
BATCH PLANT INSPECTION

Disciplines: Structural

History: Issued 07/28/20

Division of the State Architect (DSA) documents referenced within this publication are available on the [DSA Forms](#) or [DSA Publications](#) webpages.

PURPOSE

This Interpretation of Regulations (IR) provides clarification of minimum qualifications and responsibilities for personnel conducting inspection of transit-mixed batch plant operations for projects under Division of the State Architect (DSA) jurisdiction.

SCOPE

This IR is applicable to inspection of the batching of transit-mixed concrete, shotcrete, grout and other cementitious mixtures required to be inspected in accordance with the DSA-approved construction documents. For applicable reporting requirements, refer to *IR 17-12: Special Inspection Reporting Requirements*.

BACKGROUND

The California Building Code (CBC) requires “continuous” inspection of all concrete batching. CBC also identifies provisions for permitting periodic special inspections of concrete batching operations, and for certain DSA applications, elimination of batch plant inspections.

1. CONTINUOUS VS. PERIODIC BATCH PLANT INSPECTION

The requirement for continuous batch plant inspection may be waived by the design professional in responsible charge for qualifying cases noted in CBC Section 1705A.3.3 if approved by DSA and identified on the form *DSA-103: List of Required Structural Tests & Special Inspections* and other appropriate DSA-approved construction documents (e.g., drawings, etc.). If waived, “periodic” inspection is required as detailed below. In some cases, batch plant inspection may be excluded entirely, subject to the requirements and limitations in CBC Section 1705A.3.3.2.

1.1 Continuous Batch Plant Inspection

Continuous batch plant inspection is required unless the criteria previously described is met. Continuous inspection requires the inspector be on-site prior to batching to verify the requirements of Section 4 below, and be physically present at the batching console during all batching operations every day that such occurs for the project.

1.2 Periodic Batch Plant Inspection

Periodic batch plant inspection requires the inspector be on-site prior to batching to verify the requirements of Section 4 below, and be physically present at the batching console during the batching of the first batch of the day for the project. The inspector shall verify that the batch plant complies with American Standards for Testing and Materials (ASTM) C94, Sections 9 and 10, and holds valid certification from the National Ready Mixed Concrete Association (NRMCA) or Caltrans Material Plant Quality Program (MPQP).

BATCH PLANT INSPECTOR: 2019 CBC**2. MIX DESIGNS****2.1 General**

For all mix designs, proportions shall be selected by a registered civil engineer with experience in mix designs, and shall be determined in accordance with the provisions of American Concrete Institute (ACI) 318, Section 26.4.3. All mix designs shall be identified by a mix design identification number. The civil engineer shall prepare and submit a mix design report to the DSA-accepted testing laboratory for review.

Mix design reports shall include all data required to verify conformance with ACI 318 Sections 26.4.3 and 26.4.4, and the following:

- Mix design identification number
- Purpose or class of concrete
- Cement certification
- Supplementary Cementitious Materials (SCM) certification
- Admixture technical data sheets
- Aggregate test data
- Historic compressive strength data or Three-point water/cement ratio data

The report shall also bear the signature and seal of the registered engineer responsible for proportioning in accordance with Section 1.1 of *IR A-19: Design Professional's Signature and Seal (Stamp) on Construction Documents*.

2.2 Mix Design Review and Approval Process

An engineer from a DSA-accepted testing laboratory shall review the mix design report, and the design professional in responsible charge of the project shall approve the mix design.

2.2.1 Review by Laboratory of Record (LOR) Engineer

A qualified civil engineer associated with a DSA-accepted testing laboratory shall review the report for conformance with ACI 318 Sections 26.4.3.1 and 26.4.4.1. They shall also issue an evaluation report of findings and recommendation for either acceptance or rejection and forward their report to the design professional in responsible charge of the project.

2.2.2 Approval by the Project Engineer in Responsible Charge

Based on their own review, and the findings and recommendation of the respective LOR engineer's evaluation report, the project design professional in responsible charge decides whether to accept or reject the mix design. They will issue a letter stating their acceptance or rejection, sending the original letter to DSA, and distributing copies to the project inspector (PI), LOR and the mix design engineer.

2.2.3 Documentation by the Supplier

The ready-mix supplier shall submit a copy of the approved mix design, cement certification, SCM certification, admixture technical data sheets, aggregate test data and historic compressive strength data to the contractor for distribution to the PI and LOR's responsible engineer.

3. INSPECTOR QUALIFICATIONS

Batch plant inspectors shall meet all of the following requirements. Qualifications of all batch plant inspectors shall be verified by the LOR's engineering manager.

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- Possess valid certification from ACI as a Concrete Field or Lab Testing Technician and documented in-house training, or be a California licensed civil engineer. In-house training records shall document the inspectors general knowledge of materials used to produce ready-mixed concrete and/or grout, batch plant processes and operation, and mixing/delivery methods.
- Possess knowledge of the administrative requirements of the California Administrative Code (CAC), Section 4-335 and concrete batch plant inspection requirements of CBC Section 1705A.3.3.

4. INSPECTOR DUTIES

The following duties apply to both continuous and periodic batch plant inspection and shall be performed and documented on a daily basis. The batch plant inspector shall perform all duties outlined in Section 4 of this IR.

4.1 Prior to Batching

4.1.1 Review and understand the applicable portions of the approved mix designs, DSA-approved construction documents, post approval documents and ASTM C94.

4.1.2 Verify and document that the batching facility holds current NRMCA or MPQP certification. For non-certified plants verify and document that weighing scales and concrete mixing trucks meet the requirements of ASTM C94.

4.1.3 Verify that material storage areas are separated, clean and free of contaminants. Aggregate storage areas and stockpiles should be free draining and equipped with water spray systems to maintain aggregates in a saturated condition. Cementitious materials shall be stored in weatherproof structures, and admixture materials shall be protected from freezing.

4.1.4 For non-certified plants, verify that scales and other measuring or metering systems (water and admixtures) appear to be in good working order, are functioning and currently calibrated.

4.1.5 Verify that fine aggregate moisture meters appear to be in good working order and functioning. Non-functioning meters require aggregate sampling and moisture “burn-back” testing by the supplier.

4.2 During Batching

Note: Any deviations to any of the the following subsections of Section 4.2 shall be immediately reported to the weighmaster.

4.2.1 The batch plant inspector shall be physically present at the batching console during the batching sequence for each load.

4.2.2 Verify by “back spinning” that the mixing drum does not contain large amounts of wash-out water from the previous load.

4.2.3 Verify the correct mix is being produced and that the correct truck number is referenced on the batch ticket.

4.2.4 Verify that material scales start at and return to zero after each weighing cycle.

4.2.5 Verify that fine aggregate moisture contents are being determined, and that batch quantities of materials are adjusted, to compensate for free moisture in the aggregates.

4.2.6 Verify the type and amount of coarse and fine aggregate, cement, SCMs, admixtures and water conform to the approved mix design proportions, and are batched and delivered to the mixer within tolerances specified in ASTM C94.

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4.2.7 Visually inspect trucks for excess spillage that may have occurred during the loading process, and if drum revolution limits are specified in the DSA-approved documents verify that revolution counters are functioning and set to zero.

4.2.8 Record the total amount of wash down water added to each load inspected, and calculate and report the maximum quantity of water permitted to be added at the project site.

4.2.9 Provide a batch plant inspection certificate or report for each load inspected, clearly detailing basic load information and permitted quantity of site-added water. The inspection certificate shall be sent with the load or be electronically transmitted to the PI prior to discharge. Certificates shall include the name of the inspector and a statement that the specific load(s) were duly inspected and met the requirements of the approved mix design or, when applicable, provide details of non-conforming aspects of the batch.

5. REPORTING

5.1 The batch plant inspector shall prepare and provide detailed daily inspection reports, that clearly describe the work inspected in accordance with IR 17-12 and CAC Section 4-335(f)4, to parties indicated to receive such reports. All reports shall be transmitted to the PI within one day of the date the inspections were performed and shall document all inspection duties listed in Section 4 above. Reports of non-conforming materials shall be forwarded immediately to the PI and others indicated to receive such reports.

6. FAILURE TO PERFORM

Failure to inspect the work in a professional and competent manner, prepare and distribute all required reports in a truthful and timely manner (including reports of defective work) or fulfill any other duties defined by CAC may result in withdrawal of DSA acceptance of the batch plant inspector and/or LOR (reference CAC, § 4-335.1[c]). This includes but is not limited to withdrawal of acceptance or approval to work on any current or future projects under DSA jurisdiction.

REFERENCES:

California Code of Regulations (CCR) Title 24
Part 1: California Administrative Code (CAC), Section 4-335
Part 2: California Building Code (CBC), Section 1705A.3.3

This IR is intended for use by DSA staff and by design professionals to promote statewide consistency for review and approval of plans and specifications as well as construction oversight of projects within the jurisdiction of DSA, which includes State of California public schools (K–12), community colleges and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

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