

# CONCRETE PUMPING

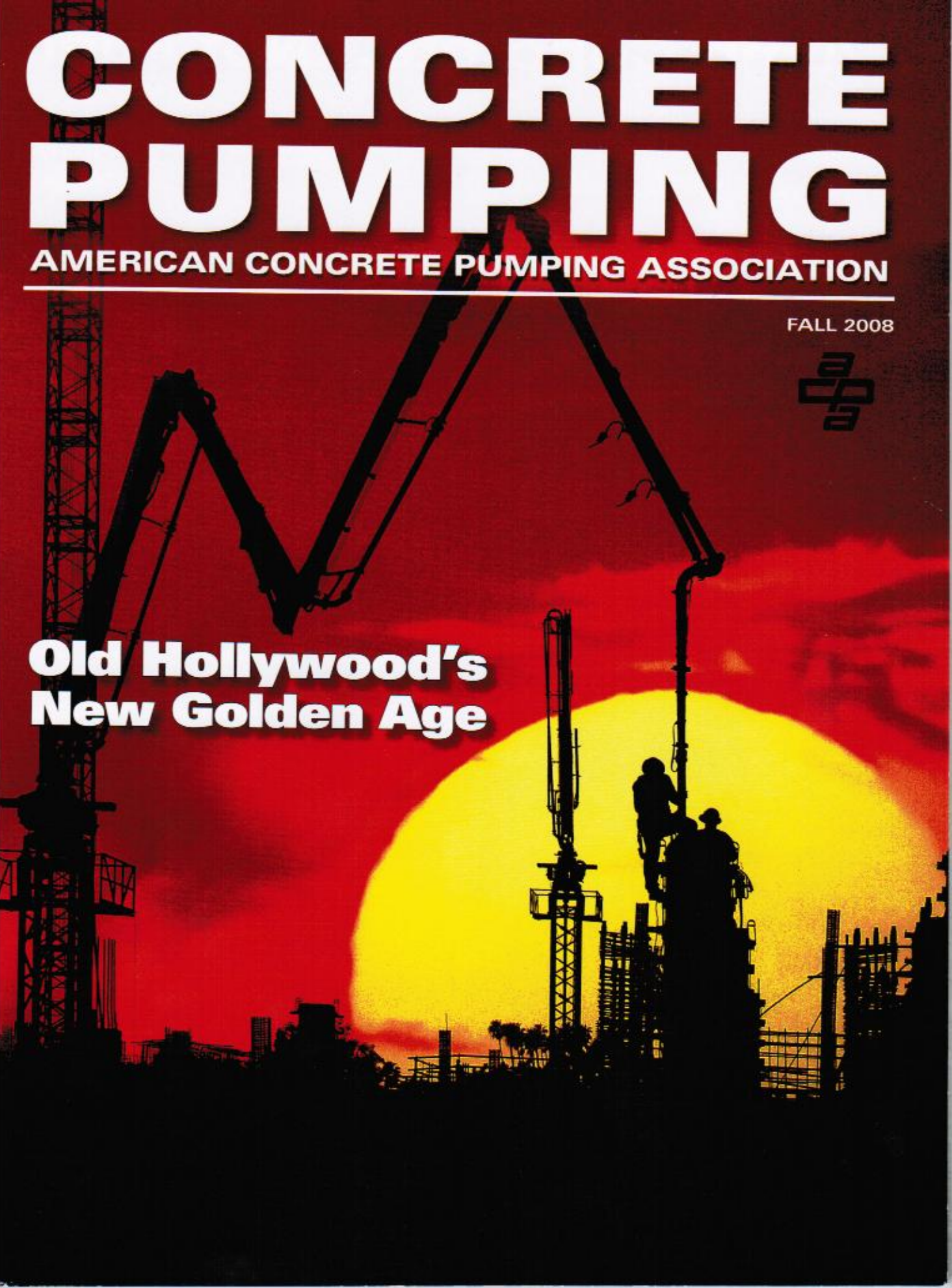
AMERICAN CONCRETE PUMPING ASSOCIATION

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FALL 2008



**Old Hollywood's  
New Golden Age**





The boom design allowed the main section to be tilted back, allowing the operator to smoothly raise the boom with the climbing form.

# Slipform Silos

The ethanol boom continues to fuel business for concrete pumpers with the equipment to handle the concrete placing challenges required on these inimitable projects. R.L. McCoy, Inc., with offices in Columbia City and Indianapolis, Indiana, has seen one grain silo project turn into four more, due to superior service, reliable equipment and versatile long booms.

The most recent silo project for One Earth Energy LLC, occurred in Gibson City, Illinois, near Champaign. McCoy has pumped five of these identical silos at different ethanol plants throughout the Midwest for Hogenson Construction, headquartered in Fargo, North Dakota. Hogenson specializes in turn-key ethanol plants from concept through engineering and construction.

The twin silos at Gibson City are each 78 feet in diameter and 146 feet tall, and

are tied together by core walls. The structures are built over tunnels that contain conveyors to move the grain from storage to the distilling process. In two of the five projects that McCoy has worked on for Hogenson, the pumper placed the footings and foundation walls for the below grade portion. The pumper's fleet consists of boom pumps from 28 to 61 meters, and on the foundation pours the company used a combination of their 32- and 39-meter booms with the renowned four-section roll and fold design.

## The Right Package

The expertise of McCoy's crew and the requirement of a long boom came into play when the slipforming of the silos began. "We put together a silo pumping package after the first project for Hogenson, based on six days of continuous pumping with a four-man

crew," explained Gary Brown, director of concrete pumping for McCoy. The pumper's performance on the first silo and a competitive package resulted in four more of the marathon pours, culminating in the Gibson City project.

"Boredom is a good thing on these slipform silos," commented Brown, "because once you start the pour you don't stop for six to six-and-a-half days. You don't want any hiccups." Brown chose the company's versatile 55-meter with four-section overhead roll and fold boom. With a vertical reach of 178 feet, the boom has the reach to stay above the formwork.

"The overhead roll and fold design is nice—the operator doesn't have to A-frame it because the main section angles away from the pour," Brown explained. He added that reducing free-fall of the mix is another benefit of this design.

## SPECS

Project: **Ethanol Plant Silo**—Gibson City, Illinois  
 Owner: **One Earth Energy LLC**—Gibson City, Illinois  
 General Contractor: **Hogenson Construction**—Fargo, North Dakota  
 Pumping Contractor: **R.L McCoy, Inc.**—offices in Columbia City and Indianapolis, Indiana  
 Equipment: **Schwing KVM 55 concrete pump**

“We average about 210 to 240 vertical inches of progress per 12-hour shift,” Brown added. “The pump provides a nice steady flow with no boom movement.”

## Repeatable Technique

The typical method for slipforming these silos was repeated at the Gibson site.

Hogenson’s crew of 120 men arrived on the site on Sunday, June 8, before the next day’s slipforming began. McCoy’s pump and two-man crew also arrived on Sunday for a pre-pour meeting. “We discuss general safety procedures that include an evacuation plan,” according to Jared Thomas, project manager for Hogenson. The general contractor has specialized slipforming crews that include finishers, iron workers and general laborers who vibrate and feed the climbing form.

Hogenson designed a mini-placer system, incorporating two rotating arms that distribute the concrete around the perimeters of the twin silos. The 55-meter boomed up to a working platform located 10 feet above the climbing forms. The pump’s end hose was connected to a pipe and through a diversion Y-valve feeding the two placers simultaneously. To further control the pace of filling the form, the concrete was actually deposited on the form’s plywood floor and then manually pushed into the void as needed. The placers averaged about one revolution per hour in their slow, steady progress to the top.

## Tried and True

Brown has kept the same pumping crew on all five of the slipform projects, “You don’t want a high-energy

operator on these types of projects,” he noted. “We picked guys that were attentive and patient.” Brown also picked the 55-meter for all five of the slipform silos. With standard Vector controls, the operator maintains two-way communication with the pump through the remote box, where he can monitor pumping pressure and adjust the strokes per minute.

The mix design varied based on the aggregate available in the area, but 4,000 psi strength was common for all five of the projects. The requirement of at least six bags of cement per yard and no fly ash reduced the friction on the constantly-moving forms. Because the five projects were accomplished over a 10-month span, retarders and accelerators were added, depending on outside temperature.



Shown is the form being constructed on top of the slab at ground zero. The concrete pump started from the bottom and never stopped until the silos were topped out.

## Slipform

"We understood that keeping our crew comfortable would be important, considering the length of time they were on the job," Brown said, "so we built a camper on a Bobcat trailer and towed it to each site. As the jobs kept multiplying, we added a heater, then air conditioning; we waterproofed it and supplied them with a grill to cook on." Brown supervised the start of the job, but then three men—two operators and a mechanic—carried the load in twelve-hour shifts until the silo was complete.

### Smooth and Efficient

Barring any glitches, the slipforming should start on a Monday morning and end the following Saturday. On all five projects, only once was there an unplanned shutdown. "We had this hellacious weather," according to Brown, "and we had to lower the boom because of lightning."

Otherwise, midway during the week-long pour, the operator scheduled a 15-minute break to chip out the accumulated concrete in the hopper. Part of the McCoy package to Hogenson was a back-up pump on every project, but it was never used.

Fueling was handled on the fly by a contractor who supplies diesel to all of the equipment on-site, including the crane that lifts the reinforcing steel and the lights that burn all night long. The 55-meter used 290 gallons of fuel to pump 2,552 yards. "It took just about as much diesel to drive over and back as it did to pump the silos. We were really impressed with the fuel efficiency of the pumping," Brown stated.

And Hogenson has been impressed with the efficiency of the McCoy team. Thomas summed up the five projects: "A lot rides on the pumping for these projects. With so much at stake, the McCoy staff is always professional, competitive and good to work with." □



Twin 146-foot tall silos were slipformed continuously, with a core wall joining them together.



The concrete was deposited from the placer onto the floor of the climbing form. Laborers pushed the concrete into the form to maintain the correct volume.



The 24-hour operation meant rebar was continuously tied on as the forms rose.