



# *the* OUTRIGGER

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

## R. Baker & Son Completes Large Industrial Processing Assembly Project

Plant relocation and machinery moving have always been among R. Baker & Son's main services, but our involvement in large, soup-to-nuts assembly projects has grown exponentially as we gain prominence as a leader in the plant assembly arena. Over the last few years, we have completed projects in various industries including pharmaceuticals, petrochemical, manufacturing, agricultural, and high tech.

R. Baker & Son recently completed a particularly complex project at a new 150,000 sq. ft. processing plant, assembling, rigging and setting all new equipment including a large conveyer system, shredders, process and mixing tanks, agitators, conical holding vats, ovens, and various other equipment and systems. Most included electrical panels, local interface panels, loose instruments, and mechanical assemblies, and we were also tasked with installation of mechanical piping in several areas as well as electrical connection between some equipment sections.

Precise logistics management was central to maintaining smooth, organized workflow. With as many as 21 Baker crew members on the jobsite at one time, large shipments of sectioned equipment arriving daily, and hundreds of boxes and containers of assorted parts and fasteners to keep track of, each item was carefully logged, marked, stored, and mapped to ensure that all components could be quickly located and were readily accessible.

Space was at a premium on this bustling project, and with multiple crews working in different areas using equipment like fork lifts, aerial booms, and scissor lifts, there was some potential for chaos. Our project team was able to prevent this from happening by designating a staging area and adjacent buffer zone to provide ample room for crews and equipment to maneuver.

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**LARGE INDUSTRIAL PROCESSING ASSEMBLY PROJECT  
CONSTRUCTION ROBOTS CHANGING OUR INDUSTRY  
PREVENTING SUSPENSION TRAUMA - DEMOLITION HISTORY**

# Construction Robots are Poised to Change the Future of Our Industry

Autonomous robotic technologies are making strides in the construction industry, with promising new equipment being introduced each year. Construction presents many challenges for autonomous equipment – safe operation, navigating busy worksites, irregular terrain, dust and dirt, weather conditions, etc. – but steady progress is being made, particularly with AI construction robots that perform repetitive, time-consuming tasks.

In June 2020, a bricklaying robot made by Australian robotics company FBR broke its own speed record by laying more than two hundred blocks per hour. [Hadrian X](#), as it's known, can build quickly, safely, and accurately with less waste and, according to FBR's website, significant savings. [Advanced Construction Robotics](#) has developed an autonomous reinforcing bar installation robot that's gaining in popularity, especially in bridge construction. TyBot self-ties as many as 1,000 rebar intersections per hour, rain or shine, and can operate around the clock. Also under development by ACR is IronBot, which will carry and place over 50,000 lbs. of rebar per shift. Hilti's entry in the construction robot sector is [Jaibot](#), a semi-autonomous overhead drilling tool designed for MEP and interior finishing installation work. Paired with BIM technology, Jaibot increases accuracy, speed and productivity, and removes risks associated with strenuous overhead work.

Some commercially-available construction robotics have even greater autonomy and mobility than the aforementioned, most notably a robotic "dog" named Spot that made a huge splash on YouTube in 2020 with videos showcasing its dance skills and fluid motion.

[Boston Dynamics](#) yellow, four-legged autonomous robot is engineered to perform routine inspection and data capture tasks while navigating various obstacles, in wet, dusty or hazardous conditions, and over all types of terrain. Spot can perform duties like reading analog gauges with its 360° camera, capturing thermal images, detecting leaks, and creating digital laser scans in areas considered risky for their human counterparts. With the addition of an optional arm, it can handle manual, semi-automated, or fully-automated actions like grasping, lifting, carrying, placing or dragging items, as well as turning valves, flipping levers, and opening doors. Watch Spot's captivating launch video seen by over 11 million viewers [here](#).



## Assembly Project: Industrial Processing Equipment

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Assembly of larger or more intricate equipment was performed in close coordination with manufacturer representatives. In two instances when reps were unable to come to the jobsite in person due to Covid-19 travel restrictions, field video conferencing using tablets and mobile phones turned out to be the next best thing. When it came to setting and anchoring the assembled equipment, 3D modeling was used to establish precise locations. We also used laser scans of the concrete floors to determine flatness and levelness and reveal where shims or other modifications would be required.



## Simple PPE Straps & Rapid Rescue Can Prevent Suspension Trauma

Falls from elevation are extremely common in the construction industry, but the great majority of these accidents are entirely preventable with engineering and administrative controls that include signs, barricades and guard rails, and personal protective equipment like harnesses, belts, and lanyards. A worker saved by fall-arrest PPE may not be out of danger, however, due to a potentially-fatal condition known as suspension trauma that can occur in as little as 15 minutes if a fallen worker remains suspended in a vertical position with the legs relaxed for a prolonged period of time. Leg straps constrict the veins in the back of the thighs, causing blood to pool in the legs and preventing it from returning to the heart. Additionally, lack of circulation causes lactic acid to build up in the pooled blood, and the kidneys, liver and heart can be overwhelmed by the high levels of lactic acid that flood the body when circulation is restored.

Fortunately, suspension trauma, also known as harness hang syndrome and orthostatic intolerance, can be prevented by two simple, lightweight pieces of PPE known as suspension trauma relief straps, which are held in two small pouches attached to each side of a harness. When a fall occurs, the worker deploys the straps and buckles them together to make a loop on which he can stand and brace his weight. This relieves pressure, allows leg muscles to contract, and restores proper blood circulation until rescue can occur. Just as important as PPE in preventing suspension trauma is a fall protection plan for all work at elevation that includes a rescue plan and worker training. Rapid rescue is particularly critical when a worker is unconscious and thereby unable to deploy the trauma straps.



## DEMOLITION HISTORY:

**Why There's A Huge Hole In One Of The Pyramids** At the end of the 12th century, an ambitious young Egyptian sultan named al-Aziz Uthman decided to demolish the Pyramids of Giza, starting with Menkaure, the smallest of the three. His motives for taking on this seemingly impossible task (even in our modern times) is unclear, but historians have a few theories. Some believe he wanted to repurpose the stones for the fortification of Cairo, or that he believed there was treasure buried beneath Menkaure, or that he saw the pyramids as pagan idolatry, which Islam condemns as sinful. Regardless, his efforts were ill-advised to say the least.



Day after day, workers toiled using wedges, levers and ropes to dislodge the stones and pull them from the side of the pyramid. The massive blocks burrowed into the sand as they fell away and required extraordinary efforts to free them. The work was excruciatingly slow and difficult, and the workers only managed to move one or two stones a day. After eight long months, al-Aziz finally came to his senses and abandoned the fruitless project, having succeeded only in leaving the unsightly vertical gash in the north face of the pyramid.