



AGENDA ITEM 1  
GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

MERVIN C. GIACOMINI, P.E.

DISTRICT ENGINEER

Feb 28, 1997

For: Mar 07, 1997

TO: Building & Operating Committee  
FROM: Mervin C. Giacomini, District Engineer  
SUBJECT: GOLDEN GATE BRIDGE SUICIDE DETERRENT - PRESENTATION  
OF NEW SUICIDE DETERRENT CONCEPT (POSSIBLE ACTION)

I. BACKGROUND INFORMATION

As a backdrop to consideration of a possible new suicide deterrent concept, I thought the Committee might welcome a short summary of key prior meetings when the subject of a suicide deterrent was discussed. The background summary follows immediately below. Copies of the reports that are referenced are included as appendices to this report.

A. District Engineer's Report Dated October 31, 1994

Issue: The Chair of the Building & Operating Committee directed staff to consider upgrading the existing east sidewalk barrier over Fort Point.

Response: The barrier over Fort Point was constructed by extending curved stansions from the tops of the existing pedestrian rail post, and installing a small mesh chain-link fence over this structure and the existing pedestrian railing. This barrier was requested by the National Park Service to prevent debris from dropping to Fort Point. The Committee concurred with staff recommendation that the barrier not be changed.

B. District Engineer's Report Dated November 29, 1994

Issue: The Chair of the Building & Operating Committee requested that staff report on the consideration of utilizing a suicide deterrent on the Bridge similar to the east sidewalk debris barrier over Fort Point.

Response: A suicide deterrent similar to the debris barrier on the east sidewalk of Fort Point cannot be used on the suspension bridge because the suspension bridge is a wind-sensitive structure which could be drastically impacted by the wind forces resulting from the chain-link fence on the Bridge.

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deck, transit deck, other major construction projects on the Golden Gate Bridge, or Golden Gate Bridge maintenance improvements shall include consideration of a suicide deterrent."

In accordance with Board Resolution No. 9797, the Board considered a suicide deterrent during the planning and design of the Bridge Deck Replacement Project and determined that a suicide deterrent was not appropriate for that project.

2. Television Surveillance. In the 1960s, television cameras were installed over the roadway to monitor traffic conditions on the Golden Gate Bridge and the Toll Plaza parking area. They are also used to monitor portions of the sidewalk on the Golden Gate Bridge for potential suicide attempts.
3. Emergency Telephone. The 13 emergency telephones on the Golden Gate Bridge have been connected to the Toll Office, allowing the Sergeant's Office to connect calls from the emergency telephones to the suicide hotline.
4. Further Action. Reviewed the requirements for a barrier. The critical issue pertaining to a barrier would be public acceptance of the change in the aesthetics of the Bridge resulting from it, approval by the State Historic Preservation Officer (SHPO) and development of a barrier which would not impact the wind stability of the Bridge.

D. District Engineer's Report Date January 30, 1995

The Chair of the Building & Operating Committee directed staff to update the statistical suicide information for the five years immediately prior to 1995.

The suicide statistics for the years 1990 through 1995 are consistent with those of the 1970 Anshen & Allen Study. The statistics show that the majority of the suicides were pedestrians (83%), most jumped from the east side of the Bridge (82%), and most occurred during daylight hours (77%). The minority of the suicides were motorists (12%), a few were bicyclists (1.8%), and some jumped from the west side of the Bridge (9%). The statistics do not show a clear trend for suicides that are seasonal or related to a particular location or time of day.

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A plan was presented to provide a suicide deterrent program consisting of closed-circuit television surveillance monitored from an observation kiosk at the south tower in conjunction with a security patrol. The cost of the television surveillance system was \$315,000.

In accordance with Board Resolution No. 9797, the Board considered a suicide deterrent during the planning and design of the Bridge Seismic Retrofit Project, and determined that a suicide deterrent was not appropriate for that project.

## II. NEW SUICIDE DETERRENT CONCEPT

Z-CLIP International Fencing Systems of Danville, California, has developed a high-capacity steel mesh fence system that is used for agriculture and security fencing, in addition to other applications. The Z-CLIP fencing system is a steel mesh fence that uses horizontal parallel high-tension steel wires approximately 3/16" diameter tensioned to 650 pounds. Patented Z-CLIP fasteners are woven into the horizontal wires every five to fifteen feet, depending on the fencing application. The Z-CLIP fasteners result in a structural steel wire mesh that distributes even pressure throughout the fencing system giving the fence strength and elasticity. The post spacing for the fencing system allows a spacing up to 100 feet between posts. The Z-CLIP fasteners and the high tension applied to the wire prevent wires from being separated. In addition, the Z-CLIP fasteners hold the wire in place should a wire be cut or broken. According to its conceivers, the Z-CLIP fencing system is designed to be difficult or impossible to climb, by tensioning the lower and middle wires to maximum tension and the upper and top wires to less tension so that the weight of a person attempting to climb the fence causes the top wires to flex backwards, and they are unable to obtain a support to climb over the fence.

The proposed application of the Z-CLIP fencing system to the Golden Gate Bridge (a drawing is included in the appendices to this report) by Z-CLIP International Fencing Systems provides for curved stansions at 100 foot intervals supporting the horizontal tensioned wires spaced four inches apart. The curved stansions attach to the existing pedestrian railing posts and architecturally match the curve of the light standards. The Z-CLIPs are installed at approximately six foot spacing and the top wires at the curve of stansion are under reduced tension to prevent a person from climbing over them. Access gates for maintenance operations would be placed in the existing pedestrian railing refuse bays to minimize their visual impact and to provide for additional security at the gate. The preliminary cost estimate, by Z-CLIP

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International Fencing Systems, of this proposal for both the east and west sidewalks of the Bridge is \$2-3 million.

Very preliminary evaluation of the proposed suicide deterrent concept based on the criteria developed by Anshen & Allen leads me to conclude that the Z-CLIP Fencing System may be a viable suicide deterrent. I have considered the following points in forming my preliminary conclusion:

- Cannot cause safety or nuisance hazard to pedestrians or Bridge personnel. The Z-CLIP fencing system does not appear to cause a safety hazard. In the event a wire should break, it is held in place between the clips. Pedestrians can continue to enjoy the views from the Bridge with minimum interference with this concept.
- Must be totally effective as a barrier. It does not appear to be easily scaled, however, it may be possible for a very athletic person to climb the system.
- Cannot bar pedestrian traffic. The system does not impact pedestrian traffic, and may enhance it since some pedestrians are now hesitant to walk near the edge of the sidewalk on the bay side.
- Weight cannot be beyond established limits. The weight of this system is minimal and well within the established limits.
- Cannot cause excessive maintenance program problems. The system does not impact the use of the maintenance scaffolding on the Bridge, however, it does limit access to the platforms to access gates.
- Aerodynamics cannot be beyond established allowable limits. It is anticipated that this system will not impact the wind stability of the Bridge. However, this must be confirmed by wind tunnel testing.

If the Committee finds this concept worthy of further pursuit, the phases of the development for the application of the Z-CLIP fencing system to the Golden Gate Bridge for a suicide deterrent would consist of the following phases. Cost proposals would be requested from Z-CLIP International Fencing Systems for performing the following phases of the project:

Phase I - Develop the concept and perform the preliminary engineering to conduct prototype testing of a section of fencing system and posts at a land side test area to confirm the proposal assumptions.

Phase II - If the prototype testing is successful, finalize the concept post configuration, height, and wire spacing to install a prototype section, of several hundred feet, on the Bridge to evaluate its aesthetics, public acceptance, and to finalize the concept.

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Phase III - Perform an environmental assessment, obtain SHIPO approval, and hold public hearings.

Phase IV - Utilizing the information from the Bridge prototyping, finalize the design, prepare plans and specifications.

Phase V - Finalize the plans, specifications, and bidding documents.

Phase VI - Advertise for construction bids.

Staff would welcome comments, reactions, of the Committee members regarding the new suicide deterrent concept. A representative from Z-CLIP International Fencing Systems is also here to respond to questions.

MCG/sgb

Attachment



AGENDA ITEM 3  
GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

Jan 03, 1995  
For: Jan 06, 1995

TO: Building & Operating Committee  
FROM: Mervin C. Giacomini, District Engineer *Mervin C. Giacomini*  
SUBJECT: GOLDEN GATE BRIDGE, SUICIDE DETERRENT - REPORT ON PREVIOUS STUDIES, ACTIONS, AND FUTURE ACTIONS (INFORMATION)

At the December 2, 1994 meeting of the Building & Operating Committee, the Chair instructed staff to provide a detailed report on the previous studies for a suicide deterrent on the Golden Gate Bridge, including all reports, conclusions, and testimonies. The Chair also requested a review of the recently installed Bridge telephones and an outline of future actions, including an assessment of physical barriers and their feasibility.

PREVIOUS STUDIES AND ACTIONS

Barriers

After many years of informal studies, the Board of Directors in 1970 retained the prestigious firm of Anshen & Allen, Architects of San Francisco, to research and evaluate all possible physical barriers that could reduce the number of suicides from the Golden Gate Bridge. Their report, dated April 7, 1971 reviewed and discussed the following suggested barriers:

- Barbed wire fence, 9 feet high.
- Square mesh safety net fence above rail.
- U-shaped spikes, 18 inches high on top of rail.
- Rail bent outward to form 1/4 circle.
- Nylon safety net on either side.
- Plexiglas screen on top of rail.
- Redesigned rail 7 feet high with Plexiglas balusters
- Horizontal tension cables.
- Low voltage electric fence.
- Laser beam.
- Wrought iron fence, curved spikes on top.
- Chain link fence, bent top.
- Horizontal fence, 8 feet out, collapsible net.
- Rotating horizontal cylinder on top of rail.
- Re-designed handrail - top rail widening.
- Vertical tension rods.
- Lowered sidewalk with tension-rod rail.
- Aluminum side guards with net.

The report also developed a comprehensive set of criteria that a viable deterrent must meet:

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- Cannot cause safety or nuisance hazards to pedestrian or Bridge personnel.
- Must be totally effective as a barrier.
- Cannot bar pedestrian traffic.
- Weight can not be beyond established allowable limits (144 lbs. per lineal foot).
- Cannot cause excessive maintenance problems.
- Aerodynamics can not be beyond established allowable limits (lateral forces or dynamic forces).

Finally, it recommended three proposals of a physical barrier, that satisfied the criteria, for further study. A copy of this report is available for review in the Office of the Engineer.

District staff, with full cooperation of the architect, constructed a full-sized model that contained the elements of the three proposals for testing. Two of the three proposals were eliminated from further study. The first one as not being practical, and the second as not being a deterrent to suicides.

In 1974, the most promising design, Proposal Number 16 of the Anshen & Allen report, was selected for further study. The help of the San Francisco Suicide Prevention and Marin County Suicide Prevention was enlisted. A full-sized model, 12'-6" long, was constructed for testing. During the next two years, the model was continuously and extensively modified as various components proved, through testing, to not perform as required.

After two years of extensively modifying and testing the model by staff and volunteers from the suicide prevention, Proposal Number 16 was developed into a reasonably effective suicide barrier. Its appearance, however, was very cumbersome and aesthetically not attractive. It also could be climbed over by an athletic person. This model is available for viewing in the East Toll Plaza Maintenance Yard.

The District then held a series of public meetings prior to proceeding with the final design, engineering and aerodynamic (wind tunnel) testing.

Following the public meetings, during which time many people expressed their views, both pro and con, the Engineer presented a scope of work and estimate of costs that would be required to proceed with the design and construction of a new pedestrian railing that would be a positive suicide deterrent.

The Board of Directors did not authorize proceeding with the final design and construction of a suicide deterrent. The Board did instruct staff, including all Bridge workers, to continue their very positive efforts to prevent most of the

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individuals who attempt to take their own lives on the Bridge from doing so through a program of vigilance and apprehension. This program continues to be a very successful program and deters most people from using the Golden Gate Bridge to end their lives.

Further, the Board passed Resolution No. 9797, which states: "Any future District planning and design activity for long-range Bridge projects, be they Bridge Deck Replacement, Transit Deck, Other Major Construction Projects on the Golden Gate Bridge or Bridge Maintenance Improvements, shall include consideration of a suicide deterrent."

In accordance with this resolution, the District considered a suicide deterrent during the planning and design of the Bridge Deck Replacement Project. The District consulted with the State Historic Preservation Officer, who advised that 36 C.F.R. 800 would require a lengthy historical value study with respect to any changes of those elements of the Bridge considered to be architecturally historic. This would include the Bridge railing, which would require consideration of its architectural details, as well as the railing's visual impact values on automobile travelers and pedestrians. To undertake the required historical value study would have the potential effect of delaying or stopping the deck replacement project and/or jeopardizing the limited federal funding that was available for the project. Therefore, a suicide deterrent was not included as part of the Bridge Deck Replacement Project.

In 1992, the District awarded a contract for replacing a portion of the west side pedestrian railing. The suicide deterrent was not included in this work because of similar reasons. In addition, the scope of the project was limited to replacing only the railing that had become badly corroded over the years. It was also noted that most suicides occur on the east side of the Bridge, which is the side open to pedestrians, rather than the west side.

Most recently, the Building & Operating Committee Chair directed the Engineer to consider several railing modifications for suicide deterrents. The Engineer reported on upgrading the debris barrier on the east sidewalk over Fort Point (Building & Operating Committee Report dated October 31, 1994); and, utilizing a barrier similar to the debris barrier on the east side over Fort Point as a suicide deterrent on the rest of the Bridge (Building & Operating Committee Report dated November 29, 1994).

The criteria for the debris barrier is a barrier that will prevent small objects from passing through it while providing adequate openings to minimize wind loadings on the arch, that it be strong and resistant to corrosion and not block views of people using the Bridge. Since the current debris barrier on

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the east sidewalk over Fort Point meets this criteria, staff recommended that the existing debris barrier remain as it stands.

A suicide deterrent utilizing a chain link fence, similar to the debris barrier on the east sidewalk above Fort Point, cannot be used on the suspension bridge because the suspension bridge is a wind sensitive structure, which would be drastically impacted by the wind forces resulting from a chain link barrier on the Bridge. The chain link fence is not detrimental to the arch span because the impact of wind forces on the arch span are not as critical since it is a short span pinned between two support pylons.

#### TELEVISION SURVEILLANCE

In the 1960s, television cameras were installed over the roadway on the bottom strut of the San Francisco and Marin main towers. Since that time, two television cameras have been installed at the south end of the Administration Building, one camera in the East Toll Plaza Parking Lot and one camera at the north end of the Bridge on the southbound changeable message sign. Although these cameras were installed primarily to monitor traffic conditions on the Bridge and the Toll Plaza parking areas, they are also used to monitor portions of the sidewalks on the Bridge. The television cameras are most effective in checking reports of people on the Bridge that appear suspicious, and responding to notifications from agencies or persons to be on the look out for people reported to be suicidal.

#### EMERGENCY TELEPHONES

The Board of Directors, by Resolution No. 93-264, approved the development of a telephone communications system on the Golden Gate Bridge for use in conjunction with suicide prevention and counseling of the San Francisco Suicide Prevention.

The emergency telephones on the Bridge have been connected to a switch in the toll office that allows the Sergeant's Office to connect calls to the suicide hotline along with two additional phones that were installed in July 1994. There are a total of 13 emergency telephones, including the additional emergency phones installed on the east sidewalk at mid-span and at pylon S1. Signs are installed at all emergency telephones reading, "Emergency Telephone and Crisis Counseling."

Employees in the toll operations, ironworkers, and paint departments have received training from San Francisco Suicide Prevention as a part of this program. California Highway Patrol personnel have also received similar training. A protocol has been developed for District personnel

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encountering persons on the Bridge that may be considering suicide. To date, there have been six calls on the emergency-crisis counseling telephones to the toll office. None of the callers would accept transfer to the San Francisco Suicide Prevention.

#### FUTURE ACTIONS

The following is an outline of possible future actions, including an assessment of their feasibility, that may be considered to develop a suicide deterrent on the Bridge.

#### Barrier

The development of a barrier concept would require developing a new architectural concept, or improving the previously studied concept, structurally designing the concept, testing the concept in a wind tunnel, constructing and testing a prototype of the concept, preparing the environmental documents, obtaining approval of the concept from the State Historic Preservation Officer, obtaining permits from the Bay Conservation and Development Commission (BCDC), U.S. Army Corps of Engineers, and other regulatory agencies. Any barrier developed under this process must also provide frequent gates for maintenance operations. The estimated cost of developing, testing, and obtaining permits for a barrier concept, which does not include the preparation of the plans, specifications, and bidding documents, is \$250,000-\$300,000. The cost of the barrier would be determined by the concept that was developed. The estimated cost of Anshen & Allen's Barrier Proposal No. 16 in 1974 was \$2.74 million. The present cost of this proposal is \$6.9 million based on the Means Construction Index.

The critical issues pertaining to a barrier would be public acceptance of the change in the aesthetics resulting from a barrier, approval by the State Historic Preservation Officer (SHPO), and development of a barrier which would not impact the wind stability of the Bridge.

#### ADDITIONAL TELEVISION CAMERA SURVEILLANCE

Television surveillance cameras could be installed along the sidewalks. This would require installing cameras along the sidewalks to cover areas presently out of the range of the cameras at the towers and at the ends of the Bridge. Cameras would be installed on the outside of the towers and on light poles along the Bridge to provide full coverage of the sidewalks. A separate monitoring system would be required in the toll office for surveillance and to separate the sidewalk surveillance from the roadway monitoring. Continued roadway monitoring is critical to the safe operation of the Bridge and the toll plaza. The cost of this concept is dependent on the

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number of cameras and the level of monitoring that would be utilized. The magnitude of cost for the equipment and installation is \$500,000. This amount does not include additional personnel.

The critical issues associated with this concept are impacts to the aesthetics of the Golden Gate Bridge due to installing cameras on the historic light poles and the main tower (considered minor), and additional staff required to monitor the surveillance cameras. The effectiveness of this concept is questionable. It would be very difficult to monitor all the pedestrians on the Bridge; and, even if pedestrians were seen climbing over the railing, they could easily jump before a response team arrived at their location.

#### ADDITIONAL SECURITY ON THE GOLDEN GATE BRIDGE

The Sergeant's Office, District tow service, and the California Highway Patrol provide security on the Golden Gate Bridge. During weekday working hours, the level of security is enhanced by District maintenance forces working on the Bridge. Additional security could be provided by security forces devoted to suicide prevention utilizing roadway and foot patrols on the Golden Gate Bridge. The cost of the concept is dependent on the level of security.

The critical issues pertaining to this concept would be the additional personnel required.

#### RESTRICT PEDESTRIAN AND BICYCLISTS ACCESS

This concept would limit public access to the Golden Gate Bridge to reduce the opportunity for potential suicides. This could be accomplished in a number of ways that provide various degrees of access:

- Close the Bridge sidewalks to pedestrians and bicyclists.
- Limit the access to the sidewalks to a reduced time period or to weekends only.
- Allow pedestrian access on the Bridge only by participation in guided sidewalk tours.

The critical issues pertaining to this proposal are: Restriction of public access; restriction of pedestrian travel across the Bridge; restriction of bicycle and bicycle commuter traffic across the Bridge; restriction of travel from the Presidio National Park to adjacent park lands at the north end of the Bridge; GGNRA and BCDC policies concerning public access, enforcement of restrictions. Restrictions may impact or favor one group, pedestrian and/or bicyclists over another. Currently, bicyclists have 24-hour access to crossing the Bridge. This concept does not assume that suicides will be deterred and it may increase suicides by motorists.

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Restriction of pedestrian and bicyclist access would create a hardship for commuting bicyclists, hikers, and visitors to the Bridge.

**CONCLUSION**

Various suicide deterrent concepts have been addressed in this report. These concepts can be considered in combination with one or more concepts. For example, additional television camera surveillance combined with additional roadway and sidewalk security could be considered. Other possible combinations are: additional security measures combined with public access restrictions; and, public access restrictions combined with guided sidewalk tours.

Staff would welcome comments, reactions, and questions from Committee members regarding these concepts.

MCG/jc



GOLDEN GATE BRIDGE HIGHWAY AND TRANSPORTATION DISTRICT

AGENDA ITEM 4

2/7  
 For: Jan 30, 1995  
 Feb 03, 1995

TO: Building & Operating Committee  
 FROM: Mervin C. Giacomini, District Engineer *McGiacomini*  
 SUBJECT: GOLDEN GATE BRIDGE SUICIDE DETERRENT:  
 A. SUICIDE DETERRENT PROGRAM (INFORMATION); AND,  
 B. CONSIDERATION OF SUICIDE DETERRENT FOR THE  
 SEISMIC RETROFIT PROJECT (ACTION)

PART A

At the January 6, 1995 meeting of the Building & Operating Committee, staff was directed to update the statistical suicide information for the past five years, and to present this information to the Committee in February, along with cost estimates for surveillance patrol and other suicide deterrent alternatives (other than a barrier).

The suicide statistics for the past five years are consistent with those prepared for the 1970 Suicide Prevention Study by Anshen & Allen Architects, of San Francisco. The statistics show that the majority of suicides were pedestrians (83%), most jump from the east side of the Bridge (82%), and most occurred during daylight hours (77%). The minority of suicides were motorists (12%), a few were bicyclists (1.8%) and some jumped from the west side of the Bridge (9%).

These statistics do not show a clear trend for suicides that are seasonal or related to a particular location or time of day. They do indicate the influences of present operating restrictions on the Bridge. For instance, suicides occur on the east side of the Bridge since it is open to the public, while the west side of the Bridge is restricted to bicyclists, and maintenance operations. Suicides primarily occur during daylight hours since the east sidewalk is closed to pedestrians from 9:00 p.m. to 5:00 a.m.

A suicide deterrent program that would address the majority of suicides (82%) indicated by the statistics could consist of the following components:

- Additional surveillance of the east sidewalk;
- Security personnel on the east sidewalk; and,
- Limited hours available for pedestrian use of the east sidewalk.

The Suicide Deterrent Program could consist of: closed circuit television surveillance cameras on the east side of the Bridge monitored from an observation kiosk at the south tower; one security person would monitor the surveillance

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cameras from the observation kiosk; and, one other security person would conduct patrols on the east sidewalk with a scooter. The scooter would give the security personnel flexibility and speed to respond to suspected potential suicides. A two person security team would provide for monitoring the surveillance cameras without encumbering the traffic operations in the toll office. It would also provide a high level of alertness by rotation of monitoring and patrolling responsibilities.

The equipment and personnel required for this level of suicide deterrent is as follows:

1. Observation kiosk at the south tower, including closed circuit television monitor. Estimated cost \$ 5,000.
2. Eight closed circuit television surveillance cameras consisting of cameras at the following locations:
  - a. Pylon S2 - for viewing San Francisco Viaduct
  - b. San Francisco Tower - for viewing San Francisco Back Span
  - c. San Francisco Tower - for viewing Main Span
  - d. Mid Span - for viewing Main Span
  - e. Marin Tower - for viewing Main Span
  - f. Marin Tower - for viewing Marin Back Span
  - g. Pylon N2 - for viewing Marin Viaduct Estimated cost \$290,000.
3. Two scooters. Estimated cost \$ 20,000.  
Sub-total - Initial Cost \$315,000.
4. Two person security team.  
Estimated cost eight hours per day, seven days per week,  
 3 personnel @ \$66,000/yr. \$198,000 per year.

The program operated 8 hours per day (9:00 a.m. - 5:00 p.m.) would provide a deterrent at the time and location where approximately 57% of the suicides have occurred.

The program operated 12 hours per day (8:00 a.m. - 8:00 p.m.) would provide a deterrent at the time and location where approximately 69% of the suicides have occurred.

The success of this program is dependent on the ability to monitor hundreds of pedestrians on a television monitor and the response time required.

Staff would welcome comments, reactions, and questions from Committee members regarding these suggestions.

#### PART E

The Board passed Resolution No. 97-97, which states: "Any

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future District planning and design activity for long range Bridge projects, be they bridge deck replacement, transit deck, other major construction projects on the Golden Gate Bridge, or maintenance improvements, shall include consideration of a suicide deterrent."

Final design is proceeding for the seismic retrofit of the Golden Gate Bridge. The design for the Golden Gate Bridge Seismic Retrofit does not include provisions for a suicide barrier because the retrofit project primarily occurs below the roadway level, and with the exception of streamlining the pedestrian railing pickets on a portion of the west railing for aerodynamic stability, the design does not involve the pedestrian railing on the Bridge.

A suicide barrier is not germane to the critical need to seismically retrofit the Golden Gate Bridge to protect it from potential failure in a major earthquake.

Moreover, the timeframe to develop a barrier concept as part of the Seismic Retrofit Project would severely delay the seismic project. The development of a barrier concept would require developing a new architectural concept, or improving the previously studied concept, structurally designing the concept, testing the concept in a wind tunnel, constructing and testing a prototype of the concept, preparing the environmental documents, obtaining approval of the concept from the State Historic Preservation Officer, obtaining permits from the Bay Conservation and Development Commission (BCDC), U.S. Army Corps of Engineers, and other regulatory agencies. The development of a barrier concept as part of the Seismic Retrofit Project could result in an interminable delay due to the complexity of these tasks.

#### RECOMMENDATION

The Committee recommends that the Board not include a suicide barrier as part of the Golden Gate Bridge Seismic Retrofit Project.

MCG/ugh



AGENDA ITEM 6  
GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

Jul 31, 1995  
For: Aug 04, 1995

TO: Building & Operating Committee  
 FROM: Carney J. Campion, General Manager  
 Robert A. Warren, Bridge Manager  
 Ronald A. Garcia, Bridge Captain  
 William B. Rumford, Chief of Security  
 SUBJECT: CONSIDERATION OF PROPOSAL FOR GOLDEN GATE BRIDGE  
 PUBLIC SAFETY UNIT (ACTION)

8/3  
D

At the July 7, 1995 meeting of the Building and Operating Committee, consideration was given to a staff proposal to develop a Public Safety Unit in an attempt to reduce the number of suicides from the Bridge. That proposal recommended a Unit comprised of uniformed temporary part-time personnel, with the primary function of suicide prevention, patrolling Bridge sidewalks in an enclosed scooter during the hours of 9:00 a.m. to 9:00 p.m., seven days a week, at a total estimated cost of \$76,736 for one year.

The Committee directed Staff to report to the next meeting of the Committee on the ability of temporary part-time personnel to physically subdue possible suicides, and the possible availability of off-duty Police Officers to perform these patrol functions.

The use of off-duty Police Officers for patrol duties would not be an adequate source of personnel for long term assignments, since their primary employment would take precedent over temporary employment with the District. Their availability could be affected at short notice due to police related activities. This would have an adverse effect on the consistency of the patrols.

Evaluation by staff determined that properly trained, full-time employees would be more effective to perform the proposed patrols than off-duty Police Officers or part-time temporary District personnel. However, it must be recognized that even trained personnel should not be expected to attempt to subdue a particularly hostile individual until back-up personnel arrive at the scene.

The existing District Toll Office Lieutenants and Sergeants, who are the primary responders to suicide attempts at the Bridge, are armed due to the security aspects of their overall duties, not suicide prevention. The firearm is not a deterrent in suicide prevention, and therefore is not necessary or appropriate for a position dedicated to suicide prevention.



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A suicide prevention patrol using full-time employees could be achieved by adding two positions, a trained Bridge Officer, equivalent to the rank of Corporal, and one clerical position, equivalent to an Office Assistant, to the Bridge Division staff. These positions would provide suicide prevention patrols in the following manner:

1. One (1) new full-time position covering the hours from 9:00 a.m. to 5:00 p.m. five days a week, during the period of time with the highest incidence of suicides. This would be a uniformed, un-armed, non-supervisory position at the level of Bridge Corporal. The primary responsibility of this position would be suicide prevention, and would utilize an enclosed scooter to patrol the sidewalks. This position would receive training pertaining to suicide prevention, as well as first aid and CPR. The proposed wage rate for this position is \$20.25 per hour, which is approximately 10% above the positions of Bridge Officer or Bridge Service Operator.
2. One (1) full-time office assistant working 8:30 a.m. to 4:30 p.m., five days a week, assigned to the Toll Office to perform routine clerical duties currently performed by Lieutenants and Sergeants. By freeing Lieutenants and Sergeants of routine clerical duties they are now performing, these personnel would be able to spend more time performing normal patrol functions, including the suicide prevention patrol.

The estimated annual cost of suicide prevention patrols based on the addition of the above two (2) full-time positions is as follows:

Labor

Corporal: \$20.25/hr. @ 40 hrs./wk. x 52 weeks	
+ benefits =	\$ 56,862.00
Office Assistant: \$16.28/hr. @ 37 1/2 hrs./week	
x 52 weeks + benefits =	\$42,857.10

Capital

Uniforms =	\$486.00
Enclosed Scooter =	\$12,000.00
Total estimated cost for one year:	\$12,205.10

These two (2) proposed positions would ensure that the personnel patrolling the sidewalks would have training for suicide prevention consistent with that of other District personnel involved with suicide prevention, and would be more familiar with District procedures and functions. The release of Lieutenants and Sergeants from routine clerical duties will

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allow better utilization of their extensive training, abilities and knowledge of the District by allowing them to increase the amount of time they can devote to their patrol functions.

This proposal provides a Bridge Corporal position dedicated to suicide prevention 8 hours a day 5 days a week coverage in lieu of 12 hours a day 7 days a week coverage in the initial proposal. The additional time patrolling by the Lieutenants and Sergeants freed from routine clerical duties by the addition of a clerical position for suicide prevention will exceed the 4 hour a day difference, as well as providing coverage on the days off of the dedicated position, for 7 day a week coverage. However, the Lieutenants and Sergeants cannot be dedicated only to suicide prevention patrol. If a security incident or traffic accident occurred while on patrol they would have to respond to that incident, providing they were not currently involved with a potential suicide situation.

#### RECOMMENDATION

The Committee recommends that the Board of Directors approve the development of a Bridge Public Safety unit, on a one-year trial basis, composed of two (2) full time positions, a Bridge Corporal for patrol and an Office Assistant to free Bridge Lieutenants and Sergeants, assigned to the Bridge Division and supervised by the Bridge Captain, at a cost not to exceed \$113,000; and, authorize a budget adjustment in the Bridge Division Budget for FY 1995-96 in the amount of \$113,000.



AGENDA ITEM 2

GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

Oct 31, 1994  
For: Nov 04, 1994

TO: Building & Operating Committee  
 FROM: Daniel E. Mohn, District Engineer *Daniel E. Mohn* (w)  
 SUBJECT: GOLDEN GATE BRIDGE - CONSIDERATION OF UPGRADING THE EXISTING EAST SIDEWALK DEBRIS BARRIER ABOVE FORT POINT (INFORMATION)

The Board, at its July 8, 1994 meeting, directed staff to report to the Building and Operating Committee on: a comprehensive review of the earlier studies and actions pertaining to development of the suicide barrier on the Golden Gate Bridge, and consideration of upgrading the existing east sidewalk debris barrier above Fort Point. A comprehensive review of earlier studies and actions pertaining to the development of a suicide barrier on the Golden Gate Bridge was presented to the Building and Operating Committee at its August 31, 1994 meeting. First Vice-President McDonnell, at the request of Director Maher, assigned consideration of upgrading the existing east sidewalk debris barrier above Fort Point.

This report pertains to consideration of upgrading the existing debris barrier above Fort Point. In 1976, a debris fence was installed over Fort Point at the request of the National Park Service. This request was motivated by debris being dropped onto Fort Point and the visitors to Fort Point by Bridge sidewalk users. Fort Point is directly below the east sidewalk of the Golden Gate Bridge between pylons S1 and S2. The four story brick fort structure encloses an open courtyard approximately 220 feet below the east sidewalk level. Any small object, such as a beverage can or a piece of fruit, falling into the Fort presents a unacceptable safety risk to the park visitors.

The debris barrier was constructed by extending curved stanchions from the tops of the existing pedestrian rail posts and installing a small mesh chain link fence over this structure and the existing pedestrian railing. The debris barrier is installed on the east sidewalk only. There is no barrier on the west sidewalk because it is not used by the public except for bicyclists during the evenings and weekends. This has not been a problem.

The debris barrier is set aside from the architecture of the remaining Bridge by mass of the pylons that flank it. It has been accepted by historical architects and the public users of the Bridge without comment. It does not block the scenic view of the bay from any angle.

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Criteria for the debris barrier is a barrier that will prevent small objects from passing through it, while providing adequate openings to minimize wind loadings on the Bridge and be strong and resistant to corrosion and not block the view of people using the Bridge. The current debris barrier meets this criteria. Staff recommends that the existing debris barrier remain as it stands.

The Golden Gate Bridge is eligible for the National Register of Historic Places and is being nominated for Landmark Status by the National Park Service. A barrier that changed or eliminated the historic railing on the east sidewalk over Fort Point would require an historic value study to determine the impacts of these changes in accordance with the National Historic Preservation Act.

DEM/MCG/sgb

AGENDA ITEM 1  
GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICTAug 18, 1994  
For: Aug 31, 1994

TO: Building & Operating Committee  
FROM: Daniel E. Mohn, District Engineer *Daniel E. Mohn* (2)  
SUBJECT: GOLDEN GATE BRIDGE, SUICIDE DETERRENT - REVIEW OF  
PRIOR STUDIES (INFORMATION)

At the request of the Committee Chair, the Engineer has reviewed the previous work that the District has done to develop a suicide deterrent for the Golden Gate Bridge. This work is summarized below.

After many years of informal studies, the Board of Directors in 1970 retained the prestigious firm of Anshen & Allen, Architects of San Francisco, to research and evaluate all possible physical barriers that could reduce the number of suicides from the Golden Gate Bridge. Their report, dated April 7, 1971 reviewed and discussed many ideas. The report also developed a comprehensive set of criteria that a viable deterrent must meet. Finally, it recommended three proposals of a physical barrier for further study. A copy of this report is available for review in the Office of the Engineer.

District staff, with full cooperation of the architect, constructed a full sized model that contained the elements of the three proposals for testing. Two of the three proposals were eliminated from further study: The first one as not being practical, and the second as not being a deterrent to suicides.

In 1974, the most promising design, Proposal Number 16 of the Anshen & Allen report, was selected for further study. The help of the Suicide Prevention Bureaus of San Francisco and Marin Counties was enlisted. A full-sized model, 12'-6" long, was constructed for testing. During the next two years, the model was continuously and extensively modified as various components proved, through testing, to not perform as required.

After two years of extensively modifying the model and extensive testing by staff and volunteers from the suicide prevention bureaus, Proposal Number 16 was developed into an effective suicide barrier. Its appearance, however, was very cumbersome and aesthetically not attractive. This model is available for viewing in the "Boneyard" east of the Toll Plaza.

The District then held a series of public meetings prior to proceeding with the final design, engineering and aerodynamic (wind tunnel) testing.

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Following the public meetings, during which time many people expressed their views, both pro and con, the Engineer presented a scope of work and estimate of costs that would be required to proceed with the design and construction of a new pedestrian railing that would be a positive suicide deterrent.

The Board of Directors did not authorize proceeding with the final design and construction of a suicide deterrent. The Board did instruct staff, including all Bridge workers, to continue their very positive efforts to prevent most of the individuals who attempt to take their own lives on the Bridge from doing so through a program of vigilance and apprehension. This program continues to be a very successful program and deters most people from using the Golden Gate Bridge to end their lives.

Further, the Board passed Resolution No. 9797, which states: "Any future District planning and design activity for long-range Bridge projects, be they Bridge Deck Replacement, Transit Deck, Other Major Construction Projects on the Golden Gate Bridge or Bridge Maintenance Improvements shall include consideration of a suicide deterrent."

During the planning and design of the Bridge Deck Replacement project in 1980, the District, in accordance with this resolution, considered the effect a suicide deterrent may have on this very important project. The State Historic Preservation Officer was consulted during the environmental assessment of the project. The State Historic Preservation Officer, in consideration that the Golden Gate Bridge is on the National Register of Historic Places, advised that 36 C.F.R. 800 would require a lengthy historical value study with respect to any changes of those elements of the Bridge that are considered architecturally historic. The Bridge railing is considered historic in many respects, including architectural details as well as visual impact values to automobile travelers and pedestrians. The additional study that changing the Bridge rail would have required had the potential effect of delaying or stopping the deck replacement project and/or jeopardizing the limited federal funding that was available for the project. Therefore, a suicide deterrent was not included as part of the Bridge Deck Replacement Project.

Most recently, the District awarded a contract for replacing a portion of the west side pedestrian railing. The suicide deterrent was not considered a part of this work because:

1. Not all the railing was being replaced, only the railing that had become badly corroded over the years;

(more)

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2. The historical preservation regulations would have required a lengthy and expensive study to determine the impact of a suicide deterrent on the historical values of the Bridge; and,
3. Most suicides occur on the east side of the Bridge, which is the side open to pedestrians.

DEM/HICG/sgb



CARNEY J. CAMPION  
GENERAL MANAGER

GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

AGENDA ITEM 1

12/9

Nov 01, 1993  
For: Nov 05, 1993

TO: Building & Operating Committee  
FROM: Carney J. Campion, General Manager  
SUBJECT: **CONSIDERATION OF REQUEST OF SAN FRANCISCO BOARD OF SUPERVISORS FOR INSTALLATION OF TELEPHONES ON THE GOLDEN GATE BRIDGE IN CONJUNCTION WITH A SUICIDE PREVENTION AND COUNSELING PROGRAM, AND APPROVE DISTRICT DESIGN CONCEPT (ACTION)**

In accordance with the instructions of the Board at its October 22, 1993 meeting, staff has met with Eve R. Meyer, Executive Director, San Francisco Suicide Prevention, Incorporated (SFSPI), to explore ways and means of implementing the request from the San Francisco Board of Supervisors.

Ms. Meyer agreed with staff that the eleven existing phones on the Bridge should be utilized for crisis counseling rather than adding additional phones. Staff, the Attorney, and Ms. Meyer will develop a specific protocol, and specific wording to be placed on each phone regarding the availability of crisis counseling.

Very little additional equipment will be needed to implement a crisis counseling procedure. An automatic switching device to extend a call to the SFSPI from any Bridge phone will need to be procured and installed. The cost of this equipment is minimal. Upon Board approval of this concept, staff will work with SFSPI, the Attorney, California Highway Patrol and others to develop a specific protocol for crisis counseling from phones on the Bridge.

**RECOMMENDATION**

The Committee recommends that the Board approve the concept of utilizing the eleven existing phones on the Bridge for crisis counseling by installing an automatic dialing and switching device that will connect any one of these phones to the San Francisco Suicide Prevention, Incorporated counseling hotline, subject to the development of appropriate protocols by staff and the Attorney in consultation with the Executive Director of San Francisco Suicide Prevention, Incorporated, the California Highway Patrol and others prior to the implementation of this service.

CJC/DEM/sgb



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2. The historical preservation regulations would have required a lengthy and expensive study to determine the impact of a suicide deterrent on the historical values of the Bridge; and,
3. Most suicides occur on the east side of the Bridge, which is the side open to pedestrians.

DEM/sgh



AGENDA ITEM 6  
GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

Feb 26, 1993  
For: Mar 05, 1993

TO: Building & Operating Committee  
FROM: D. E. Mohn, District Engineer  
SUBJECT: GOLDEN GATE BRIDGE, SUICIDE DETERRENT - REVIEW OF  
PRIOR STUDIES (INFORMATION)

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SCANNED  
Date: 3/2/93  
Initials:

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The Board of Directors did not authorize proceeding with the final design and construction of a suicide deterrent. The Board did instruct staff, including all Bridge workers, to continue their very positive efforts to prevent most of the individuals who attempt to take their own lives on the Bridge from doing so through a program of vigilance and apprehension. This program continues to be a very successful program and deters most people from using the Golden Gate Bridge to end their lives.

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