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**SECTION 04 05 16
MASONRY GROUTING**

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PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Masonry Grout.

1.2 RELATED SECTIONS

- A. Section 04 01 20.91 - Unit Masonry Restoration.
- B. Section 04 20 00 - Unit Masonry
- C. Section 04 21 00 - Clay Unit Masonry
- D. Section 04 22 00 - Concrete Unit Masonry
- E. Section 04 43 00 - Stone Masonry

1.3 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 530.1-02 - Specification for Masonry Structures.
- B. ASTM International (ASTM):
 - 1. ASTM C 33 - Standard Specification for Concrete Aggregates.
 - 2. ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
 - 3. ASTM C 150 - Standard Specification for Portland Cement.
 - 4. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - 5. ASTM C 404 - Standard Specification for Aggregates for Masonry Grout.
 - 6. ASTM C 476 - Standard Specification for Grout for Masonry.
 - 7. ASTM C 595 - Standard Specification for Blended Hydraulic Cements.
 - 8. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
 - 9. ASTM C 989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
 - 10. ASTM C 1019 - Standard Test Method for Sampling and Testing Grout.
 - 11. ASTM C 1093 - Standard Practice for Accreditation of Testing Agencies for Unit Masonry.
 - 12. ASTM C 1157 - Standard Performance Specification for Hydraulic Cement.
 - 13. ASTM C 1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
 - 14. ASTM C 1384 - Standard Specification for Admixtures for Masonry Mortars.
 - 15. ASTM C 1611 - Standard Test Method for Slump Flow of Self-Consolidating Concrete.



SPEC MIX, Inc. – Guide Specification

16. ASTM E 329 - Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction.

- C. International Masonry Industry All-Weather Council (IMIAC):
 - 1. IMIAC - International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
 - 2. IMIAC - International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

1.4 SYSTEM DESCRIPTION

- A. Design and Performance Requirements: Provide grout mixes that have been selected, manufactured, mixed and installed to comply with ASTM C 476.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data.
- C. Quality Assurance/Control Submittals:
 - 1. Submit manufacturer's certificates that products meet or exceed specified requirements.
 - 2. Submit test results prepared by a qualified independent testing laboratory.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm specializing in manufacture of masonry installation materials, including mortars, with minimum 10 years experience.
- B. Quality Assurance/Control Testing: Test Reports prepared by a qualified independent laboratory indicating compliance with the following performance requirements:
 - 1. Testing Standard: Grout samples tested in accordance with ASTM C 1019.
- C. Pre-Installation Meeting: At least three weeks prior to commencing masonry work conduct a meeting at the project site to discuss contract requirements and job conditions; require the attendance of masonry contractor, and installers of related materials; notify Architect in advance of meeting.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection: Cementitious materials shall be stored off the ground, under cover and shall be kept dry.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
 - 1. Cold Weather Requirements: In accordance with "Recommended Practices and Guide Specifications for Cold Weather Masonry Construction" by IMIAC.
 - 2. Hot Weather Requirements: "Recommended Practices and Guide Specifications for Hot Weather Masonry Construction" by IMIAC.
- B. Do not pour grout into frozen masonry units.
 - 1. Remove and replace unit masonry damaged by frost or by freezing conditions.
- C. Vent temporary heaters to exterior to prevent damage to masonry work from carbon dioxide build-up.



PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: SPEC MIX®, Inc., which is located at: 1230 Eagan Industrial Road, Suite 160, Eagan, MN 55121; Toll Free Tel: 888-SPEC-MIX (773-2649); Tel: 651-994-7120; Email: [request info \(info@specmix.com\)](mailto:requestinfo@specmix.com); Web: www.specmix.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 – Substitution Procedures.
- C. Obtain products from a single manufacturer.

2.2 GROUT

- A. **Core Fill - Fine Grout:** SPEC MIX Fine Grout is a dry, pre-blended mix containing Portland cement, pozzolans and fine aggregate and is designed to fill masonry voids as specified by ACI 530 table 7.
 1. Applicable Standards: ASTM C 143, ASTM C 150, ASTM C 260, ASTM C 404, ASTM C 476, ASTM C 595, ASTM C 618, ASTM C 989, ASTM C 1019, ASTM C 1093, ASTM C 1157, ASTM C 1314, ACI 530.1.
- B. **Core Fill - Coarse Grout:** SPEC MIX Coarse Grout is a dry, pre-blended mix containing Portland cement, pozzolans and coarse aggregate and is designed to fill masonry voids as specified by ACI 530 table 7.
 1. Applicable Standards: ASTM C 143, ASTM C 150, ASTM C 260, ASTM C 404, ASTM C 476, ASTM C 595, ASTM C 618, ASTM C 989, ASTM C 1019, ASTM C 1093, ASTM C 1157, ASTM C 1314, ACI 530.1.
- C. **Core Fill – Fine Self Consolidating Grout (SCG):** SPEC MIX Self Consolidating Grout is a dry, pre-blended grout containing Portland cement, pozzolans, performance admixtures and fine aggregate and is specifically designed to be highly fluid without segregation of the constituents. SPEC MIX SCG fills cores and bond beams completely, even around heavy steel reinforcement, without the need for mechanical consolidation and re-consolidation.
 1. Applicable Standards: ASTM C 33, ASTM C 143, ASTM C 150, ASTM C 260, ASTM C 404, ASTM C 476, ASTM C 595, ASTM C 618, ASTM C 989, ASTM C 1019, ASTM C 1093, ASTM C 1157, ASTM C 1314, ASTM C 1611, ACI 530.1-02.
- D. **Core Fill – Coarse Self Consolidating Grout (SCG):** SPEC MIX Self Consolidating Grout is a dry, pre-blended grout containing Portland cement, pozzolans, performance admixtures and coarse and fine aggregate and is specifically designed to be highly fluid without segregation of the constituents. SPEC MIX SCG fills cores and bond beams completely, even around heavy steel reinforcement, without the need for mechanical consolidation and re-consolidation.
 1. Applicable Standards: ASTM C 33, ASTM C 143, ASTM C 150, ASTM C 260, ASTM C 404, ASTM C 476, ASTM C 595, ASTM C 618, ASTM C 989, ASTM C 1019, ASTM C 1093, ASTM C 1157, ASTM C 1314, ASTM C 1611, ACI 530.1-02.

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2.3 ACCESSORY MATERIALS

- A. Water: Clean and free from deleterious acids, alkalis, and organic matter.
- B. Admixtures: Complying with ASTM C 1384.



PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive masonry work and conditions under which masonry will be installed.
- B. Do not proceed with masonry work until surfaces and conditions comply with requirements indicated in referenced masonry installation standard and manufacturer's printed instructions.

3.2 INSTALLATION

- A. Mixing: As recommended by manufacturer.
- B. Re-tempering:
 - 1. Re-temper grout by adding additional mixing water only to replace water lost due to evaporation.
 - 2. Discard standard grout 1.5 hours after initial mixing.
 - 3. Discard self-consolidating grout 30 minutes after initial mixing.
- C. Installation of grout shall be as specified under the following Sections and in accordance with ACI/ASCE-530.1:
 - 1. Section 04 20 00 - Unit Masonry
 - 2. Section 04 21 00 - Clay Unit Masonry
 - 3. Section 04 22 00 - Concrete Unit Masonry
 - 4. Section 04 43 00 - Stone Masonry
- D. Protection: Cover the top of unfinished masonry work to protect it from the weather and to prevent accumulation of water in the cores of the masonry units.

3.3 PROTECTION

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

3.4 FIELD QUALITY CONTROL

- A. Tests:
 - 1. Frequency: As determined by the Architect based upon total time for construction of masonry with not less than two tests per each level of masonry construction, foundation to roof or floors.
 - 2. Testing Laboratory: Independent of the Owner, Architect and Contractor; the testing laboratory, in addition to meeting requirements of ASTM E-329, and must be an approved laboratory competent to perform cement physical testing. All tests must be performed in strict accordance with the applicable ASTM standard.
 - 3. Distribution of Results of Tests: Within 24 hours of results of tests, copies of the results shall be submitted to the Architect, Contractor, masonry contractor, and the grout supplier if applicable.
- B. Grout Testing:
 - 1. Testing per ASTM C 1019.
 - 2. Testing per ASTM C 1611.
 - 3. Three test specimens shall constitute one sample. A strength test shall be the average of the strengths of the specimen tested at the age specified.
 - 4. Specimens shall be tested at 7 and 28 days.
 - 5. The compression strength will be considered satisfactory if the average of three consecutive tests of the grout is equal to or greater than the specified strength and no individual strength test falls below the specified strength by more than 500 psi.



END OF SECTION