BARNHART

LIFTING LETTER

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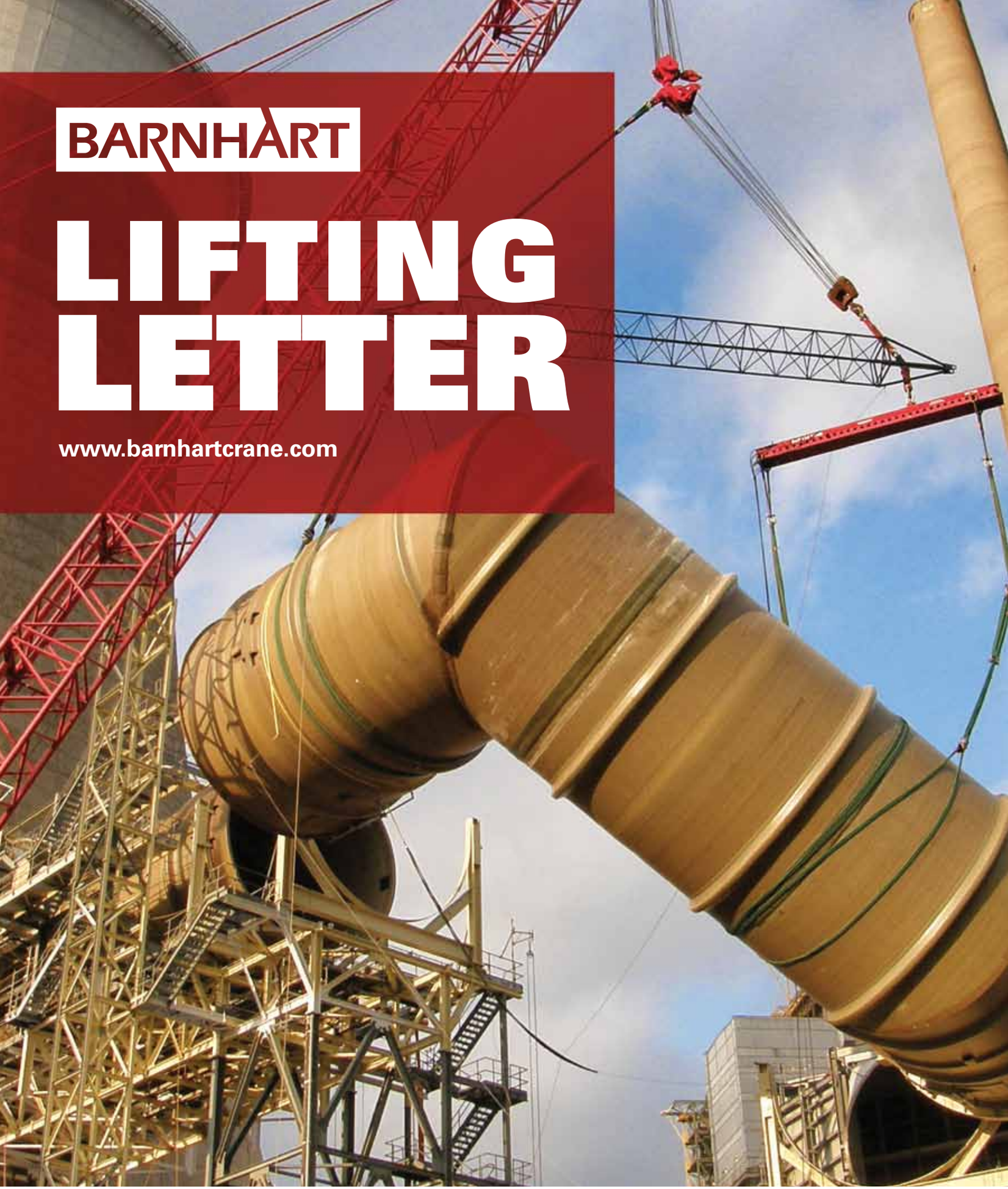

VOL. 51

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ENVIRONMENTAL RETROFITTING

Barnhart Supports Green Initiatives

COVER STORY

In order to comply with Environmental Protection Agency (EPA) regulations, many older coal-fired power plants must install emission control equipment. Some plants are also making adjustments to improve energy efficiency, increase their output and extend the lifespan of the facility. The emission-reducing retrofit projects must be operational by the year 2015.

Barnhart recently contracted with a customer who was converting an existing parabolic concrete cooling tower into an internal cooling system and using the stack to vent exhaust fumes from a Jet Bubbling Reactor (JBR) scrubber. The state-of-the-art technique had not been implemented previously in the U.S. The project scope was to engineer and perform lifts for three major 30′ diameter fiberglass duct pieces – a 56,000 lb., 50′ vertical riser section; a 343,000 lb., 226′ horizontal section; and a 304,000 lb., 120′ elbow section. The scope also included transporting 13 sections by barge as well as by double-wide Goldhofer PST for fabrication and to the job site.

During a retrofit project to convert an existing parabolic concrete cooling tower into an internal cooling system, Barnhart utilized resources from multiple branches – its Houston, Chicago, Memphis, Marino and Hake branches, plus its Wind Division – to safely execute one of the most complicated, engineered lifts ever performed.

POWER: Steam Generator Relocation

MICHIGAN

Barnhart was awarded a contract to transport a 1,040,000 lb. steam generator stator from a Michigan nuclear plant. The project scope was to lift the stator with 800 ton gantries and transport it 17 miles on an 18-line, double-wide Goldhofer THP to a barge. The team then rolled the transporter onto the barge and secured it for travel across Lake Michigan, down the Illinois River, under the Lemont Bridge, down the Mississippi and up the White River to the facility.

The team rolled the stator off the barge and transported it by Goldhofer to the hook of 800 ton gantries. Using the gantries, they lifted the stator from the Goldhofer and set it on cribbing for storage. Major challenges included delays of the roll on due to 18'-20' waves on Lake Michigan and tight clearances (2"- 4") when exiting the plant in Michigan. Finally, due to the restrictive height of the Lemont Bridge, Barnhart had to ballast the barge down to one foot of freeboard in order to travel underneath the bridge.

POWER: Transformer Relocation

MISSISSIPPI

Barnhart was awarded a contract to relocate a transformer from an electric substation in Sterlington, LA to Vicksburg, MS. The team loaded the transformer in Sterlington onto a Goldhofer platform trailer using Jack & Slide System. They hauled the transformer one mile to the Ouachita River, rolled it onto a barge and transported it on the Mississippi River for roll off in Vicksburg, MS. One of the challenges the team faced was that they had to make civil improvements – they built a temporary dirt road – to haul the transformer to the plant where they set it to pad using 450 ton gantries. In addition, the team used grid mats on the haul route because of poor ground conditions around the plant site.

POWER: Heavy Haul & Lift

INDIANA

Barnhart recently completed a project for an Indiana coal-fired power station to upgrade existing environmental controls by installing a Flue Gas Desulfurization (FGD) system to reduce sulfur dioxide emissions. The scope of the project was to transport and set 1000' of duct sections. The team used a Demag CC4000S Heavy Lift Crawler Crane with super lift to place the duct sections. In addition, a Goldhofer PSTe with 10-lines and up to 14-lines was used to transport the duct sections around the job site. The team also used the LS248 and a lattice boom spreader bar to execute the job.

FOSSIL POWER: Gas Cooler Vessel

MASSACHUSETTS

A Massachusetts power company – New England's largest fossil-fueled power station – awarded Marino a contract to remove and replace a 155,000 lb. gas cooler vessel that was 60′ long with an 8′ diameter. The scope of the project involved using a 500 ton hydraulic crane with superlift and a 180 ton hydraulic tailing crane to remove the old vessel and replace it with a new cooler vessel. After the team removed the old vessel, they transported it on a 12-line Goldhofer PST to a laydown area onsite. The new vessel was brought in by an over the road trailer and Marino used the same method in reverse to set the new vessel with the 500 ton hydraulic crane with superlift and the 180 ton hydraulic tailing crane.

CHEMICAL INDUSTRY: Cold Box Lift

TENNESSEE

In a recent project, Barnhart was contracted to design a plan to lift and set one 205,000 lb. cryogenic Air Separation Unit (ASU) Cold box that was 100' long, 14' wide and 14' high from its staging area to a foundation using a heavy lift crane.

The team used the Demag CC1800 crawler crane with 197' main and 177,000 lb. Super Lift as the primary lift crane. They used a 360 ton Hydro Crane to assist in the tailing process. The primary challenge the team faced during the project was to lift the Cold box high enough to clear the obstacles around the control building.

WIND POWER: Wind Turbine Generator Installation

WASHINGTON

Barnhart was contracted to perform the largest turbine install in the U.S. The project was awarded on safety, project planning and overall best value for the project and comprised multiple turbine strings in the hills of eastern Washington State. The wind farm has 149 wind turbine generators – each of which has a 2.3-megawatt generating capacity (enough output, on average, to serve about 700 homes). Each of the wind turbines stands 430′ high from the base to the tip of a vertical rotor blade. The turbine assemblies weigh 316 tons and the turbine foundations weigh more than 600 tons. The turbine blades are 160′ long and each turbine's three-blade rotor is 331 feet in diameter. Barnhart provided full turbine installation services including down tower electrical wiring, mechanical completion and heavy haul assistance for the transport company since the grades of the site roads were in excess of 15%. The team used the M16000WA main crane, 999 base crane and the HC278 as the offload crane.

HEAVY HAUL: Steam Generator

CALIFORNIA

Barnhart's Long Beach branch completed a challenging Power Plant Project that included: two 260 ton Generators, two 19'6" high Turbines, eight 220 ton HRSGs, and two 20' wide Steam Generators. Barnhart's new dual-lane WesTrac platform trailer, designed by Goldhofer in Germany especially for Barnhart, was created to meet California Department of Transportation (DOT) heavy haul requirements. There were numerous obstacles on the three mile haul and DOT permits were required to move the 157' trailer with a pusher and a puller through city streets. The large load on the tight city streets meant that maneuvering turns posed a significant challenge. The 18 ½' height of the turbine also made it difficult to avoid hitting traffic signals, signs and overhead power lines in the downtown area and the WesTrac trailer had to zigzag from one side of the street to the other. Since the platform trailer can be modified with additional lines and axles, WesTrac is great for multi-state loads and can change the height and width requirements to meet the needs of any commodity and all state DOT regulations.

CIVIL: Accelerated Bridge Construction

MASSACHUSETTS

Barnhart's Marino branch recently completed an Accelerated Bridge Construction (ABC) project in Massachusetts. The scope of work was to pick a new 380 ton bridge from temporary shoring, haul the bridge approximately 500' along railroad tracks and lower it onto its new abutments. The team used two 16-line PSTe Goldhofer trailers, four pyramid shoring stands, four 60" stroke pull-up gantries, two 36" wide x 282' long wide flange steel beams and two 72'6" lengths of 5' girder in the lift system to move the bridge.

Incredibly, all of the work to finish the project was completed within a 3-day window from late one Friday evening to late Monday evening – railroad tracks beneath the bridge were closed, the old bridge was demolished, new precast beams were set in place atop the abutments, and the team moved the new bridge span and set the bridge in its final location.

REMOVE & REPLACE: Barnhart Tipstick with End Swivel

INDIANA

Barnhart was contracted by a client to install a 63,000 lb. base plate and a 100,000 lb. coil positioner at an Indiana steel plant. The plant's existing overhead crane could not be maneuvered over the base plate's center of gravity (CG) and coil positioner. Barnhart's Tipstick provided a lifting point for both pieces over the CG. The Tipstick also offered a cantilever system to get under a 23′ roof obstruction and reach over the centerline of the pit. In addition, the Tipstick provided a tipping solution to lower the pieces down into the 10′ deep pit.

The client provided a 500 ton hydro to lift and hold Barnhart's Tipstick system for the safe and efficient installation of both the base plate and coil positioner which the Barnhart team rigged, lifted and set during outage. Barnhart's Tipstick allowed the coil positioner to be assembled off site and set as one complete piece during the critical stand outage.

NUCLEAR POWER: Remove & Replace FHWs

WISCONSIN (SC&RA RIGGING JOB OF THE YEAR)

Barnhart won the 2011 **SC&RA Rigging Job of the Year** with its project at a Wisconsin nuclear power station. The scope of the project was to remove and replace four Feedwater Heaters (FWHs), a condensate cooler and two main feed pump/motor skids. Barnhart's team met several challenges – the lightweight grating and floor beams would not support the weight of the 124,000 lb. FHWs. In addition, the 42' long by 6' diameter FHWs were difficult to maneuver through the facility. So the team cut doors into the building's side to remove and replace the FHWs in the building using a Tri-Block rigging system and a 500 ton All Terrain Crane. Barnhart's engineers designed new tools including a sliding gantry and track system, a crossing gantry track system and a gantry saddle system to secure the new FHWs during the lifts and installation.

NEW TOOLS: The Tri-Block

NEW EQUIPMENT

Barnhart, an industry leader in innovative rigging solutions, designed and fabricated the Tri-Block for a challenging environmental retrofit project in 2011. One of the Tri-Block's significant advantages is that it can eliminate the use of a second crane; it can be used as a substitute for a hook on a crane. With a lifting capacity of 500 kips, its applications include self-tailing and a cantilevered beam system.

The Tri-Block's swiveling idler sheave assembly sets it apart from quad blocks since the assembly allows the load to be rotated 90° from the boom center line and be mounted on either side of the upper block. In addition, the lower block can swivel in conjunction with the upper block which allows for greater load maneuverability.

(Read the cover story in this issue for more specific information about the Tri-Block's recent application.)

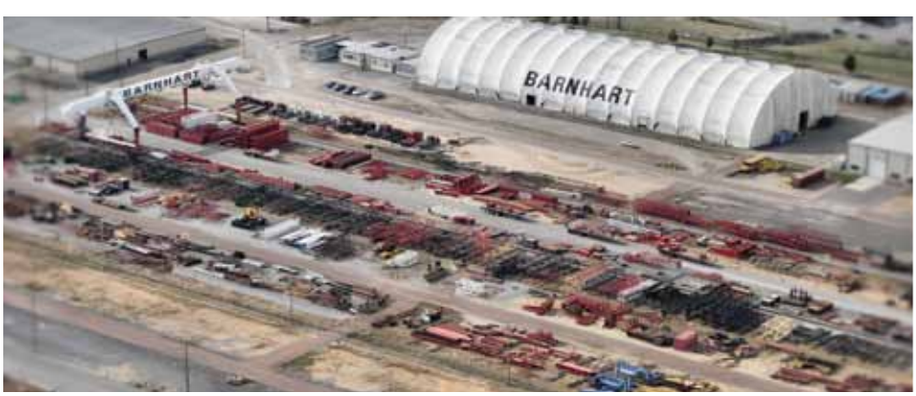
BARNHART: Memphis

Barnhart's Memphis Branch serves as the company's main hub and, with more than 100 employees, it is the largest of more than 20 branches across the U.S. The branch features all the equipment capabilities that Barnhart offers and has over 500,000 square feet of inside industrial warehouse storage and 10 acres of outside storage. As a result, the branch offers a wide inventory of operated crane rental services (up to 600 ton capacity), industrial machinery moving and storage capabilities. In addition, the equipment inventory includes Goldhofer platform trailers and dolly rigs for over the road heavy hauling capacities up to 450 tons and unlimited onsite hauling capabilities.

Located at the Port of Memphis, the branch has heavy lift capabilities with a dedicated 1250 ton derrick crane known as 'Ichabod'. There is also barge and rail access at the port. So the Memphis branch can handle transportation and heavy cargo logistic solutions. The terminal also attracts equipment fabricators and contractors due to an onsite fabrication building with storage capabilities.

The branch is able to perform and provide services across all the markets Barnhart serves: refining, chemical, nuclear, power generation, and heavy civil and industrial warehousing. Since Memphis has very large equipment fleet and labor pool available, the branch has the ability to pull off large outages and turnarounds in refineries, nuclear plants and chemical facilities as well.

Along with the port and access to waterways, the city of Memphis contains the yards for each of the nation's top four railways. Memphis Branch Manager J.D. Odom said, "Memphis is the nation's busiest distribution center and Barnhart has strategic locations in the heart of the city and at the Port of Memphis. Our heavy lift terminal and storage capabilities allow us to capitalize on the strong infrastructure and logistics capabilities Memphis offers in order to serve our clients and meet their needs."



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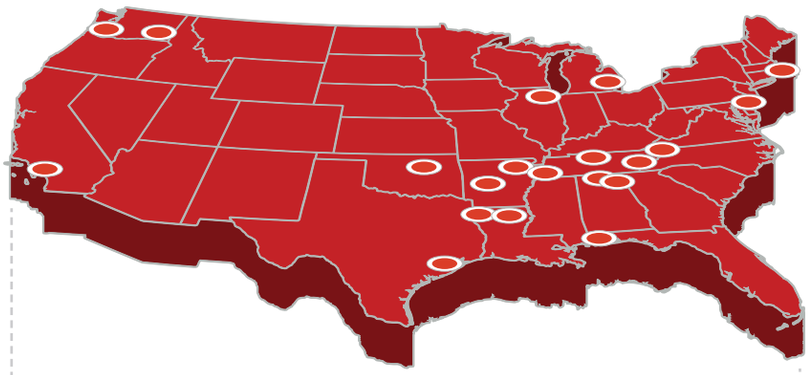
NATIONWIDE OFFICE LOCATIONS & FACILITIES



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- FAIRHOPE, AL SERVICE CENTER
- GADSDEN, AL FULL SERVICE
- MOBILE, AL FULL SERVICE
- BLYTHEVILLE, AR FULL SERVICE
- LITTLE ROCK, AR FULL SERVICE
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- HOUSTON, TX RIGGING & TRANSPORT
- RICHLAND, WA RIGGING & TRANSPORT
- MONROE, MI RIGGING & TRANSPORT

HEAVY LIFTING, MOVING AND SLIDING
Hydraulic Gantries to 800 tons
Sliding Systems from 100 to 1000 tons
Fork Lifts to 120,000 lbs w/ hydraulic booms
Strand Lifts to 700 tons
Hoists to 500 tons
Modular Lift Towers to 2800 tons

TELESCOPIC BOOM CRANES
110 cranes from 17.5 to 80 tons
25 cranes from 100 to 180 tons
15 cranes from 210 to 600 tons

LATTICE BOOM CRANES
Crawlers from 250 to 700 tons
Truck cranes from 125 to 800 tons
Ringer cranes from 360 to 1,760 tons

TRANSPORTATION SERVICES
Capacity of over 6,500 tons of Hydraulic Platform Trailors, including SPMT and PSTe
Barge and Rail Loading and Securement
Dolly Transporters to 1,000 tons
Temporary Bridges to 152'
Jumper Ramps 30' to 60'

STORAGE CAPABILITIES
500,000 Square Feet of Indoor Warehousing
Over 100 Acres of Outdoor Storage

MARINE SERVICES
Memphis, TN - Heavy Lift Terminal with 1,250 Derrick Crane, Rail and Heavy Storage
Mobile, AL - 400 ton Barge Crane
Decatur, AL - Barge Dock, Cranes to 500 tons, RO/RO

WEIGHING SYSTEMS
Multi-point weighing up to 3000 Tons