vi. Exercise extreme care to ensure fluids from grinding operation do not react with divider or control joint strips to produce a stain on aggregate or discolor strips.

vii. Delay grinding and finishing until heavy trade work is completed and construction traffic through the area is restricted.

viii. Provide terrazzo bases, thresholds, stair treads and landings, without interruptions of seams, except where divider strips, control joints and expansion joints are required. Place and finish terrazzo around obstructions to achieve continuous color, pattern and finish.

ix. Provide control joints where required by installing angle-type divider strips back-to-back with neoprene rubber filler cemented between strips, flush with finish floor.

x. Match the historic character and pattern of the terrazzo in all spaces containing or contiguous with existing terrazzo.

xi. Sand Cushion (floating) Terrazzo:
    a) Used where structural movement is anticipated from settling, expansion, contraction, or vibration, which may cause injury to the terrazzo topping.
    b) The overall thickness of the underbed and topping needs to be at least 3 inches.
    c) The concrete slab is covered with a thin bed of dry sand, over which is laid a waterproof membrane and reinforcing wire mesh.
    d) Install the terrazzo underbed to 5/8 inch below the finished floor line.
    e) Place divider strips and then pour terrazzo topping.

xii. Bonded-to-Concrete Terrazzo:
    a) Used in all general areas-corridors, lobbies, rooms, sidewalks, etc.
    b) The minimum overall thickness (most common) is 1-3/4 inches; With reinforcing, 2 or 2-1/2 inches is appropriate.
    c) Thoroughly clean and soak the base slab with water.
    d) Slush it with dry portland cement to ensure a good bond.
    e) Install the underbed followed by the placing of divider strips and terrazzo topping.

xiii. Monolithic Terrazzo: Installed at 5/8 inch thick, it is bonded to or made integral with the prepared slab.

xiv. Thin Terrazzo Toppings: Installed at 3/8 inch thick on concrete slab which has first been covered with adhesive bonding agent, i.e., polysulfide liquid polymer.

xv. Terrazzo-over-Wood:
    a) Floor must be structurally sound and rigid.
    b) Lay waterproof membrane such as 15-lb. roofing felt or plastic sheeting.
    c) Lay reinforcing wire mesh over membrane.
    d) Spread 2" thick underbed of cement and sand.
    e) Lay 5/8" topping.

xvi. Surfacing: Grout cured terrazzo topping
    a) Delay grinding and finishing until heavy trade work is completed and construction traffic through the area is restricted.

b) Finish by fine grinding.
c) Grind and polish the new areas, patches, and the entire floor as required to produce a clean, smooth, and uniform finish, capable of being sealed and polished to match the original installation.
d) Cover with vapor barrier sheets to prevent quick hydration.

23. MAKING REPAIRS TO SHEETMETAL FLASHING

i. Flashing is usually a weak part of the roofing system and, therefore, should be inspected regularly for damage or deterioration.
   a) Outside, inspect flashing for splits, holes or corrosion.
   b) Inside, inspect the underside of the roof deck for evidence such as water stains or damp wood; inspect the ceiling and walls around fireplaces and chimney flues for stained or spalling plaster or wallpaper, or peeling paint.
   c) Look for daubs of roofing cement on the flashing - this is an indication of previous leaks. This type of repair is not recommended and may not have completely stopped the leak.
   d) Look for uncaulked openings at the tops of flashing where water may enter.

ii. Execution:

Note: when replacing sheetmetal flashing, use gauge of metal suitable for strength and required performance. Install according to metal manufacturer.
Caution: be sure replacement metals are chemically compatible or corrosion by galvanic action is likely to occur.

a) For Cracks:
   - Remove entire section of cracked flashing; cut out damaged area the full width of the piece.
   - Replace piece with similar metal; join the new piece using a lock seam, loose, sealant filled seam or by lapping, riveting and soldering.

     Note: the method of joining will depend on the type of metal selected and the surrounding conditions.

b) For Outward Buckling:
   - Examine flashing to determine cause of buckling.
   - Lack of expansion joints for length of sheetmetal may have led to the problem.
   - Remove entire length of affected flashing.
   - Inspect condition of backing material.
   - For wood, remove and replace damaged material as required.
   - For bituminous felt, remove felt and replace with heavy weight rosin-sized sheathing paper.
   - Clean bituminous felt with a solvent such as mineral spirits.
   - Reinstall the sheetmetal flashing; add expansion joints as needed.

c) For Splitting of Solder at the Seam:
   - If damage is localized, remove entire length of flashing and replace it to match existing.

- If damage is widespread, replace all affected metal with new metal to match existing or substitute compatible metal.

d) For Cracked Sealant:
   - Remove sealant.
   - Clean metal using a solvent such as mineral spirits.
   - Check width of joint to make sure it is at least 1/4 inch wide. If is less than 1/4 inch, carefully move the metal edges to allow a 1/4 inch gap.
   - Prime surfaces of joint following manufacturer's instructions.
   - Check depth of joint. If joint is at deeper than 5/8 inches and there is no backing material, insert a continuous backing rod.
     Note: distance between face of back-up material and face of joint should be between 1/4 to 3/8 inch.
   - Fill the joint with sealant following manufacturer's instructions.
   - Immediately remove excess sealant from the face of the metal.

e) For Crumbling and Powdering Metal:
   - If damage is localized, remove entire length of flashing and replace it to match existing.
   - If damage is widespread, replace all affected metal with new metal to match existing or substitute compatible metal.

f) For Pitting and Corrosion:
   - If damage is localized, remove entire length of flashing and replace it to match existing.
   - If damage is widespread, replace all affected metal with new metal to match existing or substitute compatible metal.

g) For Blisters:
   - Carefully inspect the affected metal; examine expansion joints to see that they are properly formed or do not exceed the recommended spacing.
   - Cut out existing expansion joints; fabricate and install new joints with matching metal.
   - Cut out other problem areas the full width of the metal; replace with new metal, compatible with existing and of same gauge.
   - Fasten edges by soldering and riveting.

h) For Fastener Deterioration:
   - Remove all fasteners from sheetmetal.
   - Remove residue from around the holes by cleaning with a light abrasive material such as steel wool, emery cloth or other.
   - Replace fasteners with new ones made of compatible metal and neoprene washers to make a weathertight connection.
     NOTE: For aluminum and stainless steel metal, use stainless steel fasteners; for copper, lead-coated copper or brass metal work, use brass or copper fasteners; for copper-clad stainless steel metal, use stainless steel, brass, or bronze fasteners; for zinc, lead and

galvanized steel metal, use galvanized steel or coated steel fasteners.

- If the metal around the fastener connections is too deteriorated to prevent leakage and enable a weathertight connection, remove entire length of flashing and replace it to match existing or substitute compatible metal.

24. REMOVING MILDEW STAINS FROM CONCRETE
    i. Provide adequate wash solutions (i.e. water, soap and towels) before starting the job.
    ii. Whenever acid is used, the surface should be thoroughly rinsed with water as soon as its action has been adequate. Otherwise it will continue etching the concrete even though the stain is gone.
    iii. Execution:
    Note: do not try more than one treatment on a given area unless the chemicals used from prior treatment have been washed away.
        a) Mix together 1 ounce by weight of powdered laundry detergent, 1 ounce by weight of sodium orthophosphate, 1 quart of commercial sodium hypochlorite solution (which contains about 5% sodium hypochlorite) and 3 quarts of water.
        b) Brush apply the solution to the stained area, and allow to sit for a few days.
        c) Thoroughly rinse the surface with clean, clear water while scrubbing with a stiff bristle brush.
        Caution: sodium hypochlorite solution bleaches color clothing and may corrode metals.

25. REMOVING FIRE, SMOKE, SOOT, PITCH AND WOOD TAR STAINS FROM CONCRETE
    i. Provide adequate wash solutions (i.e. water, soap and towels) before starting the job.
    ii. Whenever acid is used, the surface should be thoroughly rinsed with water as soon as its action has been adequate. Otherwise it will continue etching the concrete even though the stain is gone.
    iii. Execution:
    Note: do not try more than one treatment on a given area unless the chemicals used from prior treatment have been washed away.
        a) Remove as much surface staining as possible by scrubbing with water and scouring powder, powdered pumice or grit.
        b) Apply a Bandage Treated with a Chemical Solvent:
            - Swab the stained concrete with trichloroethylene.
            - Soak 3- or 4-layers of undyed flannel, cotton or cotton batting in trichloroethylene.
            - Apply the treated bandage to the stained area. Be sure to spread the bandage well beyond the stained area.
            - Remove the bandage periodically, wring out, resaturate and reapply. On horizontal surfaces, use concrete slabs or flat stones to hold the bandage in place. On vertical surfaces

some kind of prop should be devised to hold the bandage against the concrete.

- Repeat the process as necessary to achieve the desired level of cleanliness.
- Thoroughly rinse the area with clean, clear water and allow to dry.

-OR-

c) Apply a Poultice:

- Mix 1 part sodium hypochlorite (commercial household bleach, which is about 5% hypochlorite) or Javelle water (diluted with 4 to 6 parts of water) with a talc or other suitable fine material to make a smooth paste.
- Thoroughly wet the concrete surface to be treated with clean, clear water.
- Apply the poultice mixture to the stained area using a wood or plastic spatula and allow to dry. Be sure to spread the poultice well beyond the stained area. The liquid portion of the paste will migrates into the concrete where it will dissolve some of the staining material. Then the liquid will gradually move back beyond the concrete surface and into the poultice, where it will evaporate, leaving the dissolved staining material in the poultice.
- When the poultice has dried, brush or scrape it off with a wooden scraper.
- Using a stiff bristle brush, scrub the surface with scouring powder and clean water to remove any residual staining.
- Thoroughly rinse the area with clean, clear water and allow to dry.
- Repeat the process as necessary to sufficiently remove the stain.

Note: both sodium hypochlorite and javelle water will bleach colored clothing and are somewhat corrosive to metals.

26. MAKING JAVELLE WATER

i. Dissolve 3 pounds of sodium carbonate crystals in 1 gallon of hot water in a rubber or plastic bucket.
ii. In a shallow enamel pan, place 12 ounces by weight of calcium hypochlorite. Add water slowly and mix to a paste while mashing the lumps.
iii. Pour the two solutions into another rubber or plastic bucket or into a stoneware jar and mix in enough water to make a total of 2 gallons of solution.
iv. Stir well, cover and allow the lime to settle.
v. Carefully pour off the liquid for use, leaving the solids behind. The liquid can be siphoned off, but do not start the suction by mouth.

27. GUIDELINES FOR LOCATING NEW DUCTS, GRILLES, LIGHT FIXTURES AND SWITCHES IN HISTORIC BUILDINGS

This standard includes general guidelines for locating new mechanical and/or electrical systems in historic buildings with minimal adverse impact on the building's appearance or character.

i. General:
   a) When possible, install new systems that are reversible.
   b) Reuse existing holes where possible.
   c) Use existing interstitial spaces to conceal systems.
   d) Conceal wiring when possible.

ii. Ductwork:
   a) Conceal piping and ductwork as much as possible, but DO NOT install suspended ceiling systems to do so.
   b) If suspended ceiling systems must be installed, DO NOT allow system to abut glazing. The historic appearance of the window should be maintained where possible. This can be accomplished by "boxing" around window heads and leaving the complete window exposed to view.
   c) Where piping cannot be easily concealed by providing alternative routes through less significant spaces, provide gypsum board enclosures of the minimum size necessary to sufficiently conceal the pipes.
   d) Preserve ornamental walls and ceilings as much as possible. Avoid penetrating or attaching to ornamental finishes.
   e) Where possible, place pipes, conduit, etc. along recessed ledges or other areas of minimal visibility.
   f) Where possible use piping of minimum diameter for purposes specified.
   g) Paint pipes, conduit, etc. where possible to blend with adjacent finishes.
   h) Where possible, use decoration patterns to disguise new placement of wiring or systems.
   i) Conceal ductwork in unused closets when possible and provide adequate ventilation.
   j) Use an air-sampling system instead of a smoke detector when possible; only a small hole in the ceiling is required and very little space in the ceiling is required for the pipe.
   k) Conceal sprinkler heads and smoke detectors in decorative, plaster ceilings.
   l) Use unused fireplaces for return air ducts.
   m) Use permanently placed furniture to disguise ductwork.

iii. Grilles:
   a) Reuse original hardware, such as grilles, etc. where possible.
   b) Specify new grilles, light fixtures, etc. to match original as closely as possible, in material and pattern.
   c) If reuse of an existing grille is not possible, leave original grille in place and locate new grille within five feet of original location - preferably on a non-ornamental surface such as flat plaster.

iv. Light Fixtures:

a) Rewire, clean and refinish original fixtures when possible.
b) NEVER attach fluorescent fixtures directly to ceiling medallions.
c) Conceal the light source when installing indirect lighting.
d) Introduce as few new fixtures and holes in the ceiling as possible.
e) Provide emergency lighting that is as unobtrusive as possible; use a small fixture if possible; make sure the battery pack is concealed.
f) Conceal ambient lighting behind ceiling moldings when possible.

v. Switches
a) Conceal Conduit For Light Switches, Fire Alarms And Other Controls Behind Decorative Surfaces If Possible Rather Than Attaching It Onto The Surfaces.
b) Paint Switch Plates And Access Panels Separately So They Can Be Easily Removed.
c) Conceal Fire Alarm Equipment Behind Unused Heating Grilles.
d) Use Wireless Fire Alarm Systems When Possible To Eliminate Unsightly Conduit And Wiring.
e) Conceal Electrical Panelboards In Unused Closets When Possible And Provide Adequate Ventilation
f) Conceal Smoke Detectors In Decorative Plaster Ceilings.

28. DUSTING AND MOPPING OF WOOD SURFACES
i. Verification of conditions: Before beginning major cleaning, determine the existing finish. Identify whether there is no finish, an oil finish, or a varnished finish.
ii. Move and protect furniture as required. Do not use coverings which will cause condensation.
iii. Thoroughly dry mop the floor before cleaning.
iv. Execution:
a) Routinely dust with a vacuum cleaner to dislodge dust before oily residue can be absorbed by the wood. Do not use treated mops or dust cloths on unfinished wood.
b) For Walls and Wainscots:
- Routinely dust and damp wipe periodically.
- If surface is waxed or varnished, apply microcrystalline wax or paste wax to vertical surfaces.

c) For Finished Floors:
Note: damp mopping of hardwood floors is not recommended as a regular cleaning method. It should only be done as required to remove water dispersible soil accumulations or to clean-up accidental spills.
- Wet string mop with clean water only, no detergent. Wring nearly dry.
Caution: treated mops should not be used on marble, terrazzo, fabric or fiber mats as they may cause discoloration of the material, so be careful if these materials are used on nearby surfaces, either as a floor material or wall covering.
i. Cleaning should be planned to require as few steps as possible. If the area to be swept is less than 8' wide, the mop should be pushed in parallel paths the

full length of the room, stopping only to use a radiator brush or putty knife.

ii. When the space to be cleaned is wider than 8', the mop can be swung in an arc taking in an area as wide as comfortable for the arm reach of the operator. The mop should be lifted from the floor only to transfer the accumulated dust to a dust pile.

- Start mopping by drawing the mop close to but not touching, the baseboard. Work back parallel to the baseboard using long continuous side to side strokes and keeping the mop heel on the floor and the strands spread. The mop should be turned after each four strokes.
- Rinse after eight strokes, changing the water when the bottom of the pail can no longer be seen.
- Do not touch the baseboard, furniture or rugs with the mop. Work around furniture legs and in room corners by holding the mop strings in the hand.
- If clear water damp mopping does not satisfactorily remove dirt embedded in the finish, consider damp mopping with a non-ionic detergent and warm water followed by rinsing with clean, clear water.
  i. Apply cleaning solution with a slightly wet mop.
  ii. Rinse mop in clean, clear water and pick up dirty cleaning solution with slightly wet mop.
  iii. Dry floor by wiping with the mop wrung as dry as possible.

d) For Unfinished Floors:

- Periodically, damp mop using clean, clear water. Make sure the wood doesn't remain damp any longer than necessary.
- Scour yearly with soap and brush. Use as little water as possible.
- Remove dirt between floor boards using a blunt wood or metal tool.

29. GENERAL CLEANING OF PAINTED OR WAXED WOOD SURFACES

i. Cover all surfaces and equipment not to be cleaned. Coverings must be adhered without adhesive tape or nails. Impervious sheeting that produces condensation shall not be used.
ii. Make sure work area is well ventilated and wear protective clothing and rubber gloves.
iii. When cleaning, always rub along the grain of the wood.
iv. Change cloths as often as necessary to be effective in cleaning.
v. Thoroughly dust and/or vacuum surfaces before washing.
vi. Execution:

a) Cleaning Painted Wood Surfaces:

- To clean spots, rub area gently with a clean, damp sponge and dry with a clean wiping cloth.

- If water alone will not remove spot, use a non- ionic detergent or TSP solution as described below, rinse thoroughly, and wipe dry. If this cleaning procedure leaves a noticeable difference between treated and untreated areas, cleaning is not being performed properly or frequently enough.
    i. Wash dirt and grease using a solution of 3 quarts warm water mixed with 2/3 cup trisodium phosphate (TSP) and non-ammoniated detergent. If mildew is a problem add 1 quart of liquid bleach.
    ii. Start at a lower corner of room, moisten 5 to 10 square feet of surface, then scrub with a medium bristle brush to remove dirt. Thoroughly rinse surface, two rinses may be required, and wipe dry with clean wiping cloth.
    iii. Continue process on lower portion of walls around entire room, slightly overlapping preceding section. Always wash the lower portion first because solution streaks running down a dirty wall cannot be REMOVED. Proceed to wash upper wall surfaces and ceiling, including any painted wood ornament, from ladder.

b) Cleaning Waxed Wood Surfaces:

Note: wax is an important maintenance agent which protects against material abrasion and wetting. Its advantage is that it is easy to apply and easy to remove. It can be reconditioned without stripping by applying more wax and rebuffing. The solvent in the wax reconditions the previous coat and minimizes build-up.

- For walls:
    i. Follow the above wall washing techniques, but keep the surface as dry as possible. Cleaning solution should contain only non-ionic detergent and water.
    ii. Working in a well-ventilated area, remove paste wax by rubbing hard with a coarse cloth soaked in turpentine.
    iii. Remove stubborn dirt spots by scrubbing lightly with 000 steel wool. Change cloth or steel wool when they become clogged with old wax.
    iv. Apply wax with a clean, soft cloth. Waxing unpainted wood surfaces is imperative for protection from moisture and abrasion. Use a paste or microcrystalline wax that is removable by water or turpentine.
    v. Place a small amount on the cloth and wipe it over surface leaving a thin, even coating. Wipe off any stray wax grains.
    vi. Buff wax before it hardens. NOTE: Paste wax can be reconditioned by applying more wax and rebuffing.

The solvent in the paste wax reconditions previous coats and minimizes build-up.

- For floors:

Note: be sure the wax is designated for use on hardwood floors. Do not use a liquid wax with a water-base (i.e. future). National oak flooring manufacturers association (nofma) recommends using only a solvent-base product.

i. Place a small amount of wax on dampened, clean, soft cloth and wipe it over the floor leaving a thin and even coating. It is not necessary to go right to the baseboards because the buffing operation will spread the wax to the edges of the room in every place except the inside corners.

ii. Buff floor using a 16" electric floor machine and lamb's wool pads. Reverse or replace pads as they become dirty. Buff to high gloss.
Note: take care not to damage adjacent surfaces.

iii. After polishing, sweep the floor to pick up stray wax grains that are loose on the floor. Wash all equipment before the wax hardens.

vii. Both paste wax and turpentine are flammable, dispose of used cloths properly in a metal safety container to guard against spontaneous combustion.

30. REFINISHING INTERIOR WOOD

i. Remove Existing Coating:

a) Work in areas approximately 4' by 4' at one time.
b) Apply chemical stripper using a brush or roller. Follow manufacturer's instructions.
c) Allow stripper to stand for length of time as recommended by manufacturer, depending upon the number of surface layers to be stripped; if necessary, cover with plastic sheeting to keep the stripper moist.
d) Using a broad knife or scrapper, remove paint and stripper from the surface.
e) Safely dispose of paint and stripper residue. Follow EPA regulations for disposal of lead-base paint.
f) Specifically for varnish buildup:
   - Wet steel wool with solvent and rub over the wood surface to remove varnish buildup and to smooth out any checks in the surface.
   - Replace steel wool frequently with clean, and continue the wiping process until a smooth surface is achieved.
   Note: do not use water on the wood surface.
g) Wipe wood with a clean cloth soaked in mineral spirits to remove chemical residue.
h) Allow to dry and dry-brush loose material from the surface using a short fiber bristle brush.
i) Repeat as necessary to sufficiently remove the previous coating.

j) Special Procedures for Varnished Wood Floors:
   - Sand the floor with an orbital sander to remove stains, old finish and indentations in the wood. Sand in direction of wood grain.

   Note: do not remove more than 1/16" of the wood surface.
   - Remove dust from floor with vacuum and tack cloth.

k) Special Procedures for Waxed Wood Floors:

NOTE: Some sophisticated modern waxes, formulated for long wear and for high production commercial use, require special strippers that most often are not appropriate for historic materials because the ingredients cannot be readily detected. Some silicon waxes can only be removed by abrasion.

Note: work in a well-ventilated room. Observe safety rules as both the turpentine and the wax are flammable, and the fumes can trip an ionization smoke detection system. Store soiled cloths in a metal safety container to guard against spontaneous combustion.

   - Dampen small area of floor with turpentine or mineral spirits, or apply wax remover evenly over the floor following manufacturer's instructions.
   - Using a 16" electric floor machine, scrub lightly with a piece of 000 steel wool or nylon web scrubbing pad. Change steel wool or pads as they become clogged with old wax.
   - Wipe up solvent and wax with clean cloths.
   - Continue cleaning in this manner until all of the old wax has been removed. Allow floor to dry, approximately 15-20 minutes after the last area has been cleaned.
   - Apply wax and buff. Apply two or more thin coats rather than one thick coat. Buff after each coat.

ii. Fill scratches, gouges and dents with wood filler.

iii. Apply a high quality paste wood filler with a brush to all open grain wood species (i.e., Oak) before staining.
   a) Dampen a clean cloth with mineral spirits and wipe the paste off across the grain of the wood to enable the filler to remain in the grain depressions.
   b) Allow the filler to fully dry before applying the stain or varnish.

iv. Stain and Varnish the Wood:
   a) On a SAMPLE area 12 inches square, brush apply oil stain or universal stain.
   b) Allow the stain to penetrate the wood for at least 5-10 minutes.
   c) Remove excess stain with a clean, lint-free cloth. Rub the wood parallel to the grain.
   d) Allow the stain to dry at least 12 hours before applying varnish.
   e) Brush apply one coat of alkyd or urethane-base satin varnish. Varnish should be thin, but not watery.
   f) Allow to dry for at least 24 hours.
   g) When dry, buff the surface with 000 steel wool and dry-brush with a fiber bristle brush to remove any metal particles left behind from the steel wool. A tack rag may also be used to remove dust from the surface.

h) Apply second coat of satin varnish (full-strength).
i) Allow to fully dry.
j) Buff the surface with 000 steel wool and dry-brush with a fiber bristle brush to remove any metal particles left behind from the steel wool.
k) Follow the same procedures for all remaining wood.
l) For areas subject to wear (i.e., handrails, wainscot, etc.):
m) After buffing the final coat of varnish, apply one coat of non-yellowing paste wax.

31. METHODS OF REMOVING RUST STAINS FROM CERAMIC TILE

Note: clean using the gentlest means possible.

i. For Fresh Stains:
   a) Apply the granular cleaner with a damp cloth or pad and rub vigorously until the stain is removed.
   b) Rinse thoroughly with clean, clear water and wipe dry with a clean, soft cloth.

ii. For Heavy Stains:
   a) Apply an oxalic acid stain remover compound to the dampened area. Scrub with a soft damp cloth.
   b) Repeat the process as necessary to remove the stain.
   c) Rinse thoroughly with clean, clear water.

iii. Set Stains:
   a) Create a poultice by dissolving oxalic acid crystals in hot water; add enough whiting or talcum powder to make a soft paste.
   b) Using a wood spatula, apply the poultice to the stained area and allow to dry.
   c) Rinse thoroughly with clean, clear water and dry with a soft cloth.
   -OR-
   Allow naval jelly to remain on the surface for at least 30-60 minutes, or longer if necessary until the stain disappears.
   d) Rinse the surface with clean, clear water and allow to dry.
   -OR-
   Try using a commercial rust remover. Follow manufacturer's instructions.

iv. For Persistent Stains:
   a) Mix a combination of borax and lemon juice together into a paste.
   b) Cover the stain with the paste and allow to dry.
   c) Rinse the area with clear water and dry with a clean, soft cloth.
   d) Repeat the process if necessary.
   -OR-
   Try using a commercial pumice bar: Rub the stain with the bar to remove as much of the stain as possible.
      - Rub the stain with the bar to 4remove as much of the stain as possible.
      - Rinse thoroughly with clean, clear water and dry with a clean, soft cloth.

32. ROUTINE CLEANING AND STAIN REMOVAL OF CERAMIC TILE

i. Examine the ceramic tile surface carefully to detect the type and cause of staining before proceeding with any cleaning operation.

ii. For Periodic Cleaning:

a) Wipe tiles with a damp sponge and all-purpose cleaner.
-OR-
Spray on "Tilex" following manufacturers' instructions.
OR-
Wipe tiles with a 50/50 solution of white vinegar in water.

iii. For More Persistent Dirt Build-up:

a) Scrub the surface with a nonabrasive household scouring agent.
-OR-
Scrub the surface with an all-purpose cleaner and a nylon scouring pad

iv. For Neglected Tile Surfaces:

a) Coat tile with an undiluted neutral soap.
b) Allow to dry and stand for several hours.
c) Mix additional soap with warm water and wipe over the tile surface.
d) Sprinkle the surface with scouring powder and scrub with a stiff bristle brush.
e) Thoroughly rinse the surface with clean, clear water and a sponge.
f) Dry with a clean, soft cloth or towel.

v. For Mildew or Other Miscellaneous Stains:

a) Mix 1 qt. household bleach, 3 qts. water, 3 oz. TSP and 1 oz. detergent.
b) Scrub mixture into the surface using a stiff bristle brush or nylon scrubbing pad.
c) Follow by scrubbing with a scouring powder.
d) Rinse thoroughly with clean, clear water and dry with a clean, soft cloth or towel.

33. REPLACING DAMAGED OR MISSING CERAMIC TILES

i. Clean all tile with a non-abrasive cleaner.
ii. Remove cleaner residue by wiping the tile surface with a damp sponge and clean, potable water.
iii. Select replacement tiles to match cleaned surrounding tiles.
iv. Carefully remove damaged tiles by hand using a chisel and rubber mallet. Take care not to damage surrounding material or substrate.
v. Prepare the substrate following adhesive manufacturer's instructions.
vi. Set new tile even and flush with existing surrounding tile. Follow tile manufacturer's instructions. Allow to set for length of time as recommended by manufacturer.
vii. Remove any excess adhesive from surrounding tiles using a clean, soft cloth.
viii. Once the tile has set for the recommended length of time, apply grout to match existing dimensions, color and texture.
ix. Remove any residual grout from the surface using a clean, soft cloth.

34. REGROUTING CERAMIC TILE

i. Examine the ceramic tile surface carefully to detect the type and cause of staining before proceeding with any cleaning operation.
ii. Remove loose grout using a dental pick and grout saw. Clear the joints to at least 1/8" deep and form a squared-off bottom to receive the grout.
iii. Brush out or vacuum loose debris from the joints.
iv. Mix grout thoroughly following manufacturers' instructions.
v. For Portland Cement Grout:
    a) Dampen joints to receive grout.
    b) Apply grout using a tile grouters' float, forcing the grout deep into the joints, or apply by squeezing grout into tile joints through grout bags.
vi. For Organic Grout:
    a) Apply grout using a window squeegee, or apply by squeezing grout into tile joints through grout bags.
vii. Wipe off excess grout and allow to set until it feels firm.
viii. Clean the tile surface with a damp sponge.
ix. Tool joints at curved edges with a plexiglass joint tool. Square-edged tiles can be filled flush with the tile surface.
x. Damp cure the regrouted area for at least 72 hours. Cover the area with Kraft paper or grocery bags. Do not use plastic sheeting.
xi. When dry, remove any residue from the tile surface by wiping with a clean, dry cloth.
xii. For the first month after re-grouting, wash the tile surface every 2-3 days with warm water and bar soap, rinse thoroughly with clean, clear water and dry with a clean, soft cloth.
xiii. Do not use detergent on the tile surface until the grout has fully cured - approximately 30 days.

35. REPAIRING BROKEN TILES

i. Clean out the crack of any loose dust and debris using a stiff bristle brush or by blowing air into the crack.
ii. Blend the resin materials to match the color matrix, adding pigment as required.
iii. Following manufacturer's instructions, force mixed resin into the void using re-pointing tools or a caulking gun, making sure it is pressured into the crack as deep as possible. Fill until flush with the surface. Sometimes, the supplier will instruct using a primer for their materials.
iv. Touch-up repaired surface with enamel to match color of tile.
v. Do not extend patch material into the grout or mortar joint. Crack repairs should be limited to individual tiles.

36. GENERAL GUIDELINES FOR PAINTING EXTERIOR AND INTERIOR SURFACES

i. Examine substrates and conditions under which painting will be done for compliance with requirements for application of paint.

ii. Do not begin paint application until unsatisfactory conditions have been corrected.
iii. Start of surface preparation/painting is the applicator's notice that the surfaces and conditions within a particular area are acceptable to begin work.
iv. Do all preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.
v. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface-applied protection before surface preparation and painting.
    a) Remove these items if necessary for complete painting of the items and adjacent surfaces.
    b) Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.
vi. Adjacent surfaces shall be protected against spatters, stains, or soiling. Each coat of primer or paint shall be evenly spread without skips, runs, sags, and clogging, and allowed to dry before next coat is applied.
vii. Provide ample illumination in areas where painting work is in progress to fully light the work being done.
    a) Examine areas and conditions where painting is to be done and correct any defects before beginning paint application.
    b) Starting to paint is applicator's notice that surface preparation is acceptable.
viii. Clean and prepare new surfaces to be painted according to the manufacturer's instructions for each particular substrate condition.
    a) Clean surfaces before applying paint or surface treatments.
        - Remove oil and grease before cleaning.
        - Schedule cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
    b) Hand sand between each undercoat and finish coats on smooth surface materials where oil and synthetic resin base paint and varnish systems are scheduled.
        - Use extra-fine sandpaper on painted surfaces.
        - Remove dust from surfaces after sanding with tack cloths.
        - Note any additional requirement for rubbed finishes on architectural woodwork, scheduled with that finish.
ix. Carefully mix and prepare paint materials according to manufacturers' directions.
    a) Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.
    b) Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
    c) Use only thinners approved by the paint manufacturer, and only within recommended limits.

d) Tinting: Tint each undercoat a lighter shade to ease identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

x. Execution:

a) Provide finish coats that are compatible with primers used.
b) Where different colors meet, provide a clear line of natural juncture.
c) Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
d) Finish doors on tops, bottoms and side edges, the same as the exterior faces.
e) Paint the back sides of access panels, removable or hinged covers to match the exposed surfaces.
    - The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, and similar components are in place.
    - Extend coatings in these areas as required to maintain the system integrity and provide desired protection.
f) Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces.
g) Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
h) Include field prime coats on metalwork in addition to any shop prime coats.
i) Sand lightly between each succeeding enamel and varnish coat.
Note: do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable smooth paint film.
j) Scheduling Painting:
    - Apply the first coat to surfaces cleaned, pretreated, or otherwise prepared for painting when practicable after preparation and before subsequent surface deterioration.
    - Allow sufficient time between successive coats to allow proper drying. Do not recoat until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure and where application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
k) Apply paint following manufacturers' directions. Use applicators and techniques best suited for substrate and type of material being applied.
Note: cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
    - Methods of Application:
        i. Brush application:

1. Brush-out and work brush coats in both directions onto the surfaces in a uniform film.
2. Use brushes best suited for the type of material being applied.
3. Neatly draw all glass and color break lines.

ii. Roller application:

1. Roll-out and work roller coats in both directions onto the surfaces in a uniform film.
2. Sleeves used on the rollers to be clean, full clipped pile, or as recommended by paint manufacturer for material and texture required.
3. Use brush at corners, fasteners, irregular surfaces or items, and other like conditions.

iii. Mechanical application:

Note: use mechanical methods for paint application only when acceptable. Consult with crm.

1. Spray painting, if permitted, should be accomplished using pressure settings, application technique, spray tip, mesh filter screens, and mesh tip strainer as recommended by the coating manufacturer.
2. Do not double back with spray equipment to build up film thickness of two coats in one pass.

- Minimum Coating Thickness:
  i. Apply materials at not less than the manufacturer's recommended spreading rate. Provide a total dry film thickness of the entire system as recommended by the manufacturer.
  ii. The number of coats and film thickness required is the same, despite the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce an even smooth surface according to the manufacturer's directions.
- Prime Coats: prime coat application should match original finish application.

  Note: brush apply all prime coats unless otherwise allowed to use roller or mechanical applicators.

  i. Before application of finish coats, apply a prime coat of material as recommended by the manufacturer to material required to be painted or finished and has not been prime coated by others.

ii. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

iii. Omit primer on metal surfaces that have been shop-primed and touch up painted.

- Top Coats: top coat application should match original finish application.
  i. Mechanical and Electrical Work: Painting mechanical and electrical work is limited to items exposed in mechanical equipment rooms and in occupied spaces.
  ii. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
  iii. For Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.
  iv. For Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
  v. For Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.
- Completed Work:
  i. Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.
  ii. Finish painted surfaces shall be free of clouding due to no coverage of ground coats or surfaces to which applied. Finish coat shall match specified color.
    1. Edges adjoining other materials or colors shall be true without overlapping.
    2. Each coat shall be applied to ornamental work in a way that will not obscure ornament and texture.
    3. Each coat shall be even.

37. ROUTINE AND PERIODIC CLEANING OF WALLS AND CEILINGS

i. Protection:

a) Move furniture at least three feet away from the walls and cover with drop cloths or plastic sheeting. For wet cleaning, provide additional coverings to protect floors.
b) If ceilings are to be dusted, furniture should be set compactly near the center of the room so that it does not have to be moved again for ceiling cleaning.
c) Wall hangings, decorations, pictures, drapes, curtains, roller shades, etc. must be removed.

ii. Execution:
a) Select method of cleaning (dry or wet cleaning) based on type of wall or ceiling material.
NOTE: For walls and ceilings coated with lead-based paint, take special precautions.
- Oil-based and latex paints, varnish, and modern coatings may be washed safely using both wet and dry cleaning methods.
- Because calcimine and whitewash are water-soluble, surfaces finished with these coatings should be cleaned ONLY with dry methods. No wet methods are permitted.
NOTE: Some conservators and architects use an imitation whitewash that can be cleaned with wet methods if carefully used.
- Shellacked or oiled wood surfaces should NOT be washed with wet methods.
- Wet methods for other materials may be tried after receiving advice from a conservator.

iii. Dry Cleaning Methods
a) Regularly dust using a vacuum cleaner and a round, soft, long haired brush or a treated dust cloth.
NOTE: Take care when dusting not to rub adjacent vertical surfaces, which can leave dirt residue and abrasive marks on walls or smears on glass.
b) Regularly dust tops of baseboards, window sills, door panel moldings, tops of mantels, tops of door and window trim, and tops of doors and other horizontal surfaces on walls.
NOTE: The rate of dirt accumulation is much faster on horizontal surfaces than on walls or vertical surfaces. Therefore, even if a horizontal surface is above eye level, it should be cleaned regularly.
c) After a heating season, check areas above radiators or wall grilles for dust build-up.
d) Periodically dust cobwebs from walls and ceilings, especially at corners. Lift cobwebs outward and upward so that they do not smear.
e) Periodically dust walls and ceilings using a vacuum cleaner with a dusting brush attachment. Start in a corner at the floor and move upward to the cornice.
- A light, even touch with overlapping strokes provides the best cleaning.
- Clean the vacuum attachment frequently to avoid streaks.

iv. Wet Cleaning Methods
a) Regularly spot clean to remove smudges and marks left by hands, furniture and other objects.

NOTE: The areas requiring the most frequent spot cleaning are around light switches, thermostats, doors, the wall side of stairs, bell pulls, wall sconces, etc.

- Rub spot gently with a clean sponge, dampened ONLY with clean, clear water.
- Dry with a clean wiping cloth.
- If water alone does not remove the spot, mix 1 to 2 tablespoons of detergent in 1 gallon of warm water.
- Rub the spot gently with a clean sponge dampened with solution. Blend the spot into the remaining surrounding surface.
- Rinse with a clean sponge dampened with clean, clear water and allow to dry.

b) Periodically dust walls and inspect and dust areas around radiators and air grilles as described above under Dry Cleaning Methods.

c) Periodically wash walls with a mixture of 1 to 2 tablespoons of liquid detergent in 1 gallon of warm water.

- Wash walls beginning at a lower corner of the room, including the baseboard.
- Moisten an area of approximately 5 to 10 square feet and rub with a clean sponge dampened with the solution.
  NOTE: To prevent water from streaking the wall, the sponge used for the cleaning should be wet but not dripping.
- Rinse the area thoroughly with clean, clear water. Two rinses may be necessary to remove all the cleaning solution and dirt from the wall.
- Change rinse water frequently.
- Dry the area with a clean cloth.
- Continue the process of wetting, rubbing, rinsing, and drying around the lower portion of the room.
- Each section being cleaned should overlap slightly with the previous section.
- Proceeding up the wall, wash the upper portions of the room and the ceiling in the same manner, working from a step ladder. Painted woodwork should be washed with the walls.

38. REPAIRING CRACKS AND CHECKS IN WOOD WALL ORNAMENT

i. If a check is a result of dried or shrunken end grain, it must be filled.

ii. Checks on the underside of wood members with no direct water infiltration generally do NOT need filling.

iii. Filling cracks and checks (for small surface cracks up to 1/2" across):

a) Use a proprietary wood filler, or sawdust mixed with white glue. Work into crack so that no gaps remain.

b) When dry, hand rub filled area with a fine grit sandpaper to match surface characteristics and level of surrounding surfaces.

c) Refinish as required to match remaining ornament.

iv. Regluing cracks and checks (for larger cracks that penetrate into the wood ornament):

a) Strip paint and debris from crack area. Before regluing, make sure joint can be forced back together.
b) Widen joint slightly to get glue in and work joint open and closed to spread glue.
c) Clamp joint closed using blocks of wood under clamps to protect wood. Remove all excess glue before it dries.
d) Let glue dry for 24 hours before removing clamp.
e) Refinish as necessary to match surrounding ornament.

v. Dutchman replacement (for larger cracks that cannot be filled or glued):
a) Cut long, slender, tapered shims from wood of same age, species and grain orientation as piece being patched.
b) Pre-fit shim into crack. When shim fits, glue both shim and crack surface and remove all excess glue.
c) After glue dries, cut shim flush with face of panel and refinish as necessary to match remaining ornament.

39. STRIPPING AND REFINISHING STAINED AND VARNISHED WOOD DOORS

i. Protection:
a) Make sure work area is well-ventilated and wear protective clothing and rubber gloves.
b) Do not allow smoking in the work area.
c) Daily, dispose of all used solutions, finishing products, solvent residue and soiled rags in sealed noncombustible containers to prevent a fire hazard.
d) Protect all surfaces adjacent to wood being refinished.
e) Maintain a healthy level of air circulation within the space being treated. Regularly employ and maintain exhaust fans or other air moving devices to the satisfaction of the Contracting officer's Representative.
f) Curtain off areas being treated from other trades and occupants to prevent fumes from reaching other parts of the building.
g) Wear appropriate safety devices such as respirators fitted with the correct cartridge, gloves, and other protective clothing.

ii. Surface Preparation:
a) Remove all non-original door louvers, panels and transom panels taking care not to damage the remainder of the door, frame or paneling.
b) Replace the non-original elements with new wood which matches the species of the original wood and which matches the detailing of the original millwork.
c) Hardware: Remove existing hardware, door numbers, and other applied elements, and store for reinstallation.
d) Make minor repairs to doors as required:
- Fill holes exceeding 1 inch in diameter with matching Dutchmen.
- Fill smaller holes with patching compound tinted to match wood.

iii. Strip the existing varnish finish:
   a) Wet steel wool with solvent and rub over the doors to remove varnish build-up and smooth out checked surface.
   b) Replace soiled steel wool frequently with clean and continue with wiping process until a smooth, even-colored surface is achieved.
      - Use no water on wood surface under any circumstances.
      - Work only one 4' square area at a time. Work area should be within a comfortable arms reach.
      - If solvent affects the stained color of the wood, discontinue use and use an alternative solvent mixture.
   c) Allow surface to dry thoroughly; no less than 24 hours.
   -OR-
   d) Apply commercial stripper following manufacturer's instructions.
   e) Wash the surface with acetone to remove stripper residue.
   f) Lightly sand the surface with 220 grit aluminum oxide sandpaper as needed to remove carbon soiling and finish damage not removed by solvent application.
   g) Wipe surface with a tack rag to remove traces of bronze wool, sand and dust prior to applying new finishes.

iv. Remove shallow scratches:
   a) Lightly sand, in the direction of the grain only, to remove shallow scratches, against the grain sanding, and finish damage not removed by stripper application.
   b) Remove scratches using 80 grit sandpaper.
   c) Finish using 120 grit sandpaper until smooth surface is attained.
   d) Smooth surface sufficiently to ensure uniform stain absorption.
   e) Wipe surface with a tack rag to remove traces of steel wool, sand, and dust prior to applying new finishes.

v. Apply the stain:
   a) Color mix stain to match original finish.
   b) Apply stain to bare wood surfaces using a soft cloth or bristle brush.
   c) Allow stain to set as required for proper color match and maximum surface uniformity.
   d) Wipe off excess stain by rubbing parallel to the grain with a soft dry cloth.
   e) Allow surface to dry for at least 24 hours.

vi. Fill deep scratches and gouges with shellac burn-in sticks tinted to match the wood stain.

vii. Apply the finish coating:
   a) Make sure that surface is clean, level and free of defects.
   b) Apply 3 coats of varnish using a brush or sprayer to produce a uniform sheen and appearance. 3. Allow each coat to dry for at least 4 hours.
   c) Lightly sand with #400 grit silicon carbide paper or rub with fine steel wool between coats.
   d) Vacuum surface and wipe with a dry tack rag to remove all grit and dust prior to applying next finish coat.

e) After curing, lightly rub surface with fine steel wool to replicate original finish.

viii. Clean hardware:
   a) General:
      - For bronze and stainless steel hardware (door knobs, escutcheon plates, hinges and closers), clean using a mild soap and water.
      - For stubborn dirt and hard to clean areas, apply detergent with a Scotch-Brite abrasive pad or bristle brush. Rinse thoroughly and buff dry with soft cotton.
      - Remove grease on closers and hinges with sponge and detergent.
      - Scrape gently with a non-metallic spatula to remove paint drips.
   b) If required, carefully remove adhesive residue, paint and varnish drips from escutcheon plates using a paint stripper.
      - Apply with soft cloths.
      - If necessary, apply light pressure using a natural bristle brush.
   c) If necessary, remove adhesive residue from door knobs using a mild solvent.
      - Test an inconspicuous area to avoid damaging the finish.
      - Do not apply solvents which may remove patina.

ix. Repair locksets:
   a) Repair inoperable locksets, reusing original knobs and escutcheons.
   b) Where locksets are missing or irreparably damaged, furnish new locksets matching originals. Replicate existing escutcheons in color, sheen, overall configuration, and detailing.
      - Conceal existing cutouts, but do not cover portions of door not originally concealed.
      - Replicate original knob's finish.

x. Install new closers where missing or irreparably damaged. Furnish closers matching originals in form and finish as closely as possible.

xi. Replace glazing as required.

xii. Clean glazing as required:
   a) Remove adhesive residues, paint spatters, and other soiling using soft cloths and detergent.
   b) Use a mild solvent and Scotch Brite pad or bristle brush to remove stubborn residues.
   c) Remove paint splatters with solvent or by scraping gently with a razor blade held at a shallow angle.
   d) Do not use tools or cleaning products which may etch the glass.

xiii. Reinstall kick plates and other hardware as required.

xiv. Remove and repaint louvers to match original as required.

xv. Refinish jambs and frames to match original as required.

xvi. Adjust door to assure proper operation. Replace or rehang doors which are hinge bound and do not swing or operate freely. Replace worn hinge pins with replicates.

xvii. Refinish or replace job-finished doors damaged during installation.

40. SILENCING CREAKING AND GRINDING HINGES

i. To discern door problem, observe the door open and close a few times. Note the location of any binding or rubbing. Note also if doors binds inconsistently from top to bottom or hinge side to latch side.

ii. If the pins can be removed one at a time on simple hinges, lubricate them with graphite before reinstalling them. If oil has been used before, continue to lightly lubricate hinges with household oil. In either case, work hinge back and forth to assure penetration of the lubricant to all areas. This is particularly important with ball-bearing hinges, found on large or heavy doors, and on code-compliant fire-doors.

iii. Use light oil sparingly to avoid staining adjacent materials; wipe off excess.

iv. If lubrication does not solve the problem, the hinges may be improperly installed, out of line or damaged.

v. Observe the hinge knuckles closely with a flashlight to check for any hinge injury from being struck with a blunt object such as a cart. Check the inside of the frame and the hinge fittings for alignment problems or deformation caused by an object being placed between the hinge and the door jamb (improper chocking). These kinds of hinge damage are difficult to remedy outside of the workshop, and the final solution may end up being the replacement of a single hinge or a complete set with an exact match.

vi. It may be necessary to shim or re-mortise one or both of the hinges so that they are plumb and in line with one another (this is seldom the case with steel doors and frames as the mortises and alignments are factory set).

41. REHABILITATING WOOD WINDOWS

i. Conduct a window-by-window survey to determine existing conditions and identify the specific work needs of each window.

ii. For each window type, the survey should include color photographs which show design details for comparison to new work, and existing conditions.
   a) Full frame views, both interior and exterior.
   b) Close-up views of typical details, both interior and exterior.

iii. Carefully remove window stops, sash and trim as required. Remove only those features which cannot be repaired on- site. All disassembled parts should be indelibly marked or stamped on hidden parts so they can be returned to their exact location.

iv. Replace rotted window sills as required.

v. Repair, replace, or rebuild all rotted or deteriorated wood features. These can include but are not limited to stiles, rails, muntins, joints, frame, trim. New work shall match existing profiles or shapes in every respect and shall be flush with existing adjacent surfaces.

vi. Remove paint from both interior (where applicable) and exterior surfaces.

vii. Remove all deteriorated glazing putty and broken glass. Replace glass and reglaze with a flexible elastomeric glazing compound. Clean the existing historic glass.

viii. Reinstall windows. Inspect pull chains and weights at all double hung windows and adjust, clean or replace as required to ensure proper operation. Lubricate all working parts to assure smooth operation.

ix. Provide weatherstripping as required.

x. Refinish both interior and exterior sides of sash, frame and trim with appropriate paint, stain or natural finish as specified.

xi. Hardware:

a) All window hardware shall be removed, marked for proper room number and location, boxed or packaged, and collected in a central location for the Contractor who shall polish all the hardware before reinstallation.

b) All hardware to be removed before paint stripping, cleaned to bare metal and repaired to its original condition.

c) Where hardware is missing or damaged, provide new hardware of same design and material as original hardware.

xii. Begin and maintain protection and other precautions required through the remainder of construction period to ensure that newly rehabilitated window units will not be damaged throughout the remainder of any restoration or rehabilitation work.

42. REMOVING LINOLEUM ADHESIVE FROM FLOORS

NOTE: A waterproof glue is usually applied at the edges and seams of the linoleum; the center of the felt layers is usually attached with a water soluble paste.

i. Soak the mastic area in hot water for 20-60 minutes or until soft.\

ii. If this is not effective, try adding vinegar or high-strength citrus degreasing solvent to the water and then soak for 20-60 minutes until soft.

iii. If mastic still will not soften, try applying heat to the surface using a lamp or hot-air gun.

-OR-

Try freezing the mastic with dry ice to break the bond with the substrate.

iv. If no other methods are effective in softening the mastic, test a chemical solvent on the area.

NOTE: Be sure to test in an inconspicuous area to determine appropriate chemicals and strengths before proceeding with cleaning.

v. Scrape away the softened mastic using a putty knife or garden edger.

43. CLEANING DOOR HARDWARE

i. Carefully remove hardware. Store in a secure location for reinstallation after refinishing is complete. All refinishing actions on hardware should take place after it has been completely removed from the wooden door.

ii. Carefully remove adhesive residue, and paint and varnish drips using paint stripper applied with soft cloths. If necessary, apply light pressure using natural bristle brush.

iii. Retain statuary finish on door bronze knobs. Do not apply solvents which may remove patina.

iv. Clean bronze and stainless steel door knobs, escutcheon plates, and kick plates using mild soap and water.
v. For stubborn dirt and hard to clean areas, apply detergent with "Scotch-Brite" pad. Under the direction of a qualified conservator, areas of bright metal work may be refinished with a suitable oxidizing agent to match existing patinas. Rinse thoroughly and buff dry with soft cotton cloths.
vi. Re-install hardware after it has been refinished. If the wooden door itself is also being refinished do not replace the hardware until that process has been completed.

44. REPLACEMENT OF DAMAGED WOOD DOORS

i. This procedure includes guidance on the removal and replacement of deteriorated or damaged wood doors with new to match original historic doors. It also includes the removal, storage and reinstallation of original door hardware.
ii. Remove all non-original door louvers, panels and transom panels taking care not to damage the remainder of the door, frame or paneling.
iii. Replace the non-original elements with new wood which matches the species of the original wood and which matches the detailing of the original millwork.
iv. Carefully remove existing damaged and altered doors to be replaced and label with location.
v. Remove all hardware from doors and store. New non-compatible hardware should be discarded and replaced with hardware matching the original.
vi. Remove all glazing and vents and restore to original condition.
vii. Fitting and Machining:
    a) Fit doors for width by planning; for height by sawing.
viii. Cut doors for glazing and vents. Cuts in replacement doors shall match size and location of openings cut in original doors.
ix. Refinish all job site cut surfaces before final hanging of doors.

45. EPOXY REPAIR FOR DETERIORATION AND DECAY IN WOODEN MEMBERS

i. This procedure includes guidance on stabilizing decayed wood members with epoxy consolidant and filler.
ii. Detect rot using the "Pick Test":
    a) Insert an ice pick into the wood at a slight angle.
    b) Lift the pick out. If the wood splinters in long pieces, the wood is ok. If the wood snaps where the pick is being lifted, the wood is decayed.
iii. When rot is discovered:
    a) Determine the source of moisture infiltration and eliminate it.
    b) If rot is only present on the surface, drying is all that is necessary to stop the spread of decay and kill off any growth.
iv. If source of moisture is unknown, treat the wood with a preservative.
v. Preservatives are caustic chemicals and should be handled with care.
vi. Preservatives will eliminate fungal growth, but will not restore strength to deteriorated wood material.

vii. Dry affected wood member completely to arrest further decay. Dry in place if possible or remove the member and keep in a cool dry place until dry.
viii. Have all materials at hand before the mixing process begins.
ix. Label all caps and lids so that a cap or lid is not placed on the wrong container or it may remain there permanently.
x. Repair decayed wood using epoxy wood consolidant.
xi. Drill 1/4" or 3/16" holes in affected wood to receive epoxy consolidant:
xii. Drill holes at an angle and spaced approximately 2" on center in staggered rows. The top of one hole should line up with the bottom of the next hole.
xiii. Dam any surface cracks with oil clay (this is old-fashioned modeling clay) so that epoxy will not leak.
xiv. Remove sawdust and dirt from drilled holes by blowing (by mouth or with the aid of a common drinking straw), vacuuming, or use of stiff bristle brushes.
xv. Following manufacturer's instructions, thoroughly mix the consolidant components.
xvi. Using a large plastic syringe or squeeze bottle and tube spout, carefully squirt the consolidant into the pre-drilled holes. Completely saturate the wood,
xvii. moving from hole to hole refilling until the wood can hold no more. More than one application may be needed to force air out of voids.
xviii. Wipe off any excess consolidant or spills and cover the treated area to protect until cured as directed by epoxy manufacturer.
xix. If severed pieces need to be re-attached, glue them in place with a mixture of consolidant and filler, according to the manufacturer's instructions.
xx. When the consolidant has cured, fill the voids in the surface with epoxy filler (wood-epoxy putty):
    a) Mix the two part epoxy filler according to manufacturer's instructions until consistency of a glazing compound is uniform and compound can be worked with a putty knife.
    b) Apply the filler to the surface:
xxi. For large voids, apply filler in 1" thick layers to reduce heat build-up that may undermine repairs.
xxii. Build up filler layers slightly above the wood surface to allow for planing and sanding smooth after it has cured.
xxiii. When the filler has cured, sand or plane the surface smooth.
xxiv. Apply a wood preservative to the surrounding wood surfaces, prime and paint the entire surface.