



Illinois Section
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ASCE Illinois Section

News

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McCook Reservoir Stage 1 Nears Completion

By Jerome F. McGovern, P.E.

In November 2017, the Metropolitan Water Reclamation District of Greater Chicago (MWRD) will commission the operation of the McCook Reservoir, Stage 1 in southwest suburban Bedford Park, Illinois. The Stage 1 Reservoir, with a capacity of 3.5 billion gallons of water, is the next to

In November 2017, the Metropolitan Water Reclamation District of Greater Chicago (MWRD) will commission the operation of the McCook Reservoir, Stage 1 in southwest suburban Bedford Park, Illinois.

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McCook Reservoir Stage 1, looking west. The Sanitary and Ship Canal is on the left, the Des Plaines River is on the right. MWRD Photo.

IL 115 over Gar Creek Bridge Replacement

By Stephen Long, P.E.

IL 115 over Gar Creek Bridge, an Illinois Department of Transportation (IDOT) bridge located in District 3, is located approximately 2 miles southwest of Kankakee, IL. The existing structure is a 72'-0" single span PPC deck beam bridge with a deck clear width of 35'-6". The bridge is on a Minor Arterial with an ADT of 3000 that is a key route for local school buses, farming activities, and through traffic to reach Kankakee, IL. The need for a proposed improvement was established in response to a six month routine special feature inspection. The bridge is posted for Legal Loads Only, and the deck and superstructure are rated in critical condition.

The estimated cost of providing typical maintenance of traffic (MOT) with staged construction was approximately 30% of the original estimated cost of the bridge replacement. This fact, together with the criticality of the bridge to the local economy, made the Gar Creek Bridge replacement a prime candidate to implement Accelerated Bridge Construction (ABC) practices. ABC techniques can reduce traffic impacts (closures, detours, etc.), improve site safety, and decrease project delivery time while minimizing the overall budget. It was these issues that led IDOT with the help of the Milhouse Project Team to develop an ABC design that would provide minimal bridge

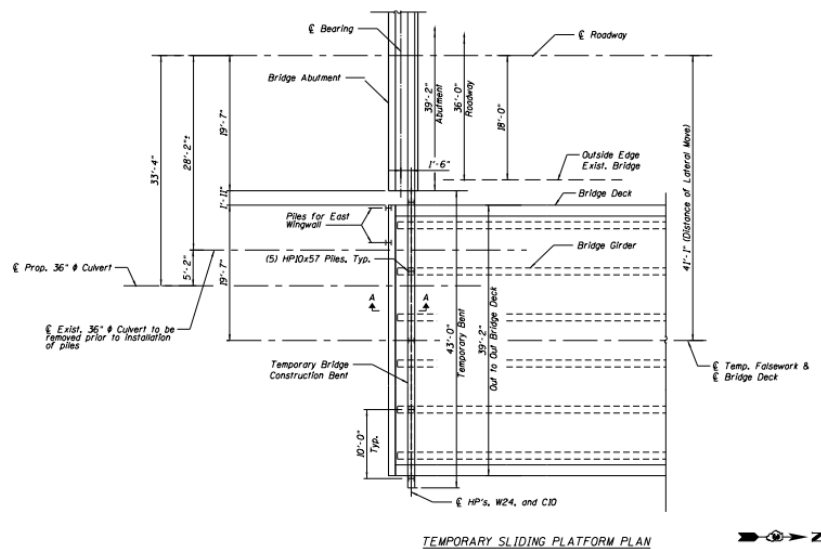
closure time and reduce MOT costs.

The IL 115 over Gar Creek Bridge, an IDOT bridge located in District 3, is to be demolished and replaced within 72 hours.

The bridge is to be demolished and replaced within 72 hours. The new structure is to be an 82'-0" single span steel girder with composite concrete deck superstructure, 36'-0" clear deck width, supported by H piles with semi integral concrete abutment caps. To limit the need for bridge closure, the new bridge

then rolled into place during a short 72 hour roadway closure. In order to accomplish this, the new superstructure will be constructed on temporary bents. The temporary bents include a roller guide system that will allow the superstructure to be rolled into final position. Additionally, to decrease bridge closure time, precast abutment caps, wing walls, and approach slabs will be used.

Once all of the precast items are cast, and the superstructure is complete and accepted, the bridge closure will begin. After the bridge is closed, the existing structure is to be demolished and the new H piles will be driven for



superstructure will be constructed next to the existing bridge, which will still be open to traffic, and

the abutments and wing walls. (continued on page 11)

IL 115 over Gar Creek Bridge Replacement

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The precast abutment caps are to be set on the driven piles and grouted into place using cast holes in the abutment cap and high strength quick setting grout. The roller guide system is to be

The new superstructure will be slid into place along the roller guide system using hydraulically driven rollers placed beneath each girder.

installed on top of the abutment caps in order to allow the rolling of the bridge off of the temporary bents and onto the abutments. The new superstructure will be slid into place along the roller guide system using hydraulically driven rollers placed beneath each girder. Vertical hydraulic jacks are integrated into the roller system allowing the superstructure to be simply lowered on the bearing seats.

Once the superstructure is in place, the precast wing walls are set on the driven H piles, grouted and the structure will then be backfilled. The precast approach sleeper slabs, full depth precast approach slabs, and approach connector pavement will then be installed. Lastly, hot mix asphalt is placed to match into the approach slab, along with pavement markings and the guardrail is installed. After all of the above has been completed within the 72 hour bridge closure, the new bridge will be reopened to traffic. After the bridge is reopened, the temporary bents will be removed. The construction engineering for the project is led by WHKS working for the prime contractor, Tobey Construction.

Utilizing an ABC design allowed the project team and contractor to reduce the cost of detours and

ABC techniques can reduce traffic impacts (closures, detours, etc.), improve site safety, and decrease project delivery time while minimizing the overall budget.

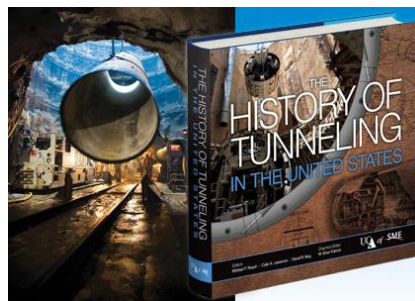
staged construction, reduced the need of a detour from 60-90 days to 3 days, and provided a safer working environment for construction workers and drivers as the majority of construction is performed away from traffic.

Stephen Long, P.E. is a Structural Engineer at Milhouse Engineering & Construction, Inc. with over 5 years of structural engineering experience within bridges, heavy industrial, and building retrofitting. He is an active member of the ASCE Illinois Section SEI.

The Underground Profession in the 21st Century

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the vast majority of tunnels have been successful, beneficial and cost-effective solutions to some of society's greatest needs. (The book has 552 pages in 9 chapters, including an attempt at an exhaustive list of all major tunnels to date, and an impressive timeline of tunneling history alongside US History. Available for purchase on the UCA of SME Website)



Building off this past, the future is incredibly bright but not without its challenges. One of the biggest

challenges to the tunnel business is training and keeping qualified staff at all levels. Ironically as the industry booms, the Boomers are retiring leaving big knowledge/experience gaps in academia and the private sector. Many university programs that catered to tunneling and civil engineering have died on the vine as old iconic professors have (continued on page 12)