

STRUCTURE TYPE SELECTION MEMO (REV. 2)

PROJECT IDENTIFICATION South Access to the Golden Gate Bridge (Doyle Drive)						DATE January 15, 2009 (Rev. 2)
DIST 04	CO SF	RTE 1, 101	PM 8.3 / 9.4	CD 04	EA 163701	DESIGN BRANCH -
SP&Q: March 2009				SPS&E: April 2010		

Bridge Name	Bridge Number	PM	Construction Cost	Design Hours Required
Main Post Tunnels – Alt. 1	34-0163L/R	8.40	\$97,274,000	12,000
Main Post Tunnels – Alt. 2			\$88,745,000	
Retaining Wall No. 8 – Alt. 1	34-0162	8.59	\$11,758,000	2,500
Retaining Wall No. 8 – Alt. 2			\$14,807,000	
Battery Tunnels – Alt. 1	34-0161L/R	8.82	\$85,119,000	12,000
Battery Tunnels – Alt. 2			\$93,531,000	
PROJECT TOTAL			\$185,622,000 Min. - \$205,612,000 Max.	26,500

TYPES CONSIDERED:**Main Post Tunnels – NB & SB:**

Alternative 1: A cast-in-place concrete structure with the invert slab maintaining a constant top of slab elevation over the transverse tunnel section, with the Doyle Drive profiles and superelevations achieved by constructing a roadway section within the tunnel.

Alternative 2: A cast-in-place concrete structure with the top of the invert slab matching the Doyle Drive profiles and elevations. The invert slab will be thickened near the walls as required to allow plastic hinging in the walls under lateral seismic loading.

Retaining Wall No. 8:

Alternative 1: Alternative 1 is a retaining wall typically utilizing tangent piles, except at the Main Post Tunnel, where a Type 1 wall is specified to retain embankment fill. Over most of the wall length, tieback anchors are used with the tangent piles where excessive wall heights preclude the use of cantilevered piles. In some locations, the wall heights approach 40 feet. Where Lincoln Boulevard extends beyond the wall layout line, cantilevered tangent piles are specified because the basements for Building 106 and other adjacent building structures do not allow for tieback anchors. At this location, the wall height is approximately 20 feet. For this height, the wall can be satisfactorily designed using a cantilevered tangent pile system. To accommodate the cantilevered slab supporting Lincoln Boulevard, a structural concrete slab utilizing the tangent piles and CIDH tension piles is specified to resist overturning loads due to the cantilever.

Alternative 2: Alternative 2 uses Caltrans' standard Type 1 walls, supported on CIDH piles, throughout most of the length of the wall. To accommodate the cantilevered slab supporting Lincoln Boulevard, a Type 1 wall is modified to support a similar structural concrete slab and CIDH tension pile system to that used in Alternative 1.

Battery Tunnels – NB & SB:

Alternative 1: Separation of temporary shoring and permanent walls: soldier piles with laggings or secant pile walls are used to provide temporary shoring during tunnel excavation. Permanent concrete tunnel walls will be cast against the temporary shoring.

Alternative 2: Combination of temporary shoring and permanent walls: slurry/diaphragm walls are used as temporary shoring and part of the permanent structure.

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ARCHITECTURAL RECOMMENDATIONS:

Main Post Tunnels – NB & SB:

- Provide several pedestrian connections from the Main Post to Crissy Field with at least one an accessible route.
- The De Anza Esplanade shall be the main pedestrian connection from the Main Post to Crissy Field. The maximum slope of the De Anza Esplanade should not exceed a 2½:1.
- Separate the Presidio Promenade multi-use trail from Lincoln Boulevard and align with the top of bluff.
- Portals should be distinguished from a natural aesthetic and read as an architectural feature disassociated from the created bluffs.
- Portals should be minimalist in design and not embellished.

Retaining Wall No. 8:

- Minimize the retaining wall south of Doyle Drive as an architectural feature and maximize the landscape character.
- Design the retaining wall south of Doyle Drive to accommodate vegetation.
- The retaining wall south of Doyle Drive to be vertical.

Battery Tunnels – NB & SB:

- Portals should be distinguished from a natural aesthetic and read as an architectural feature disassociated from the historic bluffs.
- Portals should be minimalist in design and not embellished.
- Separate the Presidio Promenade multi-use trail from Lincoln Boulevard and realign with the historic Battery Blaney Road.
- Provide pedestrian and emergency/maintenance vehicle access to the batteries along the Presidio Promenade multi-use trail.
- Conceal the protective fence atop western tunnel portals to preserve views from Lincoln Boulevard to the Golden Gate Bridge.
- Preserve the view of the Golden Gate Bridge from the intersection of Sheridan Avenue and Lincoln Boulevard.
- The tunnel portals shall be at least 20 feet from the northern curb of Lincoln Boulevard.
- The tunnel portal design should be simple.

STRUCTURAL RECOMMENDATIONS:

Following the Type Selection meeting held at Caltrans headquarters on December 19, 2008, and further review, the following alternatives studied and presented are recommended for selection for final design:

- Main Post Tunnel: Alternative No. 2
- Retaining Wall No. 8: Alternative No. 1
- Battery Tunnel Alternative No. 1

These alternatives happen to be the least costly as well as more streamlined in terms of implementation.

- (1) DESIGN ENGR X
- (2) BR DES SUPV X
- (3) SR BR ARCHIT X
- (4) CHIEF STR DES X
- (5) PROJECT ENGR X

	PROJECT ENGINEER
	PROJECT AESTHETICS CONSULTANT

Attachments: General Plan
 General Plan Estimate