



2006

Priority, Market-Ready Technologies and Innovations

Design Build Traffic Signal Projects

Problem:

Traditional traffic signal projects are time consuming and costly

As safety professionals know, when an intersection reaches a threshold at which it can be determined that the use of a traffic signal will improve the safe flow of vehicles, it may take months to complete the process of putting the proper equipment in place. Such installations are also expensive, particularly when they involve right-of-way (ROW) acquisition, utility relocation, and escalating design and materials costs.

Putting It in Perspective

- Installing a new traffic signal typically takes 12 months to complete – seven months for design and five months for construction, including advertisement and bidding process.

Solution:

Design Build Traffic Signal Projects

Design Build traffic signal projects reduce the time between identifying that a signal is warranted and “turning on” a working signal.

The Utah Department of Transportation (UDOT) began development of the Design Build Traffic Signal concept in 2002. The UDOT project development team composed a detailed Request for Proposal (RFP) for Design Build Traffic Signal projects and six design build teams qualified. The first signal was completed within 12 months of the advertisement of the RFP. Subsequent projects shaved more time off the process. Currently, the average completion time for all design build signals is five months. Of the nine installations completed, three were finished in less than three months.

Preliminary engineering costs are 10% less than traditional Design-Bid-Build (D-B-B), and construction engineering and inspection costs are an average 2% less than traditional D-B-B signals. The savings are due to the faster overall project timeline including: quicker plan reviews, focused scope, less redesign effort, and reduction in construction change orders.

The overall total costs are an average 2% less for design build signals than the traditional D-B-B process. The three best signal projects undertaken by UDOT averaged 9% less than similar D-B-B projects.

Successful Applications:

Design Build Traffic Signal projects reduce the time between identifying that a signal is warranted and “turning on” a working signal and cost less than traditional installation methods.

UDOT has completed nine Design Build Traffic Signals. It has been determined that approximately 50% of traffic signal projects are good candidates for design build. Projects that do not have a lot of right-of-way or utility relocation issues are deemed best for this method.

Design Build teams are encouraged to think outside the box when bidding on signal projects. The evaluative RFP bidding process allows the Project Manager to assign point values to the Approach section of the RFP. After teams submit a preliminary design, submittals are evaluated and selected by their overall score, so the lowest bidder may not always be selected.

Teams that are able to reduce ROW impacts and utility relocation costs are often the most successful. For example, UDOT typically prefers a signal pole be located behind the sidewalk at the radius. ROW is usually 12” behind the sidewalk, so an easement or take is required. On one signal project, design teams looked at other locations for the pole and provided a short pedestrian pole with a button behind the sidewalk that fit within the ROW. The shorter pole also avoided overhead utilities. Other methods that have helped reduce time and costs include: adjusting the sidewalk location to avoid impacting underground utilities, using existing signal pole foundations by incorporating a bolt adapter so a new style pole will fit a different bolt pattern on the existing foundation, and consolidating junction boxes for lighting and signal circuits to reduce impact.

Other agencies interested in implementing UDOT’s approach need to be sure their States have laws that allow for design build methods. Promoting the process within the construction industry is important, as well as garnering the support and cooperation of internal divisions within the agency (utilities, right-of-way, safety, construction, etc.)

Benefits

- Can be completed, from start to finish, in three-six months versus 12 months.
- ROW costs, utility relocations and design costs drop using design build.
- Overall project costs are an average of 2% less for Design Build signals than for traditional signal installations.

Additional Resources

Additional information about Design Build Traffic Signal projects is available at www.aashtotig.org

For more information, contact:
Larry Montoya, P.E.
Traffic and Safety Design Engineer
Utah Department of Transportation
801-965-4924
lmontoya@utah.gov

