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PLANNING AND PROGRAMMING COMMITTEE
AUGUST 20, 2003

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Metropolitan
Transportation
Authority

One Gateway Plaza
Los Angeles, CA
90012-2952

**SUBJECT: EXPOSITION LRT PROJECT UPDATE:
FTA ANNUAL NEW STARTS REPORT, PEER REVIEW
PANEL AND VALUE ENGINEERING STUDY**

ACTION: RECEIVE AND FILE

RECOMMENDATION

Receive and file this report on the annual New Starts Rating Report to be filed with the Federal Transit Administration for the Exposition Light Rail Transit (LRT) Project and two associated studies that have recently been completed for the project:

- Peer Review Panel Report, June 2003
- Value Engineering Study Report, June 2003

ISSUE

The Federal Transit Administration (FTA) requires an annual Section 5309 Report from each agency that is seeking federal funding under the New Start Major Capital Grant Program. FTA uses the report as the basis for project ratings and recommendations to Congress on more than 50 such projects nationwide.

This year, the Exposition LRT Project New Starts Report will incorporate new information from the preliminary engineering studies that are currently underway, ongoing efforts by staff to implement more cost-effective design and management structure, as well as information from recently completed Peer Review and Value Engineering Studies. A map of the Exposition LRT Project is included in Attachment A.

Important updates to be included in this year's New Starts Report include the following:

- Changes to Capital Cost - This year, the Exposition LRT Project New Starts Report includes a project capital cost projection of \$505 million in future year of expenditure dollars (Attachment B). This is a reduction of approximately \$126 million from last year's New Starts Report. Last year's report estimated the project costs to be \$631 million for a similar project scope (the Locally

Preferred Alternative adopted by the Board in 2001 from Downtown Los Angeles to Culver City). This reduction in cost is based on the ongoing environmental and preliminary engineering studies and savings identified in the recently completed Peer Review and Value Engineering studies. The Discussion section of this report provides further breakdown of these cost estimate changes. This cost projection is subject to further change as the environmental and preliminary engineering studies continue.

- Changes to Revenue Operation Date - The projected operational date for the project is now forecasted to be September 2012, instead of the June 2010 date that was reported last year. This represents a 27-month delay from last year's report, based solely on the anticipated delay in availability of funding. If additional funding is secured, this operational date could occur as early as 2009.
- Changes in Forecasted Ridership - The projected ridership for the project is now forecasted to be 43,600 average daily boardings (Attachment C). This represents a significant increase over last years reported ridership of 27,200. The principal reason for the increase in ridership is the inclusion of the 24-line Metro Rapid bus network that was adopted by the Board in September 2002. Inclusion of these bus lines in the Exposition Transit Corridor model runs has significantly increased the forecasted ridership on the Expo line.

Two additional studies have been conducted related to the Exposition LRT Project. These studies are described below, as well as in the attachments to this report:

- Peer Review Panel Report- A Peer Review Panel was convened from June 2nd through June 5th, 2003. The panel made several observations and recommendations that will inform the ongoing preliminary engineering and environmental studies. The Discussion section of this report provides a description of the findings and recommendations of this group and the full report of the panel is contained in Attachment B.
- Value Engineering Study - A value engineering study was conducted from June 11th through 13th, 2003. This study was facilitated by a value-engineering specialist and consisted of an intensive review of many detailed design criteria that will be applied to the Exposition project design by MTA planning, engineering, construction management and consultant staff. This Value Engineering effort resulted in \$18.5 million dollars of cost savings incorporated into the Project design and project cost projection. A summary of these recommendations is described in the following section and the Executive Summary is contained in Attachment E.

DISCUSSION

The following is a discussion of the major findings, conclusions and recommendations from the reports listed above.

Current Project Cost Projection- The current project capital cost projection of \$505 million in future year of expenditure dollars is shown in Attachment A2. The basis of this cost projection is an estimate of \$408.1 million in today's dollars (shown as "Total 2003 \$") with an additional \$15.8 million in interest and \$81.6 million in cost escalation based solely on the rate of inflation anticipated over the next 9 years. This represents a \$126 million reduction in estimated project cost from the prior year's forecast consistent with the Board's direction to proceed into PE with a more cost-efficient design that compares favorably with other light rail projects. This cost projection based on the current Locally Preferred Alternative adopted by the Board is subject to revision should changes necessitated by environmental planning occur. Significant cost reductions occurred in the following areas:

- Vehicle costs were reduced by \$52 million to reflect costs per vehicle as established in the recently executed light rail vehicle contract and a reduction in the quantity of vehicles included in the estimate to reflect an FTA requirement that opening day fleet be listed (16 vehicles) rather than year 2020 fleet size (28 vehicles).
- Professional Services were reduced by \$35 million to reflect the organizational efficiencies of an integrated project office with a Design Build approach. The proposed staffing levels are consistent with other transit industry design build projects.
- Project Contingency was reduced from \$109 million to \$67 million (\$42 million reduction) to reflect the current level of the project definition. This amount is sufficient to address anticipated but unknown cost impacts associated with the current scope of work authorized by the Board. It is not intended to cover changes to the configuration of the overall project scope or alignment.

Peer Review Panel - The Board directed that the peer review panel meet at important milestones during the preliminary engineering of the project, assessing the entire budget for the Exposition Light Rail Line, making recommendations to reduce the cost of this project through value engineering, cost containment and using the budgets and experiences of comparable light rail systems.

In compliance with this Board direction staff requested The American Public Transit Association (APTA) to chose an independent peer review committee for the Mid City/Exposition Light Rail Project as they had previously done for the MTA Eastside Light Rail Project. Mr. W.P. Grizard of the American Public Transportation Association (APTA) led the panel, which included members from three transit agencies; Sacramento Rapid Transit District, Portland Tri-Met and New Jersey Transit (Hudson-Bergen Light Rail Project).

The panel's recommendations are included in Attachment D and include suggestions to:

- Actively integrate Design Build protocols and procedures into ongoing preliminary engineering,

- Identify and resolve major cost variables early (such as new grade separations, alignment changes, railyard support requirements, etc.), and
- Manage the project with a cost containment process.

In response to the first recommendation, MTA staff, in conjunction with Mr. Wundram of the MTA Design Build Advisory Panel, has developed a comprehensive design execution plan for the PE consultant that combined the efficiencies of the Design Build approach within the environmental planning effort. Focusing current design efforts on the development of an optimal and well defined design criteria package will enable the project to achieve the quality, cost and schedule benefits inherent with Design Build.

In response to the second recommendation, staff will be returning to the Board in the near future with recommendations for major cost variables. The PE team is actively looking at options for grade separations, downtown alignment changes and maintenance yard/non-revenue track segments. Efforts will be made to remove cost risk by making such choices early in the design.

In response to the third recommendation, the Exposition project organization is comprised of a preliminary engineering team that integrates MTA management and staff expertise with specialized consultant resources to effectively organize and address community, stakeholder, and jurisdictional issues in order to ensure that the project is environmentally sound. This effort will resolve the issue of developing an optimal project scope configuration and minimizing major cost variables.

In response to the fourth recommendation, over the course of the past year, the MTA has initiated a rigorous cost management approach including value engineering in accordance with Board direction. With respect to current operations, this approach has resulted in a more cost efficient Design Engineering phase with significantly reduced staffing costs while still accomplishing critical project planning objectives. In terms of the overall project cost, the MTA is evaluating the cost impact of each design decision for the project scope and maintaining a cost trending system to provide immediate management visibility and control of cost variances.

Value Engineering

The MTA performs Value Engineering for all New Start Projects in compliance with Federal Criteria to identify means to reduce cost and improve quality.

The MTA typically retains an independent Value Engineering specialist to facilitate the implementation of value engineering studies in accordance with established procedures. For this project, the firm of Lewis & Zimmerman Associates, Inc. (LZA) which has performed extensive value engineering studies of light rail systems was hired. LZA facilitated an initial coordinated staff and consultant effort to functionally analyze and generate alternative designs for the proposed systems and major project components and subsequently assisted with the development, refinement and finalization of recommendations contained in the Value

Engineering Report. The Executive Summary of the Value Engineering Study is contained in Attachment E.

NEXT STEPS

Staff will return to the Board in the near future with the results of the Board mandated Grade Separation Study; an analysis of Downtown Branching Alternatives; an evaluation of maintenance site alternatives findings; additional safety features; and schedule and cost estimates for any proposed added features.


ATTACHMENTS

Attachment A	Project Map
Attachment B	Project Cost Estimate (Cash Flows), July 2003
Attachment C	Project Ridership (Boarding per Station), July 2003
Attachment D	APTA Peer Review Panel Report, June 2003
Attachment E	Value Engineering Study Report, Executive Summary, June 2003


Prepared by: David Mieger, Director
Westside Area Planning Team

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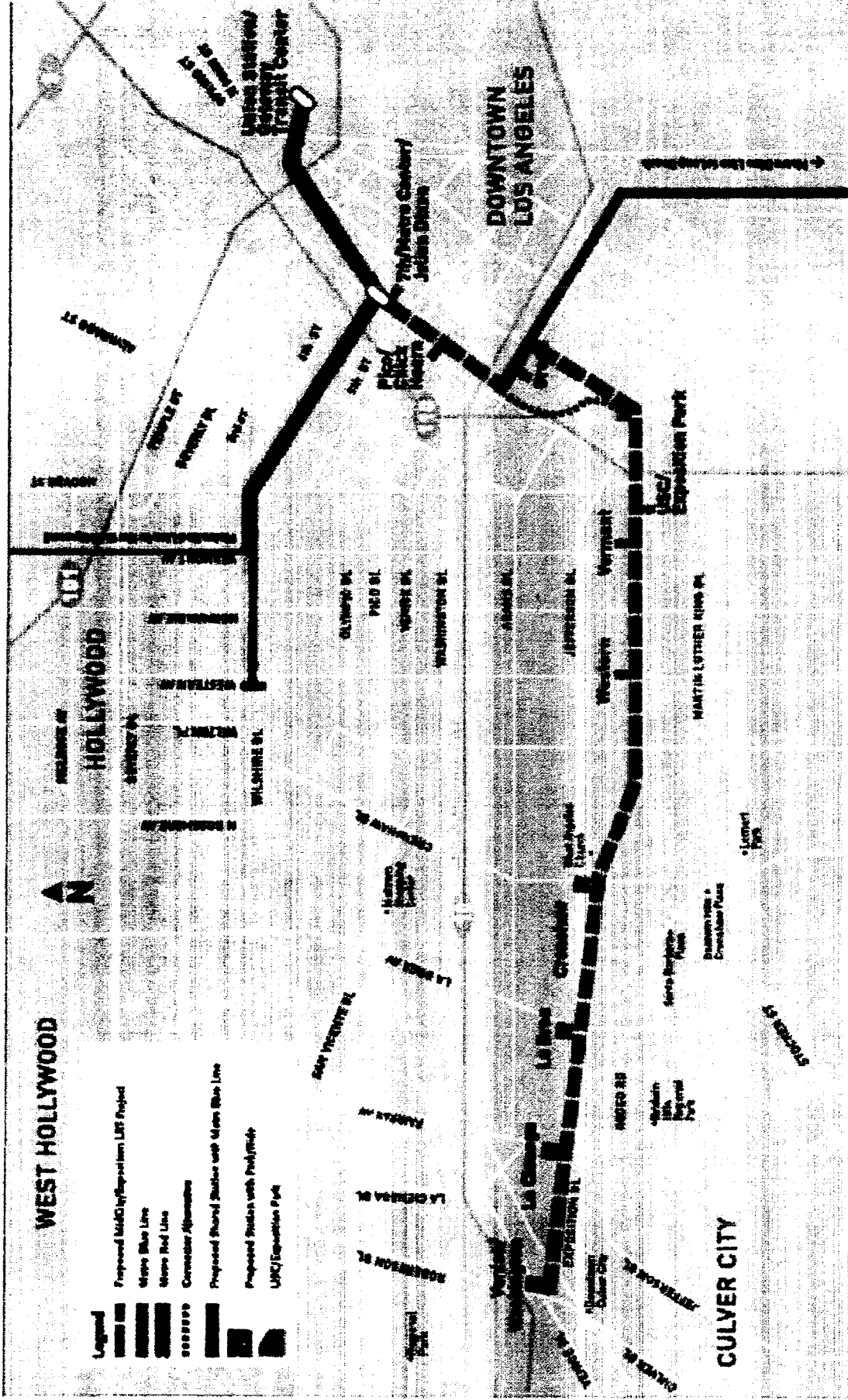
Steve Brye, Project Manager
Exposition LRT Project



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Countywide Planning and Development



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**Los Angeles County Metropolitan Transportation Authority
Mid-City/Exposition Transit Corridor – Escalated Capital Costs Cashflow – Planning Estimate**

Revenue Operation Date: Sept 2012 (potential advancement to FY2010 is being reviewed – see report text)

(in millions of dollars escalated to the year of expenditure)

AT-GRADE EXCEPT FOR AN AERIAL STATION AT LA CIENEGA

Uses of Funds	Total 2003\$	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total	% of Total
Construction and Procurement																
Guideways	54.7							\$ 9.2	\$ 8.2	\$ 11.9	\$ 18.3	\$ 13.3	\$ 5.1		\$ 66.0	13.5%
Yards and Shops	20.3							1.1	1.2	3.1	5.6	12.6	1.3		24.9	5.1%
Systems	63.9								2.3	16.7	20.1	31.6	7.6		78.3	16.0%
Stations	20.8							1.1		4.8	6.1	10.9	2.5		25.4	5.2%
Vehicles (16)	50.8									20.3	41.1				61.4	12.5%
Special Conditions	41.6							8.0	7.1	7.2	13.4	7.5	7.0		50.2	10.3%
Right-of-Way	16.6							4.6	14.7						19.3	3.9%
Subtotal Construction and Procurement	268.7	-	-	-	-	-	-	24.0	33.5	64.0	104.6	75.9	23.5	-	325.5	66.5%
Professional Services	72.1	3.0	8.3	8.4	6.5	5.5	4.5	7.4	8.9	9.5	9.7	5.0	5.1		81.8	16.7%
Project Contingency	67.3								11.9	14.3	15.9	14.9	25.4		82.4	16.8%
Total Project Cost	\$ 408.1	\$ 3.0	\$ 8.3	\$ 8.4	\$ 6.5	\$ 5.5	\$ 4.5	\$ 31.4	\$ 54.3	\$ 87.8	\$ 130.2	\$ 95.8	\$ 54.0	\$ -	\$ 489.7	100.0%
Interest Cost				0.5	0.8	1.2	1.4	1.5	1.6	1.8	2.1	2.5	2.4		15.8	
Total Cost		\$ 3.0	\$ 8.3	\$ 8.9	\$ 7.3	\$ 6.7	\$ 5.9	\$ 32.9	\$ 55.9	\$ 89.6	\$ 132.3	\$ 98.3	\$ 56.4	\$ -	\$ 505.5	
Sources of Funds																
Prop A 35%							0.2	31.4		15.9	55.6	21.7	3.1	39.8	\$ -	0.0%
Prop C 25%															167.7	33.2%
Other Local (ROW Contribution)														7.9	-	0.0%
CMAQ															7.9	1.6%
RSTP													2.0		2.0	0.4%
5309 Fixed Guideway Modernization															-	0.0%
5309 New Starts									22.6	70.0	70.0	70.0	20.1		252.7	50.0%
Traffic Congestion Relief Prog (TCRP)		3.0	8.0												11.0	2.2%
State Regional Improvement Program									31.6				32.6		64.2	12.7%
Total Sources		\$ 3.0	\$ 8.0	\$ -	\$ -	\$ -	\$ 0.2	\$ 31.4	\$ 54.2	\$ 85.9	\$ 125.6	\$ 91.7	\$ 57.8	\$ 47.7	\$ 505.5	100.0%
Surplus/(Deficit) before Bridge Loan		\$ -	\$ (0.3)	\$ (8.4)	\$ (6.5)	\$ (5.5)	\$ (4.3)	\$ -	\$ (0.1)	\$ (1.9)	\$ (4.6)	\$ (4.1)	\$ 3.8	\$ 47.7	\$ 15.8	
Gross Bridge Loan Proceeds			\$0.3	8.9	7.3	6.7	5.7	1.5	1.7	3.7	6.7	6.6			49.1	
Bridge Loan Principal Payment													(1.4)	(47.7)	(49.1)	
Bridge Loan Principal Balance			0.3	9.2	16.5	23.2	28.9	30.4	32.1	35.8	42.5	49.1	47.7	-	-	
Interest (5%)			-	(0.5)	(0.8)	(1.2)	(1.4)	(1.5)	(1.6)	(1.8)	(2.1)	(2.5)	(2.4)	-	(15.8)	
Net Surplus/(Deficit) after Bridge Loan		\$ (0.0)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.0	\$ 0.0	\$ (0.0)	\$ (0.0)	\$ 0.0	\$ (0.0)		

- Notes:
1. "Special Conditions" includes Utility relocation, environmental, master cooperative agreements, OCIP, testing, artwork, ATCS costs, Neighborhood Mitigation, etc.
 2. "Professional Services" includes Engineering, Construction Management, Agency & Specialty Consultants
 3. Bridge loans may not be necessary if other local funds can be substituted based on final audits and available funds.
 4. If all or part of the \$238.8 million of suspended TCRP funding becomes available for allocation, replacement of the local funds may be considered.

EXPOSITION LRT BOARDINGS BY STATION

STATION	NODE ID	PEAK PERIOD				OFFPEAK PERIOD				Total Ons + Offs	Station Boardings (Divide by 2)
		WESTBOUND On	EASTBOUND Off	EASTBOUND On	WESTBOUND Off	WESTBOUND On	EASTBOUND Off	EASTBOUND On	WESTBOUND Off		
7TH/FLOWER	18100	8,804	0	0	8,981	1,091	0	0	2,115	20,991	10,496
PICO	18105	292	1,318	385	902	114	150	178	324	3,663	1,832
WASHINGTON/GRAND	18106	234	2,318	349	1,334	174	421	245	470	5,545	2,773
ADAMS/HILL (see note)	18161	459	592	1,023	1,741	141	120	366	331	4,773	2,387
FIGUEROA/EXPO	18162	748	1,628	1,426	1,350	238	263	421	331	6,405	3,203
VERMONT/EXPO	18163	607	456	1,335	946	194	149	486	231	4,404	2,202
WESTERN/EXPO	18164	1,152	862	1,427	1,228	280	199	481	286	5,915	2,958
CRENSHAW/EXPO	18165	1,185	1,378	3,472	1,015	281	287	571	232	8,421	4,211
LA BREA	18166	1,183	829	2,241	633	325	228	466	196	6,101	3,051
LA CIENEGA	18167	1,021	1,640	1,626	1,870	321	214	296	275	7,263	3,632
VENICE/WASHINGTON	18169	0	4,664	6,716	0	0	1,128	1,281	0	13,789	6,895
TOTAL		15,685	15,685	20,000	20,000	3,159	3,159	4,791	4,791	87,270	43,635

Source:

cross-check 87,270 43,635

Peak period: X4TASN3, Mode 13, Line 7

Offpeak period: X4TASN6, Mode 13, Line 7

Notes:

Reported boardings based on Expo model run using 27.67 minute end-to-end travel time.

Adams/Hill Station is an optional station at this time and is included for analysis purposes.

To exclude station, some proportion of boardings can be redistributed to Washington/Grand and Figueroa/Expo; some boardings would simply be "lost."

ATTACHMENT D

REPORT
OF THE
AMERICAN PUBLIC TRANSPORTATION ASSOCIATION
PEER REVIEW PANEL
FOR
Los Angeles County
Metropolitan Transportation
Authority
Los Angeles, California

June 2003

A Service of the
APTA Safety Management Program



**REPORT
OF THE
AMERICAN PUBLIC TRANSPORTATION ASSOCIATION
PEER REVIEW PANEL
ON THE
DESIGN, STANDARDS, CRITERIA, AND COSTS OF DESIGN
BUILD CONSTRUCTION
RELATIVE TO THE
MID-CITY/EXPOSITION LIGHT RAIL TRANSIT PROJECT
OF
Los Angeles County Metropolitan
Transportation Authority**

Los Angeles, California

June 2003

PANEL MEMBERS

**Al Fazio
Don Irwin
Dave Conover
W. P. Grizard**

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I. INTRODUCTION

On April 25, 2003 the Los Angeles County Metropolitan Transportation Authority (LACMTA) made a formal request to the American Public Transportation Association (APTA) for a peer review of its Mid-City/Exposition design build project, as LACMTA was in the process of extending its operation into the City of Santa Monica.

A schedule for conducting the review was developed through consultation between LACMTA and APTA staff. Through mutual agreement, it was determined the peer review would be conducted June 2-5, 2003. It was further agreed that the Panel would be comprised of individuals who are very familiar with building cost-effective rail transit using a design build methodology. The Panel consisted of the following members from transit systems.

Al Fazio
President & Chief Executive Officer
21st Century Rail Corporation
Hudson Bergen LRT
Jersey City, NJ

Don Irwin
Director of Project Implementation – Capital Projects Division
Tri-County Metropolitan Transportation District
Portland, OR

Dave Conover
Project Manager - Engineering Services Division
Sacramento Regional Transit District
Sacramento, CA

The Panel convened on June 2, 2003 in Los Angeles, CA. APTA Staff Advisor W. P. Grizard, Manager - Safety Audit Programs, provided Panel coordination and logistical support. Liaison for LACMTA was provided through Mr. Steven Brye, Project Manager – Pedestrian/Urban, Transportation Linkages, and facilitated by Mr. Stephen J. Polechronis, Senior Vice President, DMJM-Harris.

Methodology

The APTA peer review process has been established as a valuable resource to the transit industry for assessing the status of operations. As LACMTA's rail system was being extended into Culver City and eventually into Santa Monica, the agency determined it would be prudent to enlist a peer review to assess the methodology of providing a design-build approach to the project, to ensure that requisite standards, criteria, and costs were consistent with this approach.

The Panel conducted field observations, examined organization documents, and engaged in a series of briefings with staff from various departments within LACMTA, DMJM-Harris, and project team subcontractors and consultants to gain an understanding of the project in its current phase. Additional interviews were held with the FTA Project Management Oversight team to identify the federal role in this project. Field observations were also performed on the Pasadena Gold Line project to benchmark current project methods and standards.

Scope of Report

The Panel toured the Mid-City/Exposition Light Rail extension to view the intended alignment, the existing neighborhoods and traffic patterns, and intended LACMTA maintenance and station facility sites. Meetings and interviews were conducted with consultants, supervisory personnel, and staff. LACMTA staff provided presentations.

The Panel outlined the scope of work into the following two areas:

1. Review Design Standards:
 - Make recommendations on
 - Design Standards & Specifications
 - Engineering
 - Construction Costs
 - Relative to
 - Building cost effective Light Rail Transit
 - Urban Traffic Conditions
 - Community Mitigation
2. Assess Entire Budget:
 - Make recommendations on
 - Value Engineering
 - Cost Containment
 - Relative to
 - Experiences of Comparable LRT Systems
 - Budget of Comparable LRT Systems
 - Reducing Cost of MCE LRT Project

At the conclusion of the review, the Panel provided the senior project management of LACMTA with a summary of findings and recommendations at an exit conference. Those findings and recommendations are noted within this report.

II. FINDINGS AND RECOMMENDATIONS

A. GENERAL COMMENTS

The Peer Review Panel was very impressed with the professionalism of the agency personnel involved with the development of the Mid-City/Exposition Corridor. The management team and their consultants are highly motivated to present LACMTA a high quality, safe, and operationally successful addition to their system. The Panel found a number of talented, motivated and fully committed personnel on this phase of the project with a good grasp of the issues and challenges ahead. The design build team has depth, experience, transit insight, and community awareness – all the necessary ingredients needed in identifying and addressing the important issues appropriately in this stage of the project.

B. GENERAL RECOMMENDATIONS

1. Value to Project of Lessons Learned
Incorporate Lessons Learned process from Pasadena Gold Line and other projects that have come on-line (San Fernando Valley Bus Rapid Transit, Eastside Light Rail Extension)
 - The Peer Review Panel recognizes and commends the early effort in this regard made by the project team, and the thoughtful implementation of the FTA Lesson Learned program in development of the project.
 - Incorporate, within the design, the lessons learned from PGL regarding operational constraints resulting from inadequate system elements such as SCADA, Headway design, PA systems, etc.
 - Use Lessons Learned to develop project controls over use of design criteria and services costs.

2. Agency Organizational Structure and Processes
 - Establish LACMTA Design Build lead person as early as possible
 - Establishes responsibility for overall Design Build delivery method
 - Facilitates integration of planning operations engineering, and construction
 - Capture Authority responsibility in Project Management Plan document
 - Develop and implement Design Build management procedures, and structure
 - Identify objectives for success
 - Resolve criteria and standards integration; i.e., how far to take design in PE
 - Focus on end product early to reduce costs of overall program
 - Establish a Project Action Team

- Consider independent reviews/sounding boards for:
 - Independent RFP review
 - Dispute Resolution Board
 - Industry Advisory Panel

- 3. Make Key Decisions NOW!
 - Downtown Alignment
 - Vehicle Procurement (Hi/Low, option timeframe)
 - Grade Separation Projects
 - Route to USC/Exposition

- 4. Cost Containment Process
 - Establish a special control process that is led by a LACMTA “empowered” official that is mindful of Safety, Regulatory, Functional and Performance criteria.
 - Although there is considerable effort already noted by the Panel in this area, no formal process that codifies and directs this effort was found
 - Typical areas where opportunities exist are:
 - Use of pre-cast kits for station platform structures
 - Use of grade 1 relay rail & wood ties, at Contractor’s option
 - Modify duct bank standard or utilize precast tray
 - Use of AFO track circuits
 - Relax interoperability requirements
 - Permit Center/Side/Split Platform designs
 - Shallow design for embedded track
 - Improvement of crossover specification to enable future high speed
 - Provide for express service by laying out 2 minute theoretical headway
 - Joint use of poles
 - Standardization of station platform core structure and canopy

- 5. Comprehensive Operating Plan before RFP
 - Vision of System Operation
 - Express Service
 - Short Turn Service
 - Headway and Operating Speeds/Average speed
 - Future extension and capacity upgrades
 - Yard – Inspection, running repair or shop
 - Single track or passing track operations

- 6. Management of Entire Program to a Budget
 - Validate Baseline Budget
 - Establish Change Controls to fit Design Build parameters
 - Establish Configuration Management
 - Evaluate LRV option package
 - Define realistic cost to complete
 - Examine the Draft Schedule for opportunities to reduce project cost

- Establish a Project Contingency that includes Scope contingency to deal with scope creep over the life of the project.
- Carefully watch the Design Build implementation: the 15% contingency is tight for a Design Build project.

7. Safety

- The Peer Review Panel commends MTA efforts on hazard management, including:
 - Historical data review
 - Risky behavior observation
 - Prototype application
 - Focus on safety
 - Eliminate, mitigate, warn approach
 - Safety hazard/risk analysis of each intersection
- Comments:
 - For cost control, consider application of curb median to prevent a vehicle from bypassing a gate, before the application of Quad Gates;
 - Channelizing – to be effective should not be easily defeated by risky behaviors; consider if easily defeated, e.g. – auto or ped gates, in conjunction with other treatments;
 - The Bike lane incorporated into ROW is a unique feature and deserves special attention to minimize hazards along the route;
 - Focus on Rodeo/Exposition intersection to eliminate and mitigate the hazards.

8. Risk Allocation Policy and Process

- A Fair and Reasonable management methodology is required for a Design Build project and should take into account:
 - Geotech
 - Utilities
 - Hazardous Materials
 - Permits
 - Jurisdictional Impacts
 - Parkway concept
 - CPUC Coordination
 - OCIP

9. The Commissioning Process

Requires close integration and long term planning to ensure schedule is not adversely affected and successful revenue service is achieved.

- Testing
- Start-up
- Safety Certification

III. CONCLUSIONS

It was apparent to the Peer Review Panel that LACMTA is strongly committed to a safe, cost effective, and successful design build project; and the request for this review was indicative of the organization's diligence for continued improvement. It was also apparent to the Panel that considerable attention had been given to the design build method to keep the project on time and within a cost constrained budget.

Through the extensive observations and findings of the Panel, it was determined there existed several immediate issues critical to the project that affect cost, schedule, and character of the project. There are, however, a number of findings and recommendations contained within this report that are offered to enhance and strengthen the future operations of the alignment, as well as some that identify a need to clarify management oversight and processes. LACMTA management should review the recommendations that are provided in this report in order to determine their merits for adoption and application.

Sincere appreciation is extended to LACMTA staff and to DMJM-Harris for the professional and courteous support extended to the Panel throughout the review. The Panel will stand available to clarify any questions regarding the recommendations or any other part of this report.

EXPOSITION LIGHT RAIL TRANSIT CORRIDOR

VALUE ENGINEERING STUDY

EXECUTIVE SUMMARY

JUNE 11-13, 2003

INTRODUCTION

This value engineering (VE) report summarizes the events and results of the VE study conducted during June 2003. The subject of the study was the Los Angeles Exposition Corridor Light Rail Project, Los Angeles, California, being planned by the Los Angeles County Metropolitan Transportation Authority (MTA). The study was undertaken using the Draft Supplemental Environmental Impact Statement/Draft Subsequent Environmental Impact Report (DEIS/DSEIR) as the basis of review. Three VE teams focused on three aspects of the project: systems infrastructure, trackwork, and aerial structures.

Each team followed the six-phase VE Job Plan to guide its deliberations:

- Information Gathering
- Function Identification and Analysis
- Creative Idea Generation
- Evaluation/Judgment of Creative Ideas
- Alternative Development and Selection
- Presentation and Approval of Alternatives

Study Objectives

The VE team itemized the following goals for the study:

- Identify modifications that optimize the current scope of work for the line segment
- Discuss project risk elements and offer mitigating measures
- Consider a reduced project scope which meets the key functions for the line
- Verify the need for all elements of the current scope of work

VE WORKSHOP RESULTS

After considering the full range of project value objectives, the three value engineering teams brainstormed more than 140 ideas that address the concerns of this project and enhance its value in the areas noted as desirable, such as developing a facility that is capital and life cycle cost-effective. Development and evaluation of these ideas and opportunities resulted in the selection of final alternatives that were approved and are being implemented for a project, saving

ATTACHMENT E

approximately \$18.5 million. Additionally, nearly 50 design suggestions were adopted. Although the cost savings for these suggestions could not be specifically quantified, their incorporation will certainly enhance the quality of the project.

IMPLEMENTATION PHASE

The VE process allows for tracking and documenting responses to each VE comment. Following review of the Draft VE report, a formal implementation meeting was held to select the most promising alternatives. Final results from the study are as follows:

Guideway

- \$4.5 million saved for accepting the CIP concrete double box for the shorter length bridge.
- \$8 million saved for using the center walkway, reduced width of structure, and deleted fence cross-section.
- \$0.9 million saved by using more MSE wall structure and less structural elevated span.

Elevated guideway savings = \$13.4 million

Systems

- \$2.2 million saved for using a single underground ductbank with six 4" PVC Conduits.
- \$1.9 million saved for connecting SCADA directly from field equipment.
- \$0.9 million saved for routing communication and fiber optics on leased lines.
- \$0.15 million saved for reducing the number of route control methods for train control.

Systems Savings = \$4.34 million

Total accepted VE savings \$18.5 million

