

## Professionally Engineered “Disaster” Benefits First Responders

### SUMMARY

Disaster has found a home in Perry, Georgia. A grim cityscape, where compromised tilt-up constructed buildings sit along a city block in various states of collapse, serves as a jarring reminder of the potential adversity faced in the wake of catastrophe.

However, this particular scene is not a result of recent tragedy or even the set of Hollywood’s latest apocalyptic blockbuster. It is a carefully designed and constructed facility representing the numerous challenges our nation’s first responders and emergency personnel could face following a major calamity.

The one-of-a kind, privately-funded facility, aptly named Guardian Centers of Georgia, LLC., will provide professional and volunteer first responders from government and private agencies across the nation, with real-life scenario disaster training. Training will encompass response needs resulting from natural disasters as well as acts of terrorism. In addition to the urban setting of the collapsed structures, The Guardian Centers of Georgia, LLC. complex includes a residential setting that can be flooded to facilitate water rescues, a highway, a subway system, helicopter pad and command center. The facility can provide training for up to 5,000 responders at any given time.

### CUSTOMER

- Dealer: Tucker-Kirby
- Contractor

### PROJECT

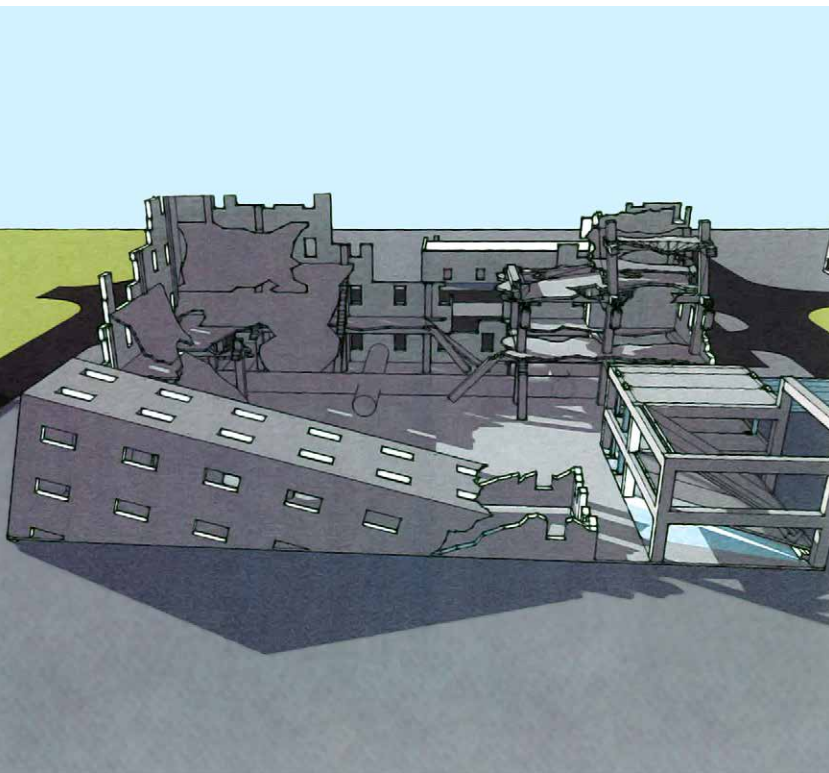
- Guardian Centers of Georgia, LLC in Perry, Georgia

### CHALLENGE

The “collapsed” structures section of the complex would be the first tilt-up job for the project’s contractor and this would not be the ordinary tilt-up project.



*Tilt-up construction is typically designed for structures that are constructed in plumb, so this project presented unique challenges.*



*Dayton Superior provided engineering services to design the “collapsed” structures.*

In standard tilt-up projects, final panel placement would be vertical or flat and panels would not have broken edges. Yet, for this job, “damaged” panels and irregular placement is exactly what was required. Because panels would intentionally include broken edges, highly detailed calculations would be needed to determine the proper location for each insert. While final placement of the panels would be at angles of varying degrees off of horizontal.

## SOLUTION

Dayton Superior’s Engineering Services group was provided the panel plans for the project from Tucker-Kirby. Having worked with Dayton Superior on numerous tilt-up projects, Tucker-Kirby knew they could rely on Dayton Superior’s engineering expertise for solutions to the project’s challenges.

Because of the atypical panel design and placement, Kevin Couch, Product Applications Designer with Dayton Superior, approached the panels from a precast perspective. A standard tilt-up layout would require inserts with a safety factor of 2 to 1, but since these panels would potentially be lifted more than once, precast inserts with a safety factor of 4 to 1 were the answer. This safety factor and use of Dayton Superior’s T110 Lifting System also allowed the contractor to lift the panels flat and force them into the final angled positions. Because of the many “broken” panel edges, a large amount of inputs were used and significant time was taken in developing the calculations for the panel’s exact insert locations, so that each panel would lift correctly.

“Dayton Superior’s Engineering Services, along with Tim Stewart of Tucker-Kirby, played a significant role in the successful lifting and placement of the unique tilt-up building segments. Dayton Superior’s engineering services developed a perfect lifting solution that performed exactly as the contractor requested.”

## RESULTS

- The T110 Lifting System provided the strength and versatility needed for the project’s complex panel design and lifting needs
- Utilizing inserts with a 4 to 1 safety factor allowed for panels to be lifted flat and successfully placed
- Engineering Services provided professional solutions to unique construction challenges



*Dayton Superior worked closely with the contractor to make sure that the lifts went smoothly.*



*Working in realistic disaster surroundings provides first responders with valuable experience.*