Guide for Submittal of Concrete Proportions

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The mass of an object is defined as the amount of matter that is present. Mass is independent of any other property; weight is the force arising from particular gravitational field or other acceleration acting on a mass. In the common measurement system, this creates no confusion. In the SI system, mass is expressed in grams and weight in Newtons. A mass of 1 kg exerts a weight of 9.81 N. It is correct, therefore, to use the term “mass” when determining how much material is being loaded into a mechanical device, printed, written, or oral, or recording for sound or visual reproduction by any means, including the making of copies by any photo process, or by electronic or mechanical device, printed, written, or oral, or recording for sound or visual reproduction or for use in any knowledge or retrieval system or device, unless permission in writing is obtained from the copyright proprietors.

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1.1—General

Project specifications, reference publications, drawings, and other contract documents contain the requirements for concrete materials, proportions, and characteristics. Concrete mixtures intended to satisfy these requirements are usually submitted based on field test results, laboratory trial mixture data, or both. The purchaser's acceptance of materials and mixtures is based on conformance of the submitted details to the criteria contained in the contract documents.

This guide provides information to assist in the submittal and review of materials and concrete mixture proportions. It is intended to benefit both the submitter and the reviewer.

1.2—Scope

This guide is limited to the preparation and review of the submittal of proposed materials or concrete mixture proportions for conformance with the requirements of the contract documents. Quantitative proportions need only to be submitted when required by the contract documents. There are two types of submittals: prescriptive and performance.

CHAPTER 2—NOTATION AND DEFINITIONS

2.1—Notation

\[ f_c' = \text{specified compressive strength of concrete} \]
\[ f_{c''} = \text{required average compressive strength of concrete, used as the basis for selection of concrete proportions} \]

2.2—Definitions

**performance submittal**—data provided by the concrete supplier to confirm the subject concrete mixture meets all plastic and hardened state properties specified in the contract documents; mixture constituents are not included in these data.

**prescriptive submittal**—data provided by the concrete supplier to confirm the subject concrete mixture meets all mixture constituent and proportion requirements of the contract documents.

CHAPTER 3—MATERIALS AND PRODUCTION

3.1—Quality of constituent materials

Cementitious materials, aggregates, admixtures, fibers, and water should comply with the requirements stipulated in the contract documents. If a substitution is deemed necessary or desired from the specified material, such deviation will be elaborated along with appropriate documentation that the concrete will be of equal or better performance.

3.2—Submittal information

A submittal is the means by which the concrete supplier confirms that the subject concrete mixture meets all mixture constituent and proportion requirements of the contract documents. Specific data to be submitted will be identified in the contract documents. This section lists items for which a submittal is often required.

3.2.1 Cement or cementitious materials—The class, grade, or type of each material proposed for use on the project should be listed. Mill test reports, manufacturer's certification of compliance, or both, should be submitted. The cement or cementitious materials should comply with the appropriate ASTM requirements.

3.2.2 Aggregates—The types, sources, and individual gradings for each aggregate fraction should be identified. The aggregates should comply with either ASTM C33/C33M or C330/C330M, or have evidence of satisfactory performance. The combined gradings of the total blended aggregate should be provided when required. For coarse aggregates, the size designation (as described in ASTM C29/