



C E L CONSULTING

A DIVISION OF CONSOLIDATED ENGINEERING

April 27, 2012

Project No. D50541

Mr. Eric Dausman
Sutro Tower, Inc.
1 La Avanzada Street
San Francisco, CA 94131-1124

SUBJ: Sutro Tower
1 La Avenzada Street
San Francisco, CA

Routine Inspection of Leg C and South Face – December, 2011
Inspection of Stack C – January, 2012

Dear Mr. Dausman:

We have completed our inspection of Leg C, the South Trusses, the Strands, and the Base of all legs and Stack C above the 6th level. The routine inspection was performed on December 22 and 28, 2011. The Stack was inspected on January 14, 2012.

Purpose

The purpose of the inspection was to check the structural portions of the tower proper and the attached equipment, etc. for distress due to corrosion, structural overload and/or other signs of distress or potential deterioration.

Scope and Procedures

The survey was performed in general accordance with the recommended approach for a Routine Inspection as described in the Inspection Procedures which were recently revised to include the appurtenant items and Stack C. The undersigned and a staff engineer (Richard Ng) and an inspector (Chad Hill) performed the inspection of the Tower. The undersigned and Chad Hill performed the hands-on inspection of Stack C. All three have

performed inspections on the tower in the past. The strands were inspected by naked eye and binocular.

The inspection was limited to visual observations and recording by entry on the data sheets for each portion of the tower being inspected. A specific photograph was taken for the individual conditions. The data sheets and the photographs are coordinated.

One exception to the one observation-one photograph record was the fasteners of Stack C. There were several groups of fasteners that were showing the early signs of corrosion in numerous locations. The locations were numerous enough that this observation was recorded as a global comment.

Inspection Limitations

We inspected the tower from the interior of the leg and horizontal trusses. No attempt was made to inspect from the exterior of the trusses and legs other than what could be seen by naked eye and binoculars (8x). These methods allow us to see most of each surface and connection, however there are still areas that are not visible.

Results

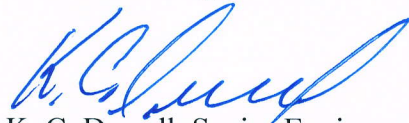
The individual results are shown on the data sheets, location sketches and photographs. The general results were as follows:

1. No structural members or appurtenant items were noted with distorted or distressed conditions indicating structural overload.
2. Most of the distress noted was corroded fasteners. Either the nut (usually) or the head of the bolt, or both, were corroded. None of the fasteners were corroded to the point of producing flaking buildup. These fasteners should be cleaned and repainted. If however during the cleaning significant loss of metal is found, that is, if the flats of the nut or heads are rounded at junction of the flats due to corrosion, the fastener should be replaced.
3. Stack C had a few areas of corrosion on the knife plates and a few welds. This corrosion should be removed and the surfaces repainted. One appurtenant item attachment channel (aluminum) had fasteners with some corrosion (galvanic) that should be cleaned and repainted, or the fasteners changed to stainless steel. Stack C is also showing early signs of corrosion on several groups of fasteners in the upper 2/3rds of the Stack. These fasteners should also be cleaned and repainted.

C E L CONSULTING

4. The skin showed no signs of structural distress.
5. The strands did not have any visible distress.
6. The bases of all three legs showed no significant observable distress. Corrosion was visible on several welds at the base plates.
7. This concludes our report of the routine inspection of Leg A, the South Face and Stack C of Sutro Tower. If you have any questions please contact the undersigned.

Sincerely,
CEL Consulting



K. C. Dewell, Senior Engineer
Civil Engineer No. 29110

Cc: Ron Hamburger



CEL CONSULTING

534 23rd Avenue • Oakland, CA 94606 • (510) 436-7626 • FAX (510)434-7719

Inspection Summary – Year 2011

Description of Inspection:

- Routine inspection of Leg C
- Routine inspection of Stack C and guys
- Routine inspection of horizontal levels on South face
- Routine inspection of all appurtenances and attachments on Leg C, Stack C, and South face
- Routine inspection of strands on South face
- Routine inspection of strand anchors on Leg C
- Routine inspection of base – all legs

Special or In-depth Inspections:

Summary of Results:

- 1) No structural distress noted for structure or appurtenant items.
- 2) Corrosion noted for some fasteners and surfaces.

Summary of Recommendations:

Clean and repaint corroded areas.

Checklist:

- Has a severe event occurred since the previous inspection? No
- Have action items and recommendations from previous inspections been addressed in the scope of work? Yes
- Has the inspection log for future years been revised to account for scope of work and findings of this inspection? Yes

Signature: K. C. Dewell

Date: April 27, 2012



Inspection Data Sheet: Miscellaneous Tower Items

[illegible]

¹ Miscellaneous items for the entire tower in addition to those contained in the column leg and truss forms.

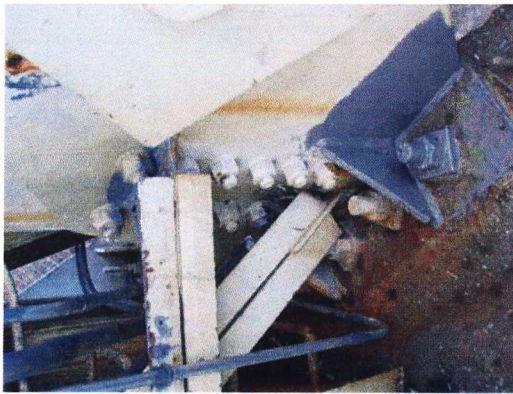


Photo 1 – PC282126
12/28/11



Photo 2 – PC282127
12/28/11



Photo 3 – PC282128
12/28/11



Photo 4 – PC282129
12/28/11



Photo 5 – PC282130
12/28/11



Photo 6 – PC282131
12/28/11



Photo 7 – PC282132
12/28/11



Photo 8 – PC282133
12/28/11



Photo 9 – PC282134
12/28/11



Photo 10 – PC282136
12/28/11



Photo 11 – PC282137
12/28/11



Photo12 – PC282141
12/28/11



Photo 13 – PC282142
12/28/11



Photo 14 – PC282144
12/28/11



Photo 15 – PC282145
12/28/11

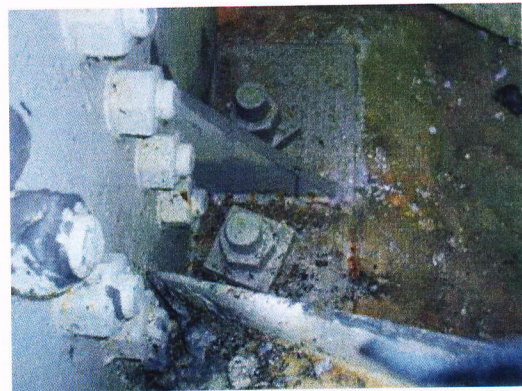


Photo 16 – PC282146
12/28/11



Photo 17 – PC282147
12/28/11



Photo 18 – PC282149
12/28/11



Photo 19 – PC282150
12/28/11



Photo 20 – PC282152
12/28/11

Inspection Data Sheet: Leg C (Level 1 to Level 2)

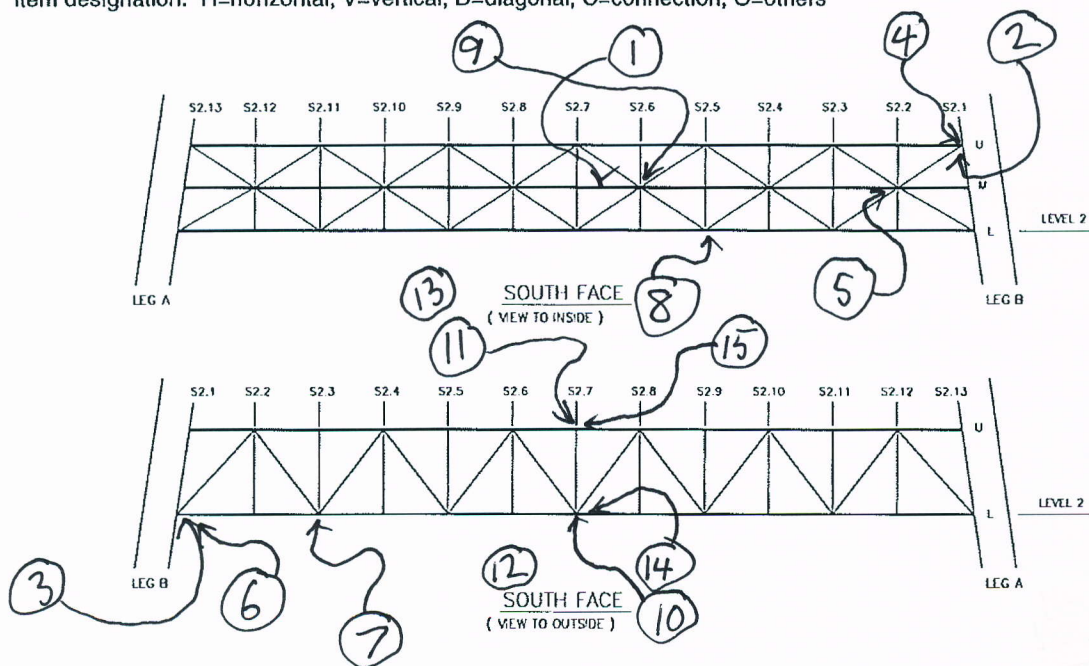
[illegible]

¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others

Observ. No.	Location / Identification			Photo No.	Inspection Comments
	Chord ¹	Horiz. Location	Item ²		
1	M	2.6-7	H/C	no photo	RF (exterior)
2	U	2.1	C	1	RF(5)
3	L	2.1	C	2	RF(5)
4	U	2.1	C	3	RF
5	M	2.2	C	4	RW
6	L	2.1	C	5	RF(2)
7	L	2.3	V/C	6	RF
8	L	2.5	C	7	RF(3)
9	M	2.6	H	8	Rust on beam flange
10	L	2.7	C	9	RF(3)
11	U	2.7	C	10	RF
12	U	2.6	C	11	Rust on skin bracket
13	L	2.7	C	12	RF on antenna bracket
14	L	2.7	O	13	Rust on antenna strut
15	U	2.7	H/V	14	Rust on beams
Sutro Tower				Signature: <i>[Signature]</i>	Page: 1 of 2
San Francisco, CA				File:	Date: 12-28-11

¹ Chord member designation: OU=outer upper, OL=outer lower, IU=inner upper, and IL=inner lower

² Item designation: H=horizontal, V=vertical, D=diagonal, C=connection, O=others



Inspection Data Sheet: South Truss (Level 2)

[illegible]

¹ Chord member designation: OU=outer upper, OL=outer lower, IU=inner upper, and IL=inner lower

² Item designation: H=horizontal, V=vertical, D=diagonal, C=connection, O=others

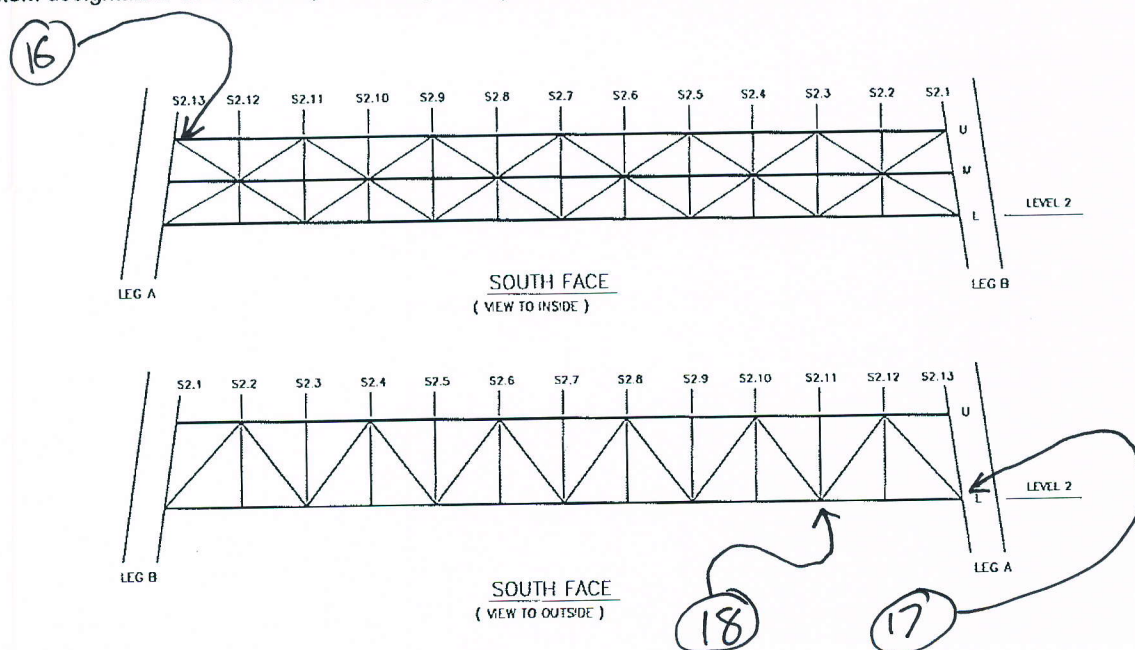




Photo 1 – PC282103
12/28/11



Photo 2 – PC282104
12/28/11

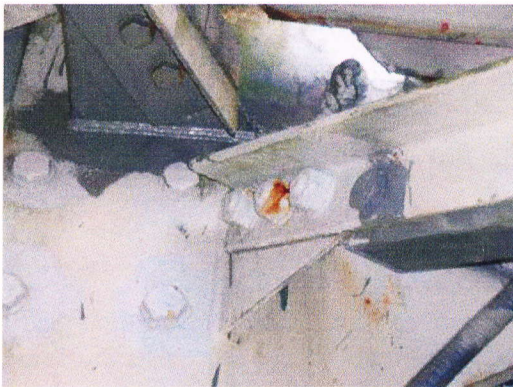


Photo 3 – PC282105
12/28/11



Photo 4 – PC282107
12/28/11

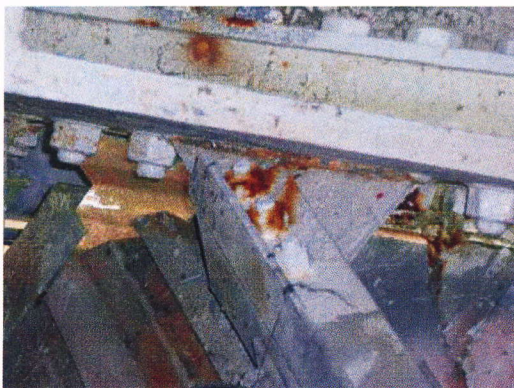


Photo 5 – PC282108
12/28/11



Photo 6 – PC282109
12/28/11

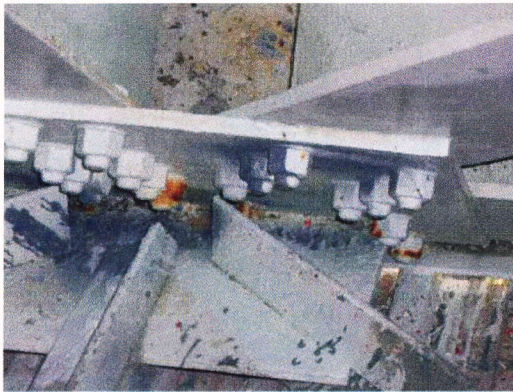


Photo 7 – PC282110
12/28/11



Photo 8 – PC282112
12/28/11



Photo 9 – PC282113
12/28/11



Photo 10 – PC282115
12/28/11



Photo 11 – PC282116
12/28/11



Photo 12 – PC282117
12/28/11



Photo 13 – PC282118
12/28/11



Photo 14 – PC282119
12/28/11

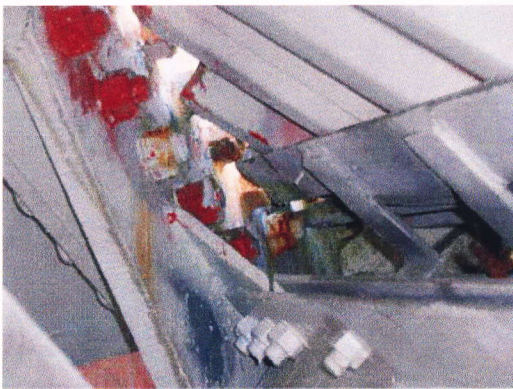


Photo 15 – PC282120
12/28/11

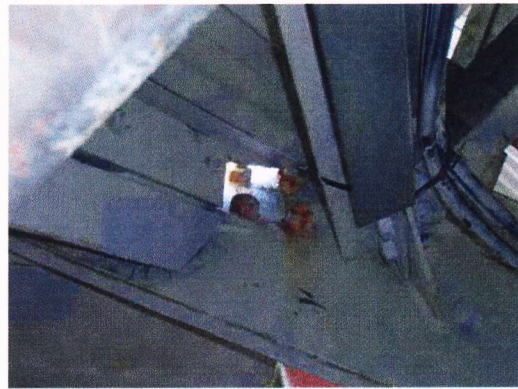


Photo 16 – PC282121
12/28/11



Photo 17 – PC282124
12/28/11

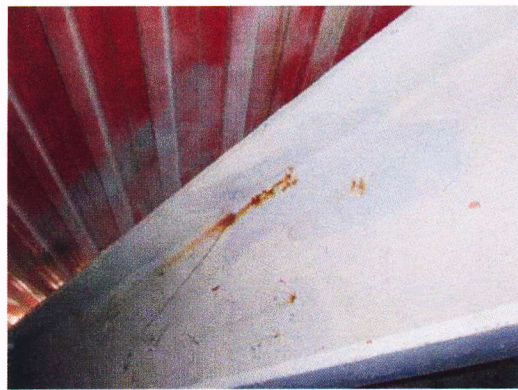


Photo 18 – PC282123
12/28/11

Inspection Data Sheet: Leg C (Level 2 to Level 3)

[illegible]

¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others

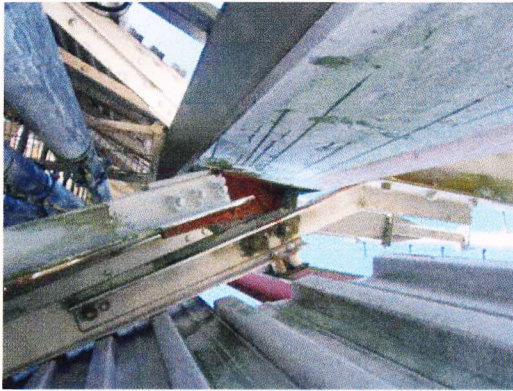


Photo 1 – PC282100
12/28/11



Photo 2 – PC282101
12/28/11

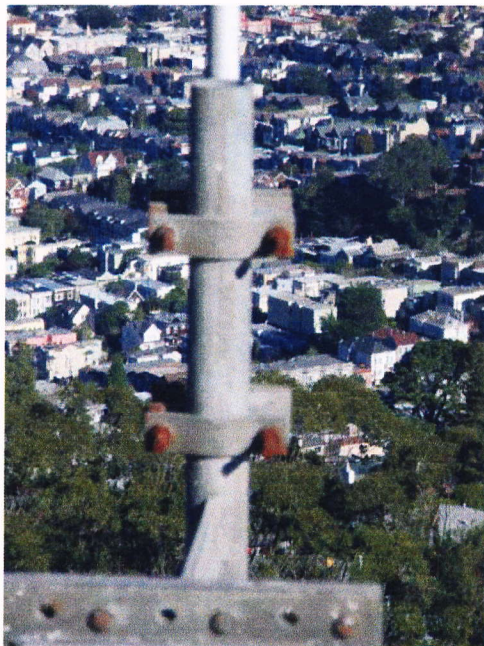


Photo 3 – PC282102
12/28/11

Inspection Data Sheet: South Truss (Level 3)

[illegible]

¹ Chord member designation: OU=outer upper, OL=outer lower, IU=inner upper, and IL=inner lower

² Item designation: H=horizontal, V=vertical, D=diagonal, C=connection, O=others

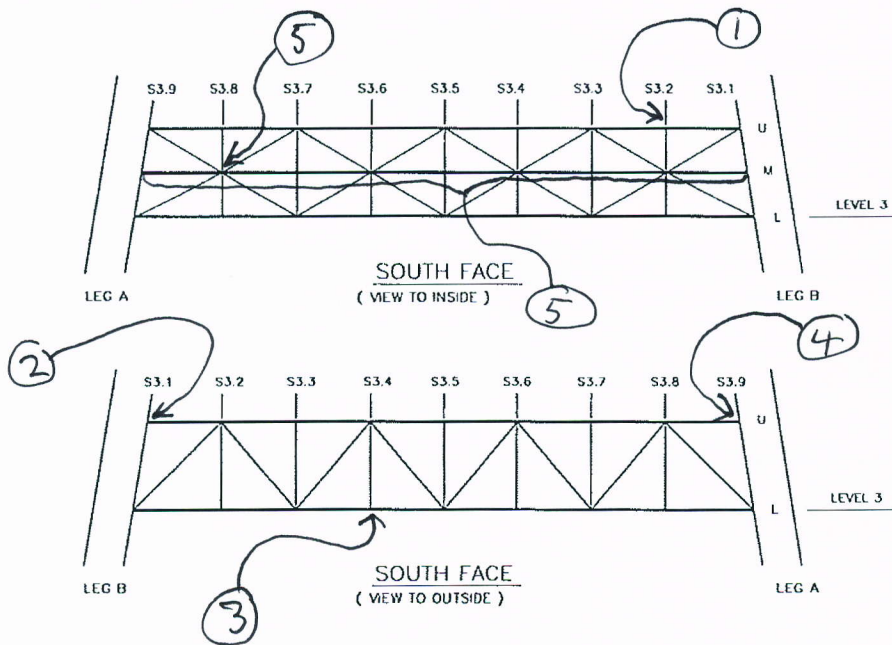




Photo 1 – PC222045
12/22/11

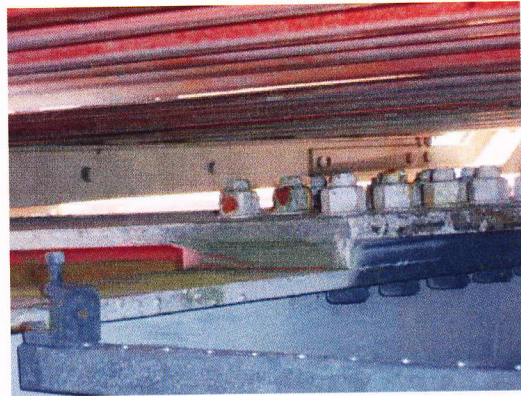


Photo 2 – PC222047
12/22/11



Photo 4 – PC222049
12/22/11

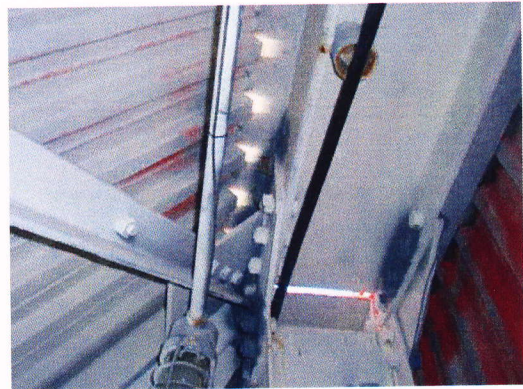


Photo 5 – PC222054
12/22/11

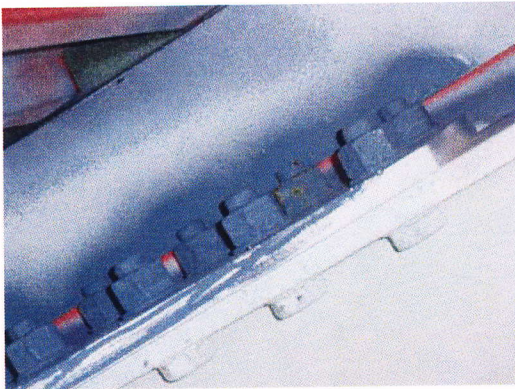


Photo 5 – PC222051
12/22/11

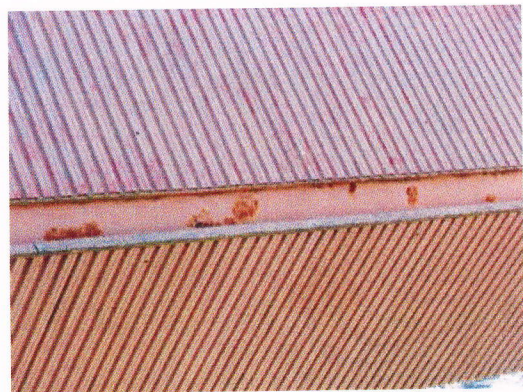


Photo 6 – PC282095
12/28/11

Inspection Data Sheet: Leg C (Level 3 to Level 4)

[illegible]

¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others



Photo 1 – PC222039
12/22/11



Photo 2 – PC222040
12/22/11



Photo 3 – PC222041
12/22/11

Observ. No.	Location / Identification			Photo No.	Inspection Comments
	Chord ¹	Horiz. Location	Item ²		
1	U	4.1	V/C	1	RF(6)
2	M	4.2	D/C	2	RF
3	L	4.2	V/C	3	RF(3)
4	U	4.2	C	4	RF on skin bracket
5	L	4.2	V/C	5	RF(4)
6	L	4.5	V/C	6	RF(2)
7	U	4.4	C	7	RF, Rust on beam flange
8	U	4.5	V/C	8	RF(2)
9	U	4.7	C	9	RF(2) and loose fastener
10	M	4.6	D/C	10	RF(2)
11	L	All	H	n/a	Rust on beam web, exterior
12	n/a	4.2	O	11, 12	Rust on door hinges
Sutro Tower				Signature: <i>Richard D</i>	Page: 1 of 1
San Francisco, CA				File:	Date: 12-22-11

¹ Chord member designation: OU=outer upper, OL=outer lower, IU=inner upper, and IL=inner lower

² Item designation: H=horizontal, V=vertical, D=diagonal, C=connection, O=others

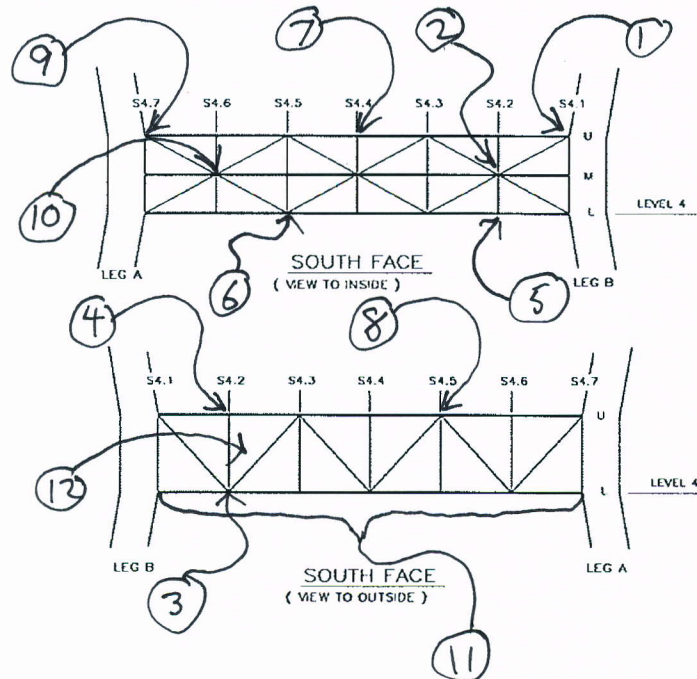




Photo 1 – PC222020
12/22/11

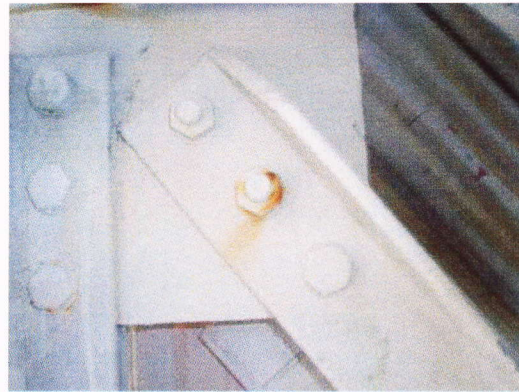


Photo 2 – PC222022
12/22/11



Photo 3 – PC222023
12/22/11



Photo – PC222025
12/22/11



Photo 5 – PC222029
12/22/11



Photo 6 – PC222032
12/22/11

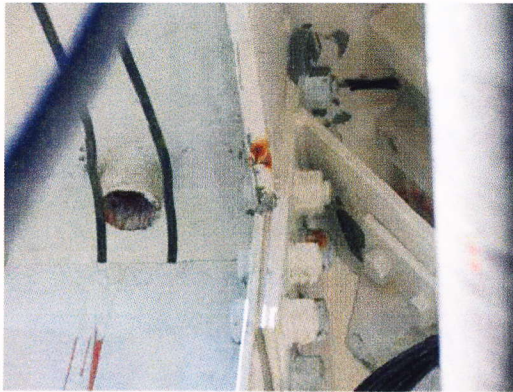


Photo 7 – PC222033
12/22/11



Photo 8 – PC222035
12/22/11

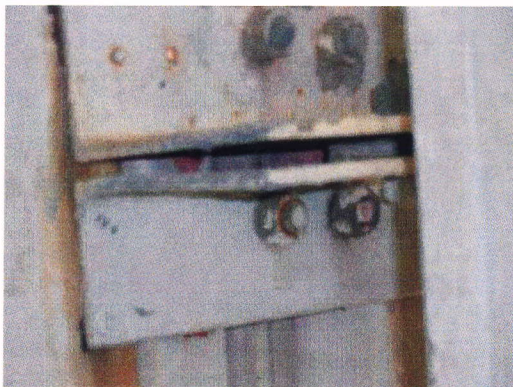


Photo 9 – PC222036
12/22/11

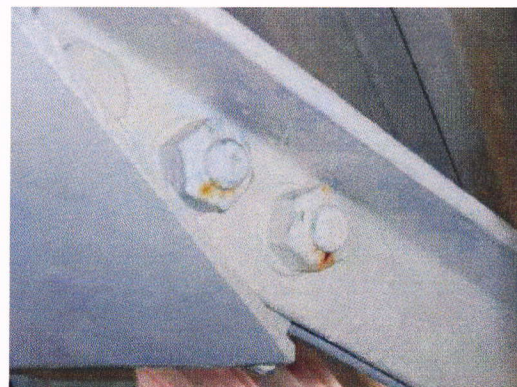


Photo 10 – PC222037
12/22/11

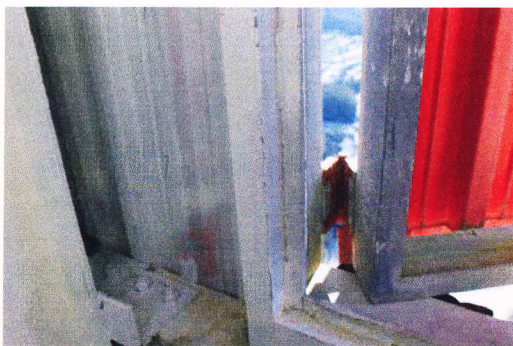


Photo 11 – IMG_0865
12/22/11



Photo 12 – IMG_0864
12/22/11

Inspection Data Sheet: Leg C (Level 4 to Level 5)

[illegible]

¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others



Photo 1 – PC222013
12/22/11

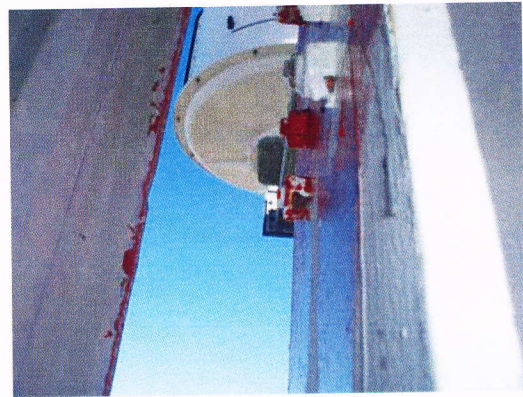


Photo 2 – PC222014
12/22/11

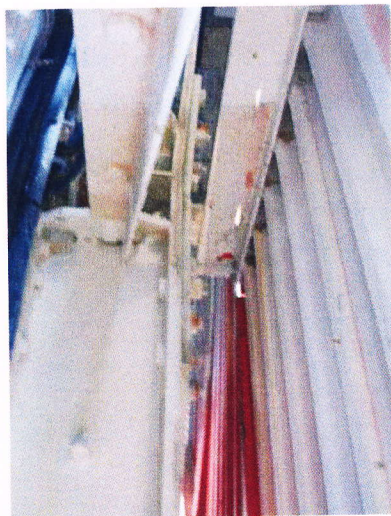
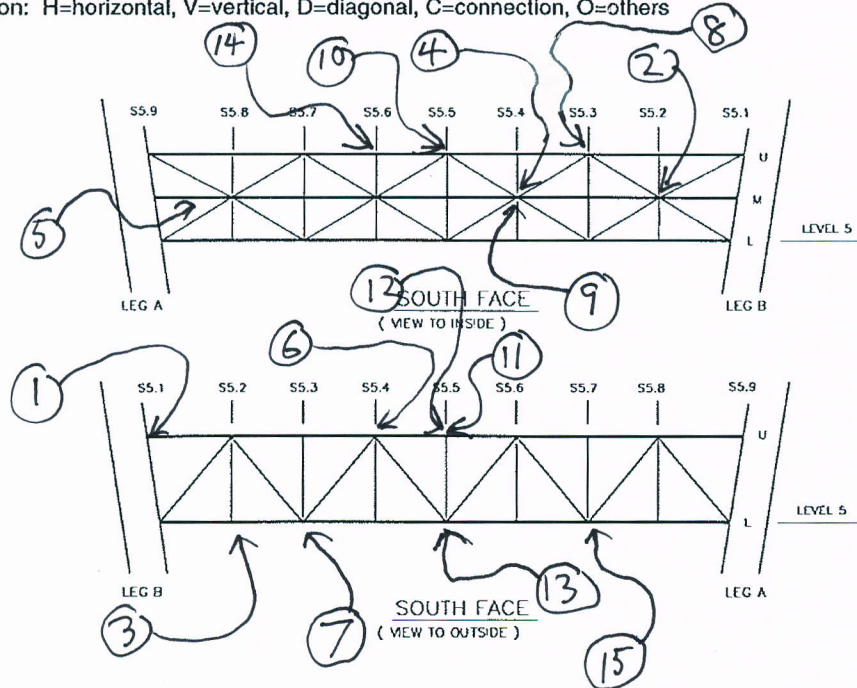


Photo 3 – PC222017
12/22/11

Observ. No.	Location / Identification			Photo No.	Inspection Comments
	Chord ¹	Horiz. Location	Item ²		
1	U	5.1	C	1	RF and loose fastener
2	M	5.2	C	2	RF
3	L	5.2	C	3	RF
4	M	5.4	C	4	RF
5	M	All	H	5	Repaint beam
6	U	5.4	C	6	RF
7	L	5.3	C	7,8	RF(3)
8	U	5.3	C	9	RF(2)
9	M	5.4	C	10	RF(2)
10	U	5.5	C	11	RF(2)
11	U	5.5	C	12	RF on exterior
12	U	5.5	C	13	RF
13	L	5.5	V/C	14	RF
14	U	5.6	H	no photo	Rust on beam flange
15	L	5.7	C	15	RF
Sutro Tower				Signature: <i>Kirby J</i>	Page: 1 of 2
San Francisco, CA				File:	Date: 12-28-11

¹ Chord member designation: OU=outer upper, OL=outer lower, IU=inner upper, and IL=inner lower

² Item designation: H=horizontal, V=vertical, D=diagonal, C=connection, O=others

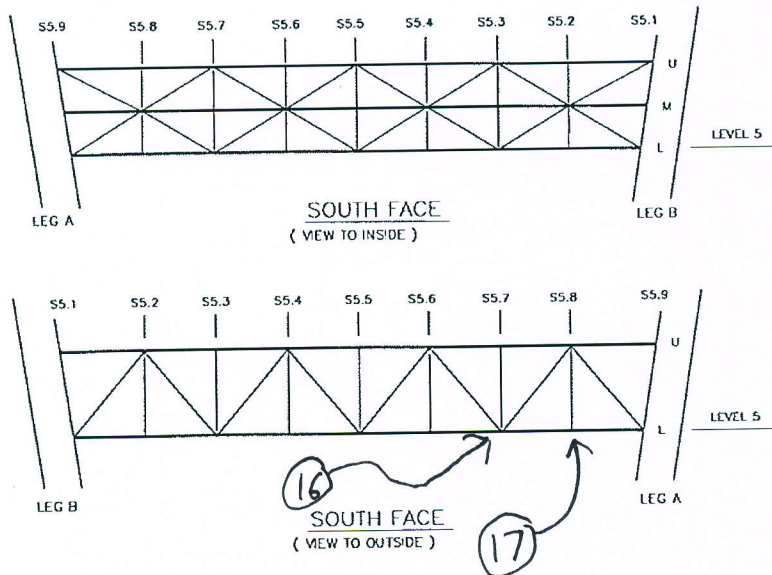


Inspection Data Sheet: South Truss (Level 5)

[illegible]

¹ Chord member designation: OU=outer upper, OL=outer lower, IU=inner upper, and IL=inner lower

² Item designation: H=horizontal, V=vertical, D=diagonal, C=connection, O=others



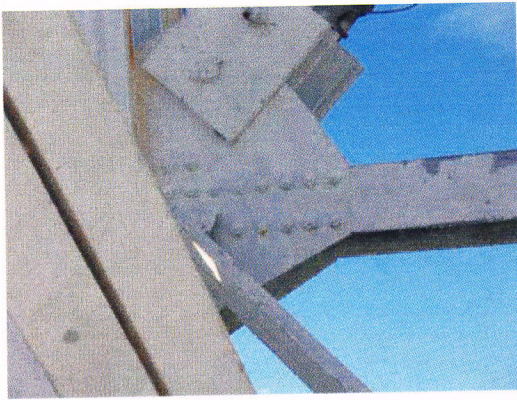


Photo 1 – PC282067
12/28/11



Photo 2 – PC282065
12/28/11

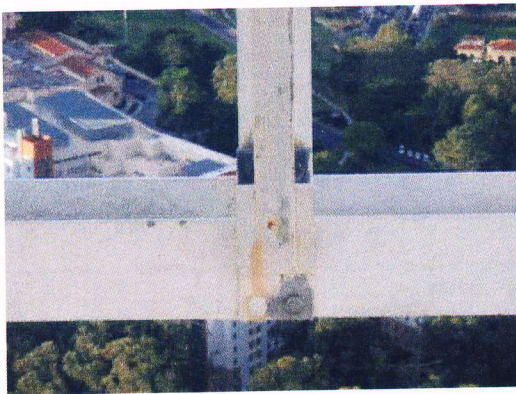


Photo 3 – PC282066
12/28/11



Photo 4 – PC282068
12/28/11

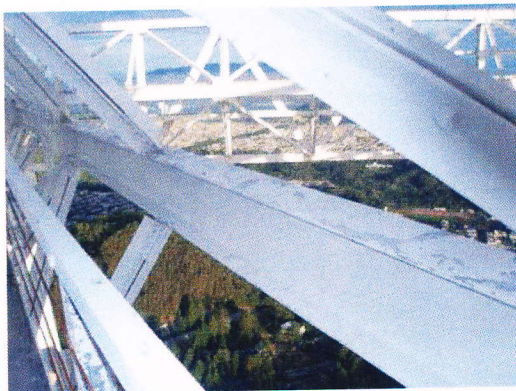


Photo 5 – PC282069
12/28/11



Photo 6 – PC282075
12/28/11



Photo 7 – PC282073
12/28/11



Photo 8 – PC282074
12/28/11



Photo 9 – PC282077
12/28/11



Photo 10 – PC282076
12/28/11



Photo 11 – PC222010
12/22/11



Photo 12 – PC282072
12/28/11



Photo 13 – PC222011
12/22/11

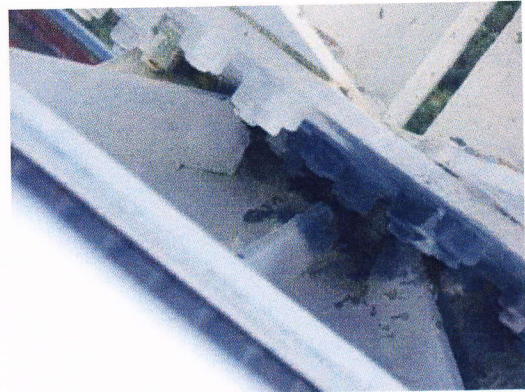


Photo 14 – PC222012
12/22/11

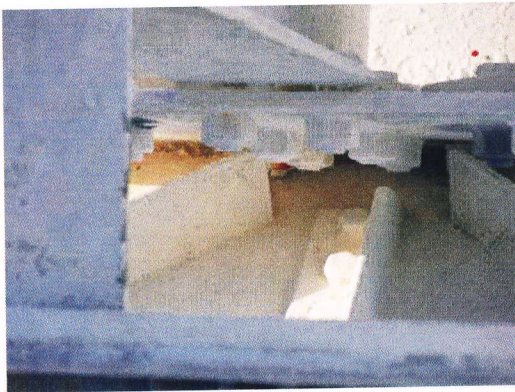


Photo 15 – PC282084
12/28/11

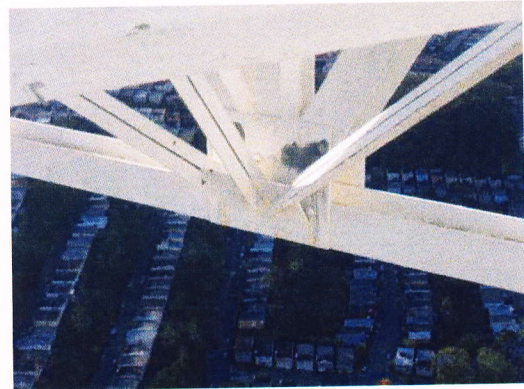


Photo 16 PC282088
12/28/11



Photo 17 – PC282089
12/28/11

Inspection Data Sheet: Leg C (Level 5 to Level 6)

[illegible]

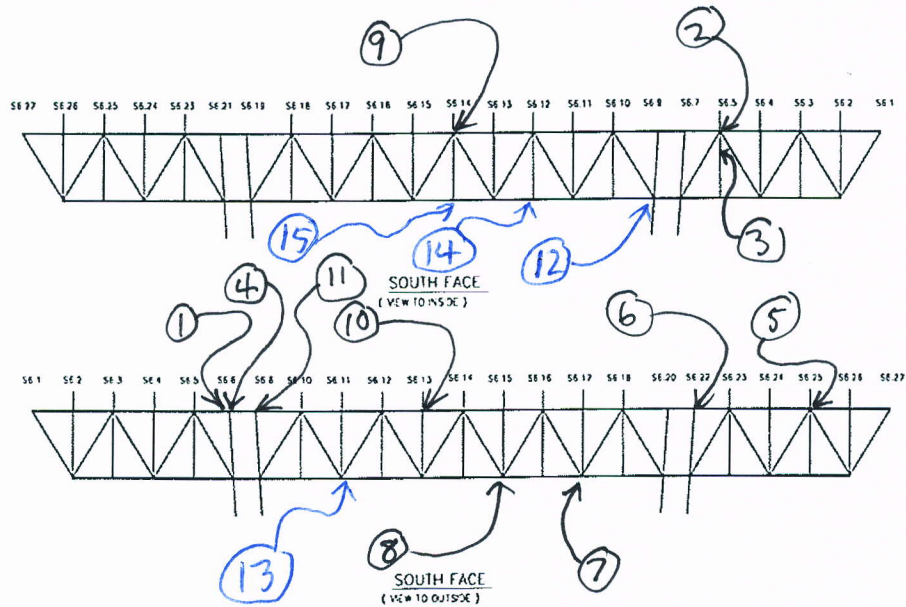
¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others

Inspection Data Sheet: South Truss (Level 6)

Observ. No.	Location / Identification			Photo No.	Inspection Comments
	Chord ¹	Horiz. Location	Item ²		
1	OU	6.6	C	1	RF(2)
2	IU	6.5	V/C	2	RF
3	IU	6.5	V	3	Rust on flange
4	IU	6.6	C	4	RF
5	OU	6.25	HC	5	RF
6	OU	6.22	HC	6	RF(2)
7	OL	6.17	C	7	RF(5)
8	OL	6.15	C	8	RF(7)
9	IU	6.14	D/C	9	RF(3)
10	OU	6.13	V/C	10	RF
11	OU	6.8	H/C	11	RF
12	IL	6.8	H/C	n/a	RF(4) on underside
13	IL/OL	6.11	C	n/a	RF(2) on underside
14	IL	6.12	C	n/a	RF on underside
15	IL	6.14	C	n/a	RF(3) on underside
Sutro Tower				Signature: <i>[Signature]</i>	Page: <u>1</u> of <u>2</u>
San Francisco, CA				File:	Date: <u>12-28-11</u>

¹ Chord member designation: OU = outer upper, OL = outer lower, IU = inner upper, and IL = inner lower

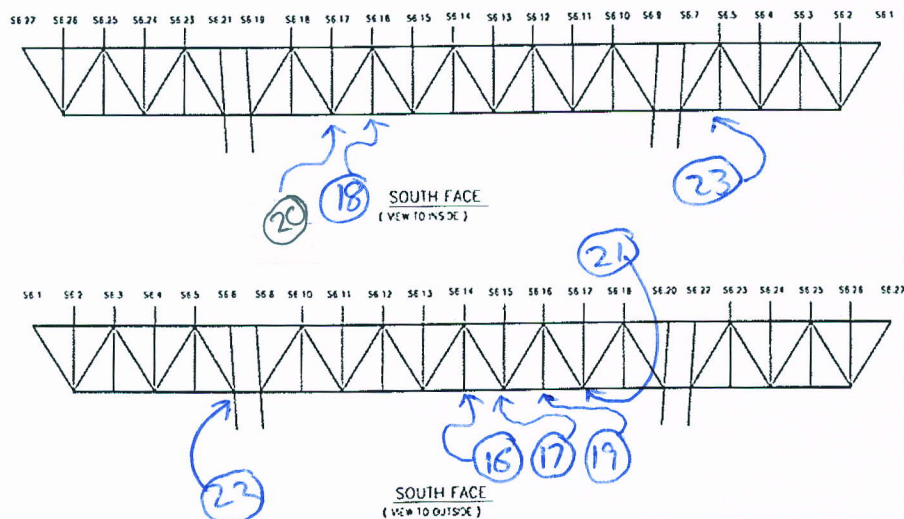
² Item designation: H = horizontal, V = vertical, D = diagonal, C = connection, O = others



Observ. No.	Location / Identification			Photo No.	Inspection Comments
	Chord ¹	Horiz. Location	Item ²		
16	OL	6.14	C	n/a	RF on underside
17	OL	6.15	C	n/a	RF on underside
18	IL	6.16	C	n/a	RF on underside
19	OL	6.16	C	n/a	RF on underside
20	IL	6.17	C	n/a	RF(2) on underside
21	OL	6.17	C	n/a	RF(2) on underside
22	IL	6.6	C	n/a	RF on underside
23	OL	6.5	C	n/a	RF on underside
					Clear photographs of the truss underside were not possible
Sutro Tower				Signature: <i>Richard [Signature]</i>	Page: <u>2</u> of <u>2</u>
San Francisco, CA				File:	Date: <u>12-28-11</u>

¹ Chord member designation: OU = outer upper, OL = outer lower, IU = inner upper, and IL = inner lower

² Item designation: H = horizontal, V = vertical, D = diagonal, C = connection, O = others



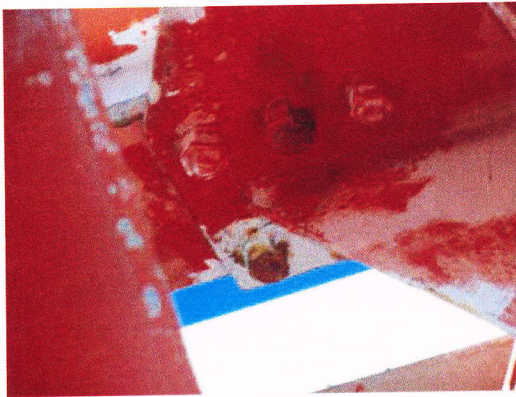


Photo 1 – PC221995
12/22/11

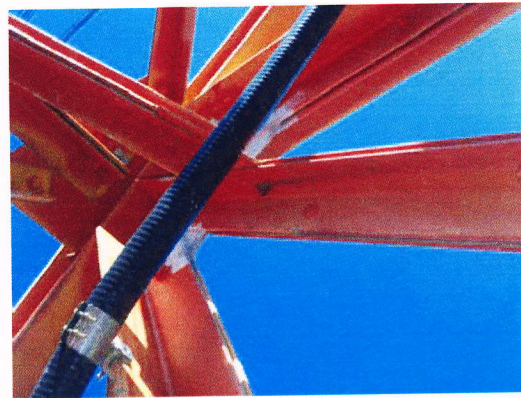


Photo 2 – PC221996
12/22/11



Photo 3 – PC221997
12/22/11



Photo 4 – PC222000
12/22/11



Photo 5 – PC222001
12/22/11

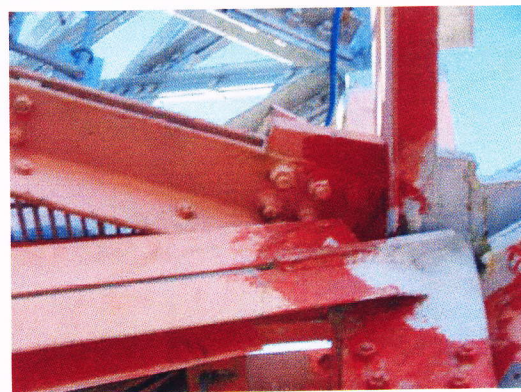


Photo 6 – PC222002
12/22/11

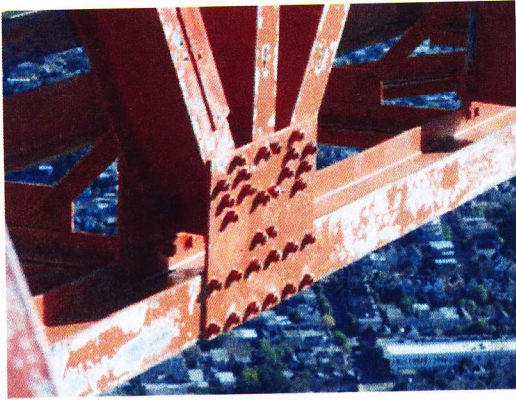


Photo 7 – PC222004
12/22/11

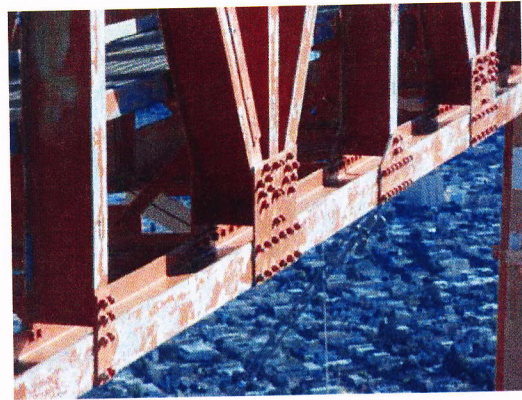


Photo 8 – PC222005
12/22/11

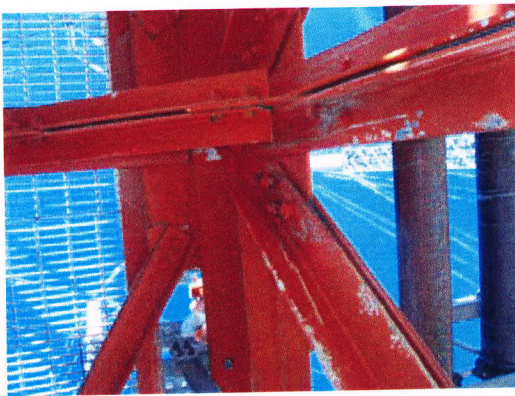


Photo 9 – PC222006
12/22/11



Photo 10 – PC222007
12/22/11

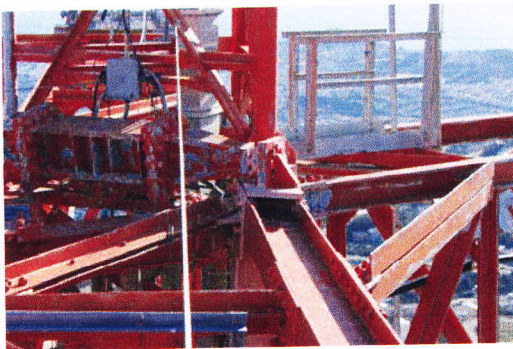


Photo 11 – IMG_0857
12/22/11

Inspection Data Sheet: Antenna Mount Stack "C" (Level 6 to base of antenna)

Observ. No.	Location/Identification			Photo No.	Observation Comments
	Column	Elevation	Item ¹		
1	C1-C2	6.1	D	1	RUSTY WELD
2	C2-C3	6.1	D	2	RUSTY WELD
3	C2	6.1	T	3	RUSTY WELD
4	C1	6.1	T	4	RUSTY WELD
5	C1-C2	6.18	C	5	RUSTY FASTENERS
6	C2	6.14	T	6	RUSTY WELD
7	C1	6.17	T	7	MISSING COATING
8	C2-C3	6.22	D	8	RUSTY FASTENERS
9	C2	6.24	A	9	RUSTY FASTENERS @ CHANNEL
10	C2-C3	6.24	D	10	RUSTY CONNECTION PLATE
11	C3	6.29	A	11	RUSTY APPURTENANCE PLATE
12	C3	6.33	T	12	RUSTY WELD
13	C2	6.31	D	13	RUSTY CONNECTION PLATE
14	C1	6.32	T	14	" " "
15	TOP	6.40	C	15	RUST ON FASTENERS
<p><i>A EXTERIOR FACES HAVE SEVERAL GROUPS OF FASTENERS WITH SEVERAL BOLTS/NUTS RUSTY</i></p>					
Sutro Tower				Signature: <i>R. C. [Signature]</i>	Page: 1 of 2
San Francisco, CA				File:	Date: 1-28-12

15

LEVEL 6.40
LEVEL 6.39
LEVEL 6.38
LEVEL 6.36
LEVEL 6.34
LEVEL 6.32
LEVEL 6.30
LEVEL 6.28
LEVEL 6.26
LEVEL 6.24
LEVEL 6.22
LEVEL 6.20
LEVEL 6.18
LEVEL 6.16
LEVEL 6.14
LEVEL 6.12
LEVEL 6.10
LEVEL 6.8
LEVEL 6.6
LEVEL 6.4
LEVEL 6.2
LEVEL 6.1
LEVEL 6

14'-0"
22'-2 1/8"
30'-0"
15'-0"
15'-8"
29'-0"
30'-0"

DIMENSIONS SHOWN ARE BETWEEN COLUMN SPICES

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

C1 X C2 Y C3 Z C1

ANTENNA MOUNT STACK "C"

¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others, T = TUBE, A = APPURTENANCE

Inspection Data Sheet: Antenna Mount Stack "C" (Level 6 to base of antenna)

[illegible]

¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others

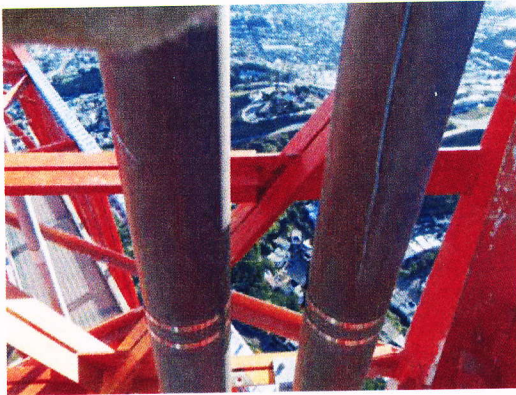


Photo 1
1/28/12



Photo 2
1/28/12



Photo 3
1/28/12

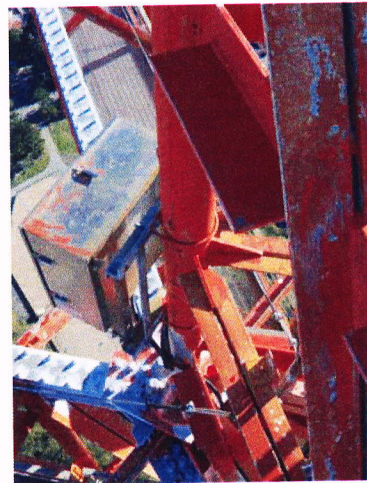


Photo 4
1/28/12



Photo 5
1/28/12



Photo 6
1/28/12

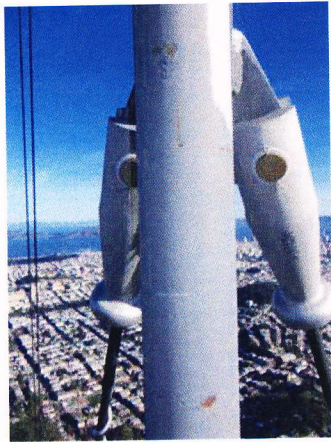


Photo 7
1/28/12



Photo 8
1/28/12



Photo 9
1/28/12

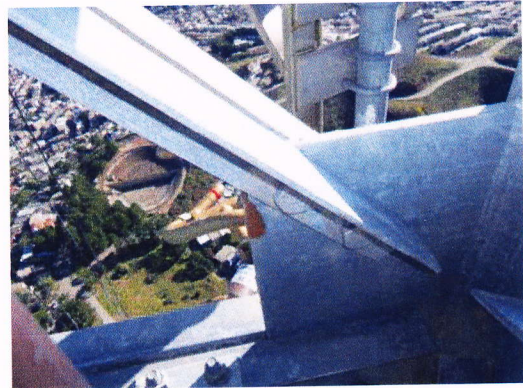


Photo 10
1/28/12



Photo 11
1/28/12



Photo 12
1/28/12

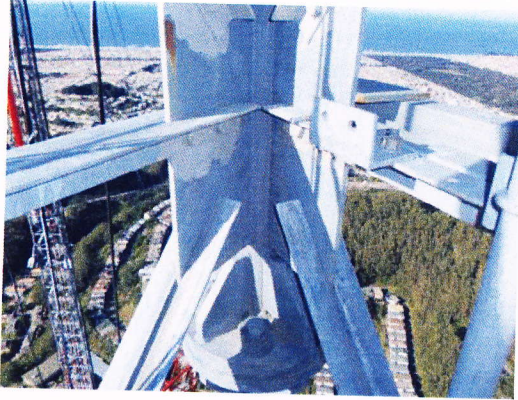


Photo 13
1/28/12



Photo 14
1/28/12

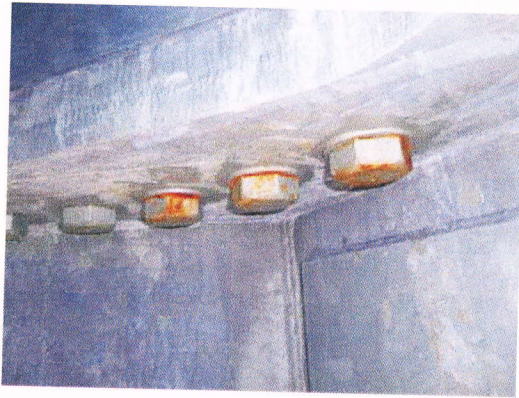


Photo 15
1/28/12

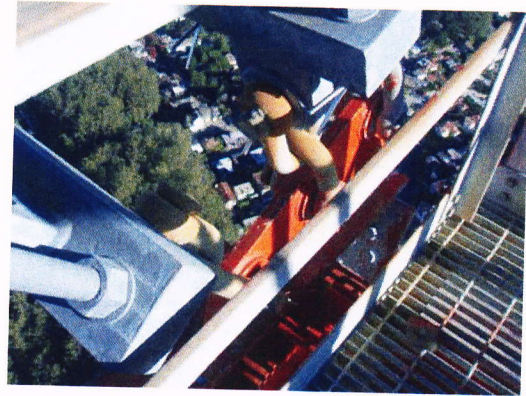


Photo 16
1/28/12

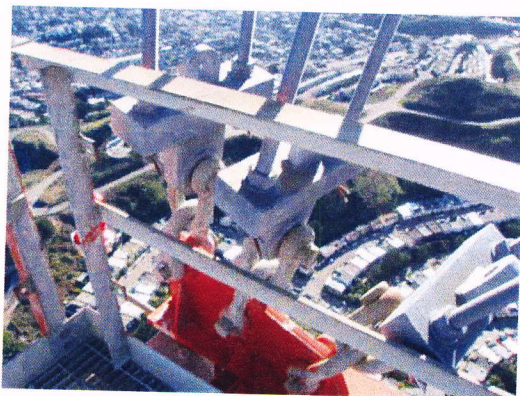


Photo 17
1/28/12



Photo 18
1/28/12



Photo 19
1/28/12

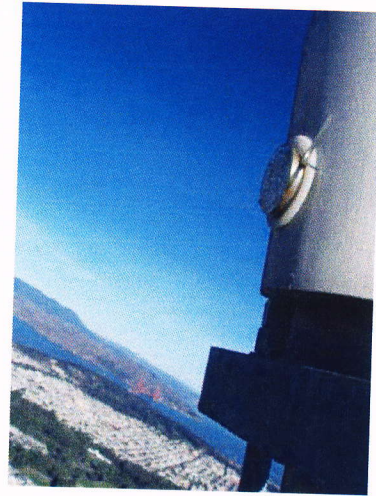


Photo 20
1/28/12