# Solving Today's Constructability Challenge, One Project at a Time

*Ceco's design-assist capabilities help customers build efficient, constructable structures. When Ceco is brought in early during the project's planning, we can devise the most constructable design for saving money and time. During construction, Ceco's design-assist services can help resolve complicated challenges on the project site.*

Today's buzz word is constructability. We often hear it during design as well as construction. When we hear about constructability during construction, it's too late. The problem cannot be resolved, although it can be reduced. Ceco's engineering and field teams devise plans to apply a construction approach to minimize the impact of poorly constructable documents. These approaches often have creative and occasionally innovative results.

## WHAT IS CONSTRUCTABILITY?

For cast-in-place projects, constructability is a series of broad concepts. Constructability allows a project to be built faster, requiring fewer RFIs and field changes, while maximizing labor and crew productivities. Constructability embraces an owner's goals and architectural objectives.

Highly constructable projects allow Ceco to plan in detail, efficiently utilize construction systems, achieve fast and predictable outcomes, help finish trades start earlier, and minimize trade tolerance conflicts requiring re-work. All these concepts deliver cost-effective results to the owner due to the realized speed and efficiency.

## DESIGN ASSIST IS CECO'S ANSWER

Ceco is a concrete construction specialist, not a structural engineer expert. However, Ceco has offered constructability expertise on projects for decades. Working with the design team from the earliest concept allows the design documents to reflect constructable solutions at a time when the concepts can be embraced.

We ask critical questions such as:

- Has formwork repetition, panel size and mechanization for movement been maximized?
- Have the economics of materials vs. labor been vetted?
- Are site logistics, deliveries, pour sequencing and materials hoisting considered in the design documents?
- Have construction loads, column transitions, shrinkage, time, temperature and post-tensioning (PT) forces been addressed efficiently?
- Have the specifications been reviewed and trade tolerance conflicts been considered in design for constructability?
- Have reinforcing congestion, PT anchorage, and mechanical or embedded items been considered for conflict resolution and constructability early enough to adjust?
- Has drainage, cracking, or freeze-thaw concerns been addressed?
- Are the architectural & structural documents coordinated and detailed for consistent clarity?

## RECENT PROJECT EXAMPLES OF CECO'S DESIGN ASSIST IMPACT

- **360 Rosemary, West Palm Beach, FL:** The Rosemary project was a structural steel designed office building that was over budget. The project stalled until Ceco provided a competitive cast-in-place option.

360 Rosemary

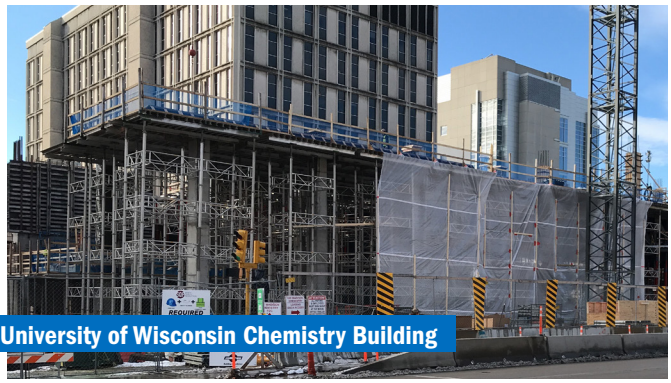
- **GE Global Headquarters, Cincinnati, OH:** The 10-level cast-in-place slab design required non-standard wide module voids, ranging from 4' to 9' in width with variations from floor to floor. Ceco provided the structural engineer a new slab configuration utilizing standardized pan widths, while standardizing the floor and void layouts. Ceco's pro-active design-assist saved $300K in formwork costs and more than a month on the schedule.

# CECO ADVANTAGE »» DESIGN ASSIST

- **Modera Tampa, Tampa, FL:** This cast-in-place garage surrounding apartments had a problematic connection between the two structures due to predictable future movement. Ceco was involved early and proposed a constructable solution to solve the problem and save time.
- **Holiday Inn Express, Lincoln, NE:** Prior to construction, Ceco identified numerous drawing discrepancies due to late design changes. In addition, there were PT, embedded items and MEP location conflicts. Ceco worked with the structural engineer to focus on these conflicts and find a constructable solution.
- **Embassy Suites, Kansas City, KS:** At an early stage of design and budget, the owner was anxious about a lack of the design's cost clarity. Ceco provided the owner a design reflecting the efficiencies of a constructible design and a corresponding guaranteed budget. The result was so valued by the owner that the same approach has been repeated on several following projects.
- **MDHA Bus Barn, Nashville, TN:** Before the start of construction, Ceco identified several design concerns thanks to Ceco's BIM construction modeling. These included insufficient parking height clearances, improperly located slab edges, crickets, elevator shaft openings and beam locations. Ceco initiated a collaborative meeting to have these document issues addressed. Design changes were made well before the issues would have created field construction delays.
- **790 E Broward, Miami, FL:** The pool deck design had multiple conflicts, including misplaced drains, uncoordinated drain heights vs. structural slab elevations, upturned beam and topping slab conflicts, poor drainage, and unplanned slab paver thickness. The garage entrance was designed without the minimum height clearance. Ceco then led weekly design team coordination meetings to get ahead of these issues. We closed the constructability gap and successfully prevented a schedule delay.

MDHA Bus Barn

- **Vande Garage, St. Louis, MO:** This design/build garage project had a wrinkle: An elevator was needed to feed an adjacent office building. Ceco found a constructable solution to expedite the elevator core ahead of the garage. This solution was valued and embraced by the owner.
- **University of Wisconsin Chemistry Building, Madison, WI:** During preconstruction, Ceco offered constructability design suggestions on the nine levels of stacked pour strips that compounded the reshoring loads. Ceco offered a redesign that greatly enhanced the constructability and allowed less reshoring and earlier removal. This design assist saved six weeks on the project schedule.



University of Wisconsin Chemistry Building

## MISSED OPPORTUNITIES

- **The Saltair, St. Petersburg, FL:** The project was over budget as designed. Ceco proposed a constructable redesign that could save the owner more than $2 million. The owner couldn't afford the redesign delay and instead paid the over-budget price.
- **Yale and Harrison Office Building, Seattle, WA:** Although Ceco was involved during preconstruction, Ceco's pourstrip constructability recommendation was not embraced. A year later, the magnitude of necessary reshoring became apparent as it created a barrier for other trades and their progress. Ceco still worked with the structural engineer to mitigate the impact that could have been avoided altogether to save money, design time and schedule time.

## CECO'S DESIGN ASSIST CAN BENEFIT YOU

Ceco is more than a structural concrete contractor. With Ceco's culture of finding better project solutions and years of doing so, you can leverage our experience to benefit your project. Ceco's early involvement increases the potential of constructability gain. The result is time and money savings with reduced risk. Choose Ceco - a company that does what it says it will do, with the desire to earn your next opportunity.

To learn more about Ceco's value to your project, visit www.cecoconcrete.com.