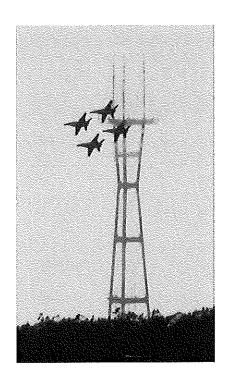


# SUTRO TOWER REPORT ROUTINE INSPECTION OF LEG A AND NORTH FACE SAN FRANCISCO, CA

FOR
SUTRO TOWER, INC



By: CEL Consulting

K. C. Dewell Civil Engineer No. 29110 November, 2009 January 18, 2010

Project No. D50541

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

SUBJ: Sutro Tower – Routine Inspection of Leg A and North Face – November, 2009 San Francisco, CA

Dear Mr. Zastrow:

We have completed our inspection of Leg A, the North Trusses, the Strands and the Base of all legs. The inspection was performed on November 10 and 11, 2009.

#### Purpose

The purpose of the inspection was to check the structural portions of the tower proper (not the attached equipment, etc.) for distress due to corrosion, structural overload and/or other signs of structural 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. A staff engineer (Richard Ng) and an inspector (Chad Hill) performed the inspection. Both had performed inspections on other legs and faces with the undersigned in prior years. They also inspected the strands 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.

#### **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

Sutro Tower Routine Inspection Leg A and North Face January 18, 2010 Page 2 of 2

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 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 rounded at junction of the flats due to corrosion, the fastener should be replaced.
- 3. The skin showed no signs of structural distress.
- 4. The strands did not have any visible distress. They were checked and re-tensioned, if necessary, during upgrade work performed recently.
- 5. The bases of all three legs showed no significant observable distress. Leg B had some rust that should be cleaned off of it and then repainted. The base plate welds will be examined for cracks by the magnetic particle process in the near future.

This concludes our report of the routine inspection of Leg A and the North Face of Sutro Tower. If you have any questions please contact the undersigned.

Sincerely,

**CEL Consulting** 

K. C. Dewell, Sonior Engineer

Civil Engineer No. 29110

Cc: Ron Hamburger



### Inspection Summary - Year 2009

#### Description of Inspection:

- Routine inspection of Leg A
- Routine inspection of horizontal levels on North face
- Routine inspection of strands on all faces
- Routine inspection of strand anchors on all legs
- Routine inspection of base all legs

Special or In-Depth Inspection
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- Load test of all diagonal strands
- · Test welds at base of all legs

Diagonal strands retensioned during upgrade work on tower

#### Summary of Results:

Summary of Recommendations:

Clean and Paint

#### Checklist:

- Has a severe event occurred since the previous inspection? Yes (
- Have action items and recommendations from previous inspections been addressed in the scope of work?
- Has the inspection log for future years been revised to account for scope of work and findings of this inspection?

  Yes

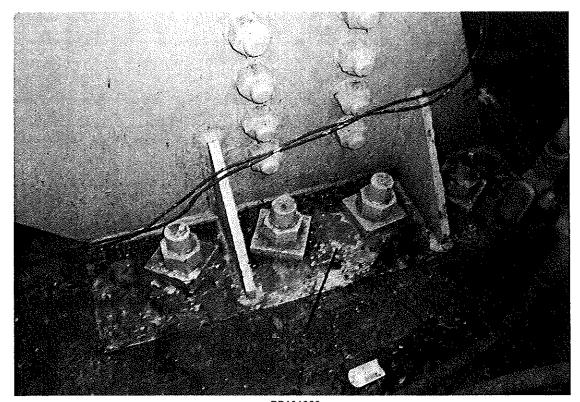
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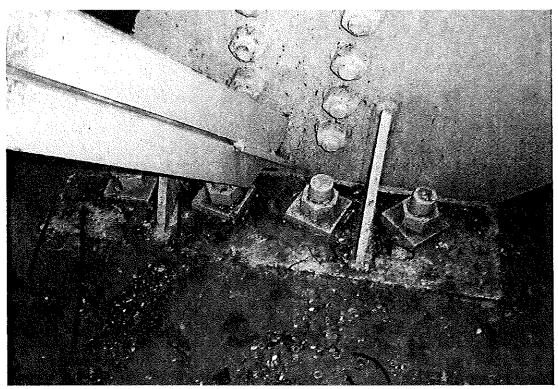
## Inspection Data Sheet: Miscellaneous Tower Items

Observ. No.	Location / Identification <sup>1</sup>	Photo No.	Inspection Comments
	B, Bose	1,2_	Leg B - Bace plates for B2 and B3 hove cust
			B3 hove rust
			La. A and C - Bases show no
			Leg A and C - Bayes show no
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	Sutro Tower	Signature	. Page: of
Sa	n Francisco, CA	File:	Date:

<sup>&</sup>lt;sup>1</sup> Miscellaneous items for the entire tower in addition to those contained in the column leg and truss forms.



PB101369 11/10/09

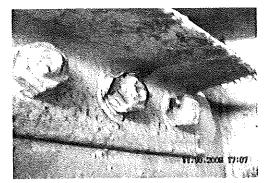


PB101370 11/10/2009

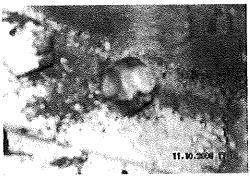
Inspection Data Sheet: Leg A (Level 1 to Level 2)

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	Observation Comments	RF(2)	X	RF(2) @ Darble Mate	RF (no picture available)	RF (no picture available)	RF(2)	RF(3) @ Danbler Plate.	スプ	RF(2)	RF (3) @ Doubler Plate ine picture								Page:of	0.545.	Date:
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	Observ. No.		. (1	7	-5-	15	9	-	CX	0											

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



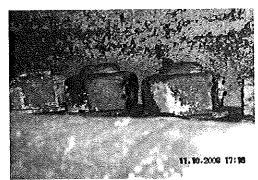
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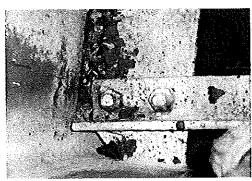
DSCN3518 11/10/2009



DSCN3519 11/10/2009



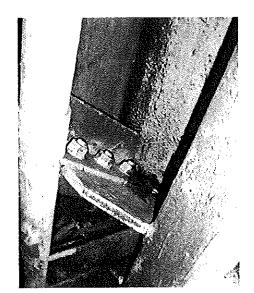
DSCN3520 11/10/2009



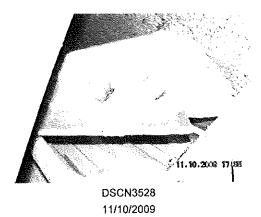
PB101431 11/10/2009



DSCN3527 11/10/2009



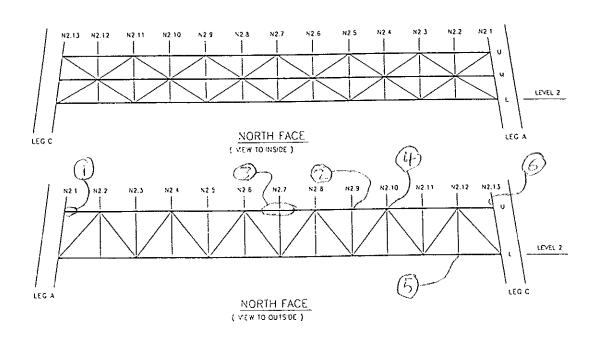
PB101433 11/10/2009

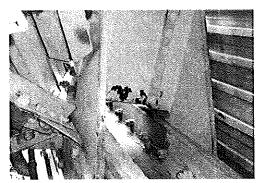


## Inspection Data Sheet: North Truss (Level 2)

	Locatio	n / Identificat	on	Shalo	
Observ. No.	Chord <sup>1</sup>	Horlz. Location	Item <sup>2</sup>	Photo No.	Inspection Comments
1	U	7.1	H	j	RF(3), Pueling Paint/Rust on Chard
-2	U	2.9	$\mathcal{C}$	2	RF
3	U	2.6-2.8	H	3	Rust on Beam Flange
4	U	2.10	C.	4-	RF(3)
5	L	2.12	C	5	RF(3)
6	U	2.13	<u></u>	6	RF
-					
	Sutro	Tower	.1	Signature	: Page: of
_	San Fran	cisco, CA		File:	Date:

 $<sup>^1</sup>$  Chord member designation: U = upper, M = middle, and L = lower  $^2$  Item designation: H = horizontal, V = vertical, D = diagonal, C = connection, and O = others

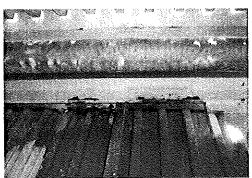




PB101404 11/10/2009



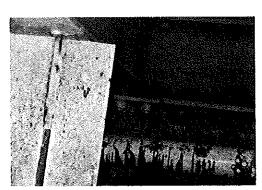
PB101406 11/10/2009



PB101408 11/10/2009



PB101409 11/10/2009



PB101410 11/10/2009

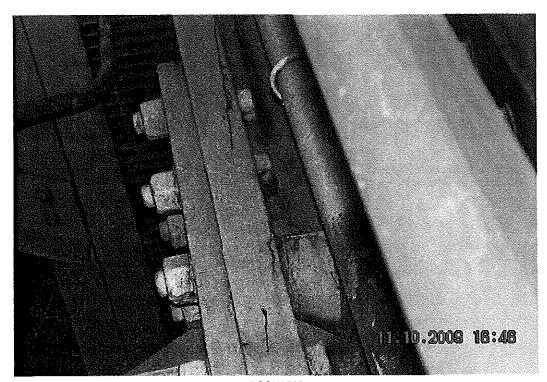


PB101411 11/10/2009

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

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	Photo No.	±:0±.0		d													Signature:	8	File:
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	Location / identification	ţc	2.37	ું તું													_	Sutro lower	San Francisco, CA
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¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others



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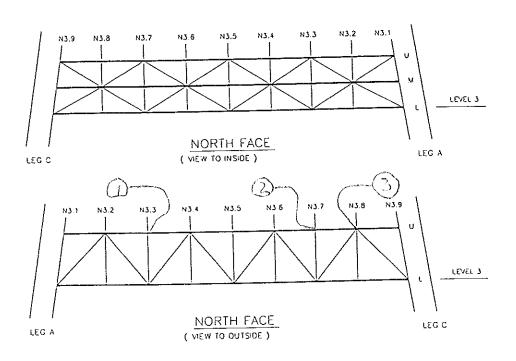


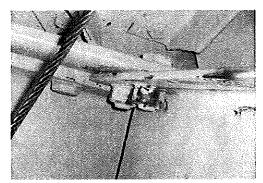
DSCN3511 11/10/2009

## Inspection Data Sheet: North Truss (Level 3)

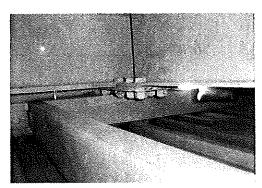
	Locatio	n / Identificat	lon	Photo		Increation Comments	e	
Observ. No.	Chord <sup>1</sup>	Horiz. Location	Item <sup>2</sup>	No.		Inspection Comments		
1	V	3.3	C		RF(2)			
·2.	U	3.7	<u>C.</u>	2,3	RF(2)			
-3	U	3.8	C_	4_	RF		<del>.</del>	
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<sup>&</sup>lt;sup>1</sup> Chord member designation: U = upper, M = middle, and L = lower<sup>2</sup> Item designation: H = horizontal, V = vertical, D = diagonal, C = connection, and O = others

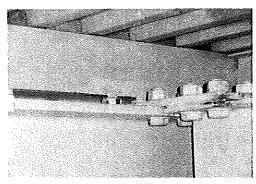




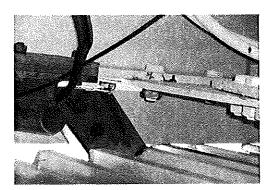
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PB101412 11/10/2009



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PB101415 11/10/2009

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

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Observation Comments		RF(3), Rust on Lennector Plate/Weld														Page:of	Date:
Photo	No.	e count														Signature:	File:
	Item <sup>1</sup>	.T														_	4
Location / Identification	Elevation	古で						-								Sutro Tower	San Francisco, CA
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ltem designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others

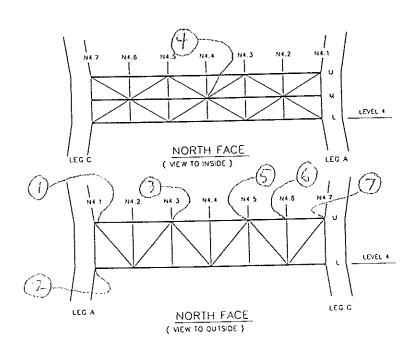


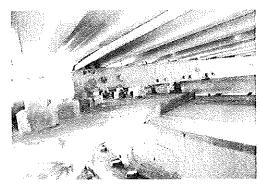
DSCN3506 11/10/2009

## Inspection Data Sheet: North Truss (Level 4)

	Locatio	n / identificat	lon	Photo	Inspection Comments
Observ. No.	Chord	Horiz Location	Item <sup>2</sup>	No.	
	U	4-,1	(		PF(2-)
٠,٢	L	4.1	C	2.	RF
3	U	4.3	<u></u>	3	RF(3)
4	7	4.4	C	4	Rust on Gasset Plates/Weld
τ,	Ù	4.5	<u></u>	5	RF
6	U	4.6	C	6	RF
7	U	4.7	<i>C.</i> -	7,8	RF(6)
	Sutro	Tower		Signature	Page: of
	San Fran	cisco, CA	l	File:	Date:

 $<sup>^1</sup>$  Chord member designation: U = upper, M = middle, and L = lower  $^2$  Item designation: H = horizontal, V = vertical, D = diagonal, C = connection, and O = others





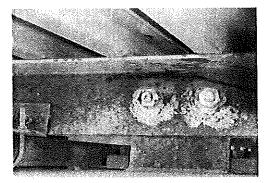
PB101395 11/10/2009



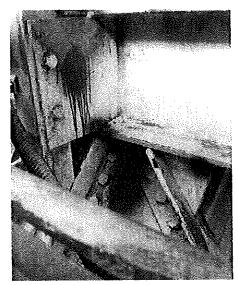
PB101397 11/10/2009



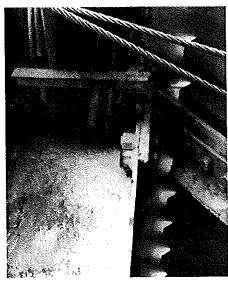
PB101399 11/10/2009



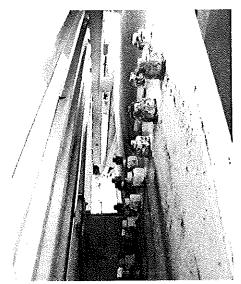
PB101396 11/10/2009



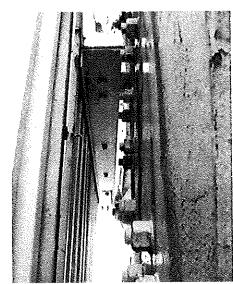
PB101398 11/10/2009



PB101400 11/10/2009



PB101401 11/10/2009

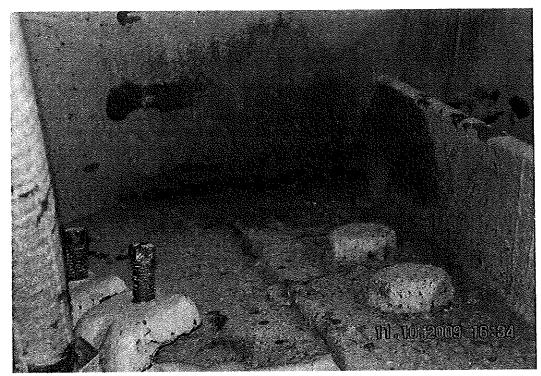


PB101402 11/10/2009

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

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Observation Comments		Rusty Weld												Page:of	Date:	
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tion	ltem1	(1)														
Location / Identification	Elevation	4.17												Tower	sisco, CA	
Location	Column	A2_												Sutro Tower	San Francisco, CA	
Observ.	No.															

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

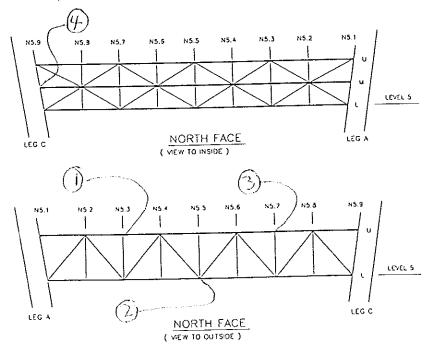


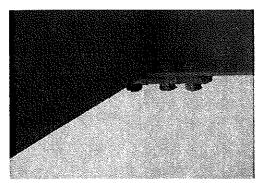
DSCN3503 11/10/2009

## Inspection Data Sheet: North Truss (Level 5)

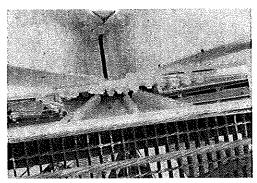
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Observ. No.	Chord <sup>1</sup>	Horiz. Location	Item <sup>2</sup>	Photo No.	Inspection Comments
	リ	5.3	<u></u>		RF
7_	l.	5.5	C	2,3	R.F.
7,	V	5.7	(	4	RF(2)
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 $<sup>^1</sup>$  Chord member designation: U = upper, M = middle, and L = lower  $^2$  Item designation: H = horizontal, V = vertical, D = diagonal, C = connection, and O = others

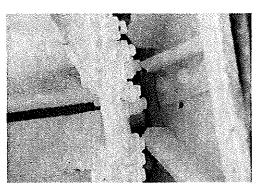




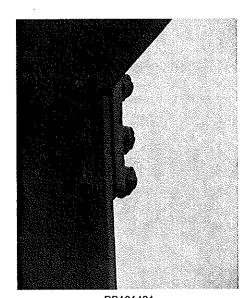
PB101419 11/10/2009



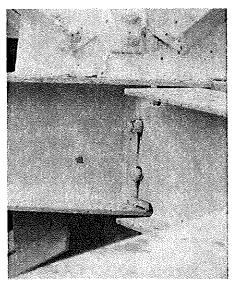
PB101418 11/10/2009



PB101420 11/10/2009



PB101421 11/10/2009

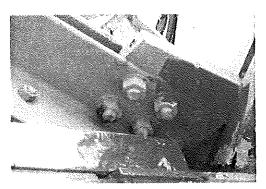


PB101425 11/10/2009

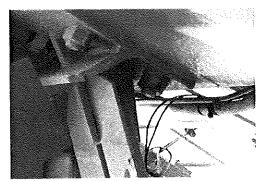
Inspection Data Sheet: Leg A (Level 5 to Level 6)

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	Observation Comments															Page: of	Date:
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Location / Identification	Elevation	(1)	_		0.9	5.3										Sutro Tower	sisco, CA
Location	Column	7	A 2.	100		10										Sutro	San Francisco, CA
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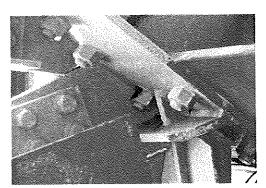
ltem designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others



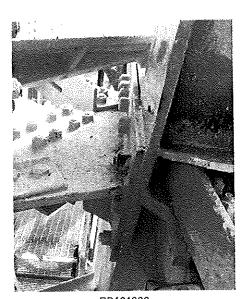
PB101377 11/10/2009



PB101379 11/10/2009



PB101380 11/10/2009



PB101386 11/10/2009



DSCN3498 11/10/2009

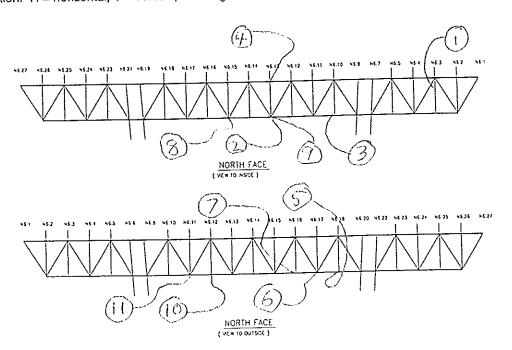


DSCN3500 11/10/2009

## Inspection Data Sheet: North Truss (Level 6)

Observ. No.	Location / Identification			Photo	Learnition Comments
	Chord <sup>1</sup>	Horiz. Location	ltem <sup>2</sup>	No.	Inspection Comments
	οU	6.3	V	i	RF
2_	OL.	6.13	C	7_	RF(6)
-2	OL	6,10	<u></u>		RF
4-	OU	6.13	C.	4	RF
5	11_	6.18		5	RF
6_	1	6.17	(	5.6	<u>RF</u>
7	11_	6.16	<u>C</u>	7	RF(3)
8	01_	6,15	<u></u>	7_	RF
9	OL	6.13	C	18,9	RF(2)
10	11_	6.12	C	10	RF
	14	6.11	(	10,11	RF(2)
Sutro Tower				Signature	Page: of
San Francisco, CA				File:	Date:

<sup>&</sup>lt;sup>1</sup> Chord member designation: OU = outer upper, OL = outer lower, IU = inner upper, and IL = inner lower <sup>2</sup> Item designation: H = horizontal, V = vertical, D = diagonal, C = connection, O = others

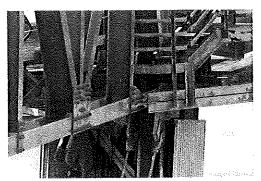




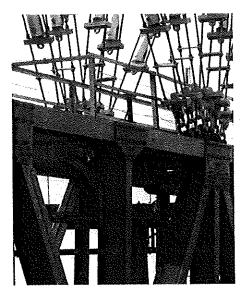
PB101385 11/10/2009



PB101391 11/10/2009



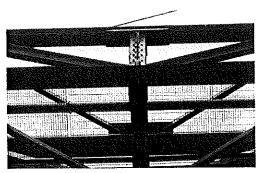
BP101392 11/10/2009



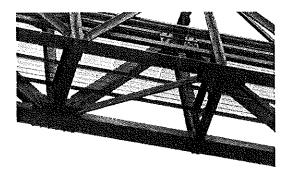
PB101393 11/10/2009



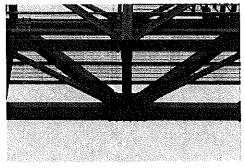
PB101434 11/11/2009



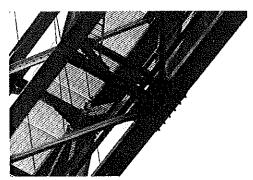
PB101440 11/11/2009



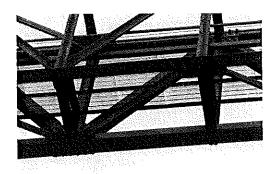
PB101435 11/11/2009



PB101438 11/11/2009



PB101441 11/11/2009



PB101437 11/11/2009



PB101442 11/11/2009