tures are commonly used in high-lift grouting projects, as are certain other types of admixtures.

ASTM C1142, Standard Specification for Ready-Mixed Mortar for Unit Masonry. This standard covers four types of ready-mixed masonry mortar—RM, RS, RN, and RO. These are the equivalent of the four basic mortar types covered in ASTM C270, except that they are mixed at an off-site batching plant and delivered to the project ready to use. This standard does not include specific recommendations for use of the ready-mixed mortar types, but the recommendations in the appendix of ASTM C270 apply to these ready-mixed mortars as well (see Chapter 6). Standards for cementitious materials and aggregates are referenced in ASTM C1142 and need not be cited separately by the specifier.

17.5.4 Standards for Masonry Accessories

ASTM A36, Standard Specification for Structural Steel. This standard covers the type of steel used for angle lintels and shelf angles in masonry construction. It also applies to heavy bent bar or strap anchors that are often used to structurally connect intersecting masonry walls. Requirements for shop coating or for galvanized corrosion protection should be specified separately for this as well as any other metal accessory used in masonry.

ASTM A82, Standard Specification for Cold Drawn Steel Wire for Concrete Reinforcement. This standard covers steel wire that is used in prefabricated joint reinforcement and some types of masonry anchors and ties. It includes strength requirements and permissible variations in wire size, but does not include any options which the specifier must designate in the project documents.

ASTM A951, Joint Reinforcement for Masonry. This standard covers material properties, fabrication, test methods, and tolerances for prefabricated wire joint reinforcement for masonry. The specifier must designate corrosion protection as Brite Basic, Mill Galvanized, Class I Mill Galvanized (minimum 0.40 oz zinc per sq ft of surface area), Class III Mill Galvanized (minimum 0.80 oz zinc per sq ft of surface area), or Hot-Dipped Galvanized (minimum 1.50 oz zinc per sq ft of surface area). The hot-dip galvanizing is the same as that required for joint reinforcement under ASTM A153 as listed below and is required by code for joint reinforcement used in exterior walls.

ASTM A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron or Steel Hardware. This standard covers hot-dip galvanized coatings that are required to provide corrosion resistance in exterior wall applications for masonry accessories such as steel joint reinforcement, anchors, and ties. Minimum coating weight is given in four classes based on the size and type of item being coated. Masonry accessories of various sizes are covered under Class B.

ASTM A167, Standard Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip. This standard covers stainless steel of the type that is used for masonry anchors, ties, and flashing. There are more than two dozen types of stainless steel included in the

standard, varying according to chemical and mineral composition. Type 304 is the type most commonly used in masonry construction. Type 316 is also sometimes used in masonry.

ASTM A366, Standard Specification for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality. This standard covers sheet steel of the type used for sheet metal anchors and ties used in masonry. It also covers the type of sheet metal used in masonry veneer anchors that are a combination of metal plates and wire rods.

ASTM A615, Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. This standard covers deformed steel reinforcing bars of the type most commonly used in reinforced concrete and reinforced masonry construction. Although there are other types that are acceptable (such as rail steel and axle steel), ASTM A615 is most prevalent in the industry. Even in unreinforced masonry projects, there may be some isolated uses of reinforcing steel such as in lintels over window and door openings.

17.5.5 Standards for Laboratory and Field Testing

ASTM C780, Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry. ASTM C780 covers methods for sampling and testing mortar for its plastic and hardened properties either before or during construction. If construction phase testing of mortar will be required, there must be some basis for comparison of the results of such tests. The compressive strengths and other requirements listed under the property specification of ASTM C270 or C1142 cannot be used for comparison because the test methods are different. The laboratory test methods used in ASTM C270 mix mortar samples with a relatively low water-cement ratio. Field-mixed mortars, however, use much higher water-cement ratios in order to overcome the initial absorption of the masonry units. When compared with one another, the field-mixed mortars would appear to be much weaker than the C270 test results. To provide an "apples-to-apples" comparison, the preconstruction design mix must also be tested with a high water-cement ratio to simulate that which will actually be prepared during construction. Using ASTM C780 to obtain a preconstruction benchmark for the mortar provides a basis for acceptance or rejection of field-sampled mortars during construction.

ASTM C1019, Standard Test Method for Sampling and Testing Grout. This standard covers both field and laboratory sampling for compressive strength testing of masonry grout. This standard should be referenced in the project specifications for loadbearing masonry construction if the compressive strength of the masonry construction is to be verified by either the unit strength method or prism test method.

ASTM C1314, Standard Test Method for Constructing and Testing Masonry Prisms Used to Determine Compliance with Specified Compressive Strength of Masonry. In structural masony projects, the engineer must indicate on the drawings the required compressive strength of masonry (f'_m) on which the design is based. The contractor must verify to the engineer that the construction will achieve this minimum compressive