



CONCRETE SEGMENTAL BLOCKS, WET CAST

GENERAL

Use of wet cast retaining wall blocks on Iowa DOT projects and other Federally-/State-funded projects requires an approved source and all required testing and certification showing compliance with Iowa DOT requirements. Source approval shall be on the basis of an approved mix design and Quality Control Program.

Each manufacturing facility shall provide the District Materials Engineer with a copy of their Quality Control Plan and Procedures, including testing rates, materials sources and mix designs. Each manufacturing facility shall also supply test reports and documentation to verify compliance with the specified requirements.

Acceptance of blocks shall be on the basis of certification from approved producers using an approved wall system listed in [IM 445.05, Appendix B](#). Approved sources are listed in [IM 445.05, Appendix A](#).

MATERIALS

All aggregates, cement, mineral and liquid chemical admixtures shall be from an approved source and shall comply with the Iowa DOT Standard Specification requirements. Coarse aggregate durability shall be a minimum of Class 2.

COMPRESSIVE STRENGTH REQUIREMENTS

Concrete segmental units and cap blocks shall have a minimum 28-day compressive strength of 6000 psi for any one individual unit. A minimum compressive strength of 3500 psi shall be achieved before blocks may be moved and/or transferred to a storage site. Air content in the fresh concrete shall be 7%, minus 1%, plus 1.5 %.

SAMPLING & TESTING

- A. Specimens shall be representative of the whole lot of units. **NOTE:** The term "lot" refers to any number of concrete units of any configuration or dimension manufactured by the producer using the same materials, concrete mix design, manufacturing process and curing method.
- B. The minimum required sampling rate for mix design approval is as follows:
 - 1. One sample per mix design, per product type, per year.

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2. Sample size shall be a minimum of three sets of three cylinders cast using the mix design. Three cylinders will be broken at 7, 14, and 28 days.
 3. Air content, slump and water cement ratio shall be recorded at the time the cylinders are cast.
- C. A minimum of three full-size units shall be measured for width, height and length. Use average measurement to determine the minimum face shell thickness.
- Overall dimensions for width, height and length shall not differ by more than $\pm 1/8$ inch (± 3.2 mm) from the specified minimum dimensions.
- D. Compression Testing – A minimum of one set of three cylinders will be made per week of production and tested to determine compliance with the specified strength. At the Engineer's discretion cores may be taken from finished units to evaluate specification requirements.
- E. Air content and slump shall be tested and recorded at least once per day during production.

All units shall be sound and free of cracks or other defects that would interfere with the proper placing, physical appearance and/or impair the strength or long-range performance of the units.

ACCEPTANCE & USE

- A. All block manufacturers shall comply with the Iowa DOT Specification requirements and shall submit test results supporting compliance with the requirements of this IM. Upon satisfactory review and verification of the test results, the system design, fabrication facility and personnel qualification, the product and the manufacturing facility will be placed on the approved list.
- B. A certificate of compliance attached to each pallet of blocks shall accompany all blocks shipped and/or submitted for use on Iowa DOT and/or Federal-Aid projects.
- C. **NOTE:** Each block manufacturer shall have a special identification mark on each block and cap in a manner approved by the District Materials Engineer to distinguish State-approved blocks from commercial blocks.

CERTIFICATION DOCUMENTS

The producer of certified wet cast retaining wall blocks shall furnish on each shipment day a certified bill of materials or invoice, which identifies the county, project number, contractor's name and the number of blocks. The certification of compliance shall be signed by a designated or responsible company representative and shall be stated as follows:

The materials itemized in this shipment are certified to be in compliance with the applicable ASTM and the Iowa Department of Transportation Plans and Specifications.

Authorized Signature & Date

One copy of the above-described documents shall be forwarded to the Project Engineer on the day the item(s) are delivered to the project and one copy shall be sent to the respective District Materials Engineer.