DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	80	13.2/13.9	893R4	1204

REGISTERED ENGINEER - CIVIL

12-6-04
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tien Hung Ho — No. C 43990 — Exp. 06/30/11 — CIVIL — STATE OF CALIFORNIA

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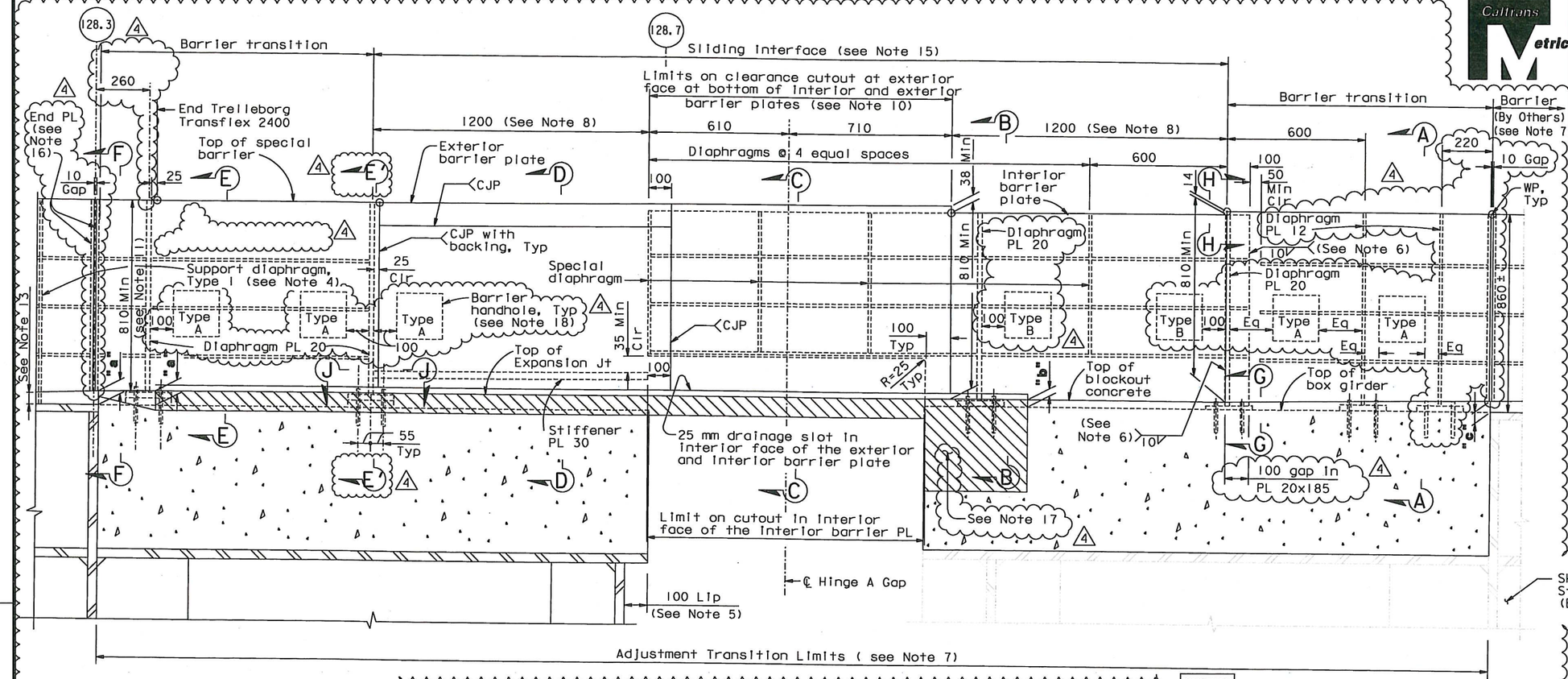
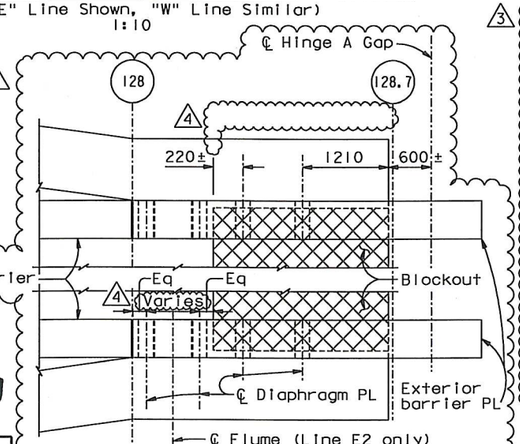


BARRIER AT HINGE A - NORTH SIDE

("E" Line Shown, "W" Line Similar)
1:10

SAS

PP		PROPOSED OVERLAY THICKNESS E Line "a"	"b"	"c"	W Line "a"	"b"	"c"	JOINT CROSS SLOPE (See Note 14) E Line	W Line
		mm (See Note 9)			mm (See Note 9)			%	%
Exp Jt Blockout	N	67	38	42	57	47	43	3.186	3.102
	S	25	57	50	32	50	50		



BARRIER AT HINGE A - PLAN VIEW

1:40

SKYWAY

- Min overlay thickness = 25 mm
- Max overlay thickness = 90 mm
- Rate of change of cross slope = 0.2% / m

10. Cope barrier PL to clear PL 20x185, see Section C-C on "Barrier Details No.6" sheet.
11. Shim North barrier on SAS as required to match barrier height at Expansion Joint. Barrier slope shall not exceed 1%. Shim PL shall be installed under the barrier base PL and under the barrier connections. The drainage cut-out in the barrier diaphragm shall not be blocked and the caulk bead shall be thickened appropriately.
12. Unless noted otherwise where calculated overlay at shoulder is greater than 50, overlay shall be tapered to 50 at barrier outside the "Adjustment Transition Limits" to maintain 810 min above the overlay at the barrier.
13. Runoff the overlay to 50 mm thick at a rate no steeper than 1:100, in shoulders beyond expansion joint transition.
14. Expansion joint shall be laid following longitudinal profile with constant cross slope throughout the expansion joint.
15. The interior and exterior barrier plate at sliding interface shall be parallel to allow for longitudinal movement without binding.

At the Contractor's option, the barrier may be detailed straight from PP128.3 to the existing Skyway barrier, subject to review and approval of the Engineer.

NOTES:

1. For details not shown, see "Barrier Details No.1" sheet.
2. For Standard diaphragm details, see Section C-C of "Barrier Details No.1" sheet.
3. For Sections A-A, B-B, C-C, D-D, F-F and G-G, see "Barrier Details No.6" sheet. For Sections E-E, H-H, J-J and Alt Section D-D, see "Barrier Details No.6A" sheet.
4. For support diaphragm Type 1 details not shown, see similar Section C-C on "Barrier Details No.1" sheet. For exterior barrier dimensions, see Section C-C on "Barrier Details No.1" sheet.
5. Barrier on the SAS side shall be trimmed by an amount equal to the amount of field trimming done at the lip.
6. For weld limits, see Section H-H on "Barrier Details 6A" sheet.
7. Field verify the as-built condition and dimensions before fabricating SAS barrier.
8. Values are for mean temperature of 20°C.
9. Tabulated overlay thickness is projected thickness at barrier based on Lowered Skyway Survey by ABF dated December 2009 and SAS cross slope of 3%. The contractor shall survey SAS and Skyway deck surfaces after installing Hinge A pipe beams. Based on this survey and the following criteria, the overlay thickness shall be calculated and submitted for approval.

16. For end plate details, see "Barrier Details No.2" sheet.
17. At the Contractor's option, it is acceptable to block out concrete and pour a non-shrink grout pad under base after setting alignment, subject to review and approval of the Engineer. All anchor bolts to be tightened after grout attains a minimum compressive strength of fcl = 75% fc.
18. Barrier handholes are on the exterior face. For details, see "Barrier Details No.6A" sheet.

REVISION 3 SUPERSEDES REVISIONS 1 & 2

CONTRACT CHANGE ORDER NO. 4551
SHEET 2 OF 5

REQUESTS FOR INFORMATION NOT ADDRESSED IN THIS CCO REMAIN IN FORCE

MARK	DATE	DESCRIPTIONS	BY	CH'D	CCO#
4	03/25/11	HINGE A BARRIER RAIL MODIFICATIONS	TH	GB	25S1
3	10/22/10	HINGE A BARRIER RAIL MODIFICATIONS	TH	GB	25S1
2	01/30/09	HINGE A BARRIER RAIL MODIFICATIONS	TH	AB	25S1
1	03/28/08	HINGE A BARRIER RAIL MODIFICATIONS	TH	AS	25S1

REVISIONS

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

	BY	CHECKED
DESIGN	T. Ho	N. Vo
DETAILS	G. Baker	N. Vo
QUANTITIES	T. Ho	N. Vo

PREPARED FOR THE STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

R. Manzanarez
PROJECT ENGINEER

BRIDGE NO. 34-0006L/R
KILOMETER POST 13.2/13.9

R. Valizadeh/V. Toan/Y.L./W.L./F.C.
DESIGN OVERSIGHT
SIGN OFF DATE 03/29/11

Rev. Date: 5-18-98

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU 04
EA 0120F1

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)										SHEET	OF
01/06/02	01/20/02	12/19/02	01/18/03							476R4	

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF-ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE & TOWER)

BARRIER DETAILS NO.5

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DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	80	13.2/13.9	893SIRI	1204

REGISTERED ENGINEER - CIVIL

10-22-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Tien Hung Ho — No. C 43990 — Exp. 06/30/11 — CIVIL — STATE OF CALIFORNIA

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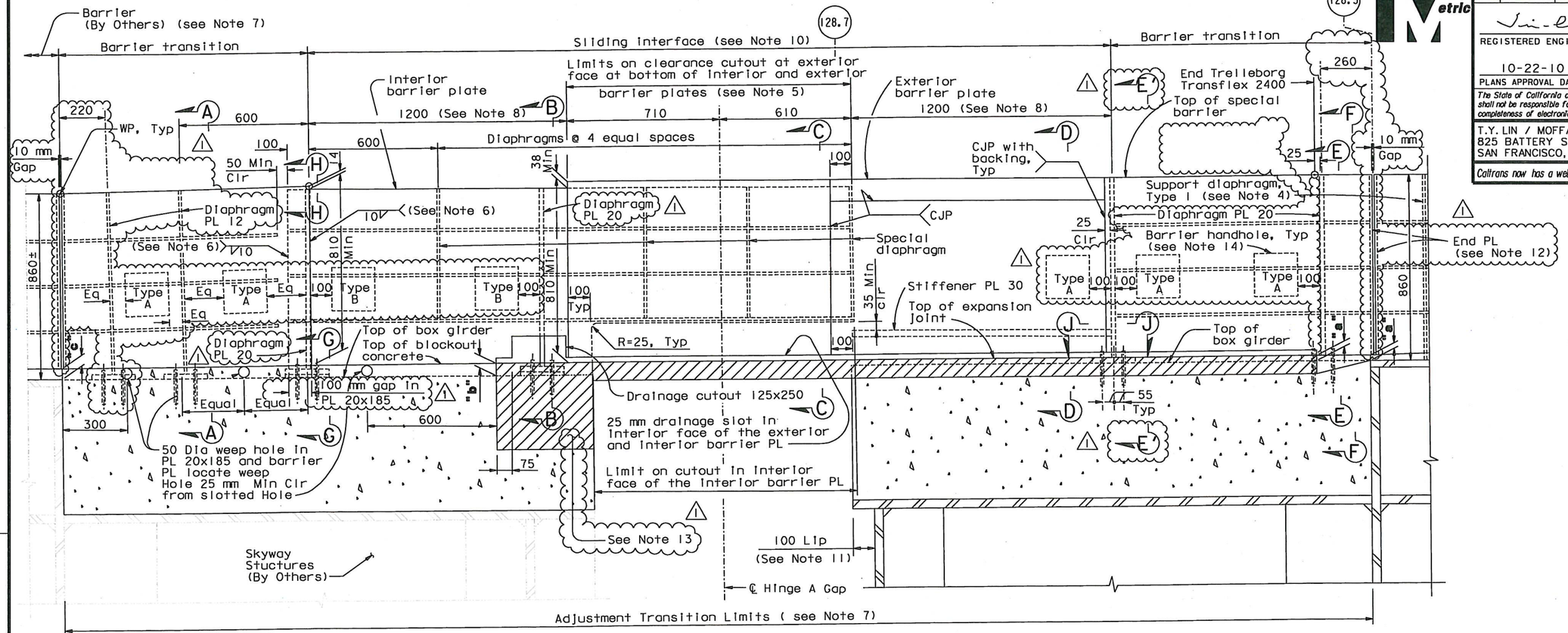

SKYWAY

SAS

BARRIER AT HINGE A - SOUTH SIDE

("E" Line Shown, "W" Line Similar)

1:10

10. The interior and exterior barrier plate at sliding interface shall be parallel to allow for longitudinal movement without binding. At the Contractor's option, the barrier may be detailed straight from PP128.3 to the existing Skyway barrier, subject to review and approval of the Engineer.
11. Barrier on the SAS side shall be trimmed by an amount equal to the amount of field trimming done at the lip.
12. For end plate details, see "Barrier Details No.2" sheet.
13. At the Contractor's option, it is acceptable to block out concrete and pour a non-shrink grout pad under base after setting alignment, subject to review and approval by the Engineer. All anchor bolts to be tightened after grout attains a minimum compressive strength of f'cl = 75% f'c.
14. Barrier handholes are on the exterior face. For details, see "Barrier Details No.6A" sheet.

NOTES:

1. For details not shown, see "Barrier Details No.1" sheet.
2. For Standard diaphragm details, see Section C-C of "Barrier Details No.1" sheet.
3. For Sections A-A, B-B, C-C, D-D, F-F and G-G, see "Barrier Details No.6" sheet. For Sections E-E, H-H, J-J and Alt Section D-D, see "Barrier Details No.6A" sheet.
4. For support diaphragm Type I details not shown, see similar Section C-C on "Barrier Details No.1" sheet. For exterior barrier dimensions, see Section C-C on "Barrier Details No.1" sheet.
5. Cope barrier PL to clear PL 20x185, see Section C-C on "Barrier Details No.6" sheet.
6. For weld limits, see Section H-H on "Barrier Details 6A" sheet.
7. Field verify the as-built condition and dimensions before fabricating SAS barrier.
8. Values are for mean temperature of 20°C.
9. Unless noted otherwise where calculated overlay at shoulder is greater than 50, overlay shall be tapered to 50 at barrier outside the "Adjustment Transition Limits" to maintain 810 min above the overlay at the barrier.

CONTRACT CHANGE ORDER NO. 25 SI
SHEET 3 OF 5

REQUESTS FOR INFORMATION NOT ADDRESSED IN THIS CCO REMAIN IN FORCE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

MARK	DATE	REVISIONS	BY	CH'D	CCO#
1	03/25/11	HINGE A BARRIER RAIL MODIFICATIONS	TH	GB	25SI
0	10/22/10	HINGE A BARRIER RAIL MODIFICATIONS	TH	GB	25SI

R. Vallzadeh/V. Toan/Y.L./W.L./F.C.
DESIGN OVERSIGHT
Ryan Vallzadeh/Vinh Toan/Y. Liu
SIGN OFF DATE 03/29/11

	BY	CHECKED
DESIGN	T. Ho	G. Baker
DETAILS	H. Patel	T. Ho
QUANTITIES	H. Patel	J. Duxbury

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

R. Manzanarez
PROJECT ENGINEER

BRIDGE NO. 34-0006L/R
KILOMETER POST 13.2/13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF-ANCHORED SUSPENSION BRIDGE (SUPERSTRUCTURE & TOWER)
BARRIER DETAILS NO. 5A

Rev. Date: 5-18-98

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU 04
EA 0120F1

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES (PRELIMINARY STAGE ONLY): 10/22/10

SHEET 476SIRI OF

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DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	80	13.2/13.9	894R4	1204

REGISTERED ENGINEER - CIVIL

12-6-04
PLANS APPROVAL DATE

Tien Hung Ho, No. C 43990, Exp. 6/30/11, CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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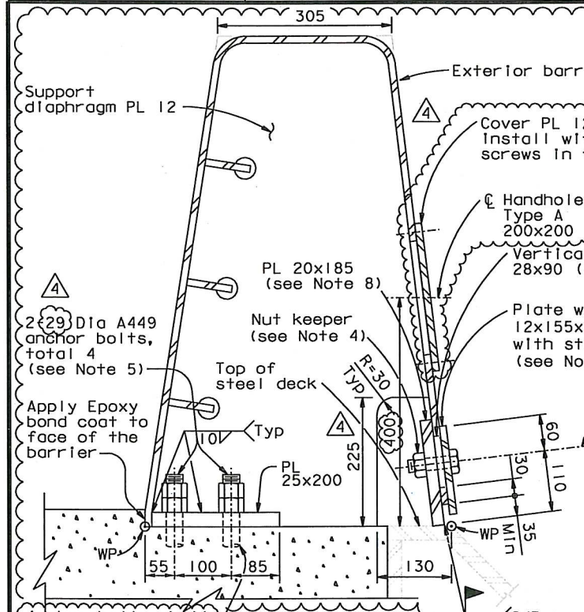

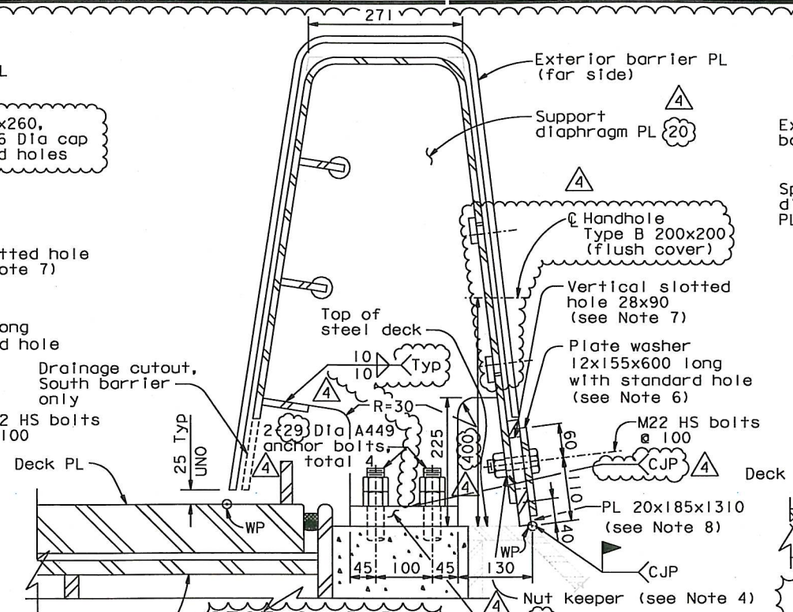

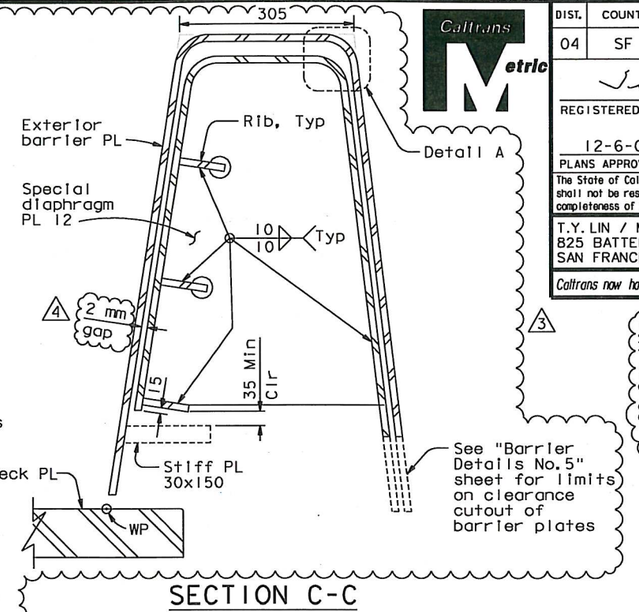

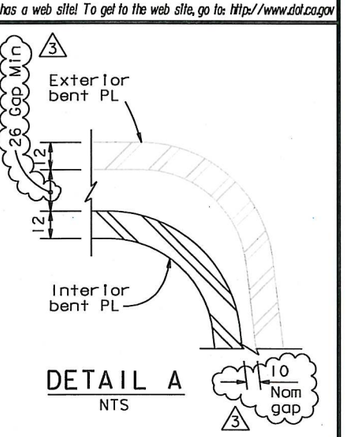

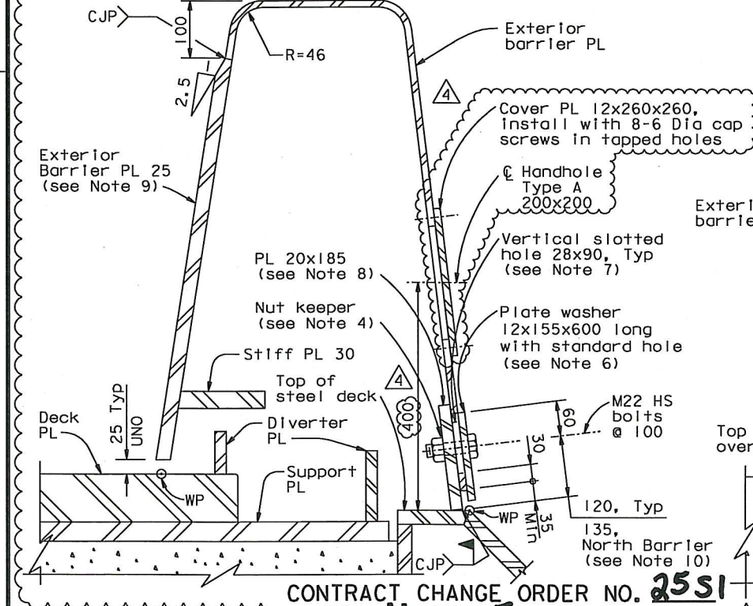

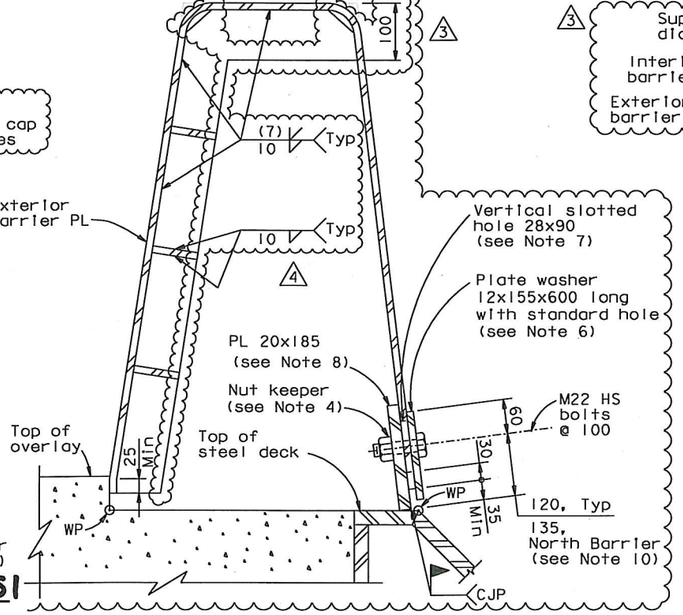

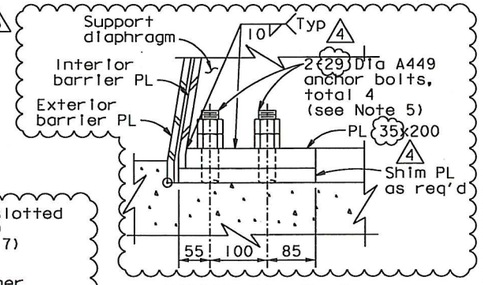

NOTES:

1. Deck plate, support plate, diverter plate, support channel and consolidated concrete are parts of expansion joint. For details, see "Hinge A Expansion Joint Details" sheet.
2. Weld discontinuous ribs to each face of diaphragm. Cope ribs as needed to clear interior barrier plate.
3. (NOTE DELETED)
4. For nut keeper details, see "West Jacking Frame Details No. 1" sheet.
5. To access anchor bolts at the support diaphragms, the Contractor may, at his option, provide 200 wide by 400 high handholes with 8mm cover plates with M6 cap screws at the back of the barrier and 100 from the support diaphragms. Anchor bolt nuts may be snug tight plus quarter turn and shall have lock nuts.
6. The plate washer shall be inverted as required to seal the slotted holes when the bolt is moved up or down in the slotted hole.
7. Adjust barrier as necessary utilizing the oversized slot and field weld at barrier transition per "Barrier Details No.5" and "Barrier Details No.5A" sheets to achieve required minimum barrier height over riding surface per "Barrier Details No.5" and "Barrier Details No.5A" sheets.
8. Plate may be installed in segments. Segments shall abut end to end and be caulked. Insert shim plate as necessary to compensate for horizontal misalignment between Skyway and SAS. See Alternate Section D-D.
9. For barrier plate thickness end transition detail, see Section J-J on "Barrier Details No.6A" sheet.
10. North barrier and South barrier on SAS shall be set 25 mm and 10 mm higher respectively with the M22 bolt centered in the slotted hole.
11. Add shim PL if necessary to achieve required barrier height.

CONTRACT CHANGE ORDER NO. 25SI
SHEET 4 OF 5

REQUESTS FOR INFORMATION NOT ADDRESSED IN THIS CCO REMAIN IN FORCE

MARK	DATE	DESCRIPTIONS	BY	CH'D	CCO#
4	03/25/11	HINGE A BARRIER RAIL MODIFICATIONS	TH	GB	25SI
3	10/22/10	HINGE A BARRIER RAIL MODIFICATIONS	TH	GB	25SI
2	01/30/09	HINGE A BARRIER RAIL MODIFICATIONS	TH	AB	25SI
1	03/28/08	HINGE A BARRIER RAIL MODIFICATIONS	TH	AS	25SI

REVISIONS

3 REVISION 3 SUPERSEDES REVISIONS 1 & 2

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

DESIGN	BY T. Ho	CHECKED N. Vo	
DETAILS	BY G. Baker	CHECKED N. Vo	
QUANTITIES	BY T. Ho	CHECKED N. Vo	

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

R. Manzanarez
PROJECT ENGINEER

R. Vallzadeh/V. Toan/Y.L./W.L./F.C.
DESIGN OVERSIGHT
SIGN OFF DATE 03/29/11

Rev. Date: 5-18-98

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU 04
EA 0120F1

BRIDGE NO. 34-0006L/R
KILOMETER POST 13.2/13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF-ANCHORED SUSPENSION BRIDGE (SUPERSTRUCTURE & TOWER)

BARRIER DETAILS NO. 6

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY): 01/06/12 | 01/27/12 | 12/28/12 | 07/18/13

SHEET 477R4 OF

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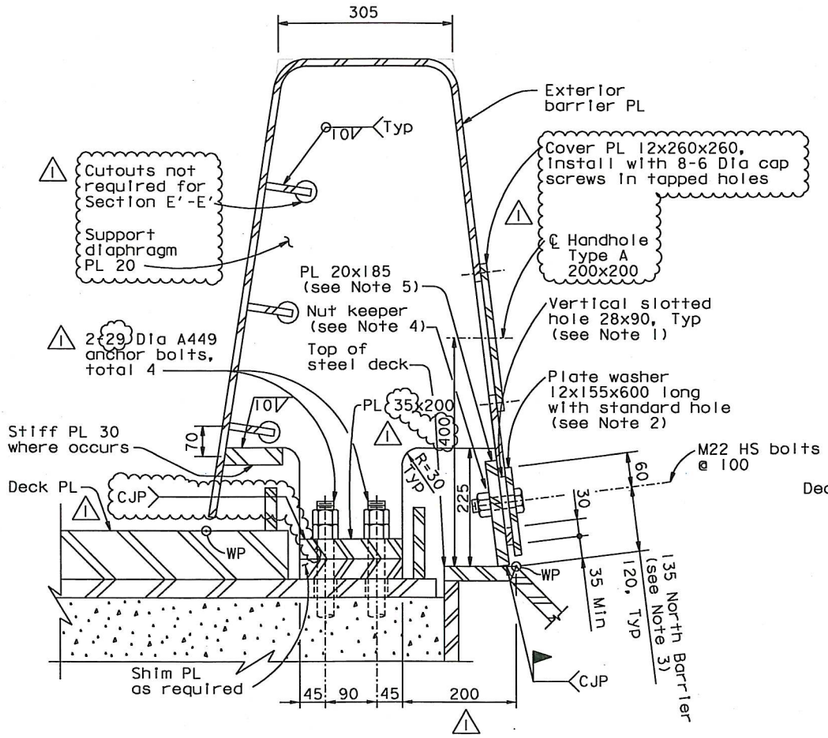

SECTION E-E (Shown, Section E'-E' similar)

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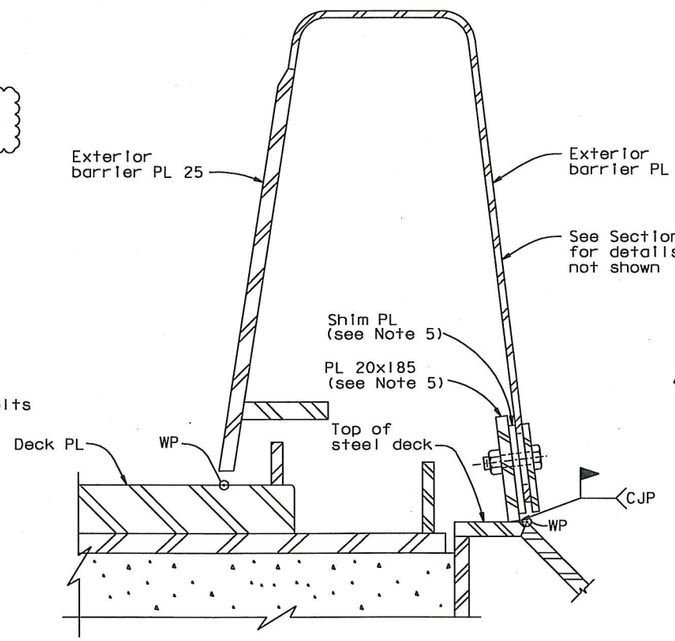

ALTERNATE SECTION D-D

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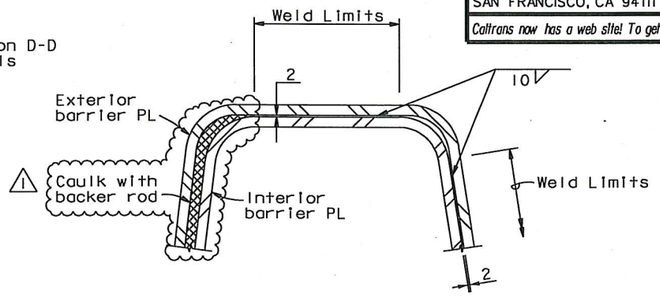
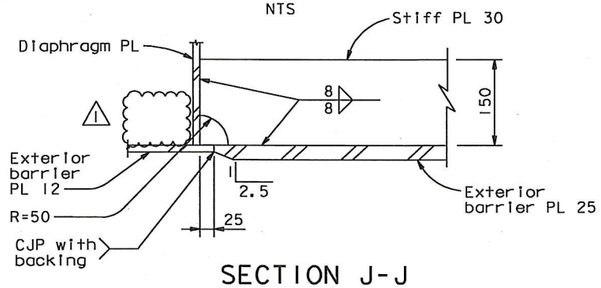


SECTION H-H

NTS



SECTION J-J

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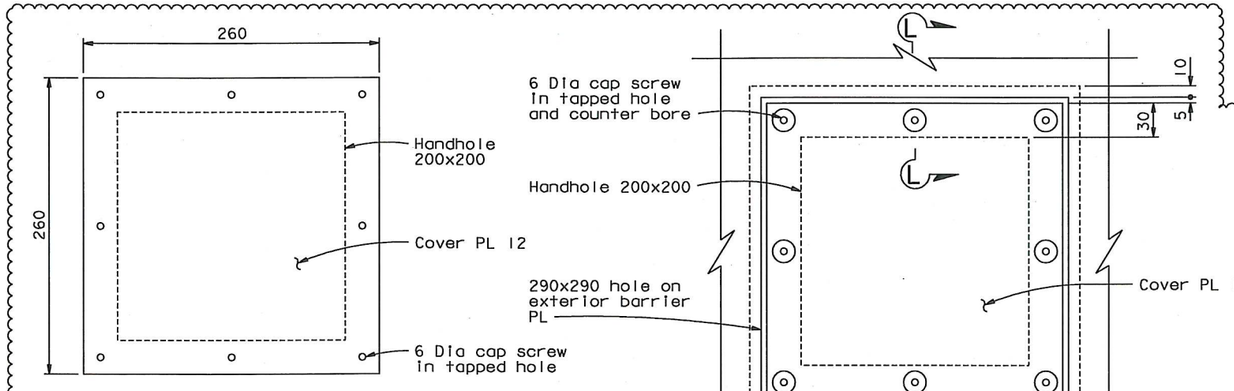

BARRIER HANDHOLE TYPE A

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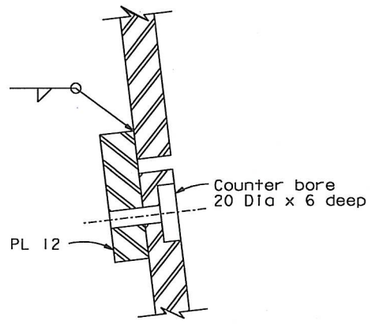
BARRIER HANDHOLE TYPE B

1:2.5



SECTION L-L

1:1

NOTES:

1. Adjust barrier as necessary utilizing the oversized slot and field weld to achieve required minimum barrier height over riding surface per "Barrier Details No.5" and "Barrier Details No.5A" Sheets.
2. The plate washer shall be inverted as required to seal the slotted holes when the bolt is moved up or down in the slotted hole.
3. North barrier and South barrier on SAS shall be set 25 mm and 10 mm higher respectively with the M22 bolt centered in the slotted hole.
4. For nut keeper details, see "West Jacking Frame Details No.1" sheet.
5. Plate may be installed in segments. Insert shim plate as necessary to compensate for horizontal misalignment between Skyway and SAS.

CONTRACT CHANGE ORDER NO. 25S1
SHEET 5 OF 5

REQUESTS FOR INFORMATION NOT ADDRESSED IN THIS CCO REMAIN IN FORCE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	80	13.2/13.9	894SIRI	1204

REGISTERED ENGINEER - CIVIL

Tien Hung Ho No. C 43990 Exp. 06/30/11 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

10-22-10
PLANS APPROVAL DATE

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MARK	DATE	DESCRIPTIONS	BY	CH'D	CCO#
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0	10/22/10	HINGE A BARRIER RAIL MODIFICATIONS	TH	GB	25S1

REVISIONS

	BY	CHECKED
DESIGN	T. Ho	G. Baker
DETAILS	H. Patel	T. Ho
QUANTITIES	H. Patel	J. Duxbury

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

R. Manzanarez
PROJECT ENGINEER

BRIDGE NO. 34-0006L/R
KILOMETER POST 13.2/13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF-ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE & TOWER)

BARRIER DETAILS NO. 6A

R. Vallzadeh/V. Toan/Y.L./W.L./F.C.
DESIGN OVERSIGHT
SIGN OFF DATE 03/25/11

Rev. Date: 5-18-98

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU 04
EA 0120F1

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 10/22/10

SHEET 477SIRI OF

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