I-680 High Capacity Transit Study

INTRODUCTION

The Contra Costa Transportation Authority (CCTA) recently completed a public outreach process for the Draft 2014 Countywide Transportation Plan Update. Feedback was received from the public through a series of workshops, interviews, polling, surveys, and online engagement tools. During that process, it became clear that residents, businesses, and commuters who use the I-680 corridor are very interested in seeing improved transit service, including connecting the BART Pittsburg Bay Point line with the Dublin line.

In response to the public's strong interest in improved transit, CCTA proposes to conduct a High Capacity Transit Study along the I-680 Corridor in the general area of I-680 Corridor from the Benicia-Martinez Bridge to SR 84.

Additional impetus for the study is as follows:

- At present, the economic recovery is generating more traffic and congestion on I-680. Further widening of the freeway is infeasible due to right-of-way constraints and neighborhood opposition. A viable transit option needs to be developed to give commuters alternatives to the automobile.
- More housing and jobs are expected along the corridor through 2040; traffic in the corridor is expected to increase by 20-to-40 percent.
- The Tri-Valley, Lamorinda, and the Central County Action Plans all support the exploration of congestion relief and improved transit options along I-680.
- Should the renewal and extension of Measure J go to the ballot in November 2016, options and opportunities for improving the I-680 Corridor should be fast tracked.

BACKGROUND

During the past two decades, the I-680 corridor has been steadily improved, with major widening and interchanges projects that have resulted in a near-doubling of roadway capacity. These improvements included the following:

- Major rebuild of the I-680/24 Interchange
- Expansion from four to eight lanes w/ HOV
- Widening of the Benicia-Martinez Bridge from four to eight lanes (through construction of a new bridge).
- Major improvements to the I-580/I-680 in Dublin
- Widening of SR 242 from 4 to 6 lanes

Despite these major improvements, congestion continues to worsen. At the same time, based upon input received from residents and neighborhoods along the I-680 corridor, it is clear that the addition of mixed-flow lanes, or providing rail service along the Iron Horse Trail is infeasible and therefore will not be considered in this study. Consequently, new and innovative transportation solutions, including transit options, need to be developed to address the current and projected congestion issues in the corridor.

CCTA proposes to engage a highly qualified and experienced consultant team to perform the I-680 High Capacity Transit Study. Below is the proposed scope of work that the consultant would follow.

SCOPE OF WORK

The primary purpose of the study is to develop and evaluate innovative improvement options to relieve congestion on I-680, with a focus on transit options.

The I-680 High Capacity Transit Study will focus on updating the travel forecasts, exploring new technologies, developing innovative solutions to addressing congestion along the corridor and getting new stakeholder input. The study will involve the following major elements:

- Review the Current and Future Transportation System, Land Use and Travel Characteristics in the Corridor
- Obtain Stakeholder Input from Residents, Employers, Businesses and Corridor Users
- Review Technological Innovations for each Modal Option, including BART, LRT, Express Bus, Bus Rapid Transit
- Update Costs for Modal Options
- Evaluate Top-Priority Improvement Options

Task 1: Review the Current and Future Transportation System, Land Use and Travel Characteristics in the Corridor

Objective: Update Information on Current and Future Transportation System, Land Use and Travel Characteristics

Description

A first step in this task will be to update the relevant system inventory for the I-680 Corridor. This effort will document existing and planned transportation facilities and services, land use, and topography that may influence the development and selection of improvement options. This task will include compiling existing studies, design plans, right-of-way maps, development boundaries, and aerial photographs. A field review of the I-680 Corridor will be performed to field verify potential opportunities and constraints.

This task will also include updating the existing and future travel conditions in the corridor in terms of travel volumes, origin-destination patterns, locations of congestion, transit ridership levels, and major trip generators. This task will include

new travel demand model runs and origin-destination data collection using cell phone tracking data to verify travel patterns in the CCTA Countywide Travel Model.

The consultant will review recent studies and plans to document existing conditions and proposed future infrastructure or operational improvements. This task will include review of the following:

- HOV and Express Lane Plans for I-680
- HOV Direct Access Ramp Study for I-680
- SR 24 Transit Capacity Study
- 2014 Action Plans for Central County and the Tri-Valley
- I-680 Corridor System Management Plan (CSMP)

The consultant will begin by compiling and reviewing the relevant materials, and will then prepare a summary analysis of the transportation needs in the corridor. This will include identification of both existing and forecast major trip generators, travel patterns, congestion levels, and transportation facilities and services, including gaps. To the greatest extent possible, this information will be presented in graphical form using maps and charts. This analysis will also include a review of transit ridership levels and qualitative assessments of trip types and the potential for the shifting of trips to transit or HOV modes emphasizing changes since the 2003 study. The results of this analysis will be presented in a technical memorandum.

Key Subtasks

1.1 Meet with Authority staff, BART staff, the Policy Advisory Committee (PAC), and the Technical Advisory Committee (TAC) to refine scope and to review and supplement the preliminary list of data sources, model networks and output, studies, reports, and projects.

1.2 Compile relevant documents and materials.

1.3 Review materials and prepare summaries of pertinent information using graphical and tabular formats to the greatest extent possible

1.4 Acquire new cell-phone O-D data as necessary to support the study

1.5 Conduct quantitative assessment of the different types of travel demand for trips using the corridor and the potential for shifting trips to transit or HOV modes.

1.6 Prepare technical memorandum with reviews by the Authority Project Manager, the TAC, and the PAC.

Deliverables

- Refined Scope of Work
- Technical Memorandum #1 – Future Transportation Needs Analysis

Task 2: Obtain Stakeholder Input from Residents, Employers, Businesses and Corridor Users Regarding Improvement Options

Description

Objective: Conduct Outreach to Key Stakeholders

The consultant will use a variety of methods to judge the current feelings of residents, employers, business owners and travelers in the I-680 Corridor about potential congestion relief strategies and transit options in the corridor. The main focus will be on a series of key stakeholder interviews and focus groups drawing on the list of key stakeholders in Contra Costa County that was used in the initial stages of outreach for the Contra Costa Countywide Transportation Plan (CTP). The team will use contacts from the recent Measure BB sales tax campaign to supplement the Contra Costa participants with Alameda County participants. These interviews and focus groups will be used to assess community views on transit options, including fixed-guideway systems and use of the I-680 median for rail options.

The consultant will also build on the recent web-based outreach methods and contacts for the Contra Costa CTP to seek additional input. This will include use of the CTP web site registrants to implement a crowd-sourcing approach to getting additional innovative ideas for meeting the corridor transit demand and reducing congestion on I-680 and the parallel roadways. Again the team will supplement the Contra Costa participants with Alameda County participants using contacts from the recent Measure BB sales tax campaign.

The consultant will also use public workshops to present the results of the re-evaluation of top priority improvement options in Task 4 and to seek comment and reaction. At least two workshops will be held – one in Central County and one in the Tri-Valley.

In addition, the consultant will work with CCTA staff to develop new and innovative outreach techniques to gain heightened stakeholder engagement on vetting issues and creating solutions that address those issues.

Key Subtasks

2.1 Prepare a final Stakeholder Engagement Plan based on initial discussions in Task 1.

2.2 Use results of Task 1 and initial results from Task 3 to initiate stakeholder engagement with a summary of issues, objective needs and study plan.

2.3 Initiate key stakeholder interview and focus groups to assess relative support of the range of improvement options being considered.

2.4 Initiate web-based information and opinion solicitation on improvement options for the corridor.

2.5 Prepare technical memorandum on results of initial stakeholder engagement efforts.

2.6 Conduct two corridor workshops on the initial evaluation of improvement options.

2.7 Initiate final web-based information and opinion solicitation on the evaluation results and draft recommendations of the study.

2.8 Prepare technical memorandum on results of final stakeholder engagement efforts.

Deliverables

- Final Stakeholder Engagement Plan
- Technical Memorandum #2 – Initial Results from Stakeholder Engagement
- Technical Memorandum #3 – Final Results from Stakeholder Engagement

Task 3: Review Technologies for Each Modal Options – BART, LRT, Express Bus, Bus Rapid Transit

Objective: Review Technology Innovations and Re-screen Improvement Options

Description

The goal of this task is to review transit technology advancements, explore recent innovations, and develop feasible concepts that offer improved transit service and reduced congestion in the I-680 Corridor. This will include a review of the following:

- Fixed-Rail Innovations – smaller, automated systems like Air BART
- Innovations in Train Control - review of BART's plans for updating their train control system
- Suspended People-Mover Systems
- Eco-Track - multi-modal rights of way (LRT, bus, bikes and pedestrians) and other LRT options to minimize visual and ecological impacts and improve integration
- Use of Express Lanes by Express Buses
- Use of Express Lanes by Private Commuter Buses
- Transit Signal Priority Innovations
- Innovations in Traveler Information Systems and Data

Additional areas of innovation may also be identified by the Authority staff, by the TAC, the PAC or by stakeholders as part of the Stakeholder Engagement effort in Task 2.

Each of the areas of innovation will be examined for their potential to change one or more of the following factors:

- Cost of construction, operation or maintenance

- Travel time for transit riders in the corridor
- Transit ridership
- Congestion reduction
- Reduction in the potential environmental impacts – noise, visual intrusion, land consumption, etc.

Descriptions of each new improvement option or redefined improvement option will then be developed. While the scope and schedule of this study suggest that only high-level descriptions be developed at this time, the descriptions must have enough specificity to support understanding of the key elements and differences that will be the basis for the screening evaluation. Information will include not only the layouts and locations of new or improved facilities within the study area, but the requirements for connections to facilities or services outside the immediate study area.

The descriptions will be presented in a set of Improvement Option Summary Sheets. For each option identified, the summary sheet will include a brief description and listing of key features or elements. Following development of the revised Improvement Option Summary Sheets, the DKS team will conduct the high-level screening evaluation of the potential options, and identify those that warrant further study. The screening will use the following criteria:

- Increased Person Throughput
- Attractiveness to New Users
- Enhanced Connectivity
- Impact on Traffic Operations
- Right-of-Way Requirements
- Community Acceptance
- Policy Consistency
- Construction Impacts
- Potential Environmental Impacts
- Cost
- Markets Served

The results of the screening analysis will be summarized in graphical format using matrices and summary charts. The results of the screening, along with recommendations regarding the top-priority improvement options will be presented in a technical memorandum.

Key Subtasks

3.1 Compile current and planned freeway system inventory information including layout and structure, HOV and Express Lane facilities, ROW, development boundaries, and topographic constraints.

3.2 Compile current and planned BART system inventory information including track and station layout and structure, parking, train control, maintenance facilities, station area development plans, station access facilities and plans.

3.3 Conduct "brainstorming" session with Authority staff, BART staff and other TAC members to generate preliminary listing of improvement options.

3.4 Define high-level characteristics of each improvement option, including the preparation of option summary sheets and graphical representations, if appropriate

3.5 Prepare technical memorandum and review with TAC and PAC

3.6 Conduct screening analysis of options

3.7 Prepare technical memorandum summarizing results in graphical or tabular format, and modify option summary sheets where appropriate

3.8 Review results with Authority Project Manager, TAC, and PAC, and finalize set of preferred options for further study in Task 4.

Deliverables

- Technical Memorandum #4 – Listing of the Full-Range of Improvement Options
- Technical Memorandum #5 – Screening of Improvement Options and Selection of Top Priority for Further Study
- Improvement Option Summary Sheets

Task 4: Develop Cost Estimates for Modal Options and Evaluate Top-Priority Transit Improvement Options

Objective: Re-evaluate the Top Priority Improvement Options

Description

In this task, the consultant will prepare cost estimates for the different modal options. This update will include a review of the state of the art for construction of the rail options. The team will examine the potential costs of smaller and automated systems, including aerial systems. The team will also examine new methods for tunneling and for cut-and-cover construction and their implications for cost reductions. The team will use the costs of recent similar projects, preferably in the Bay Area to develop planning level capital and operating costs estimates.

The top-priority improvement options identified in the previous task will be subjected to a more rigorous analysis in Task 3. The criteria used for this evaluation will include:

- Capital and Operating Costs

- Travel Time by Transit and HOV
- Potential Mode Shift, Transit Ridership and Cost Effectiveness
- Markets Served
- Connectivity with Existing System
- Construction Impacts
- Potential Environmental Impacts
- Conflicts with Other Traffic
- Constructability Issues

To forecast potential ridership and mode share impacts, DKS will run the CCTA Countywide Travel Model as refined using cell-phone tracking based O-D data to obtain travel market data.

To support the more detailed analysis, it may also be necessary to define the remaining options in greater detail. This may include refining the location and design for major facilities such as stations and new ramps, and developing conceptual plans, profiles, typical cross-sections, elevations and drawings.

Once the criteria have been defined and the necessary detail developed for each alternative, the DKS team will conduct the analysis of the alternatives, highlighting potential fatal flaw, benefits and impacts. The results and recommendations from this analysis will be presented in a technical memorandum. Once again, graphical and tabular formats will be used extensively to communicate the results. Furthermore, the Improvement Option Summary Sheets will be updated with any new information developed in this task.

Key Subtasks

4.1 Refine descriptions of top priority improvement options, including development of conceptual plans and drawings where appropriate

4.2 Conduct analysis of alternatives, including preparation of conceptual cost estimates, forecasting of travel demand impacts, and identification of potential fatal flaws

4.3 Refine Improvement Option Summary Sheets based on above analysis

4.4 Develop draft recommendations for advancing the highest priority improvement options potentially including suggestions for additional analysis and projects to be included in the Contra Costa Countywide Transportation Plan and the Transportation Expenditure Plan for a future Measure J renewal and extension

4.5 Prepare technical memorandum using graphical, tabular and matrix formats to summarize results and recommendations

4.6 Review results with Authority Project Manager, the TAC, and the PAC

4.7 Prepare outreach material to support final round of stakeholder engagement

Deliverables

- Revised Improvement Option Summary Sheets.
- Technical Memorandum #6 – Analysis of Top Priority Improvement Options and Recommendations
- Material to support final round of stakeholder engagement

Task 5: Prepare Final Report

Objective: Document Study Findings and Recommendations

Description

The technical memoranda and products from Tasks 1 to 4 will be consolidated into a single, cohesive summary document. A draft outline will be developed for review by the Authority Project Manager. Then, an administrative draft version of the full document will be developed, using previous deliverables for much of the text, for review by the Authority Project Manager. Subsequent versions will then be prepared for review by the TAC and then by the PAC before the report is finalized. The report will consist of three elements: a stand-alone executive summary, main report, and technical appendices. A presentation will also be developed to communicate the final results and recommendation of the project to the TAC, PAC, Authority Board and other key stakeholders.

Key Subtasks

5.1 Develop draft outline for final report

5.2 Review draft outline with the Authority Project Manager (and TAC, if appropriate)

5.3 Develop administrative draft of final report for review by the Authority Project Manager

5.4 Respond to comments and prepare draft report for review by TAC

5.5 Prepare a presentation to communicate the final results and recommendation of the project to TAC, PAC, Authority Board and other stakeholders

5.6 Respond to comments and prepare pre-final report for review by PAC

5.7 Revise the presentation to communicate the final results and recommendation of the project to reflect comments from the TAC

5.8 Respond to PAC comments in final report

5.9 Revise the presentation to communicate the final results and recommendation of the project to reflect comments from the PAC

Deliverables

- Administrative draft, draft final, pre-final, and final reports.

- Presentation to communicate the final results and recommendation of the project to TAC, PAC, Authority Board and other stakeholders

SCHEDULE

Work on the study is expected to begin in mid-March 2015 and be completed within six to eight months.