To all who live in, work in, and visit San Francisco

Investigate

[redacted]

The contents of this report are the sole work product of Mr. Carl Chan. Persons named in this report have no prior knowledge of its preparation. If you have any questions, comments, or suggestions, please contact Carl.Chan@isfdbi.org.

301 MISSION STREET SUPPLEMENT III

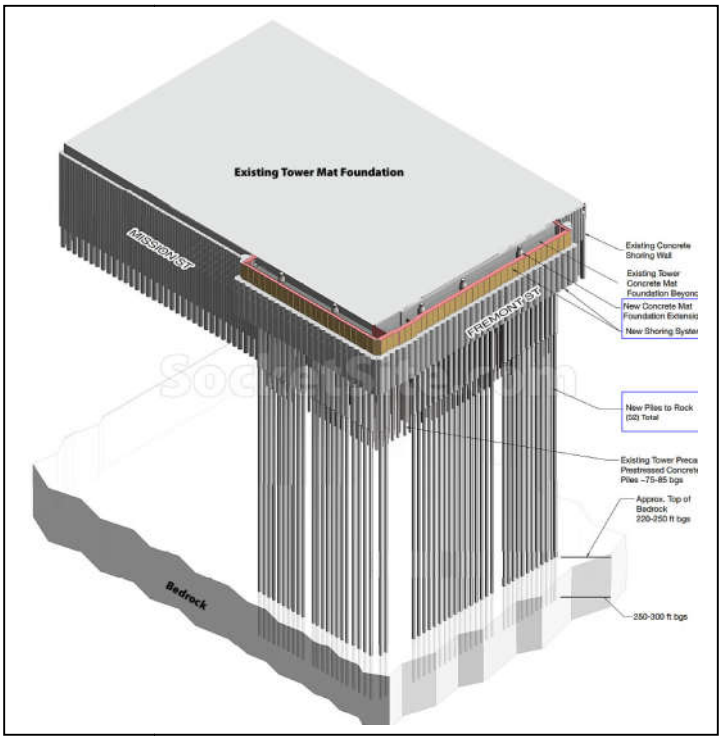


Image dated November 21, 2019; downloaded from www.socketsite.com.

Please note that additional comments that are annotated on the figures in this series of reports consist of underlining in red, text highlighted in yellow, and yellow text boxes.

REGISTERED PROFESSIONAL ENGINEER
CARL C. CHAN
No. 2900
STRUCTURAL
STATE OF CALIFORNIA

2-4-2021

Introduction

This report is the 19th in a series of engineering investigative reports on the conduct of the San Francisco Department of Building Inspection (DBI).

Even though the 18 earlier and the current engineering investigative reports include 1,417 pages, only one page of structural calculations was performed. See page 488 of the report titled "Conduct of SAC, DBI, and BIC-August 7, 2019" for the structural calculations that correct the failure analysis that the engineer of record had performed to determine the cause of the 125 Crown Terrace building collapse.

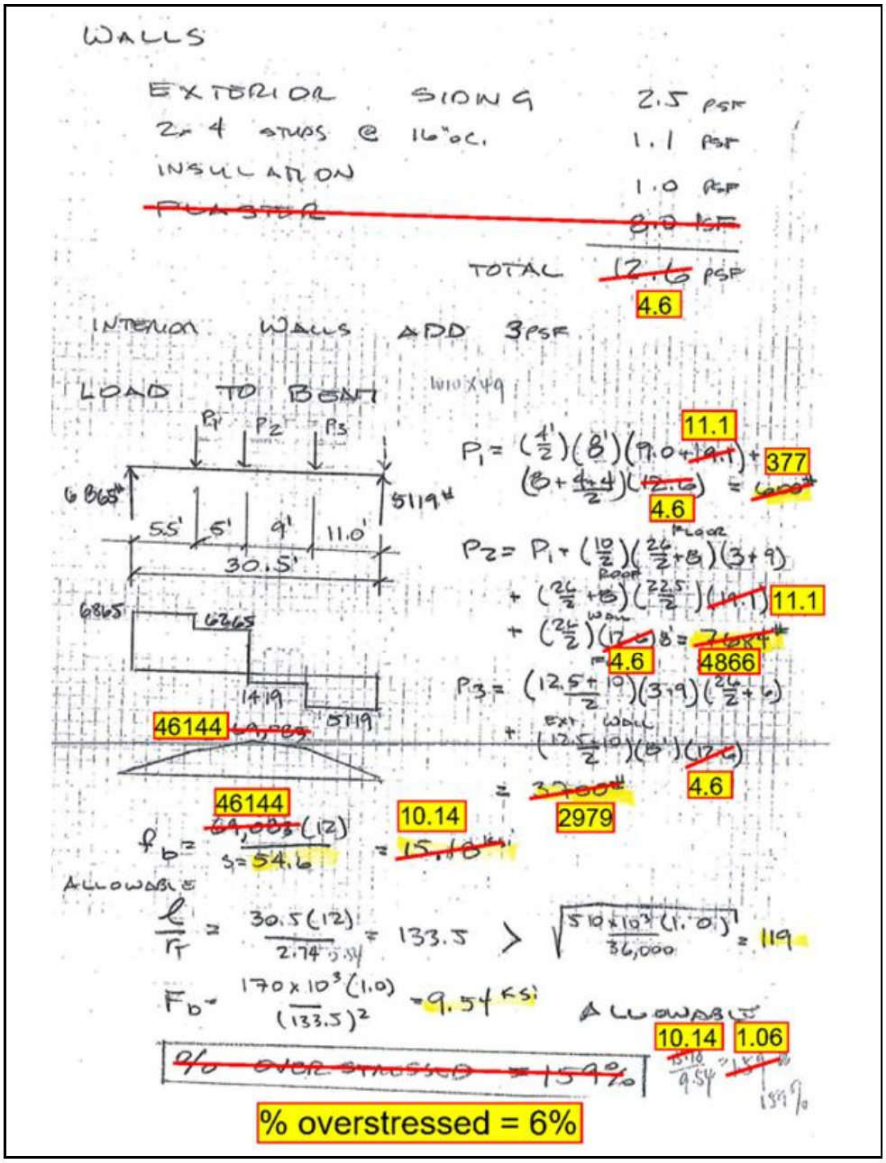


Figure 637: Calculations adjusted for lack of plaster finish; extract from page 92 of the I&M Report, with annotations by Carl C. Chan.

Executive Summary

The second of three building permit applications that have been submitted to fix the sinking and tilting Millennium Tower was issued on January 15, 2021. The permit allows the construction of a temporary shoring system to provide lateral support for Fremont and Mission Streets during excavation and to create access to implement the Millennium Tower fix at the base of its foundation wall.

As of July 2017, the two sides of the Millennium Tower that are being excavated had tilted 14 inches to the west, Fremont Street, and 6 inches to the north, Mission Street.

Can the approved temporary shoring system that is designed to laterally support Fremont and Mission Streets during excavation prevent further tilting of the Millennium Tower?

If the assessment in the two earlier investigative reports, titled "301 Mission Street Supplement" and "Transbay Transit Center Temporary Shoring of 301 Mission Street," is valid, other than the subsurface conditions and the weight of the concrete Millennium Tower, the earlier excavation of the Millennium Tower Garage and Transbay Transit Center sites contributed to the unexpected magnitude of the sinking and tilting of the Millennium Tower.

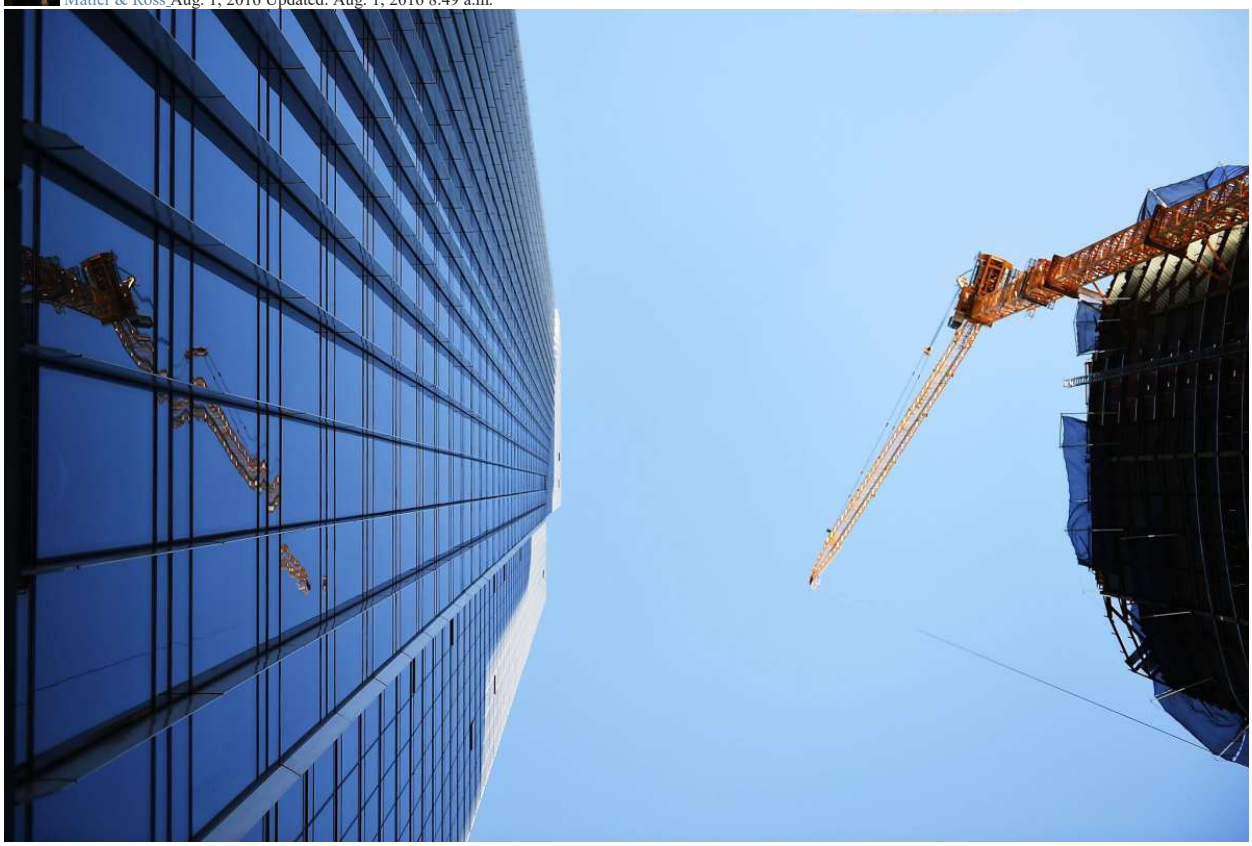
The approved temporary shoring system will be the third temporary shoring system constructed to provide lateral support for excavation adjacent to the Millennium Tower.

Borrowing from baseball and habitual-offender laws as analogies, will the third excavation that has been approved for the voluntary seismic upgrade and foundation stabilization of the Millennium Tower mimic the expression "three strikes, and you're out"?

The news media reported the sinking and tilting of the Millennium Tower as early as August 1, 2016.

SF's landmark tower for rich and famous is sinking and tilting

Matier & Ross Aug. 1, 2016 Updated: Aug. 1, 2016 8:49 a.m.



Millennium Tower on Friday, July 29, 2016 in San Francisco, California. The tower is currently facing structural issues causing a lean

.Photo: Michael Noble Jr., The Chronicle

The Millennium Tower, a leading symbol of San Francisco's new high-rise and high-end living, is sinking — setting the stage for what could be one of the most contentious and costly real estate legal battles the city has ever seen…….

While there have been reports of cracks appearing in the Millennium's underground garage, there's no word of residents complaining about damage to their condos. Instead, the shifting and sinking of the concrete platform beneath the building has necessitated what Johnston called "minor repairs to sidewalks and connections at the ground level."

Figure 1:* San Francisco Chronicle *reported the sinking and tilting of the Millennium Tower on August 1, 2016.

The news media had documented damage to the Millennium Tower's concrete sidewalks as early as August 1, 2016.

Figure 2: Downloaded from www.sanfrancisco.cbslocal.com, dated August 1, 2016.

Figure 3: Downloaded from www.nbcbayarea.com, dated September 20, 2016.

Figure 4: Downloaded from www.sfcitizen.com, dated August 10, 2016.

Figure 5: Downloaded from www.reddit.com, dated September 13, 2016.

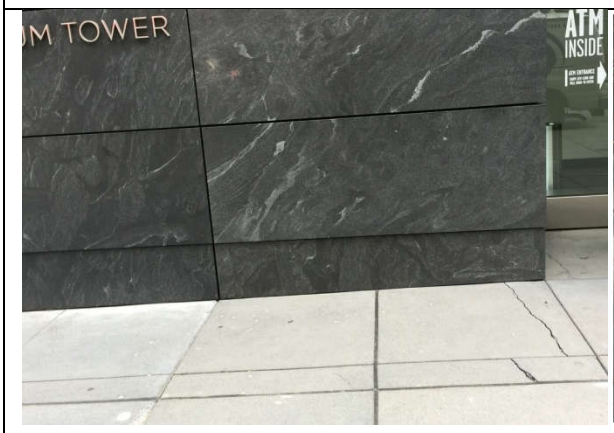


Figure 6: Downloaded from www.owengoodenkauf.com, dated April 30, 2017.

Figure 7: Downloaded from www.nytsyn.com, dated September 22, 2016.

A complaint was filed with DBI on August 16, 2016.

COMPLAINT DATA SHEET

Complaint Number:	**201632051**		
Owner/Agent:	OWNER DATA SUPPRESSED	Date Filed:	
Owner's Phone:	--	Location:	301 MISSION ST
Contact Name:		Block:	3719
Contact Phone:	--	Lot:	020
Complainant:	COMPLAINANT DATA SUPPRESSED	Site:	
		Rating:	
		Occupancy Code:	
		Received By:	Czarina Blackshear
Complainant's Phone:		Division:	BID
Complaint Source:	311 INTERNET REFERRAL		
Assigned to Division:	BID		
Description:	301 Mission ST --- We are concerned about the sidewalk defects, water lines, gas lines, electrical lines, sewer lines and the overall safety of the residents and public safety do to the Millennium Tower sinking of 16" plus inches? I am requesting that qualified city inspectors immediately conduct test to determine the safety of this building and avoid a tragic disaster!? We live in the area and extremely concerned about our safety and others.? This is an emergency and the city needs to inform the neighborhood?		
Instructions:	311 SR #6200192		

INSPECTOR INFORMATION

DIVISION	INSPECTOR	ID	DISTRICT	PRIORITY
BID	CHIU	6349	1	

REFFERAL INFORMATION

COMPLAINT STATUS AND COMMENTS

DATE	TYPE	DIV	INSPECTOR	STATUS	COMMENT
08/16/16	CASE OPENED	BID	Clancy	CASE RECEIVED	
08/19/16	OTHER BLDG/HOUSING VIOLATION	BID	Clancy	CASE UPDATE	Site visit by Clancy Met with Millennium Tower general manager to discuss nature of complaint. specifically the issues regarding water gas line connections and electrical concerns management has ensured that at this time there are no signs of any faulty systems and have also contacted PG&E and the San Francisco water department to courtesy check utility tie ins from the street Regarding seismic concerns management will foward me point of contact email information
08/26/16	OTHER BLDG/HOUSING VIOLATION	BID	Clancy	CASE CONTINUED	to follow up on Site visit by Clancyon 8.19.16 . Regarding seismic safety concerns, the General Manager provided me with John P. Gill, Hughes Gill Cochrane law firm in Walnut Creek, CA, as someone to contact for additional information regarding the building's condition.I've requested the General Manager contact Mr Gill to obtain and to provide to the department within the next 30 days an engineering report verifying any and all structural and building life-safety systems.
09/27/16	OTHER BLDG/HOUSING VIOLATION	BID	Clancy	CASE CONTINUED	case referred to Dan Lowery for follow up

Figure 8: Complaint data sheet re sidewalk defects; downloaded from the DBI website.

As of February 4, 2021, DBI Deputy Director Daniel Lowrey was continuing to follow up with the complaint after its filing 1,634 days ago.

Another news article, shown in Figure 9, was published on October 24, 2016, about the Millennium Tower's sinking and tilting. Is the quotation highlighted in yellow an intuitive assessment?

A $350 million skyscraper in San Francisco that's tilting and sinking has residents worried

AP

[redacted] **Jocelyn Gecker, Associated Press** Oct 24, 2016, 7:09 AM

Pamela Buttery noticed something peculiar six years ago while practicing golf putting in her 57th-floor apartment at the luxurious Millennium Tower. The ball kept veering to the same corner of her living room.

Those were the first signs for residents of the sleek, mirrored high-rise that something was wrong.

The 58-story building has gained notoriety in recent weeks as the "tilting tower of San Francisco." But it's not just tilting. It's sinking too. And engineers hired to assess the problem say it shows no immediate sign of stopping.

"What concerns me most is the tilting," says Buttery, 76, a retired real estate developer. "Is it safe to stay here? For how long?"

Figure 9: Extract from a news article dated October 24, 2016; downloaded from www.businessinsider.com.

Following is a link to the news article:
https://www.businessinsider.com/millennium-tower-san-francisco-tilting-sinking-2016-10

Is it conceivable that the Millennium Tower's tilting is exerting pressure on the sidewalk, resulting in the defects that are documented in Figures 2 through 7?

The City and County of San Francisco retained a three-member expert panel's service to conduct a structural safety review of the Millennium Tower.

Following is a link to the "Structural Safety Review of the Millennium Tower" report, dated July 28, 2017:
https://sfdbi.org/sites/default/files/Millennium%20Tower%20Safety%20Review%20Report%2007.28.17.pdf

A search for "sidewalk" and "tilt" in the "Structural Safety Review of the Millennium Tower" report resulted in 1 finding for "sidewalk" and 10 findings for "tilt" but nothing about the damage to the sidewalk due to the tilting of the tower.

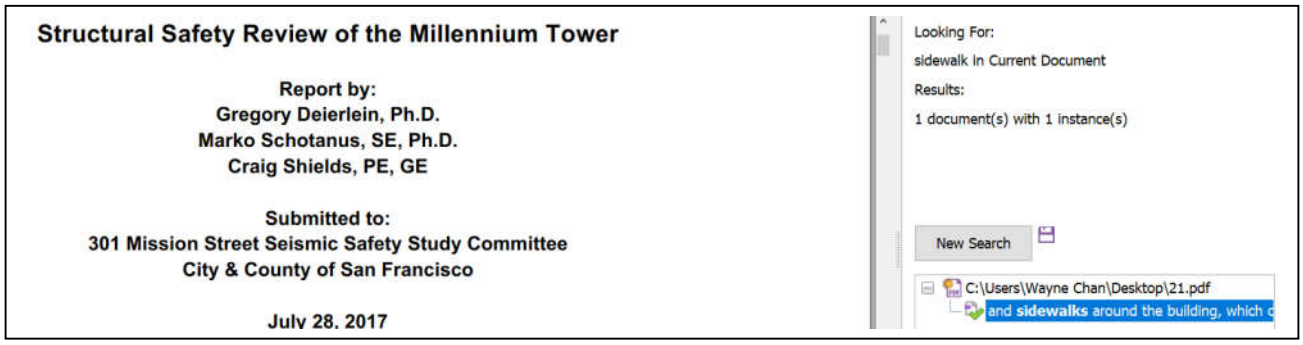


Figure 10: Search result for "sidewalk" in the "Structural Safety Review of the Millennium Tower" July 28, 2017, report; downloaded from the DBI website.

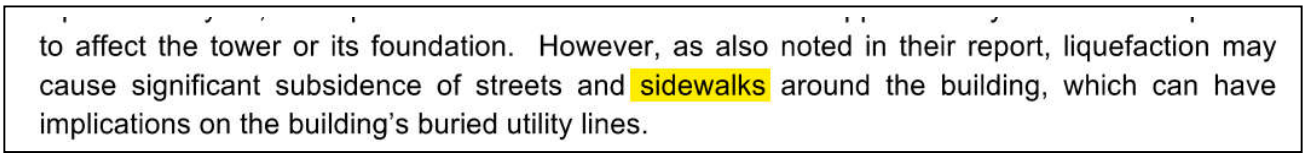


Figure 11: Extract from page 6 of the "Structural Safety Review of the Millennium Tower" July 28, 2017, report, downloaded from the DBI website.

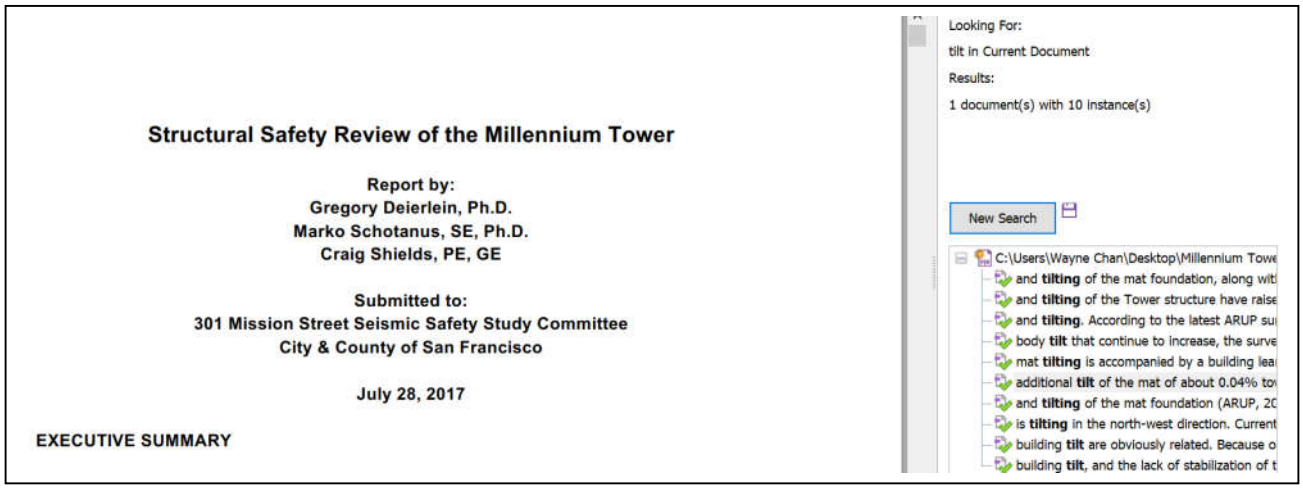
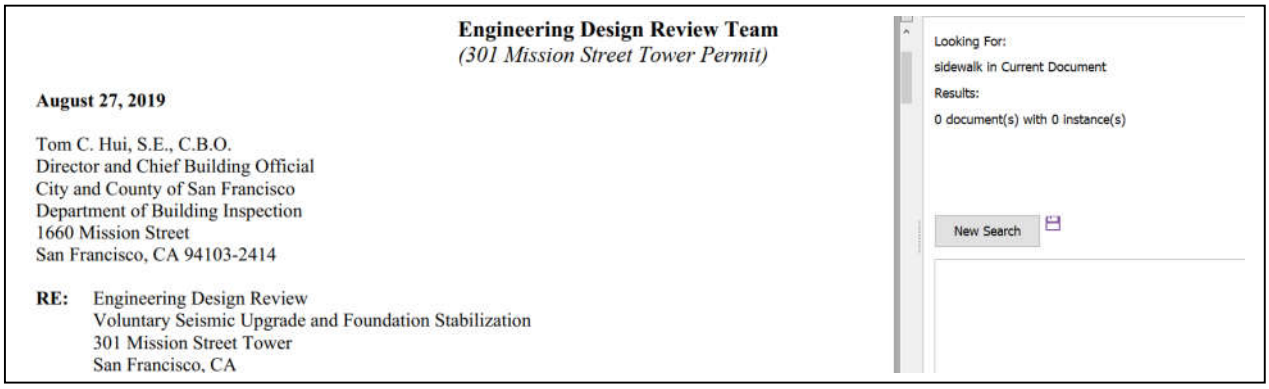


Figure 12: Search results for "tilt" in the "Structural Safety Review of the Millennium Tower" July 28, 2017, report; downloaded from the DBI website.

The City and County of San Francisco later selected a fourth member to join the previously selected three-member expert panel to review documentation submitted for the voluntary seismic upgrade and foundation stabilization of the sinking and tilting Millennium Tower. The Millennium Tower's proposed fix is separated into three different construction phases and required three separate building permit applications.

Following is a link to the "Engineering Design Review: Voluntary Seismic Upgrade and Foundation Stabilization" report:
https://sfgsa.org/sites/default/files/Document/301%20Mission%20-%20EDRT%20-%20Permit%20for%20Voluntary%20Structural%20Upgrade%20of%20Building....pdf

A search for "sidewalk" and "tilt" in the "Engineering Design Review: Voluntary Seismic Upgrade and Foundation Stabilization" report resulted in one finding for "tilt" but nothing about the damage to the sidewalk due to the tilting of the tower.



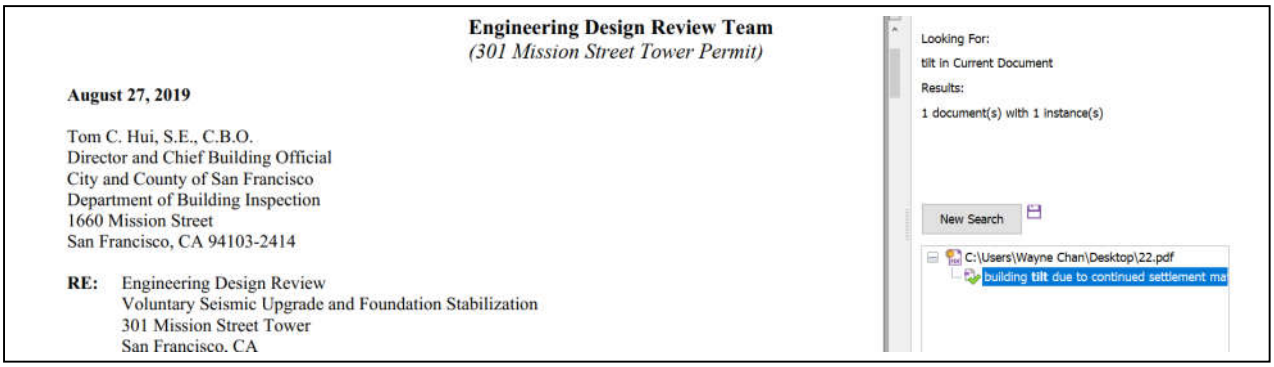
Engineering Design Review Team
(301 Mission Street Tower Permit)

August 27, 2019

Tom C. Hui, S.E., C.B.O.
Director and Chief Building Official
City and County of San Francisco
Department of Building Inspection
1660 Mission Street
San Francisco, CA 94103-2414

RE: Engineering Design Review
Voluntary Seismic Upgrade and Foundation Stabilization
301 Mission Street Tower
San Francisco, CA

Figure 13: Search result for "sidewalk" in the "Engineering Design Review: Voluntary Seismic Upgrade and Foundation Stabilization" August 27, 2019, report; downloaded from the San Francisco GSA website.



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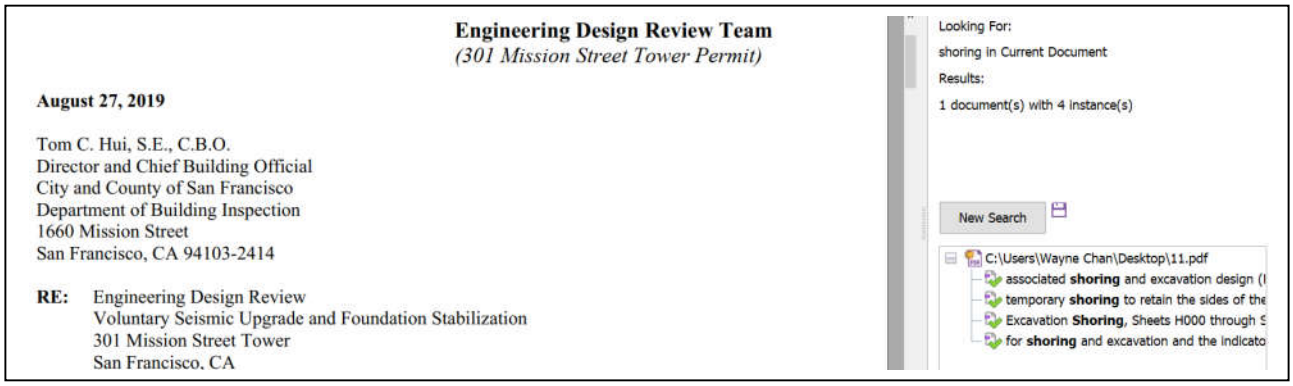
Department of Building Inspection
1660 Mission Street
San Francisco, CA 94103-2414

RE: Engineering Design Review
Voluntary Seismic Upgrade and Foundation Stabilization
301 Mission Street Tower
San Francisco, CA

Figure 14: Search result for "tilt" in the "Engineering Design Review: Voluntary Seismic Upgrade and Foundation Stabilization" August 27, 2019, report; downloaded from the San Francisco GSA website.

A search for "shoring" and "excavation" in the "Engineering Design Review: Voluntary Seismic Upgrade and Foundation Stabilization" report resulted in four findings each but nothing about the potential further tilting of the tower due to the excavation.



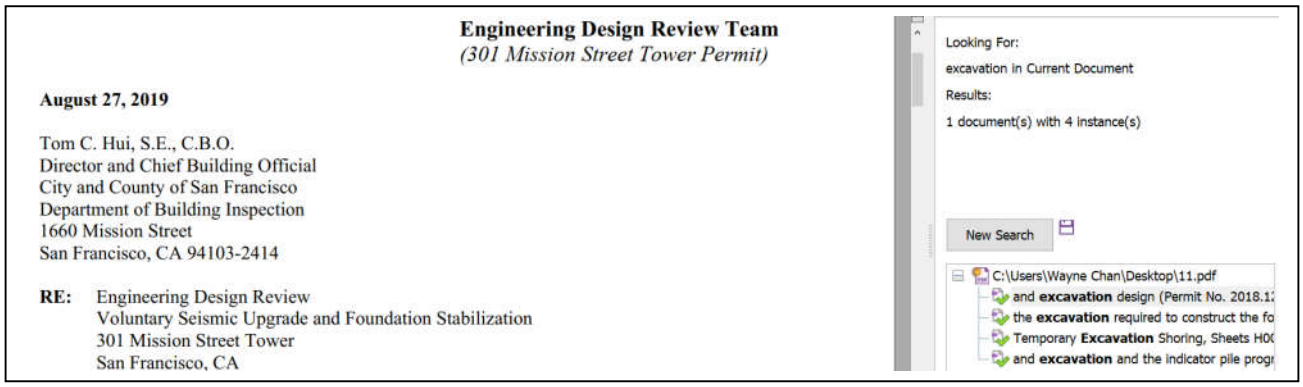
Engineering Design Review Team
(301 Mission Street Tower Permit)

August 27, 2019

Tom C. Hui, S.E., C.B.O.
Director and Chief Building Official
City and County of San Francisco
Department of Building Inspection
1660 Mission Street
San Francisco, CA 94103-2414

RE: Engineering Design Review
Voluntary Seismic Upgrade and Foundation Stabilization
301 Mission Street Tower
San Francisco, CA

Figure 15: Search result for "shoring" in the "Engineering Design Review: Voluntary Seismic Upgrade and Foundation Stabilization" August 27, 2019. report; downloaded from the San Francisco GSA website.



Engineering Design Review Team
(301 Mission Street Tower Permit)

August 27, 2019

Tom C. Hui, S.E., C.B.O.
Director and Chief Building Official
City and County of San Francisco
Department of Building Inspection
1660 Mission Street
San Francisco, CA 94103-2414

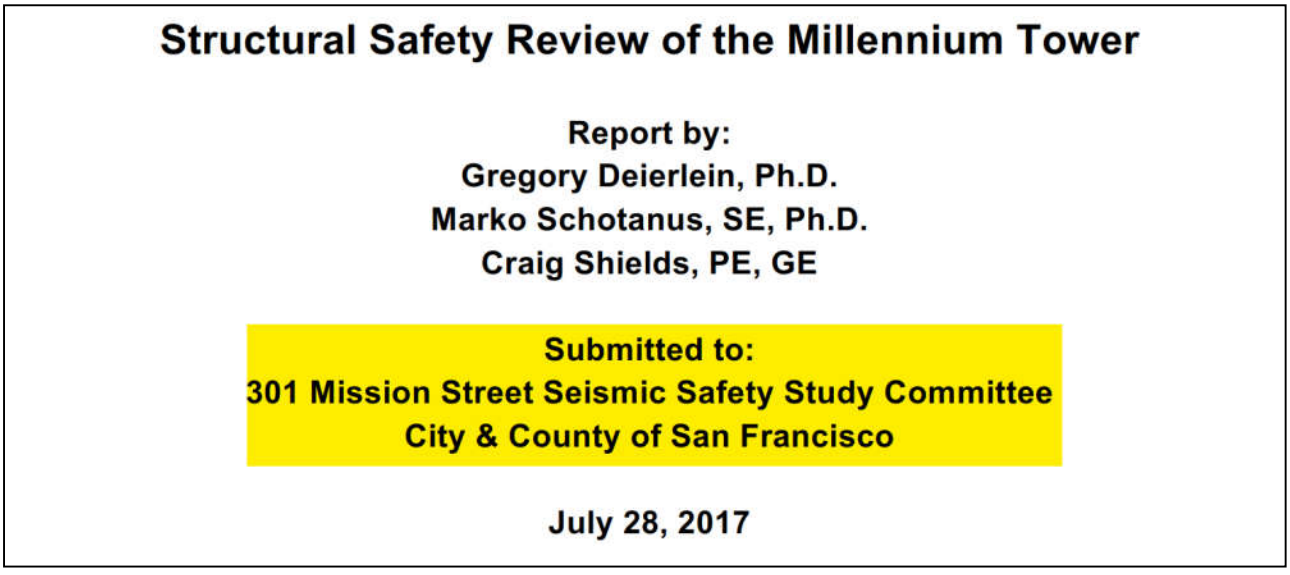
RE: Engineering Design Review
Voluntary Seismic Upgrade and Foundation Stabilization
301 Mission Street Tower
San Francisco, CA

Figure 16: Search result for "excavation" in the "Engineering Design Review: Voluntary Seismic Upgrade and Foundation Stabilization" August 27, 2019, report; downloaded from the San Francisco GSA website.

It should be noted the "Voluntary Seismic Upgrade and Foundation Stabilization" report dated August 27, 2019, and addressed to former DBI Director Tom Hui, as shown in Figures 13 to 16, is not available on the DBI website.

A copy of the "Voluntary Seismic Upgrade and Foundation Stabilization" report can be downloaded from the San Francisco Office of the City Administrator website at the following link: https://sfgsa.org/sites/default/files/Document/301%20Mission%20-%20EDRT%20-%20Permit%20for%20Voluntary%20Structural%20Upgrade%20of%20Building....pdf.

In contrast, the earlier "Structural Safety Review of the Millennium Tower" report dated July 28, 2017, was not addressed to former DBI Director Tom Hui, as shown in Figure 17. Still, a copy of the report is available from the DBI website, as shown in Figure 18.



Structural Safety Review of the Millennium Tower

Report by:
Gregory Deierlein, Ph.D.
Marko Schotanus, SE, Ph.D.
Craig Shields, PE, GE

Submitted to:
301 Mission Street Seismic Safety Study Committee
City & County of San Francisco

July 28, 2017

Figure 17: Extract from page 1 of the "Structural Safety Review of the Millennium Tower" report, downloaded from the DBI website.

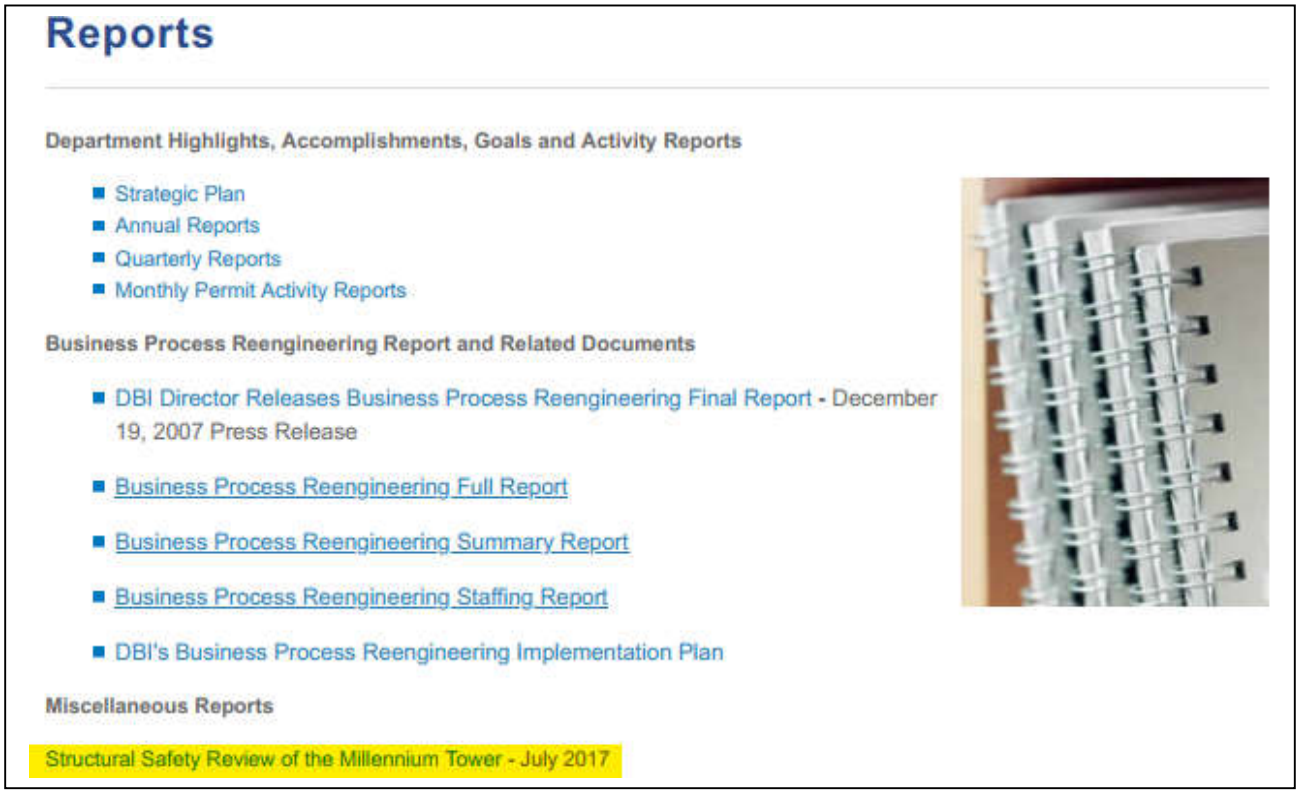


Figure 18: Partial list of available reports; downloaded from the DBI website on January 31, 2021.

The fix of the Millennium Tower is separated into three construction phases with three different building permit applications: 201812077828, 201812077819, 201812047402

Building permit application 201812077828 was submitted for "INDICATOR PILE LOCATED ON MISSION AND FREMONT STREET SIDEWALK. REFERENCE TO PERIMETER PILE UPGRADE PERMIT APPLICATION #201812047402." *The building permit application was submitted on December 7, 2018; the structural design was approved on December 27, 2019; and the building permit was issued on October 19, 2020. See Figure 19.*

Building permit application 201812077819 was submitted for **PARALLE PLAN CHECK", SHORING AND EXCAVATION ON FREEMONT AND MISSION. REFERENCE TO PERIMETER PILE UPGRADE PERMIT APPLICATION #201812047402." *The building permit application was submitted on December 7, 2018; the structural design was approved on December 27, 2019; and the building permit was issued on January 15, 2021. See Figure 20.*

Building permit application 201812047402 was submitted for "PARALLEL PLAN CHECK, VOLUNTARY SEISMIC UPGRADE AND FOUNDATION STABILIZATION, ADDITION OF NEW PILES, EXTENDING TO ROCK, AND TRANFER APPROXIMATLY 20% OF BUILDING WEIGHT TO THE NEW PILES WITH INTENT OF ARRESTING BOILDING SETTLEMENT AND IMPROVING THE FOUNDATION LATERAL CAPACITY." *The building permit application was submitted on December 4, 2018; the structural design was approved on December 27, 2019; and the building permit has not been issued as of January 31, 2021. See Figure 21.*

Permit Details Report

Report Date: 1/31/2021 4:41:16 AM

Application Number: 201812077828
Form Number: 3
Address(es): 3719 / 020 / 0 301 MISSION ST
Description: INDICATOR PILE LOCATED ON MISSION AND FREMONT STREET SIDEWALK. REFERENCE TO PERIMETER PILE UPGRADE PERMIT APPLICATION #201812047402
Cost: $1,800,000.00
Occupancy Code: R-2,S-2,M,A-2
Building Use: 24 - APARTMENTS

Disposition / Stage:

Action Date	Stage	Comments
12/7/2018	TRIAGE	
12/7/2018	FILING	
12/7/2018	FILED	
10/19/2020	APPROVED	
10/19/2020	ISSUED	

Contact Details:

Contractor Details:

License Number: 594575
Name: JOHN SHIMMICK
Company Name: SHIMMICK CONSTRUCTION CO. INC.
Address: 8201 EDGEWATER DR * OAKLAND CA 94621-0000
Phone: 5107775000

Addenda Details:

Description:

Step	Station	Arrive	Start	In Hold	Out Hold	Finish	Checked By	Hold Description
1	CPB	12/19/18	12/19/18			12/19/18	TORRES SHIRLEY	PREMIUM PLAN CHECK PAID
2	CP-ZOC	12/19/18	1/21/20			1/21/20	ASBAGH CLAUDINE	1/21/2020--CEQA review complete. Approved.
3	BLDG	12/19/18	12/20/18	3/8/19		12/27/19	TAM RICHARD	APPROVED
4	SFFD	12/19/18	2/1/19	2/1/19	1/13/20	1/13/20	ANDRAWES KAMAL	civil drawings approved - SFFD
5	SFFD	2/4/20	2/5/20			2/5/20	WOO JASON	additional sheets added and approved
6	DPW-BSM	12/19/18	12/20/18			12/30/19	DENNIS RASSENDYLL	Approve. PUBLIC WORKS/BSM sign off on Job Card required prior to DBI final. Subject to all conditions of PUBLIC WORKS/BSM: #18ie-1105, 18me-0005, 18mse-0864, 18mse-0865, Street Vacation RD APPROVED. 12/20/18: BSM sign off on Job Card required prior to DBI final. Subject to all conditions of BSM: 18MSE-0865. -EY
7	HEALTH	1/21/20	1/22/20			1/22/20	OSSAI JOSEPH	
8	PPC	1/23/20	1/23/20			1/23/20	LEI MANDY	1/23/20: to CPB; mml 1/21/20: To HEALTH (w/7819 & 7402); HP 1/14/20: original plans and application to DCP (w/7819 & 7402); am 1/9/20: Retrieved by SFFD from HOLD bin (w/7819 & 7402); HP 12/31/19: To HOLD bir #28 pending SFFD approval, then HEALTH & DCP (w/7819 & 7402); HP 12/27/19: To BSM (w/201812077819 & 201812047402); HP 12/9/19: To Richard Tam to review new revised sets (w/201812077819 & 201812047402); HP 9/10/19: R3 to DCP; cp 8/6/19: R1 to DCP; HP 12/21/18: BSM set to HOLD bin; HP 12/19/18: 2 Sets with original application route to planning, 1 set to BLDG, SFFD, BSM and DPH for parallel review;EC.
9	CPB	1/23/20	9/13/20			10/15/20	LEE KIM	9/13/20:KL-Approved, emailed applicant for contractor/payer's info. 1/27/2020:NEED CONTRACTOR'S INFO-NG

Figure 19: Permit details report; downloaded from the DBI website.

Permit Details Report

Report Date: 1/31/2021 4:53:14 AM

Application Number: 201812077819
Form Number: 3
Address(es): 3719 / 020 / 0 301 MISSION ST
Description: **PARALLE PLAN CHECK", SHORING AND EXCAVATION ON FREEMONT AND MISSION REFERENCE TO PERIMETER PILE UPGRADE PERMIT APPLICATION #201812047402
Cost: $5,600,000.00
Occupancy Code: R-2,S-2,M,A-2
Building Use: 24 - APARTMENTS

Disposition / Stage:

Action Date	Stage	Comments
12/7/2018	TRIAGE	
12/7/2018	FILING	
12/7/2018	FILED	
1/15/2021	APPROVED	
1/15/2021	ISSUED	

Contact Details:

Contractor Details:

Addenda Details:

Description:

Step	Station	Arrive	Start	In Hold	Out Hold	Finish	Checked By	Hold Description
1	CPB	12/10/18	12/10/18			12/10/18	GUTIERREZ NANCY	PARALLEL AND PRIMUM PLAN CHECK PAID.
2	DPW-BSM	12/14/18	12/20/18	12/20/18	12/30/19	12/30/19	DENNIS RASSENDYLL	Approve. PUBLIC WORKS/BSM sign off on Job Card required prior to DBI final. Subject to all conditions of PUBLIC WORKS/BSM: #18IE-1105, 18ME-0005, 18MSE-0864, 18MSE-0865, Street Vacation, BUF RD 6/6/19: Sign off after BLDG approval. BSM is ready to sign off. Please route the plans and original application into the BSM queue. (REF: 18IE-1105, 18ME-0005, 18MSE-0864, 18MSE-0865, Street Vacation, BUF) -CC On hold. 12/24/18: Waiting for BSM plan checker's recommendation to sign off (see below). Please call (415) 554-5810 for more information. (REF: BUF) -CC ON-HOLD. 12/20/18: Pending BSM plan checker recommendation for release. Reference 18IE-1105, 18ME-0005, 18MSE-0864, and BUF.
2	HEALTH	1/21/20	1/22/20			1/22/20	OSSAI JOSEPH	
2	BLDG	12/10/18	12/12/18	3/8/19		12/27/19	TAM RICHARD	APPROVED
2	CP-ZOC	12/10/18	1/21/20		1/21/20	1/21/20	ASBAGH CLAUDINE	1/21/2020 --CEQA review complete. Approved.
2	SFFD	12/10/18	2/1/19	2/1/19	1/13/20	1/13/20	ANDRAWES KAMAL	2/1/19 - Comments sent via e-mail to Structural Engineer Ronald Hamburger of SGH. Reassigned to Sagiv 8/13/19 DVDH reassigned to Kamal-1/6/20 DVDH
3	PPC	1/23/20	1/23/20			1/23/20	LEI MANDY	1/23/20: to CPB; mml 1/21/20: To HEALTH (w/7828 7 7402); HP 1/14/20: original plans and application to DCP (w/7828 & 7402); am 1/9/20: Retrieved by SFFD from HOLD bin (w/7828 & 7402); HP 12/31/19: To HOLD bi #28 pending SFFD approval, then HEALTH DCP (w/7828 & 7402); HP 12/27/19: To BSM (w/201812077828 & 201812047402); HP 12/9/19: To Richard Tam to review new revised sets (w/201812077828 & 201812047402); HP 9/10/19: R3 to DCP;cp 8/6/19: R1 to DCP (w/7402); HP 6/4/19: BSI and SFFD set to hold bin #2 (w/ 201812047402);EC. 12/21/18: BSM set to HOLD bin #2 (w/201812047402); HP 12/14/18: 4 sets recieved from CPB, 2 sets to BSM & 2 sets to HEALTH; HP 12/10/18: 2 sets w/original application to DCP, 1 set to BLDG, 1 set to SFFD; HP
4	CPB	1/23/20	9/13/20			1/15/21	LEE KIM	9/13/20:KL-Approved, emailed applicant for contractor/payer's info. 1/27/2020:NEED CONTRACTOR'S INFO-NG

Figure 20: Permit details report; downloaded from the DBI website.

Permit Details Report

Report Date: 1/31/2021 5:02:21 AM

Application Number: 201812047402
Form Number: 3
Address(es): 3719 / 020 / 0 301 MISSION ST
Description: PARALLEL PLAN CHECK, VOLUNTARY SEISMIC UPGRADE AND FOUNDATION STABILIZATION, ADDITION OF NEW PILES, EXTENDING TO ROCK, AND TRANFER APPROXIMATLY 20% OF BUILDING WEIGHT TO THE NEW PILES WITH INTENT OF ARRESTING BOILDING SETTLEMENT AND IMPROVING THE FOUNDATION LATERAL CAPACITY.
Cost: $37,000,000.00
Occupancy Code: R-2,S-2,M,A-2
Building Use: 24 - APARTMENTS

Disposition / Stage:

Action Date	Stage	Comments
12/4/2018	TRIAGE	
12/4/2018	FILING	
12/4/2018	FILED	

Contact Details:

Contractor Details:

Addenda Details:

Description:

Step	Station	Arrive	Start	In Hold	Out Hold	Finish	Checked By	Phone	Hold Description
1	HIS	12/4/18	12/4/18			12/4/18	SECONDEZ GRACE	628-652-3700	
2	CPB	12/4/18	12/4/18			12/4/18	CHEUNG WAI FONG	628-652-3240	12/04/18: PARALLEL PROCESSING TO PLANNING, BLDG & SFFD(4 PLAN SETS). WF
3	CP-ZOC	12/4/18	1/21/20			1/21/20	ASBAGH CLAUDINE	628-652-7300	1/21/2020--CEQA review finished. Approved.
3	SFFD	12/4/18	2/1/19	2/1/19	1/13/20	1/13/20	ANDRAWES KAMAL	628-652-3472	2/1/19 - Comments sent via e-mail to Structural Engineer Ronald Hamburger of SGH. Reassigned to Sagiv 8/13/19 DVDH
3	DPW-BSM	12/14/18	12/20/18	12/20/18	12/30/19	12/30/19	DENNIS RASSENDYLL	628-271-2000	Approve. PUBLIC WORKS/BSM sign off on Job Card required prior to DBI final. Subject to all conditions of PUBLIC WORKS/BSM: #18IE-1105, 18ME-0005, 18MSE-0864, 18MSE-0865, Street Vacation, BUF RD 6/6/19: Sign off after BLDG approval. BSM is ready to sign off. Please route the plans and original application into the BSM queue. (REF: 18IE-1105, 18ME-0005, 18MSE-0864, 18MSE-0865, Street Vacation, BUF) -CC On hold. 12/24/18: Waiting for BSM plan checker's recommendation to sigh off (see below). Please call (415) 554-581(for more information. (REF: BUF) -C(ON-HOLD. 12/20/18: Pending BSM plan checker recommendation for release. Reference 18IE-1105, 18ME-0005, 18MSE-0864, and BUF.
3	BLDG	12/4/18	12/5/18	3/8/19		12/27/19	TAM RICHARD	628-652-3780	APPROVED
3	HEALTH	1/21/20	1/22/20			1/22/20	OSSAI JOSEPH	415-252-3800	
4	SFFD	1/23/20	1/27/20			1/27/20	ANDRAWES KAMAL	628-652-3472	
5	PPC	1/28/20	1/28/20			1/28/20	LEI MANDY	628-652-3780	1/28/20: to CPB; mml 1/23/20; to SFFD to stamp sheet C2.0-PH2 (1 set) mml 1/21/20: To HEALTH (w/7819 & 7828); HP 1/14/20: original plans and application to DCP (w/7819 & 7828); am 1/9/20: Retrieved by SFFD from HOLD bin (w/7819 & 7828); HP 12/31/19: To HOLD bin #28 pending SFFD approval, then HEALTH & DCP (w/7819 & 7828); HP 12/27/19: To BSM (w/201812077819 & 201812077828); HP 12/9/19: To Richard Tam to review new revised sets (w/201812077819 & 201812077828); HP 9/10/19: R2 to DCP; cp 7/6/19: R1 to DCP (w/7819); HP 6/4/19: BSM and SFFD set to hold bin #2 (w/ 2018 1207 7819);EC. 12/21/18: BSM set to HOLD bin #2 (w/201812077819); HP 12/14/18: 1 se to HEALTH; HP 12/14/18: 1 set to BSM; HP 12/11/18: DPH added per BLDG;EC. 12/4/18: Parallel review: 2 sets with original application to DCP, set to SFFD & 1 set to BLDG; HP
6	CPB	1/28/20	10/7/20					628-652-3240	9/13/20:KL-Approved, Emailed applicant for payer's info.

Figure 21: Permit details report; downloaded from the DBI website.

The second of the three building permit applications has been approved (see Figure 20). This permit allows construction of a temporary shoring system to provide lateral support for Fremont and Mission Streets (see Figure 22) during the excavation to expose the Millennium Tower's foundation wall.

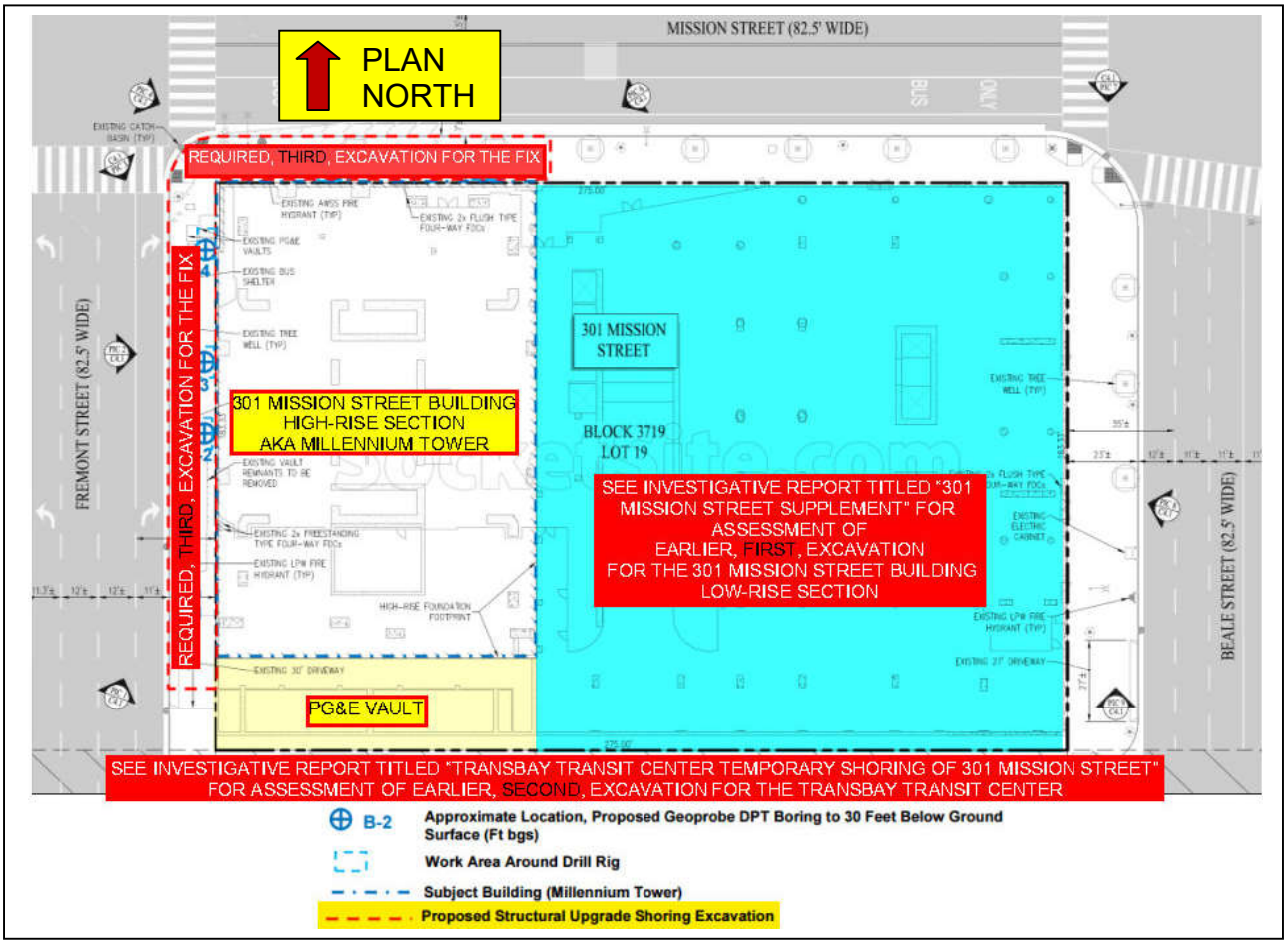


Figure 22: Extract from the plan to stabilize the Millennium Tower, article dated March 12, 2019; downloaded from www.socketsite.com, with annotations by Carl C. Chan.

As of July 2017, the required excavation on two sides of the Millennium Tower had caused the tower to tilt 14 inches to the west, Fremont Street, and 6 inches to the north, Mission Street.

> The settlement has not occurred uniformly, resulting in some distortion (dishing) and tilting of the mat foundation (ARUP, 2009, 2016, 2017), some of which continues to occur. Independent measurements of the building out-of-plumb indicate that the building is tilting in the north-west direction. Current measurements show an out-of-plumbness at the top of facade of about 14 inches to the west and 6 inches to the north. This is twice what would be considered an acceptable construction tolerance for out-of-plumb. The continuing differential mat settlement and building tilt are obviously related.

Figure 23: Extract from page 11 of the "Structural Safety Review of the Millennium Tower" July 28, 2017, report; downloaded from the DBI website.

This investigative report does not offer any opinion on the approved structural design for the voluntary seismic upgrade and foundation stabilization of the Millennium Tower.

This report's only opinion is limited to the stability of existing structures that are in the vicinity of the proposed excavation.

The sidewalk defects documented in Figures 2 through 7 are most likely proof that the existing concrete sidewalk and the underlying soil block provide lateral support to maintain the tilting Millennium Tower's stability. Lateral support is known in geotechnical engineering practice as "passive resistance."

See Figure 24, an extract from page 19 of the investigative report titled "301 Mission Street Supplement," for the reasons for this disclaimer.

> *It should be noted that my assessments are based solely on my experience in the design of underpinning and temporary shoring systems for excavations. I do not have design or construction experience with high-rise structures that are supported on driven concrete piles. The tallest and heaviest structures for which I am the structural engineer of record consist of four-story wood-frame buildings in San Francisco.*

Figure 24: Extract from page 19 of the investigative report titled "301 Mission Street Supplement," dated November 7, 2017.

> *To sum up, it is my assessment that the retrofitting of the Millennium Tower* ***should not*** *be based solely on the conclusion that the consolidation of Old Bay Clay caused the settlement of the tower. To help ensure that the retrofitted pile foundation will be structurally capable of sustaining the forces that are associated with gravity- and earthquake-loading demands, it is imperative that further investigation be performed in an objective, unbiased manner to determine the causes of the sinking and tilting conditions of the Millennium Tower.*
>
> *To eliminate any perception of or concern about self-interest and/or a conflict of interest on my part,* ***I shall not seek, I will not accept,**** *and I have not taken on any role as a paid consultant for work that is related to the 301 Mission Street property.*
>
> **Bold text is a paraphrase of a President Lyndon B. Johnson quotation.*

Figure 25: Extract from page 28 of the investigative report titled "301 Mission Street Supplement," dated November 7, 2017.

Will the excavation of the soil block underneath the sidewalks result in further tilting of the Millennium Tower?

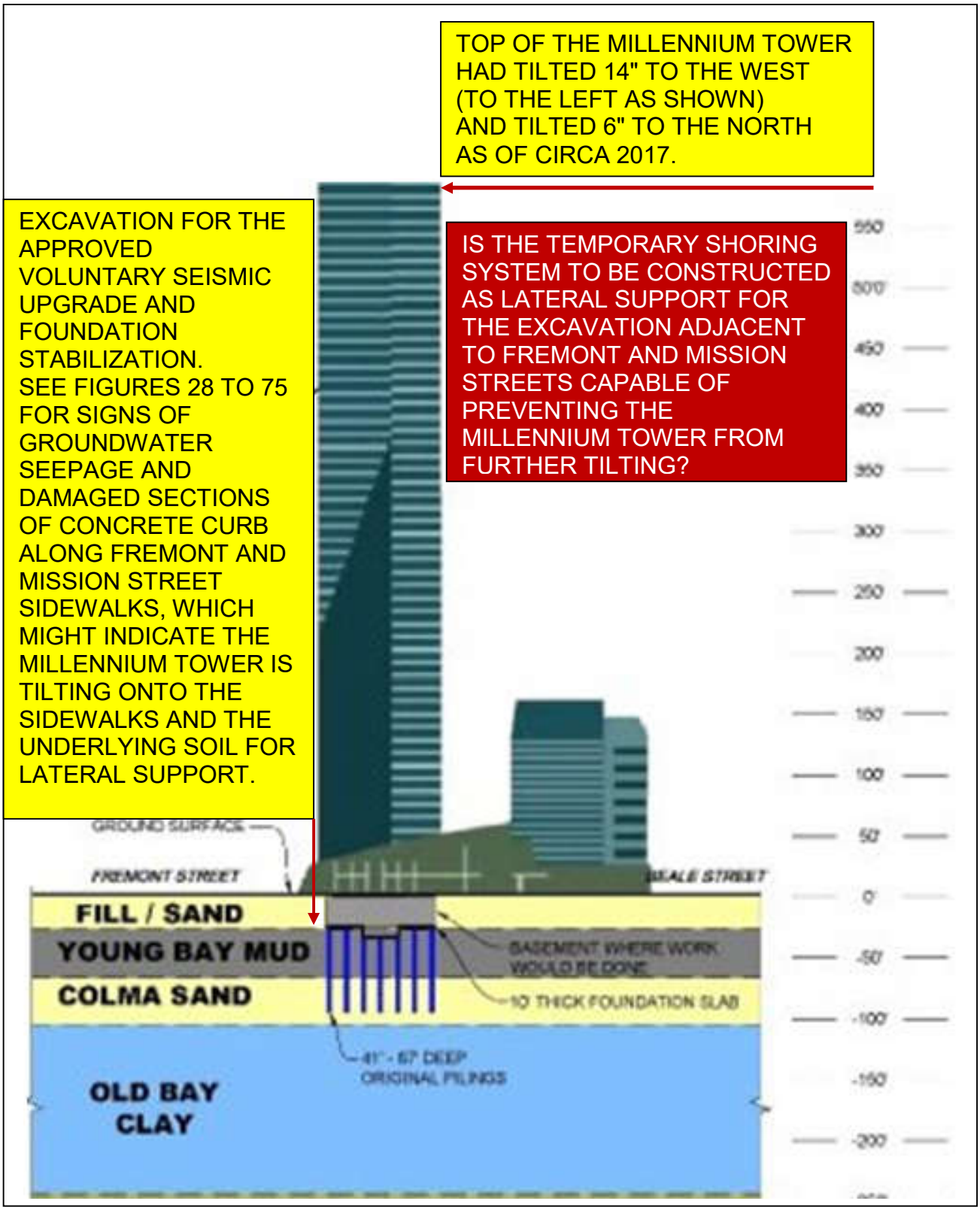
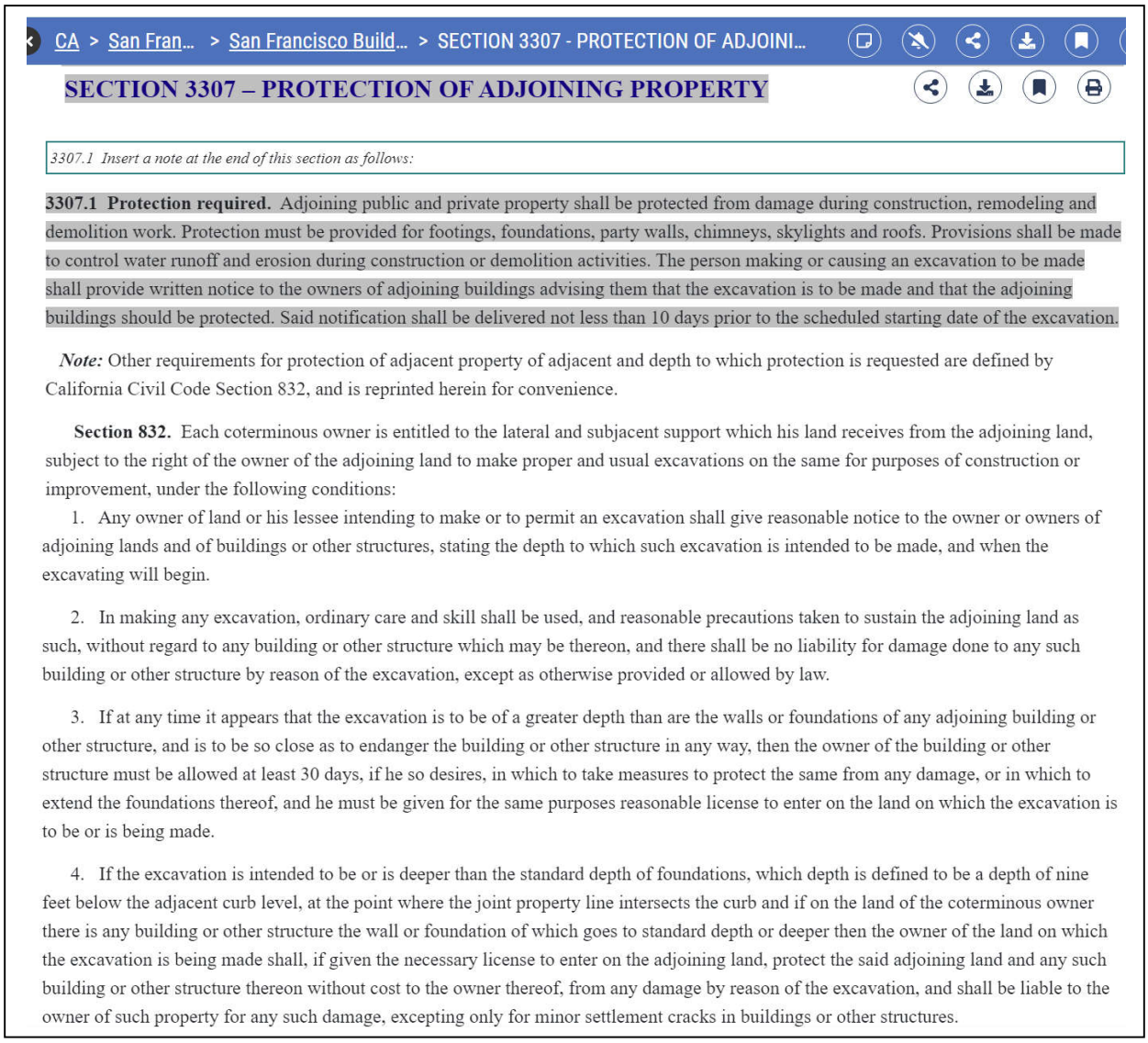


Figure 26: Enlargement of a figure downloaded from an internet search identified as the property of ENGEO, with annotations by Carl C. Chan.

Does the Millennium Tower fix need to meet the requirements of Building Code Section 3307?



CA > San Fran... > San Francisco Build... > SECTION 3307 - PROTECTION OF ADJOINI...

SECTION 3307 – PROTECTION OF ADJOINING PROPERTY

3307.1 Insert a note at the end of this section as follows:

3307.1 Protection required. Adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. Protection must be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities. The person making or causing an excavation to be made shall provide written notice to the owners of adjoining buildings advising them that the excavation is to be made and that the adjoining buildings should be protected. Said notification shall be delivered not less than 10 days prior to the scheduled starting date of the excavation.

Note: Other requirements for protection of adjacent property of adjacent and depth to which protection is requested are defined by California Civil Code Section 832, and is reprinted herein for convenience.

Section 832. Each coterminous owner is entitled to the lateral and subjacent support which his land receives from the adjoining land, subject to the right of the owner of the adjoining land to make proper and usual excavations on the same for purposes of construction or improvement, under the following conditions:

1. Any owner of land or his lessee intending to make or to permit an excavation shall give reasonable notice to the owner or owners of adjoining lands and of buildings or other structures, stating the depth to which such excavation is intended to be made, and when the excavating will begin.

2. In making any excavation, ordinary care and skill shall be used, and reasonable precautions taken to sustain the adjoining land as such, without regard to any building or other structure which may be thereon, and there shall be no liability for damage done to any such building or other structure by reason of the excavation, except as otherwise provided or allowed by law.

3. If at any time it appears that the excavation is to be of a greater depth than are the walls or foundations of any adjoining building or other structure, and is to be so close as to endanger the building or other structure in any way, then the owner of the building or other structure must be allowed at least 30 days, if he so desires, in which to take measures to protect the same from any damage, or in which to extend the foundations thereof, and he must be given for the same purposes reasonable license to enter on the land on which the excavation is to be or is being made.

4. If the excavation is intended to be or is deeper than the standard depth of foundations, which depth is defined to be a depth of nine feet below the adjacent curb level, at the point where the joint property line intersects the curb and if on the land of the coterminous owner there is any building or other structure the wall or foundation of which goes to standard depth or deeper then the owner of the land on which the excavation is being made shall, if given the necessary license to enter on the adjoining land, protect the said adjoining land and any such building or other structure thereon without cost to the owner thereof, from any damage by reason of the excavation, and shall be liable to the owner of such property for any such damage, excepting only for minor settlement cracks in buildings or other structures.

Figure 27: Building Code Section 3307.

Following is a link to Building Code Section 3307:
https://codelibrary.amlegal.com/codes/san_francisco/latest/sf_building/0-0-0-93590

The next section of this report, ***DAMAGED CONCRETE SIDEWALK****, consists of photographs downloaded from Google Maps. The photos show groundwater seepage onto the Fremont Street sidewalk. The Fremont Street concrete curbs' condition have become substantially worse than the conditions shown in Figures 2 through 7.*

The two subsequent sections, ***DAMAGED WINDOWS/GLASS*** *and* ***PLUNGING IRON PAN****, concern damage that occurred after the sidewalk damage was observed. Are these independent events, or are they related to the tilting of the Millennium Tower?*

Figure 28: Annotated photograph of Mission Street at the western end of the block, dated November 2013; downloaded from Google Maps.

Figure 29: Annotated photograph of Mission Street at the western end of the block, dated August 2014; downloaded from Google Maps.

Figure 30: Annotated photograph of Mission Street at the western end of the block, dated October 2019; downloaded from Google Maps.


At Figure 28


At Figure 29


At Figure 30

Figure 31: Close-up of concrete curb at Figures 28 to 30.

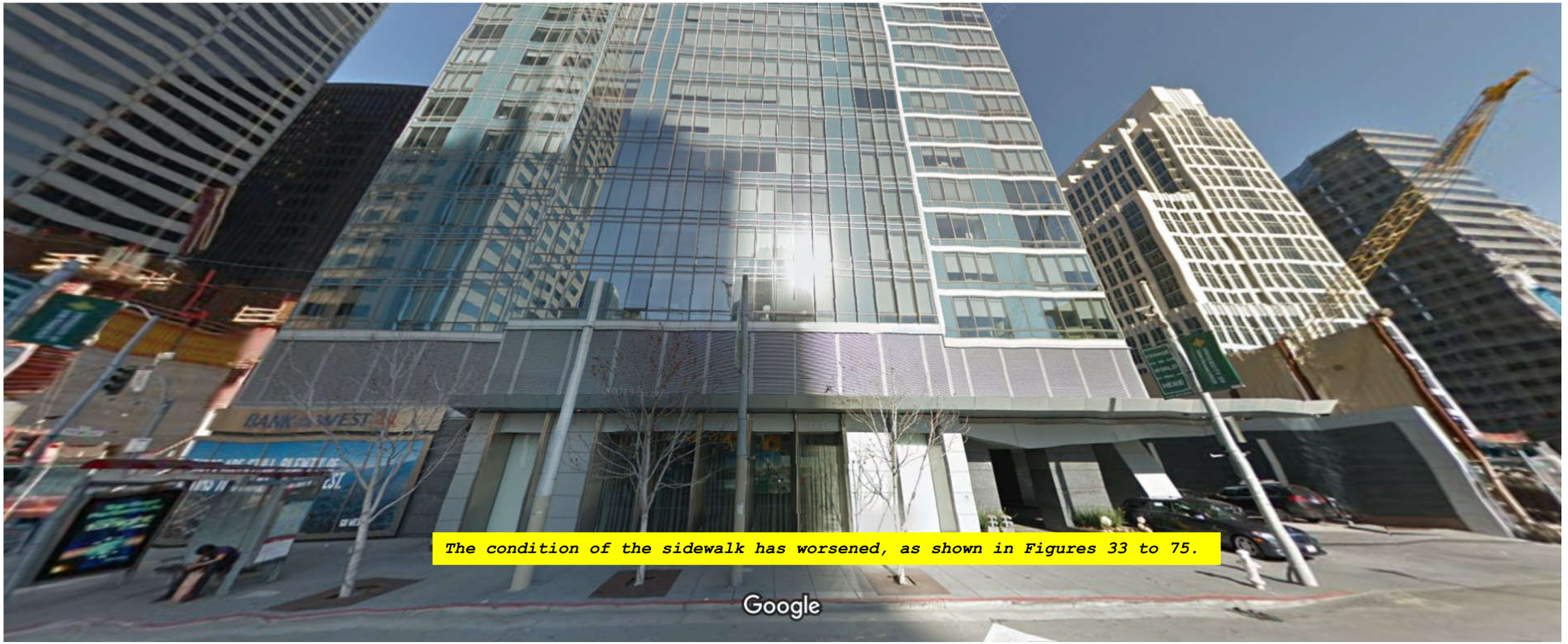


Figure 32: Photograph of the Millennium Tower facing Fremont Street, dated February 2014; downloaded from Google Maps, with annotations by Carl C. Chan.

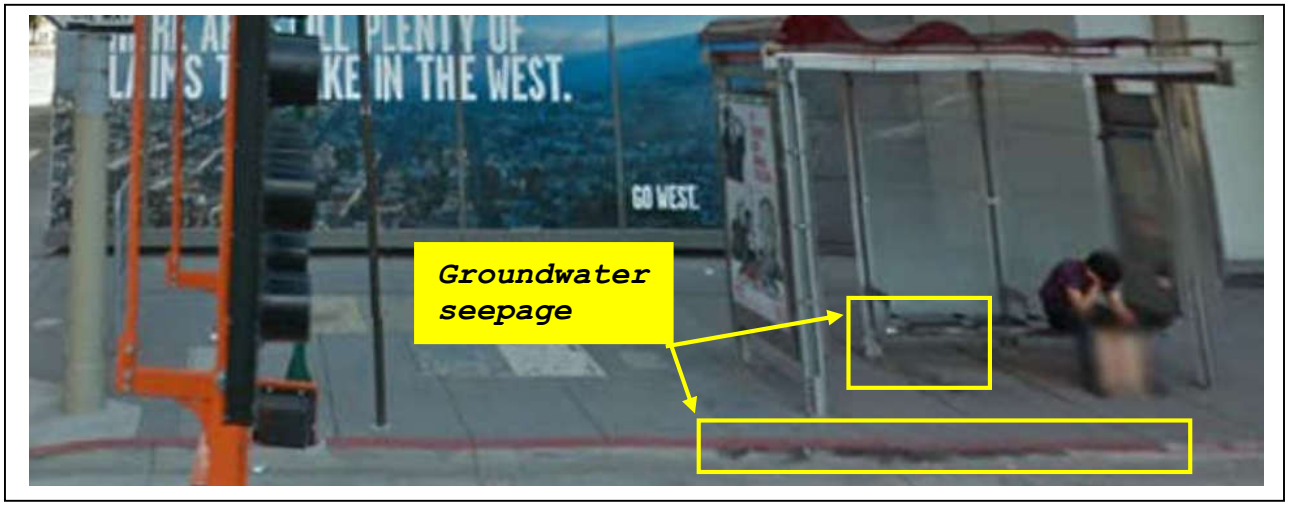


Figure 33: Annotated photograph of Fremont Street at the northern end of the block, dated February 2014; downloaded from Google Maps.

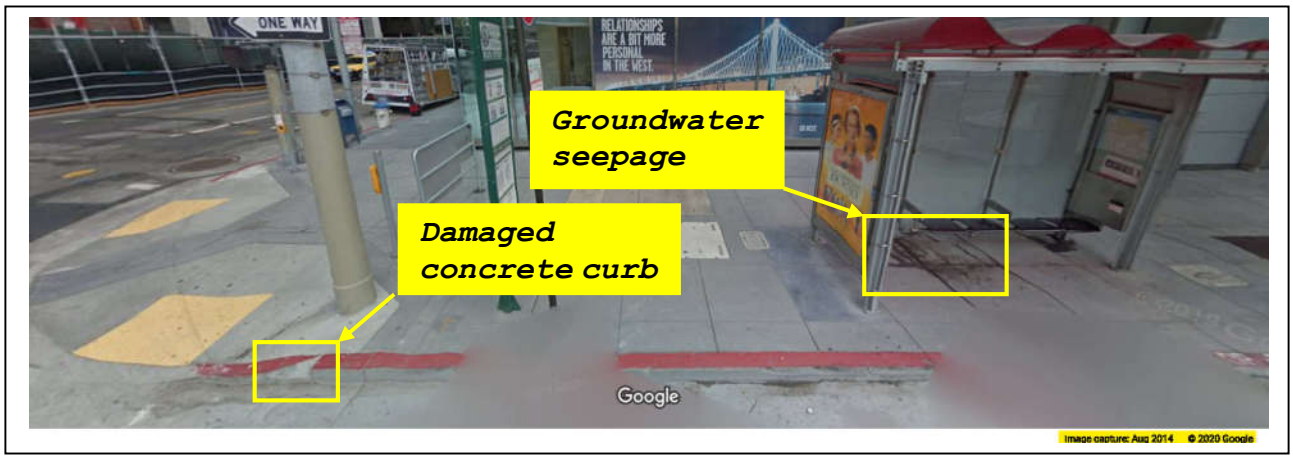


Figure 34: Annotated photograph of Fremont Street at the northern end of the block, dated August 2014; downloaded from Google Maps.

Figure 35: Annotated photograph of Fremont Street at the northern end of the block, dated August 2014; downloaded from Google Maps.

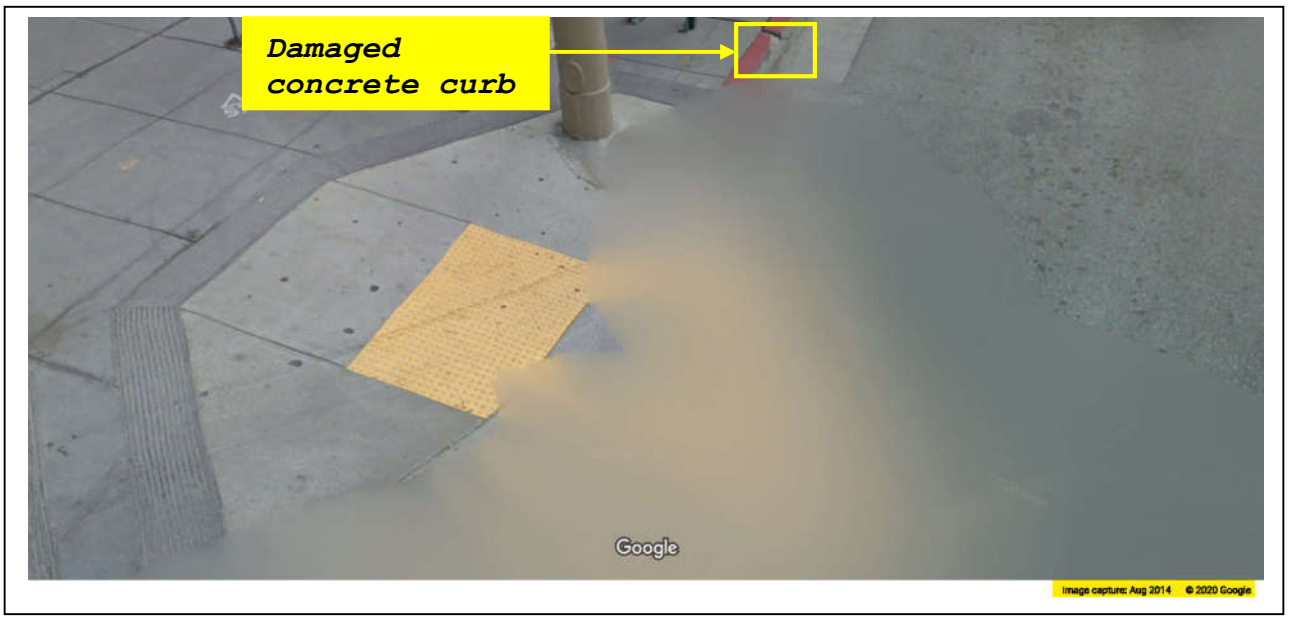


Figure 36: Close-up of left side of Figure 34, viewed from a different angle.

Figure 37: Annotated photograph of Fremont Street at the northern end of the block, dated January 2015; downloaded from Google Maps.

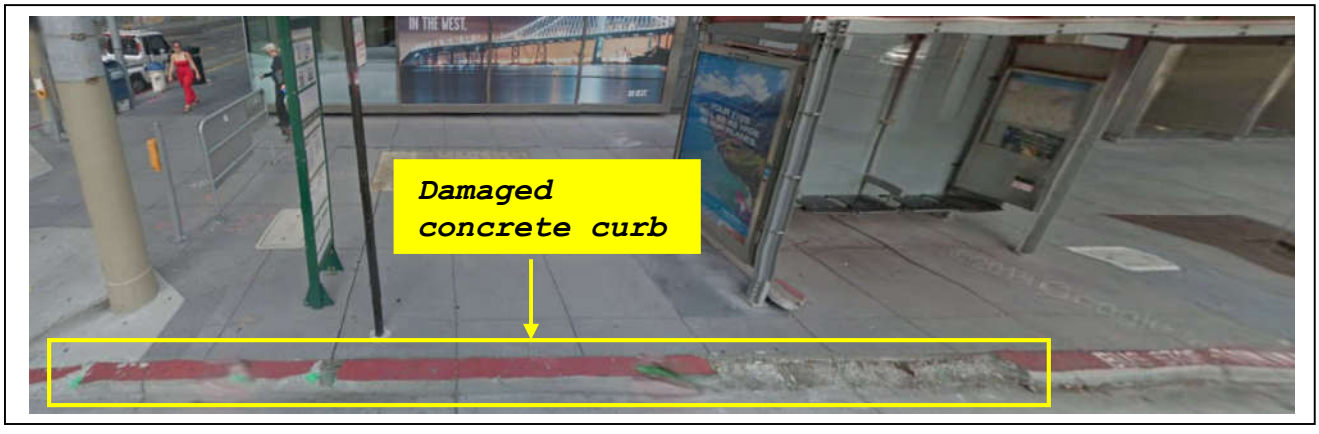


Figure 38: Annotated photograph of Fremont Street at the northern end of the block, dated July 2015; downloaded from Google Maps.

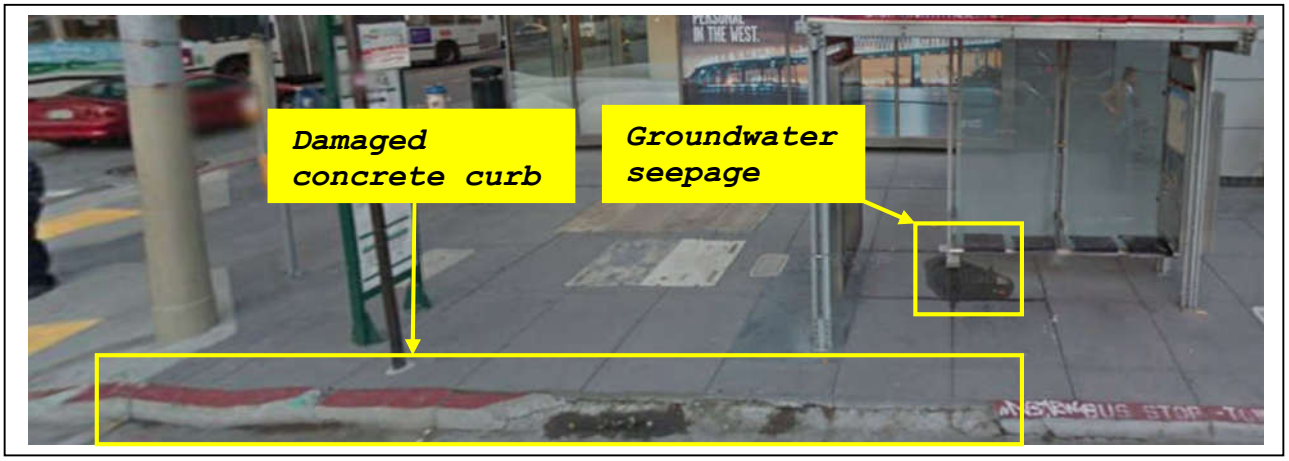


Figure 39: Annotated photograph of Fremont Street at the northern end of the block, dated November 2015; downloaded from Google Maps.

Figure 40: Annotated photograph of Fremont Street at the northern end of the block, dated February 2016; downloaded from Google Maps.

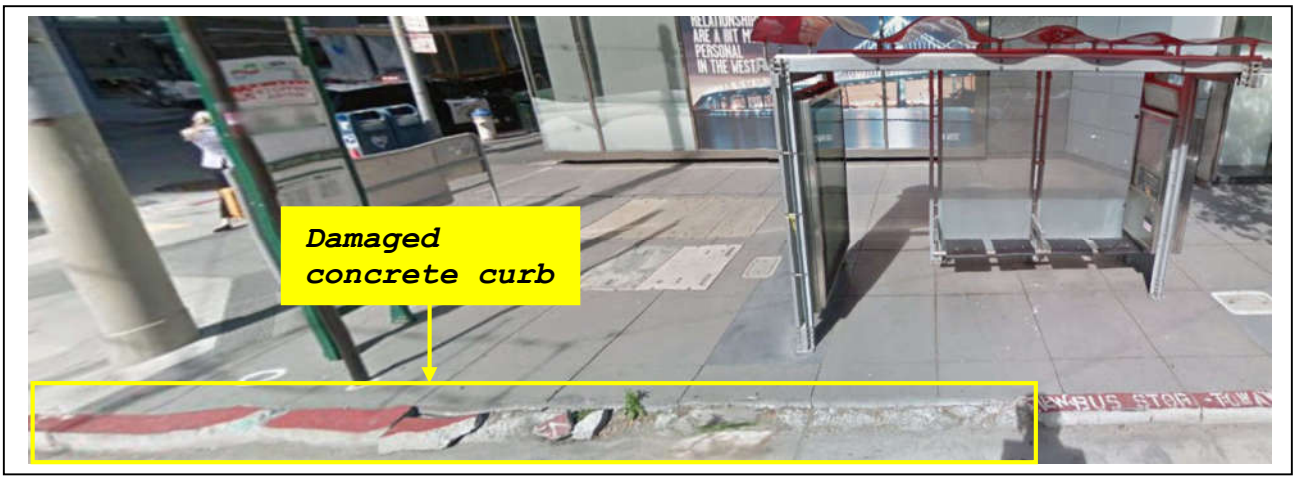


Figure 41: Annotated photograph of Fremont Street at the northern end of the block, dated April 2016; downloaded from Google Maps.

Figure 42: Annotated photograph of Fremont Street at the northern end of the block, dated October 2016; downloaded from Google Maps.

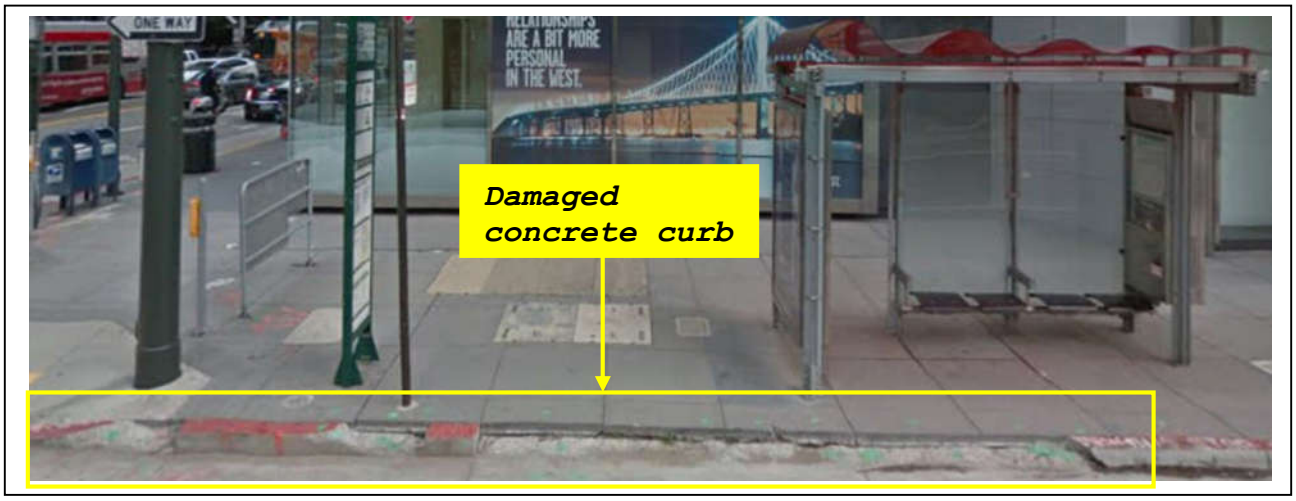


Figure 43: Annotated photograph of Fremont Street at the northern end of the block, dated February 2017; downloaded from Google Maps.

Figure 44: Close-up of damaged concrete curb shown in Figure 43.

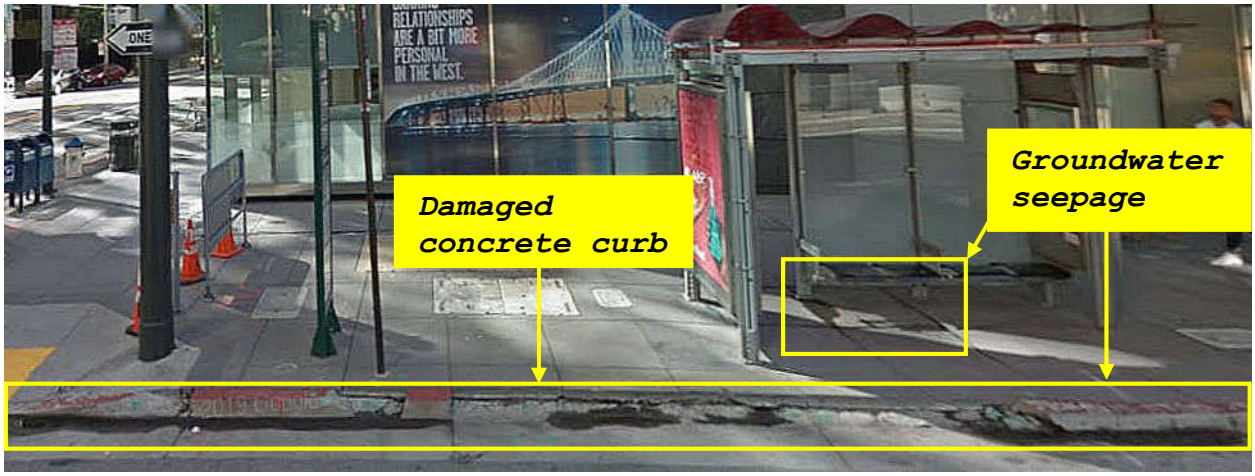


Figure 45: Annotated photograph of Fremont Street at the northern end of the block, dated April 2017; downloaded from Google Maps.

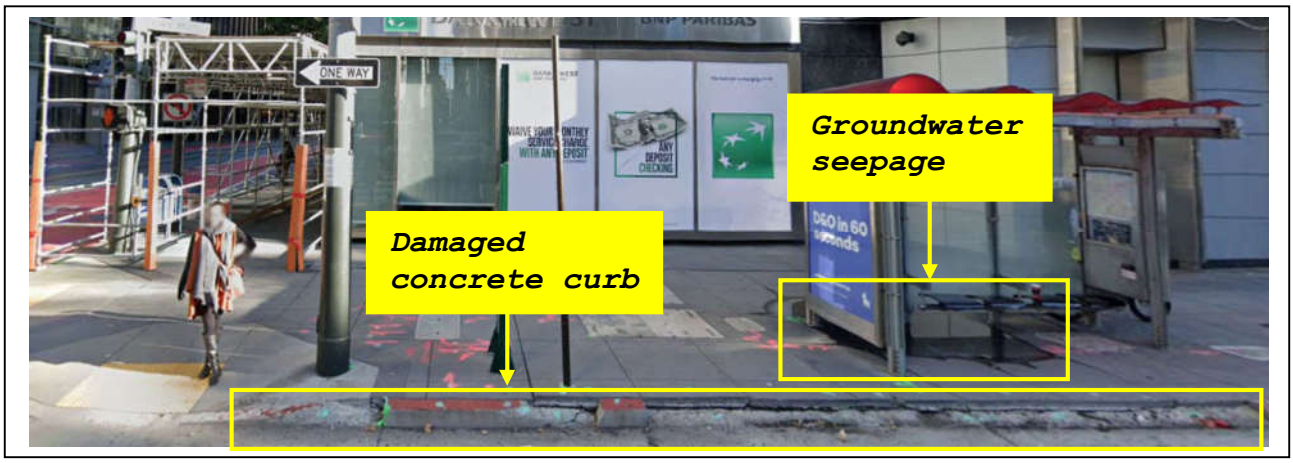


Figure 46: Annotated photograph of Fremont Street at the northern end of the block, dated December 2018; downloaded from Google Maps.

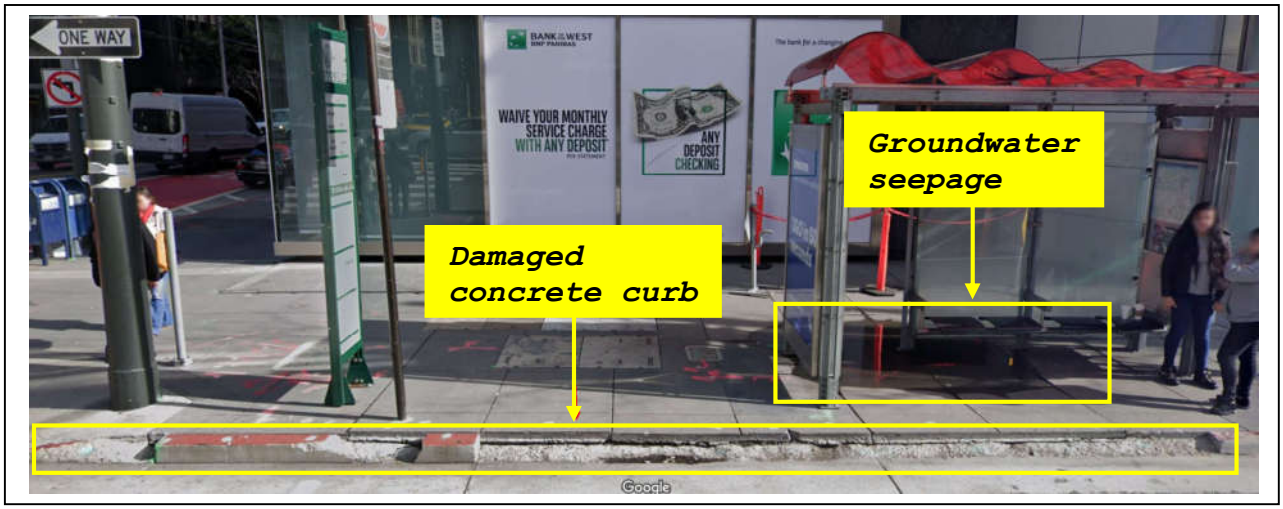


Figure 47: Annotated photograph of Fremont Street at the northern end of the block, dated February 2019; downloaded from Google Maps.

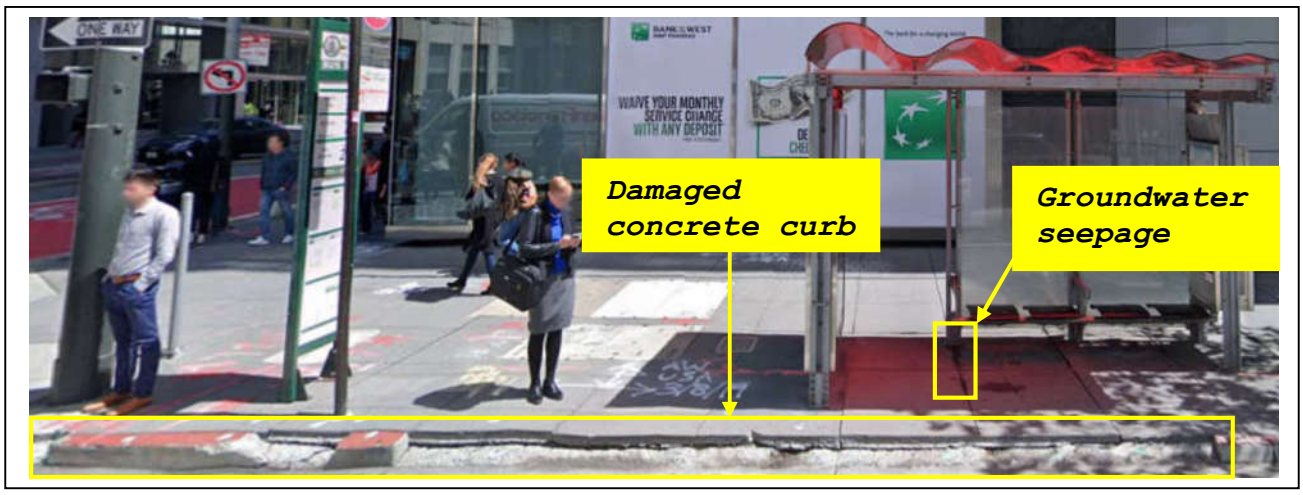


Figure 48: Annotated photograph of Fremont Street at the northern end of the block, dated April 2019; downloaded from Google Maps.

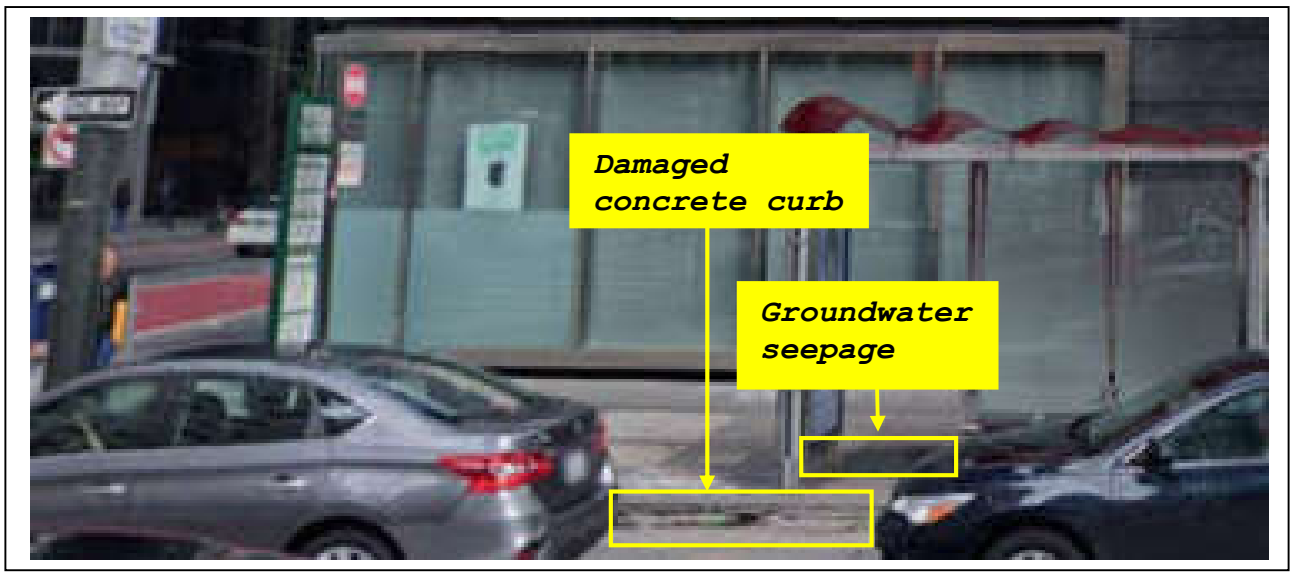


Figure 49: Annotated photograph of Fremont Street at the northern end of the block, dated January 2020; downloaded from Google Maps.

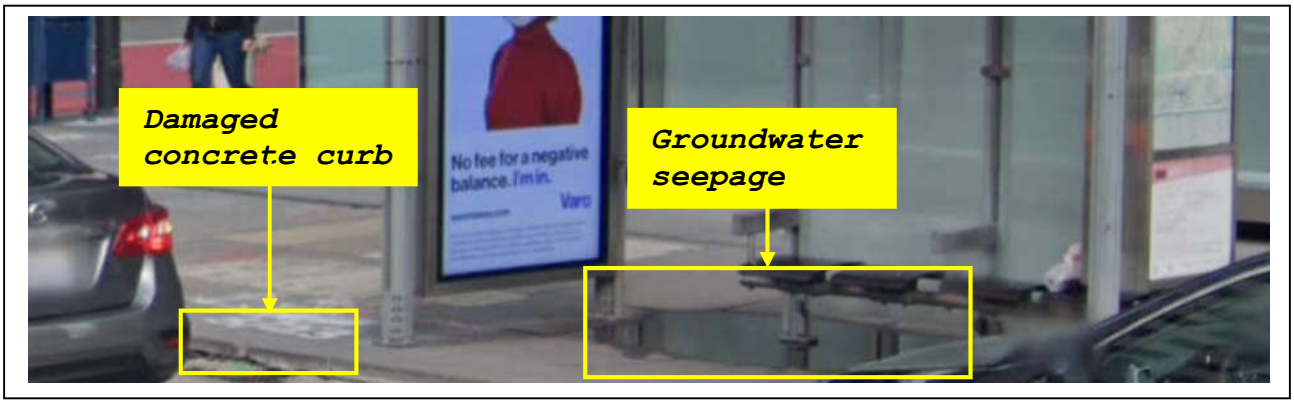


Figure 50: Close-up of groundwater seepage in Figure 49, viewed from a different angle.

Figure 51: Annotated photograph of Fremont Street at the center of the block, dated April 2011; downloaded from Google Maps.

Figure 52: Close-up of the left side of Figure 51.

Figure 53: Close-up of the right side of Figure 51.

Figure 54: Annotated photograph of Fremont Street at the center of the block, dated October 2014; downloaded from Google Maps.

Figure 55: Annotated photograph of Fremont Street at the center of the block, dated April 2016; downloaded from Google Maps.

Figure 56: Annotated photograph of Fremont Street at the center of the block, dated April 2017; downloaded from Google Maps.

Figure 57: Annotated photograph of Fremont Street at the center of the block, dated April 2019; downloaded from Google Maps.

Figure 58: Close-up of the left side of Figure 57.

Figure 59: Close-up of the right side of Figure 57.

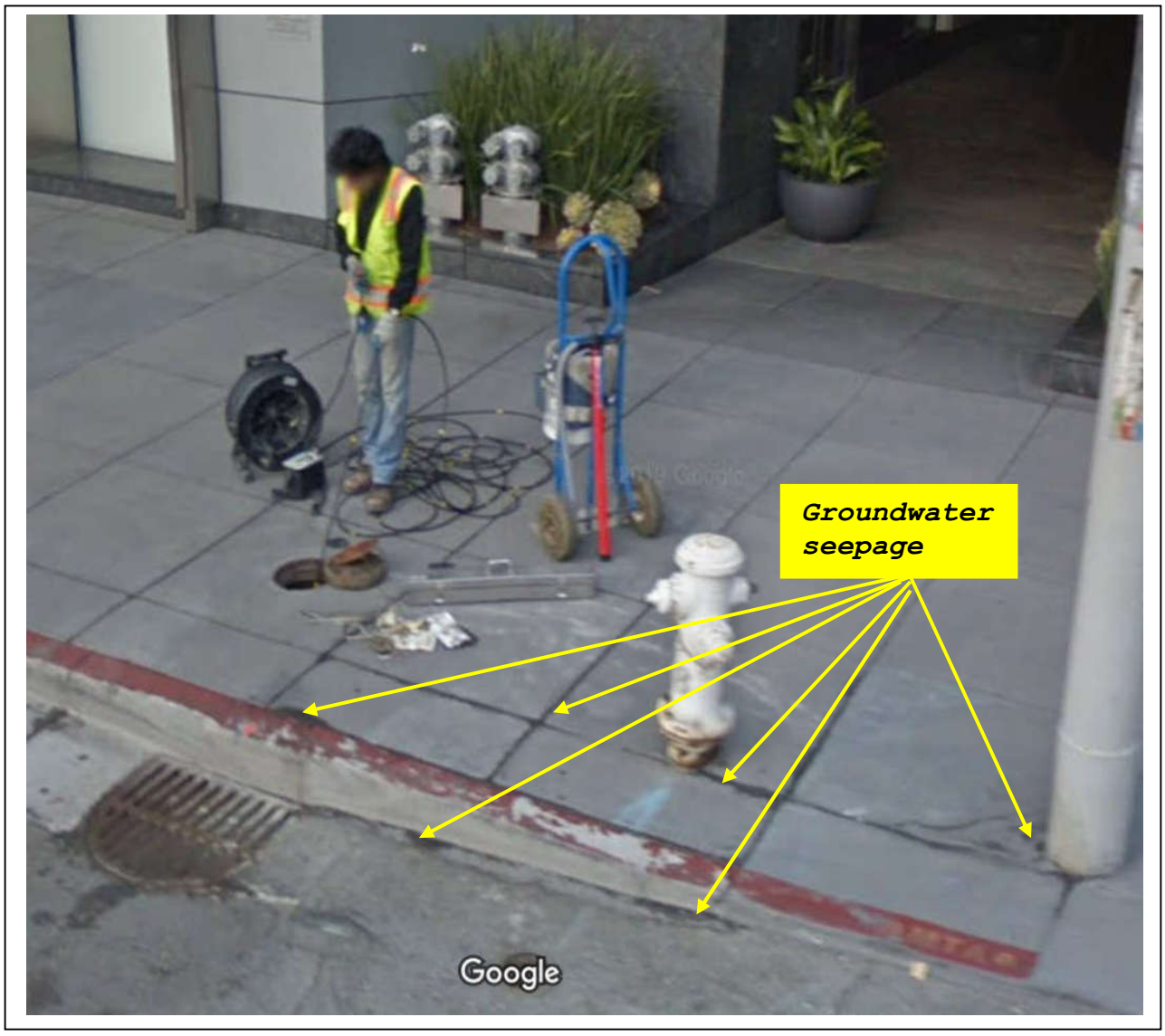


Figure 60: Annotated photograph of Fremont Street at the southern end of the block, dated February 2016; downloaded from Google Maps.

Figure 61: Annotated photograph of Fremont Street at the southern end of the block, dated October 2017; downloaded from Google Maps.

Figure 62: Close-up of the left side of Figure 61.

Figure 63: Close-up of the right side of Figure 61.

Figure 64: Annotated photograph of Fremont Street at the southern end of the block, dated December 2018; downloaded from Google Maps.

Figure 65: Close-up of the left side of Figure 64.

Figure 66: Close-up of the right side of Figure 64.

Figure 67: Annotated photograph of Fremont Street at the southern end of the block, dated February 2019; downloaded from Google Maps.

Figure 68: Close-up of the left side of Figure 67, showing the damaged concrete curb and groundwater seepage.

Figure 69: Close-up of the right side of Figure 67, showing the damaged concrete curb and groundwater seepage.

Figure 70: Close-up of Figure 69, showing the damaged concrete curb.

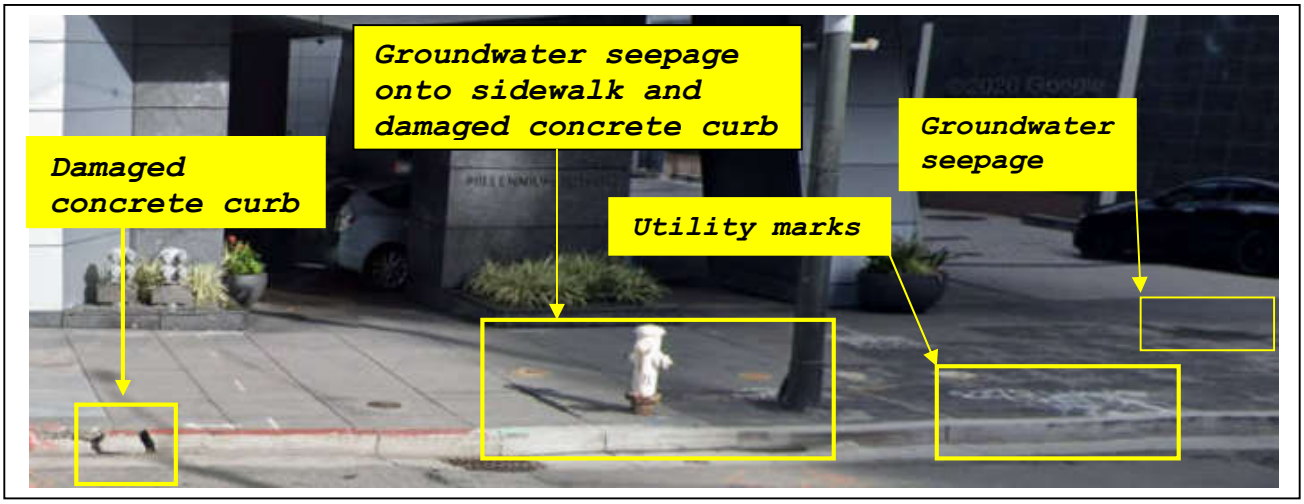


Figure 71: Annotated photograph of Fremont Street at the southern end of the block, dated January 2020; downloaded from Google Maps.

Figure 72: Close-up of the left side of Figure 71, showing the damaged concrete curb.

Figure 73: Close-up of the center of Figure 71, showing the damaged concrete curb and groundwater seepage.

Figure 74: Close-up of the right side of Figure 71, showing revised utility marks painted on the sidewalk; the date 3/8/19 has been crossed out, and another date, 5/23, has been added.

Figure 75: Close-up of groundwater seepage in Figure 71, viewed from a different angle.

The left-hand side of Figure 76 summarizes the approximate dates and locations that groundwater seepage and damaged concrete curbs were documented by images on Google Maps.

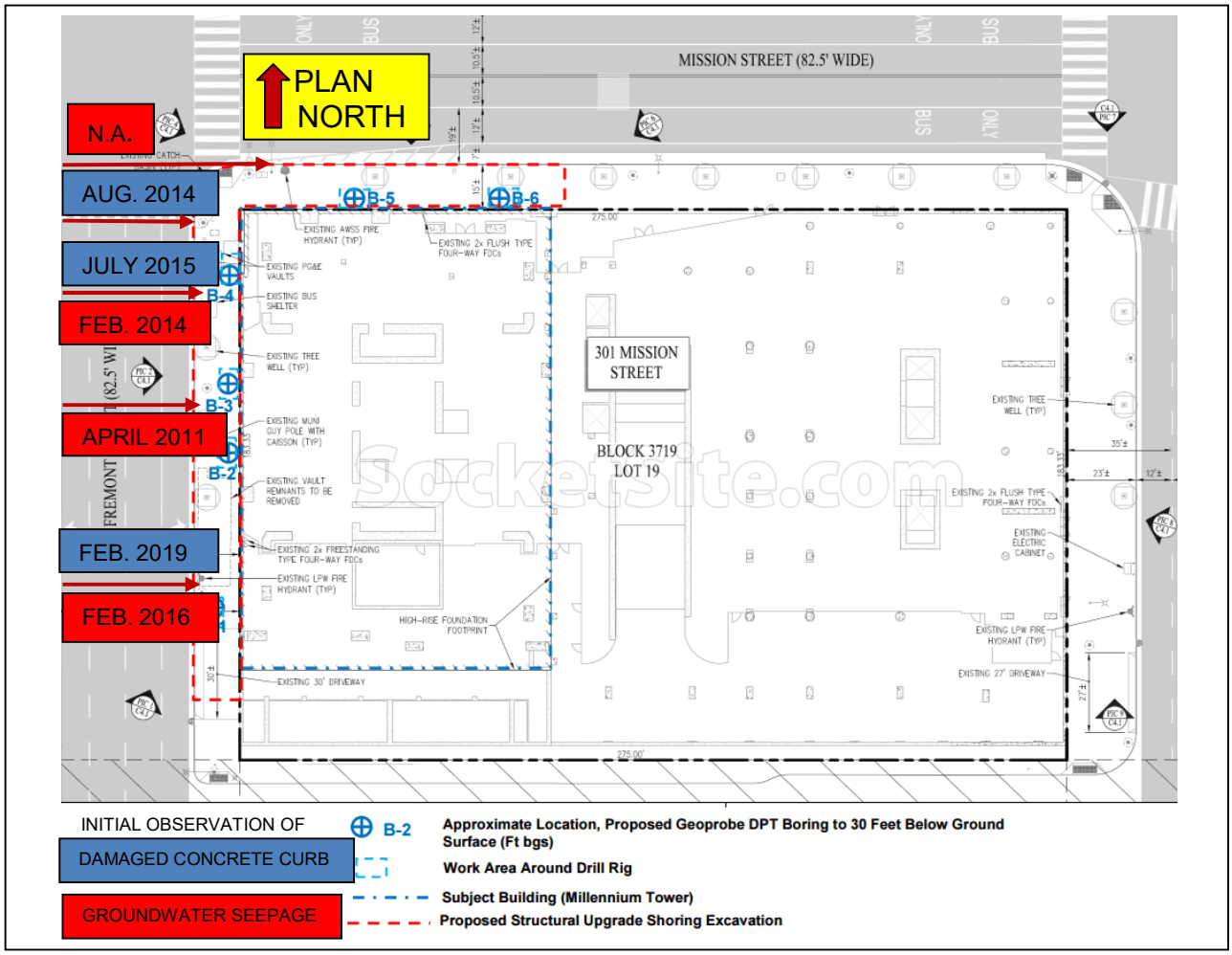


Figure 76: Extract from the plan to fix the Millennium Tower, article dated March 12, 2019; downloaded from www.socketsite.com, with annotations by Carl C. Chan.

In Figures 28 to 31, the lack of groundwater seepage onto the sidewalk was likely because the Millennium Tower was tilting to a lesser magnitude toward Mission Street, which corresponds to lower pressure imposed on the soil block adjacent to the foundation of the tilting Millennium Tower.

Based on Figures 33 to 75, the observed groundwater seepage onto the Fremont Street sidewalk and the damaged concrete curbs started from the north end of Fremont Street at Mission Street and proceeded southward along Fremont Street. It appears that the groundwater seepage onto the sidewalk preceded the damage to the concrete sidewalk curb.

Figures 33 to 75 are further proof that the pressure imposed by the tilting of the Millennium Tower, via its foundation wall, squeezed out the groundwater onto the sidewalk.

Did the technicians who are shown in Figure 42, dated October 2016, and in Figure 60, dated February 2016, try to determine the source of and resolve the groundwater seepage onto the sidewalk? Based on Figures 49 and 50, dated January 2020, and in Figures 67 and 71, dated February 2019 and January 2020, respectively, the technicians were unsuccessful in determining the source of the water.

The damaged concrete curb sections along Fremont Street are at the Millennium Tower's north and south ends. The tower has two distinct vertical offsets that form three separate planes of building façade along Fremont Street. The concrete curb along the center of the building façade has no damaged sections.

The center panel of the glass building façade appears to be bounded by two sets of reinforced-concrete shear walls, highlighted in yellow in Figure 77. Does the concrete curb along the center section not exhibit damage because of the restraint that the two sets of reinforced-concrete shear wall systems provide? Has that restraint reduced the Fremont Street foundation wall's deformation, which caused the seepage of groundwater onto the sidewalk but not damage to the concrete curb?

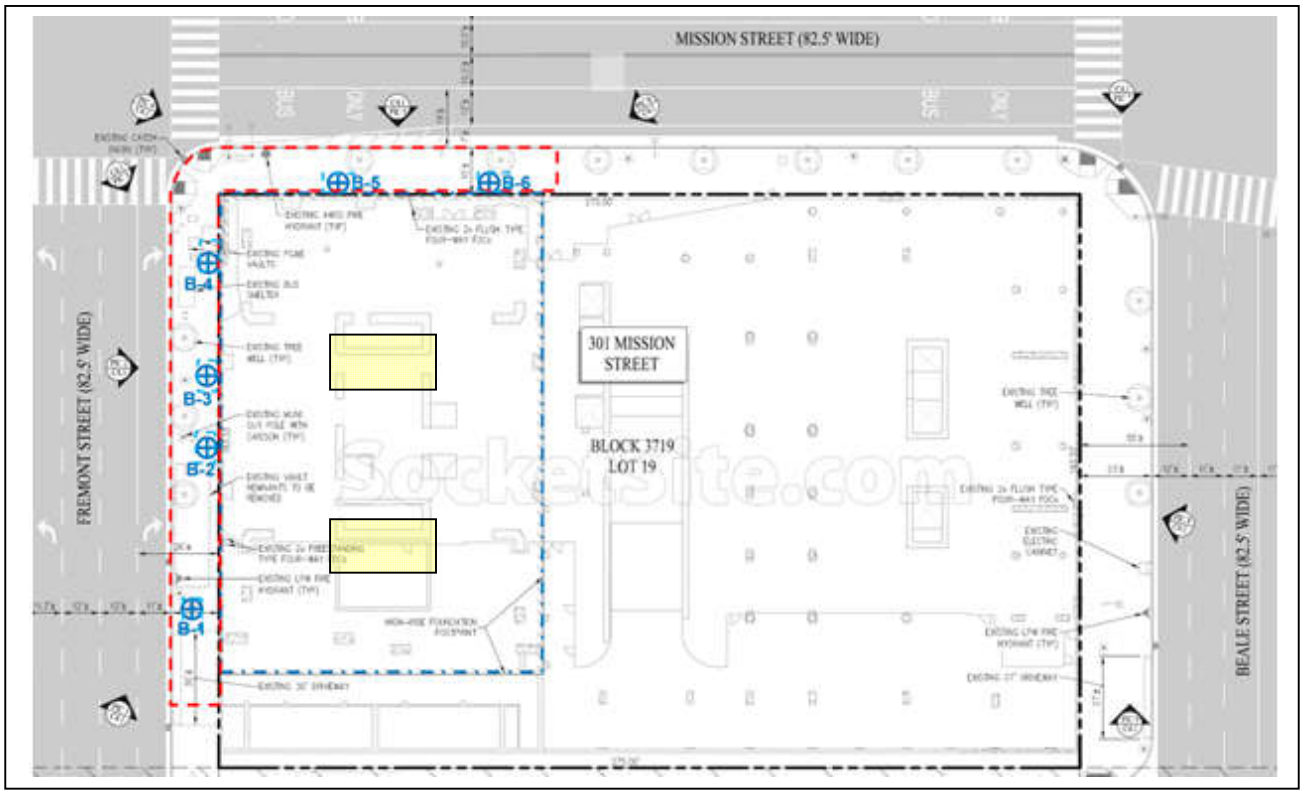
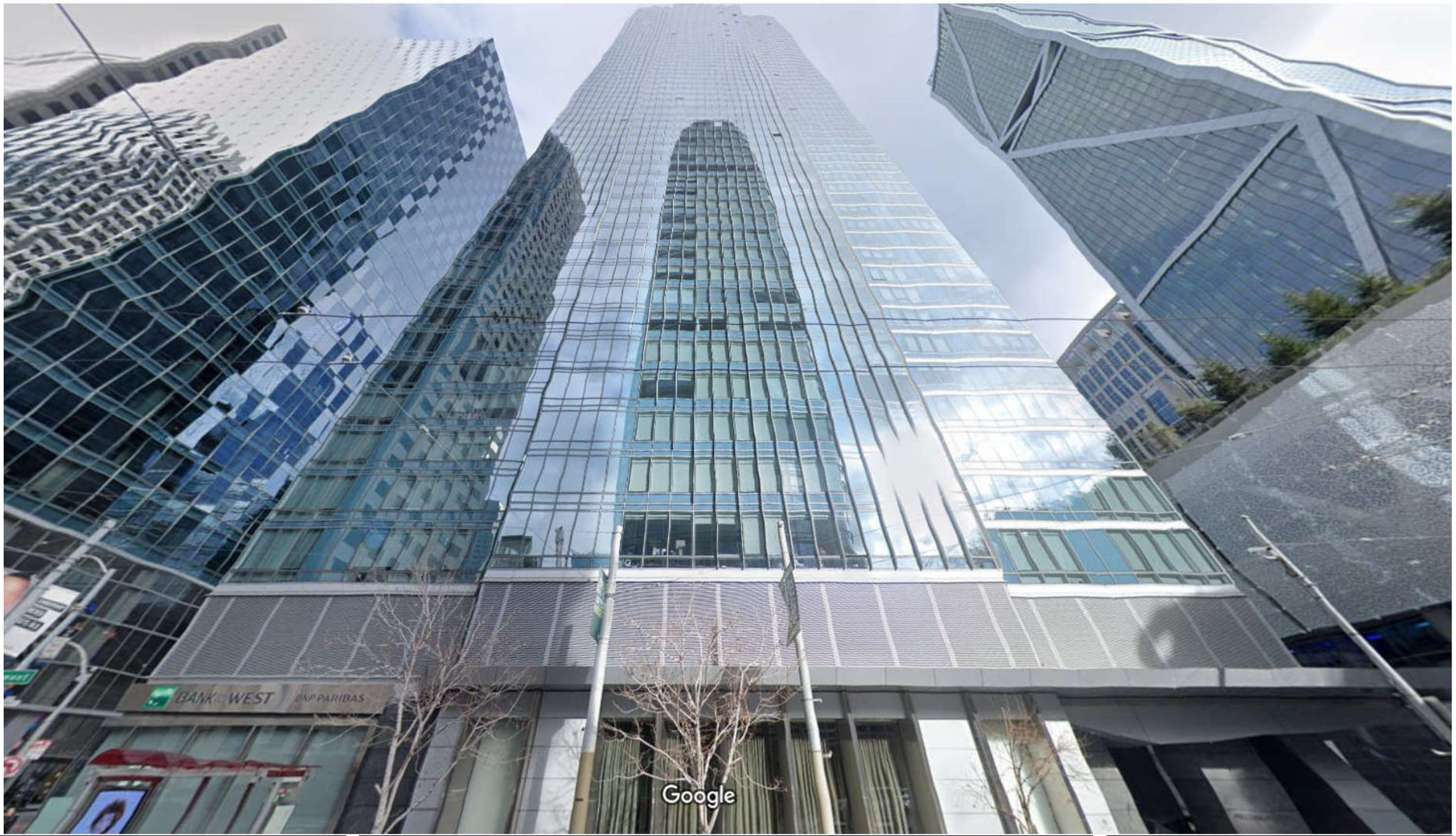


Figure 77: Drawing with highlighted reinforced-concrete shear wall systems that form the boundary of the center glass façade, shown on the reference map extract from the plan to fix the Millennium Tower, article dated March 12, 2019; downloaded from www.socketsite.com,

Figure 78 shows the three separate planes of the building façade.



SEE FIGURES 33 TO 50 FOR GROUNDWATER SEEPAGE AND DAMAGED CONCRETE CURB.

SEE FIGURES 51 TO 59 FOR GROUNDWATER SEEPAGE BUT LACK OF DAMAGED CONCRETE CURB.

SEE FIGURES 60 TO 75 FOR GROUNDWATER SEEPAGE AND DAMAGED CONCRETE CURB.

Figure 78: Photograph of the Millennium Tower facing Fremont Street, dated January 2020; downloaded from Google Maps, with annotations by Carl C. Chan.

Figure 79 is a graphic representation of the pressure imposed by the tilting of the Millennium Tower's foundation wall via the concrete sidewalk, which caused damage to the concrete curb.

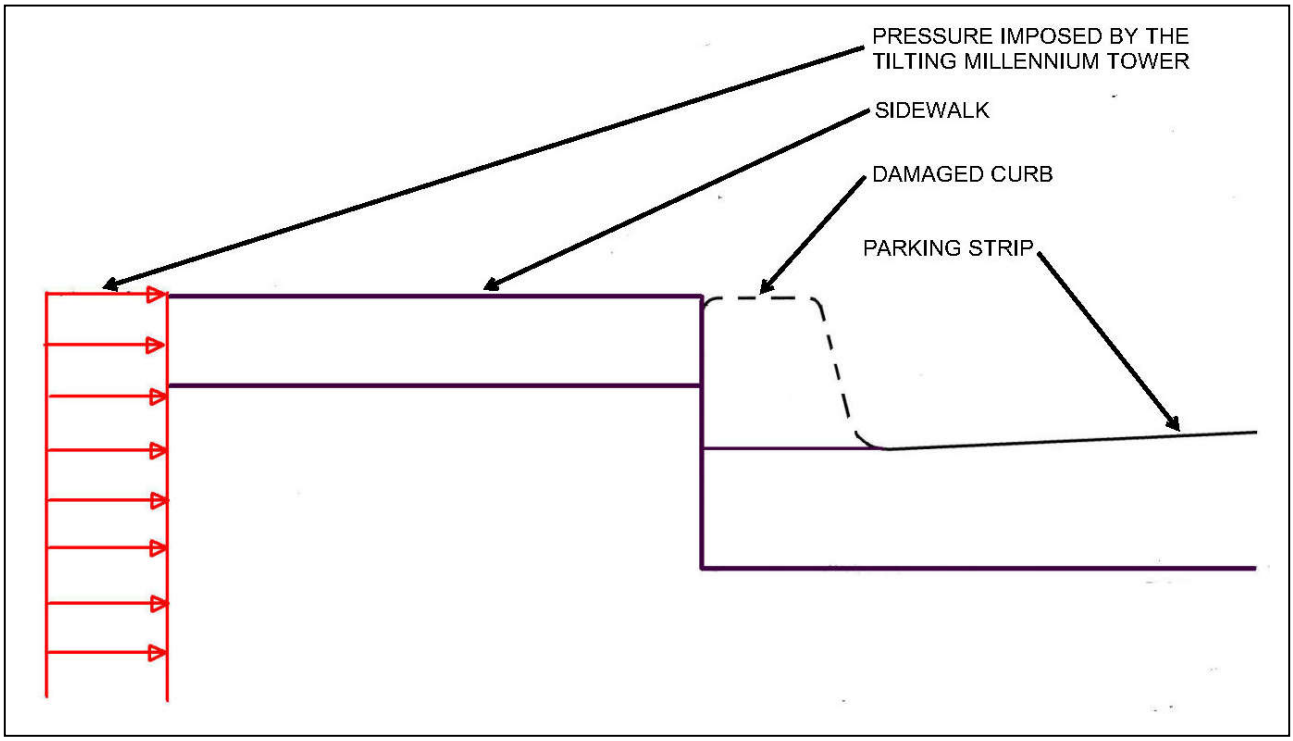


Figure 79: Annotated depiction of the concrete curb failure mode via pressure imposed from the tilting Millennium Tower.

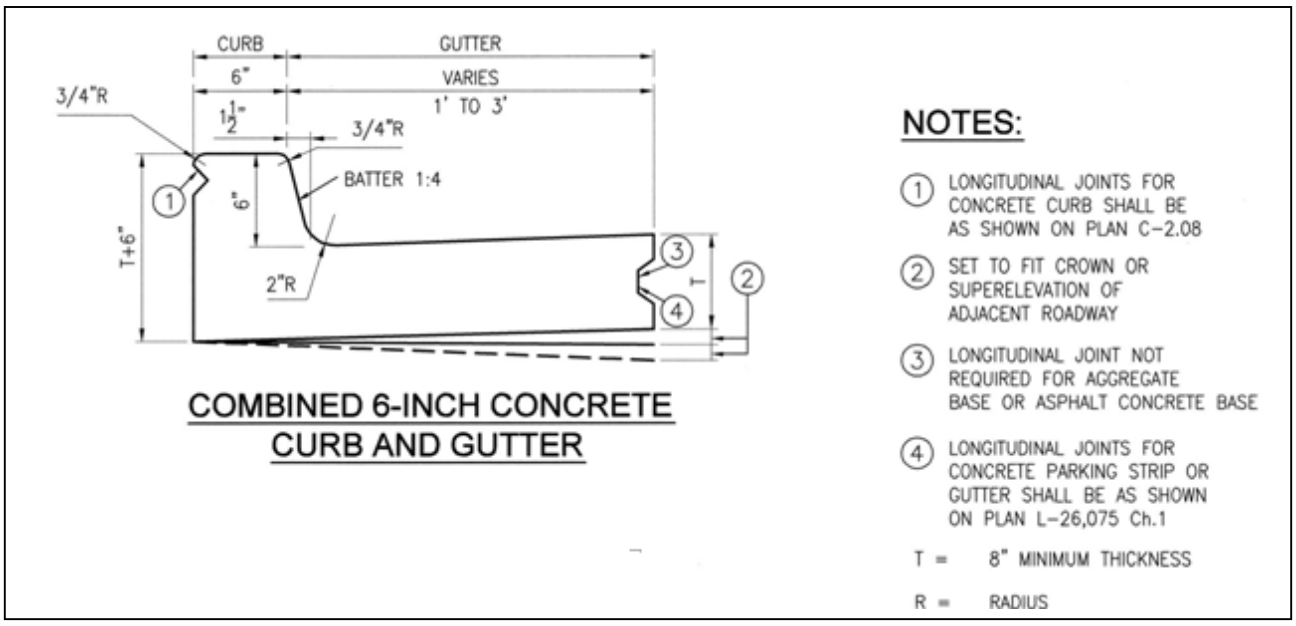


Figure 80: Standard curb and gutter detail; downloaded from the Department of Public Works website.

Following is a link to the standard curb and gutter detail:
http://sfpublicworks.org/sites/default/files/87%2C170.pdf

The left-hand side of Figure 81 shows the approximate locations of the photographs in Figures 28 to 75, which constitute a time study of the concrete sidewalks' condition based on images from Google Maps.

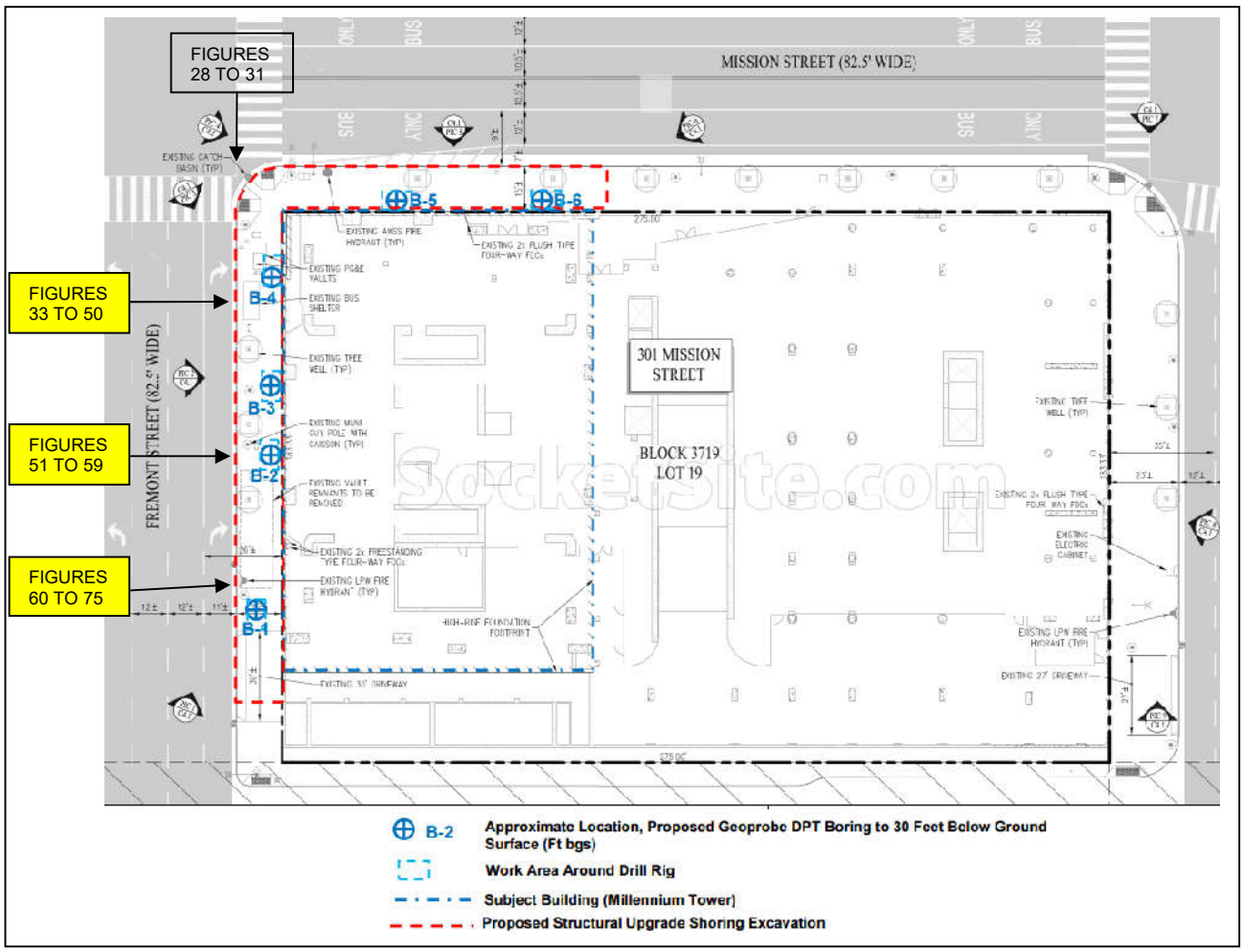


Figure 81: Reference map for photographs in Figures 28 to 75, reference map extract from the plan to fix the Millennium Tower, article dated March 12, 2019; downloaded from www.socketsite.com, with annotations by Carl C. Chan.

DAMAGED WINDOWS/GLASS

Two instances of window cracking and one window failure have occurred at the Millennium Tower. It appears that these damaged windows/glass occurred after signs of damage to concrete curbs that started from the north end of Fremont Street at Mission Street and proceeded southward along Fremont Street.

NBC

New Crack in San Francisco's Tilting Millennium Tower

By Jaxon Van Derbeken • Published September 4, 2018 • Updated on September 5, 2018 at 7:32 pm

A large crack formed in a window at the sinking and tilting Millennium Tower over the Labor Day weekend, prompting officials there to block off part of the sidewalk on Mission Street as a precaution, NBC Bay Area's Investigative Unit has learned.

City inspectors issued a notice of violation on Tuesday, giving the Millennium management 72 hours to report back on the extent of the problem and the soundness of the building's façade in light of the failure.

Residents started hearing creaking sounds followed by a loud popping noise at 2:30 a.m. Saturday. Soon afterward, one owner found the crack in his window in a 36th floor unit in the north western corner of the 58-story high-rise. The tower is currently tilting some 18 inches when measured at the top.

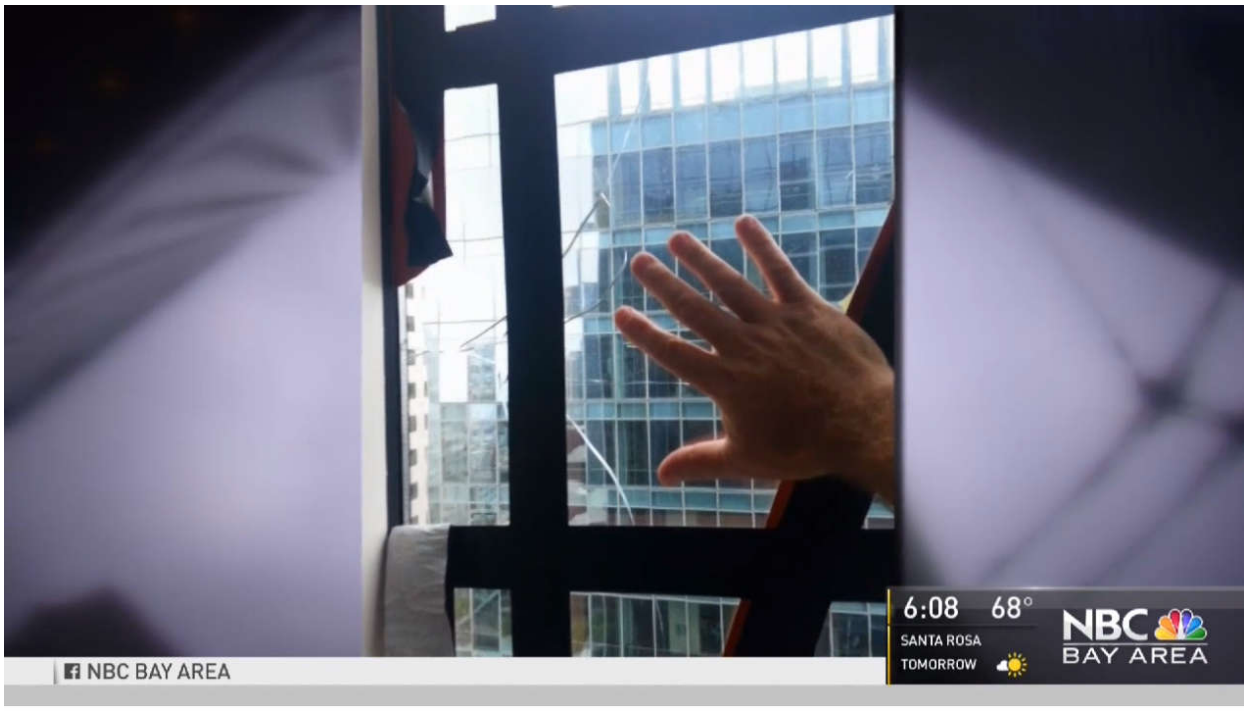


Figure 82: Page 1 of 2-page news article dated September 4, 2018, on the cracking of a window at the northwest corner of the Millennium Tower; downloaded from www.nbcbayarea.com.

San Francisco City Supervisor Aaron Peskin notes the failed window was supposed to withstand hurricane force winds.

"When you have a window at the 36th floor that cracks in the middle of the night that is a big wake up call," says Peskin, who has held a series of hearings into why the tower has been sinking so dramatically.

In a bulletin about the latest problem sent to owners on Labor Day and obtained by NBC Bay Area, building manager Michael Scofield assured them a team of experts would soon assess what he described as "a large piece of glass that cracked."

Scofield acknowledged it's "possible that this incident is related to other issues in the building."

A string of problems may have been triggered by differential settlement of the structure -- everything from cracks in the basement walls to strange odors permeating some units.

The issue of who is to blame has become mired in a legal morass. As the building continues to sink and tilt, NBC Bay Area has detailed concerns by experts about the possibility the façade of the building, known as the curtain wall, may be separating from the interior structure.

That could pose a risk, they say, that a fire could spread through gaps between floors. The failure of the 36th floor window could be evidence of strain on the steel lattice that forms the façade.

For now, Millennium manager Scofield told residents the barrier will remain out front along Mission Street until repairs are made.

"This is a public safety hazard," Peskin says of the window failure, adding that the city Department of Building Inspection must act immediately to assure the safety of thousands of people who walk by the building every day.

"The real question is do we need to limit pedestrian access on the sidewalks beneath the Millennium?" he says. "I want our Department of Building Inspection to make that decision and pronto."

Department of Building Inspection spokesman William Strawn said in a statement late Tuesday that per the building engineer's comments to the city inspector, "It does not appear to present any sidewalk safety issue at this time. We will be following up."

Figure 83: Page 2 of 2-page news article dated September 4, 2018, on the cracking of a window at the northwest corner of the Millennium Tower; downloaded from www.nbcbayarea.com.

Following is a link to the September 4, 2018, news article:
https://www.nbcbayarea.com/news/local/new-crack-in-san-franciscos-tilting-millennium-tower-2/209294/

As of February 4, 2021, DBI District Inspectors "CM" and "SLW" were continuing to investigate the cracked-window complaint after it was filed 884 days ago.

COMPLAINT DATA SHEET

Complaint Number:	**201889961**		
Owner/Agent:	OWNER DATA SUPPRESSED	Date Filed:	
Owner's Phone:	--	Location:	301 MISSION ST
Contact Name:		Block:	3719
Contact Phone:	--	Lot:	020
Complainant:	COMPLAINANT DATA SUPPRESSED	Site:	301 Mission St (36th Flr)
		Rating:	
		Occupancy Code:	
		Received By:	Suzanna Wong
Complainant's Phone:		Division:	BID
Complaint Source:	OTHER SOURCE		
Assigned to Division:	BID		
Description:	Crack in 36th floor window. Sidewalk below potentially impacted. Pedestrian safety concern		

Instructions:

INSPECTOR INFORMATION

DIVISION	INSPECTOR	ID	DISTRICT	PRIORITY
BID	CHIU	63491		

REFFERAL INFORMATION

COMPLAINT STATUS AND COMMENTS

DATE	TYPE	DIV	INSPECTOR	STATUS	COMMENT
09/04/18	OTHER BLDG/HOUSING VIOLATION	BID	Clancy	CASE UPDATE	received complaint from Chief via phone and asked to swing bye and investigate. met with building engineer and building manager to discuss the issue, they were well aware of the fractured glazing in unit 36B and were allready working on a resolution for the repairs needed. at this time access was not available to the unit as the owner would need to be contacted prior to entry. a picture was shown of the fracture and it appeared to be on the the exterior side of the curtain wall panel, no damage was noted on the interior glazing of the panel, that been said a correction notice was issued to clarify what repairs are necessary and to investigate the adjacent curtain wall system,
09/05/18	OTHER BLDG/HOUSING VIOLATION	BID	Clancy	CASE UPDATE	site visit, met with building engineer and building manager to discuss any updates in which they were working on commissioning the window washing rig for inspections at the exterior side of the glazing. the building manager had contacted the unit owner to co-ordinate a time for an inspection of the fractured glazing, at this time the interior glazing remained intact and the exterior had fractured begining on the mid left hand side os the galaxing and fractured inward on the panel the fractures varied in length and did not go full panel. the building management are engaged with engineering teams including representatives from ENCLOS (The curtainwall subcontractor from the original construction) and are working to expedite exterior inspection and replacement of the window . DBI has also requested that a SFDBI building engineer be allowed to view the glazing at unit 36B
09/05/18	CASE OPENED	BID	Clancy	CASE RECEIVED	
09/05/18	OTHER BLDG/HOUSING VIOLATION	BID	Clancy	CASE UPDATE	case reviewed, to be investigated by district inspector. cm/slw

Figure 84: Complaint data sheet re cracked window; downloaded from the DBI website.

NBC

More Cracked Glass Found at SF's Millennium Tower

By Jaxon Van Derbeken • Published October 23, 2018 • Updated on October 23, 2018 at 11:27 pm

San Francisco building officials issued yet another violation Tuesday against the Millennium Tower after city-ordered inspection crews found another cracked window at the troubled high-rise.

The latest cracked window was found during an inspection last Wednesday. That exterior inspection came after NBC Bay Area first reported about a window that cracked unexpectedly on the 36th floor over Labor Day.

The failure, Millennium officials and their consultants have repeatedly asserted, amounted to an isolated incident in unit 36B on the Mission Street side of the structure, where scaffolding is still in place.

They blamed an exterior impact of an unknown origin, not the tilting and sinking of the structure. The city announced it was satisfied with that explanation after its own engineering consultant backed it up.

But then came the latest discovery, which involved a crack between the 9th and 10th floors on the Fremont Street side of the building. City officials say consultants hired by the owners, Allana, Buick and Bers, do not know what might have caused the newly discovered failure.

Meanwhile, Millennium officials told the city they hope to remove the cracked glass as soon as Wednesday, but the city issued a new violation notice against the owner, seeking more study and the reinstallation of the protective scaffold on Fremont Street by Friday.

William Strawn, spokesman for the Department of Building Inspection, said the city has been told building owners will take out the window and it will not impact the weatherization of the building.

"They will likely request that DBI withdraw the issued (violation notice) and the requirement to restore the protective scaffolding," Strawn said.

Figure 85: Page 1 of 2-page news article dated October 23, 2018, on the cracking of a window on the Fremont Street side of the Millennium Tower; downloaded from www.nbcbayarea.com.

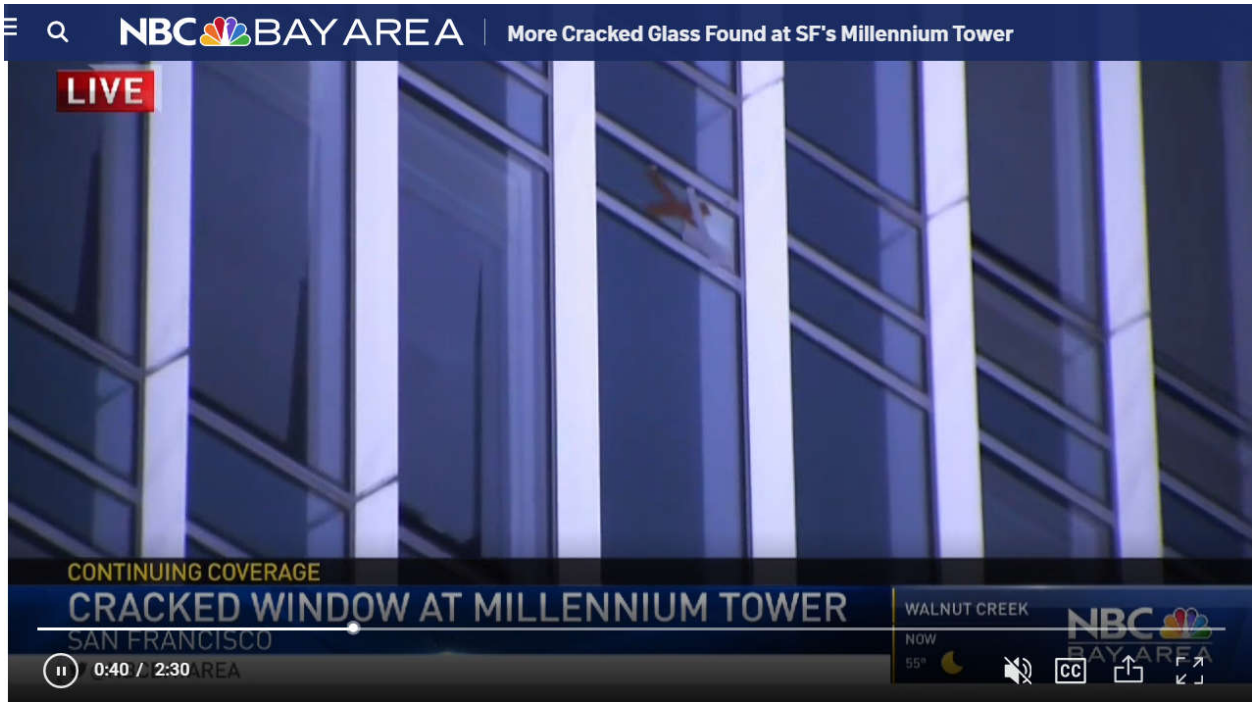


Figure 86: Page 2 of 2-page news article dated October 23, 2018, on the cracking of a window on the Fremont Street side of the Millennium Tower; downloaded from www.nbcbayarea.com.

Following is a link to the October 23, 2018, news article:
https://www.nbcbayarea.com/news/local/more-cracked-glass-found-at-sfs-millennium-tower/205162/

There is no DBI record of the cracked glass panel that was reported on October 23, 2018. DBI had withdrawn the notice of violation on the cracked glass panel, as reported at the bottom of Figure 85.

You selected:

Address: **301 MISSION ST** Block/Lot: **3719 / 020**

Please select among the following links, the type of permit for which to view address information:

Electrical Permits Plumbing Permits Building Permits Complaints

(Complaints matching the selected address.)

Complaint #	Expired	Date Filed	Status	Div	Block	Lot	Street #	Street Name
202017311		02/10/2020	ACTIVE	CES	3719	020	301	MISSION ST
~~201898023~~		10/11/2018	CLOSED	BID	3719	020	301	MISSION ST
201889961		09/05/2018	ACTIVE	BID	3719	020	301	MISSION ST
~~201889051~~		08/30/2018	CLOSED	BID	3719	020	301	MISSION ST
~~201647651~~		11/18/2016	CLOSED	BID	3719	020	301	MISSION ST
~~201643601~~		10/26/2016	CLOSED	BID	3719	020	301	MISSION ST
201632051		08/16/2016	ACTIVE	BID	3719	020	301	MISSION ST

Figure 87: Complaint listing without a record of the cracked glass panel that was reported on October 23, 2018; downloaded from the DBI website.

MILLENNIUM TOWER

Inspectors Cite Millennium Tower in Window Failure

NBC Bay Area's Investigative Unit obtained the violation notice on Monday, which requires the "unsafe" window condition be immediately rectified and an engineering report be completed by Tuesday.

*By **Jaxon Van Derbeken** • Published February 10, 2020 • Updated on February 10, 2020 at 7:28 pm*

Figure 88: Page 1 of 3-page news article dated February 10, 2020, on window failure and cracking at the Millennium Tower on the side facing the Transbay Transit Center; downloaded from www.nbcbayarea.com.

San Francisco's Department of Building Inspection has issued a violation notice at the Millennium Tower after a window failure there on Sunday sent shards of glass raining 41 stories down around the sinking and tilting building.

NBC Bay Area's Investigative Unit obtained the violation notice on Monday, which requires the "unsafe" window condition be immediately rectified and an engineering report be completed by Tuesday.

No one was injured in the mid-morning incident on Sunday, but the glass cleanup forced the temporary shutdown of the nearby Transbay transit center park and bus terminal adjacent to the building.

In a statement, the Millennium Tower Homeowner's Association called the "unfortunate isolated incident" a product of "Mother Nature and human error."

The error, the association said, occurred when a resident of a unit overlooking the Transbay transit center "inadvertently" left their 41st floor unit window open, which then broke in gale-force winds.

Residents said in interviews Monday, however, that they weren't alerted to shut their windows before the windstorm, only after the failure. Many windows were back open at the tower as of Monday.

"Just when you think it's safe to go outside of the Millennium Tower, it's raining glass," said San Francisco Supervisor Aaron Peskin in an interview Monday in which he stressed that Sunday's failure was not Millennium's first window problem.

On Sept. 1, 2018, a 36th floor window suddenly fractured. An engineering firm blamed that failure on a still unexplained exterior impact, concluding that it was not the product of the building's sinking and tilting. Those findings were reviewed and backed by a city-appointed panel of experts, and the city allowed protective scaffolding to be removed.

But Peskin says the latest mishap should trigger a new, thorough investigation.

He said the city should expect that high-rise windows – open or not – would be able to withstand mega earthquakes as well as hurricane-force winds.

"We're obviously all very pleased that nobody was hurt or injured, but the city should take this seriously and not brush this glass under the carpet," he said.

Figure 89: Page 2 of 3-page news article dated February 10, 2020, on window failure and cracking at the Millennium Tower on the side facing the Transbay Transit Center; downloaded from www.nbcbayarea.com.

The Millennium's large transom style windows extend out several inches – that's a design experts suggest could put them at greater risk of failure when left open in high winds.
"I think it's time for us to compel the developer and the Homeowners Association to come forward with a full assessment of the window systems and what steps they are going to take to make sure other windows don't fail," Peskin concluded.

But for now, the DBI notice only calls for the immediate window replacement and a full engineering report by Tuesday. The notice also requires that the association provide protective facing for a second cracked window inspectors found on the sixth floor.

City inspectors say that while that second crack was found on the same side of the building as the failed window, they aren't sure yet if the sixth-floor cracking was the product of falling debris. The city wants the homeowners association to analyze that failure as well.

Meanwhile, the $100 million planned fix on the tilting building – which involves shoring up two sides in a plan already approved by the city – is apparently bogged down in legal wrangling and the work isn't projected to begin until the summer at the earliest.

Figure 90: Page 3 of 3-page news article dated February 10, 2020, on window failure and cracking at the Millennium Tower on the side facing the Transbay Transit Center; downloaded from www.nbcbayarea.com.

Following is a link to the February 10, 2020, news article:
https://www.nbcbayarea.com/investigations/inspectors-cite-millennium-tower-in-window-failure/2231506/

As of February 4, 2021, a Director Hearing of the case was on hold due to COVID-19, after the complaint was filed 362 days ago.

COMPLAINT DATA SHEET

Complaint Number:	**202017311**		
Owner/Agent:	OWNER DATA SUPPRESSED	Date Filed:	
Owner's Phone:	--	Location:	301 MISSION ST
Contact Name:		Block:	3719
Contact Phone:	--	Lot:	020
Complainant:	COMPLAINANT DATA SUPPRESSED	Site:	
		Rating:	
		Occupancy Code:	
		Received By:	Suzanna Wong
Complainant's Phone:		Division:	BID
Complaint Source:	FIELD OBSERVATION		
Assigned to Division:	CES		
Description:	Responding to an emergency call out, it was observed that a window on the 41st floor has broken loose from the frame due to high wind. Glass has fallen onto Fremont St and Trans Bay Park - a cracked window was observed on the 6th floor and could have been due to falling debris.		
Instructions:			

INSPECTOR INFORMATION

DIVISION	INSPECTOR	ID	DISTRICT	PRIORITY
CES	CHUNG	6353		

REFFERAL INFORMATION

DATE	REFERRED BY	TO	COMMENT
2/12/2020	Suzanna Wong	CES	Per Kevin Birmingham

COMPLAINT STATUS AND COMMENTS

DATE	TYPE	DIV	INSPECTOR	STATUS	COMMENT
02/09/20	OTHER BLDG/HOUSING VIOLATION	BID	Birmingham	FIRST NOV SENT	1st NOV issued by KB; slw
02/10/20	OTHER BLDG/HOUSING VIOLATION	BID	Birmingham	CASE UPDATE	1st NOV mailed; slw
02/10/20	CASE OPENED	BID	Birmingham	CASE RECEIVED	
02/12/20	OTHER BLDG/HOUSING VIOLATION	BID	Birmingham	REFERRED TO OTHER DIV	Case referred to CES per KB; slw
02/12/20	OTHER BLDG/HOUSING VIOLATION	BID	Birmingham	CASE UPDATE	Final warning letter mailed; slw
02/12/20	CASE OPENED	BID	Birmingham	FINAL WARNING LETTER SENT	
02/13/20	OTHER BLDG/HOUSING VIOLATION	CES	Hinchion	CASE RECEIVED	Case Rcvd CES -akw
02/13/20	OTHER BLDG/HOUSING VIOLATION	CES	Chung	CASE UPDATE	Researched permit history /status-mc
02/13/20	OTHER BLDG/HOUSING VIOLATION	CES	Chung	REFER TO DIRECTOR'S HEARING	Reviewed & scheduled for the DH on 03/10/2020-mc
02/19/20	OTHER BLDG/HOUSING VIOLATION	CES	Chung	CASE UPDATE	Processed photos-mc
02/19/20	OTHER BLDG/HOUSING VIOLATION	CES	Chung	DIRECTOR HEARING NOTICE POSTED	Notice of DH posted-mc
03/04/20	OTHER BLDG/HOUSING VIOLATION	INS	Hinchion	CASE UPDATE	Final NOV returned, undelivered; ag
03/10/20	OTHER BLDG/HOUSING VIOLATION	CES	Chung	CASE CONTINUED	Case continued per H.O, the next DH is on 04/14/2020-mc
04/07/20	OTHER BLDG/HOUSING VIOLATION	CES	Chung	CASE UPDATE	Due to the shelter-in-place Order the DH has been postponed-mc

Figure 91: Complaint data sheet re loose window; downloaded from the DBI website.

Figure 92 summarizes the approximate dates and locations of damaged windows/glass as reported on the NBC Bay Area website and damaged concrete curbs as shown in images on Google Maps.

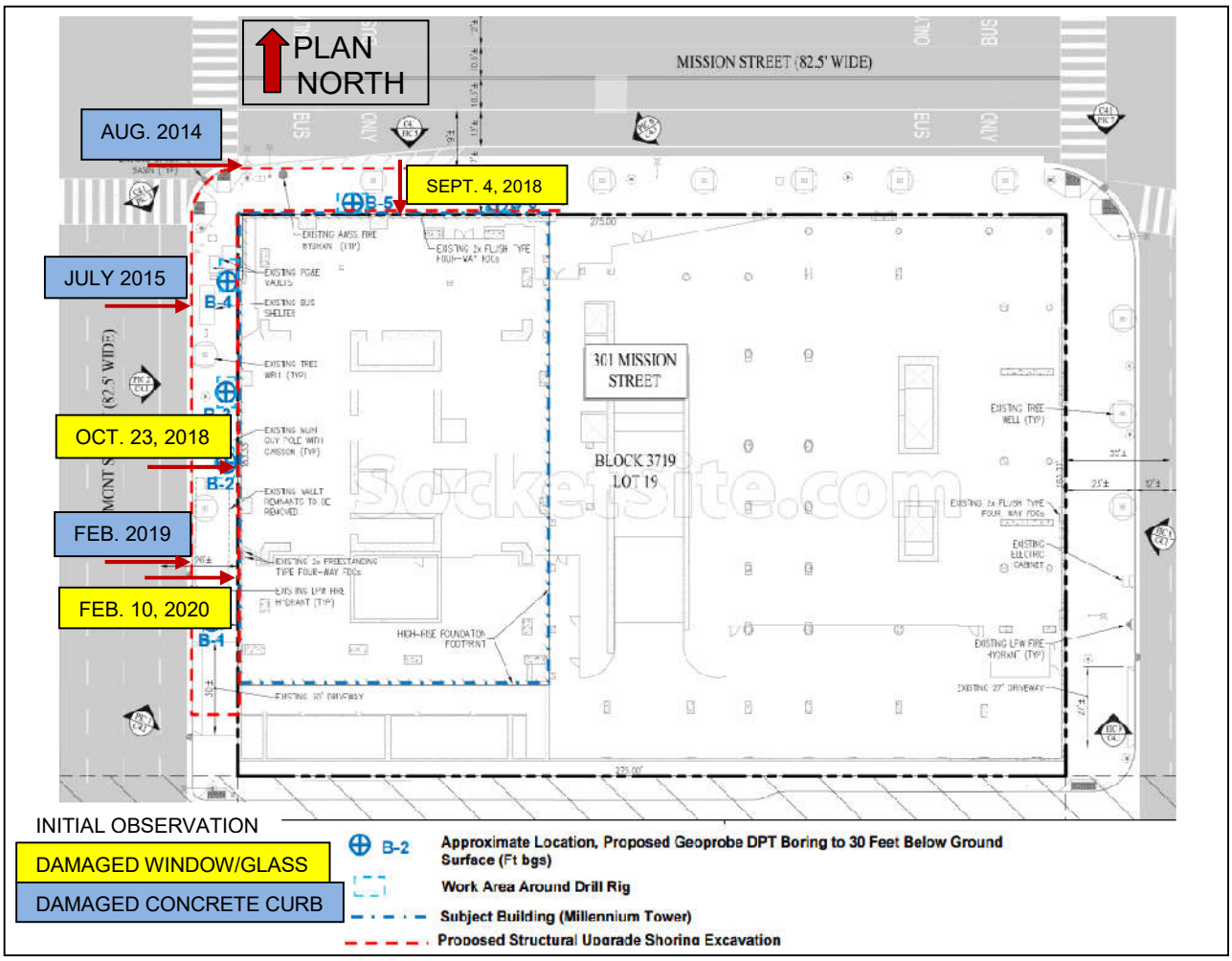


Figure 92: Extract from the plan to fix the Millennium Tower, article dated March 12, 2019; downloaded from www.socketsite.com, with annotations by Carl C. Chan.

PLUNGING IRON PAN

A news article was published on May 12, 2020, about the sinking and tilting Millennium Tower and an iron pan that had fallen.

Plunging Iron Pan Narrowly Misses Millennium Tower Resident

By **Jaxon Van Derbeken** • Published May 12, 2020 • Updated on May 12, 2020 at 11:58 pm

In another strange twist at San Francisco's sinking and tilting Millennium Tower, a cast iron pan apparently used to prop open a problem window in an apartment, fell several stories and crashed onto the sidewalk below, narrowly missing a bystander.

The incident occurred just after 1 p.m. on Monday on the Fremont Street side of the building at 301 Mission Street. According to a briefing by tower management to residents, the frypan just missed hitting a resident who was outside on the sidewalk.

Back in February, an open window broke free in high winds, plunging 40 stories and crashing at the base of the building. No one was injured, but the tower was cited by city Department of Building Inspection officials who ordered a probe into the failure.

A Millennium spokesman, Doug Elmets, said Monday's incident involved an unknown resident who propped one window open despite residents having been alerted to keep their windows closed amid predicted high winds on Monday.

He called the incident "unfortunate" but "unintentional."

A notice from building management to residents on Monday said it was a "life safety" requirement that residents not prop open their windows.

Elmets said Tuesday that the building management is in talks with city officials about the engineering firm's report on the windows ordered after the February failure.

Engineers have told city building officials they suspect the mechanism that is supposed to brace the window and keep it open is the problem, but their detailed findings have not been made public.

In March, the building tried to order residents to disable their windows, but amid resistance they opted to continue to remind residents about the need to shut windows before high winds.

Supervisor Aaron Peskin said the city was lucky the stay-at-home order kept most people inside in what would have otherwise been a bustling start of a work week.

"The sidewalks would have been packed -- Somebody would have been killed," he said, adding: "So this is one of the only good results of the shelter-in-place order – other than the coronavirus isn't spreading."

Supervisor Matt Haney, whose district includes the building, says it's long past time for Millennium to get a handle on all of its problems.

"It really needs to be fixed from top to bottom," Haney said, "and I really feel awful for the residents and people who live in that area who have to look up every time you walk by, because you don't know what might be falling down."

Figure 93: News article about plunging iron pan, dated May 12, 2020; downloaded from www.nbcbayarea.com.

Following is a link to the exclusive news article:
https://www.nbcbayarea.com/investigations/national-investigations/plunging-iron-pan-narrowly-misses-millennium-tower-resident/2289351/

Were the seepage of groundwater onto the sidewalk, damaged concrete curbs, cracked windows/glass, and failed window the Millennium Tower's "canaries"?

Approximately 8 months after the publication of the "Structural Safety Review of the Millennium Tower" report, and approximately 8 months before the announcement of the fix for the Millennium Tower with underpinning piles positioned underneath the sidewalks, a posting by "epoxybot" on www.eng-tips.com described the tilting Millennium Tower. According to "epoxybot," the building appears to be plowing a wall of fill and mud in front of it, damaging a sewer line and concrete curb in front of the bus stop on Fremont Street.

Following is a link to the 301 Mission Street building postings on www.eng-tips.com:
https://www.eng-tips.com/viewthread.cfm?qid=412357

In 2014 the City of SF replaced the sewer line in Fremont St, claiming it was old and had probably needed to be replaced for some time but in 2011 in preparation for the Transbay Center project, utility lines were run immediately adjacent to the sewer line and if it was in such a bad state, it would have been dealt with then. It is more likely that the sewer line was damaged by the rotation of the Millennium Tower. Here is an April 2014 on the Microsoft Map page suggesting rotation, more are found on Google Maps in Nov. 2014 & later. The curb in front of the bus stop on Fremont St was in a preliminary state of failure. Even for the curb to be in this condition in 2014 took at least a year or two for this degree of deterioration to manifest. It has progressively been snapping like a candy cane for the last 4 years. It begs the question, what do the people at the SFPUC & SFDPW know and how long have they known. Has anyone been hurt at this bus stop? Why has it gone untended for so long? The building appears to be plowing a 35 foot wall of fill and mud in front of it.

April 2014

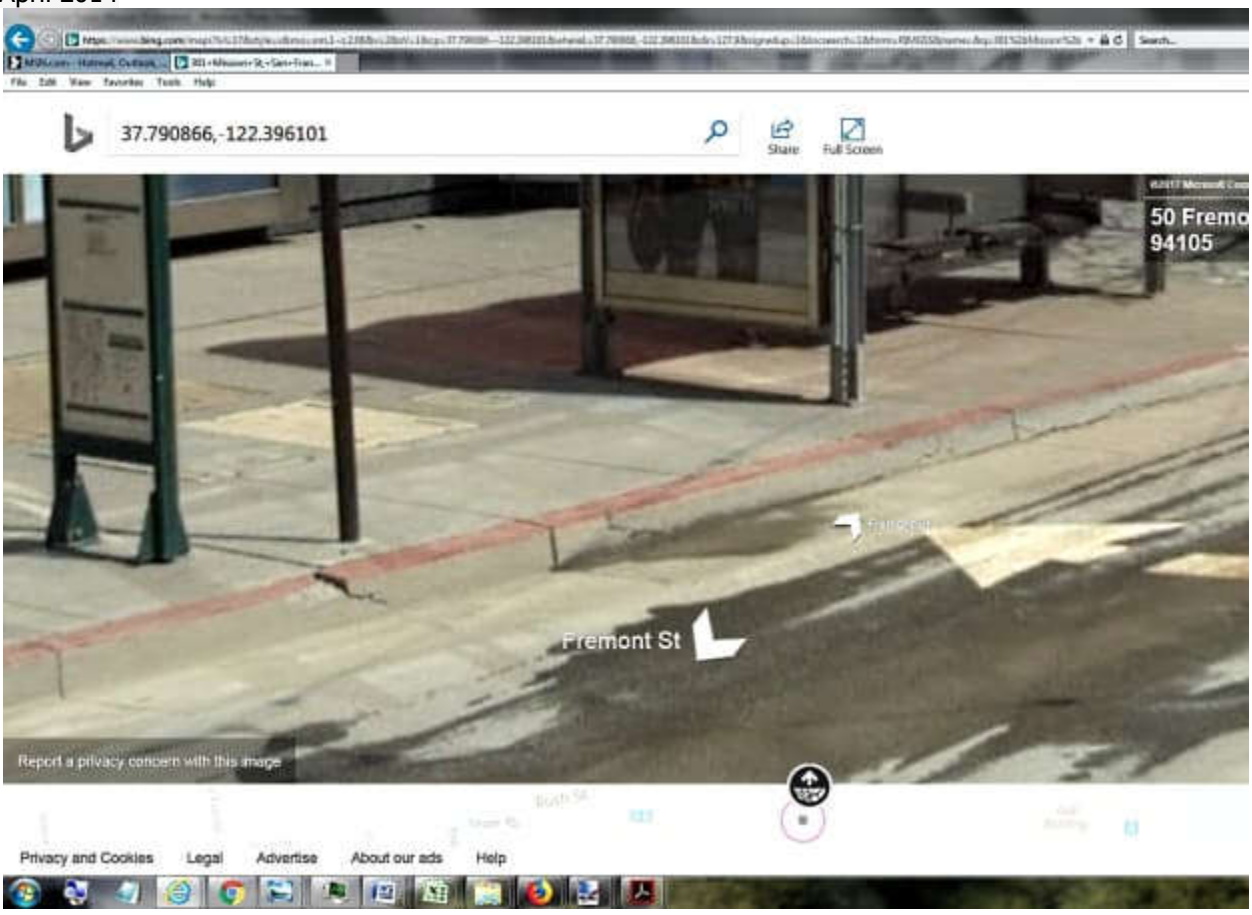


Figure 94: Posting dated April 2, 2018, on www.eng-tips.com by "epoxybot," with annotation by Carl C. Chan.

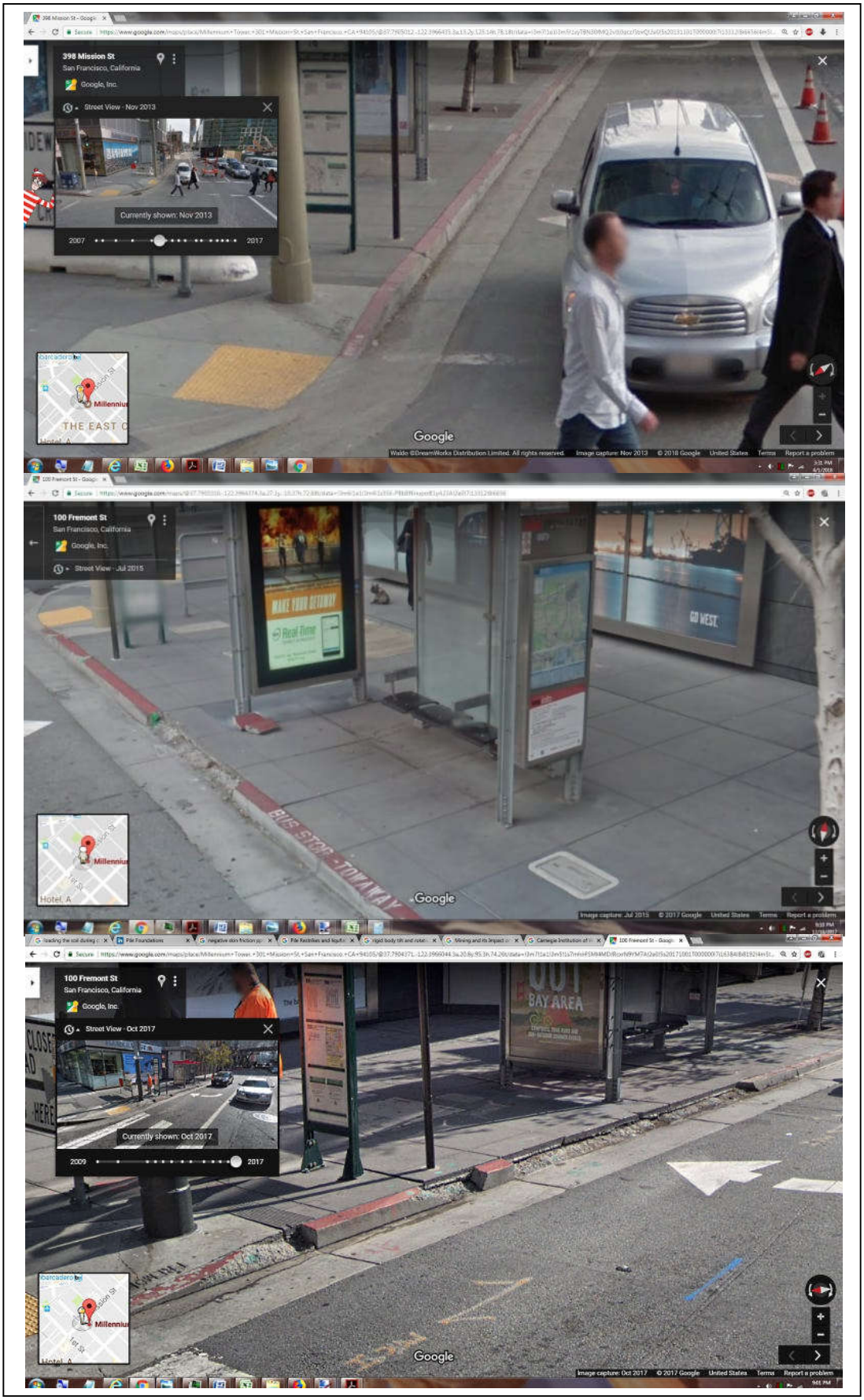


Figure 95: Posting dated April 2, 2018, on www.eng-tips.com by "epoxybot."

Figures 96 through 99 show that underground utility work was being performed circa April 2011 under Fremont Street, across from the Millennium Tower, as described by "epoxybot" in Figure 94.

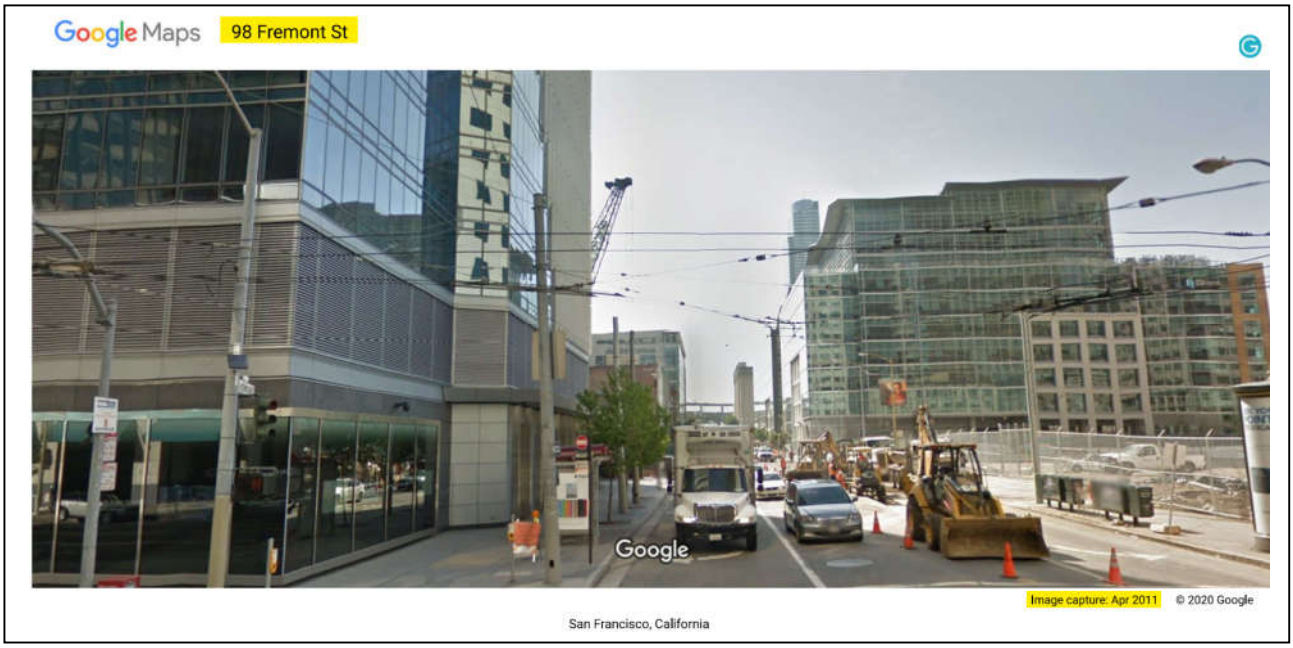


Figure 96: Photograph of Fremont Street at Mission Street, dated April 2011; downloaded from Google Maps.

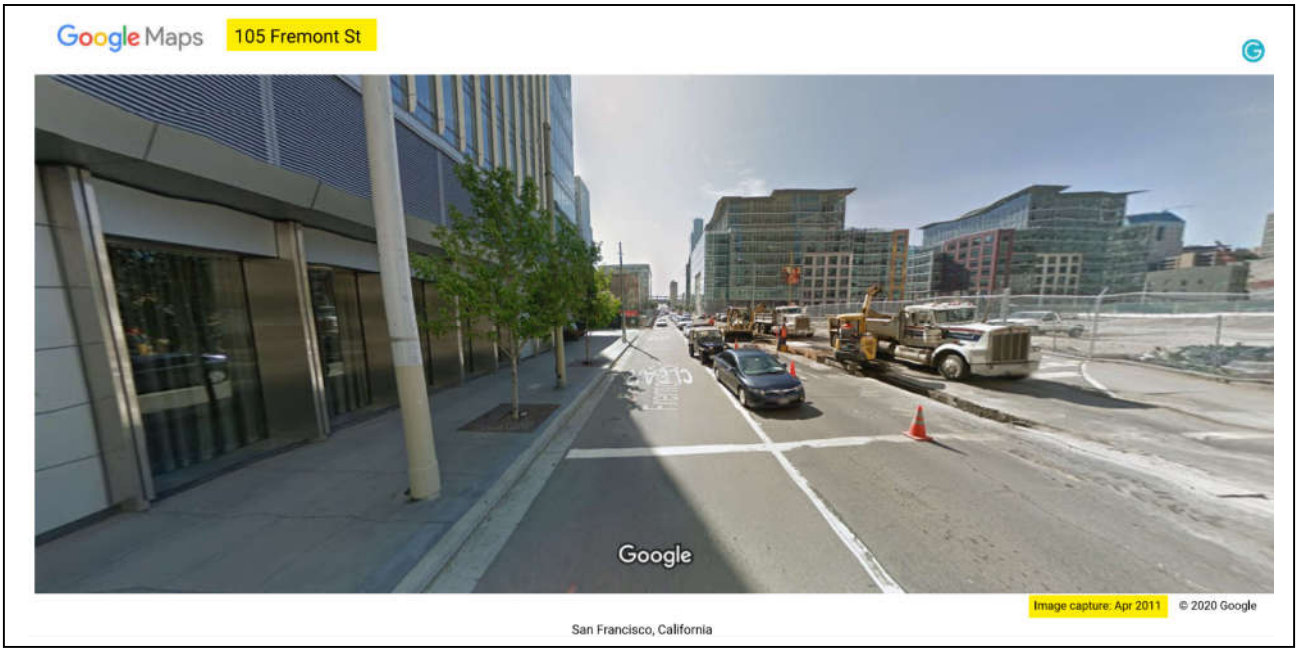


Figure 97: Photograph of underground utility work activity across from the northern end of the Millennium Tower, dated April 2011; downloaded from Google Maps.

Figure 98: Close-up photograph of underground utility work activity across from the northern end of Millennium Tower, dated April 2011; downloaded from Google Maps.

Figure 99: Photograph of underground utility work activity across from the southern end of Millennium Tower, dated April 2011; downloaded from Google Maps.

Figure 100 is an image from Google Maps that shows a damaged concrete curb circa January 2015, as described by "epoxybot" in Figure 94.

Figure 100: Annotated photograph of Fremont Street at the northern end of the block, dated January 2015; downloaded from Google Maps.

Figures 101 and 102 are images from Google Maps that show an underground sewer pipe being replaced at the northern end of the Millennium Tower circa February 2015, as described by "epoxybot" in Figure 94.

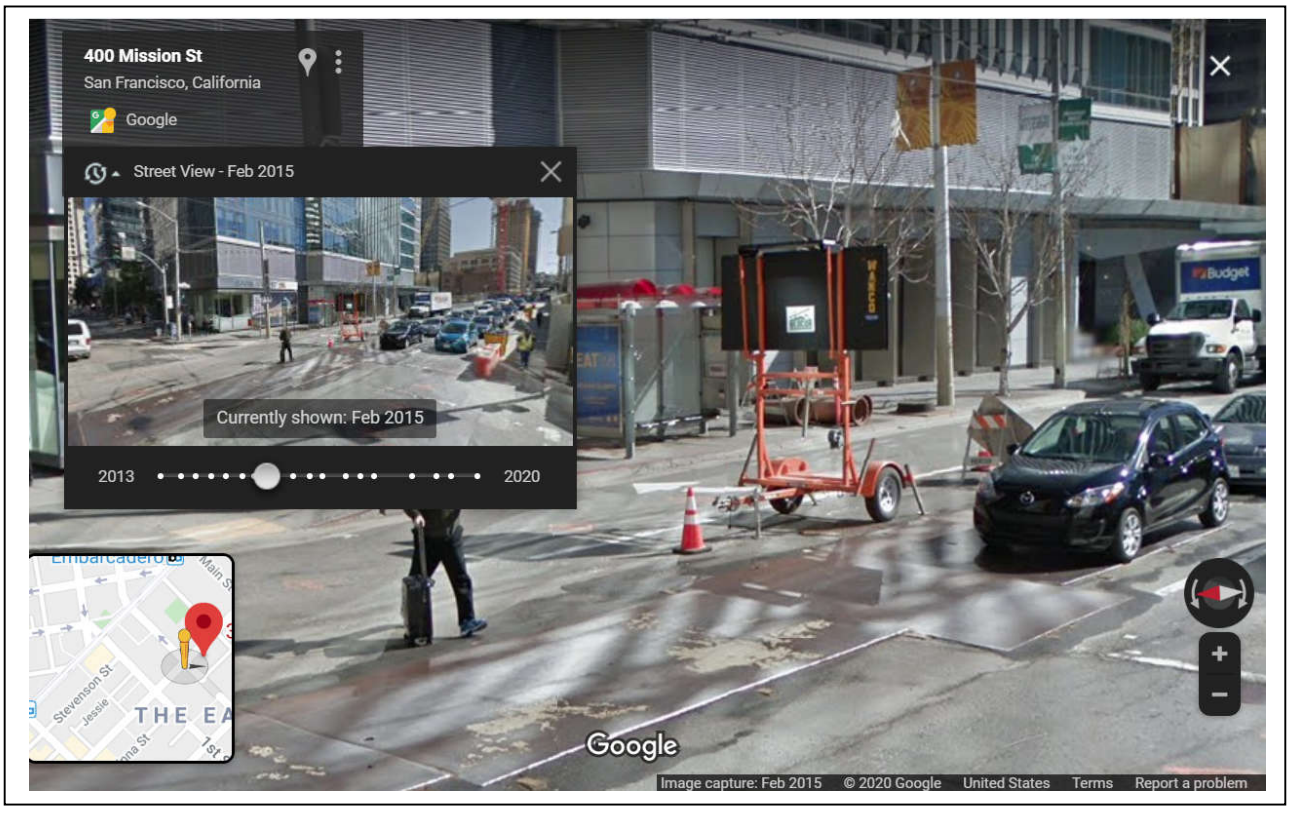


Figure 101: Photograph of sewer pipe replacement on Fremont Street, dated February 2015; downloaded from Google Maps.

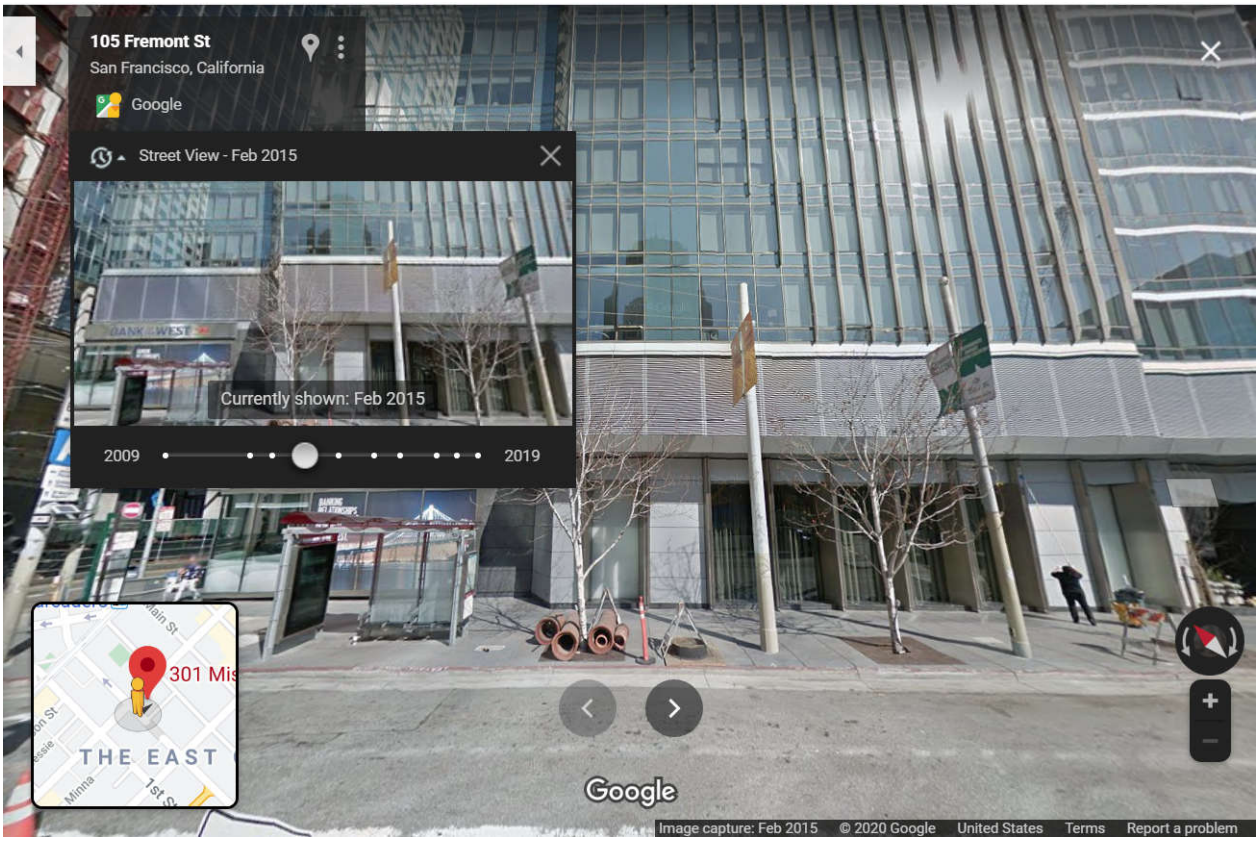


Figure 102: Photograph of new sewer pipes and manhole stored on Fremont Street sidewalk, dated February 2015; downloaded from Google Maps.

Figure 103: Close-up of Figure 102 showing new sewer pipes and manhole cover.

Do Figures 96 to 103 prove that the replacement of the sewer pipe under Fremont Street circa February 2015 resulted from pressure imposed by the tilting Millennium Tower, as concluded by "epoxybot" in Figure 94, dated April 2, 2018?

The assessment by "epoxybot" can be further verified by the San Francisco Department of Public Works requirement for pre- and post-installation video inspection of sewer pipes where temporary tiebacks are used, such as for the construction of the Millennium Tower circa 2005. Along with the mandated video inspection, the documented timing of damage to the sewer pipe under Fremont Street will provide leads as to the cause of the damage.

EXHIBIT "A"

Shoring for Excavation within the Street and Sidewalk Area: Removal and Other Requirements

The treatment of the shoring system with the sidewalks and street areas, after building construction has been completed, and is as follows:

1. All members of the shoring system in the sidewalk area, at or within two (2) feet of the property line, shall be removed to a distance of (4) feet below the adjacent sidewalk grade. All tie-back connections to soldier beams within this 4 feet distance shall be severed.

2. All members of the shoring system in the sidewalk or roadway area, two (2) feet or more from the property line, shall be removed to a distance of ten (10) feet below the sidewalk grade. All tie-back connections to soldier beams within this 10 feet distance shall be severed.

3. All timber shoring left in place above the low water table shall be treated with wood preservative in accordance with the applicable requirements of Section 415 of the Standard Specifications. If low water table has not been determined definitely, all timber shoring to be left in place shall be so treated.

4. Tie-backs will be allowed to remain in place provided they are encased in concrete. However, the tie-back connection to the soldier beam shall be severed and the appropriate portions of the shoring system removed as applicable to the requirements in (a) and (b) above.

5. Concrete will be allowed to be poured against the shoring system provided a bond breaker, such as building paper is installed adjacent to that portion of the shoring system to be removed.

The temporary shoring and tie-backs in the street area shall not be used to provide permanent support after the completion of the construction project, since they may be subject to removal upon any subsequent conflict with a public project in the street area.

This policy is intended as a uniform guide for Contractors to include in their shoring plans. Requests for deviation from the above mentioned policy will be considered only if, in the opinion of the City Engineer, the individual project requirements warrant special conditions.

APPROVAL OF DPW STREET IMPROVEMENT INSPECTORS IS REQUIRED PRIOR TO BACKFILLING AND PRIOR TO POURING CONCRETE; TELEPHONE: (415) 554-7149.

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Figure 104: Page 1 of 3-page San Francisco Department of Public Works "Shoring for Excavation" requirements.

ADDITIONAL CONDITIONS FOR MINOR SIDEWALK ENCROACHMENT PERMIT NO. 13MSE-0441
(SHORING TIEBACKS)

6. The Permittee shall comply with all conditions set forth in form titled "Shoring for Excavation within the Street and Sidewalk Area-Removal and Other Requirements", attached to this permit and made a part thereof.

7. The Permittee shall provide pre and post video inspection of existing **12" VCP** sewer main located on **Stanford Street,** fronting the construction site, including the segments of the main sewer twenty (20) linear feet on either side of the construction site. Preconstruction video inspection of the sewer shall be completed before tie back installations begin. Post construction video inspection of the sewers shall be performed after the completion of all tie back installation.

8. The video shall be in MPEG format on DVD media with individual chapters for each manhole to manhole run. The Contractor shall provide continuous recording of main sewer in color video picture. The video shall have the project name and limits of the sewer being televised superimposed on the beginning of each segment and/or audio recording. The camera shall travel through the sewer at a maximum speed of a half of a foot (0.5 feet) per second. A continuous tape counter in feet measurement shall be superimposed at the bottom of the screen to show the distance from the starting manhole or a reference point to an existing manhole or reference point. The date of the video recording shall be superimposed on the screen and/or audio recording. There shall be sufficient artificial light in the interior of the sewer to produce a clear and well focused picture. The DVD video shall have a label with the project name, and limits including the date of the television inspection. The Sewer T.V. Inspection Log shall be submitted in paper and/or digital format. The digital format of the Inspection Log shall be in PDF form and shall be included in the corresponding DVD. The Sewer T.V. Inspection Log shall also include a sketch showing the project limits and the direction the camera was pulled through the sewer.

9. All "pre" and "post" tieback installation DVDs of the main sewers including items specified in paragraph 7 shall be submit to BSM which will in turn be transmitted to Mr. Cliff Wong, DPW/Infrastructure Design and Construction Division - Hydraulic Section, through the Bureau of Street Use & Mapping, and shall be the property of the City. Preconstruction DVDs and logs shall be submitted at least fourteen (14) calendar days before the installation of the tiebacks begin. Post Construction DVDs shall be submitted within twenty-eight (28) calendar days of the completion of tieback installation.

10. Main sewer DVDs will be used to observe structural condition of main sewer (s) before and after the installation of tie backs, and determine damage, if any, caused by the tie-back installation. The Permittee shall be responsible for making necessary repairs to sewer facilities if damaged by tie back installation. In the absence of any preconstruction video submittal, the permitted shall be responsible for making repairs to sewer facilities found to be in need of repair based on post tie back installation videos. No final clearance on this project shall be issued until review of the "before" and "after"

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Figure 105: Page 2 of 3-page San Francisco Department of Public Works "Shoring for Excavation" requirements.

television DVDs and any required repairs to the sewers are completed. All repairs or replacements shall be done at the sole expense of the Permittee and to the satisfaction of the Hydraulics Section and the San Francisco Public Utilities Commission. Sewer System Information is available from: Infrastructure Design & Construction Division, Hydraulic Engineering Section, 1680 Mission Street, 2nd Floor, San Francisco, CA 94103.

11. The Permittee shall not receive a sign-off on either their Temporary Certificate of Occupancy (TCO) or Certificate of Final Completion (CFC) from DPW until the above post construction DVD has been submitted to DPW/IDC and signed-off with no damage caused to the existing sewer main.

12. The Permittee shall have the excavation and temporary shoring designed by and constructed under supervision of a Registered Engineer, licensed in the State of California.

13. The Permittee shall provide special inspections to insure that the work is done according to the revised shoring and underpinning plans prepared by **Tuan & Robinson Structural Engineers, Inc.** titled **" SH1.1, SH2.1, & SH3.1"**, dated October 18, 2013 (Revisions/response to PUC dated 1/08/2014) and for any settlement greater than predicted by Geotechnical Engineers, **Carolyn E. Ronan, G.E.** and **Richard D. Rogers, G.E.**

14. The Permittee shall conduct their operations in accordance with the requirements established at the on-site street space meeting. Pedestrians adjacent to the construction site must be accommodated within the limits established at the street space meeting.

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Figure 106: Page 3 of 3-page San Francisco Department of Public Works "Shoring for Excavation" requirements.

Following is a link to the "Shoring for Excavation" requirements:
https://www.sfpublicworks.org/sites/default/files/5143-Exhibit%20A%20for%20Shoring%20MSE.pdf

To the interested readers who have reached the last two pages of this report, also consider the following:

Why was only minimal damage observed on the concrete sidewalk from 2009 (see Figure 32), when the tower was newly completed, to 2014, when damage accelerated (see Figures 33 to 75)?

Why was the existing sewer pipe opposite the Millennium Tower not replaced until 2015 instead of circa 2011?

What caused the damage to the windows/glass circa 2018 and 2020?

What caused an iron pan to plunge to the ground on May 12, 2020?

Could it be a coincidence that all these events occurred after the excavation at the Transbay Transit Center, which was completed circa 2014, as shown in Figure 107?

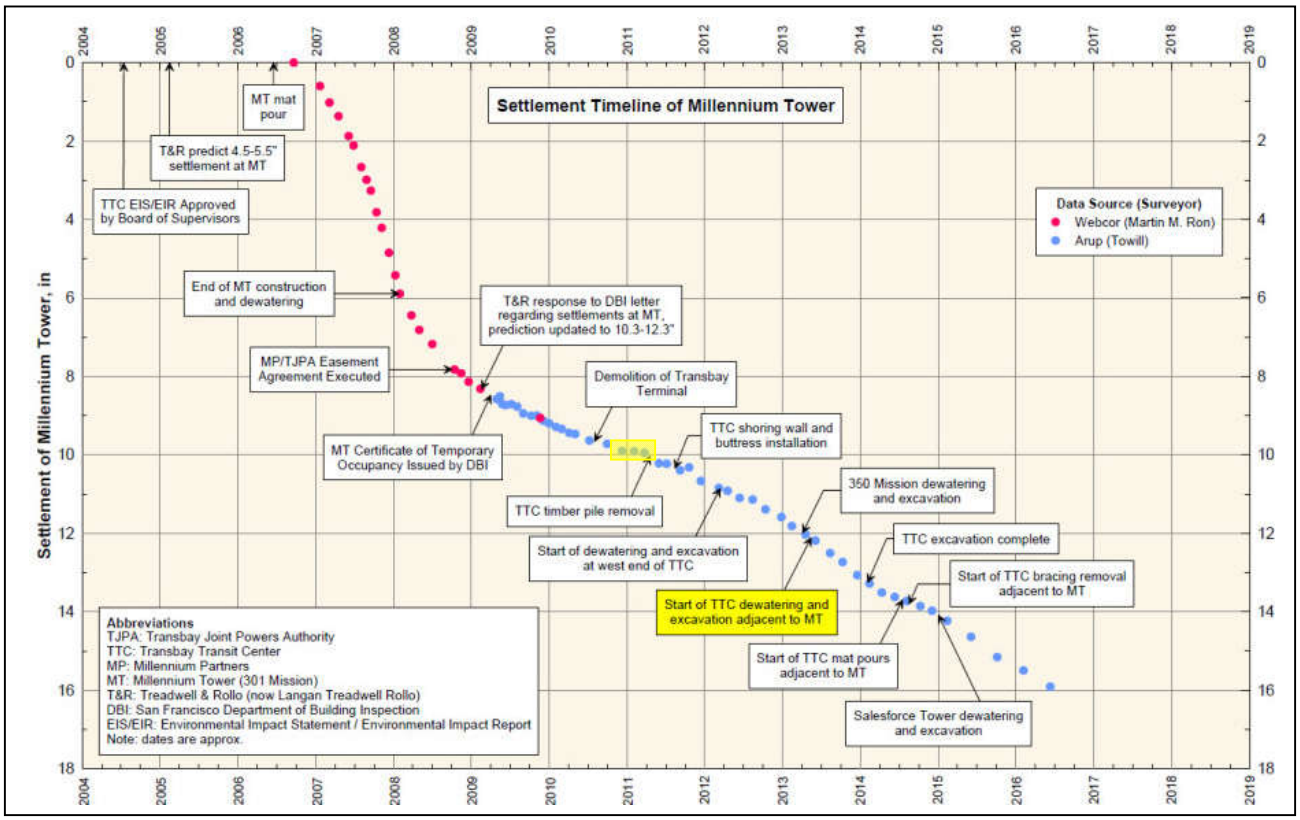

Figure 107: Settlement timeline of the Millennium Tower, issued by the Transbay Joint Powers Authority (TJPA).

Following is a link to the settlement timeline of the Millennium Tower:
https://tjpa.org/uploads/2016/10/TJPA-press-statement-Millennium-Tower-Oct-4-2016.pdf

It is important to reiterate the significance of the short period during early 2011 that is represented by the short horizontal yellow block in Figure 107. A brief but crucial discussion of the early 2011 period was presented on page 51 of the investigative report titled "Transbay Transit Center Temporary Shoring of 301 Mission Street."

> *Without any intervention, the Millennium Tower high-rise section appeared to have reached equilibrium for approximately four months while earth-moving operations at the Transbay Transit Center site continued. This is not to say that the Millennium Tower was stable as originally designed, and it does not alleviate the need to retrofit the Millennium Tower.*

Figure 108: Extract from page 51 of the investigative report titled "Transbay Transit Center Temporary Shoring of 301 Mission Street."

If the assessment in the two investigative reports dated November 7, 2017, titled "301 Mission Street Supplement" and "Transbay Transit Center Temporary Shoring of 301 Mission Street," is valid, other than the subsurface conditions and the weight of the concrete Millennium Tower, the earlier excavation of the Millennium Tower Garage and Transbay Transit Center sites contributed to the cause of the unexpected magnitude of the sinking and tilting of the Millennium Tower.

Borrowing from baseball and habitual-offender laws as analogies, will the third excavation that has been approved for the voluntary seismic upgrade and foundation stabilization of the Millennium Tower mimic the expression "three strikes, and you're out"?

Following is a link to the "301 Mission Street Supplement" report:
https://drive.google.com/file/d/1vXbGWoy1uYVcO8y2atmlm0p8kSDs5TV6/view?usp=sharing

Following is a link to the "Transbay Transit Center Temporary Shoring of 301 Mission Street" report:
https://drive.google.com/file/d/1M_S0GWCuWstlyOggETqly1TCgmsHtBHw/view?usp=sharing