

## Birmingham Supplies U.S. Army

The mobile U.S. Army needs to replace, repair or build from scratch a bridge at a moment's notice. They also need to build or improve docks and seawalls to enable the flow of material. To do so they need easily deployable pile driving equipment that can be mobilized to any location on the face of the globe. These same tools can be used for humanitarian efforts and have been used in the past to repair some of the damages caused by hurricanes and other natural disasters.

The main challenges that this contract presented were:

- army wanted a "pile driving kit" that would be capable of driving steel pipe and H piles, timber and concrete piles as well as sheets
- kit had to be self-contained, readily transportable, and easily assembled for use
- use of the tools had to be easily understood by someone with minimal training
- the kit was to be used in conjunction with a Grove AT422T crane with a capacity of 22 tons on outriggers, reduced to 11 tons on rubber tires
- the kit was to be stored in a durable, weather resistant, easily transported container
- the pile driving hammer had to be able to run on a variety of fuels that might be on hand, including jet fuel
- the hammer needed to start and run easily in extreme temperature conditions – 50° to + 120° F

**Birmingham Foundation Solutions** drew on the field experience of its pile driving crews in devising an integrated solution. Rather than presenting a "hammer and leads" the goal was to offer an encompassing system from packaging, rig-up, positioning, driving and knock down. The field crew's suggestions were then put to paper by Birmingham's in-house Engineering Department. The engineers recognized that the operational requirements for the kit would be severely limited by the capacity of the chosen crane. Thus, weight saving of the hammer, leads and attachments was critical. Birmingham proposed a lightweight version of its 2005 series hammer, utilizing a high strength steel body rather than an iron casting to optimize the strength to weight ratio. This new hammer is part of Birmingham's clean combustion line. The lead system is a lightweight modular vertical travel lead, whose position is controlled by a hydraulic spotter. Birmingham was fortunate to be able to work along with Grove Crane, a division of the **Manitowoc Crane Group**. Adapters for various pile types are included in the box. As the kit needed to be completely self sufficient, toolboxes including such basic items as slings, wrenches and sledgehammers are included along with spare parts for the hammer.



The kit is packaged in a steel box, slightly under the size of a standard half-height 20-foot shipping container. The box keeps out the weather and is capable of being slung on a ship, forklifted across a yard or parachuted out. Given the global reach of the US

army, the kits are manufactured either in military green or desert tan. Some of the kits are currently deployed in the Middle East driving security barriers around US military bases.

The Army is very positive about the new tools. Asserting that Birminghamers can drive piles quickly with a variety of different types of material, Scott Rybicki, who was the Army's Contract Specialist responsible says, "The soldiers who saw the first pile drivers were ecstatic."

The older system took a four-man crew two days to put together prior to being able to start work. The Birmingham solution took three men only two hours to be assembled, up and ready! That earned a lot of kudos. The new hammers have been received so well the order has grown well past 100 units.

Birmingham Foundation Solutions is in the second year of a three year contract to provide these tools to the Army's TACOM. As the successful supplier, Birmingham had to undergo weeks of First Article Testing where the equipment literally drove every sort of pile from dawn to dusk. Laboratory testing was used to prove cold weather performance. The Army was a demanding customer both in what they wanted the equipment to be capable of doing and the quality, robustness and compactness they required. Birmingham are adapting this successful concept into a civilian version for those contractors that want a compact pile driving solution that can be instantly mobilized.