

SECTION 04901

MASONRY RESTORATION MORTARS AND GROUTS

PART GENERAL

SECTION INCLUDES

Masonry Injection Adhesive.

Masonry Injection Grout.

Masonry Void Injection Grout.

Limestone, Sandstone Patching Mortar.

Anchor Setting Mortar.

Horizontal Concrete Patch.

Vertical Concrete Patch.

Brick/Terra Cotta Patching Mortar.

Masonry Pointing Mortar.

Marble Patching Mortar.

Casting Mortar.

Bluestone and Granite Patching Mortar.

Accessories.

RELATED SECTIONS

Section 03930 - Concrete Rehabilitation.

Section 04910 - Unit Masonry Restoration.

Section 04920 - Stone Restoration.

SYSTEM DESCRIPTION

Performance Requirements: Supply mortar materials which require the addition of water only at site for correct performance; mortar materials

requiring site-mixing of additives to achieve correct performance are not permitted.

SUBMITTALS

Submit under provisions of Section 01300.

Product Data: Manufacturer's descriptive literature for each type mortar specified in this section.

Selection Samples: Two sets of color chips representing manufacturer's full range of available colors.

Verification Samples: Two samples, minimum size 3 inches (76 mm) square, representing actual color and finish of products to be installed.

Quality Assurance Submittals:

Manufacturer's certification that installer of manufacturer's product is approved.

Manufacturer's instructions:

Printed installation instructions for each product specified in this section.

Manufacturer's Safety Data Sheets (M.S.D.S.)

QUALITY ASSURANCE

Installer Qualifications: Authorized by manufacturer of products of this section.

Mock-ups:

Construct mock-ups using materials specified in this section.

Construct mock-ups as directed, at location indicated or directed.

Construct mock-ups at location indicated or directed, and as follows:

Size: ____ feet by ____ feet (____ mm by ____ mm).

Include ____.

Obtain Architect's acceptance of mock-ups before beginning construction activities of this section; accepted mock-ups will be standard by which completed construction activities of this section is judged.

Mock-ups may not remain as part of Work.

Accepted mock-ups may remain as part of Work.

Pre-Installation Meetings:

Convene at job site seven (7) calendar days prior to scheduled beginning of construction activities of this section to review requirements of this section.

Require attendance by representatives of the following:

Manufacturers of products of this section.
Installer of this section.
Other entities directly affecting, or affected by, construction activities of this section.
Notify Architect four (4) calendar days in advance of scheduled meeting date.

DELIVERY, STORAGE, AND HANDLING

Store products of this section in manufacturer's unopened packaging until installation.

Maintain storage area for products of this section in accordance with manufacturer's instructions until installation.

PROJECT/SITE CONDITIONS

Environmental Requirements: Do not apply mortars to frozen or hot substrates; apply mortars only when ambient surface temperature is between 40 degrees F (4 degrees C) and 90 degrees F (32 degrees C), with low to average humidity.

PART PRODUCTS

MANUFACTURERS

Acceptable Manufacturer: Cathedral Stone Products, Inc.; 8332 Bristol Court, #107, Jessup, MD 20794. ASD. Tel: (301) 317-4658, Fax: (301) 317-4670; E-Mail address: Info@jahnmortars.com; Home Page: [HTTP://WWW.JAHNMORTARS.COM](http://www.jahnmortars.com)

Requests for substitution will be considered in accordance with provisions of Section 01600.

Substitutions: Not permitted.

Unless otherwise specified for an individual product or material, supply all products specified in this section from the same manufacturer.

MATERIALS

Masonry Injection Adhesive: JAHN M30 Micro Injection Adhesive; low-viscosity, single-component injection grout for stabilization and rehabilitation of masonry cracks ranging from 1/16 inch (1.5 mm) to 1/4 inch (6 mm) wide, in both non-structural simple-void applications and structural load-bearing applications; cementitious, water-based, with synthetic material to enhance

penetration and bonding.

Masonry Injection Grout: JAHN M40 Crack Injection Grout; low-viscosity, vapor-permeable single-component injection grout for stabilization and rehabilitation of masonry cracks ranging from 1/4 inch (6 mm) to 3/8 inch (9 mm) wide, in non-structural simple-void applications; mineral-based, containing no synthetic polymer bonding agents or additives.

Masonry Void Injection Grout: JAHN M50 Void Injection Grout; low-viscosity, vapor-permeable single-component injection grout for stabilization and rehabilitation of masonry cracks from 3/8 inch (9 mm) wide, in non-structural simple-void applications; mineral-based, containing no synthetic polymer bonding agents or additives.

Limestone, Sandstone Patching Mortar: JAHN M70 Stone Patching Mortar; vapor-permeable single-component mortar for restoration of natural stone surfaces; mineral-based, containing no synthetic polymer bonding agents or additives.

Laboratory-engineered formulation for compatibility with existing _____ substrate.

Laboratory-engineered formulation for compatibility with existing substrate indicated in SCHEDULE Article of PART 3 of this section.

Color: Selected from full range of manufacturer's available standard colors.

Color: _____.

Color: Custom color matching Architect-approved sample.

Color: Specified in SCHEDULES Article of PART 3 of this section.

Anchor Setting Mortar: Jahn M80 Anchor Setting Mortar; single-component, vapor-permeable, non-shrink mortar for securing anchors and bolts in new or existing masonry structures; cementitious water-based material with high pH and freeze-thaw resistance, containing no synthetic polymer bonding agents or additives.

Horizontal Concrete Patch: Jahn M90 Horizontal Concrete Patch; single-component, vapor-permeable mortar for restoration of structural concrete; cementitious mineral- and water-based material with high pH, low carbonation, and freeze-thaw resistance, containing no synthetic polymer bonding agents or additives.

Vertical Concrete Patch: Jahn M90 Vertical Concrete Patch; single-component, vapor-permeable mortar for restoration of structural concrete; cementitious mineral- and water-based material with high pH, low carbonation, and freeze-thaw resistance, containing no synthetic polymer bonding agents or additives.

Brick/Terra Cotta Patching Mortar: JAHN M100 Terra Cotta Patching Mortar;

vapor-permeable single-component mortar for restoration of brick and terra cotta surfaces; mineral-based, containing no synthetic polymer bonding agents or additives.

Laboratory-engineered formulation for compatibility with oven-fired materials.

Color: Selected from full range of manufacturer's available standard colors.

Color: _____.

Color: Custom color matching Architect-approved sample.

Color: Specified in SCHEDULES Article of PART 3 of this section.

Masonry Pointing Mortar: JAHN M110 Historic Pointing Mortar; vapor-permeable single-component mortar for restoration of masonry mortar joints; mineral-based, containing no synthetic polymer bonding agents or additives.

Laboratory-engineered formulation for compatibility with existing substrate.

Color: Selected from full range of manufacturer's available standard colors.

Color: _____.

Color: Custom color matching Architect-approved sample.

Color: Specified in SCHEDULES Article of PART 3 of this section.

Marble Patching Mortar: JAHN M120 Marble Patching Mortar; vapor-permeable single-component mortar for restoration of marble surfaces; mineral-based, containing no synthetic polymer bonding agents or additives.

Laboratory-engineered formulation for compatibility with existing marble substrates.

Color: Selected from full range of manufacturer's available standard colors.

Color: _____.

Color: Custom color matching Architect-approved sample.

Color: Specified in SCHEDULES Article of PART 3 of this section.

Casting Mortar: JAHN M150 Casting Mortar; vapor-permeable single-component dry-pack mortar for natural stone, terra cotta, or architectural concrete ornamental castings; mineral-based, containing no synthetic polymer bonding agents or additives.

Laboratory-engineered formulation to replicate appearance and texture of existing substrates.

Color: Selected from full range of manufacturer's available standard colors.

Color: _____.

Color: Custom color matching Architect-approved sample.

Color: Specified in SCHEDULES Article of PART 3 of this section.

Bluestone, Granite Patching Mortar: JAHN M160 Hardstone Patching Mortar; vapor-permeable single-component mortar for restoration of granite,

bluestone, and other hard stone surfaces; mineral-based, containing no synthetic polymer bonding agents or additives.

Laboratory-engineered formulation for compatibility with existing hard stone substrates.

Color: Light gray granite.

Color: Light gray bluestone.

Color: Custom color matching Architect-approved sample.

Color: Specified in SCHEDULES Article of PART 3 of this section.

Water: Potable, containing no materials which would impair performance or appearance of grout materials.

Accessories: Supply accessories specified in manufacturer's instructions for project conditions.

MIXES

Mix mortar materials in accordance with manufacturer's instructions; use only mixing methods and equipment specified.

Add only the amount of water specified in manufacturer's instructions to mortar mixes; re-tempering partially-set mixes by the addition of water is not permitted.

Addition of bonding agents, plasticizers, curing compounds, or other materials not specified in manufacturer's instructions, is not permitted.

PART EXECUTION

EXAMINATION

Installer's Examination:

Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.

Transmit two copies of installer's report to Architect within 24 hours of receipt.

Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.

Beginning construction activities of this section indicates installer's acceptance of conditions.

PREPARATION

Clean surfaces to be treated free of any loose or deleterious material which could prevent adhesion or otherwise impair performance of cured mortars.

Use of bonding agents to prepare existing surfaces is not permitted.

INSTALLATION

Install products of this section in accordance with manufacturer's installation instructions.

Masonry Injection Adhesive:

Transverse cracks:

Drill a series of injection ports in center of crack; drill ports in downward direction.

Moisten interior of crack immediately before injection by flushing with clean water; if surface is allowed to dry out before mortar is injected, repeat moistening.

Seal cracks, between ports, with removable, non-staining clay or masonry masking tape for low- pressure applications; patch crack, between ports, with mortar of type recommended by manufacturer for high pressure applications.

Begin injections at lowest port, continuing injection until grout flows freely from next port above; seal off initial port and proceed with injection at ports above until crack is filled.

Lateral (delamination) cracks:

Drill a series of injection ports in a square-grid configuration on face of substrate; drill ports in downward direction.

Moisten interior of crack immediately before injection by flushing with clean water; if surface is allowed to dry out before mortar is injected, repeat moistening.

Begin injections at lower left port, continuing injection until grout flows freely from other ports; seal off initial port and proceed with injection at lower right port.

Seal off ports with removable, non-staining clay or masonry masking tape for low- pressure applications; seal off ports with mortar of type recommended by manufacturer for high pressure applications.

Order of injection is lower left-lower right-upper left-upper right; continue until crack is filled.

Remove plugs after forty-eight hours; patch ports and crack surface, if not previously patched, with mortar of type recommended by manufacturer, matching color and texture of existing masonry.

Masonry Injection Grout:

Transverse cracks:

Drill a series of injection ports in center of crack; drill ports in downward direction.

Moisten interior of crack immediately before injection by flushing with clean water; if surface is allowed to dry out before mortar is

injected, repeat moistening.

Seal cracks, between ports, with removable, non-staining clay or masonry masking tape for low- pressure applications; patch crack, between ports, with mortar of type recommended by manufacturer for high pressure applications.

Begin injections at lowest port, continuing injection until grout flows freely from next port above; seal off initial port and proceed with injection at ports above until crack is filled.

Lateral (delamination) cracks:

Drill a series of injection ports in a square-grid configuration on face of substrate; drill ports in downward direction.

Moisten interior of crack immediately before injection by flushing with clean water; if surface is allowed to dry out before mortar is injected, repeat moistening.

Begin injections at lower left port, continuing injection until grout flows freely from other ports; seal off initial port and proceed with injection at lower right port.

Seal off ports with removable, non-staining clay or masonry masking tape for low- pressure applications; seal off ports with mortar of type recommended by manufacturer for high pressure applications.

Order of injection is lower left-lower right-upper left-upper right; continue until crack is filled.

Remove plugs after forty-eight hours; patch ports and crack surface, if not previously patched, with mortar of type recommended by manufacturer, matching color and texture of existing masonry.

Masonry Void Injection Grout:

Transverse cracks:

Drill a series of injection ports 1/4 inch (6 mm) to 3/8 inch (9 mm) diameter at center of void; drill ports in downward direction.

Moisten interior of void immediately before injection by flushing with clean water; if surface is allowed to dry out before mortar is injected, repeat moistening.

Seal void, between ports, with removable, non-staining clay or masonry masking tape for low- pressure applications; patch crack, between ports, with mortar of type recommended by manufacturer for high pressure applications.

Begin injections at lowest port, continuing injection until grout flows freely from next port above; seal off initial port and proceed with injection at ports above until void is filled.

Lateral (delamination) cracks:

Drill a series of injection ports in a square-grid configuration on face of substrate; drill ports in downward direction.

Moisten interior of void immediately before injection by flushing with clean water; if surface is allowed to dry out before mortar is injected, repeat moistening.

Begin injections at lower left port, continuing injection until grout flows freely from other ports; seal off initial port and proceed with injection at lower right port.
Seal off ports with removable, non-staining clay or masonry masking tape for low- pressure applications; seal off ports with mortar of type recommended by manufacturer for high pressure applications.
Order of injection is lower left-lower right-upper left-upper right; continue until crack is filled.
Remove plugs after forty-eight hours; patch ports and void surface, if not previously patched, with mortar of type recommended by manufacturer, matching color and texture of existing masonry.

Stone Patching Mortar:

Remove dust, dirt, grease, laitance, and other coatings or foreign substance which might prevent proper adhesion of mortar.
Remove loose or deteriorated masonry from the patch area, plus an additional 1/4 inch (6 mm) of what appears to be sound material, to a minimum depth of 1/2 inch (13 mm) using manual or pneumatic cutting techniques; square-cut edges of void created, maintaining 90-degree angles.
Where indicated, use threaded stainless steel dowels, or other acceptable anchors, to anchor patches.
Complete surface preparation by washing surface with clean water, using natural-bristle brush.
Completely wet substrate immediately before applying mortar by flushing with clean water.
Apply mortar to glistening wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat flushing.
Build out mortar material out further than surface of original substrate; after mortar achieves initial set, scrape away excess mortar until desired profile is attained.
To ensure color uniformity, wait until material being removed is consistency of dry sand; for rougher masonry texture, wait longer before finishing.
Do not trowel or float surface excessively to achieve finish; this can alter texture, porosity, or color of mortar material.
Keep patches moist by water-misting several times a day for seventy-two hour period, or less in cool weather.
Where access to patches is not possible, cover patches temporarily with plastic sheeting; application of plastic sheeting does not alter requirements for normal curing techniques.

Anchor Setting Mortar:

Drill holes horizontal or angled in downward direction on vertical surfaces; leave walls in abraded, open-pore condition.
Clean holes free of dust, dirt, grease, oil, laitance, and loose material

which would impair performance of mortar using compressed, oil-free, air.

Clean anchors free of rust, then treat with coating recommended by manufacturer to prevent rusting; do not apply mortar until protective coating for anchors is completely dry.

Completely wet holes immediately before applying mortar by flushing with clean water.

Apply mortar to wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat wetting.

Pour or place mortar into drill hole approximately one-half full; insert anchor, twisting, turning, and tapping anchor to remove voids or air pockets.

Fill remainder of cavity with mortar; allow minimum two days before applying load to anchor.

Keep mortar moist by water-misting several times a day for seventy-two hour period.

Horizontal Concrete Patch:

Remove dust, dirt, grease, laitance and other coatings or foreign substance which might prevent proper adhesion of mortar.

Remove loose or deteriorated concrete from the patch area, plus an additional 1/4 inch (6 mm) of what appears to be sound material, to a minimum depth of 1/2 inch (13 mm) using manual or pneumatic cutting techniques, or mechanical abrasion techniques; square-cut edges of void created, maintaining 90-degree angles.

As directed by Architect, cut out reinforcing steel which is consumed beyond structural use, and install replacement reinforcing.

Mechanically abrade structurally sound corroded reinforcing steel to white metal finish, then treat with coating recommended by manufacturer to prevent rusting; do not apply mortar until protective coating for reinforcing steel is completely dry.

Complete surface preparation by washing surface with clean water, using natural-bristle brush.

Completely wet substrate immediately before applying mortar by flushing with clean water.

Apply mortar to wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat wetting.

Apply mortar material flush to surface, then finish with steel trowel, broom, or float finish, as directed by Architect.

Keep patches moist by water-misting several times a day for seventy-two hour period.

Where access to patches is not possible, cover patches temporarily with plastic sheeting; application of plastic sheeting does not alter requirements for normal curing techniques.

Vertical Concrete Patch:

Remove dust, dirt, grease, laitance and other coatings or foreign

substance which might prevent proper adhesion of mortar.
Remove loose or deteriorated concrete from the patch area, plus an additional 1/4 inch (6 mm) of what appears to be sound material, to a minimum depth of 1/2 inch (13 mm) using manual or pneumatic cutting techniques, or mechanical abrasion techniques; square-cut edges of void created, maintaining 90-degree angles.
As directed by Architect, cut out reinforcing steel which is consumed beyond structural use, and install replacement reinforcing.
Mechanically abrade structurally sound corroded reinforcing steel to white metal finish, then treat with coating recommended by manufacturer to prevent rusting; do not apply mortar until protective coating for reinforcing steel is completely dry.
Complete surface preparation by washing surface with clean water, using natural-bristle brush.
Completely wet substrate immediately before applying mortar by flushing with clean water.
Apply mortar to wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat wetting.
Build out mortar material out further than surface of original substrate; after mortar achieves initial set, scrape away excess mortar until desired profile is attained.
Keep patches moist by water-misting several times a day for seventy-two hour period.
Where access to patches is not possible, cover patches temporarily with plastic sheeting; application of plastic sheeting does not alter requirements for normal curing techniques.

Brick/Terra Cotta Patching Mortar:

Remove dust, dirt, grease, laitance and other coatings or foreign substance which might prevent proper adhesion of mortar.
Remove loose or deteriorated masonry from the patch area, plus an additional 1/4 inch (6 mm) of what appears to be sound material, to a minimum depth of 1/2 inch (13 mm) using manual or pneumatic cutting techniques; square-cut edges of void created, maintaining 90-degree angles.
Where indicated, use threaded stainless steel dowels, or other acceptable anchors, to anchor patches.
Complete surface preparation by washing surface with clean water, using natural-bristle brush.
Completely wet substrate immediately before applying mortar by flushing with clean water.
Apply mortar to wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat wetting.
Build out mortar material out further than surface of original substrate; after mortar achieves initial set, scrape away excess mortar until desired profile is attained.
Do not trowel or float surface excessively to achieve finish; this can

alter texture, porosity, or color of mortar material.

Keep patches moist by water-misting several times a day for seventy-two hour period.

Where access to patches is not possible, cover patches temporarily with plastic sheeting; application of plastic sheeting does not alter requirements for normal curing techniques.

Masonry Pointing Mortar:

Remove dust, dirt, grease, laitance and other coatings or foreign substance which might prevent proper adhesion of mortar.

Rake out deteriorated mortar to depth required for minimum 1/2 inch (13 mm) depth mortar joint, allowing for concave joints if project conditions indicate; remove loose mortar particles.

Complete surface preparation by washing surface with clean water, using natural-bristle brush.

Completely wet substrate immediately before applying mortar by flushing with clean water.

Apply mortar to wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat wetting.

Tool mortar joints, using pointing tools and techniques required to match adjacent existing mortar joints.

Keep joints moist by water-misting several times a day for seventy-two hour period.

Where access to joints is not possible, cover joints temporarily with plastic sheeting; application of plastic sheeting does not alter requirements for normal curing techniques.

Marble Patching Mortar:

Remove dust, dirt, grease, laitance and other coatings or foreign substance which might prevent proper adhesion of mortar.

Remove loose or deteriorated masonry from the patch area, plus an additional 1/4 inch (6 mm) of what appears to be sound material, to a minimum depth of 1/2 inch (13 mm) using manual or pneumatic cutting techniques; square-cut edges of void created, maintaining 90-degree angles.

Where recommended by manufacturer's instructions, use threaded stainless steel dowels, or other acceptable anchors, to anchor patches.

Complete surface preparation by washing surface with clean water, using natural-bristle brush.

Completely wet substrate immediately before applying mortar by flushing with clean water.

Apply mortar to wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat wetting.

Build out mortar material out further than surface of original substrate; after mortar achieves initial set, scrape away excess mortar until desired profile is attained.

Do not trowel or float surface excessively to achieve finish; this can

alter texture, porosity, or color of mortar material.

Keep patches moist by water-misting several times a day for seventy-two hour period.

Where access to patches is not possible, cover patches temporarily with plastic sheeting; application of plastic sheeting does not alter requirements for normal curing techniques.

Casting Mortar:

Clean and prepare surface of original piece to cast mold; perform mold-making should be performed in accordance with mold manufacturer's instructions.

Immediately prior to packing mold, apply non-staining mold release agent recommended by mold manufacturer to surfaces; include undercut areas.

Clean mold of foreign materials which could cause imperfections; coat mold with non-staining release agent recommended by mold manufacturer.

Scoop 1 to 2 inches (25 to 50 mm) of mixed mortar into mold, tamping it into place by hand, ensuring that intricate detailings are completely filled, particularly in undercut areas; compact mortar by tamping with wood rams and rubber mallets as build-up of material proceeds, repeating process until mold is slightly overfilled.

Once filled and compacted, screed off excess mortar flush with top of mold; cover casting with plastic sheeting for approximately twenty-four hours.

After initial twenty-four hour cure, uncover mold and pour clean potable water into casting until point of rejection, then recover with plastic; remove casting from mold after an additional twenty-four hours, keeping casting damp for several additional days to further increase final strength of casting.

Bluestone and Granite Patching Mortar:

Remove dust, dirt, grease, laitance and other coatings or foreign substance which might prevent proper adhesion of mortar.

Remove loose or deteriorated masonry from the patch area, plus an additional 1/4 inch (6 mm) of what appears to be sound material, to a minimum depth of 1/2 inch (13 mm) using manual or pneumatic cutting techniques; square-cut edges of void created, maintaining 90-degree angles.

Where indicated, use threaded stainless steel dowels, or other acceptable anchors, to anchor patches.

Complete surface preparation by washing surface with clean water, using natural-bristle brush.

Wet substrate immediately before applying mortar by flushing with clean water.

Apply mortar to wet surface, with no pooling water; if surface is allowed to dry out before mortar is applied, repeat wetting.

Build out mortar material out further than surface of original substrate; after mortar achieves initial set, scrape away excess mortar until desired profile is attained.

Do not trowel or float surface excessively to achieve finish; this can alter texture, porosity, or color of mortar material.

Keep patches moist by water-misting several times a day for seventy-two hour period.

Where access to patches is not possible, cover patches temporarily with plastic sheeting; application of plastic sheeting does not alter requirements for normal curing techniques.

CLEANING

Clean up overflow and excess mortar as construction activities progress; do not allow mortars to accumulate and dry on substrates.

PROTECTION OF INSTALLED PRODUCTS

Protect installed products of this section from extreme heat, freezing, high winds, direct sunlight, or rain until materials are completely cured in accordance with manufacturer's instructions.

Protect installed products of this section from damage by subsequent construction activities until Substantial Completion.

Repair damage in accordance with manufacturer's recommendations; replace units which cannot be repaired to Architect's acceptance.

SCHEDULES

Stone Patching Mortars:

Type 1: Patch existing precast concrete retaining wall.

Type 2: Patch existing limestone surfaces at Coach House; match color of Architect-approved samples.

END OF SECTION