SECTION 040110 - MASONRY CLEANING

Revise this Section by deleting and inserting text to meet Project-specific requirements.

1. GENERAL
   * + 1. RELATED DOCUMENTS
          1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
       2. SUMMARY
          1. Section includes cleaning the following:

Unit masonry surfaces.

Stone surfaces.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project. Pressure spray values are not standardized but are typical for cleaning without abrasives. Revise pressures if preferred; for example, BIA generally assumes values 100 psi lower than those listed. If using abrasives, revise values because these pressures are too high.

* + - * 1. Very Low-Pressure Spray: Under 100 psi.
        2. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
        3. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.
        4. High-Pressure Spray: 800 to 1200 psi; 4 to 6 gpm.
      1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.

Retain subparagraph below if additional requirements are necessary; include information about conference.

Review methods and procedures related to cleaning masonry including, but not limited to, the following:

Verify masonry-cleaning equipment and facilities needed to make progress and avoid delays.

Materials, material application, and sequencing.

Cleaning program.

Coordination with building occupants.

* + - 1. SEQUENCING AND SCHEDULING

"Work Sequence" Paragraph below is an example only; revise to suit Project or delete if not prescribing a work sequence. This sequence assumes that cleaning, if required, precedes repairs and repointing. For this, masonry and joints must be sound enough to prevent water and chemicals from penetrating into building.

* + - * 1. Work Sequence: Perform masonry-cleaning work in the following sequence:

Retain and revise subparagraphs below and insert others to suit Project. Insert other sequences for different areas of building if needed.

Remove plant growth.

Inspect for open mortar joints. Where repairs are required, delay further cleaning work until after repairs are completed, cured, and dried to prevent the intrusion of water and other cleaning materials into the wall.

Remove paint.

Clean masonry surfaces.

Retain subparagraph below if water repellents are part of Project; revise if graffiti-resistant coating is required.

Where water repellents are to be used on or near masonry, delay application of these chemicals until after cleaning.

Retain paragraph below if scaffolding anchor holes in masonry and patching them are required and acceptable; revise to suit Project.

* + - * 1. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units according to masonry repair Sections. Patch holes in mortar joints according to masonry repointing Sections.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product.

Include material descriptions and application instructions.

Include test data substantiating that products comply with requirements.

Coordinate "Qualification Data" Paragraph below with qualification requirements in "Quality Assurance" Article.

* + - * 1. Qualification Data: For paint-remover manufacturer and chemical-cleaner manufacturer.

Retain "Preconstruction Test Reports" Paragraph below if specifying preconstruction testing in "Preconstruction Testing" Article as Contractor's responsibility.

* + - * 1. Preconstruction Test Reports: For cleaning materials and methods.

Retain paragraph below if program is retained in "Quality Assurance" Article.

* + - * 1. Cleaning program.
      1. QUALITY ASSURANCE

If retaining "Paint-Remover Manufacturer Qualifications" or "Chemical-Cleaner Manufacturer Qualifications" Paragraph below, verify that manufacturers of products listed in Part 2 comply with requirements. Retain option if retaining "Preconstruction Testing" Article.

* + - * 1. Paint-Remover Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with Company Service Advisor who are available for consultation and Project-site inspection[, **preconstruction product testing,**] and on-site assistance.
        2. Chemical-Cleaner Manufacturer Qualifications: A firm regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with Company Service Advisor who are available for consultation and Project-site inspection[, **preconstruction product testing**,] and on-site assistance.
        3. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used; protection of surrounding materials; and control of runoff during operations. Include provisions for supervising worker performance and preventing damage.

If materials and methods other than those indicated are proposed for any phase of cleaning work, add a written description of such materials and methods, including evidence of successful use on comparable projects and demonstrations to show their effectiveness for this Project.

Retain required mockups in "Mockups" Paragraph below; insert others to suit Project. Test areas that were prepared or are required as part of a separate contract to evaluate and establish cleaning materials and processes are not mockups.

* + - * 1. Mockups: Prepare mockups of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.

Cleaning: Clean an area [**approximately 25 sq. ft.] [as indicated**] for each type of masonry and surface condition.

Retain first subparagraph below for chemical and other cleaning processes.

Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not test cleaners and methods known to have deleterious effect.

Revise minimum waiting period in first subparagraph below to suit processes and conditions.

Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.

Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.

* + - 1. PRECONSTRUCTION TESTING

Retain this article for preconstruction testing. Revise article based on Architect's knowledge of the building's materials and experience with similar work. Usually test-clean masonry before preparing the Specifications, and delete this article. Project-specific preconstruction testing can be expensive but may be the best means of proving that performance requirements are met.

* + - * 1. Preconstruction Testing Service: Engage one or more chemical-cleaner[ **and paint-remover**] manufacturers to perform preconstruction testing on masonry surfaces.

Use test areas as indicated and representative of proposed materials and existing construction.

Propose changes to materials and methods to suit Project.

* + - 1. FIELD CONDITIONS

Usually retain this article; revise to suit Project.

* + - * 1. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry-cleaning work to be performed according to product manufacturers' written instructions and specified requirements.

Extend period in paragraph below if necessary to ensure that masonry does not freeze before it dries out.

* + - * 1. Clean masonry surfaces only when air temperature is 40 deg F and above and is predicted to remain so for at least seven days after completion of cleaning.

1. PRODUCTS
   * + 1. PAINT REMOVERS

Retain one or more paint removers in this article to suit Project. Insert other types if required. "Alkaline Paste Paint Remover" and "Covered or Skin-Forming Alkaline Paint Remover" paragraphs below describe caustic materials that require neutralizing afterwash. With glazed masonry and polished calcitic marble, use only a neutralizing afterwash that does not contain hydrofluoric acid or ammonium bifluoride, which etches these surfaces.

* + - * 1. Alkaline Paste Paint Remover: Manufacturer's standard alkaline paste or gel formulation, for removing paint from masonry; containing no methylene chloride.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Cathedral Stone Products, Inc.

Diedrich Technologies, Inc.; a Hohmann & Barnard company.

Approved equivalent.

* + - * 1. Covered or Skin-Forming Alkaline Paint Remover: Manufacturer's standard covered or skin-forming, alkaline paste or gel formulation, for removing paint from masonry; containing no methylene chloride.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Diedrich Technologies, Inc.; a Hohmann & Barnard company.

Dumond Chemicals, Inc.

Approved equivalent.

Products in "Solvent-Type Paste Paint Remover" Paragraph below contain methylene chloride.

* + - * 1. Solvent-Type Paste Paint Remover: Manufacturer's standard water-rinsable, solvent-type paste or gel formulation, for removing paint from masonry.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Diedrich Technologies, Inc.; a Hohmann & Barnard company.

Hydroclean; Hydrochemical Techniques, Inc.

PROSOCO, Inc.

Approved equivalent.

* + - * 1. Low-Odor, Solvent-Type Paste Paint Remover: Manufacturer's standard low-odor, water-rinsable, solvent-type paste, gel, or foamed emulsion formulation, for removing paint from masonry; containing no methanol or methylene chloride.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Cathedral Stone Products, Inc.

Dumond Chemicals, Inc.

PROSOCO, Inc.

Approved equivalent.

* + - * 1. Covered, Solvent-Type Paste Paint Remover: Manufacturer's standard, low-odor, covered, water-rinsable, solvent-type paste or gel formulation, for removing paint coatings from masonry; containing no methanol or methylene chloride.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Dumond Chemicals, Inc.

PROSOCO, Inc.

Approved equivalent.

* + - 1. CLEANING MATERIALS

For a surface having a mix of masonry materials, such as stone and brick or mixed stone types, consider using cleaning materials and a single cleaning method selected for gentleness to all the masonry materials in the surface.

If local water is known to be unsuitable, consider informing Contractor of this in "Water" Paragraph below. Hard or softened water may be unsuitable even though potable.

* + - * 1. Water: Potable.

Retain "Hot Water" Paragraph below if heated water is required.

* + - * 1. Hot Water: Water heated to a temperature of 140 to 160 deg F.

Retain remaining paragraphs below to suit Project.

Revise "Detergent Solution, Job Mixed" Paragraph below for specific laundry detergent requirements if know. Detergent products vary in compositions.

* + - * 1. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
        2. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.

In "Nonacidic Gel Cleaner" Paragraph below, chelating agents are used to tie up hard-water ions (calcium and magnesium) and to remove soap scum and hard-water film from surfaces.

* + - * 1. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

Cathedral Stone Products, Inc.

Price Research, Ltd.

PROSOCO, Inc.

Approved equivalent.

* + - * 1. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Cathedral Stone Products, Inc.

Diedrich Technologies, Inc.; a Hohmann & Barnard company.

Dumond Chemicals, Inc.

PROSOCO, Inc.

Approved equivalent.

Products in "Mild-Acid Cleaner" Paragraph below are phosphoric, oxalic, or citric acid based and, although not as corrosive as muriatic (hydrochloric), hydrofluoric, or sulfuric acid or ammonium bifluoride, may attack certain metals and other building materials.

* + - * 1. Mild-Acid Cleaner: Manufacturer's standard mild-acid cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Cathedral Stone Products, Inc.

Diedrich Technologies, Inc.; a Hohmann & Barnard company.

Approved equivalent.

Products in "Acidic Cleaner" Paragraph below contain hydrofluoric acid or ammonium bifluoride, which attack metals, glass, and ceramic glazes.

* + - * 1. Acidic Cleaner: Manufacturer's standard acidic masonry cleaner composed of hydrofluoric acid or ammonium bifluoride blended with other acids, detergents, wetting agents, and inhibitors.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Cathedral Stone Products, Inc.

Diedrich Technologies, Inc.; a Hohmann & Barnard company.

Dumond Chemicals, Inc.

PROSOCO, Inc.

Approved equivalent.

Products in "One-Part Limestone Acidic Cleaner" Paragraph below are intended for use as one-part cleaners for limestone.

* + - * 1. One-Part Limestone Acidic Cleaner: Manufacturer's standard one-part acidic formulation for cleaning limestone.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Cathedral Stone Products, Inc.

PROSOCO, Inc.

Approved equivalent.

Products in "Two-Part Chemical Cleaner" Paragraph below are often used to remove heavy carbon dirt and crusts from a variety of unit masonry and stone surfaces. They have pH values of up to 14 and must be tested and used with great care to prevent chemical reactions with minerals in the unit masonry and stone. Use only acidic afterwash cleaners that manufacturer recommends as afterwash for alkaline prewash cleaner. With glazed masonry and polished calcitic marble, use only acidic cleaners that do not contain hydrofluoric acid or ammonium bifluoride, which etches these surfaces.

* + - * 1. Two-Part Chemical Cleaner: Manufacturer's standard system consisting of potassium- or sodium-hydroxide-based, alkaline prewash cleaner and acidic afterwash cleaner that does not contain hydrofluoric acid.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Diedrich Technologies, Inc.; a Hohmann & Barnard company.

PROSOCO, Inc.

Approved equivalent.

* + - 1. ACCESSORY MATERIALS

Product in "Liquid Strippable Masking Agent" Paragraph below does not protect against paint removers.

* + - * 1. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Building Restoration Products, Inc.

Price Research, Ltd.

PROSOCO, Inc.

Approved equivalent.

Insert paragraphs(s) for other types of masking products, including tapes, sheets, etc., to suit Project.

* + - 1. CHEMICAL CLEANING SOLUTIONS

Retain this article if using chemical cleaners. Coordinate with selection in "Cleaning Materials" Article and with cleaning methods in Part 3. Procedures below are examples only; revise to suit Project materials and soil conditions.

* + - * 1. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended in writing by chemical-cleaner manufacturer.
        2. Acidic Cleaner Solution for [**Nonglazed Masonry] [and] [Unpolished Stone**]: Dilute acidic cleaner with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended in writing by chemical-cleaner manufacturer.

Revise "Stones" Subparagraph below to suit Project.

Stones: Use only on unpolished granite, unpolished dolomite marble, and siliceous sandstone.

* + - * 1. Acidic Cleaner for [**Glazed Masonry] [and] [Polished Stone**]: Dilute acidic cleaner with water to concentration demonstrated by testing that does not etch or otherwise damage glazed or polished surface, but not greater than that recommended in writing by chemical-cleaner manufacturer.

Revise "Stones" Subparagraph below to suit Project.

Stones: Use only on polished granite and polished dolomite marble.

1. EXECUTION
   * + 1. MASONRY-CLEANING SPECIALIST

Retain this article if using list of preapproved firms as quality-control procedure.

If retaining second option in "Masonry-Cleaning Specialist Firms" Paragraph below, include procedure for approving other firms in Document 002213 "Supplementary Instructions to Bidders."

* + - * 1. Masonry-Cleaning Specialist Firms: Subject to compliance with requirements, [**provide masonry cleaning by one of the following] [firms that may provide masonry cleaning include, but are not limited to, the following**]:

<**Insert, in separate subparagraphs, names of masonry-cleaning specialist firms**>.

* + - 1. PROTECTION

Retain first paragraph below if using paint removers or chemical cleaners.

* + - * 1. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent paint removers and chemical cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

Cover adjacent surfaces with materials that are proven to resist paint removers and chemical cleaners used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents according to manufacturer's written instructions. Do not apply liquid strippable masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.

Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.

Neutralize alkaline and acid wastes before disposal.

Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

Retain paragraph below if applicable; insert other items that may interfere with execution of this work.

* + - * 1. Remove[ **gutters and**] downspouts and associated hardware adjacent to immediate work area and store during masonry cleaning. Reinstall when masonry cleaning is complete.

Provide temporary rain drainage during work to direct water away from building.

* + - 1. CLEANING MASONRY, GENERAL

Retain "Cleaning Appearance Standard" Paragraph below to control overall appearance from a distance.

* + - * 1. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from [**20 feet] [50 feet**] away by Director’s Representative.

Revise first paragraph below to suit building configuration and Project conditions. In determining the direction of cleaning, the goal is to prevent dirty residues and rinse water from washing over dry, cleaned surfaces, where they could be reabsorbed. Although cleaning from bottom to top is most common, such a procedure in a tall building could result in resoiling surfaces already cleaned. See the Evaluations for advantages and disadvantages of methods.

* + - * 1. Proceed with cleaning in an orderly manner; work from [**bottom to top] [top to bottom**] of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.
        2. Use only those cleaning methods indicated for each masonry material and location.

Retain "Brushes" Subparagraph below if applicable.

Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.

Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.

Equip units with pressure gages.

Retain first subparagraph below unless spray application of chemical cleaners is unacceptable. Wind drift of chemical cleaners is often a problem with spray application.

For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.

Fan-spray angle in first subparagraph below is considered efficient for low and medium pressure and less harmful than sprays with narrower angles. Never use a fan spray with an angle of less than 15 degrees.

For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.

Retain first subparagraph below if high-pressure spray is permitted.

For high-pressure water-spray application, use fan-shaped spray that disperses water at an angle of at least 40 degrees.

Retain first subparagraph below if heated water is required. Revise temperature range to suit Project.

For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.

Retain subparagraph below if steam cleaning is required. Usually retain for supplemental cleaning if specifying chemical cleaning.

For steam application, use steam generator capable of delivering live steam at nozzle.

* + - * 1. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces. Keep wall wet below area being cleaned to prevent streaking from runoff.
        2. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to the "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.
        3. Water Application Methods:

Retain "Water-Soak Application" Subparagraph below if required.

Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.

Retain "Water-Spray Applications" Subparagraph below for all chemical cleaning methods.

Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from masonry surface and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

Retain "Steam Cleaning" Paragraph below if required. Steam cleaning may be used to supplement other methods.

* + - * 1. Steam Cleaning: Apply steam to masonry surfaces at the very low pressures indicated for each type of masonry. Hold nozzle at least 6 inches from masonry surface and apply steam in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

Retain both options in "Chemical-Cleaner Application Methods" Paragraph below if spray application of chemical cleaners is acceptable. Wind drift of chemical cleaners is often a problem with spray application.

* + - * 1. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; use brush[ **or spray**] application**.[ Do not spray apply at pressures exceeding 50 psi**.] Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

Bottom-to-top rinsing helps ensure thorough and uniform rinse; rinse water leaving bottom of wall while top is being rinsed will be clear only if entire wall is thoroughly rinsed. Entire wall will be wet when rinsing is completed, resulting in more uniform drying and less streaking.

* + - * 1. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

* + - * 1. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.
      1. PRELIMINARY CLEANING

Retain "Removing Plant Growth" Paragraph below if plant removal is part of the Work; revise to suit Project conditions. Insert requirements if herbicide application is required.

* + - * 1. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing remaining growth to dry as long as possible before removal. Remove loose soil and plant debris from open joints to whatever depth they occur.
        2. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, calking, asphalt, and tar.

Carefully remove heavy accumulations of rigid materials from masonry surface with sharp chisel. Do not scratch or chip masonry surface.

Remove paint and calking with [**alkaline paint remover] <Insert requirement**>.

Comply with requirements in "Paint Removal" Article.

Repeat application up to two times if needed.

Remove asphalt and tar with [**solvent-type paste paint remover] <Insert requirement**>.

Comply with requirements in "Paint Removal" Article.

Apply paint remover only to asphalt and tar by brush without prewetting.

Allow paint remover to remain on surface for 10 to 30 minutes.

Repeat application if needed.

* + - 1. PAINT REMOVAL <**Insert drawing designation**>

Copy this article and re-edit for significantly different types of paint removal.

Insert drawing designation. Use these designations on Drawings to identify locations.

* + - * 1. Paint-Remover Application, General: Apply paint removers according to paint-remover manufacturer's written instructions. Do not allow paint removers to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

Retain one or more paint-removing methods in this article depending on paint removers retained in Part 2 and in "Preliminary Cleaning" Article. Consult a cleaning specialist before retaining below or inserting other methods.

* + - * 1. Paint Removal with Alkaline Paste Paint Remover:

Retain first subparagraph below only if loose and peeling paint is significant.

Remove loose and peeling paint using [**low] [medium] [high**]-pressure water spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.

Apply paint remover to dry, painted surface with brushes.

Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.

Retain one of first two options and one of last three options in first subparagraph below. Alkaline paint removers work better with hot water.

Rinse with **[cold] [hot**] water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and paint residue.

Repeat process if necessary to remove all paint.

Apply acidic cleaner or manufacturer's recommended afterwash to surface, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or afterwash remain on surface as a neutralizing agent for period recommended in writing by chemical-cleaner or afterwash manufacturer.

Rinse with cold water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and soil.

* + - * 1. Paint Removal with Covered or Skin-Forming Alkaline Paint Remover:

Retain first subparagraph below only if loose and peeling paint is significant.

Remove loose and peeling paint using [**low] [medium] [high**]-pressure water spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.

Apply paint remover to dry, painted surface with trowel, spatula, or as recommended in writing by manufacturer.

Apply cover according to manufacturer's written instructions.

Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.

Scrape off paint and remover.

Retain one of first two options and one of last three options in first subparagraph below. Alkaline paint removers work better with hot water.

Rinse with [cold] [hot] water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and paint residue.

Apply acidic cleaner or manufacturer's recommended afterwash to surface, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or afterwash remain on surface as a neutralizing agent for period recommended in writing by chemical-cleaner or afterwash manufacturer.

Rinse with cold water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and soil.

Retain "Paint Removal with Alkaline Paste Paint Remover" Paragraph if retaining subparagraph below.

For spots of remaining paint, apply alkaline paste paint remover, according to "Paint Removal with Alkaline Paste Paint Remover" Paragraph.

Retain "Paint Removal with Solvent-Type Paste Paint Remover" Paragraph below for solvent-type paste and low-odor, solvent-type paste paint removers; delete paragraph if using only covered, solvent-type paste paint remover.

* + - * 1. Paint Removal with Solvent-Type Paste Paint Remover:

Retain first subparagraph below only if loose and peeling paint is significant.

Remove loose and peeling paint using [**low] [medium] [high**]-pressure water spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.

Apply thick coating of paint remover to painted surface with natural-fiber cleaning brush, deep-nap roller, or large paint brush. Apply in one or two coats according to manufacturer's written instructions.

Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.

Retain one of first two options and one of last three options in subparagraph below. Some manufacturers advise that heated water may improve stripping efficiency.

Rinse with [**cold] [hot**] water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and paint residue.

* + - * 1. Paint Removal with Covered, Solvent-Type Paste Paint Remover:

Retain first subparagraph below only if loose and peeling paint is significant.

Remove loose and peeling paint using [**low] [medium] [high**]-pressure water spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.

Apply paint remover to dry, painted surface with trowel, spatula, or as recommended in writing by manufacturer.

Apply cover according to manufacturer's written instructions.

Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.

Scrape off paint and remover.

Retain one of first two options and one of last three options in subparagraph below. Some manufacturers advise that heated water may improve stripping efficiency.

Rinse with [**cold] [hot**] water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and paint residue.

* + - 1. CLEANING MASONRY <**Insert drawing designation**>

Copy this article and re-edit for significantly different types of cleaning and masonry types.

Insert drawing designation. Use these designations on Drawings to identify locations.

Retain one or more cleaning methods in this article, and coordinate with cleaners retained in Part 2. Insert other methods to suit Project. If more than one method is required, insert location or develop a schedule describing location, materials, and cleaning process.

Procedure in "Cold-Water Soak" Paragraph below may cause efflorescence after wall dries out and may result in water infiltration, but it is the gentlest method.

* + - * 1. Cold-Water Soak:

Apply cold water by intermittent spraying to keep surface moist.

Use perforated hoses or other means that apply a fine water mist to entire surface being cleaned.

Apply water in cycles of five minutes on and 20 minutes off.

Time in second option in first subparagraph below is an example only; revise to suit Project.

Continue spraying [**until surface encrustation has softened enough to permit its removal by water wash, as indicated by cleaning tests] [for 72 hours] <Insert requirement**>.

Remove soil and softened surface encrustation from surface with cold water applied by low-pressure spray.

* + - * 1. Cold-Water Wash: Use cold water applied by [**low] [medium] [high**]-pressure spray.
        2. Hot-Water Wash: Use hot water applied by [**low] [medium] [high**]-pressure spray.
        3. Steam Cleaning: Apply steam at very low pressures not exceeding [**30 psi] [80 psi**]. Remove dirt softened by steam with wood scrapers, stiff-nylon or -fiber brushes, or cold-water wash, as indicated by cleaning tests.
        4. Detergent Cleaning:

Wet surface with [**cold] [hot**] water applied by low-pressure spray.

Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.

Retain one of first two options and one of last three options in first subparagraph below.

Rinse with [**cold] [hot**] water applied by [low**] [medium] [high**]-pressure spray to remove detergent solution and soil.

Retain subparagraph below if using mockup.

Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

* + - * 1. Mold, Mildew, and Algae Removal:

Wet surface with [**cold] [hot**] water applied by low-pressure spray.

Apply mold, mildew, and algae remover by brush[ **or low-pressure spray**].

Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.

Retain one of first two options and one of last three options in first subparagraph below.

Rinse with [**cold] [hot]** water applied by [**low] [medium] [high**]-pressure spray to remove mold, mildew, and algae remover and soil.

Retain subparagraph below if using mockup.

Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

* + - * 1. Nonacidic Gel Chemical Cleaning:

Wet surface with [**cold] [hot**] water applied by low-pressure spray.

Apply gel cleaner in 1/8-inch thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.

Retain one option in first subparagraph below; revise to suit Project.

Let cleaner remain on surface for period [**recommended in writing by chemical-cleaner manufacturer] [established by mockup**].

Remove bulk of gel cleaner.

Retain one of first two options and one of last three options in first subparagraph below.

Rinse with [**cold] [hot**] water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and soil.

Retain subparagraph below if using mockup.

Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

* + - * 1. Nonacidic Liquid Chemical Cleaning:

Alkaline cleaners work better with hot water.

Wet surface with [**cold] [hot**] water applied by low-pressure spray.

Apply cleaner to surface[ **in two applications**] by brush[ **or low-pressure spray**].

Retain one option in first subparagraph below; revise to suit Project. Third option is an example only.

Let cleaner remain on surface for period [**recommended in writing by chemical-cleaner manufacturer] [established by mockup] [of two to three minutes**].

Retain one of first two options and one of last three options in first subparagraph below.

Rinse with [**cold] [hot**] water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and soil.

Retain subparagraph below if using mockup.

Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

* + - * 1. Mild-Acid Chemical Cleaning:

Wet surface with cold water applied by low-pressure spray.

Apply cleaner to surface[ **in two applications**] by brush[ **or low-pressure spray**].

Retain one option in first subparagraph below; revise to suit Project. Third option is an example only.

Let cleaner remain on surface for period [**recommended in writing by chemical-cleaner manufacturer] [established by mockup] [of two to three minutes**].

Rinse with cold water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and soil.

Retain subparagraph below if using mockup.

Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

* + - * 1. Acidic Chemical Cleaning:

Wet surface with cold water applied by low-pressure spray.

Apply cleaner to surface[ **in two applications**] by brush[ **or low-pressure spray**].

Retain one option in first subparagraph below; revise to suit Project. Third option is an example only.

Let cleaner remain on surface for period [**recommended in writing by chemical-cleaner manufacturer] [established by mockup] [of two to three minutes**].

Rinse with cold water applied by [**low] [medium] [high**]-pressure spray to remove chemicals and soil. Rinse until all foaming, if any, stops and suds disappear.

Retain subparagraph below if using mockup.

Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

* + - * 1. One-Part Limestone Chemical Cleaning:

Wet surface with [**cold] [hot**] water applied by low-pressure spray.

Apply cleaner to surface by brush[ **or low-pressure** **spray**].

Let cleaner remain on surface for period [**recommended in writing by chemical-cleaner manufacturer] [established by mockup**].

Retain first subparagraph below if testing indicates one application is insufficient.

Immediately repeat application of one-part limestone cleaner as indicated above over the same area.

Revise subparagraph below if different pressure is required.

Rinse with [**cold] [hot**] water applied by medium-pressure spray to remove chemicals and soil.

* + - * 1. Two-Part Chemical Cleaning:

Alkaline cleaners work better with hot water.

Wet surface with [**cold] [hot**] water applied by low-pressure spray.

A specific time should be inserted in first subparagraph below as determined by testing. Time will vary depending on temperature and relative humidity.

Apply alkaline prewash cleaner to surface by brush or roller.

Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer unless otherwise indicated.

Alkaline cleaners work better with hot water. Revise subparagraph if different pressure is required.

Rinse with [**cold] [hot**] water applied by medium-pressure spray to remove chemicals and soil.

Apply acidic afterwash cleaner to surface[ **in two applications**], while surface is still wet, using[ **low-pressure spray equipment**,] deep-nap roller or soft-fiber brush. Let neutralizer remain on surface for period recommended in writing by manufacturer unless otherwise indicated.

Retain option in first subparagraph below if required. Reaction value range stated below is recommended by one manufacturer; revise to suit Project.

Rinse with cold water applied by medium-pressure spray to remove chemicals and soil.[ **Rinse until surface reaction value is between pH 5 and pH 9 according to pH-measuring paper, pen, or indicator solution.]**

Retain subparagraph below if using mockup.

Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

Insert paragraph(s) here for cleaning procedures to remove minor stains (cuprous, ferrous, etc.) if any.

* + - 1. FIELD QUALITY CONTROL

Retain "Manufacturer's Field Service" Paragraph below to require a Company Service Advisor to provide on-site assistance. Retain second option if retaining "Preconstruction Testing" Article.

* + - * 1. Manufacturer's Field Service: Engage[ **paint-remover manufacturer's and**] chemical-cleaner manufacturer's Company Service Advisor for consultation and Project-site inspection**[, to perform preconstruction product testing**,] and provide on-site assistance when requested by Director’s Representative. Have[ **paint-remover manufacturer's and**] chemical-cleaner manufacturer's Company Service Advisor visit Project site not less than [**once] [twice] <Insert requirement**> to observing progress and quality of the work.
      1. FINAL CLEANING

Paragraphs below are examples only; revise to suit Project.

* + - * 1. Clean adjacent nonmasonry surfaces of spillage and debris. Use detergent and soft brushes or cloths.
        2. Remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
        3. Remove masking materials, leaving no residues that could trap dirt.

END OF SECTION 040110