# **DESIMONE**

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February 25, 2009

City and County of San Francisco 1660 Mission Street, 2nd Floor San Francisco, CA 94103 DeSimone Project # 40698 301 Mission - Structural Design Services

Attn:

Roymond Lui

Re:

301 Mission Settlement

Mr. Lui:

The following is offered in response to your letter dated February 2, 2009 regarding settlement of Millennium Tower at 301 Mission Street.

- The original project design by DeSimone and Handel Architects accommodated 6 inches of total settlement under the Tower. The adjacent podium and 12-story Mid-rise building are completely separated structurally from the Tower, and are not expected to settle at all. In fact, part of the podium and Mid-rise is actually fled down to prevent upward movement due to the net upward pressure supplied by groundwater.
- 2. See attached letter from Treadwell & Rollo dated February 18, 2009.
- All columns and shear walls comprising the Tower structure are supported on a single, continuous pile cap. No differential settlements between adjacent walls/columns are expected and none have been reported to DeSimone. See also the attached letter from Treadwell & Rollo dated February 18, 2009.
- 4. See attached letter from Treadwell & Rollo dated February 18, 2009.
- See attached letter from Treadwell & Rollo dated February 18, 2009.
- 6. See attached letter from Treadwell & Rollo dated February 18, 2009.
- 7. Since settlement of the Tower was anticipated and planned for during design, it has created no known problems for the Tower or Mid-rise structures. The only connections between the Tower and Mid-rise structures are at "hinge slabs", which were detailed to allow settlement of the Tower to occur relative to the Mid-rise. These slabs could accommodate at least an additional 6" of settlement with no detrimental structural impact. DeSimone has not observed, and has not been Informed, of any cracks in walls or any other negative structural impact from the Tower settlement. It is our professional opinion that the structures are safe.
- 8. See attached letter from Handel Architects dated February 18, 2009.

DESIMONE CONSULTING ENGINEERS

Derrick D. Roorda, SE, LEED AP Senlor Associate Principal

Cc: Stev

Steve Hood, Millennium Partners Glenn Rescalvo, Handel Architects Ramin Golesorkhi, Treadwell & Rollo

18 February 2009 Project 3157.04

Mr. Derrick Roorda, SE **DeSimone Consulting Engineers** 160 Sansome Street, 16<sup>th</sup> Floor San Francisco, California 94111

Subject:

Response to DBI Letter

Settlements at 301 Mission Street

San Francisco, California

Dear Mr. Roorda:

This letter presents our responses to a letter by San Francisco Department of Building Inspection dated 2 February 2009 regarding settlements at 301 Mission Street. Specifically, our responses to questions two through six in the referenced letter are presented below:

Question 2:

What are the actual settlements now? What is the rate of settlements? Are the

settlements still continuing? What the expected final total settlement of each building?

Response 2:

The actual settlement of the Tower is 8.3 inches. This is based on the latest survey of the benchmark on the core wall which was read on 12 February 2009. The rate of settlement from the latest survey reading is 0.003 inches/day. A plot of the settlement is attached. The results of our latest-evaluations indicate that approximately two to four inches of additional settlement could occur in the future. We do not anticipate

settlement for the Podium/Mid-Rise structure.

Question 3:

Are there any differential settlements within the high-rise building?

Response 3:

We are not aware of any differential settlement issues within the high-rise Tower.

Ouestion 4:

Are the actual total and differential settlements being monitored now?

Response 4:

Currently the benchmark on the core wall is being monitored.

Question 5:

What are the reasons for the larger than expected settlements?

Response 5:

The larger than anticipated settlement can be attributed to several possible factors including extensive and longer than expected dewatering during the construction of Podium/Mid-Rise structure and limited effectiveness of predrilling during the installation

of pile foundations for the Tower.

Question 6:

Has the geotechnical engineer of record been alerted to the settlement and what is their course of action?

Response 6:

Treadwell & Rollo, Inc. as the geotechnical engineer of record has been aware of the settlement of the Tower and continues to evaluate the results of the monitoring by Martin M. Ron Associates, Inc. While the settlement of the Tower is greater than originally anticipated, this settlement should not pose issues with foundation support for the Tower.

### Treadwell Rollo

Mr. Derrick Roorda, SE DeSimone Consulting Engineers 18 February 2009 Page 2

We trust this letter provides the responses requested. If you have any questions, please call.

Sincerely yours,

TREADWELL & ROLLO, INC.

Ramin Golesofkhi, G.E.

Principal

31570417.RG

Attachment: Settlement Plot

cc: Mr. Steven Hood (Millennium Partners)

## Treadwell & Rollo

Project No. 3157.04 301 Mission TOWER Settlement

					days		Total	Total
	date		Movement between readings		between readings	inches per day	Elapsed Time (days)	Settlement (inches)
Туре		£i						
		(feet)	(feet)	inches				
Weboor reading	9/20/2006	7.829	**************************************	***************************************		0.000	0	
MR reading	1/22/2007	7.779	0.050	0,602	124	0.005	124	0.60
MR reading	3/7/2007	7.744	0.035	0,420	44	0.010	168	1,02
MR reading	4/18/2007	7.715	0.029	0.348	42	0.008	210	1.37
ViFI reading	6/5/2007	7.673	0.042	0.504	48	0.011	258	1.87
MPi reading	6/28/2007	7.653	0.020	0,240	23	0.010	281	2,11
VIR reading	8/3/2007	7.607	0.046	0.552	36	0,015	317	2.66
VIPI reading	8/28/2007	7.58	0.027	0.324	25	0.013	342	2,89
VIP reading	9/17/2007	7.557	0.023	0.276	20	0,014	362	3.26
VIR reading	10/14/2007	7.511	0.046	0.552	27	9.020	389	3.81
VIR reading	11/7/2007	7.478	0.033	0.398_	24	0.017	413	4.21
VIR reading	12/11/2007	7.425	0.053	0.636	34	0.019	447	4.85
VIR reading	1/10/2008	7.377	0,049	0.676	30	0.019	477	5.42
VIR reading	1/31/2008	7,338	0.039	0.468	21	0.022	498	5.89
#A reading	3/25/2008	7.292	0.046	0.552	54	0.010	652	5.44
VIR reading	5/1/2008	7.261	0.031	0.372	<i>\$</i> 7	0.010	589	6.81
VIR reading	7/1/2008	7.231	0.030	0.360	61	0.006	650	7.17
VIP reading	10/14/2008	7.177	0.054	0.648	105	0.006	755	7.82
dH reading	11/14/2008	7.169	0.008	0.096	31	0.003	786	7.92
VIA reading	12/19/2008	7.151	0.018	0.216	35	0.006	821	8.13
4R reading	2/12/2009	7.136	0.015	0.180	55	8,003	875	8.31
		0.693						

6/17/2006 Tower Mat Pour

9/13/2006 street level poured (core up ~3 levels)

1/22/2007 Decks to L9, care to L13

3/7/2007 Decka to L13, core to L18

4/18/2007 Decks to L18, core to L22 2/7/2008 Dewatering wells shut-off

tower settlement 7.7 Elavation of Point (SFCD) 7.4 7.3 7.2 10/10/2006 1/18/2007 4/28/2007 3/0/2/007 11/14/2007 2/22/2996 6/1/2008 8/2/2008 12/18/2008 3/28/2009 Date

#### HANDEL ARCHITECTS LLP

Gary E. Handel AlA Glenn Rescalvo AlA D.B. Middleton AlA Frank Fusaro AlA Michael Arad AlA

February 18, 2009

Derrick Roorda, SE DeSimone Consulting Engineers 160 Sansome Street, 16th Floor San Francisco, CA 94104

RE: 301 Mission Street, Settlement Issues

Dear Derrick,

Handel Architects, in conjunction with DeSimone Consulting Engineers, has designed 301 Mission for the settlement anticipated in the original Geotechnical Report prepared by Treadwell & Rollo. In addition, we are aware that additional settlement has occurred, and may continue to occur, and we have taken these conditions into account with modifications to the original design where necessary:

- Utility lines have been designed and installed with flexible connections (allowing for horizontal and vertical movement) wherever they cross the expansion joint between the buildings and at service entry points in the tower.
- Hinge slabs between the two buildings, which were originally designed for settlement that would not result in slopes exceeding requirements where handrails would have been required, have now been equipped with handrails which can be adjusted in the future if required.
- Utilities under portions of the tower but above ceilings and walls supported from the Mid-Rise have been routed to avoid possible interference from future anticipated settlement.
- Expansion joint covers at walls, ceilings and floors have been designed to accommodate settlement and seismic movement. Where the current additional or anticipated future settlement has affected waterproofing design at settlement joints, we have worked with the installer to modify the joint design to accommodate the anticipated future settlement up to 4" and continue to function as originally intended.
- Interior floor surfaces adjoining exterior walkways on the north and west of the tower have been raised where possible to allow for increased sidewalk slope away from entry and exit doors in case future settlement might decrease or negate the current slope. Where interior floor levels could not be raised, new trench drains have been installed outside the entry doors in case settlement causes a reversal of sidewalk water flow. The porte cochere driveway elevations were redesigned, taking into account the current settlement and relationship to existing street and sidewalk elevations, so that the main entries, stairs and elevator sills could remain at their original floor elevations relative to floors above, even though they are now lower than originally predicted.

Sincerely yours,

Gerald W. Sams, AIA Handel Architects, LLP

cc: Glenn Rescalvo Steve Hood

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