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William F. Hein
Deputy Executive Director

PLEASE NOTE SPECIAL MEETING DATE

COMMISSION MEETING

10:00 am, Wednesday, July 30, 1997
Joseph P. Bort MetroCenter Auditorium
101 Eighth Street, Oakland, California

PRELIMINARY AGENDA

		Action Recommended**
1.	Roll Call	Confirm Quorum
2.	San Francisco-Oakland Bay Bridge Eastern Span Bridge Design and Planning Recommendations*	Approval
3.	Other Business/Public Comment	
4.	Adjournment/Next Meeting: **Commission Meeting** Wednesday, October 1, 1997 BART Board Room 800 Madison Street Oakland, California	

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* Attachment to Commission members and other officials. (Copies available at meeting.)
** All items on the agenda are subject to action and/or change by the Commission.

Public Comment: The public is encouraged to comment on agenda items at committee meetings by completing a request-to-speak card (available from staff) and passing it to the committee secretary or chairperson. Public comment may be limited by any of the procedures set forth in Section 3.09 of MTC's Procedures Manual (Resolution No. 1058, Revised) if, in the chair's judgment, it is necessary to maintain the orderly flow of business.
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Memorandum

TO: Commission DATE: July 30, 1997

FR: Bay Bridge Design Task Force

RE: Eastern Span Bridge Design and Planning Recommendations

After five months of work, four major public hearings, hundreds of letters, telephone calls, and other communications from the public, and many hours of deliberation by its 36-member expert panel of engineers, architects, and geologists -- the Bay Bridge Design Task Force presents the following bridge design and planning recommendations for approval by the Commission. All but one of these 17 recommendations were approved by the Task Force at its last meeting on July 23. The Task Force directed staff to revise recommendation #8 regarding the accommodation of potential rail transit on the new bridge, and it is presented below in that revised form. Caltrans staff has indicated that it intends to use a design live loading standard* for the new eastern span that will accommodate some form of passenger rail service.

There are two outstanding issues which provide a context for the recommendations that follow. First, the funding package that will pay for the new eastern span bridge as well as the other seismic retrofit work on the Bay Area's state-owned toll bridges is still the subject of intense negotiations in Sacramento and no deal has yet been struck. Based on discussions with leaders of our legislative delegation, we believe it is likely that the funding package will involve a $1 toll increase on the state-owned bridges for eight years to pay the Bay Area's "cost share" of the retrofit work. The following recommendations also assume legislative authorization for MTC to extend that toll surcharge for another two years (thus yielding approximately $230 million) to pay for one or more of the following eligible additional features: a cable-supported main span, replacement of the Transbay Transit Terminal, and pedestrian/bicycle access.

Second, the Task Force and its Engineering and Design Advisory Panel (EDAP) both recommend that the two preferred cable-supported alternatives (single tower cable stayed bridge and single tower self-anchored suspension bridge) should be developed in parallel to approximately the 30% design stage before a final selection is made. Caltrans and its consultants must produce designs — not just design concepts — to a sufficient degree of detail to support reliable judgments concerning seismic performance, cost, and visual appearance. This parallel 30% design process is explained in the exchange of correspondence between MTC and Caltrans in Attachment 1.

*Minimum of 1,440 lbs./linear ft. with a maximum length of 360 ft. in center of span.

SUMMARY OF RECOMMENDATIONS

Finance Recommendation (1)

Recommendation 1: The Commission should support a two year extension of tolls and establish the priority for use of the estimated $230 million as follows: first, for the additional costs for a cable-supported structure; second, for a portion of the cost of the Transbay Terminal; and third, bicycle and pedestrian access on the bridge should continue to be evaluated.

Design Process (2 - 3)

Recommendation 2: Caltrans should select two design teams to develop the two cable-supported alternatives to approximately the 30% design stage so that reliable information as to seismic performance, cost, visual design, and other issues can be obtained before a final recommendation is made.

Recommendation 3: The EDAP and Bay Bridge Design Task Force should remain in place through the 30% design stage of the project to make a final recommendation on bridge design type and thereafter to provide continuous review of final design and engineering details.

Planning Recommendations (4 - 9)

Recommendation 4: The existing eastern span of the Bay Bridge should not be retrofitted, but replaced with a new structure.

Recommendation 5: The new eastern span and existing western span retrofit should be designed to provide post-earthquake "lifeline" service.

Recommendation 6: The new eastern span should have 10 traffic lanes, five in each direction, with two standard 10' shoulders in each direction as part of its base cost.

Recommendation 7: The new eastern span does not require a dedicated bus/carpool lane. Caltrans' design should minimize weaving conflicts between high occupancy and other vehicles at the transition from the dedicated HOV approach lanes to the bridge itself.

Recommendation 8: The new eastern span should be designed in accordance with Caltrans' proposed design loading which will accommodate the possibility of future rail service.

Recommendation 9: The Yerba Buena Island ramps are an inherent part of the bridge and Caltrans has the responsibility to replace the ramps in order to assure safe traffic flow on the bridge.

Bridge Design Recommendations (10 - 17)

Recommendation 10: The new eastern span should be built on the northern adjacent alignment.

Recommendation 11: The new eastern span should have a cable-supported main span with a single vertical tower with single or multiple legs in the transverse direction and single or multiple planes of supporting cables.

Recommendation 12: The new eastern span bridge should not be double decked. It should have two parallel separated decks on the causeway section and either parallel separated decks or a single deck on the cable-supported span.

Recommendation 13: The structural elements of the new eastern span should be visually consistent throughout.

Recommendation 14: The causeway section should have long, equal span lengths, although closer span lengths might be necessary just adjacent to the Oakland shore.

Recommendation 15: For the causeway section, particular attention should be paid to the design of the supporting pier as it enters the water, including the possibility of submerging the pile cap below water.

Recommendation 16: The cable or suspension tower on the eastern span should be no taller than the suspension towers on the existing western span.

Recommendation 17: The "diamond" shape for the tower base should not be employed in any cable or suspension tower on the eastern span.

Attachment 1

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July 24, 1997

Mr. James W. van Loben Sels
Caltrans Director
1120 N Street
P. O. Box 942873
Sacramento, CA 94273–0001

Dear Mr. van Loben Sels:

Your July 18 letter to me, urges the Metropolitan Transportation Commission's (MTC) Bay Bridge Design Task Force to select an alignment, a bridge type and amenities such as bike paths this month.

The Task Force is prepared to make these selections, but with the exception of the alignment, not until two outstanding conditions are satisfied. First, the State Legislature must pass legislation fixing the cost sharing for the bridge, including an authorization for MTC to levy tolls to finance the so called amenities. Second, Caltrans and its consultants must produce a design (not just a design concept as your letter accurately describes the current design alternatives) to a sufficient degree of detail to support reliable judgements concerning seismic performance, cost and visual appearance.

We note, for example, your acknowledgment that there is not agreement as to the cost estimates between the State, your cost estimating consultant and the designers of the alternative bridge concepts. We are not surprised given the conceptual stage of design. We continue to support the Engineering and Design Advisory Panel (EDAP) recommendation that an approximate 30% design is required.

We share your concern that the design process is not to be delayed. To meet this objective, selection of two design teams (one for cable stay and one for suspension) must proceed in parallel. Further, at the 30% milestone, the most economical design should be allowed to proceed to final design and construction unless MTC selects the more costly option and commits to finance its net additional cost from discretionary toll revenues within 30 days.

There will be an extra cost to design competing structures to the 30% design stage. The extra cost will be well spent to assure we will build the bridge that meets the full range of objectives.

If Caltrans can agree to this procedure, you will be positioned to move as expeditiously as possible with bridge design and construction as soon as the financing is approved.

I look forward to working out details of this proposal with you.

Sincerely,

Mary King

Mary King
Chair
Bay Bridge Design Task Force

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OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

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July 18, 1997

Ms. Mary King
Bay Bridge Design Task Force
Joseph P. Bort Metro Center
101 Eighth Street
Oakland, CA 946007

Dear Ms. King:

Caltrans has been working closely with the Metropolitan Transportation Commission's (MTC) Bay Bridge Design Task Force since its inception approximately five months ago. At the first Bay Bridge Design Task Force meeting, MTC outlined a schedule for the Task Force's efforts. As this schedule draws to a close, I wish to reinforce the extreme importance of your task. The MTC has this historic opportunity to literally shape the landscape of the Bay Area through its recommendations. However, every day of delay increases the risk of a temblor striking. It is imperative that the Task Force conclude its deliberations and forward recommendations on the schedule it established at the beginning of the process.

During these past five months MTC has solicited and received public input through an aggressive outreach program. The Bay Area has had ample opportunity to share its views with the Task Force, and the Task Force has received thousands of comments.

Additionally, the Task Force created an Engineering and Design Advisory Panel (EDAP) which is comprised of esteemed experts from structural engineering, earthquake engineering, seismology, geology, architecture and urban planning disciplines. This panel developed criteria, solicited ideas and concepts, and then reviewed these concepts against the criteria. EDAP is of the opinion that the replacement of the east span of this bridge is clearly preferred in lieu of the seismic retrofit of the existing structure. As a result of their efforts EDAP has determined that only three bridge concepts are acceptable at this project site. These concepts are: the skyway; a cable-stayed bridge with a single vertical tower as viewed in elevation; and a self-anchored suspension bridge with a single tower as viewed in elevation. Further, their preference was for one of the cable supported options, along with additional studies. The EDAP reviewed potential alignments and discarded the northern extended alignment. Only the southern and northern adjacent alignments remain. EDAP also proposed that the new span have a dedicated bicycle/pedestrian facility. Per MTC's instructions, EDAP's mission was not to consider costs. MTC clearly informed EDAP that cost data would enter the political decision making process when EDAP's recommendations were forwarded to the Task Force along with the summary of public comment.

Caltrans has developed cost data to assist in decision making. We have developed detailed quantities and unit costs for one variation of each concept. We worked with the individuals and firms who submitted concepts to EDAP to develop a common understanding of span lengths and transitions to ensure that the concept being estimated is consistent with the originator's vision. We have also hired a consultant to develop independent cost estimates. After reviewing the consultant's work we have revised some of our unit costs. Our updated estimates, reflecting input from the concept originator and the cost estimating consultant, are shown in the table below. We are confident in this data. Please note that there is not unanimous agreement as to the costs between the State, the cost estimating consultant and the concept originators. This is the nature of experts.

Bridge	Base Cost 4'-left shldrs & 10'-right shldrs (in billions)	Base Cost Plus 10'-left shldrs (in billions)	Base Cost Plus 10'-left shldrs & bike/pedestrian lane (in billions)
Skyway, Northern Adjacent Alignment	$1.000	$1.072	$1.156
Skyway, Southern Alignment	$0.968	$1.036	$1.115
Cable Stay Bridge, Northern Adjacent Alignment	$1.079	$1.154	$1.244
Self-Anchored Suspension Bridge, Northern Adjacent Alignment	$1.210	$1.290	$1.385

* **Estimates assume that the City of S.F. will transfer to the State at no cost the necessary land for the new bridge on Yerba Buena Island which S.F. receives at no cost from the Military Base Closure.**

During the past five months Caltrans has been responsive to the requests of the Task Force and EDAP for any additional studies or information. A substantial amount of information has been developed to assist decision makers. Sufficient information is available to make decisions regarding the bridge type, the bridge alignment, and the issue of a dedicated bicycle/pedestrian facility.

While we appreciate EDAP's efforts, we disagree with the EDAP recommendation for additional study of the three concepts. It is always possible to gather one more piece of information or to conduct one more study. However, Caltrans is of the opinion that information exists to clearly differentiate among the various choices associated with the new Bay Bridge.

Caltrans supports the recommendation that the Bay Bridge Design Task Force and EDAP remain in place throughout the design process. This will ensure that the Bay Area's recommendations to the Legislature and Governor later this month are implemented as envisioned.

In summary, I urge the Task Force to select an alignment, a bridge type, and amenities such as bike paths on the schedule developed at the beginning of the process. A design competition, as recommended by EDAP, is unneeded. In light of the urgent public safety issue with which we are dealing, it is also unwise to postpone a bridge-type decision which will cost time and money, both we can ill afford. A forthright decision is needed.

Sincerely,

JAMES W. VAN LOBEN SELS
Director

c: Members, Bay Bridge Design Task Force

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July 11, 1997

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Mr. James W. van Loben Sels
Director
Caltrans
PO Box 942873
Sacramento, CA 94273-0001

Dear Mr. Jim van Loben Sels:

Attached is a schedule designed to reach a firm and reasoned decision on the Bay Bridge east span design. It is the product of our discussion of June 25 and a meeting held here yesterday with the Chair and Vice-Chair of the Engineering and Design Advisory Panel (EDAP), as well as staff from Caltrans, Bay Conservation and Development Commission (BCDC) and the Metropolitan Transportation Commission (MTC). The schedule assumes the Commission will select the near northern alignment this month and that Caltrans would proceed to develop, in parallel, designs of a cable-stay span and a self-anchored suspension span to the approximate 30% design stage recommended by EDAP. We acknowledge that some additional design cost will be required.

EDAP has recommended, and there appears to be widespread sentiment, that a cable span (stay or suspension) should be selected. That would be the likely choice if the cost difference is in the range of $70 to $100 million, as has been suggested by Caltrans. Thus, we need not proceed with further design of the viaduct for the section of the bridge to be spanned by the tower and cable design, unless Caltrans chooses to do so to refine its own estimate of the cost of the viaduct.

The process we have outlined is intended to give confidence to the public and its political leaders that when $70 to $100 million more is spent for a signature bridge that the design process will result in a bridge worthy of the site. By engaging BCDC and its design review advisors, we believe we have expedited the schedule to the benefit of Caltrans and the public.

The design process outlined balances Caltrans' needs with those of public review. We look forward to working out any details with you.

Sincerely,

Larry

Lawrence D. Dahms
Executive Director

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Attachment (1)

Bay Bridge Design Selection Schedule
July 1997 to April 1998

Organization	Date	Action
MTC	July 30, 1997 (Wednesday)	1. Endorses Engineering and Design Advisory Panel (EDAP) recommendations 2. Selects northern adjacent alignment[1]
Caltrans	August-October 1997	Design teams contract selection process[2]
Caltrans	November 1997	Selection of design teams
Caltrans and Design Teams[3]	December-March 1998	1. 30% design of a cable-stay/viaduct bridge 2. 30% design of a self-anchored suspension/viaduct bridge 3. Cost estimates for 1 and 2
EDAP Chair and Vice-Chair[4]	December 15, 1997 (Monday)	Explanation of EDAP recommendations to design teams
Caltrans and Design Teams[5]	February 2, 1998 (Monday)	Review of alternative design approaches with EDAP
Caltrans and Design Teams[6]	March 30, 1998 (Monday)	Presentation of designs and cost estimates to EDAP
EDAP	April 10, 1998 (Friday)	Formulate recommendation for BBDTF
Bay Bridge Design Task Force (BBDTF)	April 15, 1998 (Wednesday)	Public Hearing to review design alternatives and EDAP recommendation
Bay Conservation and Development Commission (BCDC)	April 16, 1998 (Thursday)	Hearing and vote on policy issues of concern to BCDC
BBDTF	April 22, 1998 (Wednesday)	1. Review design, cost and EDAP recommendation 2. Prepare recommendation to MTC
MTC	April 29, 1998 (Wednesday, special meeting)	Adopt recommendation to Caltrans and Legislature regarding design and cost and financing

See footnotes attached.

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Bay Bridge Design Selection Schedule
July 1997 to April 1998

Footnotes

1 Based on Caltrans assurance that a lifeline bridge can be constructed on the northern adjacent alignment, that fewer land use conflicts exist on the northern alignment, that vistas and "gateway to Oakland" are enhanced on the northern alignment and that more flexibility is available to design and build a cable supported span in the northern rather than the southern alignment.

2 Based on Caltrans estimate that a design team selection process can be completed in three months including a review of consultant selection criteria and scope of work by staff of MTC, BCDC and the Chair and Vice Chair of EDAP.

3 Based on the following assumptions:
a) two design teams will be selected, one to design the best cable stay/viaduct combined structure, the other the best self-anchored suspension/viaduct combination
b) all designs will be carried to an approximate 30% level with early reviews by a reconstituted EDAP
c) Caltrans is responsible for the "base case" viaduct.

4 At this stage EDAP will have been restructured to eliminate members of the selected design teams and be augmented as necessary by bridge design experts. The standing of the restructured EDAP as advisor to Caltrans, BCDC and MTC is to be reinforced in this early dialogue between the chair and vice-chair and the design teams. The chair and vice-chair will represent EDAP in the early development of design options by the design teams.

5 This is intended to be the milestone where design alternatives are presented by the design team and where there remains sufficient flexibility for substantial revision if EDAP is not satisfied with the design direction.

6 The approximate 30% designs together with baseline and signature bridge estimates are to be presented for final review by EDAP.

Commission
mtg.
7-30-97

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SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
Thirty Van Ness Avenue • Suite 2011 • San Francisco, California 94102 • (415) 557-3686 • FAX: (415) 557-3767

April 9, 1997

TO: Bay Bridge Design Task Force, Engineering and Design Advisory Panel

FROM: Will Travis, Executive Director

SUBJECT: Draft Bay Bridge-East Span Replacement and West Span Retrofit Design Criteria

San Francisco Oakland Bay Bridge-East Span Replacement and West Span Retrofit Draft Design Criteria

Assumptions

§ Placing the east and westbound roadways on the same level, side by side, will diminish the visual access to the Bay by at least 50 percent, because only two lanes will adjoin the bridge edge, versus the four lanes that adjoin it currently on the east span. This reduction may be further compounded by the addition of shoulders and pedestrian and bicycle access.

§ The existing east span will need to be torn down to prevent damage to the new span from an earthquake, to avoid unnecessary maintenance costs, and to reduce navigational hazards.

§ The existing east span of the Bridge is eligible for the National Register of Historic Structures and may be protected under State and local historic preservation requirements.

§ The new east span will be aligned to avoid sensitive wetland areas in the Emeryville Crescent which provide habitat for endangered species.

§ The existing east and west span bridges have several elements which create a design continuity between them including:
- a continuous double level truss extending from San Francisco to Oakland;
- steel cross-bracing used throughout both spans; and
- visual continuity established by the continuous size and shape of the east bound tunnel, the braced frames on the westbound east span and the open deck of the west span.

Design Criteria

§ The replacement span should be designed to fulfill its purpose in the optimum way. The structure should reveal in itself a pure and clear form by manifesting its structural anatomy, and should impart a feeling of stability, confidence and simplicity.

§ The design of the replacement span should adhere to the established principles of design so that the structure's form, alignment, and detailing exhibit continuity and order. The bridge and its members should be scaled in harmonious proportions to one another. Order should be achieved by limiting the direction of lines and edges in space, and by establishing a consistent rhythm of spans, column size, span depth and spacing of elements. The design should be so refined that

no element can be added or removed without disturbing the harmony of the whole. The new bridge should achieve a clean and well-defined anatomical construction, devoid of any deception and unnecessary detail, and with directness of line both pleasing to the eye and responsive to the senses.

§ The bridge should integrate into the site and the surrounding environment by reflecting the grand scale of the San Francisco Bay, by harmonizing with the existing west span of the bridge and landing gracefully on the Oakland and Yerba Buena Island landfalls. The new east span design should reflect design continuity within itself and should relate and integrate with the retrofitted west span structure.

§ Where spans or structural systems change within the new east span, structural system integration will be important for visual continuity, using a consistent vocabulary within the different systems for design continuity and integrity.

§ The alignment of the roadway into and out of the tunnel on the east side should be improved. The abrupt angle of the existing east span bridge at the tunnel is awkward. The alignment of the new bridge should provide a safe, easily driven alignment that also enhances the motorist's and cyclist's view of the Bay and the surrounding land forms.

§ The roadway alignment should provide for safe motoring and contribute to the graceful form of the bridge in the landscape.

§ The ascent of the bridge from the Oakland landfall to Yerba Buena Island should be consistent and should flatten out before the tunnel so that the bridge gracefully engages the island and the tunnel as viewed from available vantage points.

§ The minimum allowable span width for the channel should be maintained.

§ Design continuity is a high priority. If a double level is considered, it will need to be an open truss design for view and light considerations and consistency with the west span.

§ The bridge design should not be a fashion statement, but should resolve itself in a timeless manner suitable to its central prominence in the Bay. The structure design should exhibit a natural balance and form in a manner which leads to the least possible disturbance of the Bay and its shoreline.

§ The design for the east span should reflect that the existing two-level truss is a very strong unifying element between the east and west spans, both because it projects from San Francisco to Oakland, interrupted only by the Yerba Buena Island tunnel and because it visually establishes a very strong line from one end to the other.

§ Material selection should reflect long-term maintenance and construction cost considerations. Maintenance considerations would favor concrete and seismic performance considerations may favor steel, which would require higher maintenance.

§ Any bicycle and pedestrian way should be integrated into the bridge design so that it contributes to the overall order and continuity of the bridge design. Periodic outlooks should be provided at intervals along the bicycle-pedestrian way.

§ The east span replacement bridge should provide a measure of visual continuity for motorists, regardless of what structural system is used, equal to that of the existing westbound portion of the east span bridge, which establishes a visual continuity for motorists because the trusses maintain a consistent rhythm of form, creating a lacy tunnel through which motorists pass.

§ The girders, piers and rails of the bridge should generally appear slender and should provide for views of the Bay by motorists using the bridge.

§ The east span replacement bridge should provide adequate on an off-ramp capacity to and from Treasure and Yerba Buena Island. Capacity projections should be based on current redevelopment plans for Treasure Island.

Detailed Design Criteria

§ Guard rails and hand rails should be designed to provide maximum transparency for maintaining views of the Bay and shall meet all appropriate safety criteria.

§ The retrofit of the west span should remove non-structural panels which block Bay views and replace them with panels which provide views.

§ Details of the bridge should be simple in appearance.

§ The bridge should generally not have any intrusive ornamentation.

§ Large expanses of concrete surface on the new span should be textured.

§ A concrete bridge should be colored in such hues as off-white, tan, reddish brown, or gray if possible.

§ Landscaping around the bridge should replicate the existing natural surroundings of the Bay shoreline.