

## **Guide Specification – Buildex Structural Lightweight Concrete**

Short Form: Sec 03300 - Revised March 9, 2009

### **Materials:**

Expanded shale lightweight coarse aggregate shall be Buildex or approved equal, manufactured by the rotary kiln process, and shall meet ASTM C 330. Grading shall be 1/2" x No. 4 (12.5 mm to 4.75 mm) as detailed in ASTM C 330. Coarse lightweight aggregate shall be pre-wetted prior to mixing if placement is to be made using a concrete pump. Follow the lightweight aggregate manufacturer's recommendations for pre-wetting procedures.

Normal weight fine aggregate shall meet ASTM C 33.

### **Concrete Properties:**

**Strength:** Proportion materials to produce concrete with a minimum compressive strength of \_\_\_ psi at 28 days.

*Comment: Commonly specified compressive strengths are 3000 psi and 4000 psi, but higher strengths, up to 9000 psi, are attainable with special mixes.*

**Density:** Proportion materials to produce concrete with a calculated equilibrium density of 100 to 110 lb/cu ft, as determined by ASTM C 567 "Standard Test Method for Determining Density of Structural Lightweight Concrete".

*Comment: Concrete proportioned for a fresh pumped in place density of approximately 116.5 lb/cu ft correlates to a calculated equilibrium density of approximately 105 lb/cu ft. Fresh density is specified for job acceptance in Field Control below. The equilibrium density is calculated per ASTM C 567 Section 9, and represents the point at which the concrete in place reaches its air dry equilibrium density. Mixes with this density have shown good pumpability, performance and economy. Other design densities are attainable if needed; contact our sales office for details.*

*Note: The estimated 28 day air dry density will be 108 - 115 lb/cu ft but this property is no longer defined by ASTM so is no longer used in specification.*

**Slump:** Slump at point of placement shall be 2 - 3 inches if placed conventionally and 3 - 5 inches if placed by concrete pump.

*Comment: Design pump mixes so that the mix attains the desired strength with the higher slump needed for pumpability.*

**Air Entrainment:** The air content shall be 6 percent, plus or minus 1.5 percent.

*Comment: Typical pumped mixes will lose 2 inches of slump and 1% entrained air during pumping.*

**Field Control:** Perform all quality control tests on lightweight concrete at the point of placement. Fresh bulk density shall be between \_\_\_ and \_\_\_ lb/cu ft. Adjust material proportions as needed to maintain proper slump, air content, fresh density and yield.

*Comment: Normally the fresh bulk density will need to be between 112 and 122 lb/cu ft to achieve calculated equilibrium density of 100 to 110 lb/cu ft.*