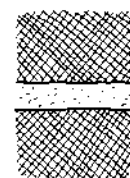
M16 Have realistic expectations of how the cleaned masonry surface will appear. Remember, it is better to underclean than overclean. A "like new" appearance is rarely desirable.

M17 Make sure that your contractor has a clear understanding of the physical and chemical properties of your masonry before proposing or testing any chemical cleaning treatments. Such treatments, if improperly applied, can result in permanent damage

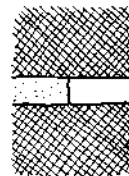
REPOINTING REQUIRES A CAREFUL TOUCH



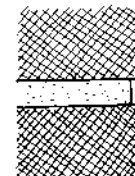
Bad Joint Removal



Bad Repointing



Good Joint Removal



Good Joint Repointing

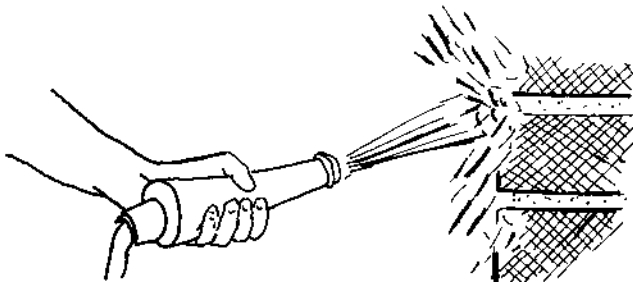
Bad repointing results in brick damage from grinding tools, a mortar that is too hard, and sloppy joints.

Good repointing carefully removes deteriorated mortar using hand tools and replaces it with a compatible mortar, slightly recessed from the edge of the brick.

GENTLE CLEANING IS THE BEST CLEANING



Scrubbing with natural-bristle brushes is recommended.



High-pressure water or sandblasting erodes the surface of the brick and dislodges mortar and should be avoided.



Moisture often enter walls from the base. Repeated freezing and thawing have crumbled the mortar at the foundation level of this structure.

that significantly outweighs any benefits of cleaning.

M18 Test proposed cleaning treatments in an inconspicuous area of the building to evaluate potential adverse effects to the masonry. Observation over a complete seasonal cycle is preferable, so that long-term effects may be ascertained. If chemical treatments are found to be acceptable, be sure that those applying the treatment follow all manufacturers' instructions.

M19 Do not use sandblasting or high-pressure water to clean historic masonry. The process of sandblasting or cleaning buildings using water pressure greater than 300psi removes the tough, outer-protective surface of the brick and loosens mortar joints, accelerating deterioration.

M20 Do not clean masonry on buildings with deteriorated mortar joints. Such masonry should be properly repointed prior to cleaning to ensure that water does not penetrate the wall during the cleaning process.

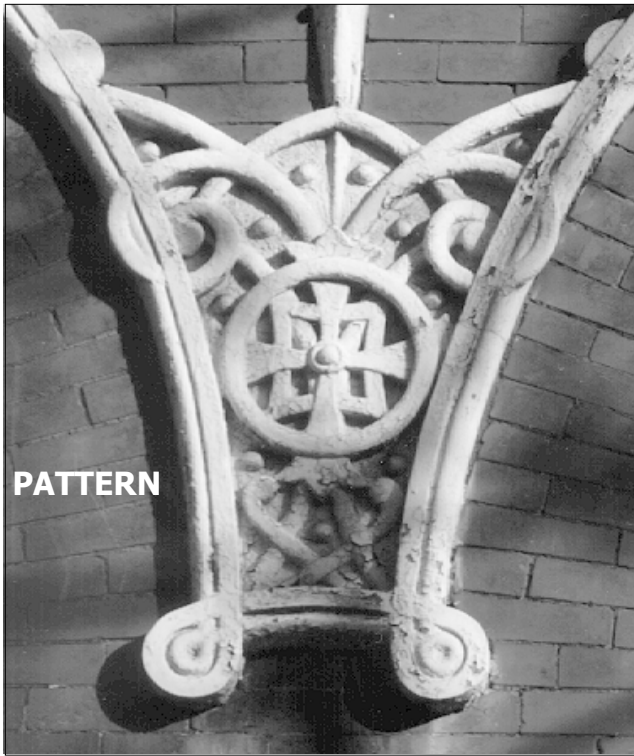
M21 Do not use any type of water- or chemical-based cleaning systems when a possibility for freezing temperatures exists. Masonry cleaning should not be undertaken until the temperature will remain above 50 degrees for 72 hours after cleaning.

M22 Remove graffiti as soon as possible, beginning with the gentlest means possible and taking care not to inadvertently etch an outline of the graffiti onto the wall.

M23 Use solvent-based chemical strippers to remove paint from previously-painted masonry only after testing its effectiveness and evaluating its potential to damage brickwork. Testing should be carried out in an inconspicuous location.

M24 Do not paint masonry or stucco that has never been painted. While one layer of paint may not affect the appearance of the masonry or stucco, accumulated layers will eventually obscure decorative detail.

M25 Paint previously-painted masonry a color that is close to its existing color, approximates a natural masonry color as approved, or is recommended by the staff. Staff is available to consult with you on appropriate colors.



Masonry can convey a wide range of stylistic effects. Top left—terra cotta detail; bottom left—paving materials; above—rock-faced stone and ornamental brick.

M26 Use a “breathable” masonry paint that is compatible with and can create a strong bond with existing paint.

M27 Make sure that areas of patched stucco match the strength, composition, color, and texture of the original to the greatest degree possible.

M28 When patching stucco, cut back the successive layers to provide a key for the new layers to prevent new cracking.

M29 Carry out stucco repairs so that the dimension between the surface of the stucco and adjacent finishes remains unchanged.

M30 Do not install stucco, Dryvit, or permastone-type cladding over historic masonry or wood siding.

M31 Do not resurface historic masonry with exterior insulation.

M32 Use a masonry or terra cotta chimney cap if needed. Metal chimney caps are not historically appropriate.