



13 August 2018

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

Project 067199.11 – Condition Assessment of Sutro Tower, 2018 Inspections
2017 Maintenance and Inspection Program

Dear Mr. Dausman:

At your request, Simpson Gumpertz & Heger Inc. (SGH) provided oversight and engineering support for tower condition assessment and repair work performed in 2017. Under agreement with the City of San Francisco (the “Standard Conditions”) Sutro Tower performs annual inspections of 1/3 of the tower, consisting of one of the three legs and the horizontal framing on one face, each year. In accordance with the inspection protocol, these inspections are typically rotated such that the entire tower is inspected over a three-year period.

On a five-year schedule, the inspection agreement calls for an in-depth inspection to identify problems which may not be readily detectable with a visual review in the annual inspection, such as evaluation of guy wire tension and inspection of welds of tower leg columns to their base plates.

In a meeting with the neighborhood liaisons in March 2014, it was agreed that the 2014 inspections would encompass two tower legs and two tower faces. Thus we are now one year ahead of schedule in performing these inspections. Accordingly, the inspections performed in 2017 are those originally scheduled for 2018 and include: Leg A, Mast A, the north facing trusses, and, the attachment of appurtenances to these portions of the Tower.

SGH provided Electronics Research, Inc. (ERI) and Sutro Tower inspection protocols and a series of standard forms for recording observations. ERI included the completed forms and accompanying photographs in a series of two reports:

1. Field Inspection Report: West Leg A & North Truss Level 2-5, ERI Project 35473A, Addendum 2, 977 Ft Self-Support Tower, San Francisco, CA ASRN 1001289, dated 25 June 2018.
2. Field Inspection Report: West Stack A & North Truss (Level 6), ERI Project 35473, 977 Ft Self-Support Tower, San Francisco, CA ASRN 1001289, dated 13 April 2018.

We reviewed these reports and performed on-site observations of conditions reported therein as needed to clarify the conditions reported. We also performed calculations as necessary to determine if corrective action was required for items reported as structural damage. Table 1 below summarizes the conditions reported by ERI as requiring additional engineering evaluation

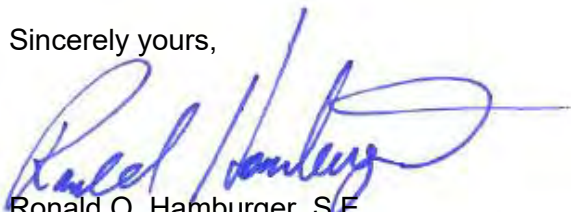
and the results of our further review. Observation 60 in the 24 June 2018 report can be repaired using details like those previously used for this purpose. We will provide details for this location and recommend you make repairs this season. Observation 140 in the same report is not a safety issue but should be addressed to improve comfort of individuals using the stair. We will provide details for this condition as well.

Table 1: Summary of Exception Items Evaluation

ERI Report No.	Observ. No.	Description	Action Required
1	14	Bent flange on I-beam	No action required.
1	47	Bent angle leg on diagonal	No action required.
1	60	Bent angle leg on diagonal	Repair required.
1	61	Bent angle leg on cladding support	No action required.
1	70	Bent angle leg on diagonal	No action required.
1	79	Bent flange on I beam at vertical truss	No action required.
1	138	Cladding cutouts	Repaired since report
1	140	Stairway needs support	Will provide repair detail
1	141	Strands kinked and unraveled	No action required
1	144	Strands slightly unraveled	No action required
2	45	Wind bracing angle torch cut	No action required
2	52	Bent angle leg ear mid-span bolt	No action required
2	53	Bent angle leg upper end diagonal	No action required

In addition to the items listed in Table 1 above, ERI identified numerous locations where rust is starting to form on bolt heads and nuts, or on the sides of steel members or gussets. None of these conditions appear particularly severe, however, they should be addressed by removal of rust and recoating as part of routine tower maintenance.

Sincerely yours,



Ronald O. Hamburger, S.E.

Senior Principal

CA License No. 2951

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FIELD INSPECTION REPORT

WEST STACK A & NORTH TRUSS (LEVEL 6)

APRIL 13, 2018

ERI PROJECT 35473, ADDENDUM 1
977 FT SELF-SUPPORT TOWER
SAN FRANCISCO, CA
ASRN 1001289

Prepared For:

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EXECUTIVE SUMMARY

Mr. Dausman,

This report is submitted by Electronics Research Incorporated (ERI) with regards to the field inspection conducted by ERI on August 22-23, 2017. The contracted scope of work included on-site inspections of the West Stack “A” above the 6th Level and the North Truss at the 6th Level. The subject inspections were completed in accordance with the current ANSI/TIA-222-G standard.

The purpose of the work was to complete thorough visual inspections to evaluate current condition of the structural components. The inspection was completed along with assistance from the Sutro Tower Maintenance Staff.

In general, the structural elements of the West Stack “A” above the 6th Level and the North Truss at the 6th Level are in good condition with no critical items found which warrant immediate attention. Routine maintenance observations such as minor surface rust, short bolts, small localized gouges and minor coating damage to the hot dip galvanized surfaces, inadequate drainage, guy hardware settings, and compromised weather sealing at the Phillystran terminations were noted and are explicitly addressed in Appendix II of this report.

Additionally, pre-existing member damage was identified in three specific locations which should be further evaluated by Simpson Gumpertz & Heger Inc. serving as the structure’s engineer of record (EOR) to determine if corrective action measures are warranted (see Observations 45, 52, & 53 in Appendix II).

Appendix II in this report includes the completed inspection forms, detailed inspection findings and recommended correction action summaries, and corresponding pictures to support all pertinent observations made. Please contact me if you should have any questions or require any additional details.

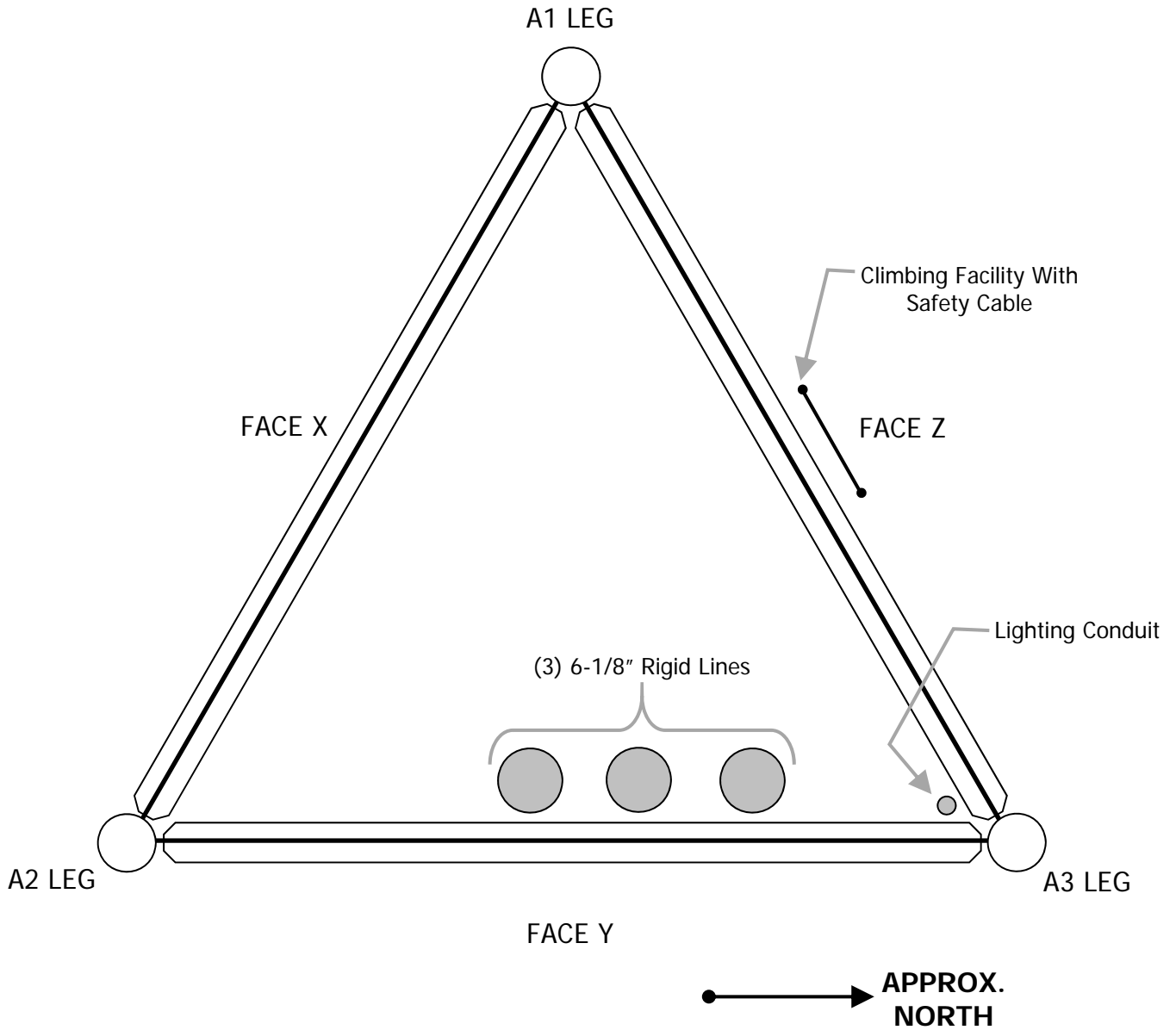
Sincerely,



James M. Ruedlinger, P.E.
Senior VP Engineering

Appendix I:
WEST STACK 'A'
ORIENTATION/NOMENCLATURE
INSPECTED AUG 22-23, 2017
977 FT SELF-SUPPORT TOWER
SAN FRANCISCO, CA
ERI PROJECT 35473
ASRN 1001289

Figure 1. West Stack “A” Orientation/Nomenclature per Inspection Forms



Appendix II:
INSPECTION FORMS, SUMMARIES, & PICTURES
INSPECTED AUG 22-23, 2017
977 FT SELF-SUPPORT TOWER
SAN FRANCISCO, CA
ERI PROJECT 35473
ASRN 1001289

ANTENNA MOUNT STACK "A" & NORTH TRUSS (LEVEL 6)

- Leg A North Face -

Inspection Summary - 2018 2017

Description of Inspection:

- ~~Routine inspection of Leg A~~
- ~~Routine inspection of horizontal levels of North Face~~
- ~~Routine inspection of strands on North Face~~
- ~~Routine inspection of strand anchors on Leg A~~
- ~~Routine inspection of base = all legs~~

ROUTINE INSPECTION OF ANTENNA MOUNT STACK "A" INCLUDING STACK CUYING SYSTEM AND NORTH TRUSS (LEVEL 6)

Special or In-Depth Inspections:

Summary of Results:

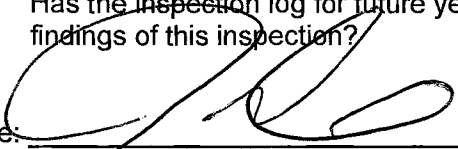
(NO CRITICAL ITEMS NOTED ~ SEE INSPECTION SUMMARY SHEETS)

Summary of Recommendations:

(SEE INSPECTION SUMMARY SHEETS FOR ALL RECOMMENDED CORRECTIVE ACTIONS)

Checklist:

- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|
| <ul style="list-style-type: none"> • Has a severe event occurred since the previous inspection? • Have action items and recommendations from previous inspections been addressed in the scope of work? • Has the inspection log for future years been revised to account for scope of work and findings of this inspection? | <p>Yes No</p> <p>Yes No</p> <p>Yes No</p> | <p><u>N/A</u></p> <p><u>N/A</u></p> <p><u>N/A</u></p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|

Signature: 

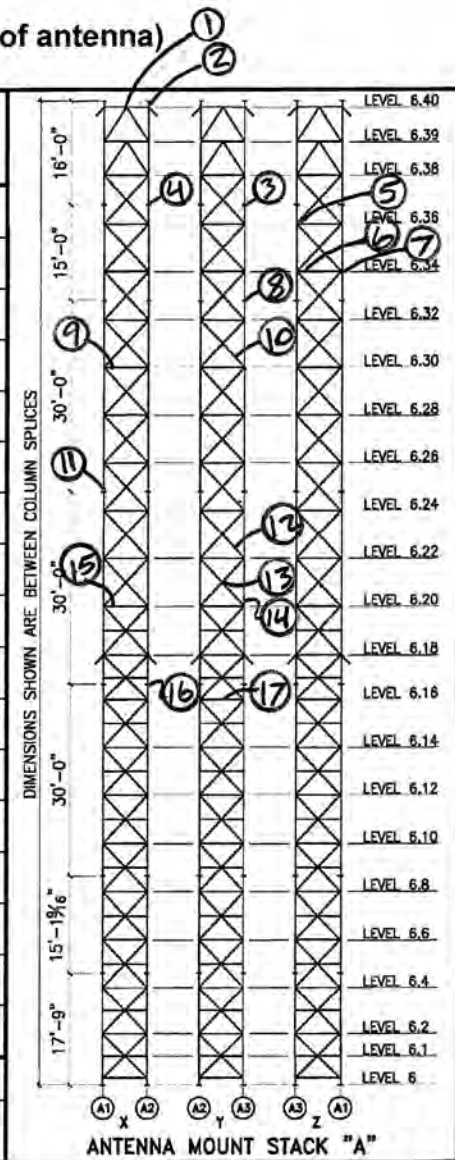
Date: 8/23/2017

#NOTE: FIRST INSPECTION COMPLETED BY FRI.

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

Observ. No.	Location/Identification			Photo No.	Observation Comments
	Column	Elevation	Item ¹		
1	A11	6.40	C	1	
2	A2	6.40	H	2	
3	A3	6.36	C	3	
4	A2	6.36	C	4	
5	Z-FACE	6.36	C	5	
6	(Inside)	6.34	O	6	
7	Z-FACE	6.34	C	7	
8	A3	6.32	C	8	
9	X-FACE	6.30	C	9	
10	Y-FACE	6.30	C	10	
11	A1	6.24	C	11	
12	Y-FACE	6.22	C	12	
13	Y-FACE	6.20	C	13	
14	(Inside)	6.20	O	14	
15	X-FACE	6.20	C	15-16	
16	A2	6.16	C	17	
17	Y-FACE	6.16	O	18	
Sutro Tower			Signature: <i>[Signature]</i>		Page: 1 of 2
San Francisco, CA			File:		Date: 9/7/17

SEE INSPECTION SUMMARY



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

ERI Project 35473 * Sutro Tower * West Stack 'A' Inspection Summary * Inspected Aug 22-23, 2017

WEST STACK 'A' LATTICE MAST						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Column	Elevation	Item			
1	A11	6.40	C	1	Minor Rust On Bolts, MRB (X6), Antenna Bolts	Surface prepare and treat
2	A2	6.40	H	2	Minor Rust On Inner Channel	Surface prepare and treat
3	A3	6.36	C	3	Short Bolt, SB (X1), ANCO Pin Not Fully Engaged, Leg Bolt	Replace with longer bolts, or remove flat washer to allow full engagement of ANCO locking pin
4	A2	6.36	C	4	SB (X2), ANCO Pin Not Fully Engaged, Leg Bolt	Replace with longer bolts, or remove flat washer to allow full engagement of ANCO locking pin
5	Z-FACE	6.36	C	5	Small Gouge In Gusset Plate (X1)	Lightly grind surface smooth and treat
6	(Inside)	6.34	O	6	J-Box Missing Plugs (X2)	Install missing plugs to keep weather-tight
7	Z-FACE	6.34	C	7	Hot Dip Galv, HDG, Coating Damaged (X2), Gusset Plate	Surface prepare and treat
8	A3	6.32	C	8	SB (X1), ANCO Pin Not Fully Engaged, Leg Bolt	Replace with longer bolts, or remove flat washer to allow full engagement of ANCO locking pin
9	X-FACE	6.30	C	9	MRB (X2), Horiz Bolts	Surface prepare and treat
10	Y-FACE	6.30	C	10	MRB (X1), Diag Bolt	Surface prepare and treat
11	A1	6.24	C	11	SB (X2), ANCO Pin Not Fully Engaged, Leg Bolt	Replace with longer bolts, or remove flat washer to allow full engagement of ANCO locking pin
12	Y-FACE	6.22	C	12	MRB (X1), Diag Bolt	Surface prepare and treat
13	Y-FACE	6.20	C	13	MRB (X1), Diag Bolt	Surface prepare and treat
14	(Inside)	6.20	O	14	Minor Rust On J-Box Plugs (X2)	Replace plugs in near future
15	X-FACE	6.20	C	15-16	HDG Coating Damaged (X2), Gusset Plate	Surface prepare and treat
16	A2	6.16	C	17	SB (X2), ANCO Pin Not Fully Engaged, Leg Bolt	Replace with longer bolts, or remove flat washer to allow full engagement of ANCO locking pin
17	Y-FACE	6.16	O	18	Missing Rigid Line Spring Hanger (X1)	Corrected By Sutro Staff ~ Hanger installed 8/22/17
18	Z-FACE	6.14	C	19	HDG Coating Damaged (X2), Gusset Plate	Surface prepare and treat
19	X-FACE	6.6	C	20	HDG Coating Damaged (X1), Gusset Plate	Surface prepare and treat
20	Y-FACE	6.6	O	21-22	Rigid Line Spring Hanger Setting Off (X1)	Adjust hanger setting (34-3/8" at 40-80deg F)
21	(Inside)	6.2	O	23	SO J-Box Connector Broken (X1)	Replace connector
22	(Inside)	6	O	24	Minor Rust On 90° J-Box Connector	Replace connector in near future
23	Y-FACE	6	O	25	Standing Water In Gusseted Rigging Weldment	Drill drainage holes

Nomenclature: HDG = Hot Dip Galvanizing, MRB = Mild Rust on Bolts, SB = Short Bolt

Picture 1: OBSERVATION 1



Picture 2: OBSERVATION 2



Picture 3: OBSERVATION 3



Picture 4: OBSERVATION 4



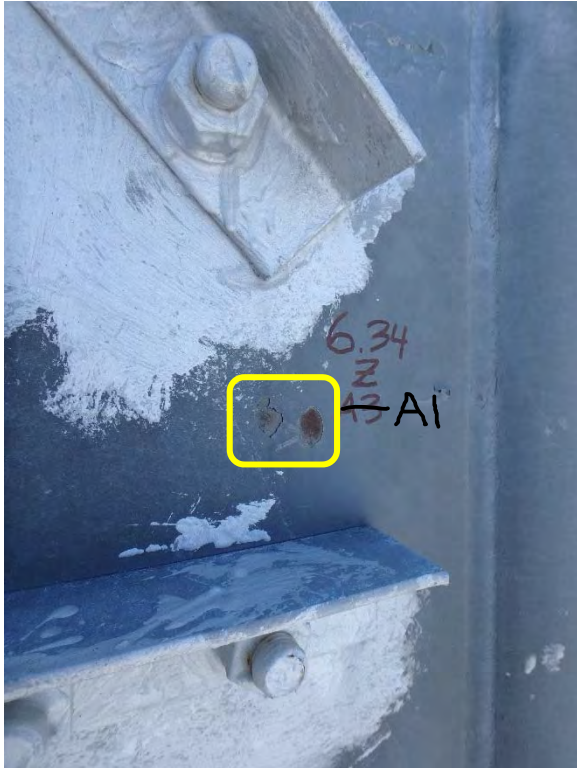
Picture 5: OBSERVATION 5



Picture 6: OBSERVATION 6



Picture 7: OBSERVATION 7



Picture 8: OBSERVATION 8



Picture 9: OBSERVATION 9



Picture 10: OBSERVATION 10



Picture 11: OBSERVATION 11



Picture 12: OBSERVATION 12



Picture 13: OBSERVATION 13



Picture 14: OBSERVATION 14



Picture 15: OBSERVATION 15



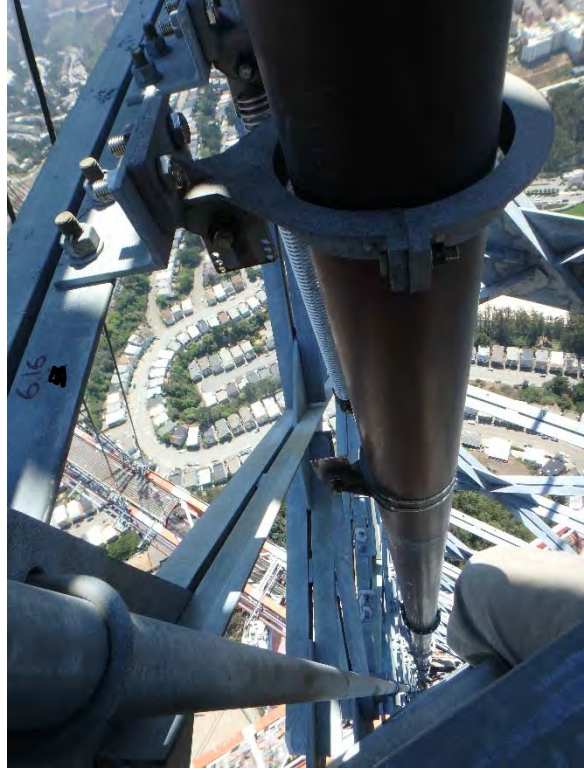
Picture 16: OBSERVATION 15



Picture 17: OBSERVATION 16



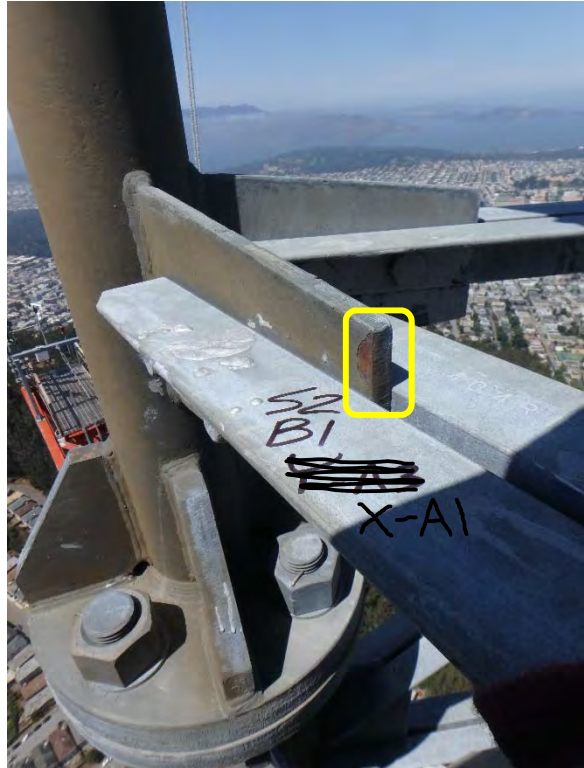
Picture 18: OBSERVATION 17 ~ CORRECTED



Picture 19: OBSERVATION 18



Picture 20: OBSERVATION 19



Picture 21: OBSERVATION 20



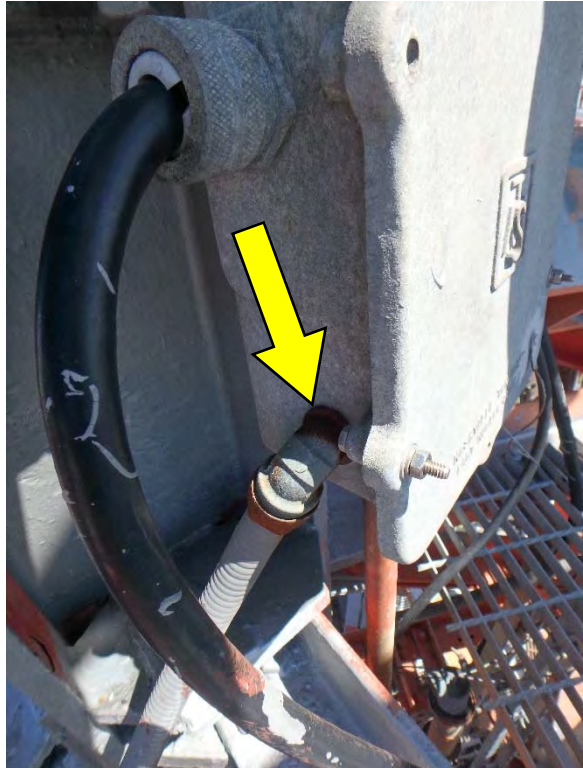
Picture 22: OBSERVATION 20



Picture 23: OBSERVATION 21



Picture 24: OBSERVATION 22

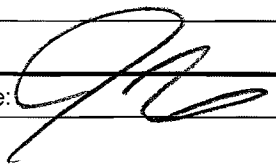


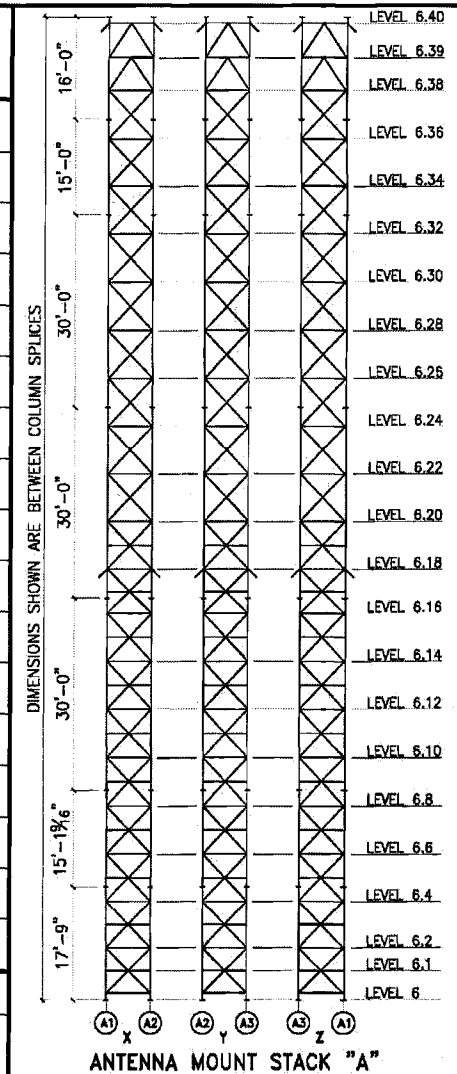
Picture 25: OBSERVATION 23



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

GUYING SYSTEM

Observ. No.	Location/Identification			Photo No.	Observation Comments	
	Column	Elevation	Item ¹			
24	Guying	All	O	26-27	(SEE INSPECTION SUMMARY)	
25		All		-		
26		L1-L3, A2, Y1, Y2		28-29		
27		L3, A1, X		30		
28		L3, A2, Y1		31		
29		L3, A2, Y2				
30		L2, A3, Y2				
31		L1, A2, X				
32		L2, A2, X				
33		L3, A2, X				
34		L3, A3, Z				
35	↓	L3, A1, Z	↓	↓		
Sutro Tower				Signature: 		Page: 1 of 1
San Francisco, CA				File:		Date: 9/7/17



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

ERI Project 35473 * Sutro Tower * West Stack 'A' Guying System Inspection Summary * Inspected Aug 22-23, 2017

WEST STACK 'A' GUYING SYSTEM						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Chord	Horiz. Location	Item			
24	Guying	All	O	26-27	Silicone Sealant At Socketed Corona Ends Has Split And Separated From The Cable And Socket At Most Locations Both At The Mast And Anchor Attachment Locations ~ No Damage Noted To Polyurethane Jackets Or Poured Resin	Remove loose silicone and debris and inject fresh pure black silicone ~ High quality pure black silicone from a local paint distributor may be used
25	Guying	All	O	-	Mild High Frequency Aeolian Vibration Noted On Multiple Cables During Inspection	Consider installing additional PLP spiral vibration dampers (SVD) to mitigate vibration ~ Recommend trial installation on single cable to compare with adjacent cable(s) prior to placing large order for SVD's to ensure adequate mitigation ~ Note, per discussion with Phillystran, high frequency aeolian vibration is not a structural concern for the Phillystran guying systems, but rather a general concern primarily for supported structures utilizing incandescent lighting where operational issues may arise from premature wear on filaments and electrical contact points imposed by the induced vibrations
26	Guying	L1-L3, A2, YL & YR	O	28-29	Minor Rust On All-Thread Cotter Pins (x12)	Replace cotter pins in near future
27	Guying	L3, A1, X	O	30	Top Lock Nuts Not Tightened Down	Run down and tighten top lock nuts
28	Guying	L3, A2, YL	O	31	All-Thread Out By ~1/2"	Adjust all-thread to balance load
29	Guying	L3, A2, YR	O	31	All-Thread Out By ~1/4"	Adjust all-thread to balance load
30	Guying	L2, A3, YR	O	31	All-Thread Out By ~1/4"	Adjust all-thread to balance load
31	Guying	L1, A2, X	O	31	All-Thread Out By ~1/4"	Adjust all-thread to balance load
32	Guying	L2, A2, X	O	31	All-Thread Out By ~1/2"	Adjust all-thread to balance load
33	Guying	L3, A2, X	O	31	All-Thread Out By ~1/4"	Adjust all-thread to balance load
34	Guying	L3, A3, Z	O	31	All-Thread Out By ~1/2"	Adjust all-thread to balance load
35	Guying	L3, A1, Z	O	31	All-Thread Out By ~1/4"	Adjust all-thread to balance load

Picture 26: OBSERVATION 24 (TYP. ANCHOR END)



Picture 27: OBSERVATION 24 (TYP. TOWER END)



Picture 28: OBSERVATION 26



Picture 29: OBSERVATION 26




Picture 30: OBSERVATION 27



Picture 31: OBSERVATION 28-35 (TYP.)

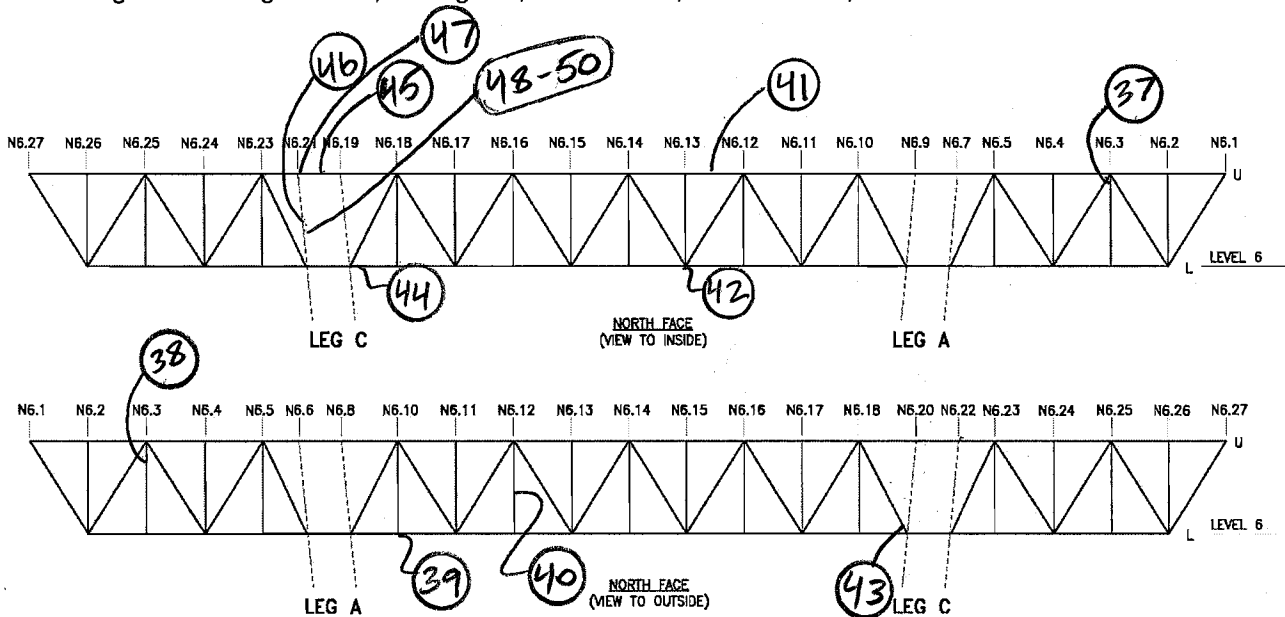


Inspection Data Sheet: North Truss (Level 6)

Observ. No.	Location/Identification			Photo No.	Observation Comments
	Chord ¹	Horiz. Location	Item ²		
36	IU	NW Outer: ggv	O	32-33	
37	IU	6.3	C	34-35	
38	OU	6.3	C	36	
39	OL	6.10	C	37-38	
40	O	6.12	C	39-40	
41	IU	6.12-6.13	D	41	
42	IL	6.13	C	42-43	
43	IL	6.18-6.21	C	44-45	
44	IL	6.19	V/H	46-47	
45	IU	6.19-6.21	O	48	
46	I	6.21	V/A	49-50	
47	OU	6.21	C	51-52	
48	I	6.21	V/H	53-54	
49	I	6.21	C	55-56	
50	I	6.21	V/D	57-58	
Sutro Tower				Signature: 	Page: <u>1</u> of <u>2</u>
San Francisco, CA				File:	Date: <u>9/7/17</u>

SEE INSPECTION SUMMARY

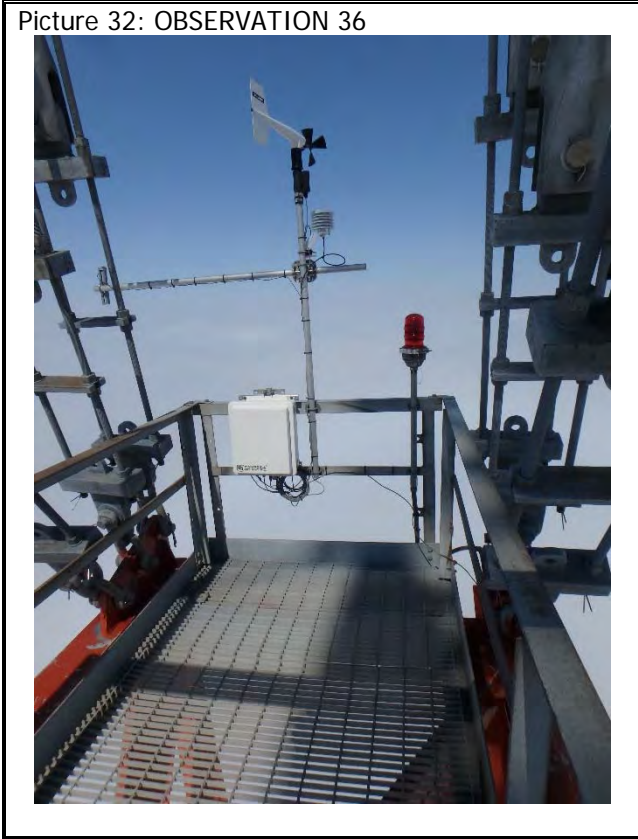
¹ Chord member designation: OU = outer upper, OL = outer lower, IU = inner upper, and IL = inner lower
² Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others



ERI Project 35473 * Sutro Tower * North Truss (Level 6) Inspection Summary * Inspected Aug 22-23, 2017

NORTH TRUSS (LEVEL 6)						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Chord	Horiz. Location	Item			
36	IU	NW Outrigger	O	32-33	Damaged Cable, Apparrent Bird Damage	Consider running cable in flexible conduit to protect ~ Replace cable as needed
37	IU	6.3	C	34-35	MRB (X5), Leg & Diag Bolts	Surface prepare and treat
38	OU	6.3	C	36	MRB (X1), Leg Bolt	Surface prepare and treat
39	OL	6.10	C	37-38	MRB (X1), Leg Bolt	Surface prepare and treat
40	O	6.12	C	39-40	Loose Stitch Bolt Near Midspan, Leg	Properly drive stitch bolt and tighten
41	IU	6.12-6.13	D	41	Damaged Angle Reinforced Using Bolt-On Brace, Wind Brace	Issue previously assessed by EOR and deemed acceptable
42	IL	6.13	C	42-43	Loose Stitch Bolt Near Outer Leg, Wind Brace	Properly drive stitch bolt and tighten
43	IL	6.18-6.21	C	44-45	MRB (X4), Diag Bolts	Surface prepare and treat
44	IL	6.19	V/H	46-47	Minor Rust At Leg To Wind Brace Horiz Joint	Surface prepare and treat
45	IU	6.19-6.21	O	48	Wind Brace Angle Legs Torch Cut To Facilitate Rigging Weldment	Contact EOR to determine if any CA is warranted
46	I	6.21	V/D	49-50	Leg To Diag Joint Holding Water	Clear drain hole or re-drill to allow positive drainage
47	OU	6.21	C	51-52	MRB (X1), Horiz Bolt	Surface prepare and treat
48	I	6.21	V/H	53-54	Minor Rust At Leg To Horizontal Joint	Surface prepare and treat
49	I	6.21	C	55-56	MRB (X6), Horiz Bolts	Surface prepare and treat
50	I	6.21	V/D	57-58	Leg To Diag Joint Holding Water	Clear drain hole or re-drill to allow positive drainage
51	I	6.21	V	59	HDG Coating Damaged, Leg	Surface prepare and treat
52	O	6.23	V	60	Bent Angle Leg Near Midspan Stitch Bolt, Leg	Contact EOR to determine if any CA is warranted
53	OU	6.25-6.26	D	61	Bent Angle Leg, Upper End, Diag	Contact EOR to determine if any CA is warranted
54	IL	6.26	O	62	Moderate/Severe Corrosion On Top Guard Rail	Repair or replace guard rail in near future
55	IU	6.27	C	63	MRB (X2), Horiz Bolts	Surface prepare and treat
56	IU	6.27	C	64-66	MRB (X3), Wind Bracing Bolts	Surface prepare and treat

Picture 32: OBSERVATION 36



Picture 33: OBSERVATION 36



Picture 34: OBSERVATION 37



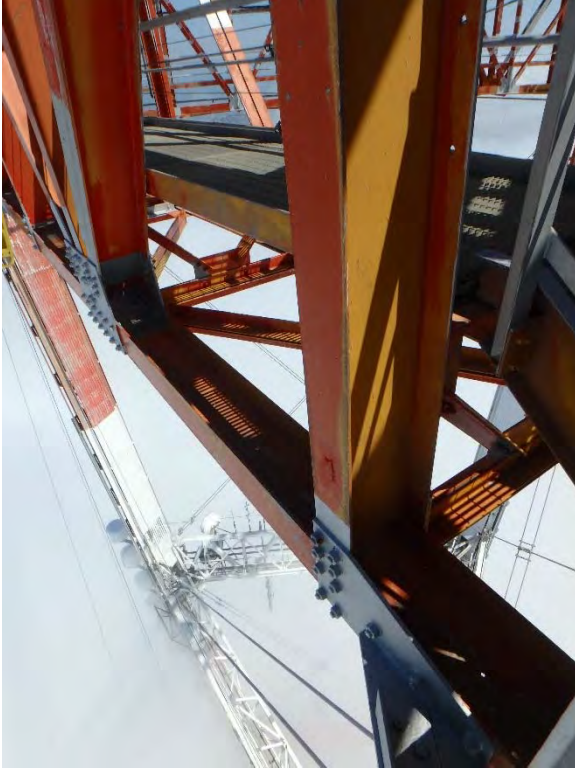
Picture 35: OBSERVATION 37



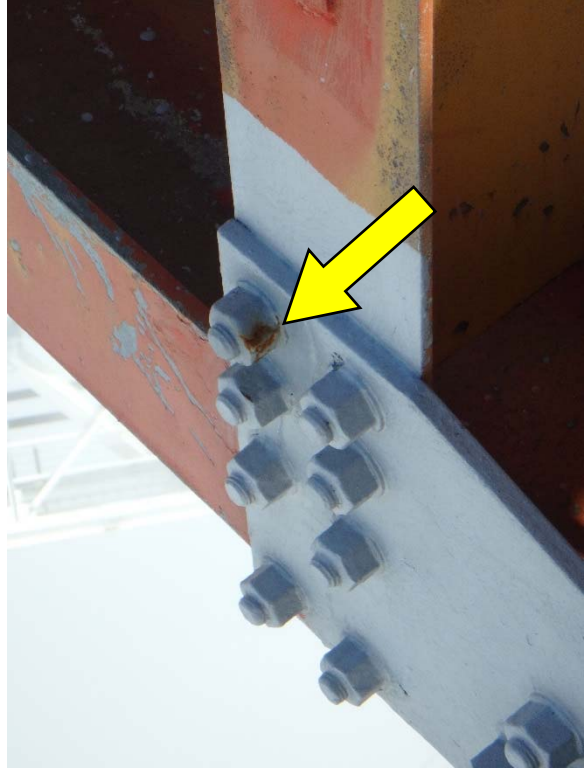
Picture 36: OBSERVATION 38



Picture 37: OBSERVATION 39



Picture 38: OBSERVATION 39



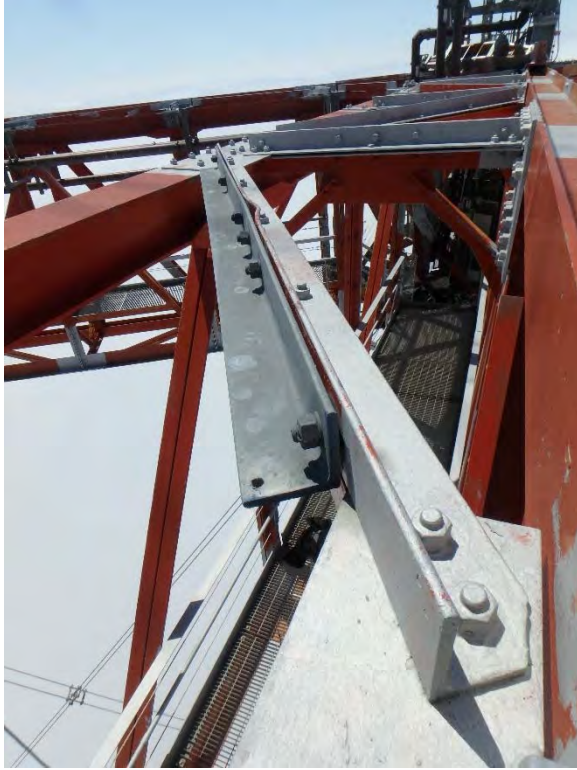
Picture 39: OBSERVATION 40



Picture 40: OBSERVATION 40



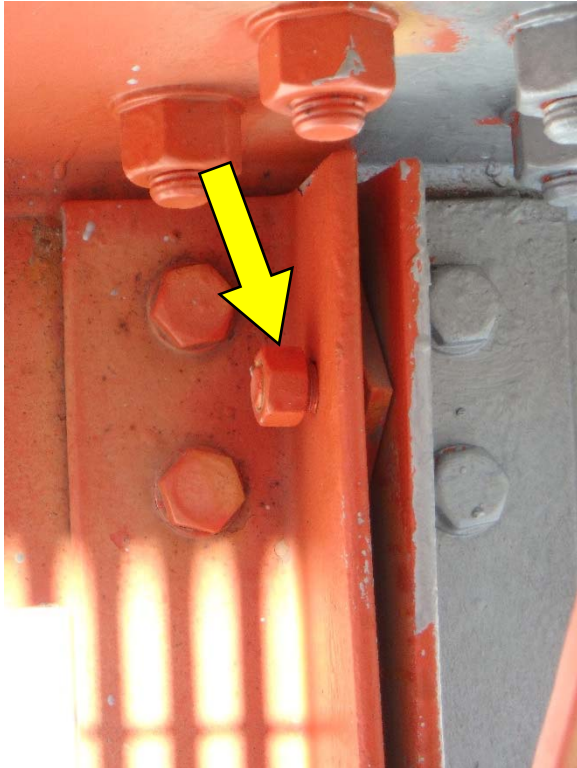
Picture 41: OBSERVATION 41



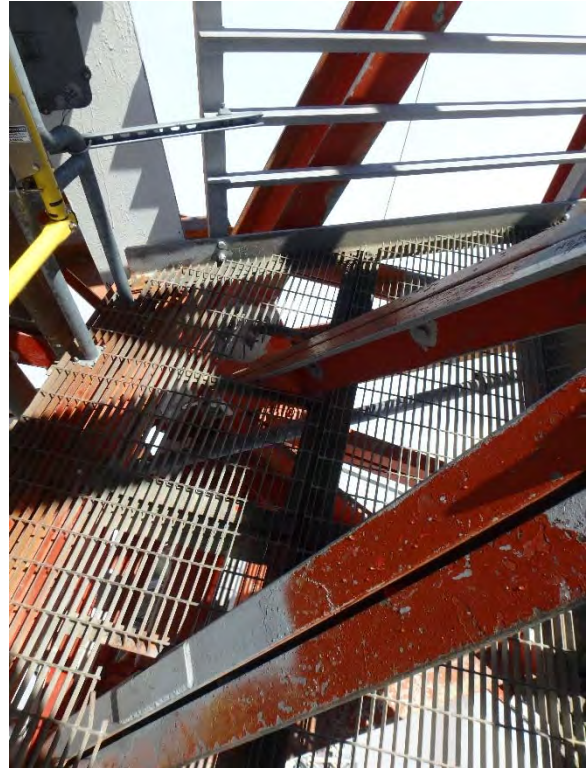
Picture 42: OBSERVATION 42



Picture 43: OBSERVATION 42



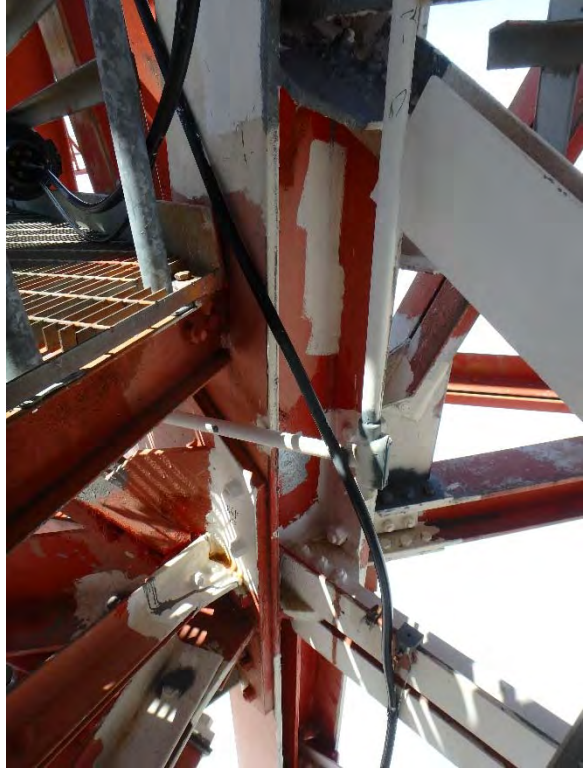
Picture 44: OBSERVATION 43



Picture 45: OBSERVATION 43



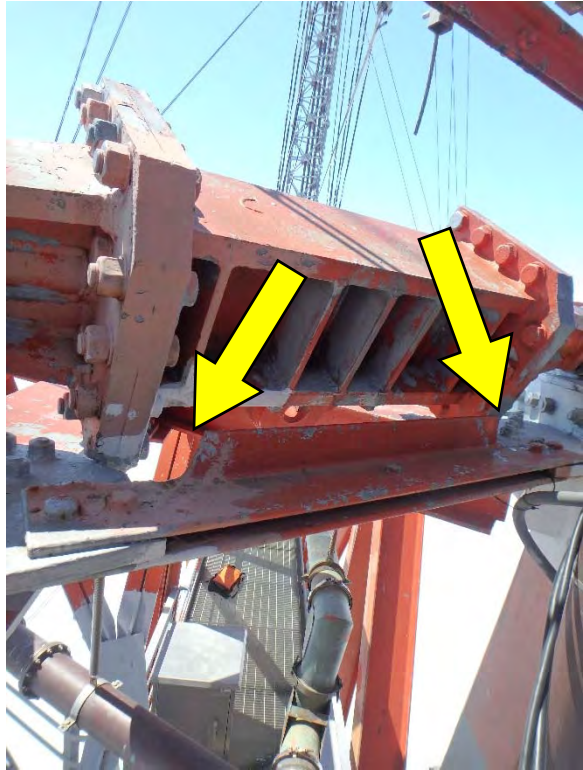
Picture 46: OBSERVATION 44



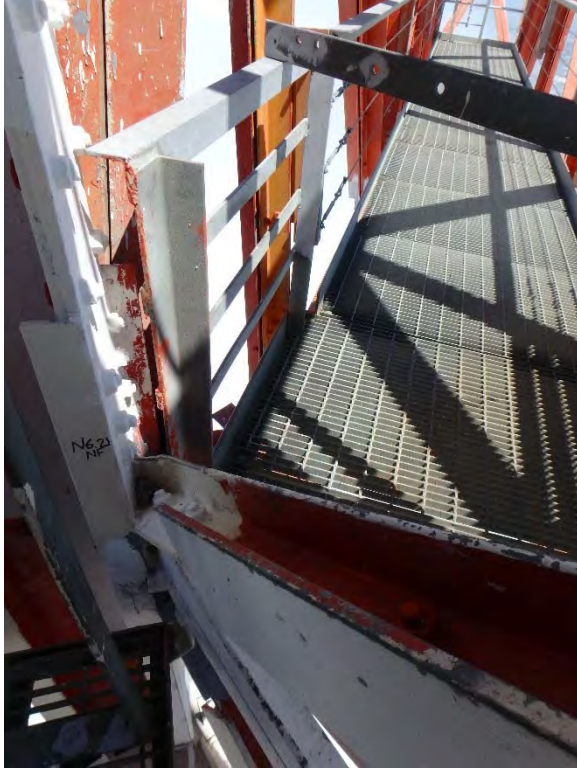
Picture 47: OBSERVATION 44



Picture 48: OBSERVATION 45



Picture 49: OBSERVATION 46



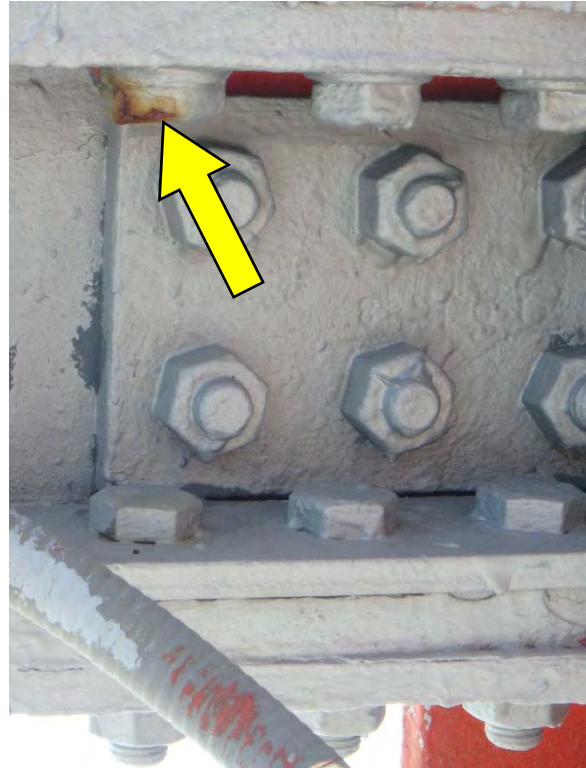
Picture 50: OBSERVATION 46



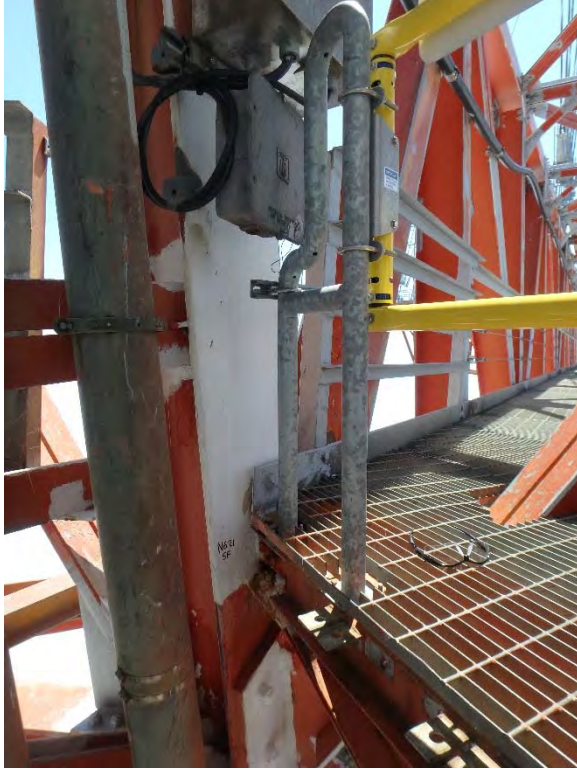
Picture 51: OBSERVATION 47



Picture 52: OBSERVATION 47



Picture 53: OBSERVATION 48



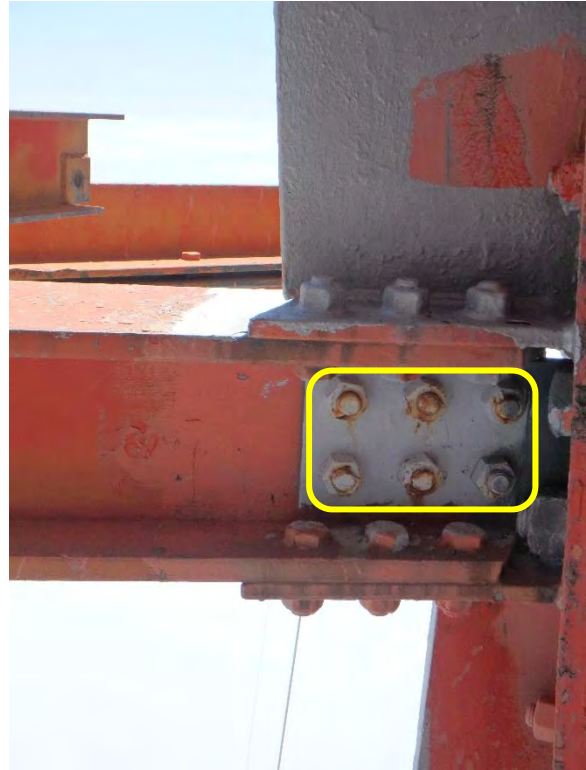
Picture 54: OBSERVATION 48



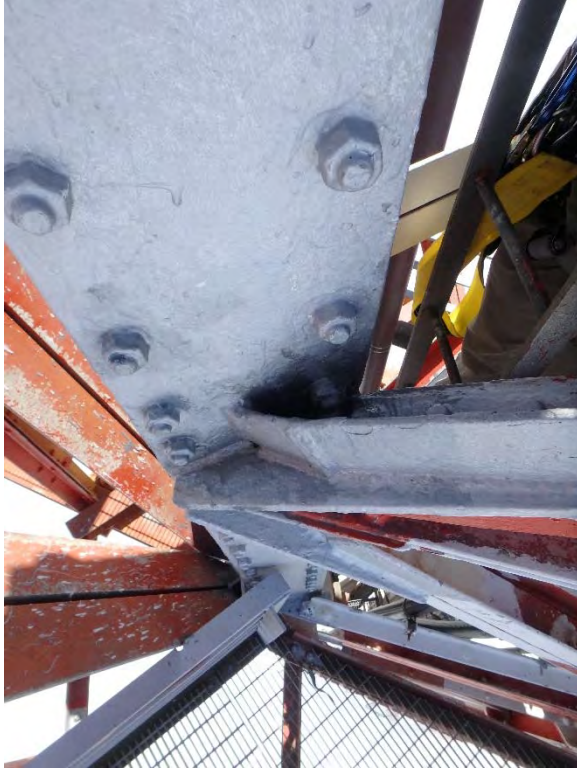
Picture 55: OBSERVATION 49



Picture 56: OBSERVATION 49



Picture 57: OBSERVATION 50



Picture 58: OBSERVATION 50



Picture 59: OBSERVATION 51



Picture 60: OBSERVATION 52



Picture 61: OBSERVATION 53



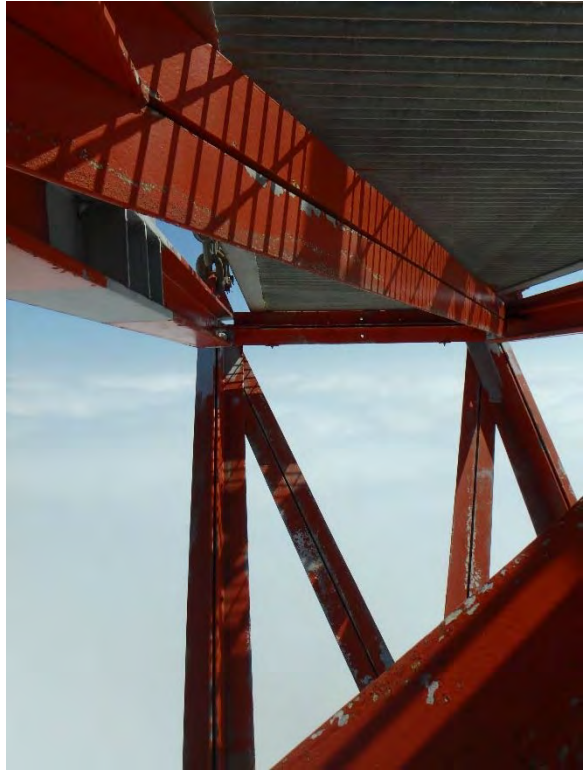
Picture 62: OBSERVATION 54



Picture 63: OBSERVATION 55



Picture 64: OBSERVATION 56



Picture 65: OBSERVATION 56



Picture 66: OBSERVATION 56



FIELD INSPECTION REPORT

WEST LEG A & NORTH TRUSS LEVEL 2-5

JUNE 25, 2018

ERI PROJECT 35473A, ADDENDUM 2
977 FT SELF-SUPPORT TOWER
SAN FRANCISCO, CA
ASRN 1001289

Prepared For:

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WEST LEG 'A' ORIENTATION/NOMENCLATURE I
INSPECTION FORMS, SUMMARIES, & PICTURES II

EXECUTIVE SUMMARY

Mr. Dausman,

This report is submitted by Electronics Research Incorporated (ERI) with regards to the field inspection conducted by ERI on December 12-14, 2017. The contracted scope of work included on-site inspections of the West Leg “A” up to the 6th Level and the North Truss Levels 2, 3, 4, and 5. The subject inspections were completed in accordance with the current ANSI/TIA-222-G standard.

The purpose of the work was to complete thorough visual inspections to evaluate current condition of the structural components.

In general, the structural elements of the West Leg “A” up to the 6th Level and the North Truss Levels 2, 3, 4, and 5 are in good condition.

Appendix II in this report includes the completed inspection forms, detailed inspection findings and recommended correction action summaries, and corresponding pictures to support all pertinent observations made.

OCCUPATIONAL SAFETY RELATED OBSERVATIONS

All safety related observations noted pertain strictly to occupational issues for individuals climbing and accessing the structure and do not pose any concerns to the general public. In general, the occupational safety related issues identified do not appear to pose immediate danger to the highly experienced Sutro Tower Maintenance Staff; however, all safety related observations should be carefully reviewed and action plans established for remediation. Following is a summary of the safety observations noted (see “Inspection Summary” in Appendix II of this report for further details and associated pictures):

- **Observation Number (ON) 16:** Bent climbing ladder rung between elevations 4.11 and 4.13 on the X-face inside the West Leg “A” (photo no. 19)
- **ON 37:** Safety cable keeper gate broken between elevations 2.27 and 2.29 on the X-face inside the West Leg “A” (photo no. 41)
- **ON 78:** The magnetic safety gate does not properly latch closed in Truss Level 3 at Northeast Leg “C” (photo no. 92-93)
- **ON 105:** The magnetic safety gate does not properly latch closed in Truss Level 2 at Northeast Leg “C” (photo no. 124)
- **ON 140:** The existing staircase leading to the Leg A base access is not properly supported, and one of the supporting posts is not adequately anchored to the ground (photo no. 167-168)

STRUCTURAL DAMAGE OBSERVATIONS

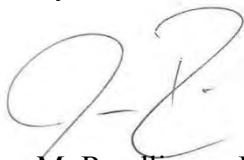
In general, the structural damage identified does not appear to pose immediate concerns to the overall structure's strength and stability; however, all structural damage observations noted should be further evaluated by Simpson Gumpertz & Heger Inc. serving as the structure's engineer of record (EOR) to determine if corrective action measures are warranted. Following is a summary of the structural damage observations noted (see "Inspection Summary" in Appendix II of this report for further details and associated pictures):

- **ON 14:** Damaged/bent flange on I-beam horizontal at elevation 5.10 on the X-Face inside the West Leg "A" (photo no. 17)
- **ON 47:** Damaged/bent angle leg on diagonal between elevations 1.29 and 1.31 on the Z-Face inside the West Leg "A" (photo no. 54-55)
- **ON 60:** Damaged/bent angle leg on diagonal between elevations 1.0 and 1.1 on the Y-Face inside the West Leg "A" (photo no. 69-70)
- **ON 61:** Damaged/bent angle leg on cladding support horizontal at elevation 1.0 on the Y-Face inside the West Leg "A" (photo no. 71-72)
- **ON 70:** Damaged/bent angle leg on diagonal between truss verticals 4.6 and 4.7 in the North Truss Level 4 (photo no. 81-82)
- **ON 79:** Damaged/bent flange on I-beam vertical at truss vertical 3.3 in the North Truss Level 3 (photo no. 94-95)
- **ON 138:** The existing cladding is considered in fair condition due to numerous cut-outs, minor surface rust, and inconsistent attachment means (photo no. 161-164)
- **ON 141:** The outer North face strands between Levels 1 & 2 near the Leg A anchor attachment are slightly unraveled with a distinct kink in the strand roughly 3 feet up from the end termination (photo no. 169-170)
- **ON 144:** The outer North face strands between Levels 1 & 2 near the Leg C anchor attachment are slightly unraveled (photo no. 173)

It is our understanding many of the observations noted will be remediated by means of replacement of the lighting system which is scheduled to be completed in 2018 along with plans to replace all guy cable high frequency dampers.

Please contact me if you should have any questions or require any additional details.

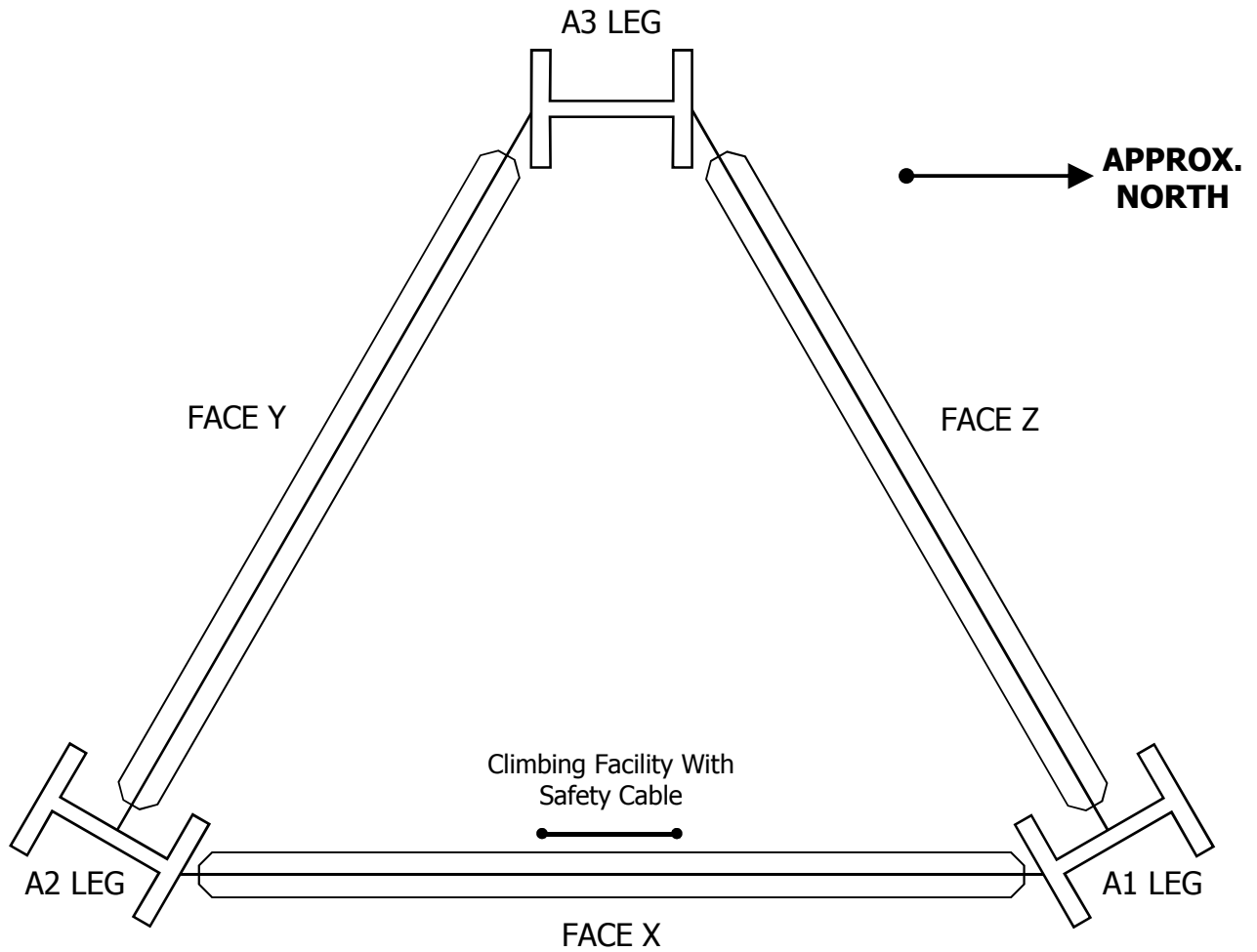
Sincerely,



James M. Ruedlinger, P.E.
Senior VP Engineering

Appendix I:
WEST LEG 'A' ORIENTATION/NOMENCLATURE
INSPECTED DEC 12-14, 2017
977 FT SELF-SUPPORT TOWER
SAN FRANCISCO, CA
ERI PROJECT 35473A
ASRN 1001289

Figure 1. West Leg "A" Orientation/Nomenclature per Inspection Forms



Appendix II:
INSPECTION FORMS, SUMMARIES, & PICTURES
INSPECTED DEC 12-14, 2017
977 FT SELF-SUPPORT TOWER
SAN FRANCISCO, CA
ERI PROJECT 35473A
ASRN 1001289

Leg A North Face Inspection Summary – 2018

Description of Inspection:

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

Special or In-Depth Inspections:

N/A

Summary of Results:

SEE INSPECTION SUMMARY + REPORT

Summary of Recommendations:

SEE INSPECTION SUMMARY + REPORT

Checklist:

NOT
KNOWN

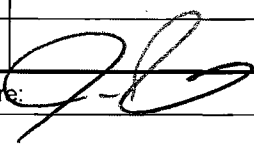
- | | | | |
|---|--------------------------------------------------------------------------------------------------------------------|-----|----|
| • | Has a severe event occurred since the previous inspection? | Yes | No |
| • | Have action items and recommendations from previous inspections been addressed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

Signature: _____

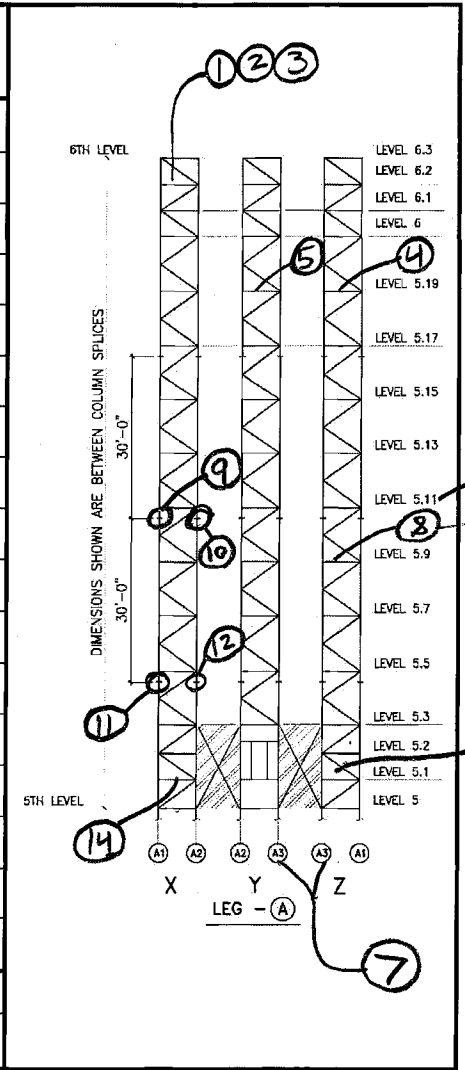
Date: _____

12/14/2017

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

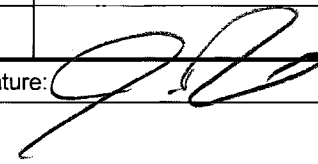
Observ. No.	Location/Identification			Photo No.	Observation Comments
	Column	Elevation	Item ¹		
1	X-FACE	6	O	1	
2	X-FACE	6	O	2	
3	X-FACE	6	O	3	
4	Z-FACE	5.19	O	4	
5	Y-FACE	5.19	O	5-6	
6	OB LEVEL	5.11	O	7	
7	A3	4.12-5.11	L	8-9	
8	Z-FACE	5.9	O	10-11	
9	A1	5.9-11	C	12	
10	A2	5.9-11	C	13	
11	A1	5.3-5	C	14	
12	A2	5.3-5	C	15	
13	Z-FACE	5.1-2	O	16	
14	X-FACE	5.1	H	17	
Sutro Tower				Signature: 	Page: <u>1</u> of <u>1</u>
San Francisco, CA				File: _____	Date: <u>12/12/2017</u>

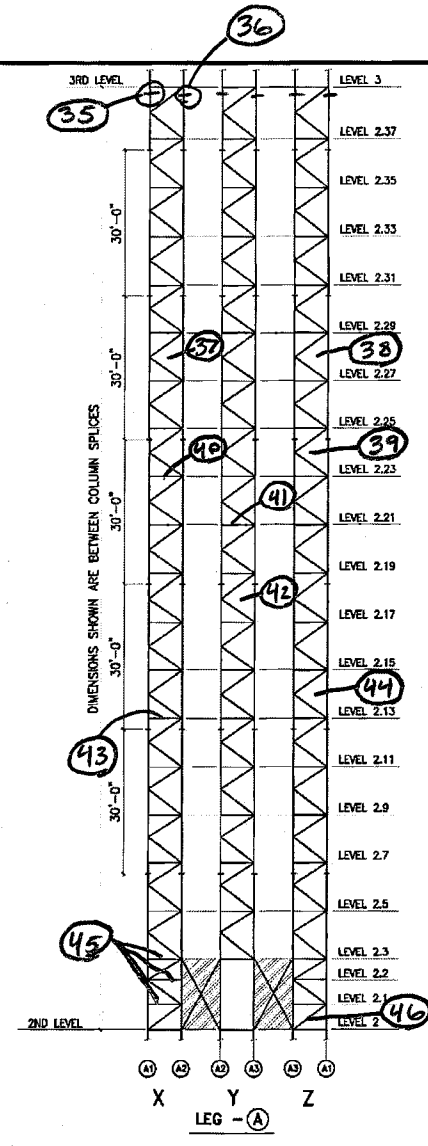
SEE INSPECTION SUMMARY



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

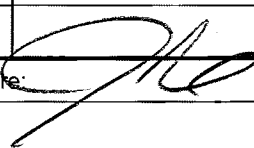
Inspection Data Sheet: Leg A (Level 2 to Level 3)

Observ. No.	Location/Identification			Photo No.	Observation Comments
	Column	Elevation	Item ¹		
35	A1	2.37-3.0	C	39	
36	A2	2.37-3.0	C	40	
37	X-FACE	2.27-29	O	41	
38	Z-FACE	2.27-29	O	42	
39	Z-FACE	2.23-25	O	43	
40	X-FACE	2.23	O	44-45	
41	Y-FACE	2.21	C	46	
42	Y-FACE	2.17-19	O	47	
43	X-FACE	2.13	C	48	
44	Z-FACE	2.13-15	O	49	
45	X-FACE	2.1-3	O	50-52	
46	Z-FACE	2.0-1	C	53	
(SEE INSPECTION SUMMARY)					
Sutro Tower				Signature: 	Page: <u>1</u> of <u>1</u>
San Francisco, CA				File:	Date: <u>12/12/2017</u>

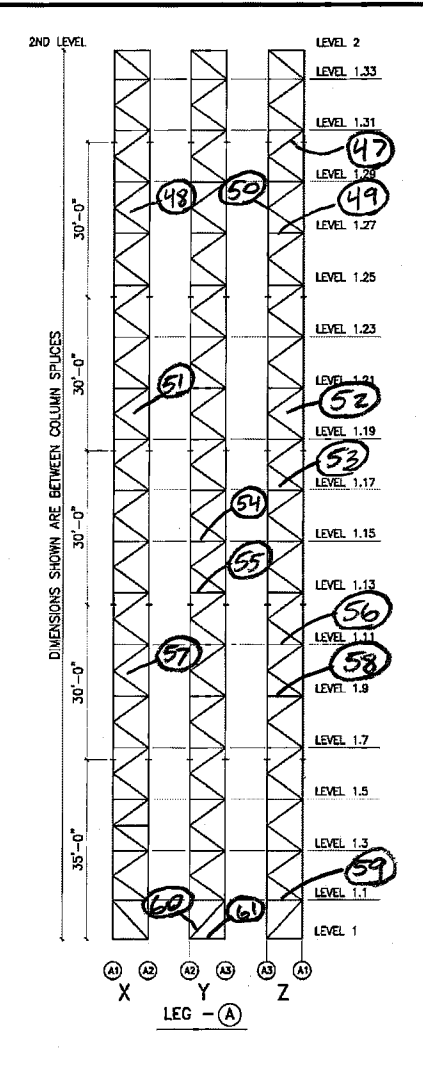


¹ Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others

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

Observ. No.	Location/Identification			Photo No.	Observation Comments
	Column	Elevation	Item ¹		
47	Z-FACE	1.29-31	D	54-55	
48	X-FACE	1.27-29	O	56	
49	Z-FACE	1.27	O	57	
50	OB Level	1.27-29	O	58	
51	X-FACE	1.19-21	O	59-60	
52	Z-FACE	1.19-21	O	61	
53	Z-FACE	1.17	O	62	
54	Y-FACE	1.15	O	63	
55	Y-FACE	1.13	O	64	
56	Z-FACE	1.11	O	65	
57	X-FACE	1.9-11	O	66	
58	Z-FACE	1.9	O	67	
59	Z-FACE	1.1	O	68	
60	Y-FACE	1.0-1	D	69-70	
61	Y-FACE	1.0	O	71-72	
Sutro Tower				Signature: 	Page: <u>1</u> of <u>1</u>
San Francisco, CA				File:	Date: <u>12/12/2017</u>

SEE INSPECTION SUMMARY



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

Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

	;Denotes Occupational Safety Related Observation
	;Denotes Structural Damage Observation Requiring EOR Review
	;Denotes Missing or Damaged Hardware/Components Which Need To Be Installed, Repaired, or Replaced
	;Denotes Minor Rust Observation Where No Significant Material Loss Noted
	;Denotes General Maintenance Observations

WEST LEG 'A' - 1 OF 2						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Column	Elevation	Item			
1	X-Face	6	O	1	Line pressure gauge no longer operable	Replace gauge if readings are being monitored at this elevation
2	X-Face	6	O	2	Fixture in poor condition and no longer weather-tight	Repair or replace fixture
3	X-Face	6	O	3	Cut/unused cables	Ensure cables are dead, and properly cap fixture
4	Z-Face	5.19	O	4	Junction box missing (1) screw	Install missing screw
5	Y-Face	5.19	O	5-6	Junction box missing top plug and connected u-bolts are severely rusted and in poor condition throughout vertical run	Install plug and replace all corroded u-bolts
6	OB Level	5.11	O	7	Lightning rod near red light fixture is loose and poorly supported	Properly secure lightning rod or replace
7	A3	4.12-5.11	L	8-9	Mild rust on exterior column splice bolts, column web, and column flange reinforcement plates from level 4.12-5.11	Surface prepare and treat. NOTE: an extensive inspection of the exterior column faces utilizing rope access is strongly recommended in order to fully identify and treat all areas
8	Z-Face	5.9	O	10-11	Severe rust on junction box	Replace junction box
9	A1	5.9-11	C	12	Mild Rust on Bolts, MRB (x2); Column splice bolts	Surface prepare and treat
10	A2	5.9-11	C	13	MRB (x1); Column splice bolts	Surface prepare and treat
11	A1	5.3-5	C	14	MRB (x8); Column splice bolts	Surface prepare and treat
12	A2	5.3-5	C	15	MRB (x4); Column splice bolts	Surface prepare and treat
13	Z-Face	5.1-2	O	16	Mild rust on junction box and cover not closed and secured	Surface prepare and treat, and repair; or replace
14	X-Face	5.10	H	17	Damaged/bent flange on I-beam horizontal	Field-straighten, or contact EOR to determine if any CA is warranted
15	X-Face	4.13-15	C	18	MRB (x1); Diag bolt	Surface prepare and treat
16	X-Face	4.11-13	O	19	Bent climbing ladder rung	Field-straighten
17	A1	4.11-13	C	20	MRB (x3); Column splice bolts	Surface prepare and treat
18	A2	4.11-13	C	21	MRB (x3); Column splice bolts	Surface prepare and treat
19	Z-Face	4.9-11	O	22	Moderate rust on junction box	Surface prepare and treat, or replace
20	Y-Face	4.11	C	23	MRB (x1); Diag Bolt	Surface prepare and treat
21	A1	4.5-7	C	24	MRB (x2); Column splice bolts	Surface prepare and treat
22	A2	4.5-7	C	25	MRB (x3); Column splice bolts	Surface prepare and treat
23	Z-Face	4.3	O	26	Strobe cable enclosure plug disengaged	Repair and reseal enclosure to prevent moisture intrusion
24	X-Face	4.30	O	27	Lighting fixture junction box cover is missing	Install missing cover plate on junction box
25	A1	3.28-30	C	28	MRB (x2); Column splice bolts	Surface prepare and treat
26	Z-Face	3.30	C	29	MRB (x1); Cladding support bolt	Surface prepare and treat
27	Z-Face	3.24-26	C	30	MRB (x1); Diag bolt	Surface prepare and treat
28	Z-Face	3.18-20	C	31	MRB (x1); Diag bolt	Surface prepare and treat
29	Y-Face	3.10-12	O	32	Severe rust on junction box	Replace junction box
30	OB Level		O	33	Moderate rust on red light conduit feed	Surface prepare and treat
31	Y-Face	3.10	C	34	Missing stitch bolt; Horizontal	Install new $\varnothing 3/4$ "x2-3/4" HDG A325 bolt with ANCO lock nut
32	X-Face	3.6	C	35-36	Loose/unseated stitch bolt; Ladder support	Drive bolt to properly seat and tighten, or replace if "shanked out"
33	A1	3.4-6	C	37	MRB (x1); Column splice bolts	Surface prepare and treat
34	X-Face	3.0-1	O	38	Severe rust on junction box	Replace junction box
35	A1	2.37-3.0	C	39	MRB (x6); Column splice bolts	Surface prepare and treat
36	A2	2.37-3.0	C	40	MRB (x12); Column splice bolts	Surface prepare and treat

Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

	;Denotes Occupational Safety Related Observation
	;Denotes Structural Damage Observation Requiring EOR Review
	;Denotes Missing or Damaged Hardware/Components Which Need To Be Installed, Repaired, or Replaced
	;Denotes Minor Rust Observation Where No Significant Material Loss Noted
	;Denotes General Maintenance Observations

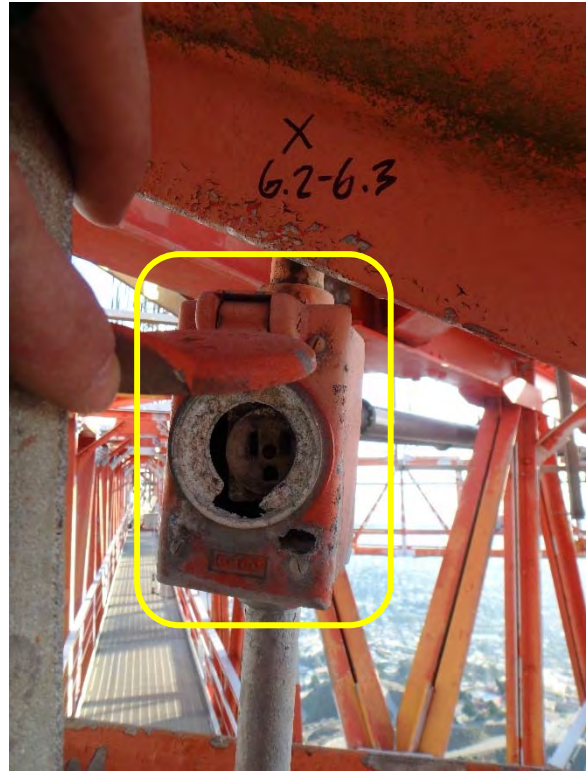
WEST LEG 'A' - 2 OF 2						
37	X-Face	2.27-29	O	41	Safety cable keeper gate broken	Replace safety cable keeper assembly
38	Z-Face	2.27-29	O	42	Ø2.375" conduit junction rusted	Surface prepare and treat, or replace
39	Z-Face	2.23-25	O	43	Severe rust on junction box	Replace junction box
40	X-Face	2.23	O	44-45	Rusted plugs on junction box (x3)	Replace junction box plugs
41	Y-Face	2.21-23	O	46	Missing stitch bolt; Horizontal	Install new Ø3/4"x2-3/4" HDG A325 bolt with ANCO lock nut
42	Y-Face	2.17-19	O	47	Ø1.9" conduit junction rusted	Surface prepare and treat, or replace
43	X-Face	2.13	C	48	Loose/unseated stitch bolt; Horizontal	Drive bolt to properly seat and tighten, or replace if "shanked out"
44	Z-Face	2.13-15	O	49	Ø2.375" conduit junction rusted	Surface prepare and treat, or replace
45	X-Face	2.1-3	O	50-52	Elevator lift cable has worn into elevator landing framing	Install sacrificial pads to mitigate future wear at known contact points
46	Z-Face	2.0-1	C	53	Missing stitch bolt; Diagonal	Install new Ø3/4"x2-1/2" HDG A325 bolt with ANCO lock nut
47	Z-Face	1.29-31	D	54-55	Damaged/bent angle leg on diagonal	Field-straighten, or contact EOR to determine if any CA is warranted
48	X-Face	1.27-29	O	56	Severe rust on Ø1.9" conduit	Replace conduit
49	Z-Face	1.27	O	57	Lighting fixture junction box cover is severely corroded/disconnected and moderate rust present on conduit	Replace junction box cover, and surface prepare and treat conduit, or replace
50	OB Level	1.27-29	O	58	Moderate rust on red light conduit feed	Surface prepare and treat
51	X-Face	1.19-21	O	59-60	Rusted plugs on junction box (x4)	Replace junction box plugs
52	Z-Face	1.19-21	O	61	Severe rust on Ø2.375" conduit	Replace conduit
53	Z-Face	1.17	O	62	Severe rust on Ø2.375" conduit	Replace conduit
54	Y-Face	1.15	O	63	Severe rust on Ø1.9" conduit	Replace conduit
55	Y-Face	1.13	O	64	Severe rust on Ø1.9" conduit	Replace conduit
56	Z-Face	1.11	O	65	Severe rust on Ø2.375" conduit	Replace conduit
57	X-Face	1.9-11	O	66	Severe rust on Ø1.9" conduit	Replace conduit
58	Z-Face	1.9	O	67	Severe rust on Ø2.375" conduit	Replace conduit
59	Z-Face	1.1	O	68	Rusted all-thread at cable guide rollers	Surface prepare and treat
60	Y-Face	1.0-1	D	69-70	Damaged/bent angle leg on diagonal	Field-straighten, or contact EOR to determine if any CA is warranted
61	Y-Face	1.0	O	71-72	Damaged/bent angle leg on cladding support horizontal	Field-straighten, or contact EOR to determine if any CA is warranted

Nomenclature: MRB = Mild Rust on Bolts

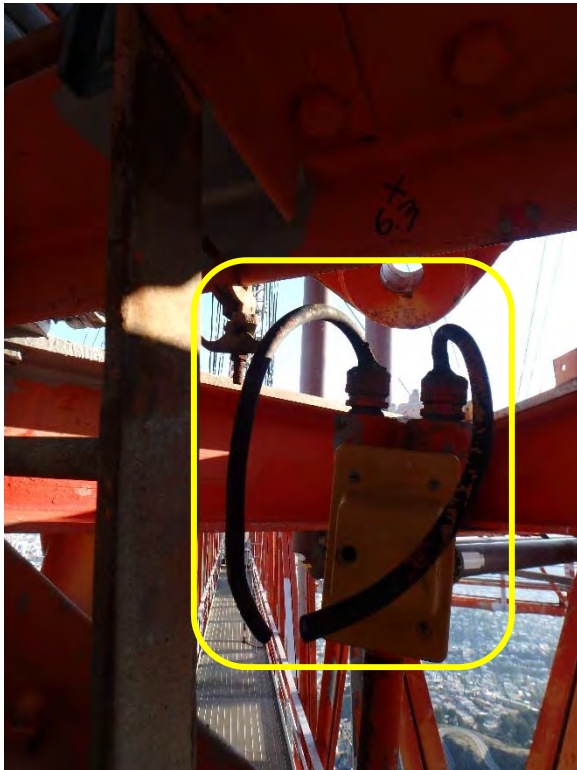
Picture 1: OBSERVATION 1



Picture 2: OBSERVATION 2



Picture 3: OBSERVATION 3



Picture 4: OBSERVATION 4



Picture 5: OBSERVATION 5



Picture 6: OBSERVATION 5



Picture 7: OBSERVATION 6



Picture 8: OBSERVATION 7



Picture 9: OBSERVATION 7



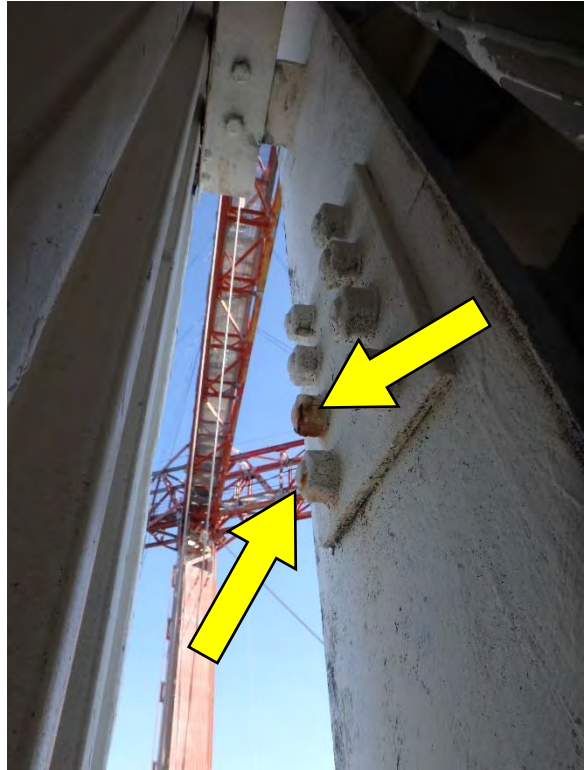
Picture 10: OBSERVATION 8



Picture 11: OBSERVATION 8



Picture 12: OBSERVATION 9



Picture 13: OBSERVATION 10



Picture 14: OBSERVATION 11



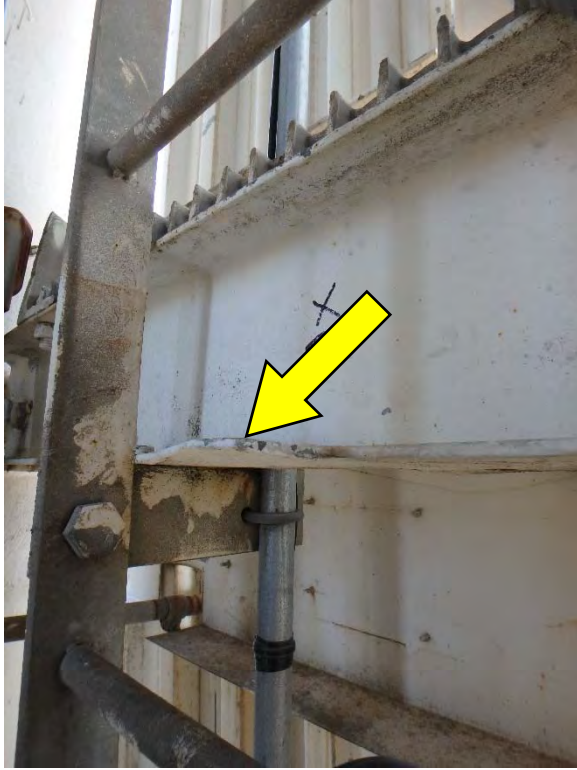
Picture 15: OBSERVATION 12



Picture 16: OBSERVATION 13



Picture 17: OBSERVATION 14



Picture 18: OBSERVATION 15



Picture 19: OBSERVATION 16



Picture 20: OBSERVATION 17



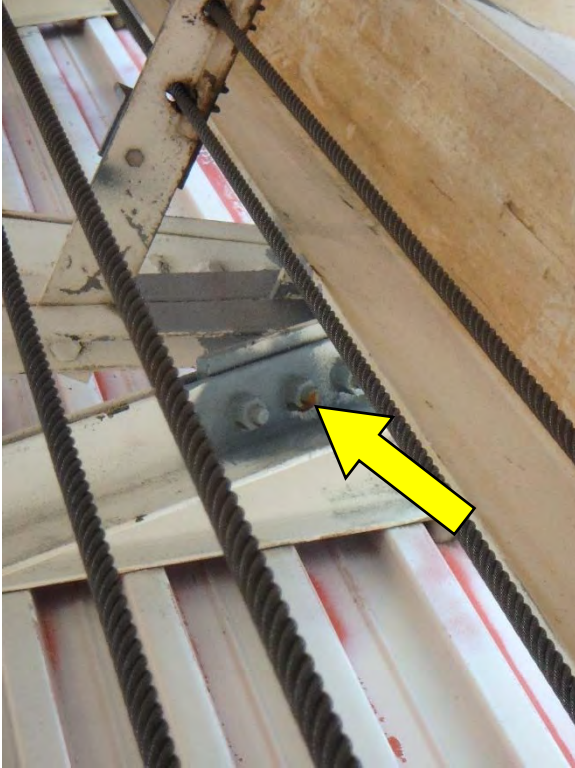
Picture 21: OBSERVATION 18



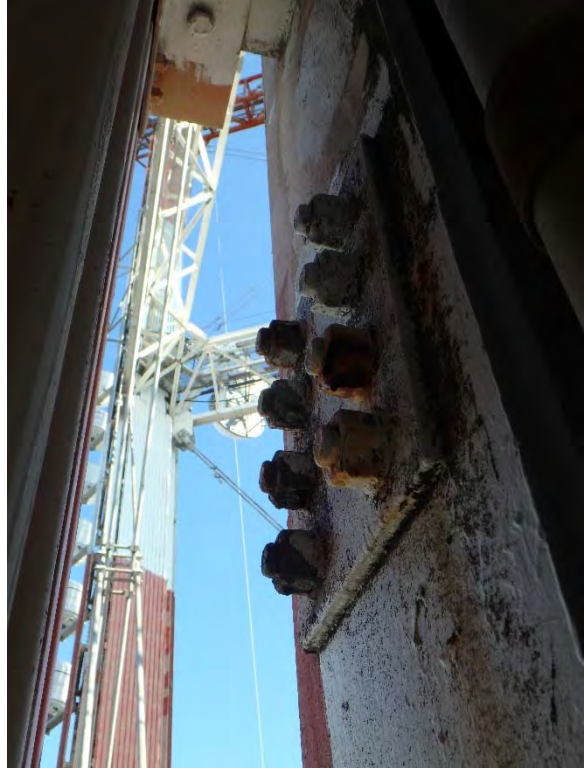
Picture 22: OBSERVATION 19



Picture 23: OBSERVATION 20



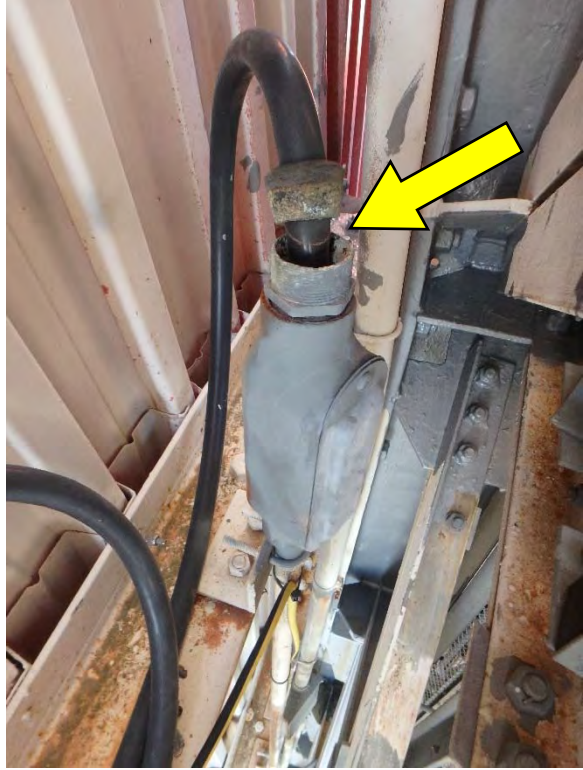
Picture 24: OBSERVATION 21



Picture 25: OBSERVATION 22



Picture 26: OBSERVATION 23



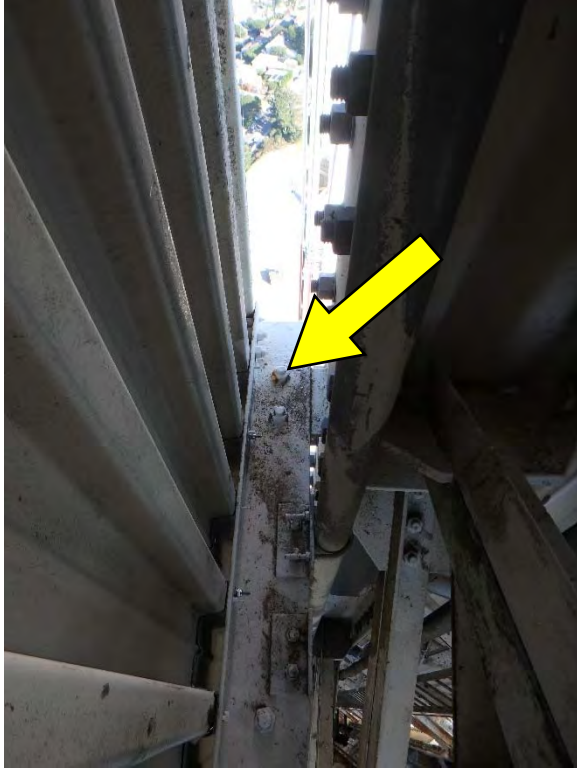
Picture 27: OBSERVATION 24



Picture 28: OBSERVATION 25



Picture 29: OBSERVATION 26



Picture 30: OBSERVATION 27



Picture 31: OBSERVATION 28



Picture 32: OBSERVATION 29



Picture 33: OBSERVATION 30



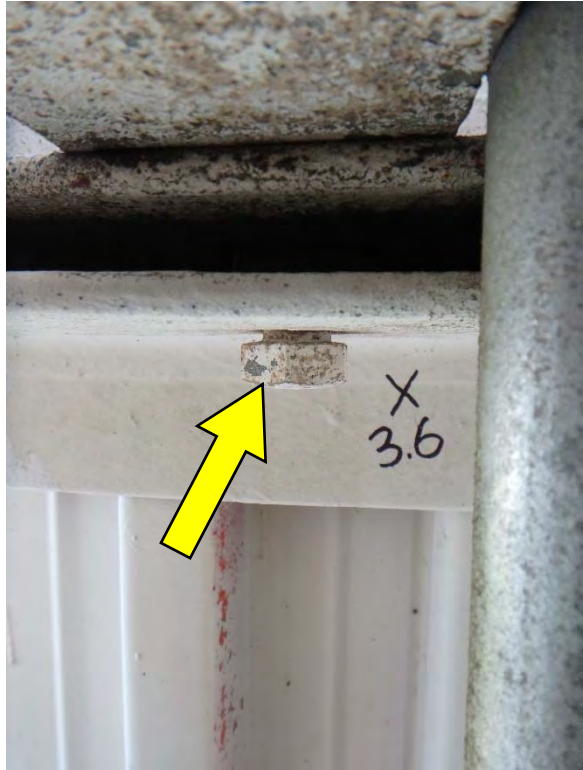
Picture 34: OBSERVATION 31



Picture 35: OBSERVATION 32



Picture 36: OBSERVATION 32



Picture 37: OBSERVATION 33



Picture 38: OBSERVATION 34



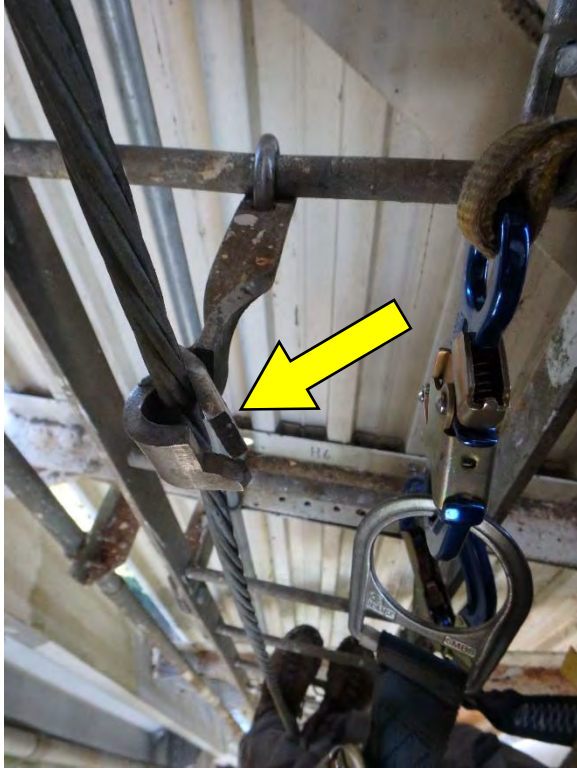
Picture 39: OBSERVATION 35



Picture 40: OBSERVATION 36



Picture 41: OBSERVATION 37



Picture 42: OBSERVATION 38



Picture 43: OBSERVATION 39



Picture 44: OBSERVATION 40



Picture 45: OBSERVATION 40



Picture 46: OBSERVATION 41



Picture 47: OBSERVATION 42



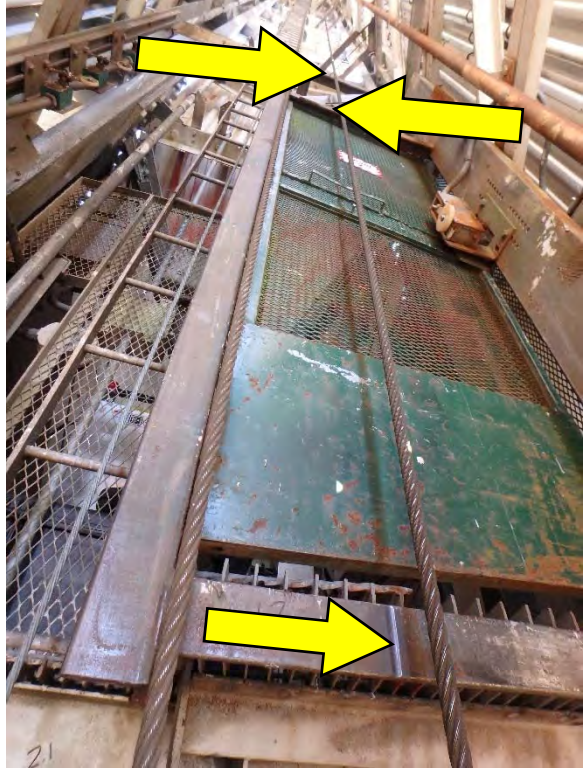
Picture 48: OBSERVATION 43



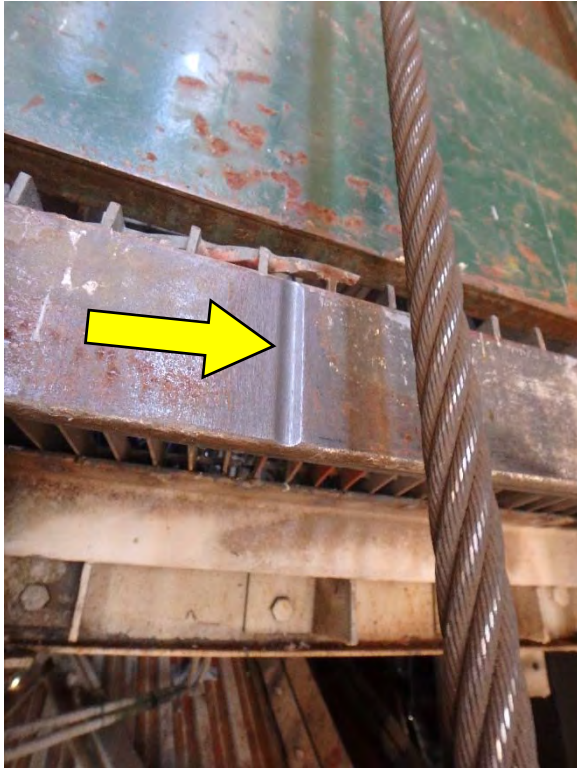
Picture 49: OBSERVATION 44



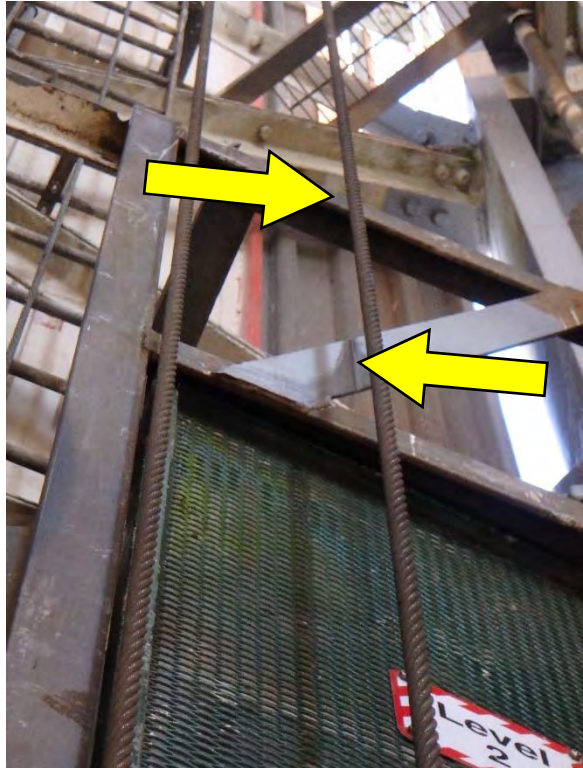
Picture 50: OBSERVATION 45



Picture 51: OBSERVATION 45



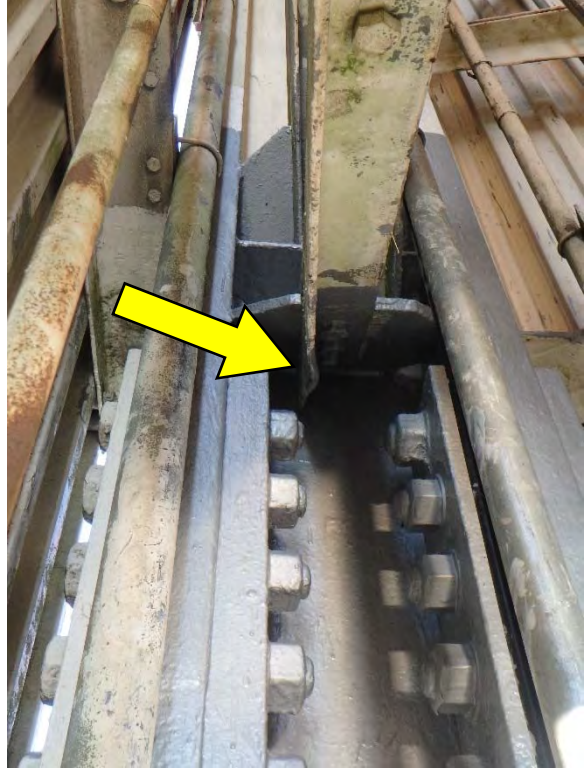
Picture 52: OBSERVATION 45



Picture 53: OBSERVATION 46



Picture 54: OBSERVATION 47



Picture 55: OBSERVATION 47



Picture 56: OBSERVATION 48



Picture 57: OBSERVATION 49



Picture 58: OBSERVATION 50



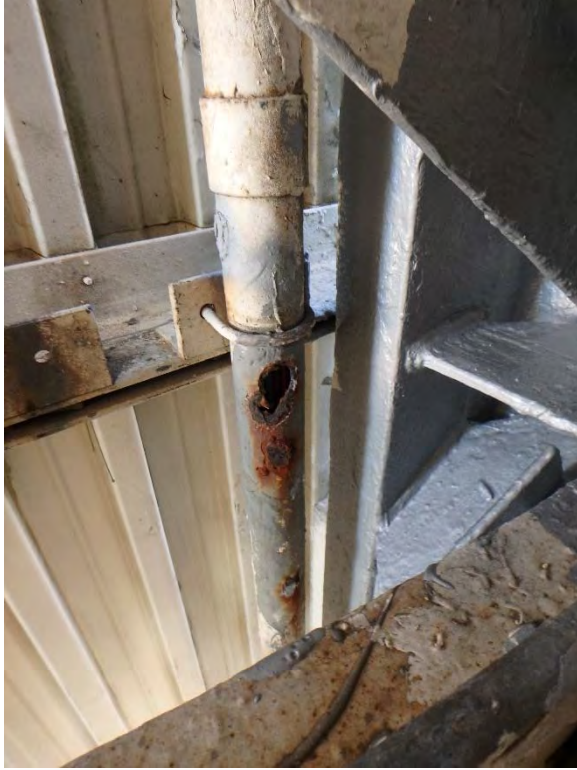
Picture 59: OBSERVATION 51



Picture 60: OBSERVATION 51



Picture 61: OBSERVATION 52



Picture 62: OBSERVATION 53



Picture 63: OBSERVATION 54



Picture 64: OBSERVATION 55



Picture 65: OBSERVATION 56



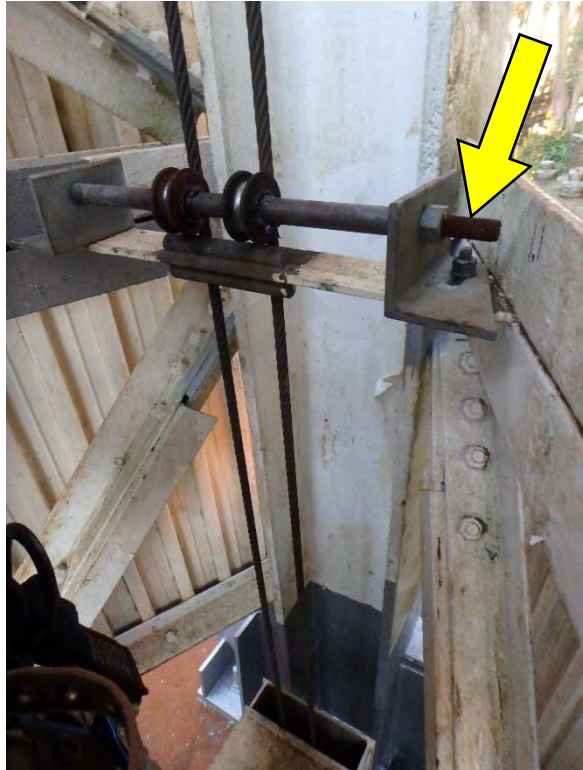
Picture 66: OBSERVATION 57



Picture 67: OBSERVATION 58



Picture 68: OBSERVATION 59



Picture 69: OBSERVATION 60



Picture 70: OBSERVATION 60



Picture 71: OBSERVATION 61



Picture 72: OBSERVATION 61



Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

	;Denotes Occupational Safety Related Observation
	;Denotes Structural Damage Observation Requiring EOR Review
	;Denotes Missing or Damaged Hardware/Components Which Need To Be Installed, Repaired, or Replaced
	;Denotes Minor Rust Observation Where No Significant Material Loss Noted
	;Denotes General Maintenance Observations

NORTH TRUSS (LEVEL 5)						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Chord	Horiz. Location	Item			
62	U	5.4-5	C	73	MRB (x1); Diag bolt	Surface prepare and treat
63	U	5.4	C	74	MRB (x1); Vertical bolt	Surface prepare and treat
64	L	5.1	C	75	MRB (x2); Leg bolts	Surface prepare and treat
65	U	5.4-5	C	76	Loose/unseated stitch bolt; Diag	Drive bolt to properly seat and tighten, or replace if "shanked out"
66	U	Antenna Mount	C	77	MRB (x1); Mount u-bolt	Surface prepare and treat, or replace
67	L	5.90	C	78	MRB (x7); Leg bolts	Surface prepare and treat

Nomenclature: MRB = Mild Rust on Bolts

Picture 73: OBSERVATION 62



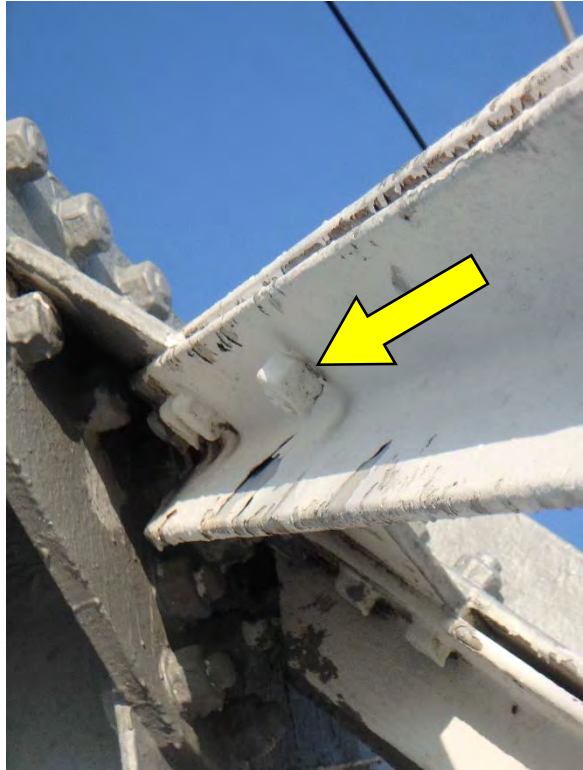
Picture 74: OBSERVATION 63



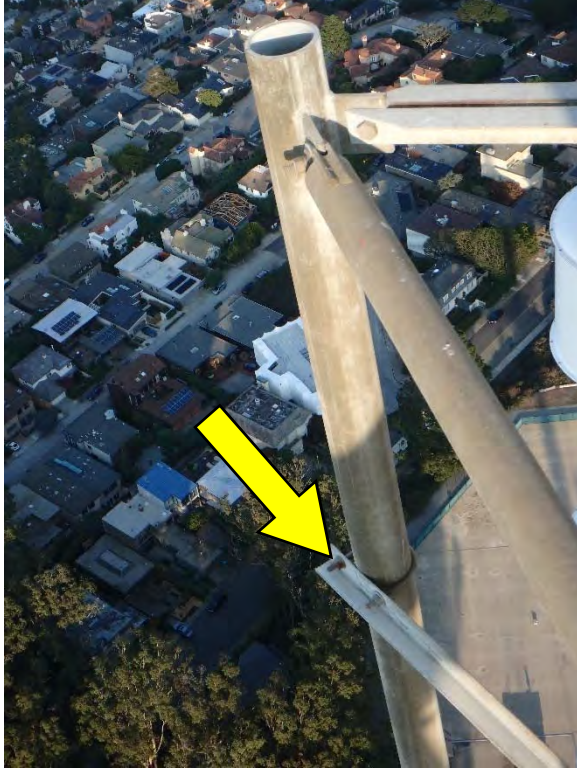
Picture 75: OBSERVATION 64



Picture 76: OBSERVATION 65



Picture 77: OBSERVATION 66



Picture 78: OBSERVATION 67



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Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

	;Denotes Occupational Safety Related Observation
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	;Denotes General Maintenance Observations

NORTH TRUSS (LEVEL 4)						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Chord	Horiz. Location	Item			
68	U	4.7	C	79	MRB (x3); Leg bolts	Surface prepare and treat
69	U	4.3	V	80	Minor rust on vertical	Surface prepare and treat
70	U	4.6-7	D	81-82	Damaged/bent angle leg on diagonal	Field-straighten, or contact EOR to determine if any CA is warranted
71	L	4.7	C	83	MRB (x2); Leg bolts	Surface prepare and treat
72	U	HOIST	O	84	Minor rust on anti-two block fixture, counterweight, and counterweight cable/end terminations	Surface prepare and treat fixture and counterweight, or replace; and replace cable and end terminations to counterweight
73	U	---	O	85	Disconnected equipment atop Truss level	(For reference purposes only)
74	L	4.6	C	86-87	MRB (x7); Vertical bolts; and minor rust on Horiz & Diag	Surface prepare and treat
75	L	DISH	O	88-89	Butterfly hanger disconnected on EW line feeding dish, and apparent bird damage at old kit	Install new EW line hanger(s) to properly support and prevent ongoing wear and tear, and repair ground kit

Nomenclature: MRB = Mild Rust on Bolts

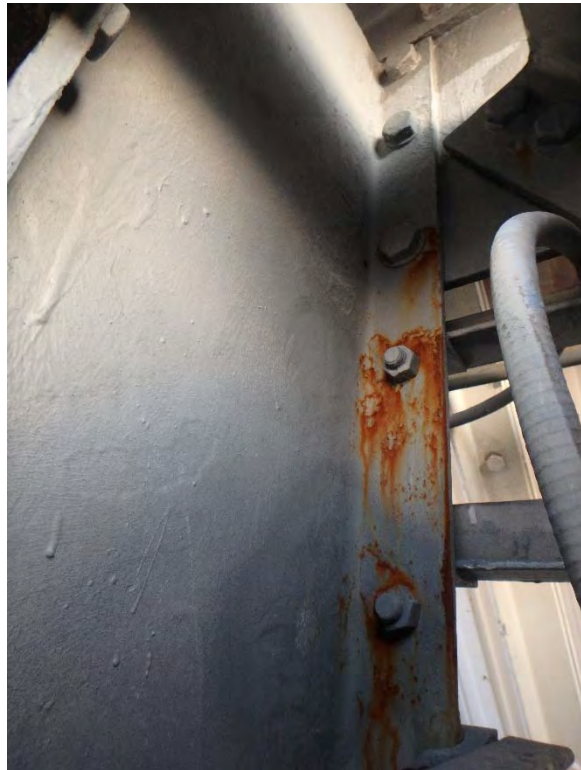
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Picture 79: OBSERVATION 68



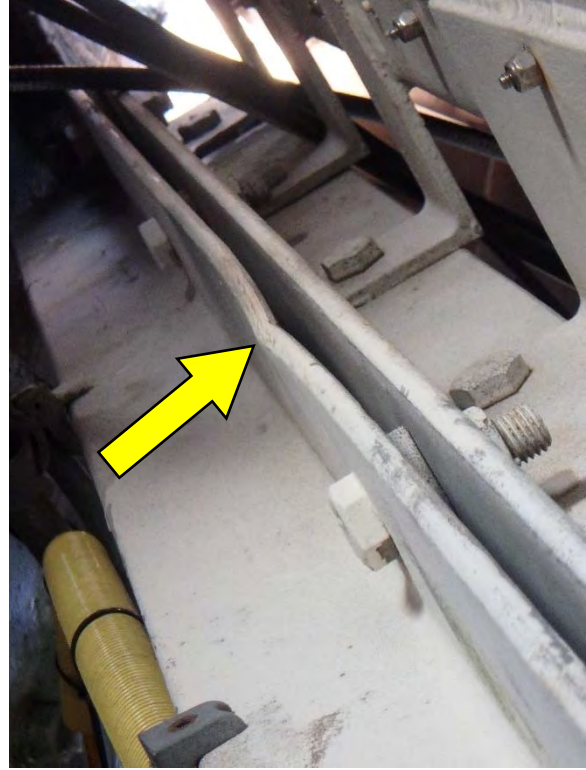
Picture 80: OBSERVATION 69



Picture 81: OBSERVATION 70



Picture 82: OBSERVATION 70



Picture 83: OBSERVATION 71



Picture 84: OBSERVATION 72



Picture 85: OBSERVATION 73



Picture 86: OBSERVATION 74



Picture 87: OBSERVATION 74



Picture 88: OBSERVATION 75



Picture 89: OBSERVATION 75



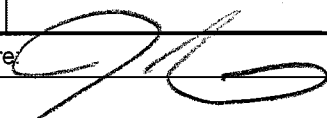
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Inspection Data Sheet: ~~South~~ Truss (Level 3)

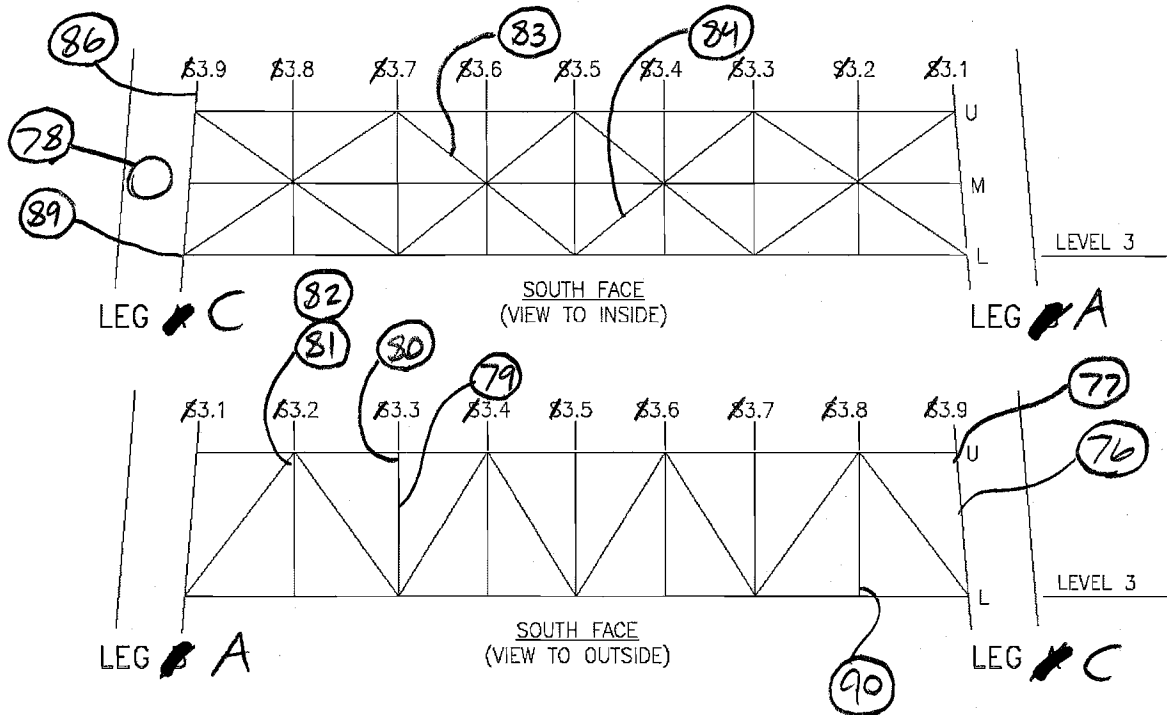
Observ. No.	Location/Identification			Photo No.	Observation Comments
	Chord ¹	Horiz. Location	Item ²		
76	M	3.9	L	90	
77	U	3.9	C	91	
* 78	M	Leg C	O	92-93	
79	M	3.3	V	94-95	
80	U	3.3	C	96	
81	U	3.2	C	97	
82	U	3.2	C	98	
83	U	3.6-7	C	99	
84	L	3.4-5	C	100	
85	M	HOIST	O	101-102	
86	U	3.9	O	103	
87	U	Antenna Link	C	104	
88	U	Antenna Link	C	105	
89	L	3.9	C	106	
90	L	3.8	C	107	
Sutro Tower				Signature: 	Page: 1 of 2
San Francisco, CA				File:	Date: 12/14/2017

SEE INSPECTION SUMMARY

¹ Chord member designation: U = upper, M = middle, and L = lower

² Item designation: L=leg member, D=diagonal, H=horizontal, C=connection, O=others

V=vertical

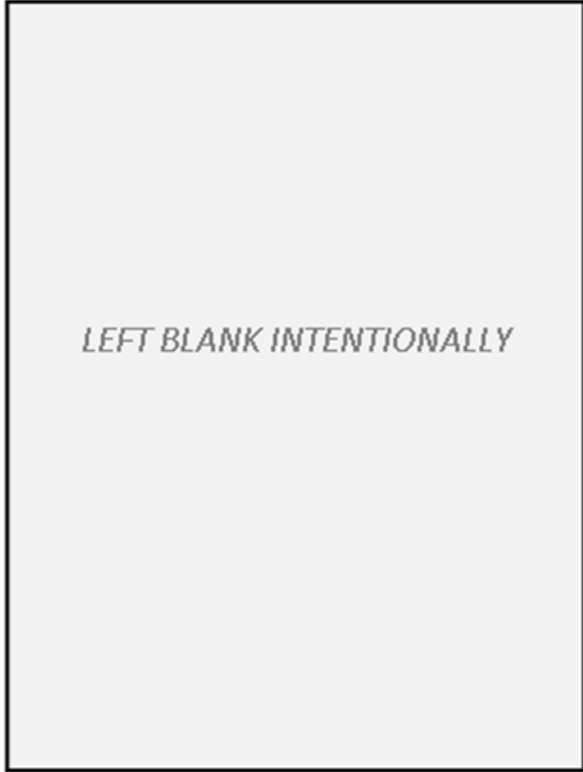


Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

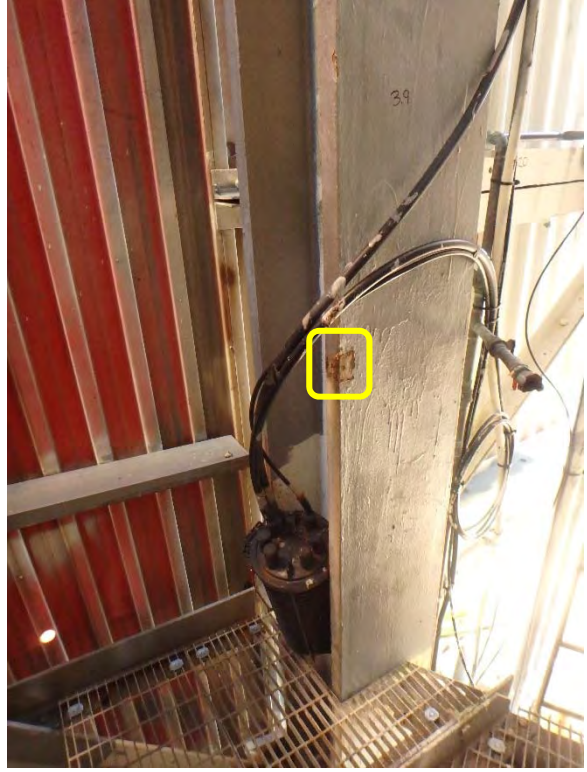
	;Denotes Occupational Safety Related Observation
	;Denotes Structural Damage Observation Requiring EOR Review
	;Denotes Missing or Damaged Hardware/Components Which Need To Be Installed, Repaired, or Replaced
	;Denotes Minor Rust Observation Where No Significant Material Loss Noted
	;Denotes General Maintenance Observations

NORTH TRUSS (LEVEL 3)						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Chord	Horiz. Location	Item			
76	M	3.9	L	90	Minor rust on Leg	Surface prepare and treat
77	U	3.9	C	91	MRB (x1); Leg bolt	Surface prepare and treat
78	M	Leg C	O	92-93	Safety gate does not properly latch closed	Reverse gate stop attached to ladder rail to ensure proper closure
79	M	3.3	V	94-95	Damaged/bent flange on I-beam vertical	Field-straighten, or contact EOR to determine if any CA is warranted
80	U	3.3	C	96	MRB (x1); Vertical bolt	Surface prepare and treat
81	U	3.2	C	97	MRB (x1); Vertical bolt	Surface prepare and treat
82	U	3.2	C	98	MRB (x2); Vertical bolt	Surface prepare and treat
83	U	3.6-7	C	99	Minor rust on stitch bolt spacer plate; Diag	Surface prepare and treat
84	L	3.4-5	C	100	Missing stitch bolt; Diagonal	Install new $\varnothing 3/4$ "x2-3/4" HDG A325 bolt with ANCO lock nut
85	M	HOIST	O	101-102	Minor rust on hoist mount spacers	Surface prepare and treat, or replace
86	U	3.9	O	103	Rusted cotter on safety line turnbuckle pin	Replace cotter pin
87	U	Antenna Mount	C	104	MRB (x2); Mount v-bolts	Surface prepare and treat, or replace
88	U	Antenna Mount	C	105	MRB (x4); Mount all-thread	Surface prepare and treat, or replace
89	L	3.9	C	106	MRB (x10); Leg bolts	Surface prepare and treat
90	L	3.8	C	107	Minor rust on Vertical gusset	Surface prepare and treat
91	L	3.1-2	C	108	MRB (x3); Diag bolts	Surface prepare and treat
92	L	3.1	C	109	MRB (x3); Leg bolts	Surface prepare and treat
93	L	3.1	C	110-111	MRB (x1); Leg bolt	Surface prepare and treat

Nomenclature: MRB = Mild Rust on Bolts



Picture 90: OBSERVATION 76



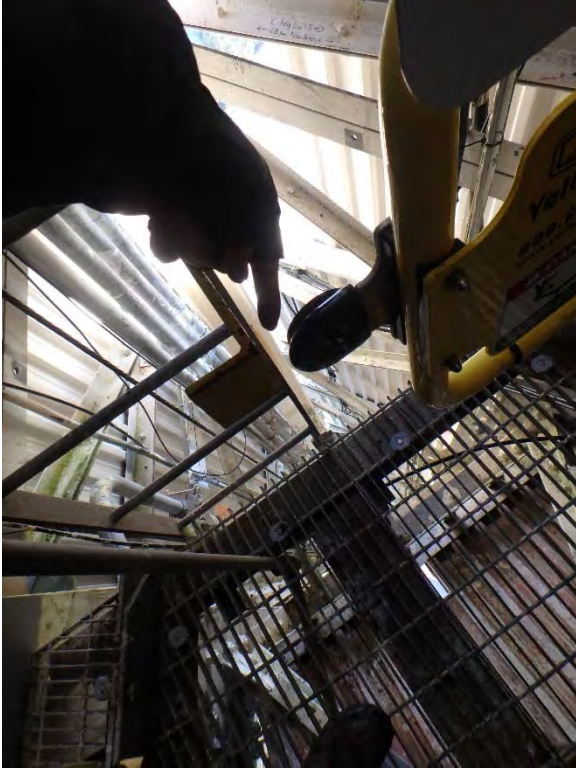
Picture 91: OBSERVATION 77



Picture 92: OBSERVATION 78



Picture 93: OBSERVATION 78



Picture 94: OBSERVATION 79



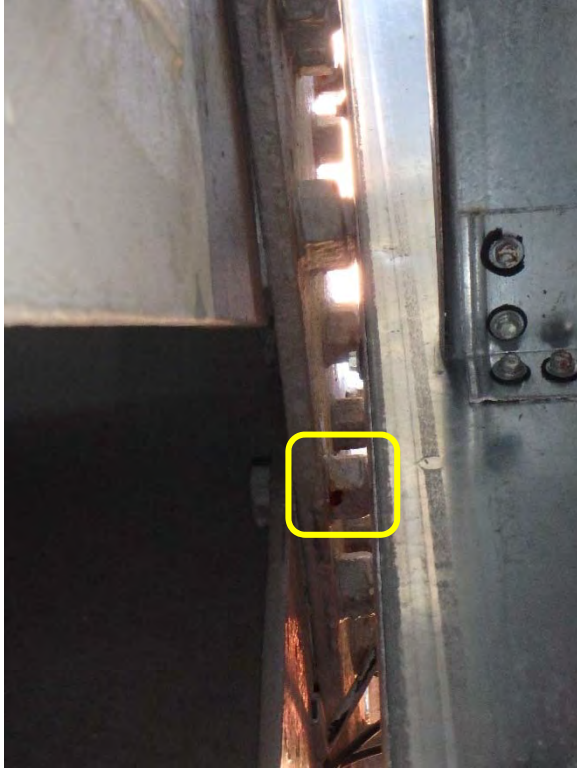
Picture 95: OBSERVATION 79



Picture 96: OBSERVATION 80



Picture 97: OBSERVATION 81



Picture 98: OBSERVATION 82



Picture 99: OBSERVATION 83



Picture 100: OBSERVATION 84



Picture 101: OBSERVATION 85



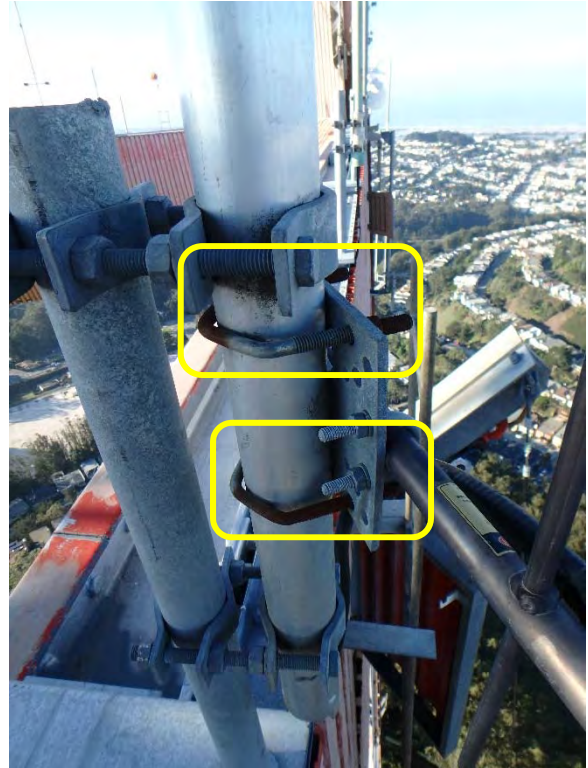
Picture 102: OBSERVATION 85



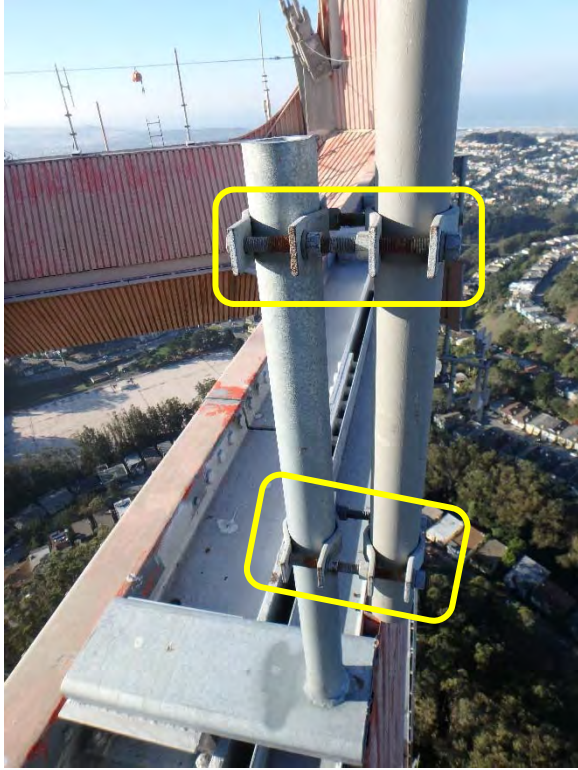
Picture 103: OBSERVATION 86



Picture 104: OBSERVATION 87



Picture 105: OBSERVATION 88



Picture 106: OBSERVATION 89



Picture 107: OBSERVATION 90



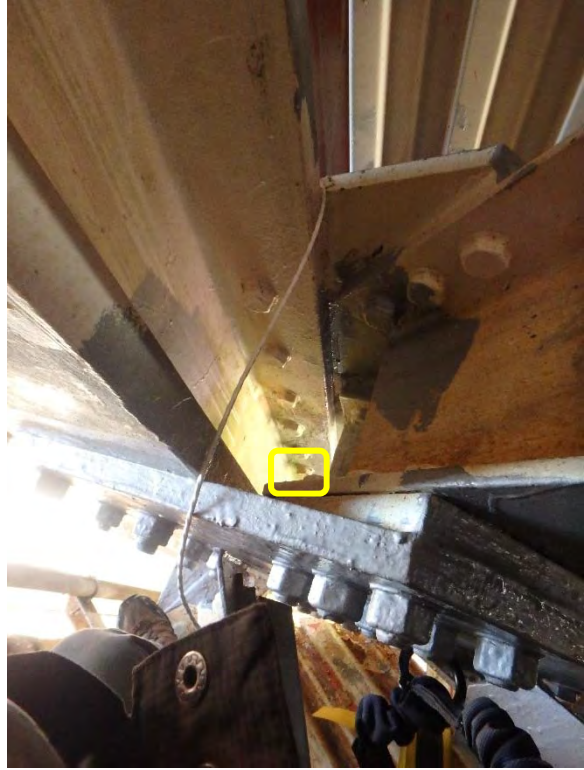
Picture 108: OBSERVATION 91



Picture 109: OBSERVATION 92



Picture 110: OBSERVATION 93



Picture 111: OBSERVATION 93



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Inspection Data Sheet: North Truss (Level 2)

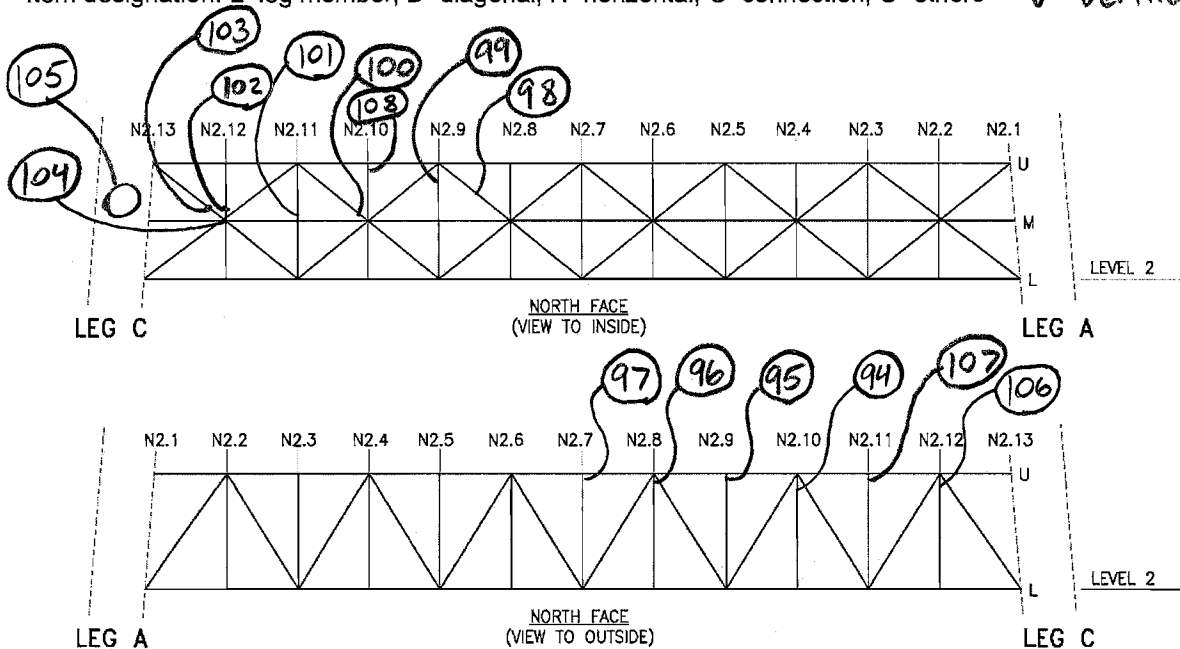
Observ. No.	Location/Identification			Photo No.	Observation Comments
	Chord ¹	Horiz. Location	Item ²		
94	U	2.10	C	112	
95	U	2.9	C	113-114	
96	U	2.8	C	115	
97	U	2.7	C	116	
98	M	2.8-9	C	117	
99	U	2.9	C	118	
100	M	2.10-11	C	119	
101	M	2.11	C	120	
102	M	2.12	C	121	
103	M	2.12-13	C	122	
104	M	2.12	C	123	
105	M	Leg C	O	124	
106	U	2.12	C	125	
107	U	2.11	C	126	
108	U	2.10	C	127	

SEE INSPECTION SUMMARY

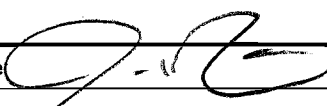
Sutro Tower	Signature:	Page: <u>1</u> of <u>3</u>
San Francisco, CA	File:	Date: <u>12/14/2017</u>

¹ Chord member designation: U = upper, M = middle, and L = lower

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



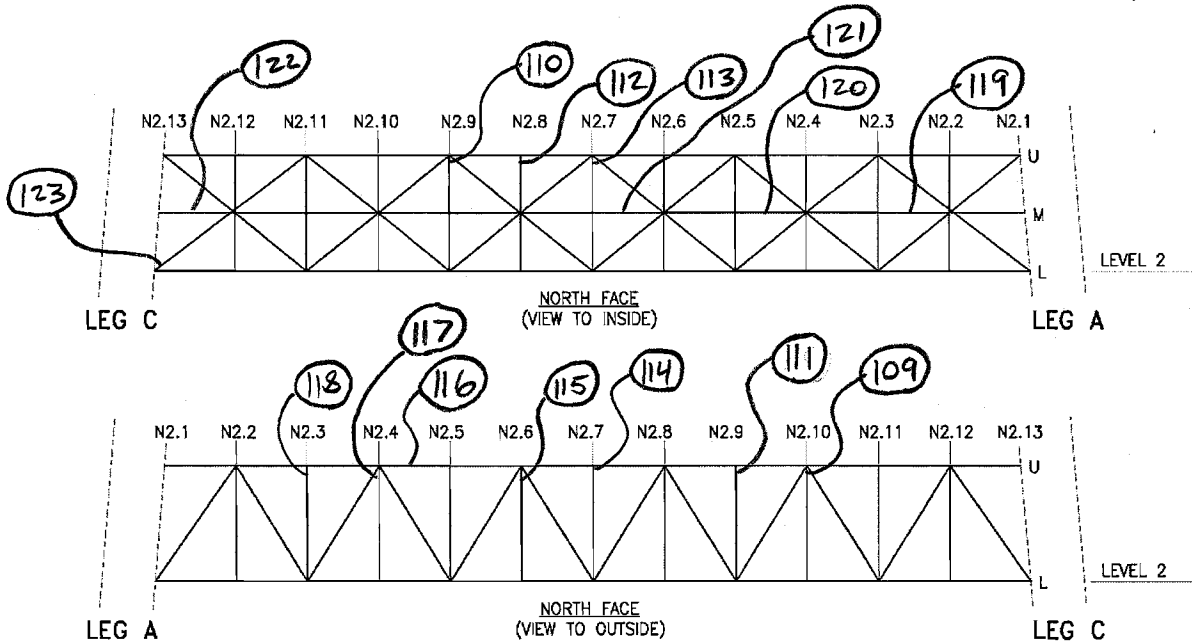
Inspection Data Sheet: North Truss (Level 2)

Observ. No.	Location/Identification			Photo No.	Observation Comments
	Chord ¹	Horiz. Location	Item ²		
109	U	2.10	C	128	
110	U	2.9	C	129	
111	U	2.9	C	130	
112	U	2.8	C	131	
113	U	2.7	C	132-133	
114	U	2.7	C	134	
115	U	2.6	C	135	
116	U	2.4-5	O	136-137	
117	U	2.4	C	138	
118	U	2.3	C	139	
119	M	2.2-3	C	140	
120	M	2.4-5	C	141	
121	M	2.6-7	C	142	
122	M	2.12-13	O	143	
123	L	2.13	C	144	
Sutro Tower				Signature: 	Page: <u>2</u> of <u>3</u>
San Francisco, CA				File:	Date: <u>12/14/2017</u>

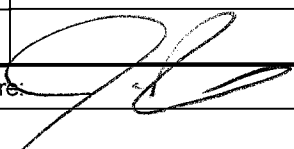
SEE INSPECTION SUMMARY

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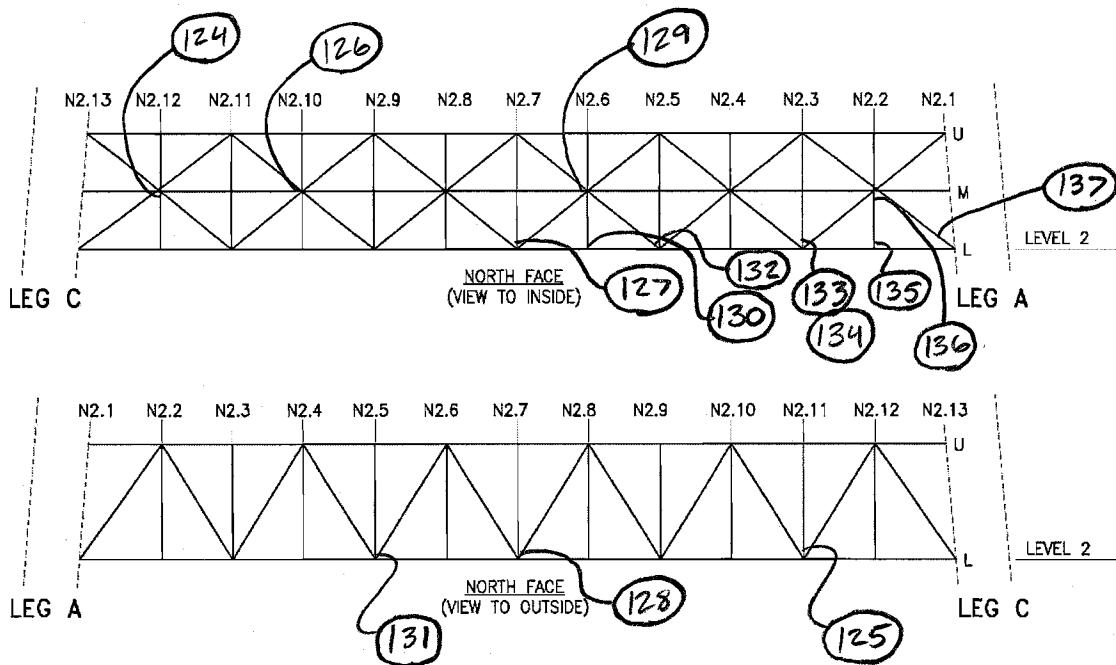
Inspection Data Sheet: North Truss (Level 2)

Observ. No.	Location/Identification			Photo No.	Observation Comments
	Chord ¹	Horiz. Location	Item ²		
124	M	2.12	C	145	
125	L	2.11	C	146	
126	M	2.10	C	147	
127	L	2.7	C	148	
128	L	2.7	C	149	
129	M	2.6	C	150	
130	L	2.6	C	151	
131	L	2.5	C	152	
132	L	2.5	C	153-155	
133	L	2.3	C	156	
134	L	2.3	C	157	
135	L	2.2	C	158	
136	M	2.2	C	159	
137	L	2.12	C	160	
Sutro Tower				Signature: 	Page: <u>3</u> of <u>3</u>
San Francisco, CA				File:	Date: <u>12/14/2017</u>

SEE INSPECTION SUMMARY

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



Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

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NORTH TRUSS (LEVEL 2) - 1 OF 2						
OBSERV. NO.	Location/Identification			Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
	Chord	Horiz. Location	Item			
94	U	2.10	C	112	MRB (x2); Vertical bolts	Surface prepare and treat
95	U	2.9	C	113-114	MRB (x2); Vertical bolts	Surface prepare and treat
96	U	2.8	C	115	MRB (x1); Vertical bolt	Surface prepare and treat
97	U	2.7	C	116	MRB (x2); Vertical bolts	Surface prepare and treat
98	M	2.8-9	C	117	Missing stitch bolt; Diagonal	Install new Ø3/4"x2-3/4" HDG A325 bolt with ANCO lock nut
99	U	2.9	C	118	Missing stitch bolt; Vertical	Install new Ø3/4"x3" HDG A325 bolt with ANCO lock nut
100	M	2.10-11	C	119	MRB (x1); Diag bolt	Surface prepare and treat
101	M	2.11	C	120	MRB (x1); Vertical bolt	Surface prepare and treat
102	M	2.12	C	121	MRB (x3); Vertical bolts	Surface prepare and treat
103	M	2.12-13	C	122	MRB (x2); Diag bolts	Surface prepare and treat
104	M	2.12	C	123	MRB (x1); Vertical bolt	Surface prepare and treat
105	M	Leg C	O	124	Safety gate does not properly latch closed	Install gate stop to ensure proper magnetic closure
106	U	2.12	C	125	MRB (x5); Vertical bolts	Surface prepare and treat
107	U	2.11	C	126	MRB (x2); Vertical bolts	Surface prepare and treat
108	U	2.10	C	127	MRB (x1); Vertical bolt	Surface prepare and treat
109	U	2.10	C	128	MRB (x1); Vertical bolt	Surface prepare and treat
110	U	2.9	C	129	MRB (x2); Vertical bolts	Surface prepare and treat
111	U	2.9	C	130	MRB (x2); Vertical bolts	Surface prepare and treat
112	U	2.8	C	131	MRB (x1); Vertical bolt	Surface prepare and treat
113	U	2.7	C	132-133	MRB (x4); Vertical bolts	Surface prepare and treat
114	U	2.7	C	134	MRB (x2); Vertical bolts	Surface prepare and treat
115	U	2.6	C	135	MRB (x3); Vertical bolts	Surface prepare and treat
116	U	2.4-5	O	136-137	Moderate rust on angle support (no longer used)	Surface prepare and treat, or remove angle as it no longer appears to be utilized
117	U	2.4	C	138	MRB (x2); Vertical bolts	Surface prepare and treat
118	U	2.3	C	139	MRB (x1); Vertical bolt	Surface prepare and treat
119	M	2.2-3	C	140	Conduit horiz run missing u-bolt at post	Install missing u-bolt
120	M	2.4-5	C	141	Conduit horiz run missing u-bolt at post	Install missing u-bolt
121	M	2.6-7	C	142	Conduit horiz run missing u-bolt at post	Install missing u-bolt
122	M	2.12-13	O	143	Conduit junction cover missing screw	Install missing screw
123	L	2.13	C	144	MRB (x1); Diag bolt	Surface prepare and treat
124	M	2.12	C	145	MRB (x1); Walkway support angle bolt	Surface prepare and treat
125	L	2.11	C	146	MRB (x1); Vertical bolt	Surface prepare and treat
126	M	2.10	C	147	MRB (x1); Walkway support angle bolt	Surface prepare and treat
127	L	2.7	C	148	MRB (x1); Vertical bolt	Surface prepare and treat
128	L	2.7	C	149	MRB (x2); Vertical bolts	Surface prepare and treat
129	M	2.6	C	150	MRB (x1); Walkway support angle bolt	Surface prepare and treat
130	L	2.6	C	151	MRB (x2); Vertical bolts	Surface prepare and treat
131	L	2.5	C	152	MRB (x1); Vertical bolt	Surface prepare and treat
132	L	2.5	C	153-155	MRB (x4); Vertical bolts	Surface prepare and treat
133	L	2.3	C	156	MRB (x1); Vertical bolt	Surface prepare and treat

Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

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NORTH TRUSS (LEVEL 2) - 2 OF 2						
134	L	2.3	C	157	MRB (x2); Vertical bolts	Surface prepare and treat
135	L	2.2	C	158	MRB (x2); Vertical bolts	Surface prepare and treat
136	M	2.2	C	159	MRB (x1); Vertical bolt	Surface prepare and treat
137	L	2.1-2	C	160	MRB (x2); Diag bolts	Surface prepare and treat

Nomenclature: MRB = Mild Rust on Bolts

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Picture 112: OBSERVATION 94



Picture 113: OBSERVATION 95



Picture 114: OBSERVATION 95



Picture 115: OBSERVATION 96



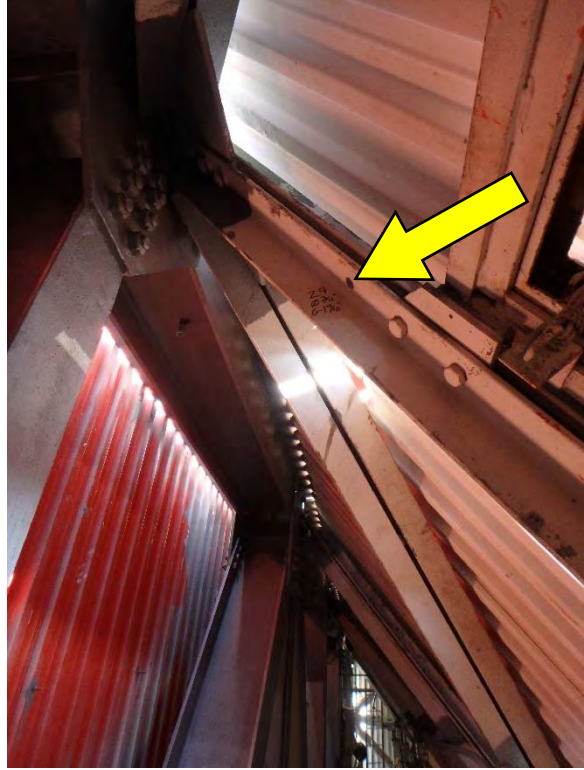
Picture 116: OBSERVATION 97



Picture 117: OBSERVATION 98



Picture 118: OBSERVATION 99



Picture 119: OBSERVATION 100



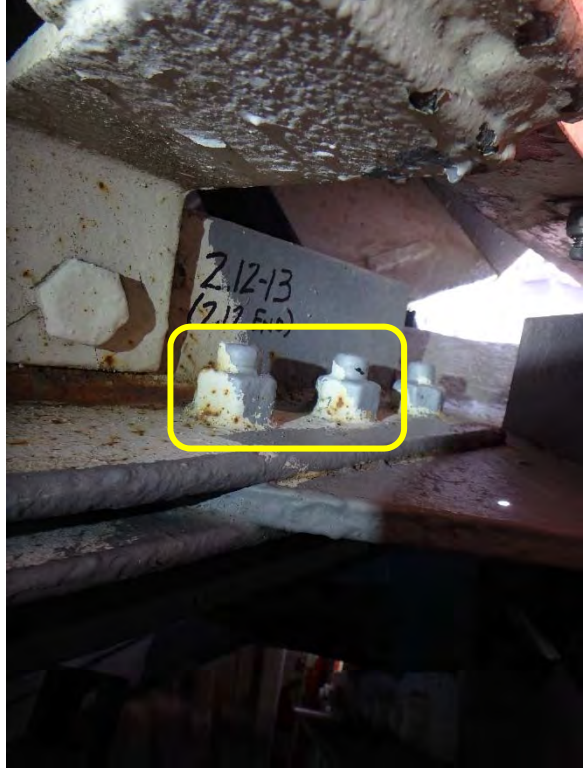
Picture 120: OBSERVATION 101



Picture 121: OBSERVATION 102



Picture 122: OBSERVATION 103



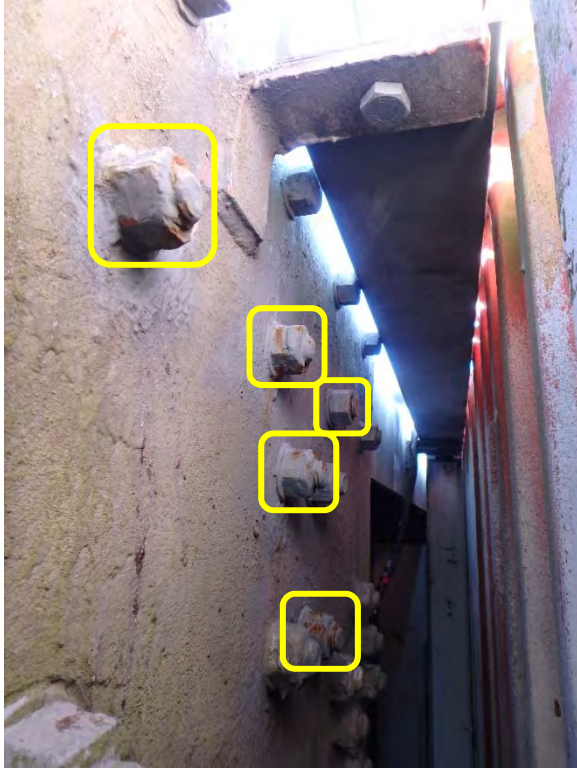
Picture 123: OBSERVATION 104



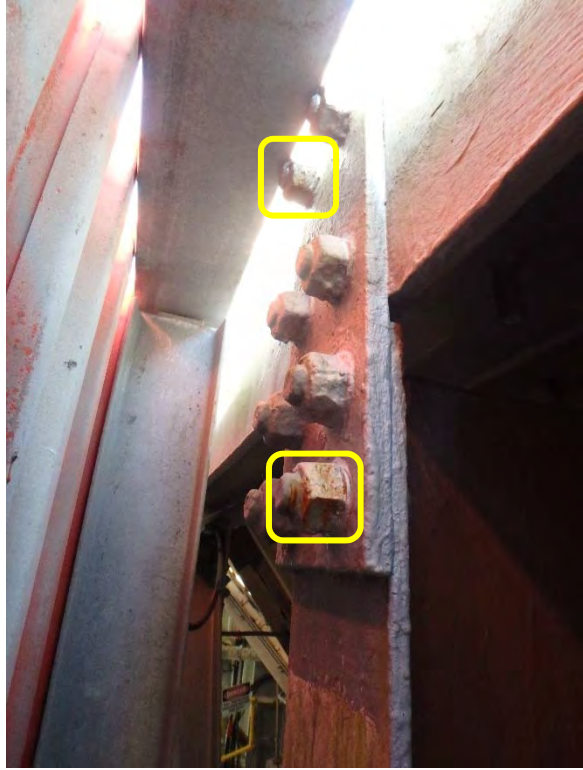
Picture 124: OBSERVATION 105



Picture 125: OBSERVATION 106



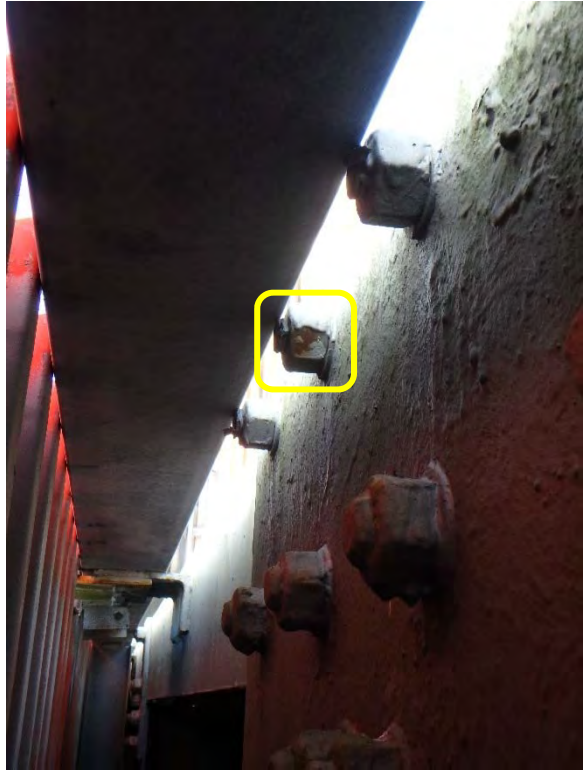
Picture 126: OBSERVATION 107



Picture 127: OBSERVATION 108



Picture 128: OBSERVATION 109



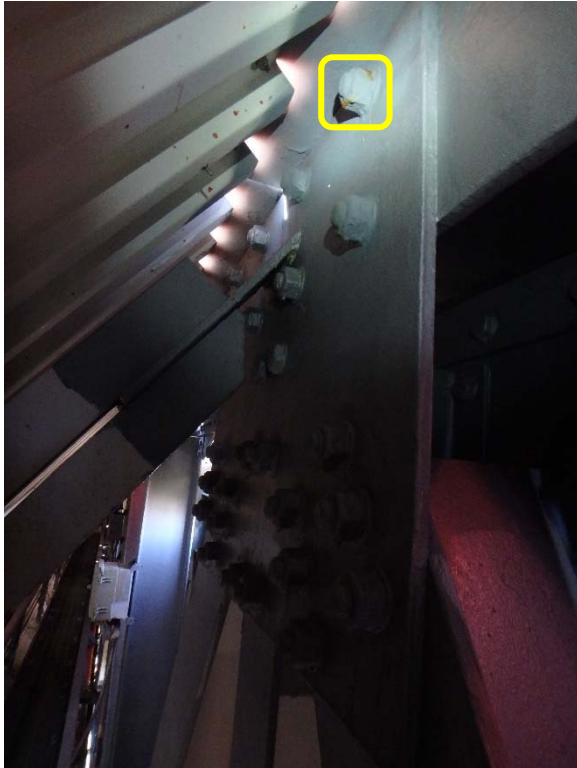
Picture 129: OBSERVATION 110



Picture 130: OBSERVATION 111



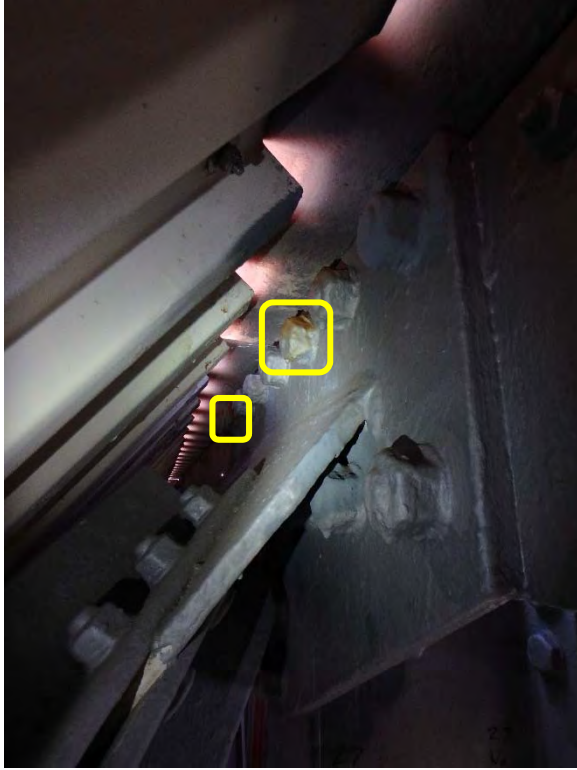
Picture 131: OBSERVATION 112



Picture 132: OBSERVATION 113



Picture 133: OBSERVATION 113



Picture 134: OBSERVATION 114



Picture 135: OBSERVATION 115



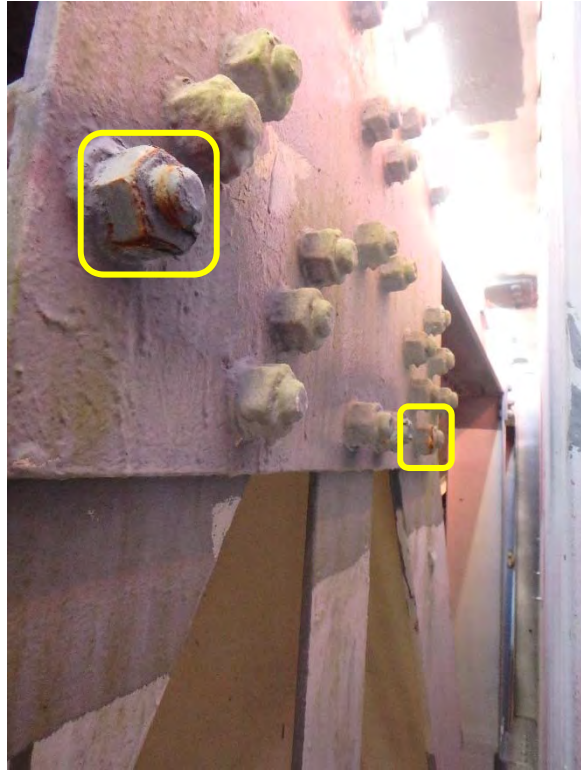
Picture 136: OBSERVATION 116



Picture 137: OBSERVATION 116



Picture 138: OBSERVATION 117



Picture 139: OBSERVATION 118



Picture 140: OBSERVATION 119



Picture 141: OBSERVATION 120



Picture 142: OBSERVATION 121



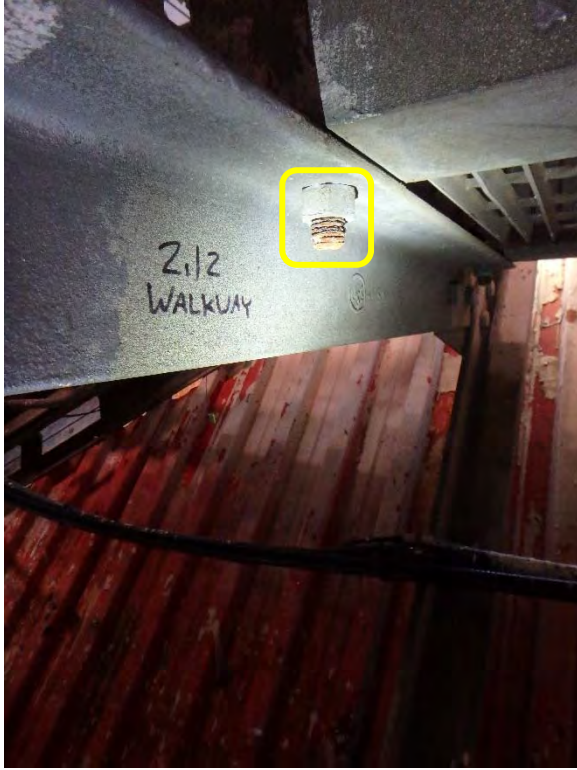
Picture 143: OBSERVATION 122



Picture 144: OBSERVATION 123



Picture 145: OBSERVATION 124



Picture 146: OBSERVATION 125



Picture 147: OBSERVATION 126



Picture 148: OBSERVATION 127



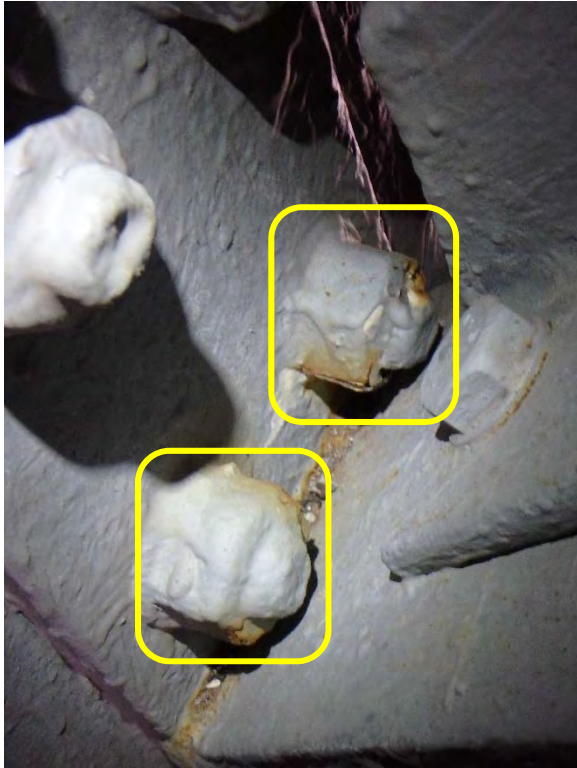
Picture 149: OBSERVATION 128



Picture 150: OBSERVATION 129



Picture 151: OBSERVATION 130



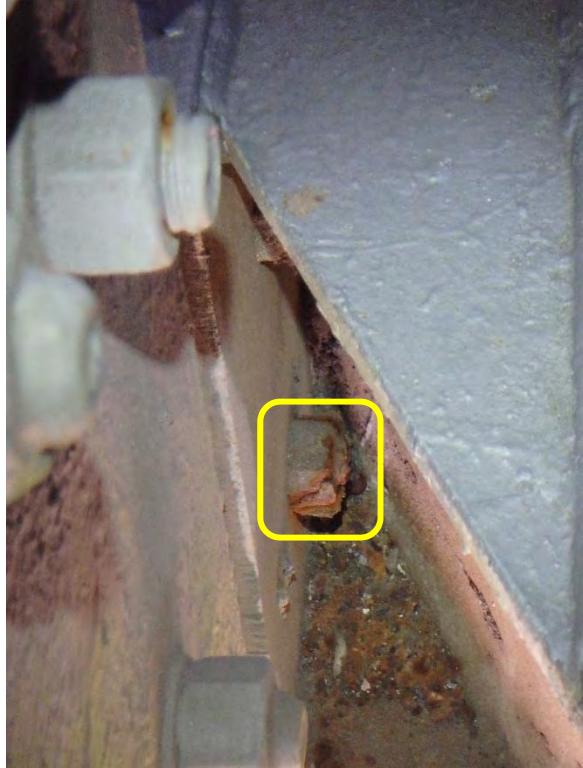
Picture 152: OBSERVATION 131



Picture 153: OBSERVATION 132



Picture 154: OBSERVATION 132



Picture 155: OBSERVATION 132



Picture 156: OBSERVATION 133



Picture 157: OBSERVATION 134



Picture 158: OBSERVATION 135



Picture 159: OBSERVATION 136



Picture 160: OBSERVATION 137



Inspection Summary * Sutro Tower * ERI Project 35473A * Inspected Dec 12-14, 2017

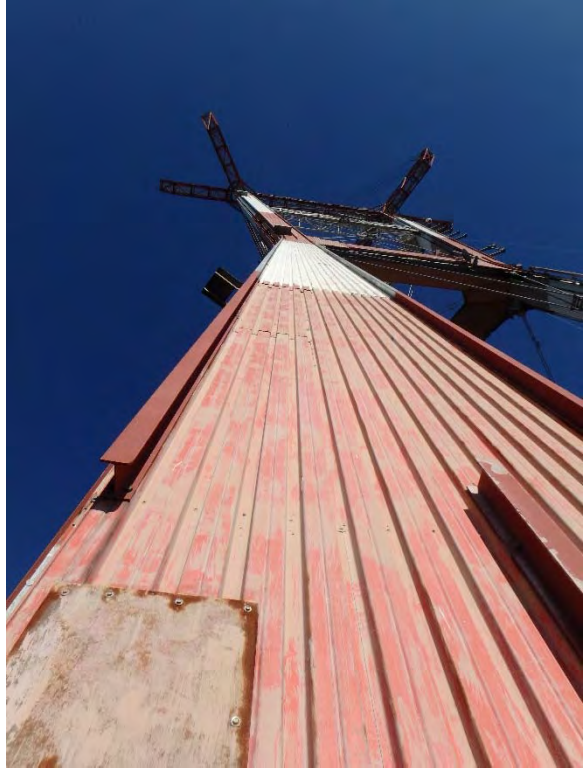
	;Denotes Occupational Safety Related Observation
	;Denotes Structural Damage Observation Requiring EOR Review
	;Denotes Missing or Damaged Hardware/Components Which Need To Be Installed, Repaired, or Replaced
	;Denotes Minor Rust Observation Where No Significant Material Loss Noted
	;Denotes General Maintenance Observations

MISCELLANEOUS				
OBSERV. NO.	Location/Identification	Photo No.	OBSERVATION COMMENTS	RECOMMENDED CORRECTIVE ACTION (CA)
138	CLADDING	161-164	The existing cladding is considered in fair condition due to numerous cut-outs, minor surface rust, and inconsistent attachment means	Contact EOR to determine appropriate long-term repairs required for cladding including support framing and attachments
139	X-FACE (INSIDE LEG A)	165-166	Rope used for additional cladding support is degraded and should not be used for stabilizing cladding for long-term conditions	Structural supports should be used along with permanent attachments/fasteners for properly securing the cladding
140	LEG A BASE STAIRCASE	167-168	The existing staircase leading to the Leg A base access is not properly supported, and one of the supporting posts is not adequately anchored to the ground	Contact EOR to determine appropriate repairs to staircase; at minimum, one additional post should be installed and the existing post anchors should be repaired
141	STRANDS	169-170	The outer North face strands between Levels 1 & 2 near the Leg A anchor attachment are slightly unraveled with a distinct kink in the strand roughly 3 feet up from the end termination	Issue does not appear to be detrimental to the structural integrity of the strands; however, the EOR should be consulted to determine if any CA is warranted
142	STRANDS	171	The end termination hairpin assembly for the outer North face strands between Levels 1 & 2 near the Leg A anchor attachment is out of square by roughly 1/4"	Adjust hairpin assembly to balance load
143	STRANDS	172	The inner North face strand end termination pin assembly between Levels 1 & 2 is missing a cotter pin near the Leg A anchor attachment	Install missing cotter pin
144	STRANDS	173	The outer North face strands between Levels 1 & 2 near the Leg C anchor attachment are slightly unraveled	Issue does not appear to be detrimental to the structural integrity of the strands; however, the EOR should be consulted to determine if any CA is warranted
145	STRANDS	174	The end termination hairpin assembly for the outer North face strands between Levels 1 & 2 near the Leg C anchor attachment is out of square by roughly 3/8"	Adjust hairpin assembly to balance load
146	STRANDS	175-176	Strand high frequency dampers should be replaced throughout structure (numerous broken/degraded safeties, stiff/corroded damper cables, missing dampers, etc.)	Replace high frequency strand dampers

Picture 161: OBSERVATION 138



Picture 162: OBSERVATION 138



Picture 163: OBSERVATION 138



Picture 164: OBSERVATION 138



Picture 165: OBSERVATION 139



Picture 166: OBSERVATION 139



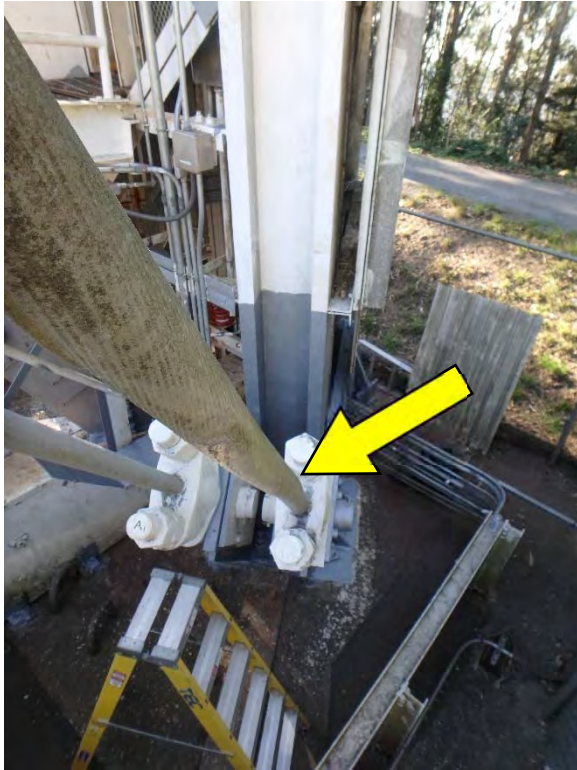
Picture 167: OBSERVATION 140



Picture 168: OBSERVATION 140



Picture 169: OBSERVATION 141



Note "Kink"

Picture 170: OBSERVATION 141



Note Unraveled Strands

Picture 171: OBSERVATION 142



Picture 172: OBSERVATION 143



Picture 173: OBSERVATION 144

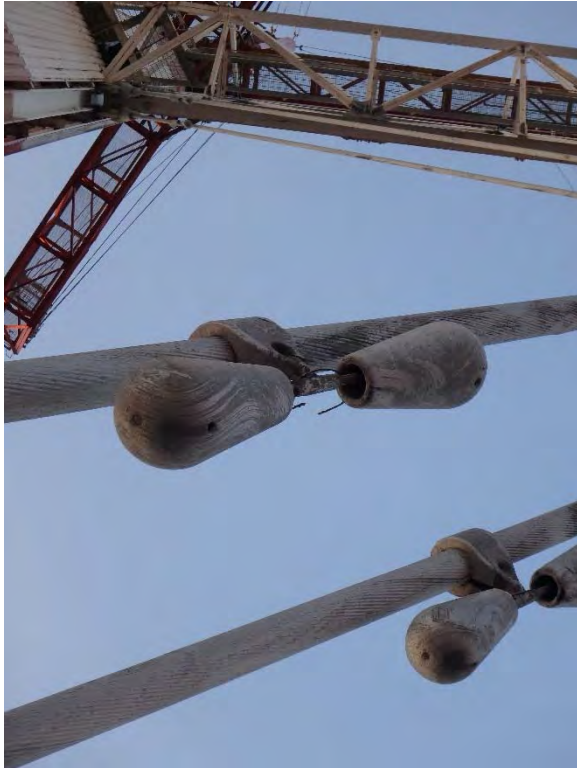


Note Unraveled Strands

Picture 174: OBSERVATION 145



Picture 175: OBSERVATION 146



Picture 176: OBSERVATION 146

