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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate product model numbers, styles and types are used in Specifier Notes and in the specification text Article titled "Acceptable Material." Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies preblended gray mortar mixes, colored mortar mixes and integral water repellent mortar mixes, as manufactured by SPEC MIX, Inc. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

**SECTION 04 05 13
MASONRY MORTARING
(STANDARD, COLORED AND INTEGRAL WATER REPELLENT MORTARS)**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: [Preblended mortar mixes] [Preblended colored mortar mixes] [and] [Integral water repellent mortar mixes].

Specifier Note: Revise paragraph below to suit project requirements. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the paragraph below. Add section numbers and titles per CSI MasterFormat and specifier's practice. In the absence of related sections, delete paragraph below.

- B. Related Sections:
1. Division 04 Section: Masonry Units.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 01 References Section may establish the edition date of standards. This article does not require compliance with standard. It is a listing of all references used in this section.

1.02 REFERENCES

- A. ASTM International:

1. ASTM C91 Standard Specification for Masonry Cement.
 2. ASTM C144 Standard Specification for Aggregate for Masonry Mortar.
 3. ASTM C150 Standard Specification for Portland Cement.
 4. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes.
 5. ASTM C270 Standard Specification for Mortar for Unit Masonry.
 6. ASTM C476 Standard Specification for Grout for Masonry.
 7. ASTM C780 Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
 8. ASTM C979 Standard Specification for Pigments for Integrally Colored Concrete.
 9. ASTM C1329 Standard Specification for Mortar Cement.
 10. ASTM C1384 Standard Specification for Admixtures for Masonry Mortars.
 11. ASTM E514 Standard Test Method for Water Penetration and Leakage Through Masonry.
- B. International Masonry Industry All-Weather Council (IMIAC):
1. Recommended Practices and Guide Specification for Cold Weather Masonry Construction.
 2. Recommended Practices and Guide Specification for Hot Weather Masonry Construction.
- C. National Concrete Masonry Association (NCMA):
1. NCMA TEK Bulletin #8-2A Removal of Stains from Concrete Masonry.
 2. NCMA TEK Bulletin #8-3A Control and Removal of Efflorescence.

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.

1.03 SYSTEM DESCRIPTION

Specifier Note: Test method ASTM C780 is acceptable for pre-construction and construction evaluation of mortars for plain and reinforced unit masonry. There is no ASTM method for determining the conformance or non-conformance of a field prepared mortar to the property specification of ASTM C270. Compressive strength values resulting from field-tested mortars do not represent the compressive strength of mortar tested in the laboratory or that of the mortar in the wall. Physical properties of field sample mortars should not be used to determine compliance with ASTM C270 intended as criteria to determine the acceptance or rejection of the mortar.

- A. Design and Performance Requirements: Provide mortar mixes selected, manufactured, mixed and installed to comply with the following:
1. ASTM C270.
 2. ASTM C780.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 01 Submittal Procedures Section.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures Section.
- B. Product Data: Submit manufacturer's product data.
- C. Samples: Submit selection and verification samples of [colored] mortar.
- D. Quality Assurance/Control Submittals: Submit the following:

1. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

Specifier Note: Article below should include statements of prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 01 Quality Assurance Section.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.
- B. Field Samples: [Specify requirement for field samples].
- C. Mock-Ups:
 1. Subject to acceptance by owner, mock-up may be retained as part of finish work.
 2. If mock-up is not retained, remove and properly dispose of mock-up.

Specifier Note: Article below should include specific protection and environmental conditions required during storage. Coordinate article below with Division 01 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. Delivery and Acceptance Requirements:
 1. Deliver material in accordance with Section [01 61 00 - Common Product Requirements] and in accordance with manufacturer's written instructions.
 2. Deliver materials in manufacturer's original packaging, with identification labels intact and in sizes to suit project.
- B. Storage and Handling Requirements:
 1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- C. Packaging Waste Management:

Specifier Note: The disposal of packaging waste into landfill sites demonstrates an inefficient use of natural resources and consumes valuable landfill space. Specifying appropriate packaging and construction waste management and disposal procedures may contribute to points required for USGBC's LEED® construction project certification.

Specifier Note: Include the following Subparagraphs to specify information that will provide direction to the Contractor for the disposal of construction waste materials using environmentally responsible methodology other than landfill resources.

1. Separate waste materials for [reuse] [and] [recycling] in accordance with [Section 01 74 19 - Construction Waste Management and Disposal].

Specifier Note: LEED certification includes credits for the diversion of construction waste from landfill. Diversion can be tracked by either weight or volume, but must be consistent for all materials. Manufacturer may reclaim packaging and delivery materials for recycling.

2. Remove packaging materials from site and dispose of at appropriate recycling facilities.
3. Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate onsite bins] for recycling.
4. Fold metal and plastic banding, flatten and place in designated area for recycling.

Specifier Note: Add additional Subparagraphs to include pallets, crates, padding and other packing materials that are typically associated with the specified products.

5. Remove:
 - a. Pallets from site [and return to supplier or manufacturer].

b. []].

1.07 1PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not build or apply mortar products on frozen substrates.
 - a. Remove and replace unit masonry damaged by frost or by freezing conditions.
2. Take special care when constructing in extremely hot or cold weather. Comply with the following standards:
 - a. IMIAC Recommended Practices and Guide Specification for Cold Weather Masonry Construction.
 - b. IMIAC Recommended Practices and Guide Specification for Hot Weather Masonry Construction.

PART 2 PRODUCTS

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions, as applicable. Use of such phrases as “or equal,” “or approved equal” or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining “or equal” products.

2.01 PREBLENDED MORTAR MIXES, COLORED MORTAR MIXES AND INTEGRAL WATER REPELLENT MORTAR MIXES

Specifier Note: Include in the following Paragraph manufacturer’s name, address, phone number, fax number, e-mail address and website URL.

A. Manufacturer: SPEC MIX, Inc.

1. Contact: 1230 Eagan Industrial Boulevard, Suite 160, Eagan, MN 55121; Telephone: (888) 773-2649, (651) 994-7120; Fax: (888) 329-7732; E-mail: info@specmix.com; website: www.specmix.com.

B. Proprietary Products/Systems: Dry, preblended mortar mixes, including the following:

1. SPEC MIX Preblended Mortar Mix:
 - a. Material: Preblended factory mix of Portland cement and hydrated lime or masonry cement or mortar cement and sand aggregate mixtures.
 - b. Mortar Type: Property Mixture [Type M] [Type S] [Type N] [Type O].
 - c. Aggregate Type: [Coarse] [Fine].
 - d. Material Standard for Aggregate: Comply with ASTM C144.
 - e. Material Standard for Portland Cement: Comply with ASTM C150.
 - f. Material Standard for Hydrated Lime: Comply with ASTM C207.
 - g. Material Standard for Masonry Cement: Comply with ASTM C91.
 - h. Material Standard for Mortar: Comply with ASTM C270.
 - i. Material Standard for Masonry Grout: Comply with ASTM C476.
 - j. Material Standard for Mortar Cement: Comply with ASTM C1329.
2. SPEC MIX Preblended Colored Mortar Mix:
 - a. Material: Preblended factory mix of Portland cement and hydrated lime, masonry cement or mortar cement, sand aggregate and color pigments.
 - b. Mortar Type: Property Mixture [Type M] [Type S] [Type N] [Type O].
 - c. Aggregate Type: [Coarse] [Fine].
 - d. Material Standard for Aggregate: Comply with ASTM C144.
 - e. Material Standard for Portland Cement: Comply with ASTM C150.
 - f. Material Standard for Hydrated Lime: Comply with ASTM C207.
 - g. Material Standard for Masonry Cement: Comply with ASTM C91.

- h. Material Standard for Mortar: Comply with ASTM C270.
- i. Material Standard for Masonry Grout: Comply with ASTM C476.
- j. Material Standard for Pigments: Comply with ASTM C979.
- k. Material Standard for Mortar Cement: Comply with ASTM C1329.

Specifier Note: Manufacturer offers a selection of mortar colors by national pigment suppliers. Contact manufacturer for information on locally available SPEC MIX color pigments.

- l. Mortar Color: [_____].

Specifier Note: Manufacturer uses a proprietary, dry integral water repellent admixture to mitigate water penetration through the mortar joint. The admixture can be used in SPEC MIX colored mortar mixtures and whenever IWR treated block is used.

- 3. SPEC MIX IWR Mortar:
 - a. Material Description: Dry preblended mortar mixture incorporating dry SPEC MIX Integral Water-Repellent Mortar Admixture.
 - b. Water Penetration of Masonry, ASTM E514: No dampness reported.
 - c. Mortar Type: Property Mixture [Type M] [Type S] [Type N] [Type O].
 - d. Compressive Strength of Masonry Mortar, ASTM C1384: Greater than 95% of control mortar, containing no admixtures.

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 01 Project Requirements (Product Substitutions Procedures) Section.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

Specifier Note: List characteristics of assembly, components, products or materials involved that must relate to match existing work such as matching style, material or finish, surfaces, operation and dimensions. Specify compatibility between new and existing materials.

2.03 EXISTING PRODUCTS

- A. [Specify requirements to match existing work].

PART 3 EXECUTION

Specifier Note: Article below is an addition to the CSI SectionFormat and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's product data, including product technical bulletins, SPEC-DATA product sheets and product catalogs.
- B. SPEC MIX Integral Water-Repellent Mortar:
 - 1. Installer shall use only concrete masonry units containing compatible integral water repellent CMU admixture for exterior wall construction.
 - 2. Installer shall use only mortar containing integral water repellent mortar admixture at the manufacturer's recommended addition rate and mixed according to the manufacturer's recommended instructions.
- C. SPEC MIX Preblended [Color] Mortar Mix:
 - 1. Fill head and bed joints for full thickness of the face shells to provide the greatest resistance to water penetration.

2. Tooling:
 - a. Tool the mortar joints concave or to a V-profile to provide the greatest resistance to water penetration. Do not use raked, flush, extruded, struck, beaded, weathered or other joint profiles due to their reduced water resistance.
 - b. Tool the mortar joints when they are thumbprint hard to provide the greatest resistance to water penetration and to help minimize hairline cracks between the mortar and the CMU.
3. Cover the top of unfinished masonry work to protect it from the weather and to prevent accumulation of water in the cores of the CMU.
4. Cleaning:
 - a. Remove primary efflorescence from masonry walls exposed in the finished work in accordance with manufacturer's recommendations and NCMA TEK Bulletin #8-3A.
 - b. Remove dirt or stains from masonry walls exposed in the finished work in accordance with the manufacturer's recommendations and NCMA TEK Bulletin #8-2A.
 - c. Promptly remove excess wet mortar containing integral water repellent mortar admixture from the face of the masonry as work progresses. Do not use strong acids, overaggressive sandblasting or high pressure cleaning methods.
 - d. Comply with applicable environmental laws and restrictions.

Specifier Note: Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

3.02 EXAMINATION

- A. Site Verification of Conditions:
 1. Verify that site conditions are acceptable for use of mortar mixes.
 2. Do not proceed with use of mortar mixes until unacceptable conditions are corrected.

Specifier Note: Coordinate article below with manufacturer's recommended construction requirements.

3.03 CONSTRUCTION

- A. Mix mortar using a mechanical mortar mixer to ensure homogeneity and workability. Hand mixing of the mortar is permitted only with written approval of the Architect/Specifier who will outline hand-mixing procedures.
 1. Observe mixing times of 4–5 minutes, consistent from batch to batch.
- B. Use clean, potable water; add the maximum amount consistent with optimum workability.
 1. Maintain a uniform water/cement ratio.
 2. At the end of the day, thoroughly rinse the mixer to avoid contamination of future mortar batches.

Specifier Note: Retempering mortar will alter the water to cement ratio, which may affect compressive strength and color consistency.

- C. Retemper mortar by adding additional mixing water only to replace water lost due to evaporation.
 1. Do not retemper colored mortars.
- D. Discard mortar 2.5 hours after initial mixing.
- E. Tool mortar joints when surface is thumbprint hard.
 1. Keep tooling time consistent.
 2. Do not strike joint too early or too late in order to maintain color consistency.
- F. Cure mortar a minimum of 28 days.
- G. For masonry core fill grout applications, comply with the requirements of ASTM C476.

Specifier Note: Specify how existing work is to be repaired, restored and cleaned.

3.04 REPAIR/RESTORATION

- A. [Specify requirements for cleaning, repair or restoration of existing mortar or masonry work].

Specifier Note: Specify the final actions required to clean installed equipment or other completed work to properly function or perform. Coordinate article below with Division 01 Execution Requirements (Cleaning) Section.

3.05 CLEANING

- A. Cleaning Method:
1. Clean masonry with the least aggressive cleaning solution and technique possible.
 2. Comply with cleaning procedure and recommendations of the manufacturers of both the cleaning solution and the unit masonry.
 3. Utilize the same cleaning procedure on the sample panel at selection and during construction.

Specifier Note: Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 01 Execution Requirements Section.

3.06 PROTECTION

- A. Protect installed work from damage due to subsequent construction activity on the site.

END OF SECTION