City of Carlsbad Traffic Signal Project: From Stone Age to State of the Art

Performance Excellence

Submitted by:

City of Carlsbad

Population: 108,000

City Manager:

John Coates

Please submit project for innovation award and Rapid Fire Session

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**Intent of Project/Program/Service**

Our City Council grew concerned that traffic congestion was degrading the quality of life of those that lived, worked and played in the City of Carlsbad. The traffic signal system had been neglected to a point that a complete evaluation and overhaul was needed. The essence of this change was an evolution from a "reactive" to a "proactive" traffic signal program. City Council determined that efficient traffic flow is vital to our community's well-being and economic health and identified the traffic signal system upgrade in their strategic goals.

**Cost/Savings**

Once the excitement wore off from getting council approval for the three-year $5.4M project, staff quickly realized the true scope of work that lay ahead.

An innovative leadership style was used to complete this project ahead of schedule and $1.2 million under budget. The City Council funded the total cost of this project at $5.4M. Our elected officials, who pride themselves on being fiscally conservative, surprised us when they directed staff to come back and request more funds if needed to complete this important project. The project was completed for $4.2M resulting in a cost savings of $1.2M. As news of our early success spread, we received more favorable bids from private sectors firms and vendors eager to be a part of a notable project. The equipment upgrades and new TMC led to a significant reduction in maintenance costs approaching $150,000 per year.

The project cost $4.2M to complete including a following breakdown of itemized costs:

- $2.6M for equipment

- $1.0M for equipment installation

- $0.3M for consulting/design

- $0.3M for TMC

**Innovation Characteristics**

This success stemmed directly from our new approach to risk management and unique teamwork with private consultants and equipment vendors. Our team essentially revolutionized the project management approach to these types of challenging projects and what we learned is directly applicable to other types of project.

**Obstacles**

Specifically we needed to implement a comprehensive traffic signal program including the following tasks:

- identify staffing needs

- develop flexible equipment procurement process

- form effective public/private partnerships

- improve the project cost tracking/approval process

- build a cost effective Traffic Management Center (TMC)

One challenging part of developing the new traffic signal program was workforce planning. In a time when other departments were being asked to eliminate or outsource positions, we took the bold step of creating a new position called a Traffic Systems Operations Specialist. Staff took a progressive approach to filling this position by recruiting candidates similar to what private sector firms typically do. Before the job announcement was circulated, staff met with numerous professionals in the traffic signal field to identify qualities needed to successfully perform this job. Staff realized that while numerous candidates could be found with technical expertise, it would be more important to find the right person with respect to attitude to serving the public.

**Applicable Results and Real World Practicality**

Vision was the centerpiece of our project. Vendors, consultants and contractors all shared our vision and we allowed them to showcase their work and products. All team members participated "from cradle to grave" meaning vendors helped design the network and designers were available for consultation during installation. Our department is now infused with this teamwork approach to project delivery.

Wireless technology presents many challenges, and these types of projects typically focus on "worst case" scenarios meaning engineers prepare conservative cost estimates, staff circulate requests with minimal contingencies, vendors submit bids unable to suggest cost cutting measures, and contractors install equipment with no incentive to streamline the process. Our innovative design/build approach strived to achieve "best case" scenarios that led to some incredible cost savings. We used master purchase agreements to essentially set up a super market where we were allowed to procure equipment on an as-needed basis to streamline the process. Instead of using a "risk avoidance" approach, our team used "risk management" to carefully design and build the system at the same time.

Carlsbad has taken this approach on several new projects. The master purchase agreements allow staff to establish competitive bids without knowing exact quantities. One of the most important aspects we learned from this project is how important it is to clearly establish a vision for a project and identify meaningful ways to measure success. Even though we did not have a formal plan guiding our every move, our team was aligned with a vision to solve every challenge quickly and cost effectively. As noted above, our innovate approach to project management and risk management led to savings of $1.2M. Our ideas are being implemented into other projects that may have a clear goal, but may not be suited to define all of the details in a formal plan before equipment can be purchased.

**Consultant Information**

Numerous private consultants and vendors were used in this project. Most of the design-built process was outsourced. More importantly, private sector contractors were treated like staff extensions with clear expectations that their customer were the drivers of the road and not the accountants in their offices.

Here is a list of our team:

- Siemens

- Iteris

- Actelis

- Encom

- Kimley-Horn and Associates

- McCain

- DDL

- Stack Traffic Consulting