

DESIGN-BUILD DEMONSTRATION PROGRAM PROJECT AUTHORIZATION REQUEST

SM-101-0.0/26.2
04-2A7901

Install Ramp Metering at Various Locations on US 101 in San Mateo County

Executive Summary

This project proposes to install and implement ramp metering at 29 on-ramp locations on US 101 in San Mateo County, in both the northbound and southbound directions. This project will complete the ramp metering system in San Mateo County and will reduce mainline traffic congestion during peak hours.

The Department desires to utilize design-build on this project to achieve several important benefits including faster delivery, transfer of risk, and cost certainty. The Department expects to save nine months or more through the use of design-build. The Department is requesting authorization to award based on Best Value. The Department expects to achieve better value through competition between design-builders on their approach to maintenance of traffic, utility coordination, and environmental coordination.

This project is one of a group of four projects the Department has identified for the use of design-build contracting. The Department's approach to the Design-Build Demonstration Program is to begin with smaller and simpler projects to test the methodology before attempting larger and more complex projects. The Department intends to utilize the lessons learned on these first projects to ensure success on the next set of projects.

Background and Importance of the Project

a. Description and Scope of the Project

This project proposes to complete the installation and implementation of the ramp metering systems along US 101 in San Mateo County, in both the northbound and southbound directions. The project limits are from the Santa Clara County line to the San Francisco County line. A total of 29 locations are included in the scope of work. This project installs new ramp metering equipment and upgrades and activates existing partially constructed ramp metering infrastructure from previous projects. The scope of work includes the construction of High Occupancy Vehicle (HOV) preferential lanes. Many ramp locations will include installation of Maintenance Vehicle Pullout (MVP) areas and California Highway Patrol (CHP) enforcement areas. The following is a summary of the scope of work to be performed for the project:

- 16 locations will have newly installed ramp metering equipment
- 10 locations with previously installed ramp metering equipment will be upgraded to the latest standards
- 3 locations that are currently in operation will be upgraded with the latest ramp metering Advance Warning Signs

- 2 locations will be widened to accommodate HOV lanes
- 13 locations will include construction of new MVP pullouts, and
- 4 locations will include construction of new CHP enforcement areas.

This project will also provide asphalt concrete pavement repair (crack-sealing/digouts, overlay or rehabilitation) as needed on the project on-ramps.

b. Project Benefits

The US 101 corridor in San Mateo County is an access-controlled freeway. Due to high demand, this freeway currently experiences heavy congestion on a daily basis of four or five hours during the morning and evening peak periods. One of the underlying causes for congestion and the breakdown of traffic flow on US 101 is the platoons of vehicles entering at unmetered on-ramps and merging with the mainline traffic. Metering has been proven to be an effective traffic operations tool in maximizing the overall efficiency of a transportation corridor.

The project will provide the following benefits:

1. Proposed ramp meters will complement the existing and partially installed ramp meters.
2. Proposed ramp meters will regulate and manage traffic entering the freeway, resulting in more consistent freeway flow and reduced congestion.
3. Reduced mainline delays and congestion-related accidents
4. Metering the entry volumes will break up platoons of vehicles entering the freeway, thereby facilitating traffic merges.
5. Upgrading the existing meters to new ramp meter equipment standards will provide consistency between the older existing ramp meter sites and the new ramp meter sites.
6. Provide HOV Bypass lanes for preferential treatment of carpools and transit riders.

The implementation of the regional ramp metering system will reduce mainline US-101 congestion during peak travel hours, minimize gridlock of the freeway system, decrease travel times and improve mobility through the corridor during both morning and evening peak commute hours. This project will benefit the US 101 corridor in San Mateo County by completing the ramp metering system at all locations.

c. Regional Significance

This project is consistent with the 2006 Ramp Meter Development Plan to install ramp metering systems on the freeway network. It is identified as a State Highway Operation and Protection Plan (SHOPP) project for the 2010/11 fiscal year and as such is consistent with the plans, program and goals identified in the 201.315 Mobility Plan. The project is the continuation of metering the US 101 corridor, from the Hillsdale Boulevard interchange and north to the San Francisco County line, and upgrades some metering equipment from the Santa Clara County line to the San Francisco County line. This project is significant to the region because it will complete the ramp metering system for all locations in both the northbound and southbound onramps in San Mateo County. When the project is finished, the goals for the ramp metering system will have been met.

d. Project Status

i. Stage of Development

The Plans, Specifications, and Estimate (PS&E) phase began in July 2009. The project team is reviewing as-built maps, investigating project utilities, and documenting environmental constraints. The project team has prepared several base maps during the onset of the design phase.

ii. Current Schedule

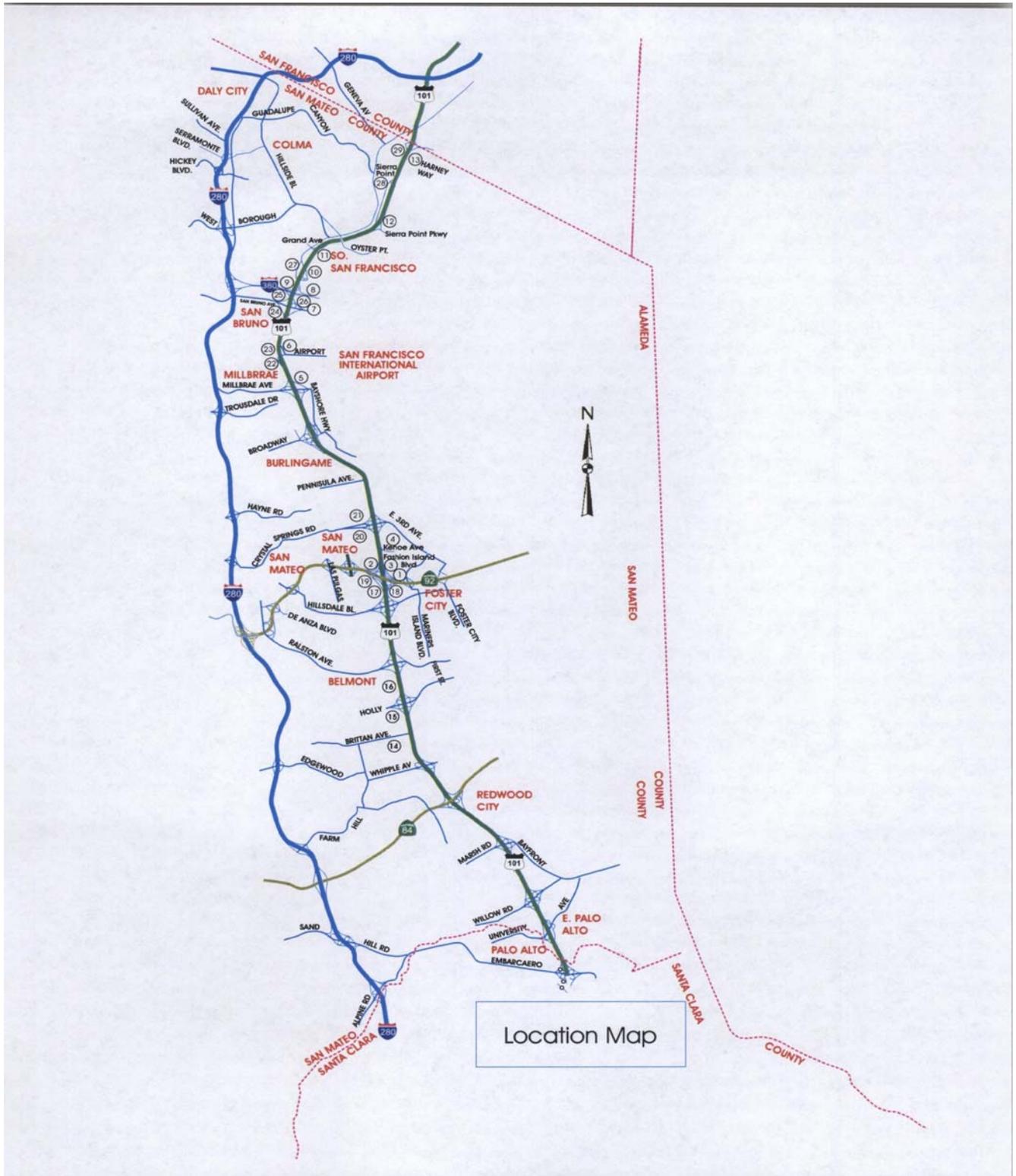
Based on the current 2008 SHOPP and proposed draft 2010 SHOPP, the schedule is as follows:

Project Approval and Environmental Document	3/20/09	(Actual)
Ready to List	2/4/11	(Programmed FY 10/11)
Advertise	3/1/11	
Award	6/1/11	
Construction Contract Acceptance	9/1/12	

e. Project Cost Estimate

Construction Capital	\$9,526,000
Right of Way Capital	<u>\$5,000</u>
Total Capital	\$9,531,000

f. Vicinity Map



Justification for Design-Build Authorization

a. Summary of Analysis and Steps Taken to Date

The Department made a call for projects in April of 2009 in anticipation of the California Transportation Commission's (CTC) approval of the Design-Build Program Guidelines. Initial screening criteria were for projects that were fully funded, that had achieved environmental clearance, and with minimal right of way involvement. The nominated projects were then presented to the Department's Design-Build Steering Committee for approval. The projects were compared to the draft CTC guidelines to ensure that they met the proposed criteria and the Steering Committee approved the initial four projects at its August 2009 meeting.

The Department's approach to the Design-Build Demonstration Program is to begin with smaller and simpler projects to test the methodology before attempting larger and more complex projects. The Department intends to utilize the lessons learned on these first projects to ensure success on the next set of projects.

To prepare for the use of design-build, the Department has been developing templates for the Request for Qualification (RFQ) and Request for Proposal (RFP) documents. The templates were posted for industry review between December 2, 2009 and January 8, 2010. The Department expects to achieve consistency in contract documents by developing these templates.

The Project Team is currently using the templates to develop the project RFP. Upon CTC authorization, the Project Team will be prepared to release the RFQ and RFP documents per the proposed implementation schedule contained in this Authorization Request.

b. Procurement Type Request (Best Value or Low Bid)

The Department is requesting authorization to utilize Best Value procurement for this project. The project scope includes primarily specialized work and it is anticipated that the State will obtain value through competition of other factors than just price. This project will allow for flexibility in final design and the Department expects to achieve value in transferring utility coordination, maintenance of traffic, environmental coordination and associated risks. Best Value procurement will allow the Department to compare the approach to these areas by competing design-builders and select the entity that best meets the Department's goals.

At this time, the Department is considering using the following as selection criteria:

- Design-Build Team Qualifications
- Project Cost
- Project Schedule
- Design Alternatives
- Project Management Approach
- Quality Management Approach
- Maintenance of Traffic
- Public Communication

The relative weights for each of these criteria will be developed and clearly documented in the Request for Proposal submitted to the shortlisted design-build entities.

c. Implementation Schedule

The following is the proposed schedule for delivery of this project utilizing design-build:

PA&ED	3/20/09	(Actual)
Request for Qualifications	5/2010	
Request for Proposals	8/2010	
R/W Certification	8/2010	
Award Contract	12/2010	
Construction Contract Acceptance	12/2011	

d. Expected Design-Build Benefits

Thirty-two states have design-build authority and have used design-build to deliver a large number of projects. There have also been a number of studies that have documented the benefits of design-build over the design-bid-build method of contracting. Based on the results achieved by other state departments of transportation that have utilized the design-build and the available research, the Department anticipates achieving the following benefits by using design-build on this project:

i. Schedule Acceleration - Under design-build, portions of the design and construction phases are overlapped leading to significant time savings. Improved coordination between the designer and the builder lead to better constructability and improved efficiency. The design-builder is also able to order critical materials earlier and schedule subcontractors more effectively. Finally, the designer is able to design the project to take advantage of the contractor’s strengths (equipment, materials on hand, and expertise). Each of these benefits can lead to significant time savings. It is anticipated that design-build will enable this project to be completed about 9 months earlier than by design-bid-build.

ii. Innovation – It is not expected that new design or construction techniques will arise from this process in the construction of ramp metering systems. The innovation in the design-build process is the early involvement of the contractor that enables engineering considerations to be incorporated into the design phase and enhances the constructability of the engineered project plans. Interjecting contractor knowledge early into design can foster creative engineering and construction solutions as well as possible innovation available in the staging of construction and maintenance of traffic. Design-build projects have the ability to lessen the impact on the traveling public by shortening overall construction schedule while allowing the contractor maximum flexibility.

iii. Risk Transfer - The design build process allows for transfer of risks including cost escalation and schedule delays. The design-build contract is for a firm fixed price and a schedule guarantee for the work. The contractor is responsible for completing the scope of the work in accordance with the schedule. This would include responsibility for the schedule performance of subcontractors after the initial award. The contractor is responsible for any increase in the quantities of commodities, labor, and any other units that evolve as design is advanced.

iv. Cost Certainty - Because design-build projects are awarded on a fixed price basis, with limited opportunities for cost growth, the Department will have greater certainty regarding the total project

cost at a fairly early stage of the process. Under the design-build delivery methodology, the contractor provides the Department with a fixed price for the construction before detailed design is complete and then is responsible for working with the designer to make sure that price remains fixed.

e. Proposed Project Funding Plan

This project is a proposed candidate for inclusion in the 201.315 Mobility Program of the 2010 State Highway Operation and Protection Plan (SHOPP) for the 2010/2011 fiscal year.

Construction Capital	\$9,526,000
Right of Way Capital	<u>\$5,000</u>
Total Capital	\$9,531,000
PA&ED	\$454,000
PS&E	\$907,000
Right of Way Support	\$181,000
Construction Support	<u>\$1,361,000</u>
Total Support	\$2,903,000
Total Project Cost	\$12,434,000

f. Project Considerations

- i. **Project Eligibility** – This project has been programmed for funding in the 2008 SHOPP and is therefore eligible for the Design-Build Demonstration Program pursuant to authorization by the California Transportation Commission.
- ii. **State or Local Project** – This is a State Project on the State Highway System and will fill one the ten slots allocated to the Department by statute.
- iii. **Selection Method (low bid/best value)** – Department is requesting authorization to utilize best value method.
- iv. **Geographic Location (north/south)** – This project is in San Mateo County and will be a “North” project as defined by the CTC Guidelines.
- v. **Project Size** – This project falls in the under \$20 million category.

Conclusion/Summary

The Department desires to utilize the design-build method of contracting for this project to achieve several important benefits includes schedule acceleration, risk transfer, and cost certainty. The project meets the eligibility requirements as outlined in the CTC’s design-build guidelines approved in September 2009. It is requested that the CTC authorize the use of design-build method of procurement for this project with a Best Value award.

Attachment

Project Delivery Selection Questionnaire

DESIGN-BUILD PROJECT SELECTION TOOL

The following is a tool that the Department of Transportation (Department) is developing to assist in determining the appropriate delivery method for projects. The Department is testing this tool on projects on the State Highway System that have been nominated for the Design-Build Demonstration Program authorized by Senate Bill (X2) 4. Please provide a response to each question below.

EVALUATION OF PROJECT SCOPE AND CHARACTERISTICS		
QUESTION No.	QUESTION	Rating (A, B or C)
1a)	Where is the project in the project development process? A. Detailed or final engineering stage B. Preliminary design C. Conceptual engineering stage	B
1b)	What is the size/complexity of the project? A. Relatively simple, smaller project with no need for specialized outside expertise B. Medium size project with more technically complex components and schedule complexity C. Large, complex project with significant schedule complexity (e.g. multiple phases, extensive third-party issues, specialized expertise needed)	A
1c)	Does the project involve significant impacts to highway users and local businesses/community during construction? A. No more than typical B. More than typical C. Much more than typical	A
1d)	Does the project present right-of-way limitations that would benefit from a contractor's assistance? A. No more than typical B. More than typical C. Much more than typical	A
1e)	Does the project present environmental permitting issues that would benefit from a contractor's assistance? A. No more than typical B. More than typical C. Much more than typical	B
1f)	Does the project present utility or third-party issues that would benefit from a contractor's assistance? A. No more than typical B. More than typical C. Much more than typical	B
1g)	Does the project present unique work restrictions or traffic maintenance requirements that would benefit from a contractor's assistance? A. No more than typical B. More than typical C. Much more than typical	A
1h)	Would the project benefit by packaging features of work to allow early lock-in of construction materials/labor pricing? A. No more than typical B. More than typical C. Much more than typical	A
1i)	Would the project benefit by raising quality standards/benchmarks to minimize maintenance and achieve lower life-cycle cost? A. No more than typical B. More than typical C. Much more than typical	A

EVALUATION OF SUCCESS CRITERIA		
QUESTION No.	QUESTION	Rating (A, B or C)
2a) Schedule Issues		
1	Can time savings be realized through concurrent design and construction activities (fast-tracking)? A. No more than typical B. More than typical C. Much more than typical	B
2	Can the schedule be compressed? A. No more than typical B. More than typical C. Much more than typical	B
2b) Opportunity for Innovation		
1	Will the project scope allow for innovation (e.g., alternate designs, traffic management, construction means and methods, etc.)? A. No more than typical B. More than typical C. Much more than typical	B
2	Must the project scope be primarily defined in terms of prescriptive specifications (i.e., predetermined materials and methods), or can performance specifications (expressing desired end results) be used, or a combination of both? A. Primarily prescriptive specifications B. Combination of prescriptive and performance specifications C. Performance specifications for significant elements	B
2c) Quality Enhancement		
1	Will there be opportunities for contractors to provide materials or methods that provide greater value than normally specified by the state on similar projects? A. No more than typical B. More than typical C. Much more than typical	A
2	Will there be the opportunity for realization of greater value due to designs tailored to contractor's area of expertise? A. No more than typical B. More than typical C. Much more than typical	B
3	Will warranties or maintenance agreements be used? A. No B. Limited to short-term workmanship and materials C. Much more than typical	A

EVALUATION OF SUCCESS CRITERIA (Continued)		
QUESTION No.	QUESTION	Rating (A, B or C)
2d) Cost Issues		
1	Will there be opportunities for contractors to provide designs with lower initial construction costs than those typically specified by the state? A. No more than typical B. More than typical C. Much more than typical	A
2	Will there be opportunities for contractors to provide alternate design concepts with lower lifecycle costs than those typically specified by the state? A. No more than typical B. More than typical C. Much more than typical	A
3	Is funding for the project committed and available? A. Secured for design phase only or cannot support accelerated construction B. Funding can accommodate fast-tracking to some extent C. Funding will accommodate compressed schedule/fast-tracking	C
4	Will the cost of procurement affect the number of bidders? A. Procurement cost would significantly limit competition B. Procurement cost could affect the number of bidders C. Procurement cost would not be a significant issue given the size or complexity of the project	C
5	Will project budget control benefit from the use of formal contingencies? A. No benefit B. A formal contingency may permit the Transportation Entity to add project scope or enhance quality within the constraints of its published budget C. A formal contingency is required to allow the Transportation Entity to maximize project scope and quality within the constraints of its published budget	C
2e) Staffing Issues		
1	Does the Transportation Entity have the expertise and resources necessary for a complicated procurement process? A. Inadequate resources or expertise B. Limited resources or expertise C. Adequate resources and expertise	B
2	Are resources available to complete the design? A. Resources are available to complete design B. Resources are available for partial design C. Specialized expertise, not available in-house, is required	B
3	Are resources available to provide construction oversight? A. Resources are available B. Full-time construction oversight could strain staff resources C. Resources are unavailable	A

Please provide name and telephone number of person most familiar with the responses to this questionnaire for potential follow-up questions: Ray Tritt (916)653-3348