

Building College World Series Stadium Requires Traffic Assessment for Downtown Omaha

By Matt Selinger, P.E., PTOE

For 59 years, college baseball has crowned its national champion at the College World Series in Omaha, Neb. Over the years, the city invested more than \$30 million in improvements to Johnny Rosenblatt Stadium to keep the series in Omaha. However, in 2007 negotiations with the National Collegiate Athletic Association (NCAA) stalled during discussions of additional renovations to the ballpark. Based on comments from this discussion, it was decided that Omaha should consider both a renovation plan for Rosenblatt and construction of a new stadium.

DOWNTOWN LOOKS LIKE A HOME RUN, OR DOES IT?

A stadium oversight committee was formed in October 2007 to evaluate alternatives and make recommendations to the mayor. The committee hired a team to study and compare feasible options in November 2007. The initial study focused on identifying potential stadium sites with the goal of screening the alternatives to a preferred site for detailed evaluation.



This artist's rendering shows the proposed stadium to the left and the existing Qwest Center to the upper right.

Eight sites were screened along with the Rosenblatt site option, and a downtown site adjacent to the Qwest Arena-Convention Center (Qwest Center) was chosen as the preferred alternative.

Though the downtown site was the most attractive option, there were significant challenges that needed to be addressed. Key among them was traffic management and adequate parking. The site would replace two of the main parking areas for the Qwest Center and require closing a primary arterial into and out of the convention center area. How could this possibly work?

Because the downtown site met other selection criteria, such as environmental issues, utilities and proximity to existing amenities, further evaluation was warranted to determine if it could handle the traffic demand, the loss of parking and loss of an arterial roadway. The primary transportation issues that arose through discussion with decision makers were:

- How much additional congestion for Qwest Center events will be caused by the new stadium?
- How and where will parking be replaced?

HDR was tasked with determining how the road and parking systems would respond to the new stadium. The need to quickly and convincingly answer these questions was critical to helping decision makers move forward in the stadium study process. While determining study objectives, it was agreed a traffic evaluation for a College World Series event with a new stadium was not required. Decision makers understood



The Qwest Center site currently has 11 exit points.



The revised site plan provides 10 exit points.

that, compared to the existing stadium, a downtown stadium offered superior access to the interstate, increased parking and a street system with considerably higher traffic capacity. So determining how much congestion there would be during the 11 days of the College World Series wasn't really of interest. Instead, the interest was in determining how a typical arena event would be impacted by the new stadium and infrastructure changes. How much additional delay would the new stadium cause?

NEW LINEUP FOR PARKING

A total of 900 parking stalls would be displaced by the new stadium. The study team identified a plan for replacing these stalls with surface lots and even adding 250 more stalls—bringing the total parking number for the Qwest Center to 4,800. The additional parking would come from a combination of city-owned lots, construction of a new lot on city-owned land, expansion on Qwest Center property and acquiring some adjacent open property. The location of the stalls was generally within the same walking radius as those lost; however, the new parking areas resulted in a more dispersed parking system. This turned out to be an important factor.

SCOUTING REPORT ON TRAFFIC FLOW

Analyzing how traffic will flow during overly congested or saturated conditions is especially challenging. First, the right data must be collected. Then, the evaluation must be conducted using a method that differentiates one saturated traffic condition from another. To do this, the study team needed to take all the collected data and develop detailed micro-simulation models for the study area.

Based upon input from Qwest Center staff and the Omaha Police Department, it was determined that data from two

types of major Qwest Center events would need to be collected. The first event was a sold-out college basketball game, which has a fan base that includes a large number of regular attendees. The second data need was a dual event—a sold-out concert in the arena plus a boat show operating in the convention center. This dual event included a higher percentage of drivers unfamiliar with the Qwest Center and downtown transportation system. Driver familiarity was perceived to be a contributing factor to congestion, and the traffic evaluation was going to test this perception.

Traffic data was collected for 15 study intersections around the Qwest Center for pre-event and post-event conditions. The data was used to prepare traffic simulation models calibrated to existing conditions. Once the existing models were completed, new models were prepared that included a revised roadway network with an assumed stadium in place. Traffic volumes were rerouted to match changes to the roadways and parking, and then the stadium models were run. System-level operational measures were gathered from the models for comparison to existing conditions.

AND THE FINAL SCORE IS...

The simulation analysis results the study team found were not what was initially expected. Given the change in parking and closure of a main roadway through the site, it was anticipated the road system would show a slight increase in congestion or no change. The findings instead showed that with a new stadium and the assumed roadway system and parking changes, road users would experience 25 percent less congestion entering and exiting the site for an event. At first this seemed to defy logic, but upon further evaluation of the results the findings were validated and the causes of the projected improvements were identified as follows:

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- The additional and relocated parking dispersed traffic away from existing parking facilities, reducing vehicular conflicts.
- The closed arterial corridor was the primary road utilized for gaining access to several of the parking lots. Removing this road forced a redistribution of traffic that actually reduced vehicular conflicts.

EXTRA BASES

The study team also investigated opportunities to further enhance the transportation system if the stadium moved forward. One of the key items that was observed during data collection and modeled in the simulation was the lack of driver familiarity with the parking systems Qwest Center operated. This was especially noticeable during the dual event when a larger portion of drivers were unfamiliar and were observed to circulate through the downtown roads repeatedly as they tried to reach the parking areas. To address this need, a parking information



Computer simulations used event data to show effects the new stadium would have on traffic operations.

system was conceptualized and included in the improvement package with the new baseball stadium. The parking information system is a network of dynamic message boards and parking status signs providing real-time parking lot usage information to the public as they enter the downtown area. A similar system has been implemented by HDR at a Florida theme park.

Another enhancement the study team identified for addressing the high variability of traffic flow is traffic-adaptive signal control. Adaptive traffic control is technology that automatically senses traffic demand and optimizes the traffic signal timing along an arterial or defined corridor to limit congestion. Currently the method of practice for handling the heavy flows into and out of Qwest Center events is to utilize police officers to direct traffic. The officers control the signals with a hand switch and attempt to maximize traffic flow as best they can. This control is not really optimized considering the police officer at one intersection cannot see or predict what officers are doing at surrounding intersections. As part of the improvement package to support the new stadium, the study team recommended adaptive signal control along primary roadways around the new stadium. HDR is working with a new traffic adaptive technology that is simple to implement and maintain compared to traditional adaptive traffic control. It is anticipated this system will be implemented.

POST-GAME WRAP-UP

The longstanding tradition of playing the College World Series in Omaha is on its way to continuing well into the future. The city and the NCAA signed an agreement to extend their contract 25 years, keeping the series in Omaha through at least 2035. Determining that the proposed downtown site could be configured to handle anticipated traffic flow and parking needs created an attractive stadium alternative to all parties involved and helped drive in the game-winning run. HDR was selected to provide transportation design for the new stadium.

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