**SECTION 04 05 13**

**MASONRY MORTAR AND GROUT**

**PART 1 GENERAL**

1. SECTION INCLUDES
	1. Mortar for Masonry
	2. Grout for Unit Masonry
2. REFERENCES
	1. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures
	2. ACI 530.1/ASCE 6/TMS 602 ‑ Specifications for Masonry Structures
	3. ASTM C91/C91M ‑ Standard Specification for Masonry Cement
	4. ASTM C94/C94M‑ Standard Specification for Ready-Mixed Concrete
	5. ASTM C144 ‑ Standard Specification for Aggregate for Masonry Mortar
	6. ASTM C150/C150M ‑ Standard Specification for Portland Cement
	7. ASTM C207 ‑ Standard Specification for Hydrated Lime for Masonry Purposes
	8. ASTM C270 ‑ Standard Specification for Mortar for Unit Masonry
	9. ASTM C404 ‑ Standard Specification for Aggregates for Masonry Grout
	10. ASTM C476 ‑ Standard Specification for Grout for Masonry
	11. ASTM C595/C595M ‑ Standard Specification for Blended Hydraulic Cement
	12. ASTM C780 – Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
	13. ASTM C1019 – Standard Test Method of Sampling and Testing Grout
	14. FBC - Florida Building Code
3. SUBMITTALS
	1. Submit mix design for mortar indicating whether to use the proportion or the property specification of ASTM C270.
	2. Submit mix design for grout indication conformance of grout to requirements of ASTM C476.
	3. Submit test reports indicating conformance of mortar materials to property specifications of ASTM C270.
	4. Submit test reports of pre-construction tests of mortar for consistency, mortar aggregate ratio, water content, air content, compressive strength, and splitting tensile strength in conformance with ASTM C780.
	5. Submit test reports of grout tests in conformance to ASTM C1019.
	6. Submit manufacturer's certificate for products indicating conformance with specified requirements.
	7. Submit two samples representative of mortar color.
4. DELIVERY, STORAGE, AND HANDLING
	1. Deliver and store packaged materials in original unopened containers and store in dry weather-tight enclosures.
	2. Stockpile and handle aggregates to prevent segregation and contamination.
	3. Maintain sand for volume proportioning of mortar and grout in a damp loose condition.
5. ENVIRONMENTAL REQUIREMENTS
	1. Follow requirements of ACI530.1/ASCE6/TMS 602 for cold and hot weather construction.

**PART 2 PRODUCTS**

1. MORTAR MATERIALS
	1. Cementitious Materials:
		1. Masonry Cement: ASTM C91/C91M, Type M or S, gray color
		2. Portland Cement: ASTM C150/C150M, Type I, gray color
		3. Hydrated Lime: ASTM C207, Type S
	2. Sand: ASTM C144
	3. Water: Provide water suitable for drinking, clean, and free of harmful amounts of acid, alkalies, salts, or organic materials.
	4. Admixtures:
		1. When required use only non-chloride based accelerators as approved by specifier.
		2. Do not add antifreeze substances to the mortar.
	5. Pigments: When required used mineral oxide pigments not to exceed 5% of the weight of masonry cement or 10% of the weight of Portland Cement in the mortar.
2. GROUT MATERIALS
	1. Portland Cement: ASTM C150/C150M, Type I
	2. Hydrated Lime: ASTM C207, Type S
	3. Aggregates: ASTM C404
	4. Water: Provide water suitable for drinking, clean, and free of harmful amounts of acid, alkalis, salts, or organic materials.
3. MORTAR MIXES
	1. Mortar: Provide ASTM C270, type ‘M’ or type ‘S’ in conformance with proportion specifications.
4. GROUT MIXES
	1. Grout: ASTM C476, coarse grout meeting proportion requirements
5. MORTAR MIXING
	1. Measure sand by volume or equivalent weight; do not measure by shovel.
	2. In clean mortar mixer, mix ingredients for 3 to 5 minutes with maximum amount of water to produce proper workability.
	3. Re-temper mortar as needed within 2½-hours after initial mixing.
	4. Discard unused mortar 2½-hours after initial mixing.
6. GROUT MIXING
	1. Control batching procedure to ensure proper volume proportions of grout materials and achieve grout slump between 8" and 11".
	2. Mix grout in accordance with ASTM C94.
	3. Measure grout materials mixed at job site by volume and mix all ingredients in mechanical mixer for minimum of five minutes.
7. MIX TESTS
	1. Testing of Mortar: In accordance with ASTM C270
	2. Testing of Grout: In accordance with ASTM C1019

**PART 3 EXECUTION**

1. INSTALLATION
	1. Install mortar and grout in accordance with ACI 530.1/ASCE 6/TMS 602.
2. FIELD QUALITY CONTROL
	1. Architect, Owner, or Building Department may request field inspections per Section 01 40 00 1.7 Quality Control.
	2. Test Mortar in accordance with ASTM C780 for consistency, mortar aggregate ratio, water content, air content, compressive strength, and splitting tensile strength.
	3. Test Grout in accordance with ASTM C1019

END OF SECTION