

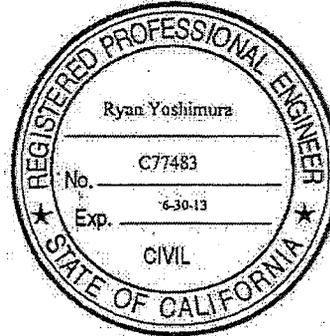


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**San Francisco Bay Bridge - Seismic Safety Project
 Fact Sheet Exceptions to Mandatory Design Standards**

Prepared by:

Ryan Yoshimura 10/26/11
 Ryan Yoshimura, P.E. Date
 Parsons Brinckerhoff Inc.
 303 Second Street, Suite 700N
 San Francisco, CA 94107-1317
 (415) 248-4600



Submitted by:

Bob Zandipour 10-26-11 (510)286-5709
 Bob Zandipour Date Telephone
 Senior Design Engineer

Recommended for Approval by:

Ken Terpstra 11-15-11 (510)286-4679
 Ken Terpstra Date Telephone
 Project Manager

Concurrence by:

John Uozumi 10-27-11 (510)622-5974
 John Uozumi Date Telephone
 Design Office Chief
 Toll Bridge Design

Approved by:

Michael W. Thomas 11/22/11 (510)286-4687
 Michael W. Thomas Date Telephone
 Design Coordinator
 Division of Design

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1. PROPOSED PROJECT

A. Project Description

The San Francisco-Oakland Bay Bridge (SFOBB) East Span Seismic Safety Project (East Span Project) will replace the existing East Span with a seismically upgraded crossing between Yerba Buena Island (YBI) and the City of Oakland. Construction of the East Span Project is being performed under multiple contracts (21 in total), some of which have been completed while others are ongoing or under development.

As part of the new East Span, the mainline Yerba Buena Island Transition Structures (YBITS) will connect the new Self-Anchored Suspension (SAS) Span and the YBI Tunnel. To allow for the construction of the YBITS, the dismantling of the existing bridge on YBI will be necessary. Traffic will use the temporary South-South Detour (SSD) that redirects all lanes of I-80 from the existing bridge. The YBITS will be built under two contracts – YBITS Contract 1 and Contract 2. The YBITS Contract 1 will build the mainline structures and complete other work that will enable traffic to be transitioned from the existing East Span to the new East Span. The YBITS Contract 2 will demolish the SSD, dismantle the cantilever truss, realign Southgate Road and the eastbound (EB) off-ramp east of the tunnel, build the permanent eastbound on-ramp and bike path, and complete Yerba Buena Island restoration activities (some in association with the United States Coast Guard).

This Fact Sheet documents the YBITS Contract 2 design features that require an exception from mandatory design standards. Please see Attachment A for the YBI #2 Contract Project Location Map (Figure A-1) and Project Vicinity Map (Figure A-2).

B. Existing Highway

I-80 currently has 5 lanes of traffic in the eastbound (EB) and westbound (WB) directions at the SFOBB. The SFOBB currently serves approximately 260,000 vehicles per day, and provides regional access between the San Francisco Peninsula and the East Bay. As a component of Interstate 80 (I-80), it is a critical link in the interstate network. The existing double-decked bridge spans across two separate sections (the East Span and the West Span), and both the eastbound (EB) and westbound (WB) levels are striped with five 3.4-m lanes without left or right shoulders. Toll is collected from WB traffic at the east approach of the bridge in the City of Oakland.

C. Safety Improvements

The new East Span will consist of two side-by-side bridge structures separated by 15 m (49 ft). Each bridge structure will include five travel lanes, each 3.6 meters (12 feet) wide, and 3.0 m (10 ft) wide left and right shoulders. The bridge structures will also include standard cross slope and superelevation compliant with the Highway Design Manual (HDM), Fifth Edition. In addition, a 5.80 m (19 ft) pedestrian/bicycle path will be located in most locations 0.3 m (one ft) above the roadway along the south side of the eastbound bridge deck. The eastbound (EB) and westbound (WB) YBI transition structures will have similar features. Also, a new eastbound on-ramp will be constructed to provide standard freeway entrance from YBI to the City of Oakland and beyond.

D. Total Project Cost

Total cost for the project is estimated at approximately \$139,000,000. Roadway items are estimated at \$54,000,000, and structures items are estimated at \$85,000,000.

2. FEATURES REQUIRING AN EXCEPTION

Table II is a summary of nonstandard features that are exceptions from mandatory design standards:

Table II Summary of Mandatory Design Exceptions

Feature No.	HDM Index	Feature	Standard	Proposed Exception	Location/Ref. Dwg
M1	101.1	Selection of Design Speed	Local Facility Min Design Speed = 55 km/h	Local Facility Design Speed = 40 km/h	Hillcrest Road (H Line)/Figure B-1
M2	201.1, Table 201.1, 201.4, Figure 201.4	Stopping Sight Distance at Grade Crests	Min SSD = 130 m (Design Speed = 80 km/h)	Min SSD = 38.82 m	EB Off-Ramp, R4 Line Vertical Curve (BC 50+95.000/EC 51+25.000)/Figure B-3
M3	201.1, Table 201.1, 201.5, Figure 201.5	Stopping Sight Distance at Grade Sags	Min SSD = 50 m (Design Speed = 40 km/h)	Min SSD = 35.51 m	EB Off-Ramp, R4 Line Vertical Curve (BC 51+25.000/EC 51+45.000)/Figure B-3
M4	201.1, Table 201.1, 201.6, Figure 201.6	Stopping Sight Distance on Horizontal Curves	Min SSD = 130 m (Design Speed = 80 km/h)	(a) Min SSD = 40 m (b) Min SSD = 17 m	(a) EB Off-Ramp, R4 Line Horizontal Curve (BC 50+94.310/EC 51+35.780)/Figure B-2 (b) WB Off-Ramp (WW Line)/Figure B-1
M5	202.2, Table 202.2	Standards for Superelevation	e = 0.12 (R= 189 m & Under)	(a) e = 0.075 (b) e = 0.01	(a) EB Off-Ramp, R4 Line, Horizontal Curve (BC 50+94.310/EC 51+35.780)/Figure B-3 (b) WB Off-Ramp (WW Line)/Figure B-1
M6	203.2, Table 203.2	Standards for Curvature	Min R = 70 m (Design Speed = 40 km/h)	(a) R = 20.3 m (b) R = 16 m (Outer Radius)	(a) EB Off-Ramp, R4 Line, Horizontal Curve (BC 50+94.310/EC 51+35.780)/Figure B-2 (b) WB Off-Ramp (WW Line)/Figure B-1

Feature No.	HDM Index	Feature	Standard	Proposed Exception	Location/Ref. Dwg
M7	302.1, Table 302.1; 309.1(3) (a)	Shoulder Standards, Width; Horizontal Clearances, Minimum Clearances	(a) Min Right Shoulder Width = 2.4 m; Min Horizontal Clearance = 1.2 m (b) Min Left Shoulder Width = 0.6 m; Min Horizontal Clearance = 1.2 m (c) Min Horizontal Clearance = 1.2 m	(a) Min Right Shoulder Width = 1.1 m; Min Horizontal Clearance = 0.6 m (Left); 1.1 m (Right) (b) Min Left Shoulder Width & Horizontal Clearance = 0.2 m (c) Min Horizontal Clearance = 0.6 m	(a) EB On-Ramp, R1 Line Sta 50+90.000 to Sta 51+00.000/Figure B-2 (b) EB Off-Ramp, R4 Line Sta 51+53.633/Figure B-2 (c) WB Off-Ramp, W Line Sta 51+26.900/Figure B-1
M8	309.2(1) (a)	Vertical Clearances, Major Structures, Freeways and Expressways	Min Vertical Clearance = 5.1 m	Min Vertical Clearance = 5.01 m	EB Off-Ramp, E Line Sta 50+44.54, 13.72 m Rt./Figure B-3
M9	405.2(2) (a)	Left-Turn Channelization, Lane Width	Left-Turn Lane Width = 3.6 m	Left-Turn Lane Width = 3.3 m	EB Off-Ramp (R4 Line), Left Turn Pocket (H Line Sta 50+71 to Sta 50+86)/Figure B-2
M10	501.3	Interchange Spacing	Min Interchange Spacing = 1.5 km (Urban)	Interchange Spacing = 0.3 km	YBI Interchanges/Figure B-6
M11	504.2(1)	Freeway Entrances and Exits, Basic Policy	Exit Ramp Connects to Right of Through Traffic	Exit Ramp Connects to Left of Through Traffic	WB Off-Ramp (WW Line)/Figure B-1
M12	504.2(2), Figure 504.2B	Freeway Entrances and Exits, Standard Designs	Min Deceleration Length = 180 m	(a) Deceleration Length = 34.6 m (b) Deceleration Length = 0 m	(a) EB Off-Ramp (R4 Line)/Figure B-2 (b) WB Off-Ramp (WW Line)/Figure B-1
M13	504.3(3)	Ramps, Location and Design of Ramp Intersections on the Crossroads	Min Distance Between Ramp & Local Road Intersections = 125 m	Min Distance Between Ramp & Local Road Intersection = 25 m	WB Off-Ramp (WW Line) & Southgate Road (SG Line) Intersections with Hillcrest Road (H Line)/Figure B-1
M14	504.8	Access Control	Access Rights Acquired Along Ramp	Quarters 8 Parking Area has Access	WB Off-Ramp (WW Line)/Figure B-1

Feature No.	HDM Index	Feature	Standard	Proposed Exception	Location/Ref. Dwg
M15	203.1, AASHTO Chap 5	Horizontal Alignment	Min R = 25 m (Design Speed = 30 km/h)	R = 16 m	Southgate Road, SG Line Sta 10+14.035 to Sta 10+45.713/Figure B-2
M16	204.1, AASHTO Chap 5	Grade/Vertical Curves	Min K = 6 m/% (Sag Vertical Curves, Design Speed = 30 km/h)	(a) K = 3.03 m/% (b) K = 4.34 m/%	(a) Southgate Road, SG Line Sta 10+65.000 to Sta 11+05.000/Figure B-4 (b) SG1 Line Sta 20+00.000 to Sta 20+20.000/Figure B-5
M17	1003.1 (7), Table 1003.1	Class 1 Bikeway Design Speed	Min Design Speed = 40 km/h	(a) Min Design Speed = 30 km/h with e = 0.02 (b) Design Speed = 4.05 km/h	(a) EB On-Ramp, R1 Line Sta 50+94.885 to Sta 51+15.400/Figure B-2 (b) Bike Path, BP Line Sta 30+18.520 to Sta 30+35.892/Figure B-2

A. Design Exception Feature #M1

Nonstandard Feature

This project proposes nonstandard design speed at the following location:

Hillcrest Road, H Line. The proposed design speed is 40 km/h. See Attachment B, Figure B-1.

Standard for Which Exception is Requested

Highway Design Manual Index 101.1 states the following:

Where the local facility connects to a freeway or expressway (such as ramp terminal intersections), the design speed of the local facility shall be a minimum of 55 km/h.

Reason for Requesting Exception

The nonstandard design speed is an existing condition and a result of geographical constraints. Hillcrest Road would have to be realigned to meet design speed standards, but is surrounded by steep topography (including the "goat hill" slope) and United States Coast Guard (USCG) buildings (historic Qtrs 8 & 9). The proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and realigning Hillcrest Road to meet design speed standards would impact the historical properties, increase right-of-way costs, and result in additional security concerns for the USCG.

Added Cost to Make Standard

A preliminary cost estimate to obtain a standard design speed is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 4.0 million	\$ 5.0 million	\$ 5.0 million	\$ 14.0 million

B. Design Exception Feature #M2

Nonstandard Feature

This project proposes nonstandard stopping sight distance at the following location:

EB Off-Ramp, R4 Line Vertical Curve (BC 50+95.000/EC 51+25.000). The proposed minimum sight distance at this crest vertical curve is 38.82 m (Design Speed = 34.41 km/h). See Attachment B, Figure B-3.

Standard for Which Exception Is Requested

Highway Design Manual Index 201.1 states the following:

Table 201.1 shows the standards for stopping sight distance related to design speed, and these shall be the minimum values used in design.

Per Table 201.1, the standard minimum stopping sight distance for a design speed of 80 km/h is 130 m.

Reason for Requesting Exception

The nonstandard stopping sight distance is a result of geographical constraints. The off-ramp ties into local Hillcrest and Southgate Roads, and the terminus of the off-ramp is directly adjacent to the entrance of the EB on-ramp. The intersection is also surrounded by the steep "goat hill" slope and United States Coast Guard (USCG) buildings (historic Qtrs 8 & 9). Increasing the length of the ramp to satisfy stopping sight distance standards would further encroach into the USCG right-of-way, as this would not only require realignment of the EB off-ramp, but the EB on-ramp and both Hillcrest and Southgate Roads as well. This results in additional right-of-way costs for the project and security concerns for the USCG. In addition, the proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and increasing the length of the ramp would not only impact the ESAs, but the two historic buildings would also have to be removed. Advanced warning signs will be placed to warn drivers about the reduced speed on the ramp. The proposed stopping sight distance is an improvement over the existing condition by 2.15 m.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard stopping sight distance is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard features #M3, #M4A, #M5A & #M6A would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 1.0 million	\$ 2.0 million	\$ 5.0 million

C. Design Exception Feature #M3

Nonstandard Feature

This project proposes nonstandard stopping sight distance at the following location:

EB Off-Ramp, R4 Line Vertical Curve (BC 51+25.000/EC 51+45.000). The proposed minimum sight distance at this sag vertical curve is 35.51 m (Design Speed = 32.76 km/h). See Attachment B, Figure B-3.

Standard for Which Exception Is Requested

Highway Design Manual Index 201.1 states the following:

Table 201.1 shows the standards for stopping sight distance related to design speed, and these shall be the minimum values used in design.

Per Table 201.1, the standard minimum stopping sight distance for a design speed of 40 km/h is 50 m.

Reason for Requesting Exception

The nonstandard stopping sight distance is a result of geographical constraints. The off-ramp ties into local Hillcrest and Southgate Roads, and the terminus of the off-ramp is directly adjacent to the entrance of the EB on-ramp. The intersection is also surrounded by the steep "goat hill" slope and United States Coast Guard (USCG) buildings (historic-Qtrs 8 & 9). Increasing the length of the ramp to satisfy stopping sight distance standards would further encroach into the USCG right-of-way, as this would not only require realignment of the EB off-ramp, but the EB on-ramp and both Hillcrest and Southgate Roads as well. This results in additional right-of-way costs for the project and security concerns for the USCG. In addition, the proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and increasing the length of the ramp would not only impact the ESAs, but the two historic buildings would also have to be removed. Advanced warning signs will be placed to warn drivers about the reduced speed on the ramp.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard stopping sight distance is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 1.0 million	\$ 2.0 million	\$ 5.0 million

D. Design Exception Feature #M4

Nonstandard Feature

This project proposes nonstandard stopping sight distance at the following locations:

- (a) EB Off-Ramp, R4 Line Horizontal Curve (BC 50+94.310/EC 51+35.780). The proposed minimum sight distance at this horizontal curve is approximately 40 m (Design Speed = 35 km/h). See Attachment B, Figure B-2.

- (b) WB Off-Ramp, WW Line, First Horizontal Curve. The proposed minimum sight distance at this horizontal curve is approximately 17 m (Design Speed = 17 km/h). See Attachment B, Figure B-1.

Standard for Which Exception Is Requested

Highway Design Manual Index 201.1 states the following:

Table 201.1 shows the standards for stopping sight distance related to design speed, and these shall be the minimum values used in design.

Per Table 201.1, the standard minimum stopping sight distance for a design speed of 80 km/h is 130 m.

Reason for Requesting Exception

- (a) The nonstandard stopping sight distance is a result of geographical constraints. The off-ramp ties into local Hillcrest and Southgate Roads, and the terminus of the off-ramp is directly adjacent to the entrance of the EB on-ramp. The intersection is also surrounded by the steep "goat hill" slope and United States Coast Guard (USCG) buildings (historic Qtrs 8 & 9). Increasing the length of the ramp to satisfy stopping sight distance standards would further encroach into the USCG right-of-way, as this would not only require realignment of the EB off-ramp, but the EB on-ramp and both Hillcrest and Southgate Roads as well. This results in additional right-of-way costs for the project and security concerns for the USCG. In addition, the proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and increasing the length of the ramp would not only impact the ESAs, but the two historic buildings would also have to be removed. Advanced warning signs will be placed to warn drivers about the sharp turn and reduced speed on the ramp.
- (b) The nonstandard stopping sight distance is an existing condition and a result of geographical constraints. The WB off-ramp is constrained by the existing viaduct structure on one side and Hillcrest Road on the other, and is surrounded by the steep "goat hill" slope and USCG buildings (historic Qtrs 8 & 9). Hillcrest Road also ties into the EB on and off-ramps and Southgate Road. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA) and USCG properties. Providing standard stopping sight distance would impact several historical properties, and result in additional right-of-way costs for the project and security concerns for the USCG, as larger radius curves and a longer ramp would be required. This ramp will be superseded by a subsequent project (EA 04-43A641), and will be used as a driveway to the Quarters 8 parking area after the new WB off-ramp is constructed. The new WB off-ramp has an approved design exception for reduced design speeds, and will have standard stopping sight distances based on those design speeds.

Added Cost to Make Standard

- (a) A preliminary cost estimate to obtain standard stopping sight distance on the EB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard features #M2, #M3, #M5A & #M6A would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 3.0 million	\$ 2.5 million	\$ 2.5 million	\$ 8.0 million

- (b) A preliminary cost estimate to obtain standard stopping sight distance on the WB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard features #M5B & #M6B would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 5.0 million	\$ 6.0 million	\$ 3.0 million	\$ 14.0 million

E. Design Exception Feature #M5

Nonstandard Feature

This project proposes nonstandard superelevation rates at the following locations:

- (a) EB Off-Ramp, R4 Line Horizontal Curve (BC 50+94.310/EC 51+35.780). The proposed superelevation rate is 0.075. See Attachment B, Figure B-3.
- (b) WB Off-Ramp, WW Line, First Horizontal Curve. The proposed superelevation rate is 0.01. See Attachment B, Figure B-1.

Standard for Which Exception Is Requested

Highway Design Manual Index 202.2 states the following:

Based on an e_{max} selected by the designer for one of the conditions, superelevation rates from Table 202.2 shall be used within the given range of curve radii. If less than standard superelevation rates are approved (see Index 82.1), Figure 202.2 shall be used to determine superelevation based on the curve radius and maximum comfortable speed. Per Table 202.2, the standard minimum superelevation rate for a curve radius under 189 m is 0.12.

Reason for Requesting Exception

- (a) The nonstandard superelevation rate is a result of geographical constraints. The off-ramp ties into local Hillcrest and Southgate Roads, and the terminus of the off-ramp is directly adjacent to the entrance of the EB on-ramp. The intersection is also surrounded by the steep "goat hill" slope and United States Coast Guard (USCG) buildings (historic Qtrs 8 & 9). Increasing the size of the ramp to satisfy superelevation rate standards would further encroach into the USCG right-of-way, as this would not only require realignment of the EB off-ramp, but the EB on-ramp and both Hillcrest and Southgate Roads as well. This results in additional right-of-way acquisition and security concerns for the USCG. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and increasing the length of the ramp would not only impact the ESAs, but the two historic buildings would also have to be removed. Advanced warning signs will be placed to warn drivers about the sharp turn and reduced speed on the ramp.
- (b) The proposed WB off-ramp is on the existing viaduct structure, and therefore has the same superelevation rate. Resurfacing of the viaduct structure would be required to provide standard superelevation (including transitions) on the WB off-ramp. And since a significant amount of overlay would be placed for a superelevation rate of 0.12, the viaduct structure would have to be strengthened to support the increased loading. This is a temporary

condition as a new WB off-ramp will be constructed in a subsequent project (EA 01-43A641).

Added Cost to Make Standard

- (a) A preliminary cost estimate to obtain a standard superelevation rate on the EB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard features #M2, #M3 & #M4A would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 3.0 million	\$ 1.5 million	\$ 2.5 million	\$ 7.0 million

- (b) A preliminary cost estimate to obtain a standard superelevation rate on the WB off-ramp is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 1.0 million	\$ 6.0 million	\$ 0.0 million	\$ 7.0 million

F. Design Exception Feature #M6

Nonstandard Feature

This project proposes nonstandard curvature at the following location:

- (a) EB Off-Ramp, R4 Line Horizontal Curve (BC 50+94.310/EC 51+35.780). The proposed horizontal curve has a radius of 20.3 m (Design Speed = 15.23 km/h). See Attachment B, Figure B-2.
- (b) WB Off-Ramp, WW Line, at first curve. The proposed horizontal curve has a radius of 16 m (outer radius, Design Speed = 12 km/h). See Attachment B, Figure B-1.

Standard for Which Exception Is Requested

Highway Design Manual Index 203.2 states the following:

Table 203.2 shall be the minimum radius of curve for specific design speeds. Per Table 203.2, the standard minimum curve radius for a design speed of 40 km/h is 70 m.

Reason for Requesting Exception

- (a) The nonstandard horizontal curve radius is a result of geographical constraints. The off-ramp ties into local Hillcrest and Southgate Roads, and the terminus of the off-ramp is directly adjacent to the entrance of the EB on-ramp. The intersection is also surrounded by the steep "goat hill" slope and United States Coast Guard (USCG) buildings (Qtrs 9 and historic Qtrs 8). Increasing the size of the ramp to satisfy horizontal curve standards would further encroach into the USCG right-of-way, as this would not only require realignment of the EB off-ramp, but the EB on-ramp and both Hillcrest and Southgate Roads as well. This results in additional right-of-way acquisition and security concerns for the USCG. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and

increasing the length of the ramp would not only impact the ESAs, but the two historic buildings would also have to be removed. Advanced warning signs will be placed to warn drivers about the sharp turn and reduced speed on the ramp.

- (b) The nonstandard horizontal curve is an existing condition and a result of geographical constraints. The WB off-ramp is constrained by the existing viaduct structure on one side and Hillcrest Road on the other, and is surrounded by the steep "goat hill" slope and USCG buildings (Qtrs 9 & historic Qtrs 8). Hillcrest Road also ties into the EB on and off-ramps and Southgate Road. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA) and USCG properties. Providing a standard horizontal curve would impact the ESAs, require the two historical buildings to be removed, additional right-of-way acquisition and security concerns for the USCG. This ramp will be superceded by a subsequent project (EA 04-43A641), which will construct a new WB off-ramp on the north side of the freeway. The WB off-ramp built in this project will be used as a driveway to the Quarters 8 parking area after the new WB off-ramp is constructed. Advanced warning signs will be placed to warn drivers about the sharp turn and reduced speed on the ramp.

Added Cost to Make Standard

- (a) A preliminary cost estimate to obtain a standard horizontal curve on the EB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard features #M2, #M3 & #M4A would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 4.0 million	\$ 2.0 million	\$ 3.0 million	\$ 9.0 million

- (b) A preliminary cost estimate to obtain a standard horizontal curve on the WB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard feature #M4B would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 5.0 million	\$ 6.0 million	\$ 3.0 million	\$ 14.0 million

G. Design Exception Feature #M7

Nonstandard Feature

This project proposes nonstandard shoulder widths or horizontal clearance at the following locations:

- (a) EB On-Ramp, R1 Line Sta 50+90.000 to 51+00.000. The proposed minimum right shoulder width/clearance is 1.1 m. The proposed minimum left clearance is 0.6 m. See Attachment B, Figure B-2.
- (b) EB Off-Ramp, R4 Line Sta 51+53.633. The proposed minimum left shoulder width/clearance is 0.2 m. See Attachment B, Figure B-2.
- (c) WB Off-Ramp, W Line Sta 51+26.900. The proposed minimum left clearance is 0.6 m. See Attachment B, Figure B-1.

Standard for Which Exception is Requested

Highway Design Manual Index 302.1 states the following:

The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder. Per Table 302.1, single-lane ramps shall have a 0.6 m left shoulder and 2.4 m right shoulder.

Highway Design Manual Index 309.1(3)(a) states the following:

The minimum horizontal clearance to all objects, such as bridge rails and safety-shaped concrete barriers, as well as sand-filled barrels, metal beam guardrail, etc., on all freeway and expressway facilities, including auxiliary lanes, ramps, and collector roads, shall be equal to the standard shoulder width of the highway facility as stated in Table 302.1. A minimum clearance of 1.2 m shall be provided where the standard shoulder width is less than 1.2 m.

Reason for Requesting Exception

(a) – (b) The nonstandard shoulder widths and horizontal clearances are a result of geographical constraints. Both the EB on-ramp and off-ramp tie into local Hillcrest and Southgate Roads, and the entrance of the on-ramp is directly adjacent to the terminus of the off-ramp (separated by a crash cushion) on one side and the bike/pedestrian path (separated by concrete barrier) on the other. The on-ramp also travels over the steep “goat hill” slope. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and providing standard shoulder widths/horizontal clearances would affect a larger area of ESA. There are two historic United States Coast Guard (USCG) buildings (Quarters 8 & 9) within the project limits that would have to be removed to fix this nonstandard feature. The area south of the SFOBB is also owned by the USCG, and providing standard shoulder widths/horizontal clearances would cause the project’s footprint to further encroach into the USCG right-of-way, as this would also require realignment of the bike/pedestrian path and Southgate Road. This results in additional right-of-way acquisition and security concerns for the USCG.

(c) The horizontal clearance is constrained by the existing structures. Bridge widening in this area would require expensive construction techniques due to the surrounding steep topography. It should also be noted that the existing SFOBB East Span that connects to the YBI Tunnel has no shoulders.

Added Cost to Make Standard

(a) – (b) A preliminary cost estimate to obtain standard shoulder widths and horizontal clearances on the EB off-ramp is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 1.0 million	\$ 2.0 million	\$ 5.0 million

(c) A preliminary cost estimate to obtain standard horizontal clearance on the WB off-ramp is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 0.5 million	\$ 4.0 million	\$ 0.0 million	\$ 4.5 million

H. Design Exception Feature #M8

Nonstandard Feature

This project proposes nonstandard vertical clearance at the following location:

EB Off-Ramp R4 Line. The proposed minimum vertical clearance is 5.01 m. See Attachment B, Figure B-3.

Standard for Which Exception Is Requested

Highway Design Manual Index 309.2(1)(a) states the following:

5.1 m shall be the minimum vertical clearance over the roadbed of the State facility (e.g., main lanes, shoulders, ramps, collector-distributor roads, speed change lanes, etc.).

Reason for Requesting Exception

The nonstandard vertical clearance is caused by an existing edge beam of the viaduct. To eliminate this nonstandard condition, the viaduct would have to be rebuilt. This would take approximately a year to build, and would require full closures of I-80 WB and EB traffic to perform the construction. The I-80 EB travel lanes maintain a minimum vertical clearance of at least 5.1 m. The Yerba Buena Tunnel has a minimum vertical clearance of 4.87 m. The vertical clearance will not be reduced by future overlay projects. The EB travel lanes in this area will not be overlaid without first removing the existing bridge deck.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard vertical clearance at the EB off-ramp is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 10.0 million	\$ 1.0 million	\$ 13.0 million

I. Design Exception Feature #M9

Nonstandard Feature

This project proposes nonstandard lane width at the following location:

EB Off-Ramp R4 Line. The proposed lane width for the left turn pocket is 3.3 m. See Attachment B, Figure B-2.

Standard for Which Exception Is Requested

Highway Design Manual Index 405.2(a) states the following:

The lane width for both single and double left-turn lanes on State highways shall be 3.6 m.

Reason for Requesting Exception

The nonstandard left-turn lane width is a result of geographical constraints. Both the EB on-ramp and off-ramp tie into local Hillcrest and Southgate Roads, and the entrance of the on-ramp is directly adjacent to the terminus of the off-ramp (separated by a crash cushion) on one side and the bike/pedestrian path (separated by concrete barrier) on the other. The on-ramp also travels over the steep "goat hill" slope. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and providing standard left-turn lane width would affect a larger area of ESA. There are two historic United States Coast Guard (USCG) buildings (Quarters 8 & 9) within the project limits that would have to be removed to provide a standard left-turn lane. The area south of the SFOBB is also owned by the USCG, and providing standard left-turn lane width would cause the project's footprint to further encroach into the USCG right-of-way, as this would also require realignment of the bike/pedestrian path and Southgate Road. This results in additional right-of-way acquisition and security concerns for the USCG.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard left-turn lane width on the EB off-ramp is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 1.0 million	\$ 2.0 million	\$ 5.0 million

J. Design Exception Feature #M10

Nonstandard Feature

This project proposes nonstandard interchange spacing at the following location:

Yerba Buena Island I-80 Interchanges. The proposed interchange spacing is 0.3 km. See Attachment B, Figure B-6.

Standard for Which Exception Is Requested

Highway Design Manual Index 309.2(1)(a) states the following:

The minimum interchange spacing shall be 1.5 km in urban areas, 3.0 km in rural areas, and 3.0 km between freeway-to-freeway interchanges and local street interchanges.

Reason for Requesting Exception

The proposed nonstandard interchange spacing is an existing condition. The spacing between the Hillcrest Road interchange east of the tunnel and the Treasure Island Road interchange west

of the tunnel is limited due to the size of Yerba Buena Island. To eliminate the nonstandard condition, the Treasure Island Road interchange on the west side of Yerba Buena Tunnel (I-80 WB on-ramp and EB off-ramp) would have to be taken out. This would require additional roadway work to Treasure Island Road in the area where it accesses the interchange. The WB on-ramp is planned to remain for buses and emergency vehicles, and the EB off-ramp for all traffic.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard interchange spacing on I-80 is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 5.0 million	\$ 1.0 million	\$ 0 million	\$ 6.0 million

K. Design Exception Feature #M11

Nonstandard Feature

This project proposes a nonstandard freeway exit at the following location:

WB Off-Ramp, WW Line. The proposed exit ramp connects to the left of through traffic on WB I-80. See Attachment B, Figure B-1.

Standard for Which Exception Is Requested

Highway Design Manual Index 504.2(1)(a) states the following:

All freeway entrances and exits, except for direct connections with median High-Occupancy Vehicle lanes, shall connect to the right of through traffic.

Reason for Requesting Exception

The proposed nonstandard exit ramp is an existing condition. A new WB off-ramp will be built in a subsequent project (EA 04-43A641) that connects to the right of I-80 WB through traffic. This project is programmed and currently scheduled to begin construction in May 2014. The WB off-ramp built in this project will be used as a driveway to the Quarters 8 parking area after the new WB off-ramp is constructed. The striping on WB I-80 will be modified to remove the off-ramp approach lane, and a movable barrier will be placed across the exit. The movable barrier will allow emergency personnel to use the superceded WB off-ramp if necessary.

Added Cost to Make Standard

A new WB off-ramp is required to satisfy freeway exit standards. A preliminary cost estimate for capital costs to address the improvements explained above is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 3.0 million	\$ 18.5 million	\$ 3.0 million	\$ 24.5 million

L. Design Exception Feature #M12

Nonstandard Feature

This project proposes a nonstandard deceleration length for a freeway exit ramp at the following locations:

- (a) EB Off-Ramp, R4 Line. The proposed deceleration length is 34.6 m. See Attachment B, Figure B-2.
- (b) WB Off-Ramp, WW Line. The proposed deceleration length is 0 m. See Attachment B, Figure B-1.

Standard for Which Exception is Requested

Highway Design Manual Index 504.2(2) states the following:

The minimum deceleration length shown on Figure 504.2B shall be provided prior to the first curve beyond the exit nose to assure adequate distance for vehicles to decelerate before entering the curve.
For a first curve radius less than 90 m, the required deceleration length is 180 m.

Reason for Requesting Exception

- (a) The nonstandard freeway exit is a result of geographical constraints. The off-ramp ties into local Hillcrest and Southgate Roads, and the terminus of the off-ramp is directly adjacent to the entrance of the EB on-ramp. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and increasing the deceleration length would affect a larger area of ESA. There are two historic United States Coast Guard (USCG) buildings (Quarters 8 & 9) within the project limits that would have to be removed to fix this nonstandard feature. The area south of the SFOBB is also owned by the USCG, and increasing the deceleration length would further encroach into the USCG right-of-way, as this would require the ramp to be lengthened approximately 145 m and realignment of the EB on-ramp and both Hillcrest and Southgate Roads to match the longer ramp length. This results in additional right-of-way acquisition and security concerns for the USCG. Advanced warning signs will be placed to warn drivers about the sharp turn and reduced speed on the ramp. The accident history at this location is considerably higher than that experienced on similar facilities in the State. The proposed deceleration length is an improvement over the existing deceleration length of 0 m.
- (b) The nonstandard freeway exit is an existing condition and a result of geographical constraints. The WB off-ramp is constrained by the existing viaduct structure on one side and Hillcrest Road on the other, and is surrounded by the steep "goat hill" slope and USCG buildings (historic Qtrs 8 & 9). Hillcrest Road also ties into the EB on and off-ramps and Southgate Road. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA) and USCG properties. Providing a standard freeway exit would impact a larger portion of the ESA & historical properties, and result in additional right-of-way acquisition and security concerns for the USCG. This ramp will be superseded by a subsequent project (EA 04-43A64.1), which will construct a new WB off-ramp on the north side of the freeway. The WB off-ramp built in this project will be used as a driveway to the Quarters 8 parking area after the new WB off-ramp is constructed. Advanced warning signs will be placed to warn drivers about the sharp turn and reduced speed on the ramp.

Added Cost to Make Standard

- (a) A preliminary cost estimate to obtain a standard deceleration length on the EB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard feature #M4A would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 6.0 million	\$ 2.5 million	\$ 4.0 million	\$ 12.5 million

- (b) A preliminary cost estimate to obtain a standard deceleration length on the WB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard feature #M4B would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 4.0 million	\$ 2.0 million	\$ 2.0 million	\$ 8.0 million

M. Design Exception Feature #M13

Nonstandard Feature

This project proposes nonstandard intersection spacing at the following location:

WB Off-Ramp (WW Line) and Southgate Road (SG Line) Intersections with Hillcrest Road. The proposed intersection spacing is 25 m. See Attachment B, Figure B-1.

Standard for Which Exception is Requested

Highway Design Manual Index 504.3(3) states the following:

For new construction or major reconstruction of interchanges, the minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 125 m.

Reason for Requesting Exception

The garage for Quarters 8 (historic residence) was removed for Bay Bridge seismic retrofit work and needs to be replaced. The garage had access off of the EB off-ramp, but access to the new parking area was changed to the WB off-ramp because this ramp will be superceded by a subsequent project (EA 04-43A641), and will be used solely as a driveway after the new WB off-ramp is constructed. For this reason, the alignment of the ramp was modified to provide access in both directions along Hillcrest Road, and the nonstandard intersection spacing is a result of geographical constraints. The WB off-ramp is constrained by the existing viaduct structure on one end and Hillcrest Road on the other, and is surrounded by the steep "goat hill" slope and USCG buildings (historic Qtrs 8 & 9). Hillcrest Road also ties into the EB on and off-ramps. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA) and USCG property. Realigning the WB off-ramp to intersect Hillcrest Road 125 m away from the Southgate Road intersection would impact a larger portion of the ESA & historical properties, increase right-of-way costs, and result in additional security concerns for the USCG. This nonstandard

feature will be eliminated when the new WB off-ramp is constructed. This project is programmed and currently scheduled to begin construction in May 2014.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard intersection spacing is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 5.0 million	\$ 4.0 million	\$ 3.0 million	\$ 12.0 million

N. Design Exception Feature #M14

Nonstandard Feature

This project proposes nonstandard access control at the following location:

WB Off-Ramp, WW Line. The parking area for Quarters 8 has access off of the proposed ramp. See Attachment B, Figure B-1.

Standard for Which Exception is Requested

Highway Design Manual Index 504.8 states the following:

Access rights shall be acquired along interchange ramps to their junction with the nearest public road.

Reason for Requesting Exception

The garage for Quarters 8 (historic residence) was removed for Bay Bridge seismic retrofit work and needs to be replaced. The garage had access off of the EB off-ramp, but access to the new parking area was changed to the WB off-ramp because this ramp will be superceded by a subsequent project (EA 04-43A641), and will be used solely as a driveway after the new WB off-ramp is constructed. This project is programmed and currently scheduled to begin construction in May 2014. The nonstandard feature is also a result of geographical constraints. The surrounding steep topography and USCG buildings (historic Qtrs 8 & 9) limit the possible locations for a new roadway. The proposed layout minimizes impacts to the environmentally sensitive areas (ESA) and USCG property. Providing a driveway from the parking area to Hillcrest Road would impact a larger portion of the ESA, increase right-of-way costs, and result in additional security concerns for the USCG. This would require realignment of the WB off-ramp through the steep hill west of the existing ramp, so that it can connect further down Hillcrest Road and create the necessary space to build the driveway.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard access control on the WB off-ramp is presented below. It should also be noted that by fixing this nonstandard feature, nonstandard features #M4B and #M6B would also be corrected in the process.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 5.0 million	\$ 4.0 million	\$ 3.0 million	\$ 12.0 million

O. Design Exception Feature #M15

Nonstandard Feature

This project proposes nonstandard curvature at the following location:

Southgate Road, SG Line Horizontal Curve (BC Sta 10+14.035/EC Sta 10+45.713). The proposed horizontal curve has a radius of 16 m (Design Speed = 16 km/h). See Attachment B, Figure B-2.

Standard for Which Exception Is Requested

Highway Design Manual Index 203.1 states the following:

For local facilities which are within the State right of way and where there is no connection or the connection is to a non-controlled access facility (conventional highway), AASHTO standards shall prevail. Per Chapter 5 (page 391) of AASHTO's Geometric Design of Highways and Streets (2004), the minimum curve radius should not be less than approximately 25 m for a 30 km/h design speed.

Reason for Requesting Exception

The nonstandard horizontal curve radius is a result of geographical constraints. Southgate Road ties into local Hillcrest Road, the I-80 EB on and off-ramps, and the bike/pedestrian path. The intersection is also surrounded by the steep "goat hill" slope and United States Coast Guard (USCG) buildings (historic Qtrs 8 & 9). The proposed layout minimizes impacts to the environmentally sensitive areas (ESA) and USCG property. Realigning Southgate Road with a larger radius curve would impact a larger portion of the ESA & historical properties, increase right-of-way costs, and result in additional security concerns for the USCG.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard horizontal curvature on Southgate Road is presented below

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 1.5 million	\$ 2.0 million	\$ 5.5 million

P. Design Exception Feature #M16

Nonstandard Feature

This project proposes nonstandard rate of vertical curvature (K) at the following locations:

- (a) Southgate Road, SG Line Sta 10+65.000 to Sta 11+05.000. The proposed rate of vertical curvature (K) is 3.03 m/%. See Attachment B, Figure B-4.

- (b) Southgate Road, SG1 Line Sta 20+00.000 to Sta 20+20.000. The proposed rate of vertical curvature (K) is 4.34 m/%. See Attachment B, Figure B-5.

Where rate of vertical curvature, K, is the length of curve per percent algebraic difference in the intersecting grades (i.e., $K = L/A$).

Standard for Which Exception is Requested

Highway Design Manual Index 204.1 states the following:

For local facilities which are within the State right of way and where there is no connection or the connection is to a non-controlled access facility (conventional highway), AASHTO standards shall prevail. Per Exhibit 5-2 (page 381) of AASHTO's Geometric Design of Highways and Streets (2004), the minimum rate of vertical curvature (K) is 6 m/%.

Reason for Requesting Exception

The nonstandard rate of vertical curvature is a result of geographical constraints. Southgate Road must traverse under multiple structures and over multiple footings, limiting the flexibility of the vertical profile. The short length of Southgate Road also confines the size of vertical curves. And since Southgate Road is surrounded by the steep "goat hill" slope, USCG buildings (historic Qtrs 8 & 9), I-80 EB on & off-ramps, bike/pedestrian path, and local Hillcrest Road, lengthening the alignment would impact a larger portion of the environmentally sensitive areas (ESA) and historical properties, result in additional right of way acquisition and security concerns for the USCG. Lighting in this area should help provide additional sight distance on the sag vertical curves.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard vertical curvature on Southgate Road is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 2.0 million	\$ 2.0 million	\$ 6.0 million

Q. Design Exception Feature #M17

Nonstandard Feature

This project proposes nonstandard design speed on a Class 1 bikeway at the following location:

- (a) EB On-Ramp, R1 Line Sta 50+94.885 to 51+15.400. The proposed minimum design speed is 30 km/h with $e = 0.02$. See Attachment B, Figure B-2.
- (b) Bike Path, BP Line Sta 30+18.520 to Sta 30+35.892. The proposed minimum design speed is approximately 4.05 km/h ($R = 5.4$ m). See Attachment B, Figure B-2

Standard for Which Exception is Requested

Highway Design Manual Index 1003.1(7) states the following:

The minimum design speed for bike paths shall be 40 km/h except as noted in Table 1003.1. Per Table 1003.1, the standard minimum design speed is 40 km/h.

Reason for Requesting Exception

- (a) The bike path is cantilevered off the edge of the EB on-ramp structure, and the nonstandard design speed is a result of geographical constraints. The on-ramp ties into local Hillcrest and Southgate Roads, and the entrance of the on-ramp is directly adjacent to the terminus of the EB off-ramp and the bike/pedestrian landing area. The on-ramp also travels over the steep "goat hill" slope, and is nearby to a historic United States Coast Guard (USCG) building (Qtrs 8). The proposed layout minimizes impacts to the environmentally sensitive areas (ESA), and increasing the design speed would impact a larger portion of the ESAs. In addition, the area south of the SFOBB is currently owned by the USCG, and increasing the design speed would further encroach into the USCG right-of-way, as this would require larger radius curves to be used, and realignment of Southgate Road and the bike/pedestrian path. This results in additional right-of-way acquisition and security concerns for the USCG. The EB on-ramp is also on structure throughout its alignment. Increasing the size of the ramp will incur additional structure and construction costs.

The radius of the bike path curve requires a superelevation rate of 4%. The path is a combined use pedestrian and bike path, and the 2% superelevation rate was used to satisfy ADA requirements (cross-slope cannot exceed 2%).

- (b) Due to the same geographical constraints explained above, the bike path is forced to make a sharp U-turn as it joins with Southgate Road. Due to the extremely small radius of this curve, the bike path will be signed for users to walk their bikes. This U-turn immediately follows the end of the bike path off the Bay Bridge and is also a pedestrian viewing area, leading to a reasonable termination point where users can get off their bikes. The same types of changes and impacts explained above would be required to meet the design speed standard.

Added Cost to Make Standard

A preliminary cost estimate to obtain standard design speed is presented below.

Roadway Construction Cost	Structure Construction Cost	Right of Way Cost	Total Cost
\$ 2.0 million	\$ 4.0 million	\$ 2.0 million	\$ 8.0 million

3. TRAFFIC DATA

The SFOBB currently serves approximately 240,000 to 260,000 vehicles per day and frequently operates at capacity. The metering of vehicles on the bridge is controlled by metering lights at the Oakland Toll Plaza in the WB direction and the ramp system in San Francisco in the EB direction, which is a result of the two entrance ramps merging with the three through lanes on EB I-80 at the beginning of the bridge. Traffic flow on the SFOBB is vulnerable to congestion due to stalls, accidents, lane closures required for bridge maintenance, and the lack of shoulders for clearing stopped vehicles.

The freeway ramps to and from the SFOBB and YBI typically operate with no more than 300 vehicles during the peak hour. Despite the low traffic volumes, the ramps operate at capacity due to severely restricted design limitations (e.g., restricted merge lanes). All local streets on YBI currently operate with low volumes of traffic.

In the future, peak hour travel demand for the approaches to the SFOBB is expected to increase for travel between the East and West Bay. However, traffic volumes on the bridge itself are expected to remain fairly constant due to the metering lights in the WB direction at the Oakland Toll Plaza and the geometric meter in the EB direction in San Francisco.

4. ACCIDENT ANALYSIS

Table 1 shows the most recent traffic accident rates for the EB I-80 mainline between YBI and Oakland, as well as the EB entrance and exit ramps from YBI to Oakland.

Table 1 Accident Data

Location	Period	Total Accidents	Fatalities	Injuries	Actual Accident Rate ¹	Average Accident Rate ²
EB I-80	04/01/07 to 3/31/10	233	3	65	2.17	0.73
EB Entrance Ramp (East of Tunnel)		2	0	1	1.40	0.75
EB Exit Ramp (West of Tunnel)		2	0	1	10.75	0.60
WB Exit Ramp (East of Tunnel)		25	0	12	8.77	0.95

¹ The Actual Accident Rate is the rate of accidents per million vehicles miles on the facility described.

² The Average Accident Rate is the rate of accidents per million vehicles miles on similar facilities in the State.

The accident rate for the EB I-80 mainline is nearly three times higher than that experienced on similar facilities in the State, with the prevalent accident types being Rear End (50%), Hit Object (26%), and Side Swipe (19%). The high traffic volumes that are often in stop-and-go conditions, along with the lack of shoulders, may be factors that contribute to these prevalent accident types and higher accident rates.

The accident rate for the EB entrance ramp from YBI to Oakland, which is on the east side of the tunnel, is almost twice as high as that experienced on similar facilities in the State, with the prevalent accident types being Rear End (50%) and Hit Object (50%). Factors such as high mainline traffic volumes limiting the number of adequate gaps for merging, and the high speed differential required for merging, might attribute to collisions.

The accident rate for the EB exit ramp from San Francisco to YBI, which is on the west side of the tunnel, is considerably higher than that experienced on similar facilities in the State, with the prevalent accident type being Hit Object (100%). The substandard geometric features of the ramp might attribute to the higher accident rate.

The accident rate for the WB exit ramp from Oakland to YBI, which is on the east side of the tunnel, is considerably higher than that experienced on similar facilities in the State, with the

prevalent accident type being Hit Object (100%). The substandard geometric features of the ramp might attribute to the higher accident rate.

5. INCREMENTAL IMPROVEMENTS

No cost effective incremental improvements have been identified that would improve the proposed design from the requested exceptions to mandatory and advisory design standards.

6. FUTURE CONSTRUCTION

The YBI Westbound (WB) Ramps Improvement Project (EA 04-43A641) will reconstruct the WB on and off-ramps, and is currently scheduled to begin construction in May 2014.

After construction of the East Span is completed, the existing East Span bridge structure will be dismantled (EA 04-012094).

7. PROJECT REVIEWS, CONCURRENCE

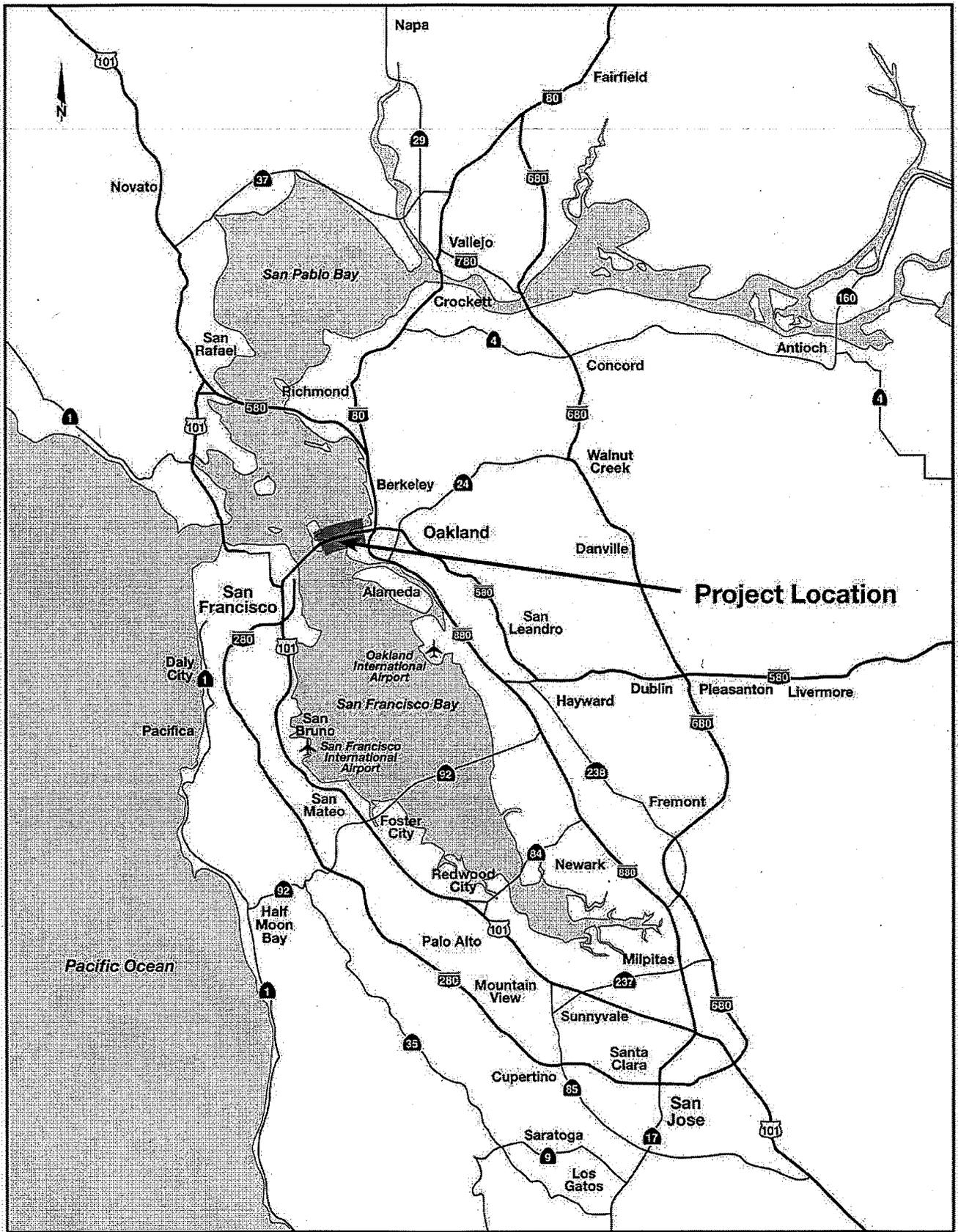
The proposed exceptions to design standards were reviewed and concurred by Gordon Brown on 10/25/11.

8. ATTACHMENTS

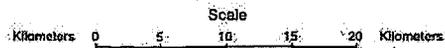
Attachment A	Project Location Map and Project Vicinity Map
Attachment B	Mandatory Design Exception Features

District 4-SF-80-KP 12.6/13.9
04-0120T1
\$139,000,000

Attachment A
Project Location Map and Project Vicinity Map



**SFOBB
EAST SPAN
SEISMIC SAFETY
PROJECT**



Project Location Map

Figure A-1

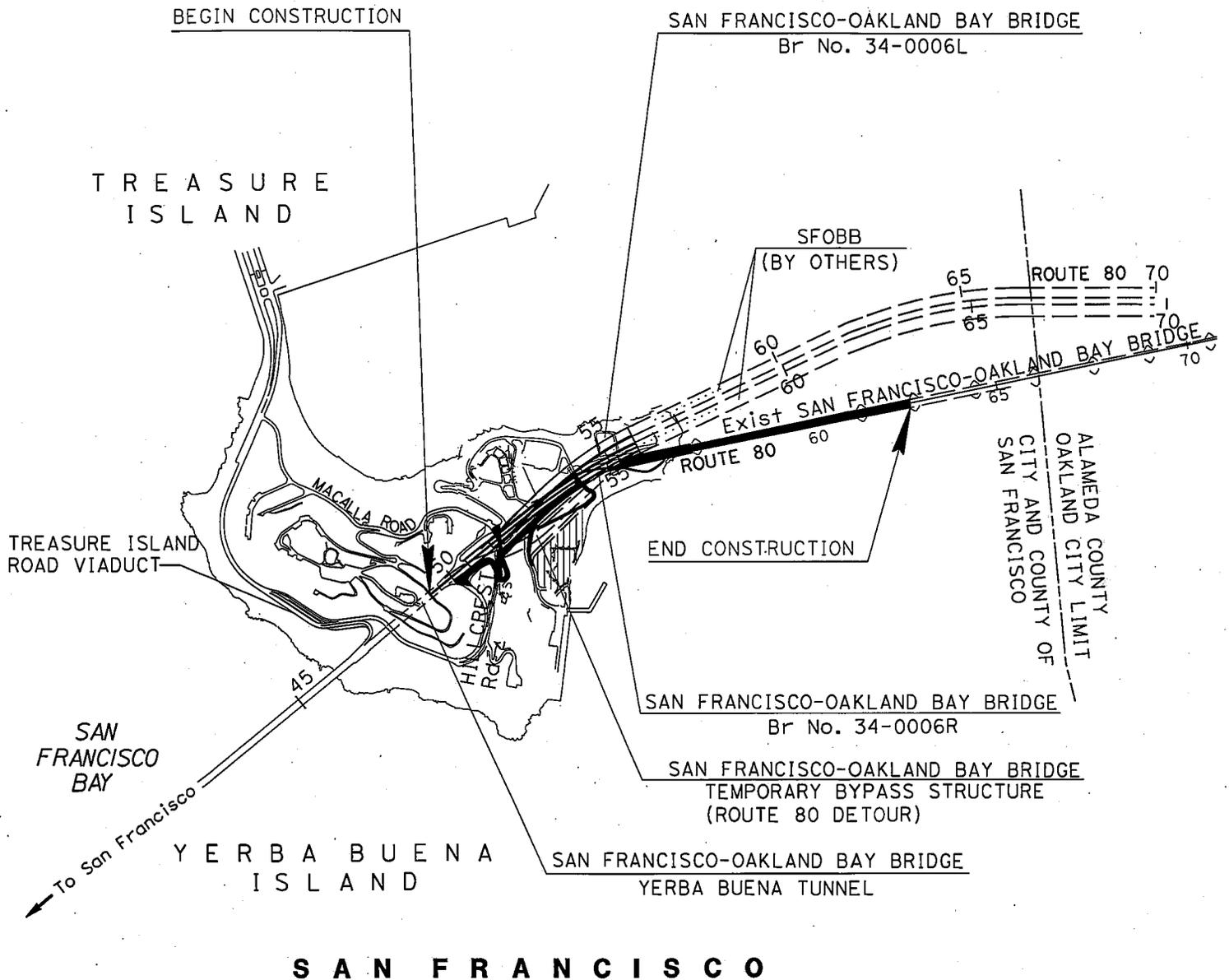


FIGURE A-2

PROJECT VICINITY MAP

SFOBB SEISMIC SAFETY PROJECT
YBI CONTRACT 2

District 4-SF-80-KP 12.6/13.9

04-0120T1

\$139,000,000

Attachment B

Mandatory Design Exception Features

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	80	12.6/13.9		

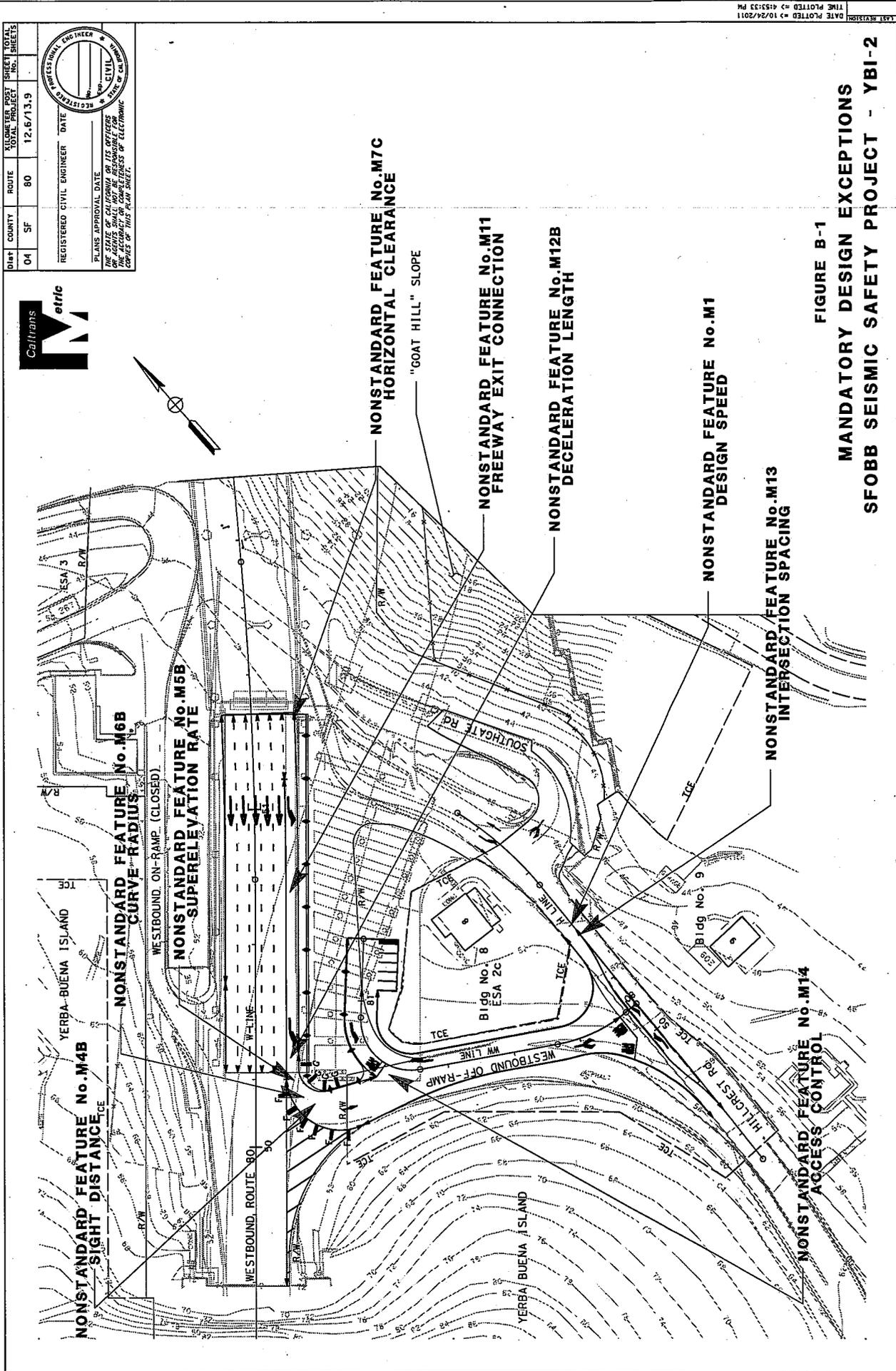


REGISTERED CIVIL ENGINEER DATE
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE CORRECTNESS OF THIS PLAN SHEET.

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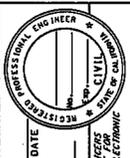
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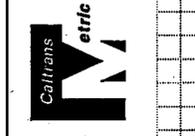
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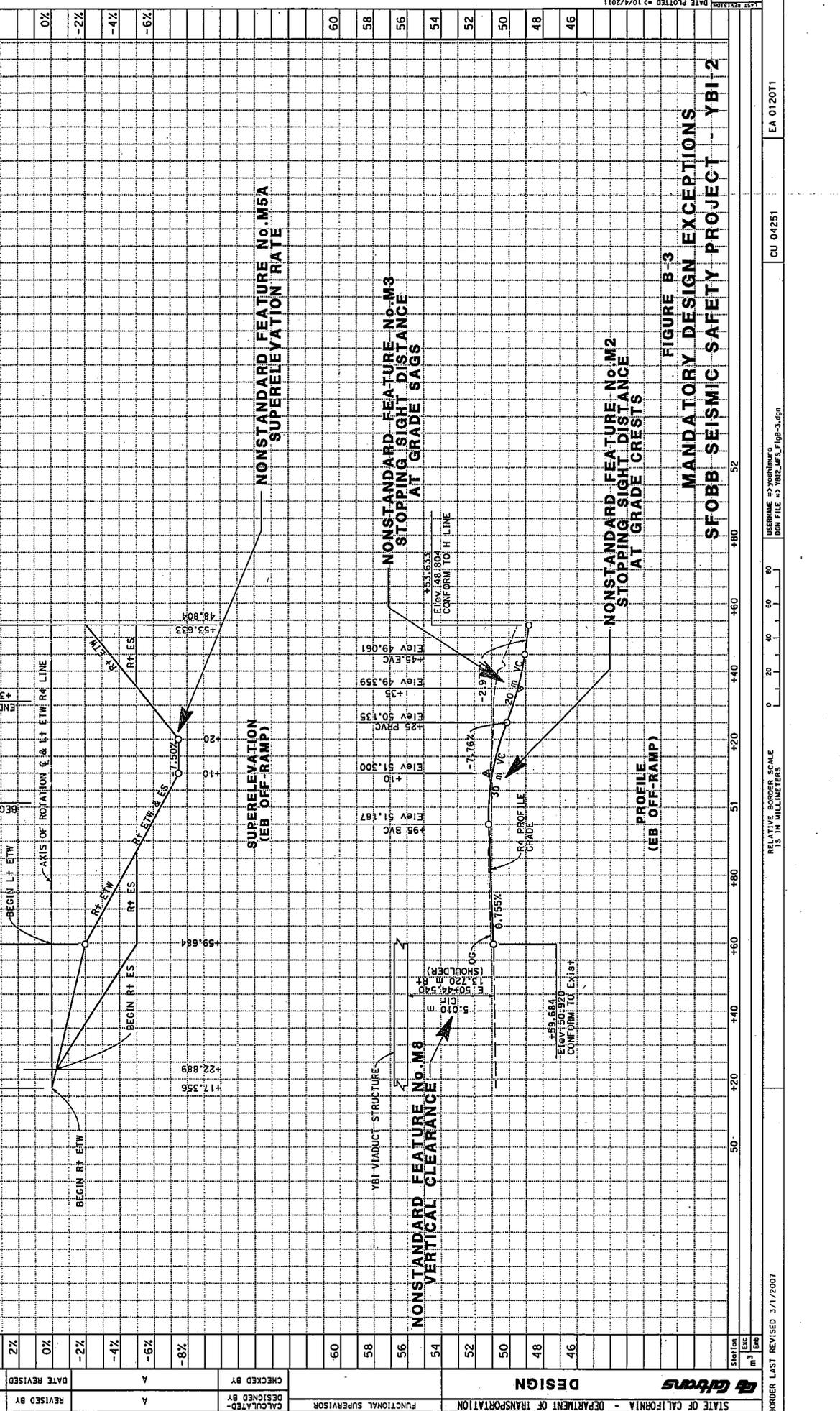
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 CU 04251
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FIGURE B-1
 MANDATORY DESIGN EXCEPTIONS
 SFOBB SEISMIC SAFETY PROJECT - YBI-2

Dist	County	ROUTE	KILOMETER PROJECT TOTAL SHEETS
04	SF	80	12.6/13.9
REGISTERED CIVIL ENGINEER		DATE	RECEIVED
PLANS APPROVAL DATE			
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE CORRECTNESS OF THIS PLAN SHEET.			



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CHECKED BY	DATE REVISION	REVISION
FUNCTIONAL SUPERVISOR		
DEPARTMENT OF TRANSPORTATION		
STATE OF CALIFORNIA		



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MANDATORY DESIGN EXCEPTIONS
 SFOBB SEISMIC SAFETY PROJECT - YBI-2

FIGURE B-3

NONSTANDARD FEATURE No. M8
 STOPPING SIGHT DISTANCE
 AT GRADE SAGS

NONSTANDARD FEATURE No. M5A
 SUPERELEVATION RATE

NONSTANDARD FEATURE No. M2
 STOPPING SIGHT DISTANCE
 AT GRADE CRESTS

PROFILE
 (EB OFF-RAMP)

RELATIVE BORDER SCALE
 IS IN MILLIMETERS

RESERVED FOR FILE => TOTAL.P2.S1.FIG-B.3.DGN

CU 04251

EA 0120T1

BORDER LAST REVISED 3/1/2007

DATE PLOTTED => 10/4/2011
 TITLE PLOTTED => 213148.P4

MANDATORY DESIGN EXCEPTIONS
 SFOBB SEISMIC SAFETY PROJECT - YBI-2

FIGURE B-3

NONSTANDARD FEATURE No. M8
 STOPPING SIGHT DISTANCE
 AT GRADE SAGS

NONSTANDARD FEATURE No. M5A
 SUPERELEVATION RATE

NONSTANDARD FEATURE No. M2
 STOPPING SIGHT DISTANCE
 AT GRADE CRESTS

PROFILE
 (EB OFF-RAMP)

RELATIVE BORDER SCALE
 IS IN MILLIMETERS

RESERVED FOR FILE => TOTAL.P2.S1.FIG-B.3.DGN

CU 04251

EA 0120T1

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RELATIVE BORNEO SCALE
 1" = 10' HORIZONTAL
 1" = 10' VERTICAL

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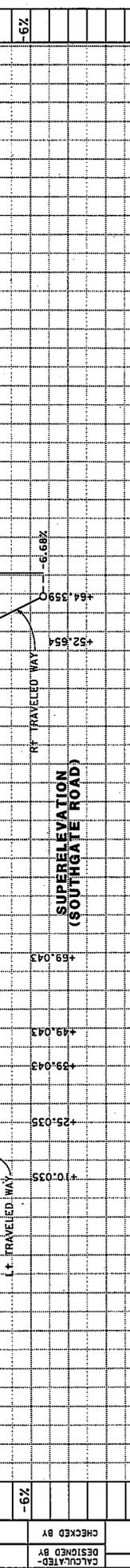
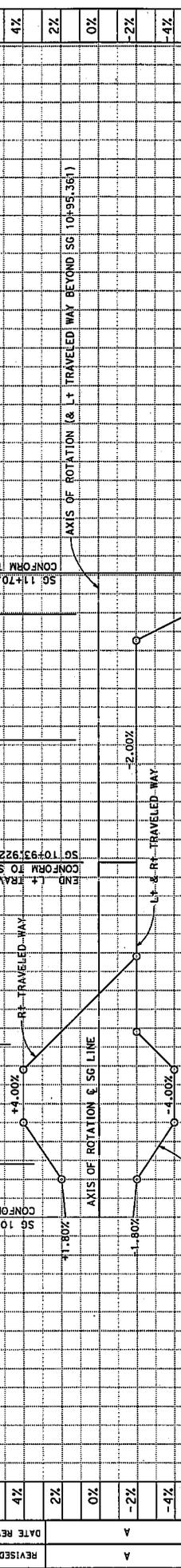
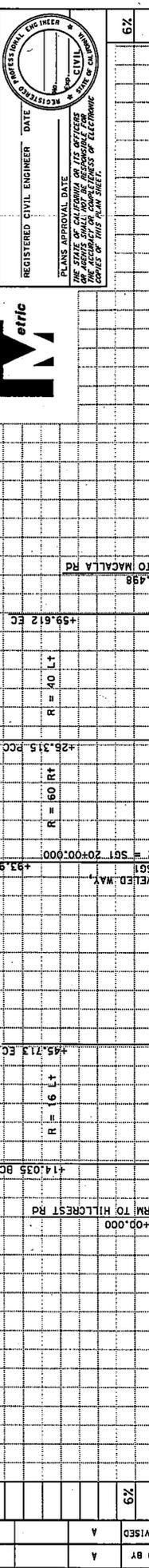
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FIGURE B-4
 MANDATORY DESIGN EXCEPTIONS
 SFOBB SEISMIC SAFETY PROJECT - YBI-2



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DI&T COUNTY ROUTE TOTAL PROJECT SHEETS
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DESIGN

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RELATIVE BORNEO SCALE
 1" = 10' HORIZONTAL
 1" = 10' VERTICAL

USENAME: yobhnmrc
 SGN FILE: \072-PS-1-figs-4.dgn

CU 04251

EA 0120T1

BORDER LAST REVISED 3/1/2007

DATE PLOTTED: 10/4/2011
 DATE PLOTTED: 10/4/2011

FIGURE B-4
 MANDATORY DESIGN EXCEPTIONS
 SFOBB SEISMIC SAFETY PROJECT - YBI-2

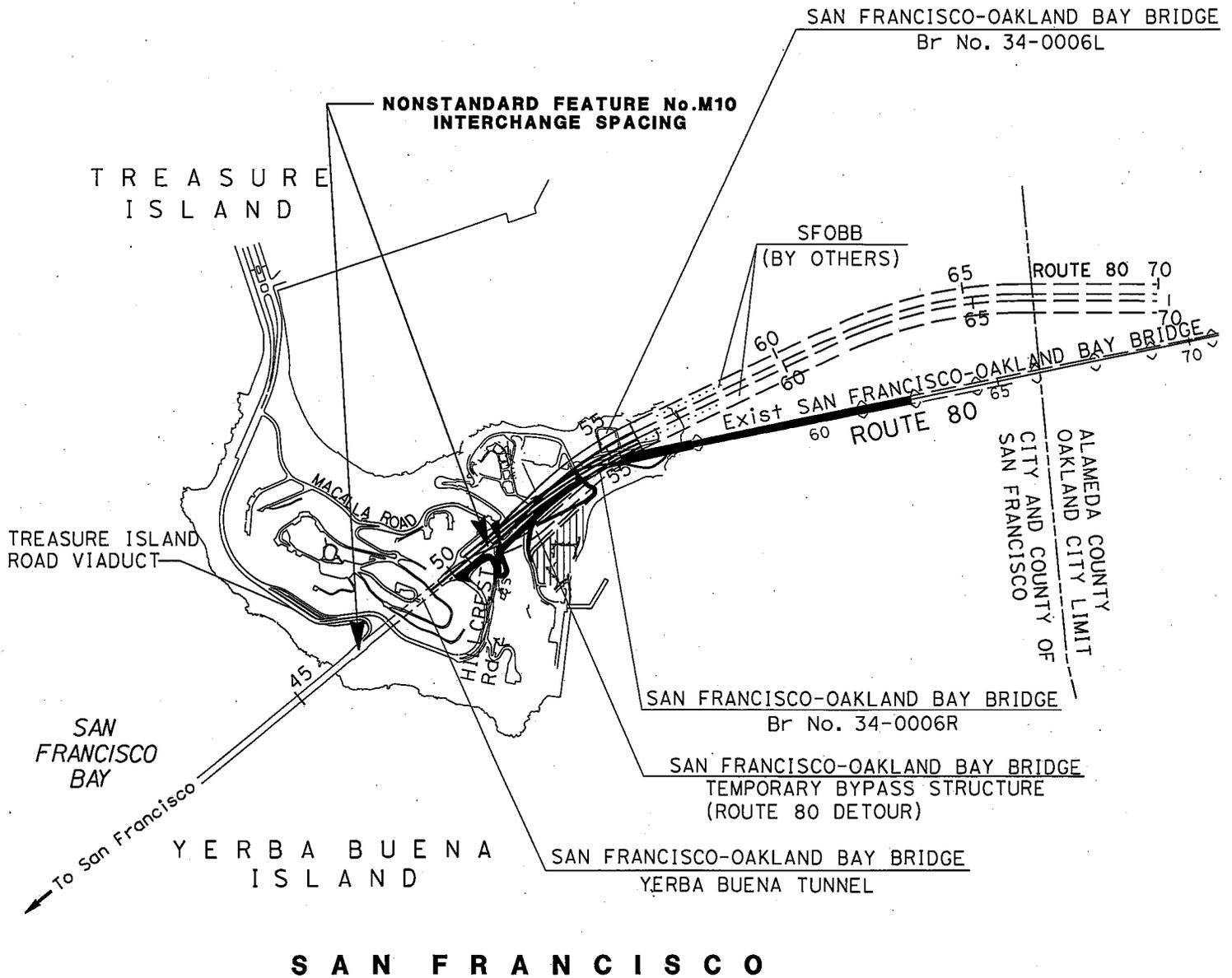


FIGURE B-6

MANDATORY DESIGN EXCEPTIONS

SFOBB SEISMIC SAFETY PROJECT - YBI-2