Notes From The Director

Last month I touched on the plight of the United States Highway Trust Fund. This fund was created by the Highway Revenue Act of 1956 and is intended to be used exclusively for highway construction and maintenance. It is currently financed through a federal tax of 18.3 cents/gallon of gasoline and 24.4 cents/gallon of diesel fuel. According to the Congressional Budget Office, the fund is projected to become insolvent by this fall if congress fails to act. Needless to say, this will have a devastating effect on the construction industry and foolishly delay much needed infrastructure projects.

The most likely outcome at the federal level, and so typical of our do-nothing congress, will be to put a Band-Aid on the problem and kick it down the road for someone else to deal with. Even if the national trust fund is restored to a sustainable level, there is a disturbing trend at the state level which needs to be addressed. According to the NYS Comptroller, only about 19% of the money disbursed to New York from the Highway Trust fund actually went directly toward bridge and highway projects in fiscal 2012-2013. Of the remaining funds, 41% was spent for general DOT and DMV operating costs and 40% on debt service, which is not what the fund was intended for.

The New York Senate has repeatedly introduced legislation that would phase out the use of the fund for non-intended purposes. Unfortunately, the Assembly has somehow failed to make it a priority. Perhaps a little pressure from their constituents would get their attention.

Warmest Regards,

Ronald E. Thornton, P.E.
PRECASTSLAB + (GRS + IBS) = ABC

By: Ralph Verrastro, PE, President, Bridging Solutions, LLC

This is a general formula for success if you have a small bridge replacement project where cost and time are critical concerns. Let’s first define the terms of the equation:

**PRECASTSLAB**: A bridge superstructure consisting of adjacent, precast or prestressed concrete slab units with transverse post tensioning and an asphalt wearing surface.

**(GRS + IBS)**: Geosynthetic Reinforced Soil Integrated Bridge System is a method of bridge support that blends the roadway into the PRECASTSLAB to create a jointless interface between the bridge and the approach. See Figure 1 at left which has been excerpted from a FHWA publication called the Geosynthetic Reinforced Soil Integrated Bridge System Interim Implementation Guide (Pub. No. FHWA-HRT-11-026). Another excerpt from this publication: "The GRS-IBS abutment uses alternating layers of compacted fill and closely spaced geosynthetic reinforcement to provide support for the bridge, which is placed directly on the GRS abutment without a joint and without cast-in-place (CIP) concrete. GRS is also used to construct an integrated approach to transition to the superstructure. This bridge system therefore alleviates the “bump at the bridge” problem caused by differential settlement between bridge abutments and approach roadways.”

**ABC**: Accelerated Bridge Construction is bridge construction that uses innovative planning, design, materials, and construction methods in a safe and cost-effective manner to reduce the onsite construction time that occurs when building new bridges or replacing and rehabilitating existing bridges.

Rock Ridge Road Bridge Uses Precast With GRS+IBS

The project involved the replacement of the Rock Ridge Road Bridge over the Gator Canal in Polk County, Florida under a design-build contract with FDOT. The existing bridge was a deteriorated 2-span bridge with a total length of 37 feet. The FDOT design-build Request for Proposal (RFP) required the new bridge to provide 2 – 12 foot lanes and 8 foot shoulders. Due to tight right-of-way constraints and an unacceptably long off site detour, the new bridge needed to be designed in phases using a one lane, two way alternating traffic pattern with temporary traffic signals to maintain traffic. The high cost and risk associated with this type of traffic control system convinced the design-build team to incorporate **ABC** into the project approach.

Some of the key elements of the **ABC** approach included:

1. Using GRS-IBS abutments to reduce cost and time compared to a conventional FDOT pile bent. This approach eliminated deep pile foundations, bearings, expansion joints, CIP concrete backwalls, CIP concrete caps, and CIP concrete approach slabs.
2. Incorporating details from FDOT’s Developmental Design Standard Index D6025 for GRS-IBS abutments to minimize design time and Department review time.
3. Using precast, prestressed concrete adjacent slab units for the superstructure.
4. Elimination of the FDOT standard 6” CIP composite concrete deck. Alternatively, to provide for lateral live load distribution, a transverse post tensioning system using high strength steel rods was designed. In addition, a 2” thick asphalt overlay over a membrane waterproofing system was specified.
Precast Box Culvert and Modular Retaining Wall Form an Attractive Bridge for Country Club

The Clifton Springs Country Club located in Ontario County was in need of a low-cost heavy duty stream crossing with aesthetic end treatments and slope protection. The solution came in the form of a precast concrete box culvert with Redi-Rock Gravity Wall System for the wings and parapets.

The box culvert, designed for AASHTO HS20 loading, was fabricated in accordance with ASTM C1433. The Redi-Rock system, which conforms to NYSDOT Specification 544, was fabricated with an attractive ledge stone face and installed on a radius for a visually pleasing approach. The parapets are provided with a cap block and can be doweled directly into the culvert slab to act as a safety barrier.

Project credits:

Owner – Clifton Springs Country Club
Contractor – DiFiore Construction, Rochester, NY
Precast manufacturer – Kistner Concrete Products, Lockport, NY

Route 31 over Trout Run Creek

A nearly 100 year old culvert near the Town of Lyons in Wayne County that was showing signs of deterioration, received a much needed replacement last year. The replacement structure was a 23’ Span x 10’-6” Rise precast box culvert designed and manufacturing in accordance with NYSDOT specifications for MS23 (HS25) bridge loading. The wing walls were shown in the plans to be precast cantilever style. However, a proposed alternate using precast segmental blocks in accordance with Specification 544 was accepted by NYSDOT. The alternate was not only cost effective, but an aesthetic enhancement to the end product.

Project credits:

Owner/Engineer – New York State Department of Transportation
Contractor – Slate Hill Constructors, Inc., Warners, NY
Precast manufacturer – Kistner Concrete Products, Lockport, NY
Welcome New PCANY Members

Bridging Solutions, LLC of Naples, FL has joined as a Professional Member. President, Ralph Verrastro, PE is a native of Binghamton, NY and worked for many years as a bridge engineer in New York State. Bridging Solutions provides bridge and structural design services for public and private sector clients. Ralph may be contacted at ralph@bridging-solutions.com.
Company website is www.bridging-solutions.com

We are proud to welcome Valbruna Stainless, Inc. as an Associate Member of PCANY. Valbruna is a mill/producer of stainless steel rebar among other products and maintains a stocking warehouse in Pompton Lakes, NJ. Branch Manager, Tim Cooney may be contacted at tcooney@valbrunastainless.com.
Company website is www.valbrunastainless.com

PCANY Spring Meeting Coming Up

We hope to see you at the Spring 2014 PCANY meeting on Thursday May 22. The morning session will be held at 9AM at the AGC conference room, 10 Airline Dr. in Albany. The afternoon will be a joint session with NYSDOT in their first floor conference room at 50 Wolf Rd.