

# *the* **OUTRIGGER**

**R. Baker & Son Magazine**  
*Service-Disabled Veteran-Owned Business*

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## **R. Baker & Son - Tank Farm Dismantling**

The NY/NJ/CT tri-state area is home for a large number of tank farms serving pharmaceutical, food and beverage, industrial manufacturing and petrochemical industries. Dismantling a tank farm is not typically a complex undertaking, but requires an experienced dismantling contractor to properly identify safety and environmental hazards as well as asset recovery opportunities. R. Baker & Son has been involved in dozens of tank farm dismantling projects over the past few decades, and one fairly recent one in northern New Jersey had us performing the mechanical, electrical, and structural dismantling of several tank farms.

Erected in the early 80s, the tank farms mainly consisted of elevated stainless-steel tanks ranging from 500 to 10,000 gallons covered by steel-framed Butler-style roof systems. Most of the piping was stainless steel, with some plastic piping, and there were several sets of pumps for product transfer between tanks and delivery trucks. Connection points to the tanks, pumps, and other accessories were either stainless-steel weld or tri-clover clamp. There was an extensive grounding system for all tanks, pumps, and piping, along with several grounding bars for static connection of drums. All of the lighting and power for pumps and outlets for portable pumps were explosion-proof due to a hazardous environment Class I, Division 1, groups C and D classification.

Dismantlement of the tank farm entailed unbolting and cutting of all piping, pumps, tanks, and electrical systems after they were cleaned and identified as safe for lockout tag out. Salvageable pumps and fittings were carefully recovered for reuse at another facility. Once all of the mechanical, electrical and structural elements were removed, R. Baker team members dismantled the parapet wall surrounding the tank farms. Concrete floor trench drains and holding tanks were removed from the ground, and the concrete was tested for any contaminants before being cut and removed for recycling. Clean backfill and stone replaced the concrete floor and trench to make the area reusable again.



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# The Project Triangle



There's an old saying in the construction industry: "You can have it fast, you can have it good, or you can have it cheap. Pick two". This is what's known as the "project triangle", whose sides consist of three constraints, time, cost, and scope, with quality at the center. Emphasis on one side of the triangle will usually affect at least one of the other two. If time is of the essence, the budget can be increased or the scope reduced so the project can be completed more quickly. If more features are desired, cost goes up and the project takes longer.

Does the old "pick two" approach still apply in 2021? Not as much as it has in the past, because owners have become more demanding. Rather than settling for two sides of the triangle and forsaking a third, there's more expectation for a greater balance

of all three, especially in our current economy. This is why it's important to choose experienced, top-notch contractors like R. Baker & Son.

Nowadays, more contractors are competing for the same jobs, so they're increasingly called upon to come up with ways to deliver quality results while keeping the triangle equilateral and intact. Project plans often include fewer design details than they used to, leaving it up to individual contractors to fill in the blanks. Seasoned innovators like Baker have the ability to assess a project from every angle to figure out the best way to deliver more for less. Experience in value engineering and constructability is essential, as are strong communication and coordination with the client. Logistical challenges must be overcome with increased efficiency, and many owners now demand refurbishment and reuse whenever possible.

R. Baker & Son has the ability to thoroughly assess a project, recognize the challenges, work out the fine details, and implement them within the time-money-scope constraints, and we've been doing it for over 85 years.

## Hard Hat History: WWI Doughboy Inspired the Hard Boiled Hat

World War I was a bloody four-year conflict, and millions of Allied troops were killed. Countless lives were undoubtedly saved, however by the Brodie helmet, known among U.S. soldiers as the doughboy. When a young Army lieutenant named Edward Bullard, who had served in the cavalry in France, returned home to San Francisco to work at his family's business, which produced carbide lamps and mining equipment for gold and copper miners, he was struck with an idea. The E.D. Bullard Company should design and produce protective hats for miners based on the doughboy helmet he'd worn on the frontlines.

Back in the early twentieth century, there was no such thing as a hardhat. Miners at that time typically wore a cloth or canvas cap with a leather brim – scant protection from dangers found in a mine. Bullard realized that a metal helmet was impractical for working underground and would be too expensive for miners to afford, so he came up with a hat made of heavy duck canvas formed to fit the head with steam. He added two leather brims, painted it black, coated it in shellac for durability, and fitted the inside with a suspension device to distribute the force of an impact. Dubbed the Hard Boiled Hat due to the steaming process, Bullard's creation was patented in 1919 and became the world's first commercially-available head protection gear.



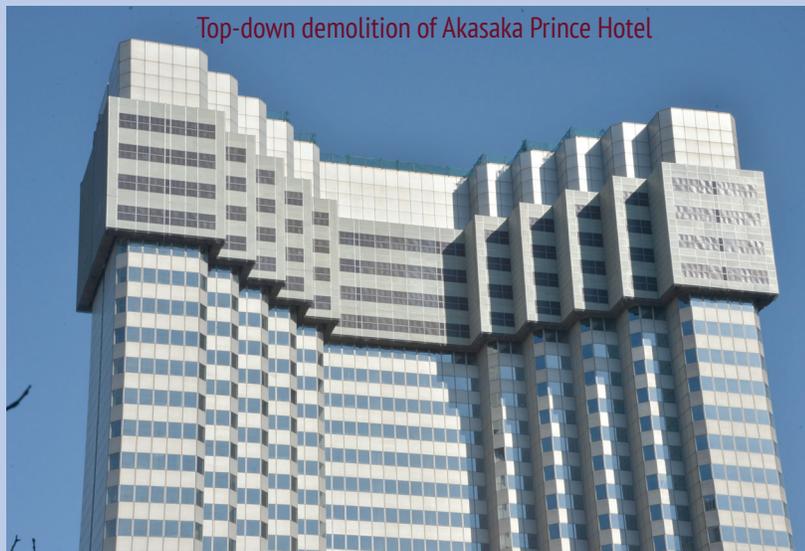
Miners eagerly adopted the Hard Boiled Hat, and soon word began to spread to other industries. Bullard adapted and improved upon his original design for different uses, receiving thirteen more patents for his inventions. Popularity surged in 1931 when Boulder Dam construction workers began wearing Bullard hard hats, and the chief engineer in charge of construction of the Golden Gate Bridge required them for all workers to protect them from falling rivets. The company now known simply as Bullard remains, to this day, a leading manufacturer of hard hats and various other types of personal protective equipment.

## Demolition Innovation: Tokyo's Incredible Shrinking Buildings

Demolishing a high-rise building in a densely populated city is always an extreme challenge, but Japanese companies have developed two pioneering techniques for dismantling obsolete Tokyo office towers that seem to defy gravity. These methods are cleaner and quieter than traditional demolition, not to mention mostly imperceptible to Tokyo city dwellers at large.

### TOP-DOWN DEMOLITION

Taisei Corporation's TECOREP system dismantles buildings from the top down, with all work concealed by a four-story moving scaffold "cap" encased in panels made to look like part of the façade. Steel beams and concrete floors are removed using hydraulic shears and other heavy equipment, and debris is moved to the ground via a crane inside the building. Floors are supported during the process by a system of temporary columns and computer-controlled jacks. Once two floors have been completely removed, the columns and scaffold cap are lowered and demolition begins on the next two floors. With all work occurring under the cap, noise levels are about 20 decibels quieter than conventional demolition and dust is reduced by 90 percent to meet Tokyo's stringent environmental standards. See top-down demolition in action. [See top-down demolition in action.](#)



Top-down demolition of Akasaka Prince Hotel

### BOTTOM-UP DEMOLITION

The reverse of the above method is the remarkable bottom-up system developed by Kajima Corporation in which all demolition safely takes place at ground level. As each floor is gutted, steel columns supported on giant jacks are cut in 30-inch increments and the entire structure is slowly lowered to the ground. Floors are supported during the process by a system of temporary columns and computer-controlled jacks. Hazardous materials like asbestos can be removed floor-by-floor rather than having to strip the entire building before demolition can begin. Bottom-up demolition video. [Bottom-up demolition video.](#)

Struck-by objects is a leading cause of construction-related accidents, with 75% of fatalities involving moving vehicles like trucks, cranes and other heavy equipment. Common risks when safety practices are not properly followed include

## Vehicle Struck-By Safety

workers being pinned between vehicles and walls, struck by swinging backhoes, trapped beneath overturned vehicles, and struck by vehicles in reverse. OSHA recommends numerous practices to prevent such incidents.

First, seatbelts should be worn as required. Drivers should not operate in reverse with obstructed rear view unless equipped with an audible reverse alarm or another worker signaling that movement is safe. Vehicles should be inspected before each shift and should only be operated on roads or grades that are properly constructed and maintained. Heavy equipment attachments should be lowered or blocked when not in use with controls left in neutral. Parking brakes should be used, and wheels chocked when on an incline. Vehicles loaded by cranes or heavy equipment should have a cap shield or canopy to protect the driver from falling materials. Personnel should not be carried on a vehicle unless there is a safe place to ride. All workers must be highly visible in all levels of light, and traffic signs, barricades or flaggers should be used when working near public roadways. And finally, do not exceed a vehicle's rated load or lift capacity, and make sure all personnel are in the clear before dumping or lifting.

