Notes From The Director

What kind of year can the construction industry expect for 2017? According to Dodge Data & Analytics, new construction starts are expected to increase by 5% over 2016 to $713 Billion. Broken down by sector, Dodge predicts an increase of 12% for single family housing, 6% for commercial building, manufacturing plant construction, and public works, and 10% for institutional building. Multi-family housing is expected to remain flat while electric utilities and gas plants will decline by 29%.

On the highway side, the American Road & Transportation Builders Association (ARTBA) projects a modest 1.3% growth in total transportation construction activity. While there is an air of optimism regarding a major infrastructure package coming out of the new administration, the ability of congress to move anything forward in time to affect this year’s construction spending is highly unlikely.

Warmest Regards,

Ronald E. Thornton, P.E.
Private Access Road Bridge—Penfield, NY

Submitted by Todd Clarke of Lakelands Concrete Products.

This project involved the construction of a decorative access road bridge consisting of precast parabolic arch elements (6'-4" rise with a radius of 10'-6"), precast bridge deck slabs (3 at 6'-4" wide x 21’ long), and fascia walls with integral parapet.

The owner (contractor) adorned the bridge with a fieldstone veneer and colonial style luminaires giving it a warm rustic appeal.

Project Credits:
Owner: Anthony Arena
Contractor: Arena Construction
Precast Manufacturer: Lakelands Concrete Products, Lima, NY
Benefits and Considerations for the use of Lightweight Aggregates

Contributed by Ron Vaughn of Northeast Solite Corporation

Concrete is a dense heavy material with a specific gravity (SP.G) of approximately 2.25 (140pcf)—2.35 (146pcf). The strength and density of concrete makes it ideally suitable for many structural applications. However, significant benefits can be achieved by reducing the unit weight of concrete while maintaining its structural characteristics. Some of these benefits include:

- Reduced foundation loads, particularly where poor underlying soils exist.
- Longer bridge clear spans due to reduced dead loads
- Increased fire ratings
- Savings in shipping and crane costs for precast elements
- Enhanced internal curing through the use of lightweight fine aggregates

In order to reduce the unit weight of concrete one needs to substitute traditional aggregates with lightweight aggregates such as expanded shale, clay, slate and/or slag. Lightweight aggregates must conform to the requirements of ASTM C330 “Standard Specification of Lightweight Aggregates for Structural Concrete”. Sand-lightweight concrete uses normal weight sand in conjunction with lightweight coarse aggregate. The SP.G of lightweight concrete varies from approximately 1.5 (95pcf) to as much as 1.9 (120pcf) for sand-lightweight.

**Design Considerations**—Structural designs using lightweight concrete may be performed essentially the same as normal weight concrete with appropriate adjustment for modulus-of-elasticity using:

\[ E_c = W_c^{1.5} \times 33 \sqrt{f'_c} \]

There is also a modification factor, \( \lambda \), for shear capacity per Article 11.2.1.2 of ACI 318 that varies between 0.75 and 0.85 depending on the percentage of lightweight aggregate used.

**Other Considerations**—The cost of lightweight concrete may run higher than traditional concrete due, in part, to increased material costs and should be weighed against the potential benefits. There are also considerations in the batching process such as pre-wetting of the aggregates and adjustments to batching sequence and mixing times. Testing personnel must be aware that entrained air content must be measured by the volumetric method using ASTM C173.

For additional information contact Northeast Solite or any PCANY Producer Member. See also NPCA article at Precast.org

Northeast Solite Corporation is an Associate Member of PCANY. Check out our members in the PCANY Buyer’s Guide located on our website.
Northeast Precast Concrete Association Winter Conference

NEPCA will hold its 2017 Winter Conference at the Sheraton Harbor-side Hotel in Portsmouth, NH on Friday, January 27 (Information)

Capital District’s 37th Celebration of national Engineers Week.

A full 2 days of seminars with up to 10PDH’s will be offered on February 16th & 17th at the Albany Marriott on Wolf Road (Registration).

The Precast Show 2017...

Will be held March 2-4 at the Huntington Convention Center in Cleveland, OH. PCANY will be represented at the first Affiliate’s meeting to be held in several years. Visit precast.org/theprecastshow/ for information and registration.