

Guide Specifications For Internally Cured Concrete

PART 1-GENERAL

This guide specification shall be used for modifying a conventional normal weight concrete mixture to provide internal curing of the concrete by replacing a portion of the normal weight fine aggregate with prewettted expanded slate (STALITE) fine lightweight aggregate.

The conventional concrete mixture being modified shall satisfy all project requirements and specifications for constituent materials and for both fresh and hardened concrete properties.

The modified, or internally cured, concrete mixture shall meet all project requirements and specifications for constituent materials and for both fresh and hardened concrete properties, including the additional requirements in this guide specification.

PART 2-LIGHTWEIGHT AGGREGATE (LWA)

Expanded slate (STALITE) fine lightweight aggregate for internal curing shall conform to the requirements of ASTM C 330 [AASHTO M 195] *Standard Specification for Lightweight Aggregate for Structural Concrete*.

PART 3-PREWETTING & TESING OF LWA

Expanded slate (STALITE) fine lightweight aggregate shall be prewettted prior to mixing into the concrete mixture. The recommendations of the lightweight aggregate supplier shall be followed to ensure that the lightweight aggregate has a minimum absorbed moisture content of 10% at the time of batching.

The New York State DOT test method NY 703-19E *Moisture Content of Lightweight Fine Aggregate (Aug 2008)* shall be used to determine the free and absorbed moisture content of the lightweight aggregate at the time of batching.

Batch quantities shall not be adjusted for the water absorbed in the lightweight aggregate.

PART 4-QUANTITY OF PREWETTED LWA REQUIRED FOR INTERNAL CURING

The concrete supplier shall compute the weight of prewettted expanded slate (STALITE) fine lightweight aggregate (W_{LWA}) required to supply the internal curing water in the internally cured concrete mixture using the following relationship:

$$W_{LWA} = 75 \text{ lbs per cwt of total cementitious materials}$$

PART 5-INTERNALLY CURED CONCRETE MIXTURE

The proportions of the internally cured concrete mixture shall be determined by modifying the proportions of the conventional normal weight concrete mixture in the

following manner: the volume of prewettted expanded slate (STALITE) fine lightweight aggregate that corresponds to W_{LWA} computed above shall replace an equal volume of normal weight fine aggregate. Other minor adjustments to the mixture may be made to achieve mixture performance requirements.

Submit the internally cured concrete mixture and any test results as required by the contract documents.

PART 6-CONSTRUCTION REQUIREMENT

The expanded slate (STALITE) fine lightweight aggregate shall be stockpiled and handled in accordance with the contract requirements for normal weight aggregates. The lightweight aggregate shall be prewettted, according to the recommendations of the lightweight aggregate supplier, to ensure that the absorbed moisture content is at least 10% at the time of batching.

The internally cured concrete mixture shall be batched, transported, placed and finished to meet all requirements specified in the contract documents for the conventional normal weight concrete mixture.

The free moisture content of the prewettted lightweight fine aggregate shall be determined immediately prior to batching, as specified above. Batching weights shall be adjusted accordingly.

Water absorbed in the lightweight aggregate is retained within the aggregate during mixing and does not affect the mix water. Therefore, batching weights shall not be adjusted for the absorbed moisture in the prewettted lightweight aggregate.

PART 7-DENSITY OF INTERNALLY CURED CONCRETE

Density of internally cured concrete shall not be used as a basis for field acceptance.

PART 8-“LEED” PROJECTS

As directed by the architect, the concrete supplier shall use raw materials harvested within a 500 mile job site radius. Lightweight aggregates used for internal curing shall be certified by an independent testing facility recognized by USGBC verifying that the lightweight aggregate meets all qualifications of pre-consumer 100% recycled waste aggregate content. (A certificate by the testing facility shall be submitted by the aggregate supplier.)

