



Five SC&RA member companies were winners of the annual Job of the Year Awards competition for 2005. The results were announced at the Association's Annual Conference in April. *JC* reports on the winners

JOB OF THE YEAR

# Top jobs

## Rigging Job of the Year winners.

Rigging under \$100,000: Taylor Crane & Rigging, Colleyville, KS, US  
Rigging between \$100,000 and \$700,000: Bamhart, Memphis, TN, US

## Hauling Job of the Year winners.

Hauling under 160,000 pounds: Ernsert International, Clackamas, OR, US  
Hauling over 160,000 pounds: Precision Heavy-Haul, Phoenix, AZ, US  
Moving Job of the Year: Fagioli PSC, Milan, Italy

## Moving Job of the Year: Fagioli PSC, Milan, Italy

# Record air bridge movement

**T**he British Airports Authority's plans to upgrade London's Gatwick airport called for a passenger bridge to be built over an aircraft taxiway between a

terminal and an aircraft loading pier. This is only the second time a taxiway has been bridged, the first was in Denver, Colorado.

To minimise disruption to the UK's second busiest airport, the construction programme called for the air bridge structure – 810 feet long by 96 feet wide by 40 feet high (247 x 30 x 15 m), weighing 3,108 tons (2874 tonnes) – to be pre-fabricated off-site. It was then transported to site and lifted into position overnight, when the aircraft taxiways could be closed.



The contract for the construction of the air bridge was awarded to Watson Steel, which sub-contracted the transport and lifting portion of the project to Fagioli PSC.

The initial phase of the work included the on-site assembly of the Fagioli PSC lifting system, comprising standard Fagioli PSC Towerlift masts and strand jacks. This was assembled over a two-week period and a test lift of 3600 tons (3295 tonnes) was made.

Due to the limited time available for the transport and lifting operations it was necessary to transport both the longest section of the air bridge, at 548 feet (167 m), and the supporting gantry together. This meant a total payload of 2174 tons (1972 tonnes), which required a total of 120 axle lines of Fagioli PSC self propelled modular transporter (SPMT), which together made a total convoy weight of 3748 tons (3400 tonnes). The transport arrangement used to move the bridge together with the



Rigging between \$ 150000 and \$ 750000. Barnhart, Memphis, TN, US

# Lock, stock and barrel

**B**arnhart was contracted to remove and replace the two lower pool lock gates 'in the dry' on a large ship lock in Mobile, Alabama. Each gate measured 85 feet tall, 65 feet wide and 7 feet thick (26 x 20 x 2 m), and weighed in at 360 tons (327 tonnes). Matters were further complicated by the tight time constraints on the project – just 30 days were programmed in for this phase.



Barnhart devised a solution comprising a portable, high capacity bridge crane to span the dock, and fitted with a 500 ton (454 tonne) winch. The old gates would be lowered onto a barge, which would also deliver the new ones, and throughout the lifting procedure this vessel would act as a baling device.

These lifts presented a range of engineering and planning challenges, not least of which were the span, the weight of the load and the obstructions of the lock structure. In addition, Barnhart had just three weeks to design, fabricate and test the bridge.

New equipment developed for the project was the trolley gantry (with BCR containerised 500 ton hoist) and BCR gripper system with wheel-mounted end trucks. Barnhart

also modified existing 60 foot long, 8 foot (18 x 2.4 m) deep box girdes to give the required 150 foot (46 m) span.

Execution of the project involved removing each of the two lock gates by rotating them out of their hinges, before first lifting them up between the two 8 foot (2.4 m) deep trolley girders and then lowering them onto the barge. The new gates were delivered by barge and temporarily installed in the reverse of this procedure. With this complete, the lock was temporarily dammed and drained to allow the final installation and inspections.

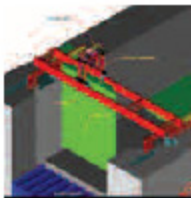
The project was under fixed lump sum contract, which included an agreement to accept liquidated damages for exceeding scheduled outage days. Barnhart completed assembly, removal, replacement, draining procedure and permanent installation fitting within 15 days – half the originally proposed period.

In addition to its commercial and technical success, the project was outstanding from a safety viewpoint. There were no OSHA recordable incidents and no first aid incidents (throughout all phases – load test, load out, erection and execution). Daily safety meetings, pre-lift meetings and fully remotely controlled operations led to the job exceeding the Army Corps of Engineers Safety Manual requirements, resulting in Barnhart being winning the Army Corps of Engineers Annual Safety Award. ■

lifting towers to the final location comprised two sets of 60 axle lines of SPMT.

Final positioning of the bridge was required to within +/-1 inch (25 mm) at each end. Access to the final position required a 90 degree turn, with very little clearance at each end to fit between the terminal connection piers. Any minor discrepancies in steering between the two transporter groups could create enormous torsion forces over the 548 foot (167 m) distance, so a tubular restraint system was designed and installed between each trailer group and the bridge.

Due to the bridge being already fully glazed and painted, the convey needed to be continually monitored and maintained to within +/- 2 inches (50 mm) over its length and width to minimise any stresses over the 0.62 mile journey from the construction site to final destination. ■



## Rigging Job of the Year winners:



**Roody Beckford, left, Mike Industrial Constructors, Columbus, OH and James White, right, White Brothers Trucking, Waco, TX, congratulate Rigging Job of the Year winners, Jim Taylor, middle left, Taylor Crane & Rigging, Galloway, OH and Steve Sips, Barnhart, Memphis, TN**

## Hauling Job of the Year winners:



**Al Koenig, left, Midwest Specialized Transportation, Rochester, MN and James White, right, White Brothers Trucking, Waco, TX, congratulate Hauling Job of the Year winners, left to right, Mike Pappa, Precision Heavy Haul, Phoenix, AZ, Terry Swartz, Swartz International, Columbus, OH and Steve Pabis, Rightful P&G, Waco, Italy.**

**Hauling under 160000 pounds:**

**Emmert International, Clackamas, OR, US**

## Pipe routing

In 2004 Emmert International was awarded a contract from a fabrication company in North Texas to transport 18 pipe rack modules to a refinery in South Texas. The route covered more than 20880 miles (33400 km) of road in just six weeks.

Each pipe rack module had a gross loaded weight of 140000 pounds (64 tonnes), an overall length of 90 feet, an overall width of 18 feet, and an overall height of

20 feet (27 x 5.5 x 6 m). Transporting them required a four-axle, single drop, stretch deck trailer, pulled by a four-axle tractor. This combination kept the axle groupings within legal limits to obtain permits, and a total of five such units were required to transport so many modules in the short time available.

The dimensions of the load made it difficult to find a route, as any trees, wires, and low overhead clearance were potential problems. All planning

and permits for the job depended on the clearances around the loaded pipe rack modules.

To identify a suitable route the cities and counties affected were contacted to discuss the requirements for the large components. A physical route survey was then made to find problem areas. All the concerns were identified, and a suitable and workable route was determined.

Each load was escorted by bucket trucks used to lift all the overhead power, traffic lights and phone lines out of the way, so the pipe racks could pass safely underneath. Tree limbs and signs along the route also had to be moved. The lead escort used a height stick to ensure proper clearance was achieved, while a rear pilot car controlled traffic, especially in restricted passing areas.

The timing of each delivery was crucial, due to the lack of space to unload the units at their final



destination. An off site staging area was established to accommodate the pipe racks while the site was prepared. The racks were then delivered, with only an hour's notice, to the site's off-loading area to maintain the critical path of the customer's project schedule.

In total Emmert completed the 18 road trips for all modules to a total gross weight of 2520000 pounds (1143 tonnes). Even with all the time restrictions and offloading requirements at the destination, all loads were delivered on time and within budget. ■

**Hauling over 160000 pounds. Precision Heavy Haul, Phoenix, AZ, US**

## A nest of their own

Phoenix Arizona and the surrounding communities are the home of the National Football League Arizona Cardinals. Dating from 1898, the Cardinals are the oldest continuously run professional football team in the US and have had the Cardinals name since 1901. They were based in Chicago until 1960 when they moved to St Louis and then to Phoenix in 1968.

Since moving to Arizona the Cardinals have played at the Arizona State University's Sun Devil Stadium in Tempe. In November 2000 Maricopa County in Arizona approved funding for the construction of a new football stadium. In August 2002 a site was selected in the city of Glendale and the design was finalized.

The stadium will have a retractable roof and Precision Heavy Haul (PHH) was selected by the roof

fabricator and erector, Schuff Steel Company, to transport of portions of the roof steel from their fabrication plant in Phoenix to the stadium site in Glendale. The area is heavily populated with numerous overhead obstructions, and the 17 foot 7 inch (5.4 m) height of the 28 box truss top chord sections made this problem very significant. It was soon realized that a reduction in loaded height of 2 feet (600 mm) and pre-lifting all overhead wires would result in saving travel time and thousands of dollars over the 28 loads.

The sections were very strong in bending and compression, and therefore capable of sustaining the forces from Schnabel loading, i.e., where the load becomes part of the bridge between the end supports. As a Schnabel load, the bottom of the truss could be carried as little as 6 inches (150 mm) off of the

road surface, a substantial reduction from being loaded on any platform. PHH had previously designed and constructed a Schnabel trailer for hauling large diameter pipe and this equipment would require substantial modification, but it had adequate capacity and the necessary adjustment features.

The 15 mile (24 km) haul route from the fabrication shop to the stadium involved crossing several bridges and wrong-way travel on city streets to avoid light signals. Due to the consistency of the routing and obstacles, accompanying each load were two Highway Patrol cars – one front escort with a height pole, and one escort at the rear. The loaded

dimensions of the largest truss section for traveling over the road on the Schnabel equipment was 165 feet long, 20 feet wide, 18 feet 8 inches high (50 x 6 x 5.7 m) and with a gross weight of 344725 pounds (156 tonnes).

Due to congestion in the foundation hole at the stadium, and the hauling portion remaining ahead of schedule, several of the trusses were required to be staged on site outside the stadium. When ready, PHH moved in and manually reattached each section to the trailer.

The uncommonly rainy weather in Arizona made for wet and muddy site conditions. Braking and load control was a concern so PHH opted to set 10000 pounds (4.5 tonnes) of counterweight on the gooseneck to add traction, and attached a DO door to the rear of the trailer to ensure a safe and controlled final journey. ■

