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DEPARTMENT OF  
PUBLIC WORKS

CITY OF SACRAMENTO  
CALIFORNIA

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ROOM 200  
SACRAMENTO, CA  
95814-2705

ENGINEERING DIVISION

916-449-8220

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ENGINEERING DIVISION MANAGER

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SUITE B  
SACRAMENTO, CA  
95814-0131

September 4, 1990

916-449-5282

Transportation and Community Development Committee  
Sacramento, California

Honorable Members In Session:

SUBJECT: Investigation and Repair of Suspender Cables on the Guy  
West Bridge (PN:HA51) - For Committee Information

#### SUMMARY

Investigation and replacement of the suspender cable system on the Guy West Bridge has been completed. A consultant report which summarizes the investigation and details the bridge repairs and maintenance program has also been prepared. (A copy of this report is available for review in the Engineering Division, Design Section, 927 10th Street, Room 300.) This report summarizes the results of the study and is for committee information.

#### BACKGROUND

The Guy West Bridge is a suspension pedestrian bridge which spans the American River and provides pedestrian access between the California State University, Sacramento campus and the Campus Commons area on the easterly side of the river. The structure has been in service since 1967.

In May of 1987, three of the original 3/4" diameter suspender cables on the Guy West Bridge were observed to have failed. The bridge was closed for approximately one month, and emergency repairs to the failed suspender cables were performed.

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The City worked closely with CalTrans to evaluate the suspender cable failures and entered into a consultant services agreement with Wiss, Janney, Elstner Associates, Inc., to evaluate the causes of the failures, evaluate the condition of the existing remaining suspender cables, and make recommendations for repairs and maintenance of the cables.

The study by Wiss, Janney, Elstner Associates, Inc., titled "Investigation of Suspender Failures and Recommendation for Bridge Repairs for the Guy West Bridge" and dated February 12, 1990, concludes that the primary cause of the suspender cable failures was due to fatigue of the steel wires which make up the suspender cables. The point of failure was located at the top of the socket connection to the bridge deck. The fatigue was caused primarily by the overhead suspension cables swaying relative to the bridge deck. (See attached Exhibit A which identifies the point of failure).

Several possible design alternatives were evaluated that would reduce the fatigue experienced in the existing suspender cables and yet maintain the aesthetic appearance of the existing structure. It was determined that the most economical long-term solution was to replace the existing suspender cables with only minor design modifications and to subsequently replace the suspender cables periodically (every 20 years or so) as fatigue occurs. A maintenance program which may lengthen the life of the suspender cables is described in the report. The maintenance program will be implemented by the Public Works Department as part of its routine bridge maintenance program.

#### FINANCIAL DATA

It is estimated that replacement of the suspender cables on the Guy West Bridge will be required every 20 to 25 years. In 1989, all of the suspender cables on the bridge were replaced for a total project cost (failure analysis, design and construction) of \$134,336.74. The City Council approved a Capital Improvement Project (PN:HA51, Transportation Development funds, Fund 235) to provide for this work.

#### POLICY CONSIDERATIONS

Providing necessary maintenance and repair of public facilities is in accordance with existing City policy.

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MBE/WBE EFFORTS

This report is for information only; no goods or services are being purchased.

RECOMMENDATION

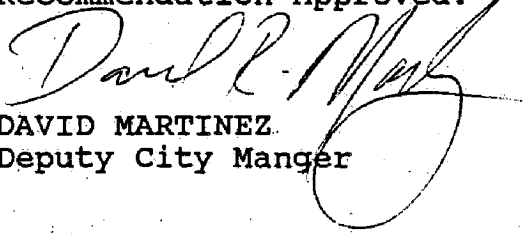
This item is provided for information only, and no Committee action is required.

Respectfully submitted,



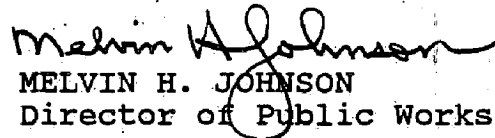
THOMAS M. FINLEY  
Engineering Division Manager

Recommendation Approved:



DAVID MARTINEZ  
Deputy City Manger

Approved:



MELVIN H. JOHNSON  
Director of Public Works

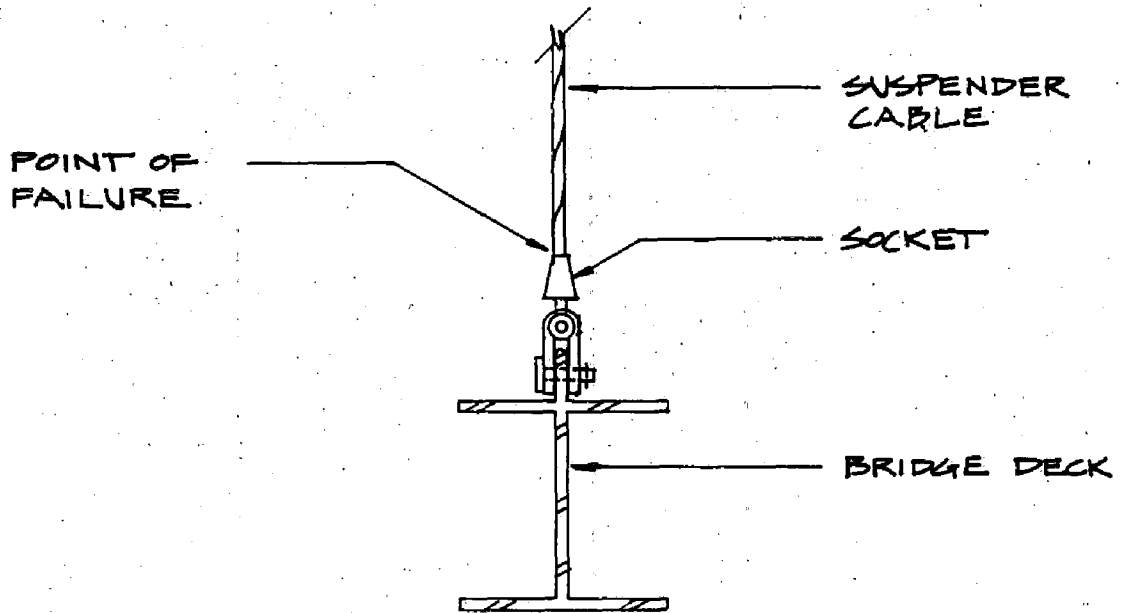
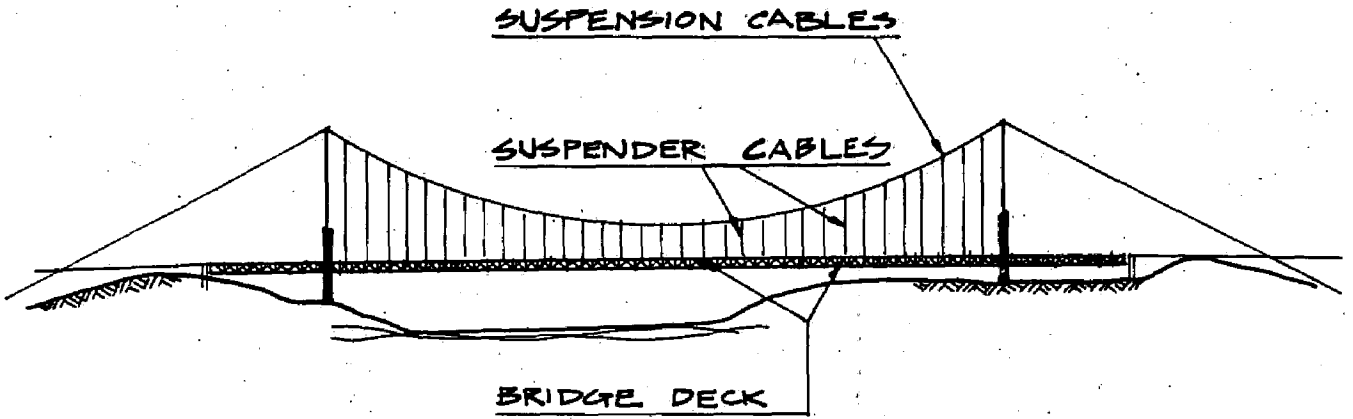
CONTACT PERSON

Randy Witt, Senior Engineer  
449-2035

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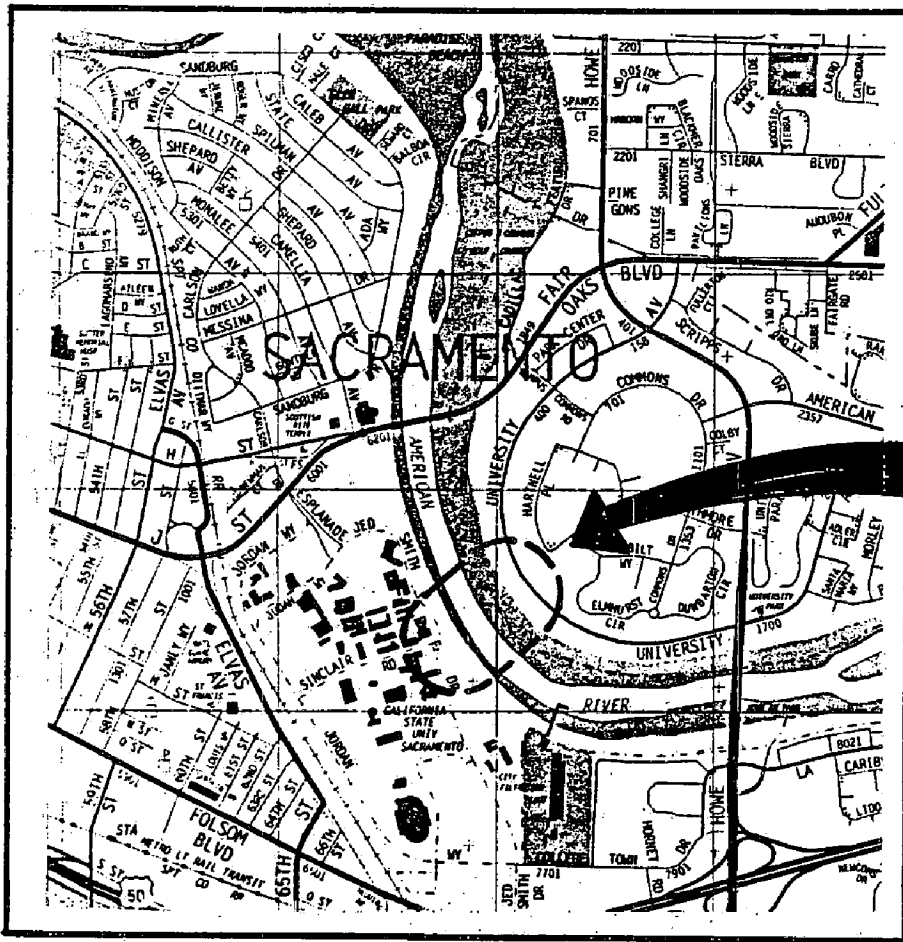
Attachment

September 4, 1990  
District. No. 3



GUY WEST BRIDGE

PN: HA51



**PROJECT  
LOCATION**

**GUY WEST BRIDGE**

**PN: H451**