

**DPD**

# Director's Rule 11-2014

<b>Applicant:</b>  City of Seattle Department of Planning and Development	<b>Page:</b> 1 of 3	<b>Supersedes:</b> 12-2006
	<b>Publication:</b> 9/29/14	<b>Effective:</b> October 27, 2014
<b>Subject:</b>  Continuously Approved Concrete Design Mixes: Review Criteria and Procedure	<b>Code and Section Reference:</b> Seattle Building Code 1705.3.2	
	<b>Type of Rule:</b> Code Interpretation	
	<b>Ordinance Authority:</b> SMC 3.06.040	
<b>Index:</b>  Building Code/Technical Requirements	<b>Approved</b>  <u>(signature on file)</u>	<b>Date</b>  <u>signed 10/27/14</u> Diane M. Sugimura, Director, DPD

## **BACKGROUND**

This Rule establishes the minimum requirements and procedures for use of the exception to Section 1705.3.2 within the continuously approved concrete design mix program. This Rule lists the contractor's responsibilities, eligible mixes, quality control requirements, and the details of approval and revocation. Compliance with this Rule will substitute for the requirement of a special inspector at the batch plant.

According to Seattle Building Code (SBC), Section 1705.3.2, batch plant inspection is required "during mixing of concrete under one of the following circumstances:

- 1) Concrete mixes prepared in a batch plant that is not certified by the City of Seattle;
- 2) All structural lightweight concrete mixes;
- 3) Concrete mixes with  $f'_c$  greater than 6,000 psi (41.4 Mpa);
- 4) Concrete mixes containing alternative materials addressed in Section 1705.3.1; or
- 5) Other unusual circumstances as determined by the building official."

An exception states that inspection during the mixing of concrete is not required when the proportions of ingredients are established according to SBC Table 1905.1.11 or when a mix has been granted continuous approval by the building official. This rule provides the criteria and procedures to qualify a mix design for continuous approval.

## **RULE**

A concrete mix design meeting the requirements of SBC Section 1905.1.11 may be approved by the building official on an annual basis. This annual approval eliminates project-by-project approval for use of the approved mix design. The general contractor must obtain approval from a structural engineer for use of the approved mix. The materials content criteria for the mix and the producer's consistent quality control must be met to obtain and retain the continuous approval status.

### **A. CRITERIA**

Concrete mixes must meet the criteria of paragraphs 1-3 in order to be approved for continuous approval.

- 1. Design Mix** – Concrete mix proportions must be established by conformance with SBC Section 1905.1.11; selection of concrete proportions as contained in Table 1905.1.11; or in accordance with ACI 318, Section 5.3 which allows for proportions determined on the basis of field experience and trial mixtures.
- 2. Continuously approved design mixes** – For the purpose of achieving continuous approval status, mixes must be “frequently used” which means (1) the design mix has been used on a minimum of three projects within the past 12 month period and that there are a minimum of 10 sets of cylinder tests total from these projects, or (2) the mix has been used on 1 project within the past 12-months and there are a minimum of 30 sets of cylinder tests from that one project. All tests shall be from independent testing laboratories.
- 3. Good consistency history of a concrete producer** – Continuous approval requires that the concrete be a good history concrete producer. To satisfy this criterion the producer shall:
  1. maintain an average psi/lb. of cement that is not less than 0.7 psi/lb. of cement compared to the overall average of all concrete producers (see note),
  2. maintain the consistency required in #1 as a running average for the past three months, and
  3. have an average standard deviation for all concrete produced of 600 psi or less.

**Note:** The psi per pound (psi/lb.) of cement and standard deviation used to establish a good consistency history of a concrete producer shall be those recorded by DPD's concrete technician from the compression test results filed with DPD by independent testing laboratories. These test reports are maintained continuously by DPD's concrete quality control inspector and used to monitor ongoing performance of mixes and producers, including the mixes granted “continuously approved” status.

### **B. CONTRACTOR'S RESPONSIBILITY**

It is the responsibility of the general contractor to obtain the approval of the project's structural engineer prior to using any concrete mix for any structural purpose. When a continuously approved design mix is to be used on a project, it shall be the general contractor's responsibility to maintain a copy of the original stamped approved mix design for the use of the special inspector. The contractor shall maintain a copy of the mix design on site throughout the construction phase of the project.

### **C. ELIGIBLE MIXES**

Mixes containing the following materials are eligible for continuous approval status:

Cements: Meeting ASTM C150 strength requirements for Types I, II, and II.

Admixtures: Types A, D, E and F, as defined by ASTM C494; Pozzolan or Fly Ash as defined by ASTM C618; and, air-entraining mixtures as defined by ASTM C260.

Aggregates: Normal weight aggregates meeting the grading and other requirements of ASTM C33. No light-weight aggregates are permitted.

Mixes containing materials other than those listed above are not eligible for continuous approval status.

Continuous approval status shall not be granted for strength requirements in excess of 6,000 psi.

#### **D. QUALITY CONTROL BASED APPROVAL**

Approval for these mix designs will be based on the use history of the mix and the producer's quality control in the consistency and performance of the mix.

Approval, granted by the building official, is valid for 12 months and must be submitted for re-approval each year. In order to qualify for renewed approval, the producer must continue to produce strengths meeting ACI requirements, maintain a strength standard of 7.0 psi/lb. and provide nationally recognized certifications.

Continuously approved mixes do not require DPD's approval on a project-by-project basis prior to use, and they do not require special inspection at the batch plant.

**Note:** The continuous approval does not qualify a mix for use on a particular project or in a particular situation. Suitability of the mix design for the specific project requirements and application shall be determined by the structural engineer or architect.

The producer may at any time withdraw a mix from the continuous approval designation.

#### **E. REVOCATION**

Continuous approval may be revoked by the building official at any time during the approval period. When approval is revoked, the special inspection requirements under the code are reinstated immediately.

The building official may revoke approval if any of the following occur:

1. the yearly renewal fee is not paid;
2. the materials used are changed;
3. conditions of the equipment or quality control by the concrete producer adversely affects the strength or other properties of the concrete;
4. a drop in the statistical averages of the concrete producer below the minimums required for continuous approval; or
5. test cores on a project indicate the mix is not performing as designed or is not meeting the SBC required strengths.