



American Concrete Institute
LOUISIANA CHAPTER
P. O. Box 8787
Metairie, Louisiana 70011

BEST CONCRETE PROJECTS
2013 Awards Competition

Causeway Boulevard Interchange
(Phases I and II)





**American Concrete Institute
LOUISIANA CHAPTER
2013 AWARDS COMPETITION**

ENTRY FORM

Category (Check One):

- Buildings & Parking Structures Highways and Bridges Industrial
 Public Works Paving Special
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Name of Project: Causeway Boulevard Interchange
Location: Metairie, LA
Date of Completion: January 8, 2013
Descriptive Data: Attach separate sheets to supplement the form as required (see entry requirements).
No. of photographs enclosed: Color Prints: 12 Digital Photos (jpeg format): 12

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Contact: Rene A. Chopin III Title: Vice President

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GENERAL PROJECT DESCRIPTION:

The Causeway Boulevard Interchange is the primary artery for the Metairie Business District and for commuters driving into New Orleans from the Louisiana cities of Mandeville and Covington, both located north of Lake Pontchartrain. Utilized by 178,000 motorists per day, it is imperative that the infrastructure's configuration have the optimal design to serve the volume and directional flow of that significant traffic volume. The Louisiana Department of Transportation and Development (LADOTD) retained the engineering firm Burk-Kleinpeter, Inc. (BKI) to upgrade this interchange's outdated design, transforming it from a cloverleaf configuration to one with directional and semi-directional ramps. James Construction Group, LLC (JCG) was awarded the contract to perform the interchange improvements.

The new interchange system now efficiently serves two major routes: (1) Causeway Boulevard, a key north-south route leading to the Lake Pontchartrain Causeway Bridge; and (2) Veterans Memorial Boulevard, the main street in Metairie, which runs parallel to I-10. Also, prior to this project's completion, traffic from Causeway and Veterans boulevards were required to merge together as it entered and exited I-10. The functionality of the completed project now allows the motoring public to travel through the interchange safely, without having to merge abruptly into oncoming traffic. Motorists have dedicated lanes to travel through the Causeway Boulevard Interchange.

Since the completion of the new interchange, it is apparent that it is functioning according to its planned purpose. Not only are the dedicated lanes and ramps providing a safer driving experience, but by enhancing traffic flow it is saving motorists an average of 15 minutes of one-way travel time.

DESCRIPTION OF THE PORTION OF PROJECT USING CONCRETE PRODUCTS:

Concrete design was utilized on the Causeway Interchange on the following:

- Approach slabs, slab spans, and elevated concrete decks.
- Pre-cast pre-stressed Type IV and Bulb-T AASHTO concrete girders.
- End, intermediate, and continuity concrete diaphragms for bracing of girders.
- Symmetric and asymmetric pile, hammerhead, and straddle concrete bents.
- Concrete barrier, retaining walls, foundations, and piles.
- Exposed aggregate concrete paving used to match existing on Veterans under Causeway.

The substructure and superstructure construction involved 3,710 CY of Class A concrete; 285 CY of Class A (M) concrete; 5,493 CY of Class AA concrete; and 2.1 million lbs. of reinforcing steel.

WHY SHOULD THE PROJECT BE CONSIDERED FOR THE CONCRETE PROJECT AWARD?

This project is deserving of the concrete project award because of its unique esthetic qualities and its enormous impact on several cities in Louisiana. The concrete bents chosen for this project are not only unique in shape, which will be discussed in the next section, but were combined with masonry products that complement the existing brick structure over Veterans Boulevard (to be discussed in Aesthetic Aspects of the Project).

In addition, the new Causeway Boulevard Interchange was conceived, designed, and constructed with the local and surrounding communities in mind. Prior to this project, the Causeway Boulevard interchange system was outdated. It did not provide the traveling public many avenues for safe passage and was notorious for weaving movements by motorists, leading commuters into hazardous situations when merging with other traffic from Causeway or Veterans Memorial boulevards. The newly constructed interchange now allows commuters to travel on dedicated ramps and travel lanes, which eliminates the previously occurring congestion and has reduced one-way commuting time by 15 minutes.

DESIGN CONCEPT USED FOR CONCRETE MEMBERS:

LADOTD desired an aesthetically pleasing interchange at this major junction. During preliminary design, various bent geometry was submitted for LADOTD to select a preferred design. These shapes could all easily be mass produced with concrete and since traffic was to travel below them, the bents selected had a very open feel.

Pre-stressed girders were utilized for the majority of the structures, improving constructability over heavily traveled roadway.

SPECIAL CONSTRUCTION PROBLEMS AND SOLUTIONS:

The Causeway Boulevard Interchange project presented a number of challenges. Perhaps the greatest challenge was working within mere feet of live traffic. The project team took every measure possible to provide a safe work zone and avoid peak travel times, including road closures and lane shifts, assignment of on-site traffic control professionals, night construction, flaggers to direct traffic, and police to assist with traffic control.

Another challenge was limited space for performance of construction and movement of heavy equipment. While road closures helped make the situation more manageable, they also presented the JCG team with the challenge of time limits. Because any road or lane closure in this highly traveled urban area presented impediments to traffic flow, LADOTD mandated the specific durations and days on which these closures were allowed.

The construction team also made it a priority to maintain traffic flow and motorist and pedestrian access to businesses by coordinating its various disciplines—earthwork, pile-driving, and concrete

crews—and by coordinating with its subcontractors from both phases of the project to schedule and allocate resources such that the duration of lane closures was minimized.

Among the challenges faced by BKI was calculation of stopping sight distances for horizontal and vertical alignments, as well as required super-elevation transitions. Continual reevaluation was done during the design process to ensure that when the final structures were completed, sufficient sight distances were allowed to permit motorists to safely navigate the interchange.

SPECIAL CONSTRUCTION COST SAVINGS:

The contractor was able to excel in many aspects of quality and craftsmanship throughout the duration of this project. The JCG project management team had to strategically plan all concrete deck pours months in advance and in extreme detail, including transportation of materials to the site and assignment of every worker, from supervisors to laborers. On average, each of the six major deck pours required workers to place 550 CY of concrete in a 4 to 6 hour time span, during which period the main arteries to Metairie and New Orleans were closed. Each pour was executed as planned and with no road or lane penalties assessed by LADOTD.

The designer, contractor, and owner worked diligently in a collaborative effort to eliminate potential delays caused by unforeseen conditions not represented in the contract documents. The project team eliminated several anticipated lane closures by working the two phases concurrently and by coordinating subcontractors within road or lane closures. This kind of teamwork enabled the number of closures to be decreased by half and minimized impacts to the traveling public significantly.

SUSTAINABILITY ASPECTS OF PROJECT:

As stated earlier, this interchange cuts 15 minutes of commute time for each of its 178,000 travelers, reducing fuel consumption and emissions on a daily basis. Furthermore, since the new interchange was designed to maximize efficiency, even as the population grows its ability to decrease commute times will be sustained.

AESTHETIC ASPECTS OF THE PROJECT:

Though improved functionality was the primary consideration, aesthetic quality was also a consideration and can be noticed as soon as one approaches the new Causeway Boulevard Interchange. One goal was to have the columns of the new interchange maintain the design aesthetic of the existing Causeway Boulevard/Veterans Memorial Boulevard overpass, which has a brick facade dating back to the 1970s. JCG obtained brick that matched the original, which is no longer available. Now, traveling along Veterans Memorial Boulevard and Causeway Boulevard ground level, one can see that the brick facade around the face of the columns matches the original, creating a cohesive look. Another aesthetic quality of the design is the radial caps, which are complemented by the

fractured fin design on the supporting columns. This aspect can be noticed throughout the entire project.

INNOVATIVE USE OF CONCRETE:

During the larger deck pours, a massive amount of concrete had to be poured quickly to minimize impact on the interstate and major boulevards. As mentioned earlier, 550 CY of concrete were poured in a 4 to 6 hour time frame, this was accomplished by placing 3 pump trucks along the pour area. Instead of moving one truck around getting it in position for each pour, three trucks were placed accordingly, with one on standby in case of any breakdowns.









