Notes From The Director

PCANY had a very productive day of meetings in Albany on November 19th starting with the introduction of one new producer and two new associate members. The membership approved a revised version of the Wastewater Product Certification Program. The revisions are included in a more condensed professional looking document with provisions intended to increase participation in this critical program. Members also affirmed their support of the PCANY Buyer’s Guide and approved a proposed media kit to include advertising in the 2016 publication. Ads will help us to print and distribute more hard copies of this valuable reference guide to our members.

The afternoon session with NYSDOT highlighted significant progress made with the Geotech Bureau in obtaining more reasonable design criteria and guidance for the design of precast wing walls. The Materials Bureau noted progress in their efforts to implement electronic shop drawing submission through ProjectWise beginning with pilot projects in 2016.

On behalf of all the members of PCANY, we want to wish everyone a Merry Christmas, Happy Holidays and a prosperous New Year.

Warmest Regards,

Ronald E. Thornton, P.E.

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University At Buffalo School of Medicine & Biomedical Sciences

Submitted by Michael Kistner of Kistner Concrete Products, Inc.

This project involved the construction of a new facility along Washington Street in downtown Buffalo on a site formerly occupied by a bank and light rail station. The stormwater management plan for the site included a 50,000 gallon precast concrete detention structure consisting of (10) 5' W x 7' H and (9) 5' W x 9' H “Kon-Structure” vault elements. Units were post-tensioned and an exterior wrap was applied to assure water-tight joints.

Navigating a narrow excavation width and a tight construction schedule, precast quickly became the obvious choice for this structure. All of the units were installed in a period of just two days.

Mike Kistner of Kistner Concrete Products, Inc. reports that this was “a complex project requiring multiple re-designs, precision tolerances, tight schedules, and a high degree of quality control”. Environment 21, a sister company of Kistner, provided design assistance and technical support.

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Project Credits:
Owner: DASNY/University at Buffalo
Design Engineer: Foit-Albert Associates
Technical Support: Environment 21, LLC
Precast Manufacturer: Kistner Concrete Products, Inc.
Contractor: Pinto Construction Services Co., Inc.
At-Rest vs. Active Soil Pressure for Underground Precast vaults

By Ronald Thornton, P.E.

A topic often debated with regard to the design of underground precast vaults is whether to use at-rest (ko) or active (ka) soil pressure when calculating the moment and shear forces on a buried precast vault. The coefficient of lateral earth pressure (k) is defined as the ratio of horizontal to vertical effective stress and is directly related to the internal friction angle of the soil. A level ground deposit with zero lateral strain is considered to be at-rest. However, as a wall begins to yield or move under pressure, the “at-rest” condition becomes “active”.

The reason that these values are subject to debate is that at-rest (ko) pressure is greater than active (ka) and the amount of movement needed to effect ka is not that well defined (although it is widely accepted from both laboratory and field testing that this value is quite small). Accordingly, many designers will use ko in their analysis of cast-in-place vault walls primarily because it is the more conservative value. While this is certainly a reasonable approach for cast-in-place construction, precast elements are typically thinner and made with higher strength concrete under plant controlled conditions. The units are also segmentalized which, when combined with the previous characteristics, allow for a degree of yielding by deflection making the assumption of active pressure perfectly valid.

The use of ka in the design of precast underground vaults is supported by both ASTM C857 “Minimum Structural Design Loading for Underground Precast Concrete Utility Structures” and ASTM C890 “Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures”.

Unfortunately, ACI 318 provides minimal guidance on this issue. However, AASHTO Standard Specification Table 3.22.1A allows for a reduced load factor ($\beta = 1.15$) for at-rest pressure vs ($\beta = 1.3$) for active pressure. The net result of this is that the difference in the ultimate design forces between ko and ka is really not all that significant.

Design professionals are required to ensure that the end product, when built according to design, will safely withstand all anticipated loads. Precast designers have properly relied on the guidance of ASTM and other standards for the analysis of underground vaults for many years which now provides us with a record of excellent structural performance and durability.

PCANY is proud to have several Professional Members that specialize in the design of precast concrete products. Professional Member firms are listed in the PCANY Buyer’s Guide and on our website.

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(1) ASTM International—West Conshohocken, PA
(2) (AASHTO) American Association of State Highway and Transportation Officials, Washington, DC
(3) (ACI) American Concrete Institute, Farmington Hills, MI
Congress Approves 5 Year Infrastructure Bill
A 5-year $305B transportation bill was signed into law on December 4th. While the bill only provide a modest increase to highway and transit spending, it does provide a greater level of certainty so that states can plan accordingly. (See article)

PCANY to Exhibit at 2016 Engineers Week
Information about PCANY and its members will be on display during the NYSSPE Capital District Celebration February 25-26, 2016 at the Albany Marriott. Up to 10 PDH’s are available to attendees. (Information and Registration)

Obituary
Associate Member Forta Corp mourns the passing of VP of Operations, Jeff Lovett who succumbed to his battle with cancer in September. Editor’s Note: I had the pleasure of knowing Jeff and was deeply saddened by this news. He will be missed.

The Precast Show 2016
NPCA and PCI are co-sponsoring the event occurring March 3-5, 2016 at the Gaylord Opryland Convention Center in Nashville, TN. There will be several meetings and educational opportunities along with hundreds of exhibitors on display. (Information)