

## Appendix C: Effects of Surface Fault Rupture on Infrastructure

Numbering of the Appendix C contents for individually mapped houses are denoted with an “H##” that represents the house reference number. The first figure for each house includes a site map (Figure C-H##-1); subsequent figures numbers are photographs associated with the house. As an example, the second photo for house no. 7 would be: “Figure C-H07-3.”

Pavement was mapped in 3 locations; the numbering for these maps are the same, except the letter “P” is used.

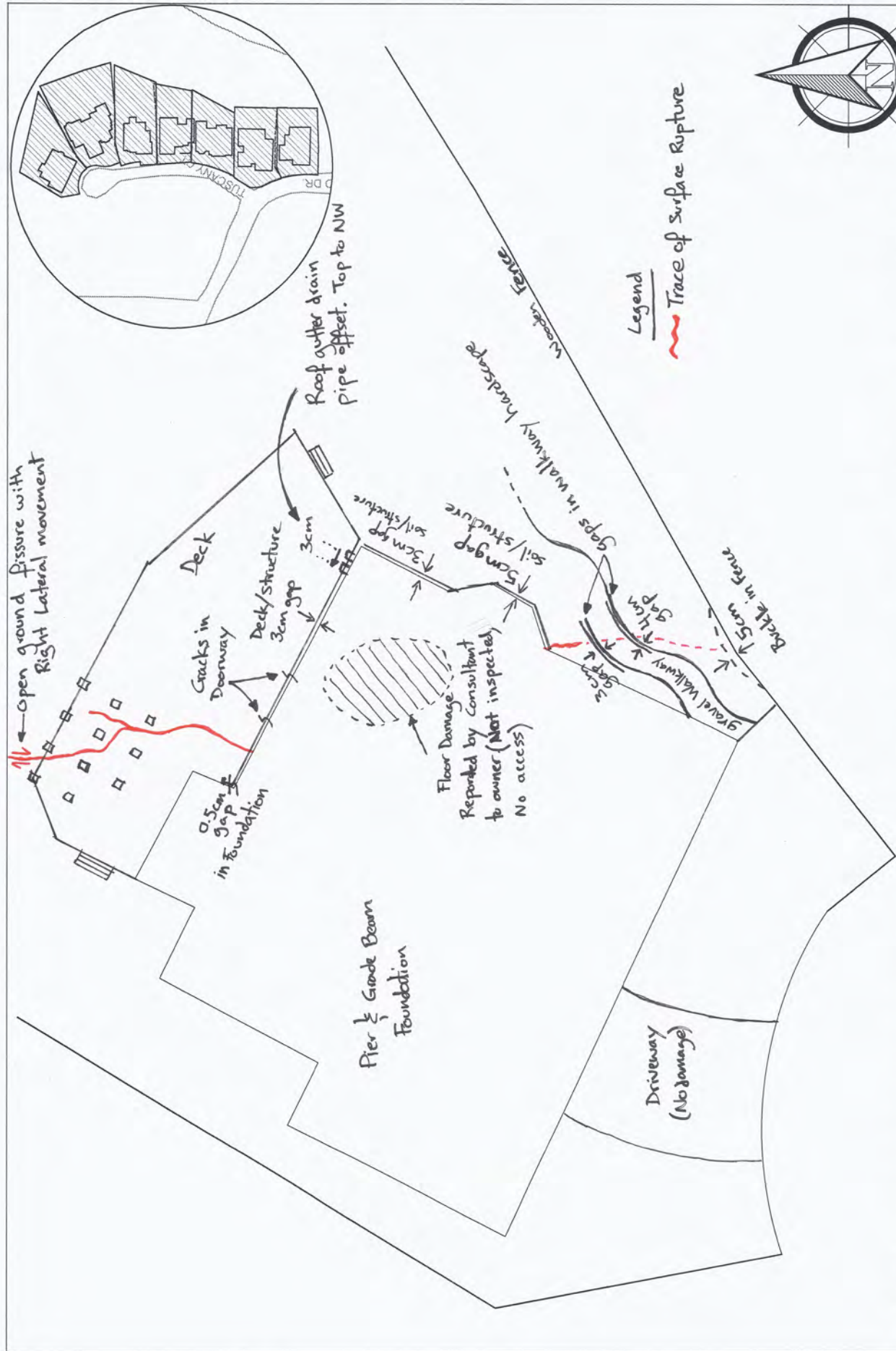
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Figure C-A - Overview of Mapping Area

Site Specific Maps & Photo Contents			
No.	Contents	House No.	Contents
H-01	Site map and 2 photos	H-25	Site map and 2 photos
H-02	Site map and 2 photos	H-27	Site map and 2 photos
H-03	Site map and 4 photos	H-28	Site map and 2 photos
H-04	Site map and 4 photos	H-29	Site map and 2 photos
H-05	Site map and 2 photos	H-30	Site map and 2 photos
H-06	Site map and 2 photos	H-31	Site map and 2 photos
H-07	Site map and 2 photos	H-32	Site map and 4 photos
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H-15	Site map and 2 photos	H-34	Site map and 1 photo
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H-20	Site map	H-37	Site map and 2photos
H-21	Site map and 2 photos	P-1	Site map and 3 photos
H-22	Site map and photos	P-2	Site map and 2 photos
H-23	Site map and 1 photo	P-3	Site map and 2 photos
H-24	Site map and 3 photos		

Total Figures in Appendix C: 105

Total Pages (including this one): 64



Open ground fissure with Right Lateral movement

Roof gutter drain pipe offset. Top to NW

gaps in walkway hardscape

Floor Damage Reported by Consultant to owner (Not inspected, No access)

Back in fence

Legend  
Trace of Surface Rupture





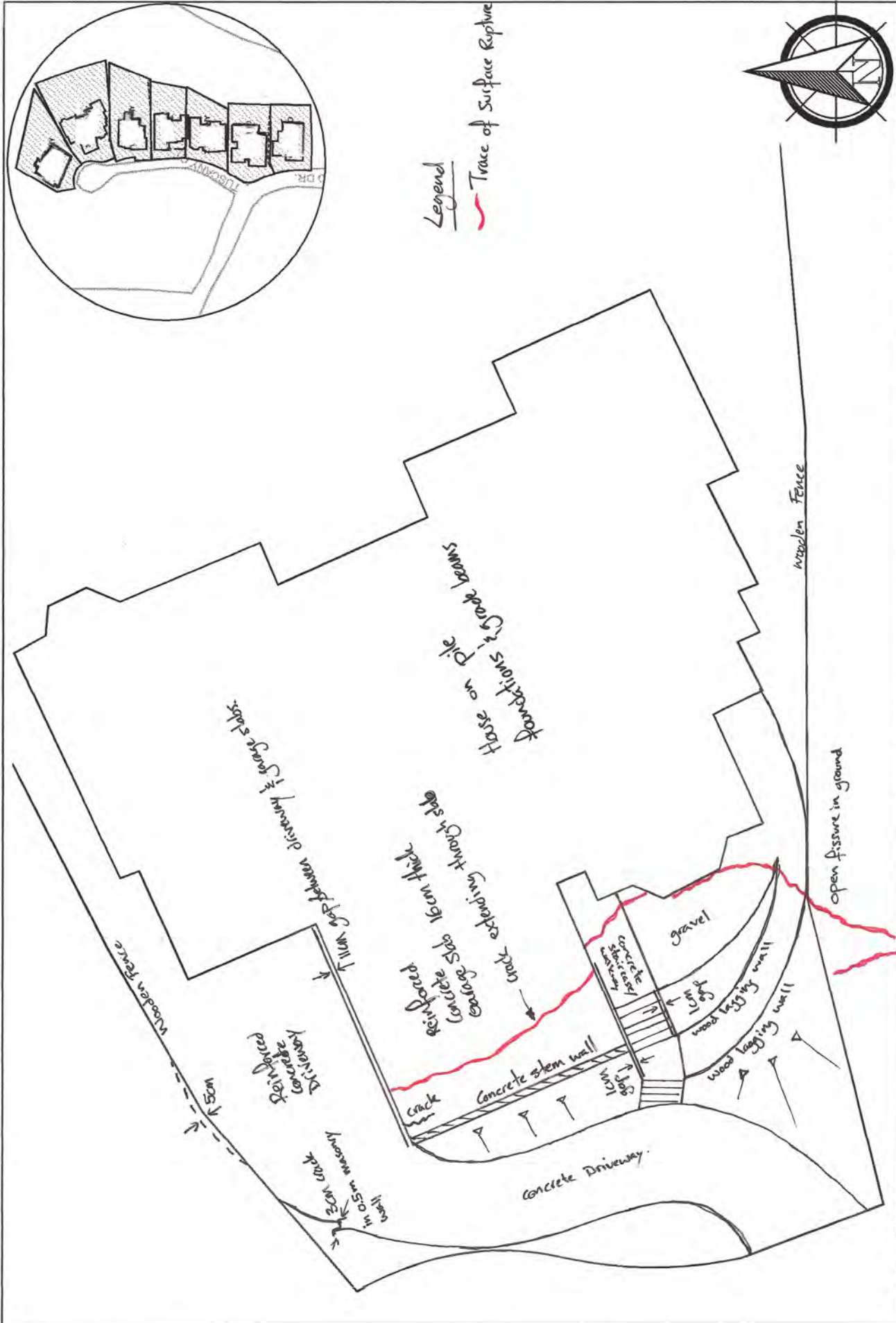
	<b>EVENT:</b> AMERICAN CANYON EQ $M_w = 6.0$	<b>ADDRESS:</b> 38.3135 -122.3431 (H01)	<b>DRAWING BY:</b> J. Cohen-Woebler J. Weber, G. Harris	
	<b>DESCRIPTION:</b> Surface Fault Rupture through Private Residence	<b>DATE OF INSPECTION:</b> 08/28/2014	<b>DATE OF DRAWING:</b> 08/29/2014	



Figure C-H01-2: Roof Beam separated from wall due to shearing. [NSF-GEER; N 38.3135 W 122.3431; 08/28/14 17:08]



Figure C-H01-3: South looking view of ground rupture under deck coming from under severely damaged house on pier foundations. [NSF-GEER; N 38.3135 W 122.3431; 08/28/14 17:15]






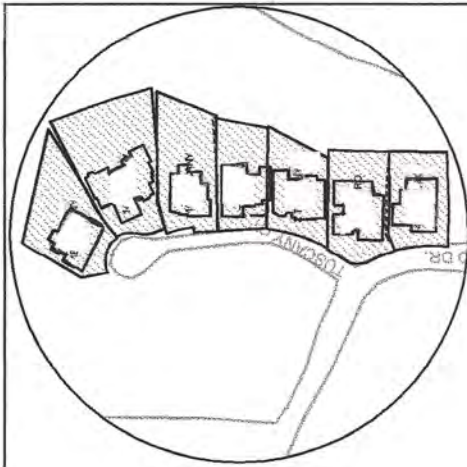
	<b>EVENT:</b> AMERICAN CANYON EQ $M_w = 6.0$ <b>DESCRIPTION:</b> Surface fault rupture through private residence.	<b>ADDRESS:</b> 38.3133 -122.3431 <b>DATE OF INSPECTION:</b> 08/28/2014	<b>HOZ</b> <b>DATE OF DRAWING:</b> 08/28/2014	<b>DRAWING BY:</b> J. Cohen-Weber J. Weber, G. Harris, S. Feti <b>SCALE:</b> 1 cm : 2 m 	
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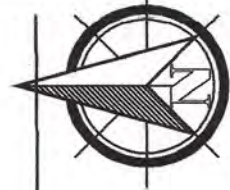
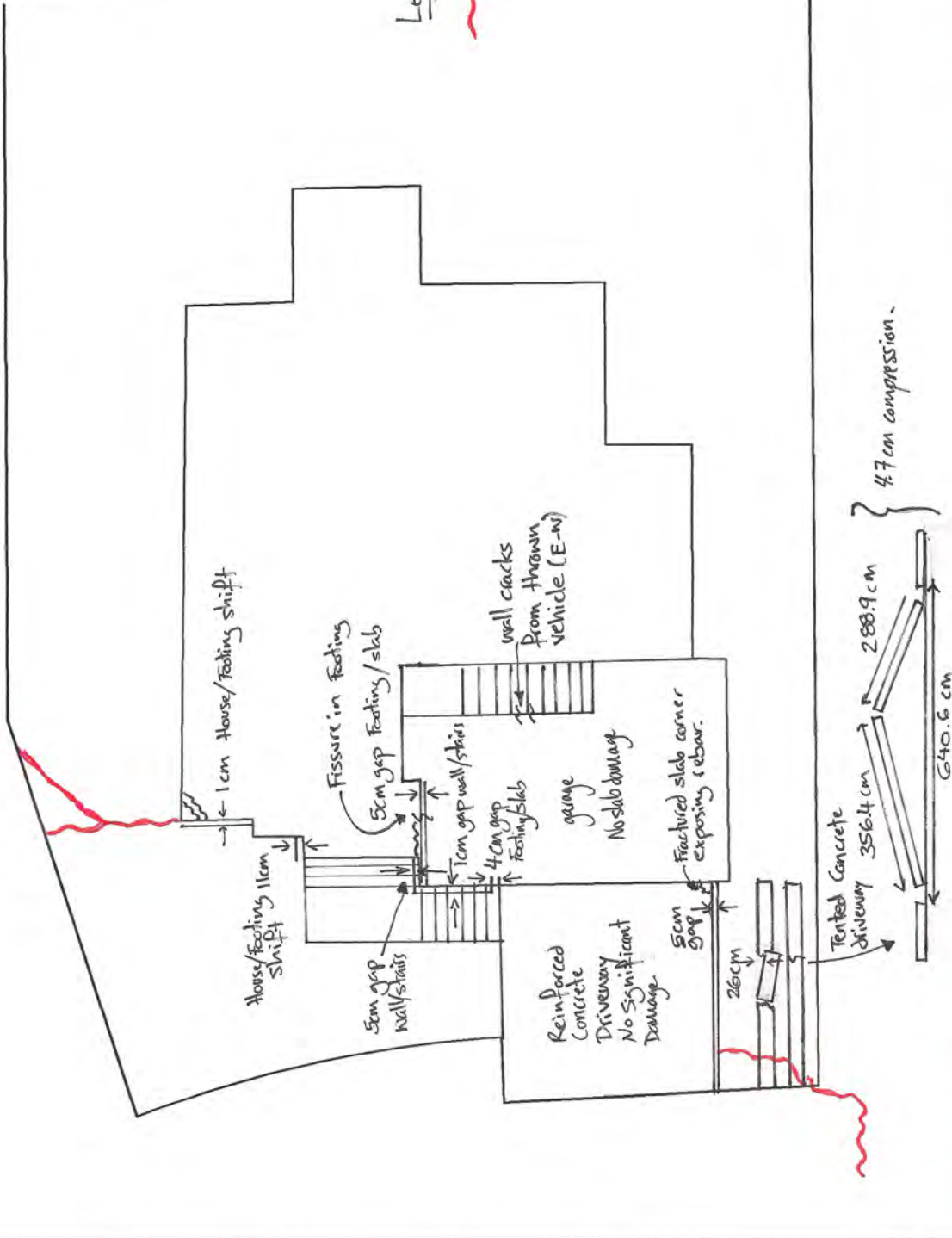
Figure C-H02-2: East looking view of crack extending through walkway and garage. [NSF-GEER; N 38.3133 W 122.3431; 08/28/14 12:46]



Figure C-H02-3: West looking view of driveway/garage slab separation and crack extending through 6 inch reinforced slab. [NSF-GEER; N 38.3133 W 122.3431; 08/28/14 12:44]



Legend  
 ~ Trace of surface Rupture



	EVENT: AMERICAN CANYON EQ Mw = 6.0 DESCRIPTION: Surface Fault Rupture through Private Residence	ADDRESS: 38.3131 -122.3431 DATE OF INSPECTION: 08/28/2014	DRAWING BY: J. Cohen-Weber, J. Weber, G. Harris, S. Felt SCALE: 1 cm : 2 m DATE OF DRAWING: 08/28/2014	
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Figure C-H03-2: SE looking view of stair case/structure separation and cracks. [NSF-GEER; N 38.3131 W 122.3431; 08/28/14 11:52]



Figure C-H03-3: SE looking view of structure pushed off of foundation. [NSF-GEER; N 38.3131 W 122.3431; 08/28/14, 11:54]

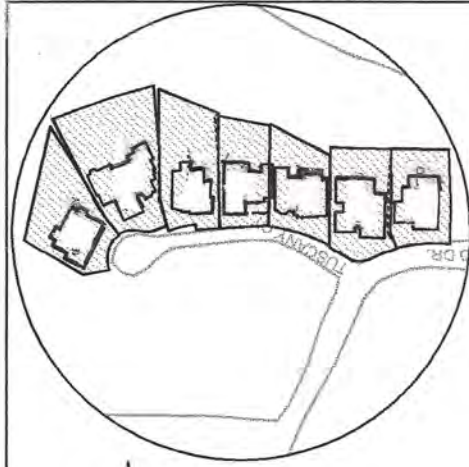


Figure C-H03-4: Vehicle thrown E-W into wall. [NSF-GEER; N 38.3131 W 122.3431; 08/28/14]

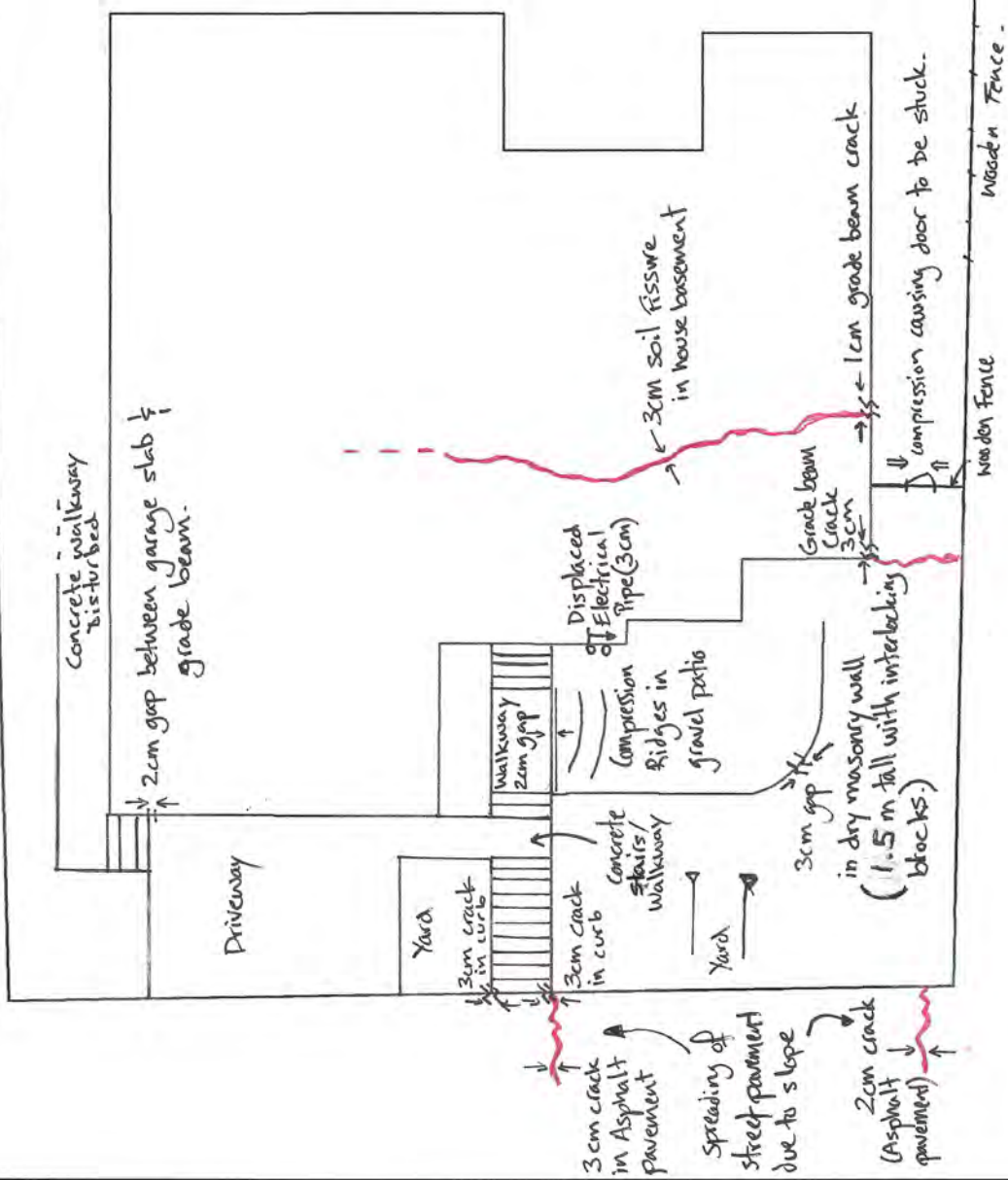
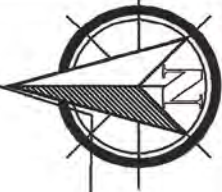


Figure C-H03-5: Fence buckled in compression. [NSF-GEER; N 38.3131 W 122.3431; 08/28/14]





Legend  
 Trace of surface Rupture



	EVENT:	AMERICAN CANYON EQ Mw = 6.0	ADDRESS:	38.3128 - 122.3431	(404)	DRAWING BY:	J. Cohen-Weeber
	DESCRIPTION:	Surface fault rupture through private property.	DATE OF INSPECTION:	08/28/2014	DATE OF DRAWING:	08/28/2014	J. Weeber, G. Harris, S. Fati
			SCALE:	1 cm : 2 m			
							5 m



Figure C-H04-2: Displaced masonry wall. [NSF-GEER; N 38.3128 W 122.3431; 08/28/14, 16:32]



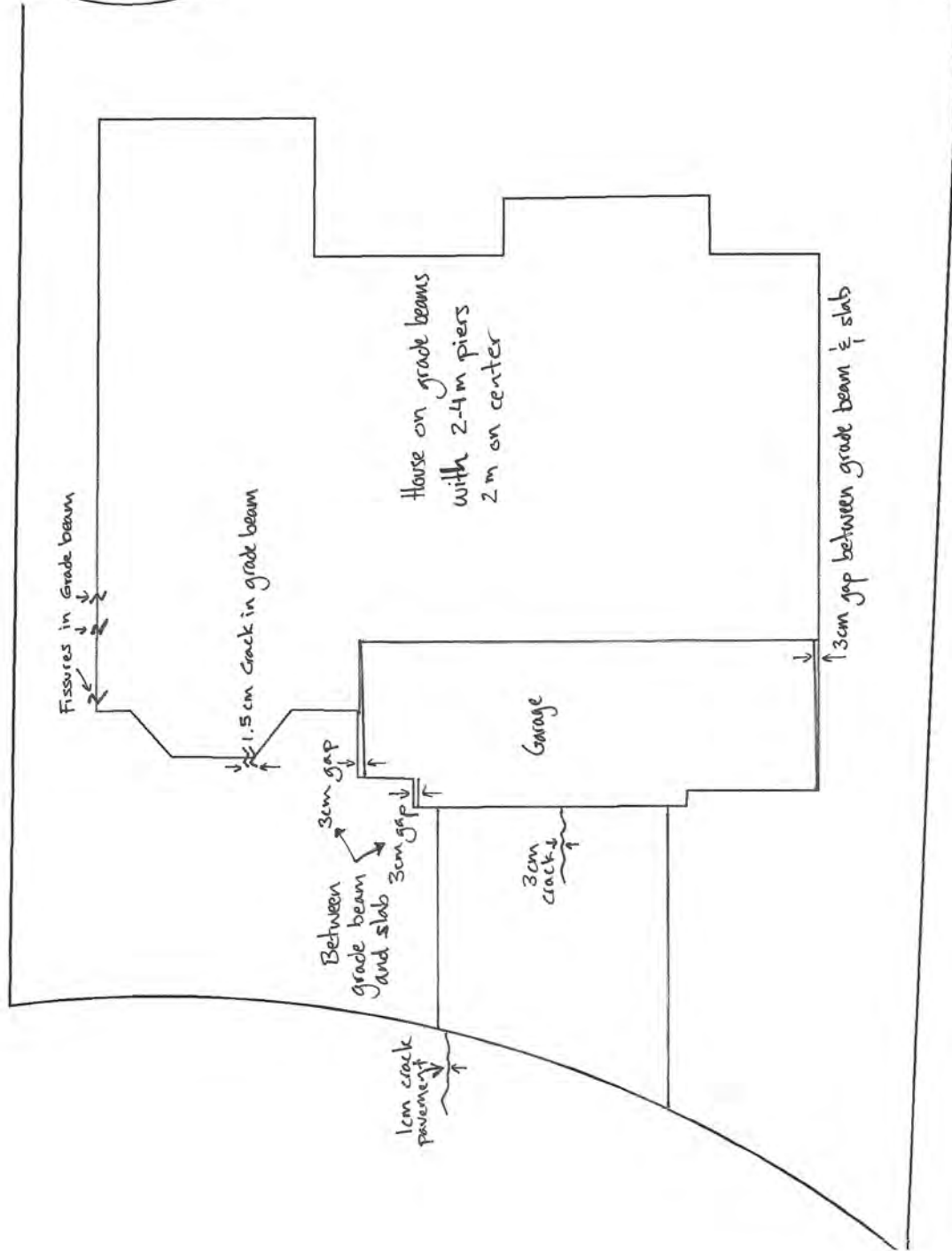
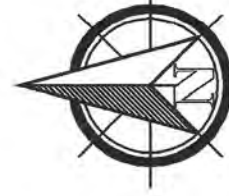
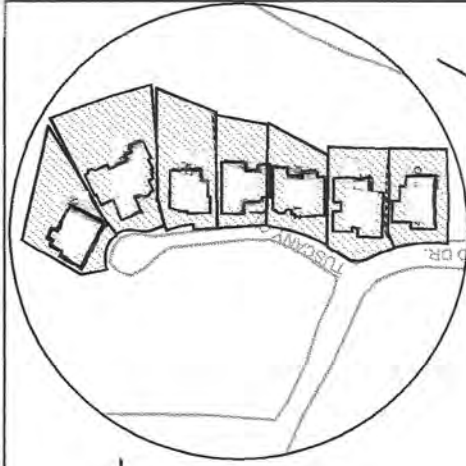
Figure C-H04-3: Compression ridge in gravel above wall. [NSF-GEER; N 38.3128 W 122.3431; 08/28/14, 14:40]



Figure C-H04-4: Cracked foundation. [NSF-GEER; N 38.3128 W 122.3431; 08/28/14]



Figure C-H04-5: Soil fissure in basement. [NSF-GEER; N 38.3128 W 122.3431; 08/28/14, 12:08]



	<p>EVENT: AMERICAN CANYON EQ Mw = 6.0</p> <p>DESCRIPTION: Surface fault Rupture through Private property.</p>	<p>ADDRESS: 38.3126 -122.3431</p> <p>DATE OF INSPECTION: 08/28/2014</p>	<p>DRAWING BY: J. Cohen-Waerber</p> <p>J. Waerber, G. Harris, S. Foti</p> <p>SCALE: 1 cm : 2 m</p> <p>5 m</p>	
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Figure C-H05-2: Cracked slab foundation in garage. [NSF-GEER; N 38.3126 W 122.3431; 08/28/14, 15:20]

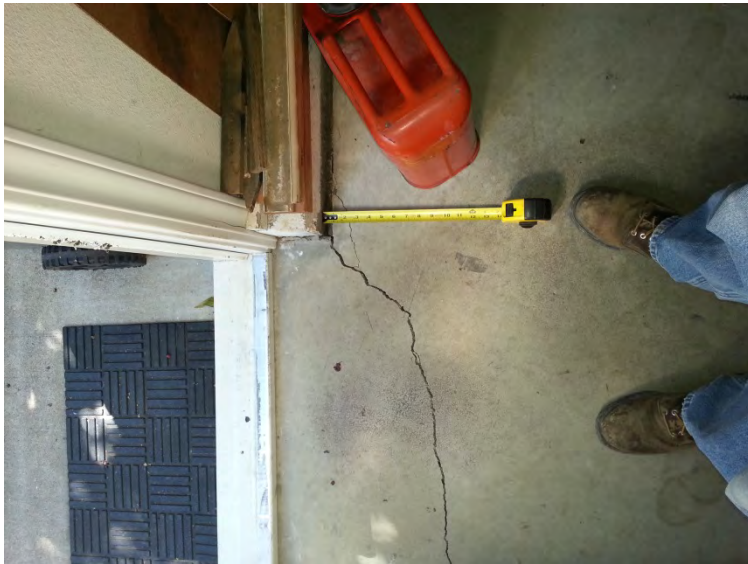
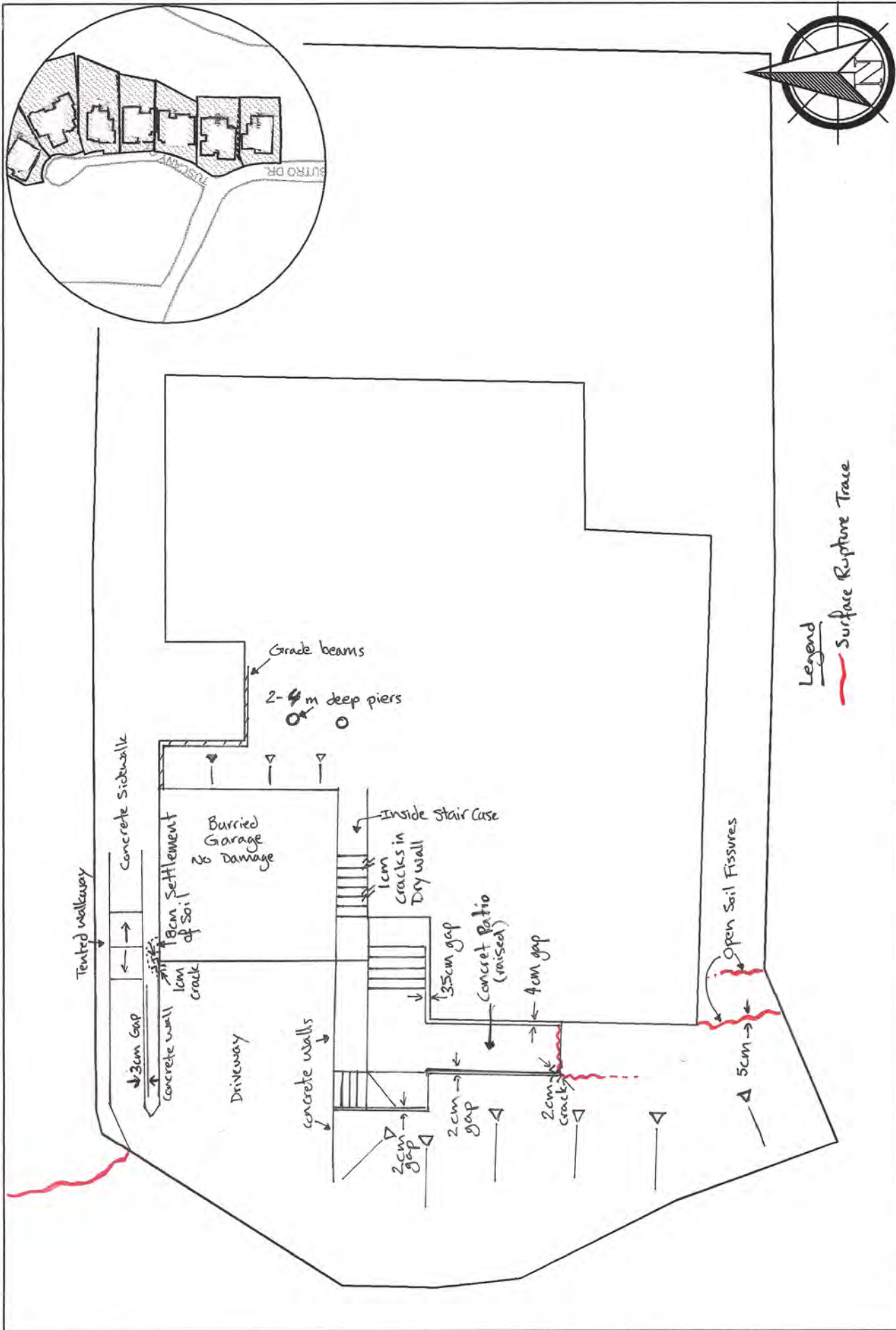


Figure C-H05-3: Cracked slab and separation from footing. [NSF-GEER; N 38.3126 W 122.3431; 08/28/14, 15:20]





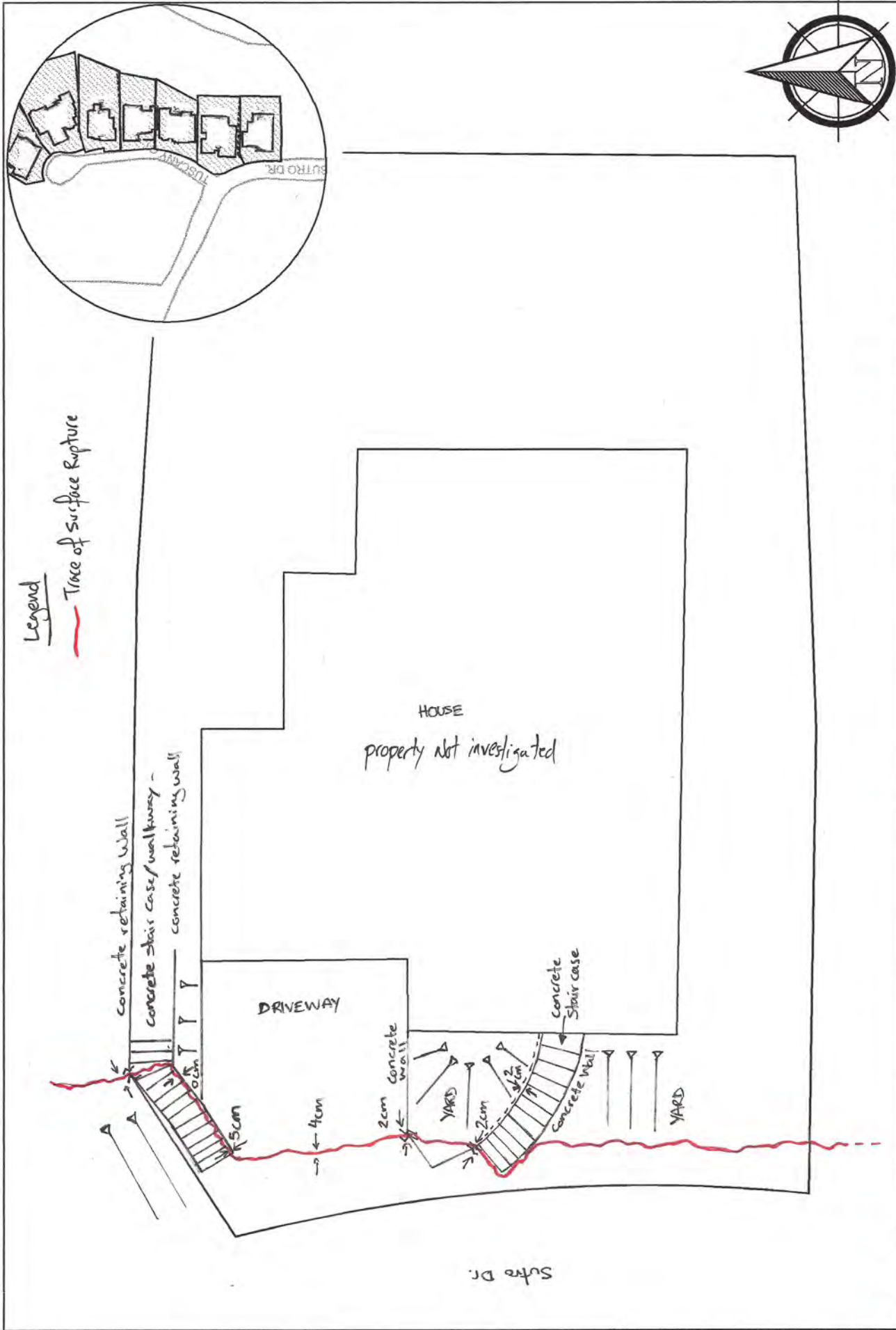
	<p>EVENT: AMERICAN CANYON EQ <math>M_w = 6.0</math></p> <p>DESCRIPTION: Surface Fault Rupture through private property</p>	<p>ADDRESS: 38.3124 -122.3432 (406)</p> <p>DATE OF INSPECTION: 08/28/2014</p> <p>DATE OF DRAWING: 08/28/2014</p>	<p>DRAWING BY: J. Cohen-Waerber J. Weber, G. Harris, S. Foti</p> <p>SCALE: 1 cm : 2 m</p> <p>5 m</p>	
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Figure C-H06-2: Soil fissure looking North. [NSF-GEER; N 38.3124 W 122.3431; 08/28/14, 17:31]



Figure C-H06-3: Staircase displaced from structure. [NSF-GEER; N 38.3124 W 122.3431; 08/28/14]



EVENT:	AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS:	38. 3122	DATE OF INSPECTION:	08/28/2014	DATE OF DRAWING:	08/28/2014	SCALE:	1 cm : 2 m 5 m	DRAWING BY:	J. Cohen-Waeber J. Weber , G. Harris , S. Feti
DESCRIPTION:	Surface Fault Rupture through Private Property.										





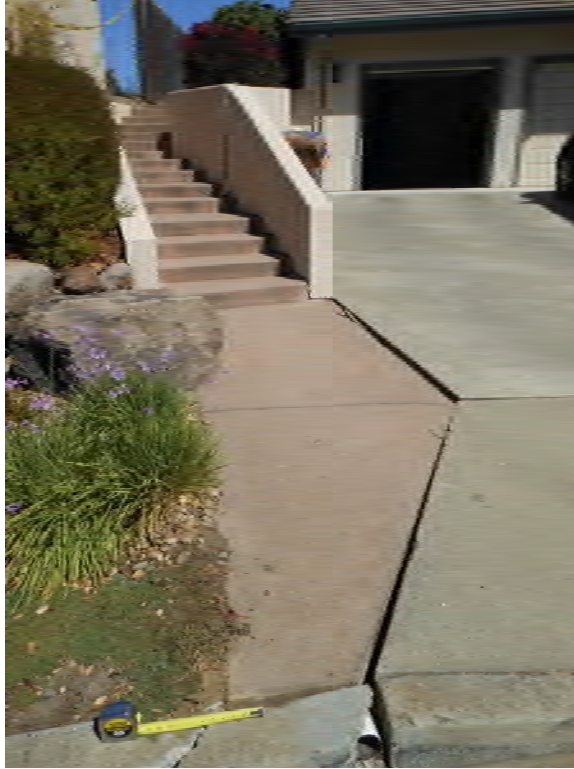


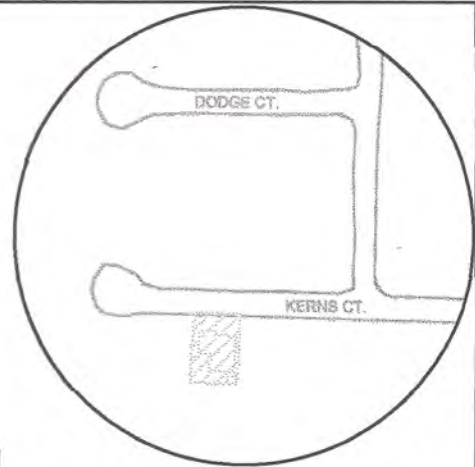
Figure C-H07-2: Crack extending along stair case and joint. [NSF-GEER; N 38.3122 W 122.3432; 08/28/14]



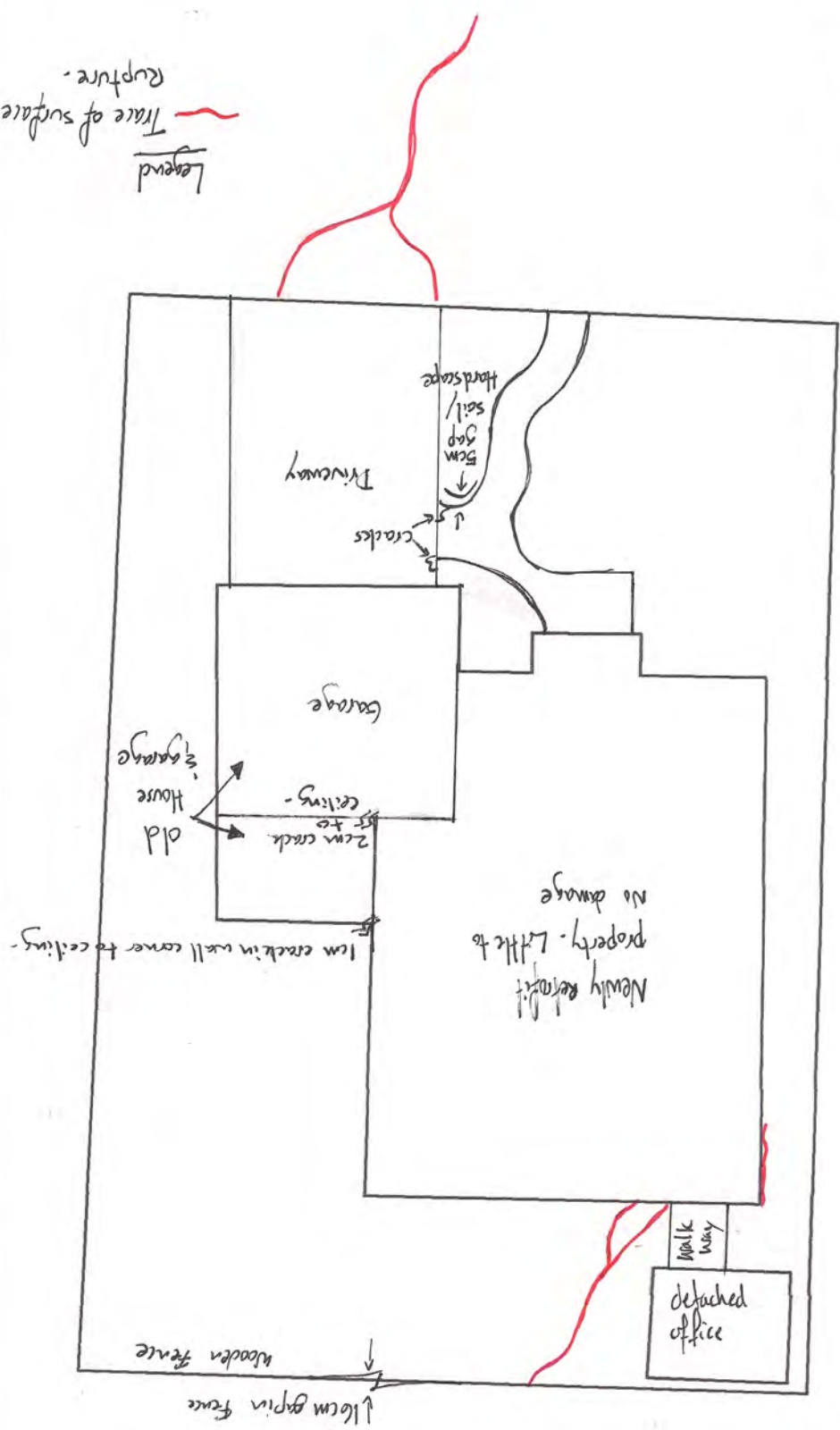
Figure C-H07-3: Crack extending along stair case and joint. [NSF-GEER; N 38.3122 W 122.3432; 08/28/14]

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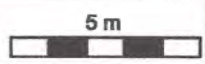
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Legend  
Trace of surface rupture.



	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: 36.3082 -122.3427	(H14)	DRAWING BY: J. Cohen-Waeber	
	DESCRIPTION: Surface fault + Rupture through Private Property.	DATE OF INSPECTION: 08/28/2014		DATE OF DRAWING: 08/28/2014	



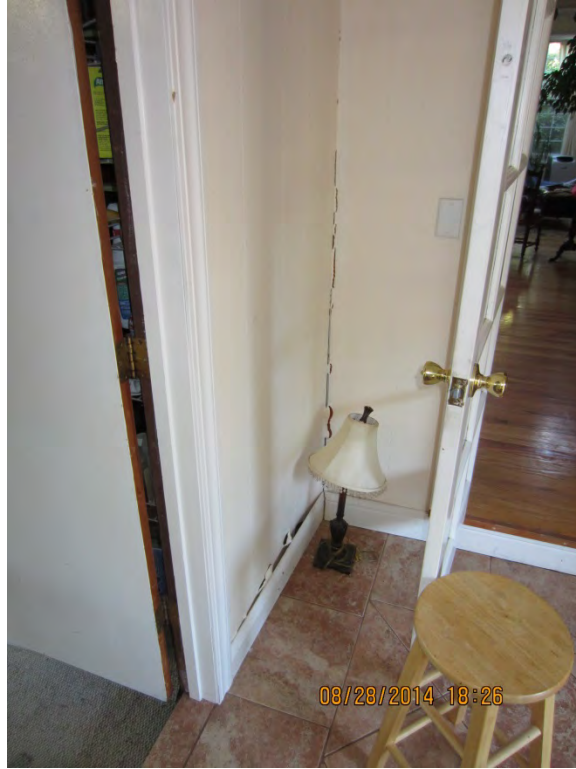
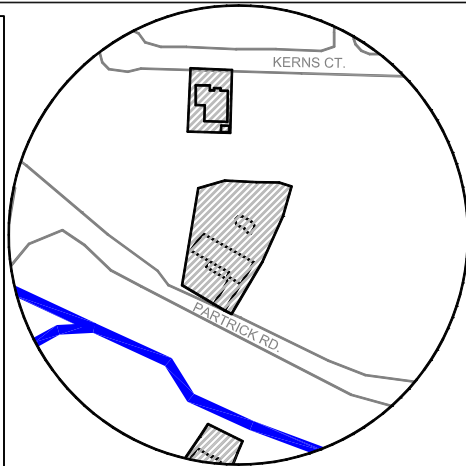
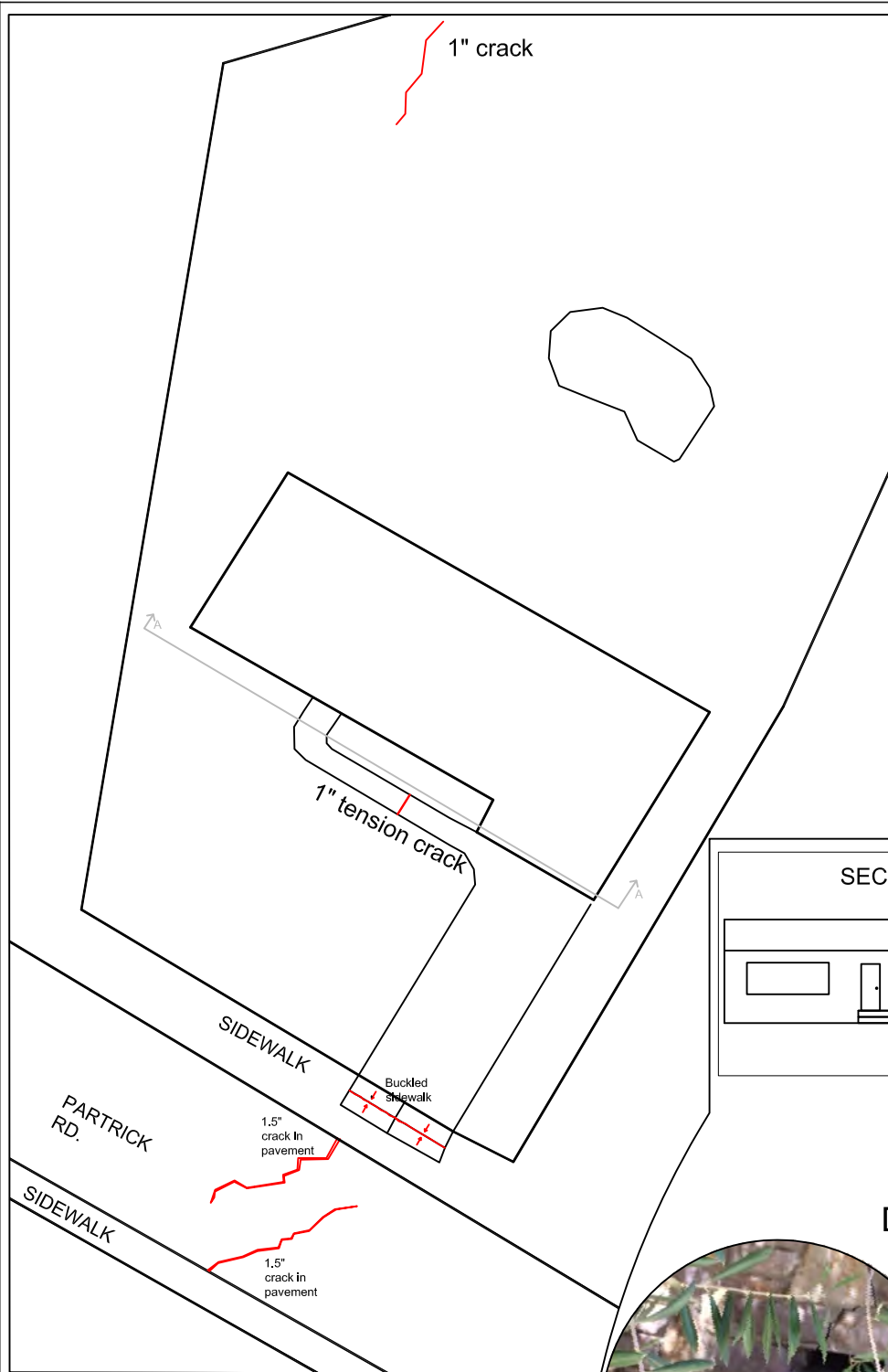


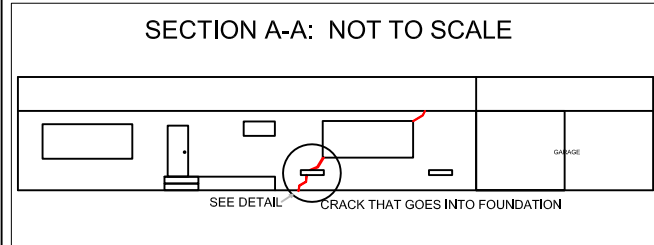
Figure C-H14-2: Crack along boundary with new construction. [NSF-GEER; N 38.3082 W 122.3427; 08/28/14, 18:26]



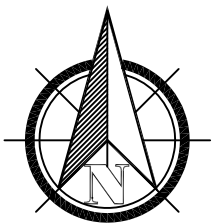
Figure C-H14-3: Street Crack. [NSF-GEER; N 38.3082 W 122.3427; 08/28/14, 18:27]



NOTE:  
 FOUNDATION CONSIST OF  
 A CONCRETE PERIMETER  
 WALL SUPPORTED ON  
 STRIP FOOTING AND  
 INDIVIDUAL FOOTING FOR  
 INTERIOR WOODEN  
 COLUMNS



DETAIL





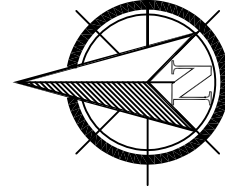
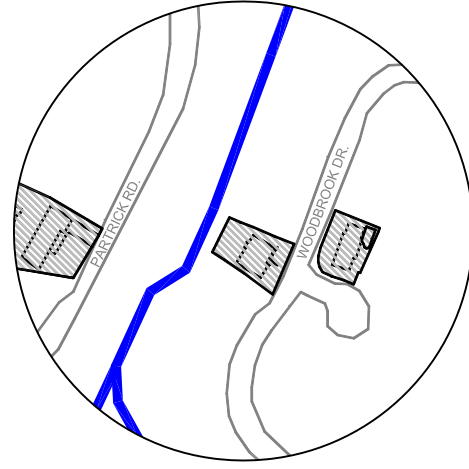
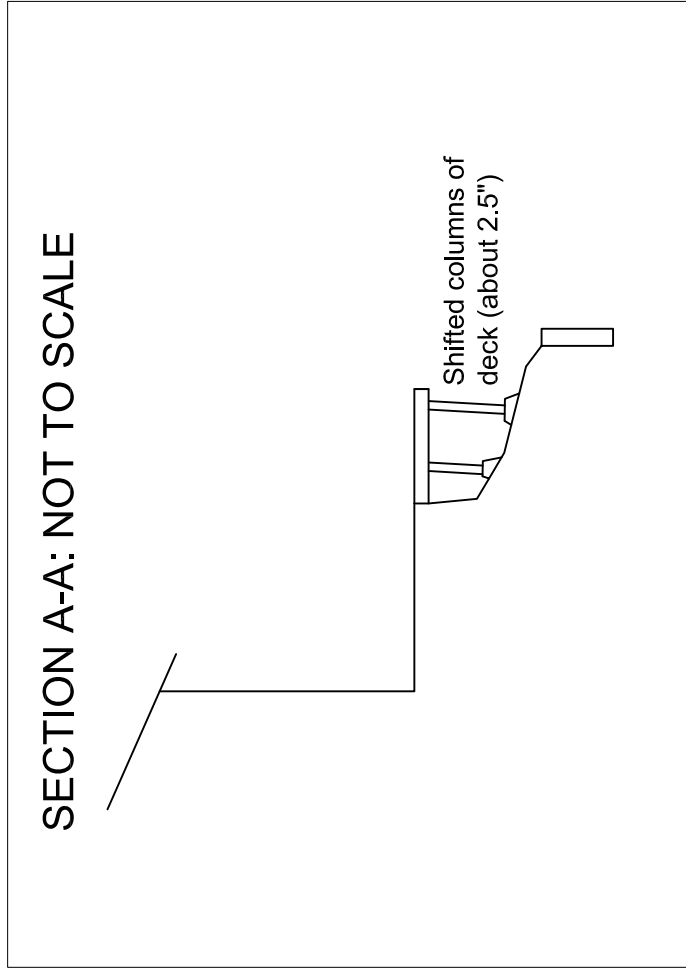
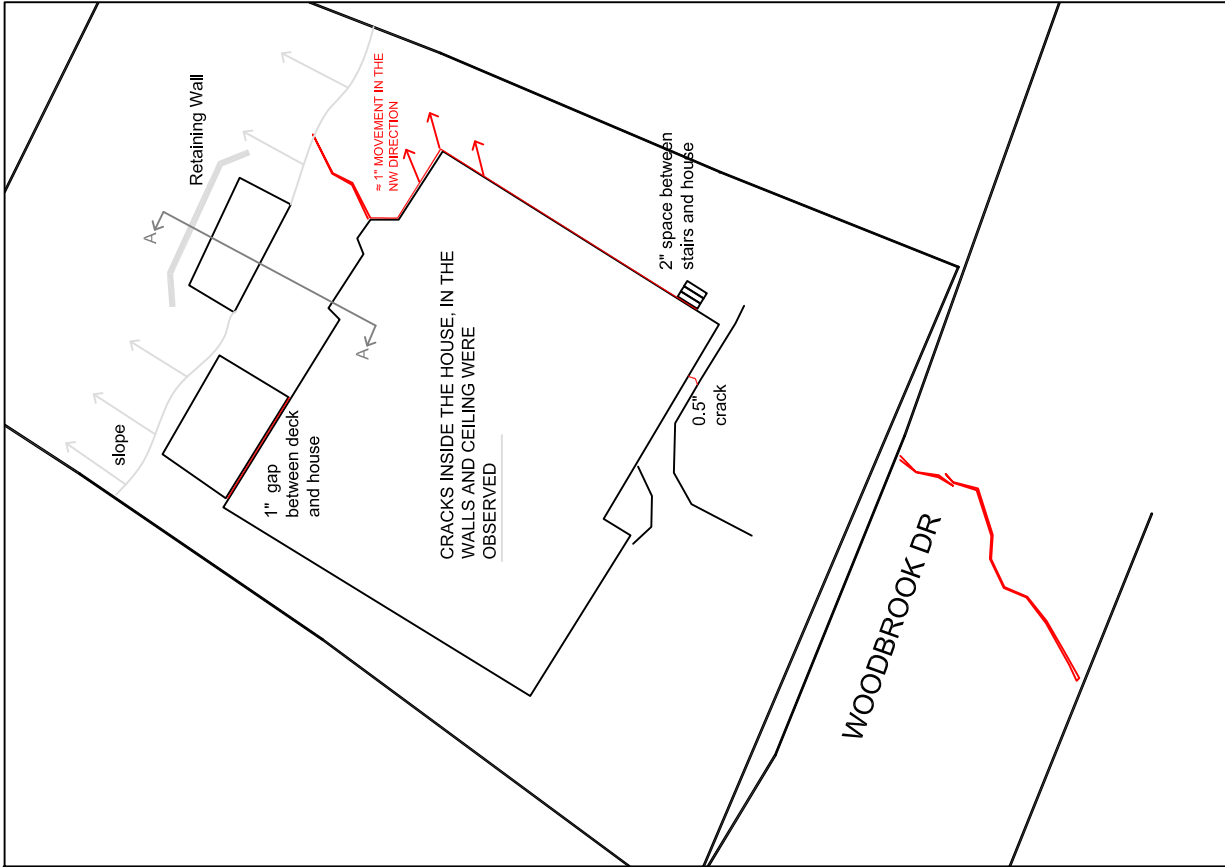
	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	LOCATION: LAT 38.3075° LON -122.3426°	DRAWING BY: ROBERTO LUQUE JUSTIN HOLLENBACK	
	DESCRIPTION: DAMAGE IN HOUSE	DATE OF INSPECTION: 08 / 29 / 2014	DATE OF DRAWING: 08 / 29 / 2014	






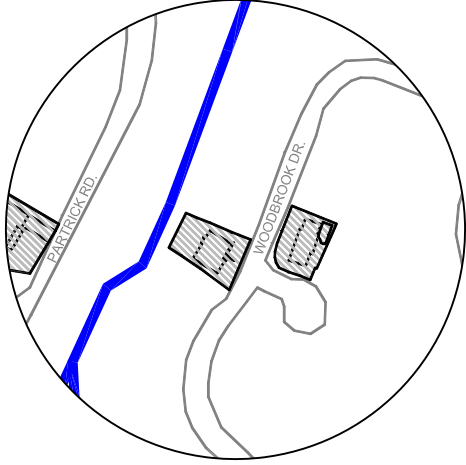
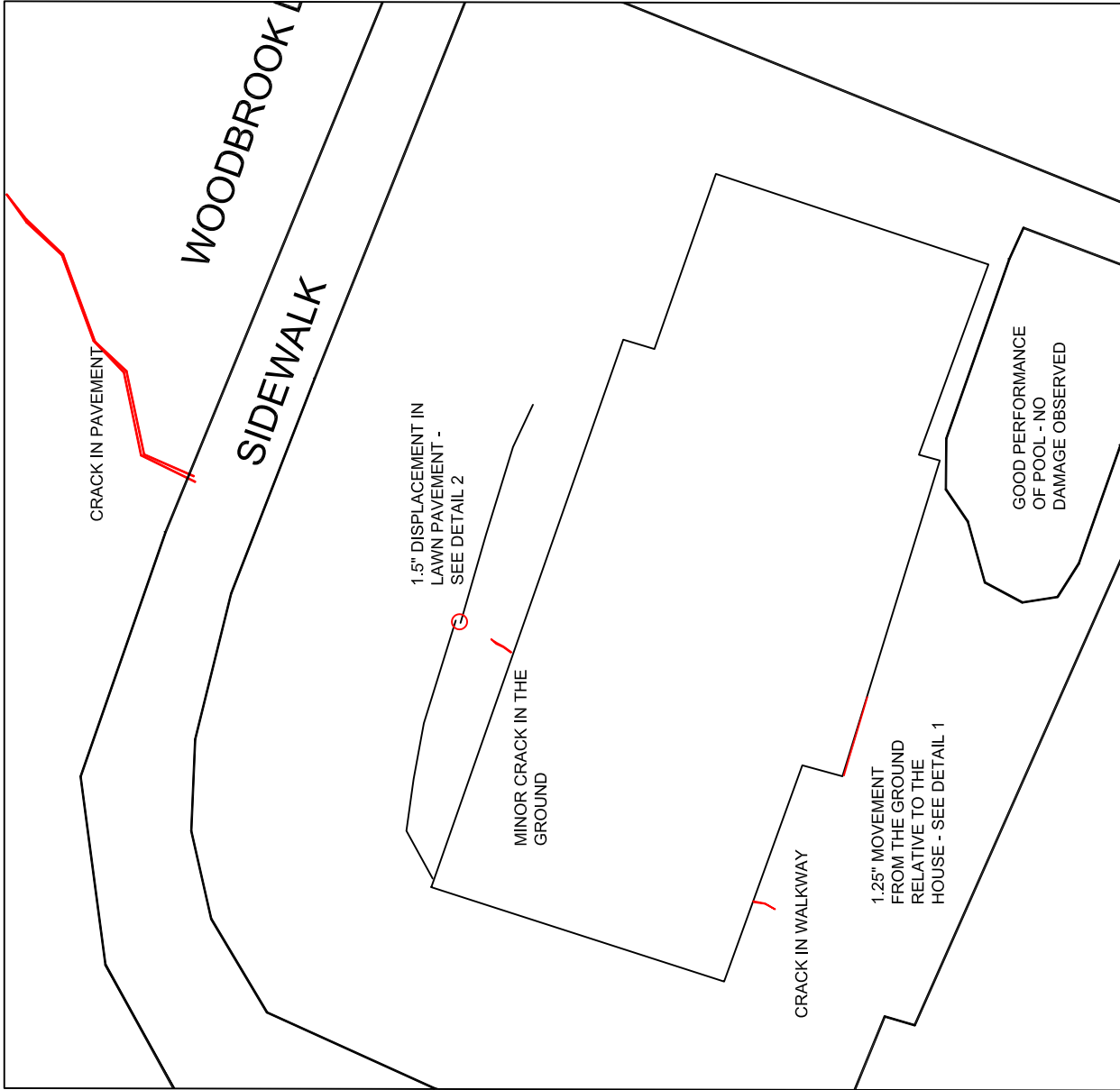
Figure C-H15-2: Shifted wooden column. The column was shifted towards west. [NSF-GEER; N 38.3061 W 122.3427; 08/29/14 10:02]



Figure C-H15-3: Crack in the perimeter foundation wall [NSF-GEER; N 38.3066 W 122.3427; 08/31/14 10:02]



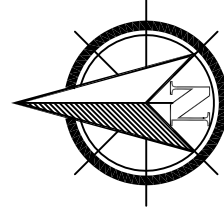
	EVENT: AMERICAN CANYON EQ $M_w = 6.0$ DESCRIPTION: DAMAGE IN HOUSE	LOCATION: LAT 38.3065° LON -122.3417° DATE OF INSPECTION: 08 / 29 / 2014	DRAWING BY: ROBERTO LUQUE JUSTIN HOLLENBACK SCALE: 1 cm : 3 m 	
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DETAIL 1



DETAIL 2






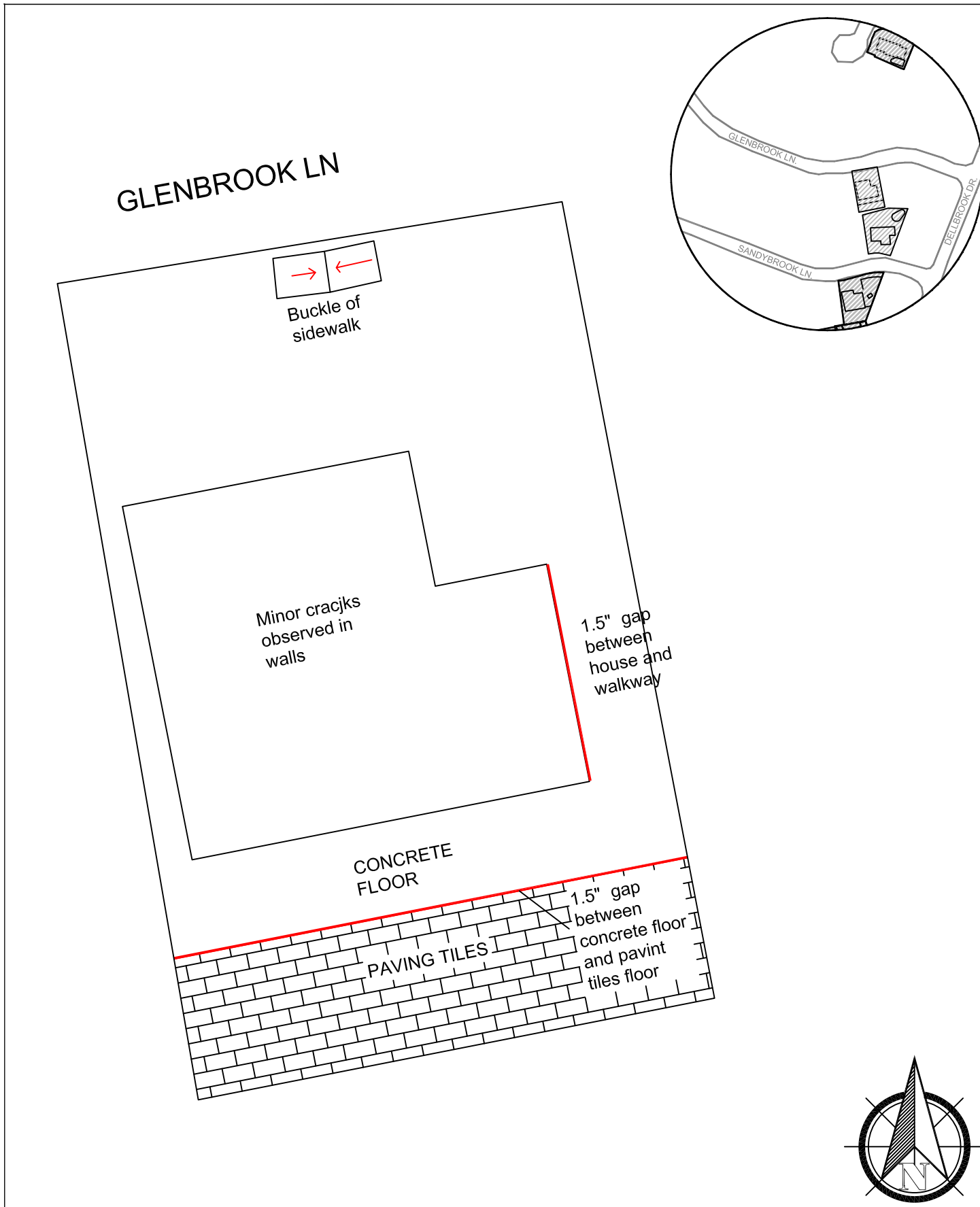

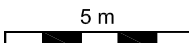
	<b>EVENT:</b> AMERICAN CANYON EQ $M_w = 6.0$	<b>LOCATION:</b> LAT 38.3061° LON -122.3427°	<b>DRAWING BY:</b> ROBERTO LUQUE JUSTIN HOLLENBACK	
	<b>DESCRIPTION:</b> DAMAGE IN HOUSE	<b>DATE OF INSPECTION:</b> 08 / 29 / 2014	<b>DATE OF DRAWING:</b> 08 / 29 / 2014	<b>SCALE:</b> 1 cm : 2 m 

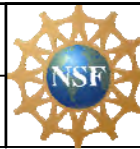


Figure C-H17-2: Movement of the ground and foundation with respect to the wall [NSF-GEER; N 38.3066 W 122.3427; 09/05/14 16:01]



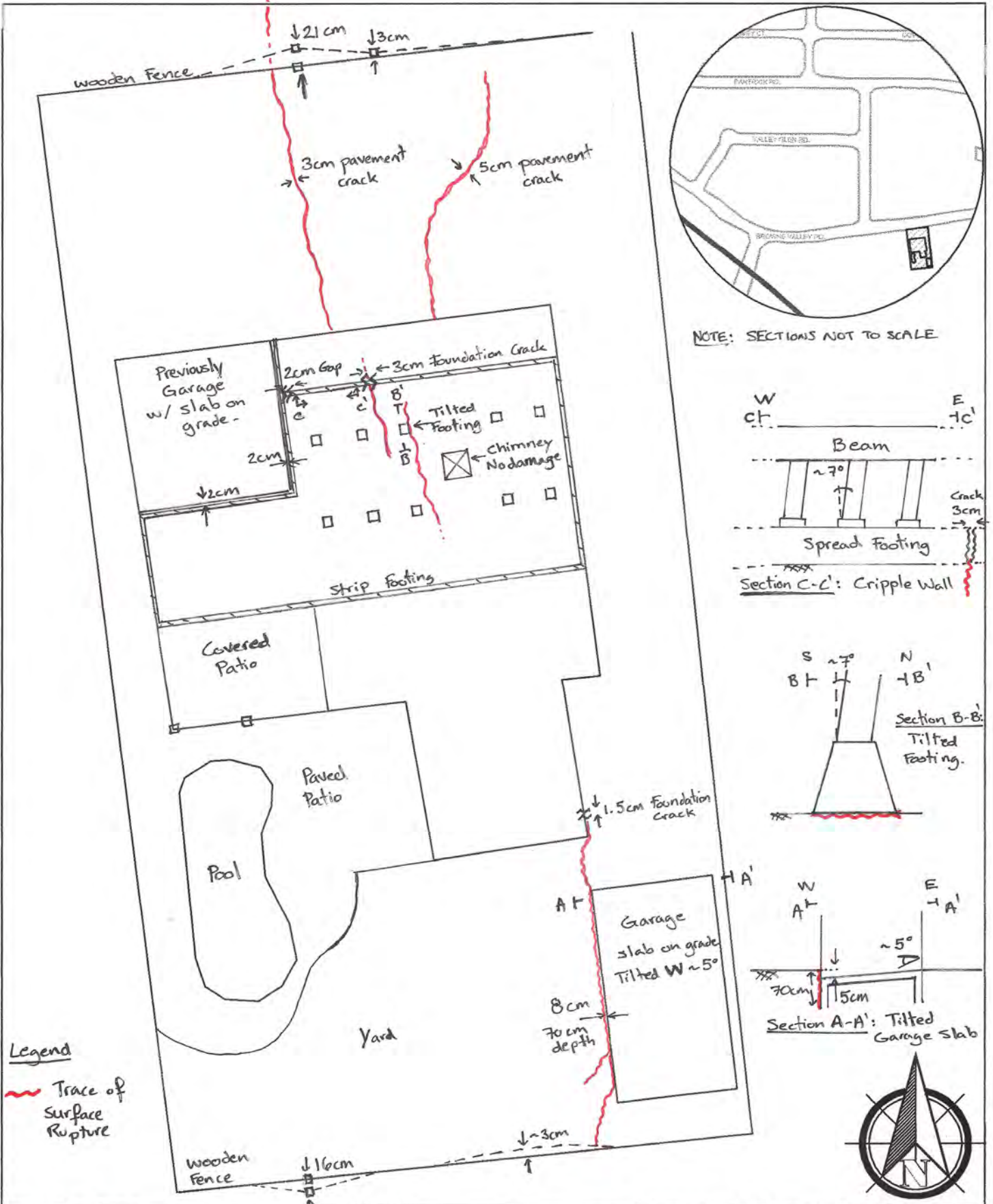


	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: LAT 38.3051° LON -122.3429°		DRAWING BY: ROBERTO LUQUE JUSTIN HOLLENBACK	
	DESCRIPTION: DAMAGE IN HOUSE	DATE OF INSPECTION: 08 / 29 / 2014	DATE OF DRAWING: 08 / 29 / 2014	SCALE: 1 cm : 2 m 	



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	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: 38.3052 -122.3369 (H21)		DRAWING BY: J. Cohen-Waeber J. Weber, G. Harris, S. Foti
	DESCRIPTION: Surface Fault rupture through private property.	DATE OF INSPECTION: 08/28/2014	DATE OF DRAWING: 08/28/2014	SCALE: 1 cm : 2 m



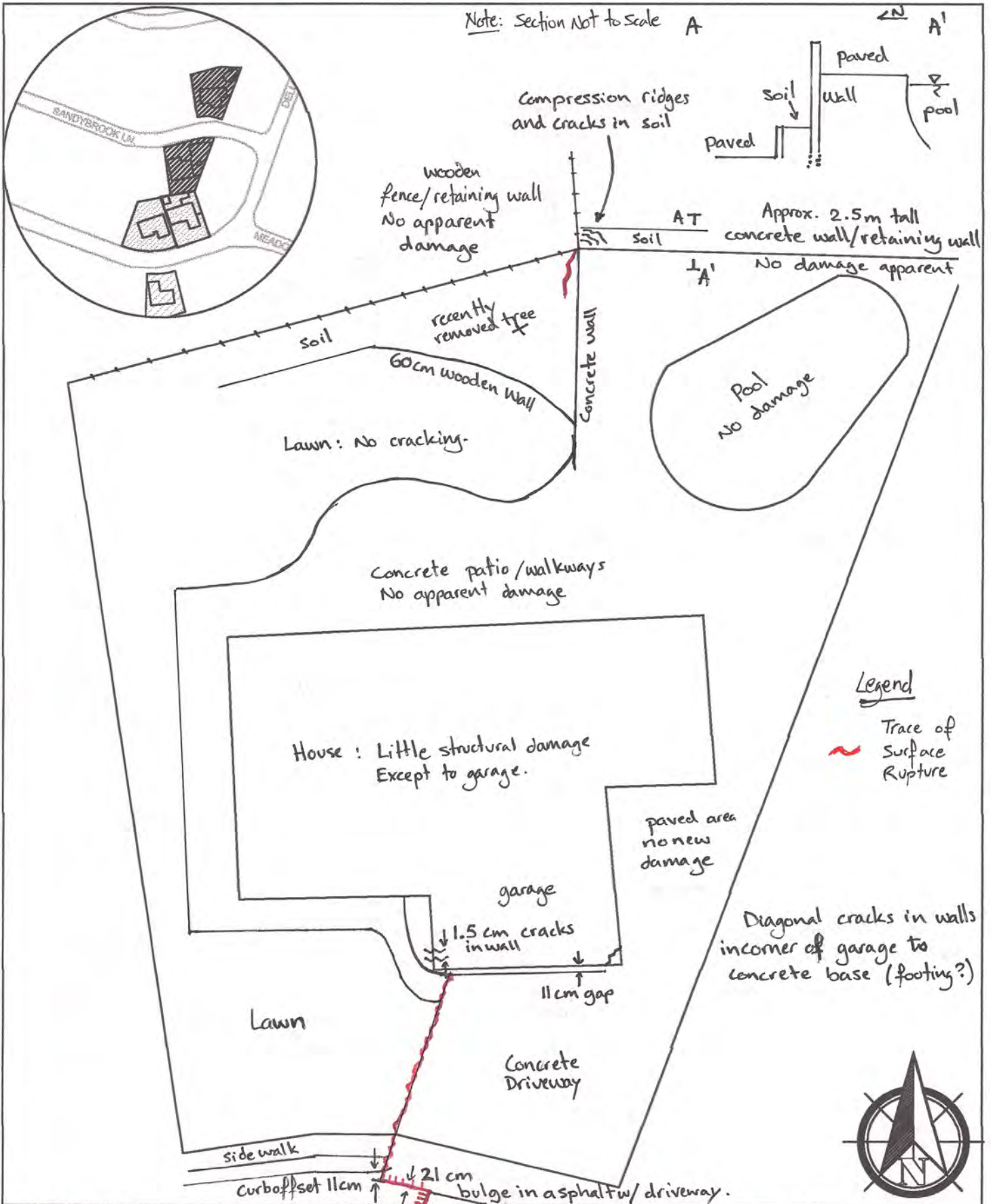
Figure C-H21-2: Open fissure along detached garage causing settlement to the right (West) [NSF-GEER; N 38.3052 W 122.3369; 08/28/14, 10:09]



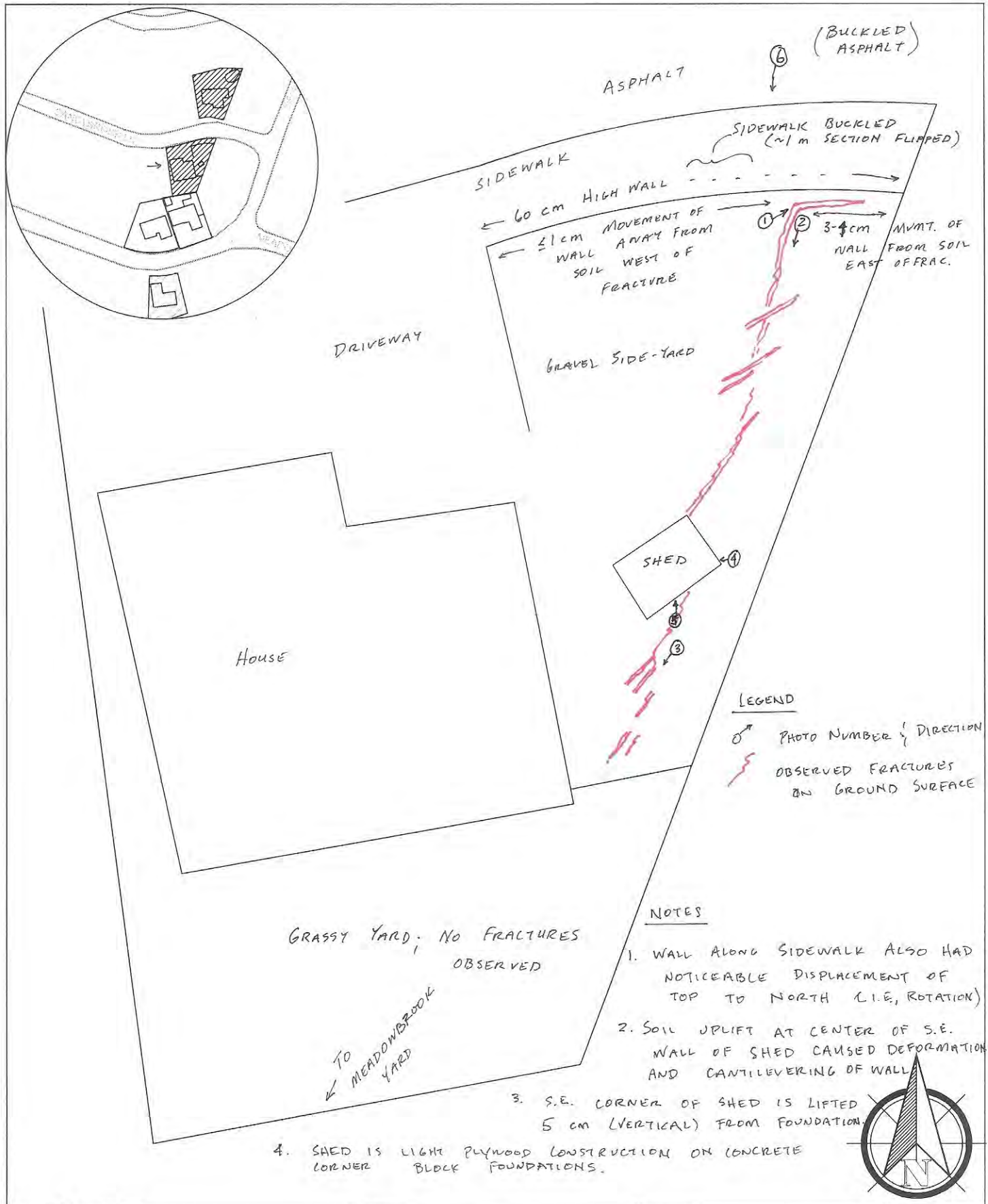
Figure C-H21-3: Strip footing crack and tilted cripple wall (E-W) [NSF-GEER; N 38.3052 W 122.3369; 08/28/14, 10:15]

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PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: 38.3048 -122.3427 (H22)	DRAWING BY: C. Markham Julien Cohen-Waeber
	DESCRIPTION: Surface Fault Rupture through private property	DATE OF INSPECTION: 08/25/2014	DATE OF DRAWING: 08/25/2014
		SCALE: 1 cm : 2 m	





	<b>EVENT:</b> AMERICAN CANYON EQ $M_w = 6.0$	<b>ADDRESS:</b> N 38.3045° W 122.3429°		<b>DRAWING BY:</b> R. LANZAFAME N. WAGNER	
	<b>DESCRIPTION:</b> HOUSE MAPPING (23)	<b>DATE OF INSPECTION:</b> 8/25/14	<b>DATE OF DRAWING:</b> 8/25/14	<b>SCALE:</b> 1 cm : 2 m	

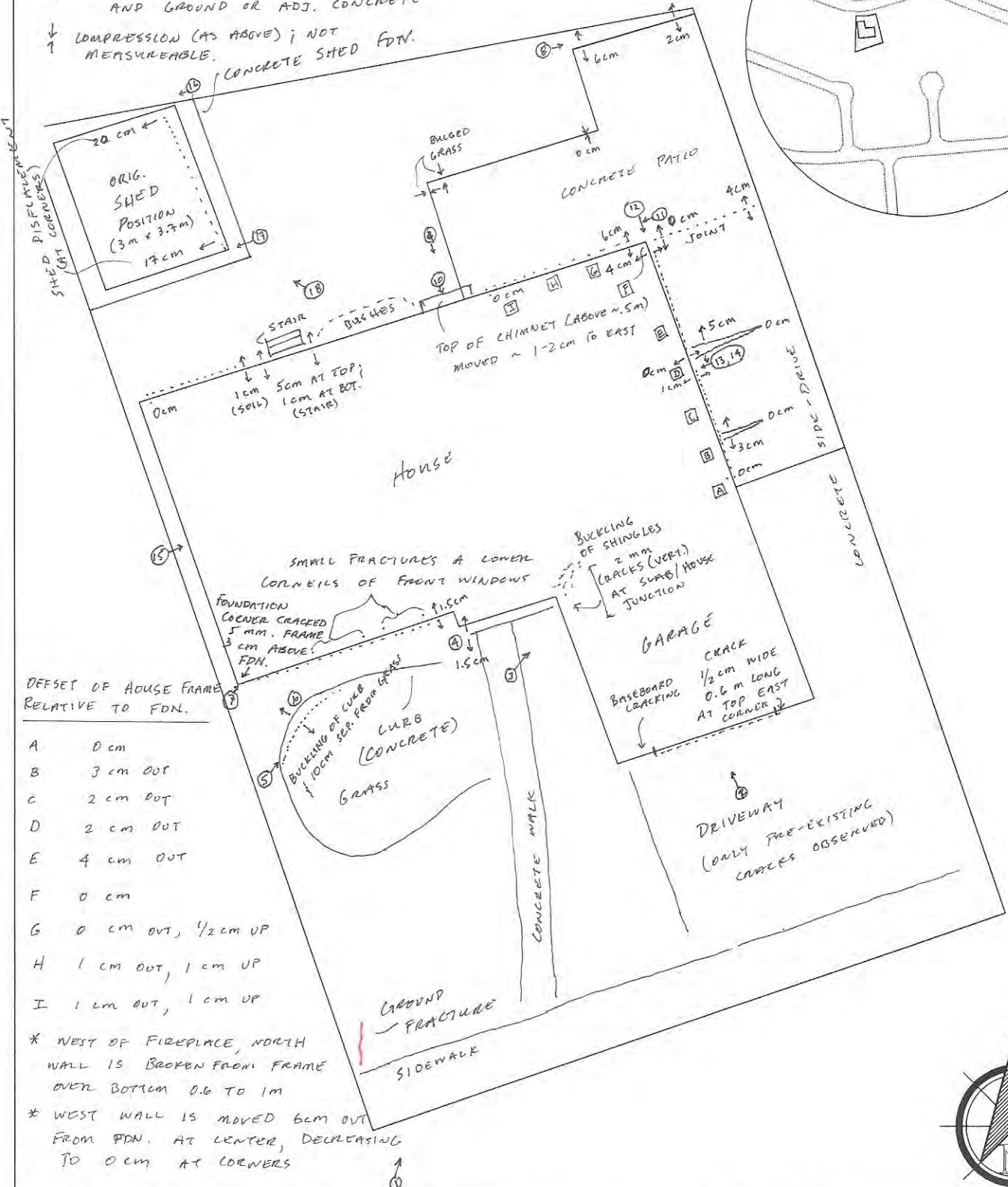
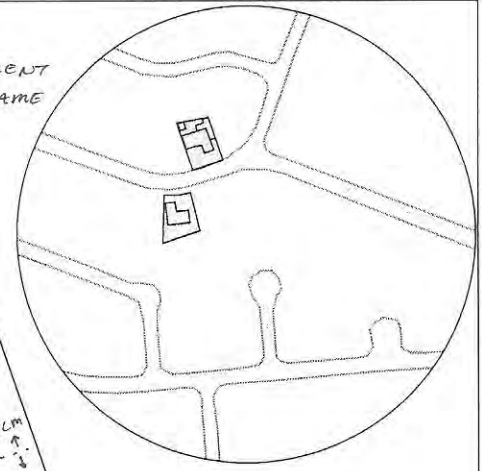


Figure C-H23-2: Ground surface rupture in side-yard  
[NSF-GEER; N 38.3045 W 122.3427; 08/25/14 15:24]

**LEGEND**

- ⊕ PHOTO LOCATION & DIRECTION
- CRACK IN CONCRETE
- ↑ EXTENSION BETWEEN CONCRETE AND GROUND OR ADJ. CONCRETE
- ↓ COMPRESSION (AS ABOVE); NOT MEASURABLE

[A] LOCATION OF MOVEMENT BETWEEN HOUSE FRAME AND FOUNDATION



OFFSET OF HOUSE FRAME RELATIVE TO FDN.

- A 0 cm
- B 3 cm OUT
- C 2 cm OUT
- D 2 cm OUT
- E 4 cm OUT
- F 0 cm
- G 0 cm OUT, 1/2 cm UP
- H 1 cm OUT, 1 cm UP
- I 1 cm OUT, 1 cm UP

- \* WEST OF FIREPLACE, NORTH WALL IS BROKEN FROM FRAME OVER BOTTOM 0.6 TO 1m
- \* WEST WALL IS MOVED 6cm OUT FROM FDN. AT CENTER, DECREASING TO 0cm AT CORNERS



EVENT: AMERICAN CANYON EQ M<sub>w</sub> = 6.0

ADDRESS: N 38.3041 W 122.3429°

DRAWING BY: R. LANZAFAME  
N. WAGNER

DESCRIPTION: House Mapping (24)

DATE OF INSPECTION: 8/25/14

DATE OF DRAWING: 8/25/14

SCALE: 1 cm : 2 m

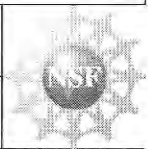




Figure C-H24-2: Displacement of patio slab relative to structure foundation; cracking of corner [NSF-GEER; N 38.3041 W 122.3429; 08/25/14 13:18]

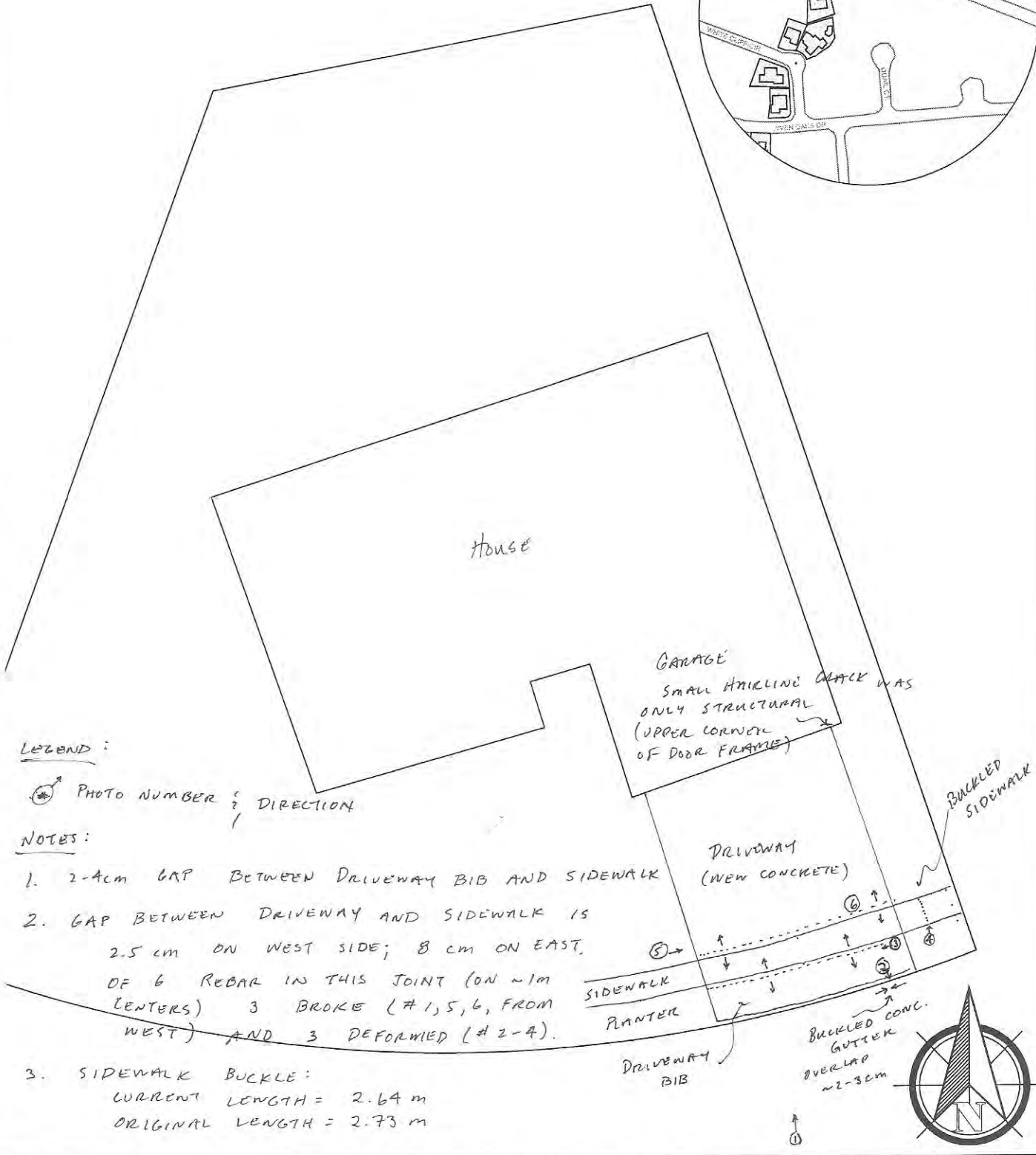
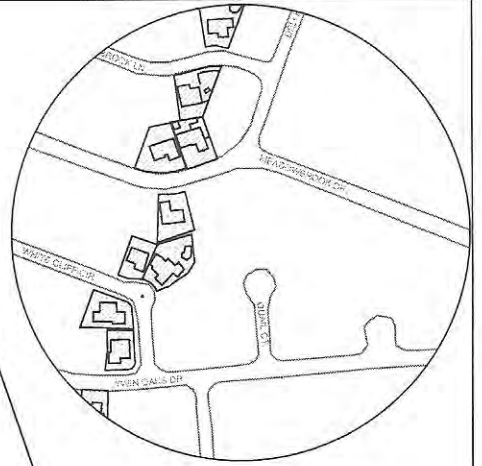




Figure C-H24-3: Asphalt rupture and front of residence (building on right) [NSF-GEER; N 38.3038 W 122.3430; 08/25/14 14:02]



Figure C-H24-4: Offset of wall frame relative to foundation (view from top) [NSF-GEER; N 38.3040 W 122.3431; 08/25/14 14:15]



LEGEND:

① PHOTO NUMBER ; DIRECTION

NOTES:

1. 2-4cm GAP BETWEEN DRIVEWAY BIB AND SIDEWALK
2. GAP BETWEEN DRIVEWAY AND SIDEWALK IS 2.5 cm ON WEST SIDE; 8 cm ON EAST. OF 6 REBAR IN THIS JOINT (ON ~1m CENTERS) 3 BROKE (#1,5,6, FROM WEST) AND 3 DEFORMED (#2-4).
3. SIDEWALK BUCKLE:  
 CURRENT LENGTH = 2.64 m  
 ORIGINAL LENGTH = 2.73 m



EVENT:  
AMERICAN CANYON EQ  $M_w = 6.0$

$N 38.3040^\circ W 122.3432^\circ$

DRAWING BY: R. LANZAFAME  
N. WAGNER

DESCRIPTION:  
HOUSE MAPPING (25)

DATE OF INSPECTION:  
8/25/14

DATE OF DRAWING:  
8/25/14

SCALE:  
1 cm : 2 m

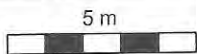
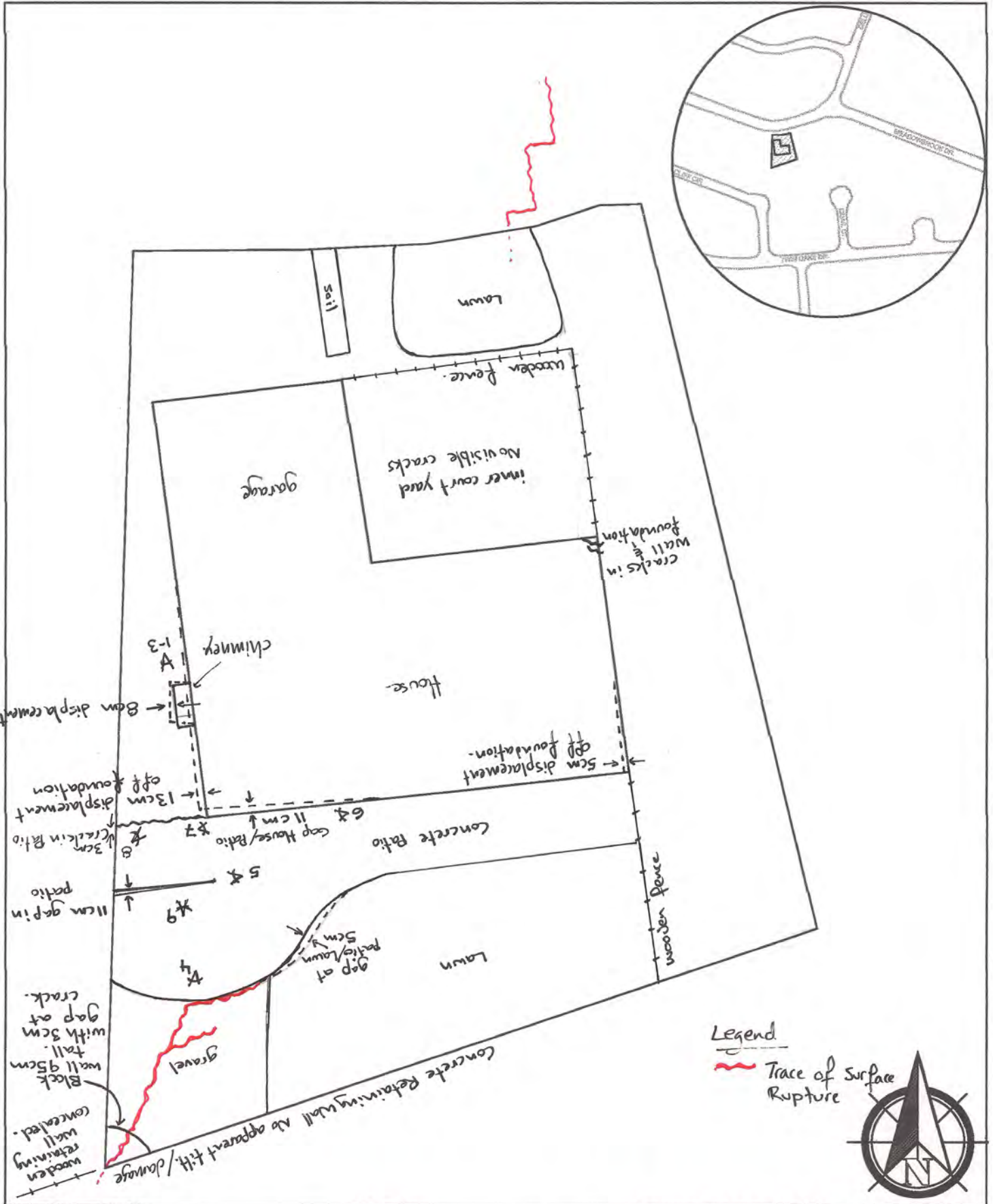




Figure C-H25-2: Offset of driveway, sidewalk and driveway bib [NSF-GEER; N 38.3038 W 122.3431; 08/25/14 13:29]



Figure C-H25-3: Deformation of rebar between driveway and sidewalk [NSF-GEER; N 38.3038 W 122.3430; 08/25/14 13:29]



Legend  
 Trace of Surface Rupture



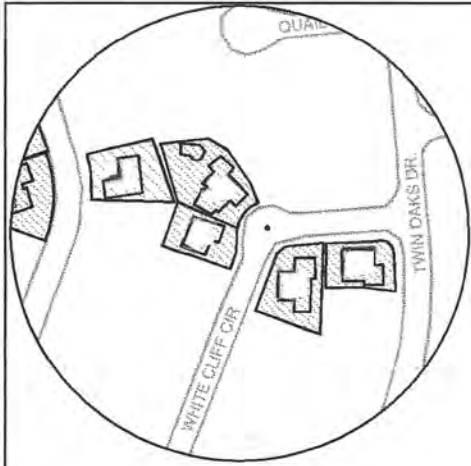
	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: 38.3036 -122.3432 (H27)		DRAWING BY: C. Markham Julien Cohen-Waeber	
	DESCRIPTION: Surface Fault Rupture through private property	DATE OF INSPECTION: 08/25/2014	DATE OF DRAWING: 08/25/2014	SCALE: 1 cm : 2 m	



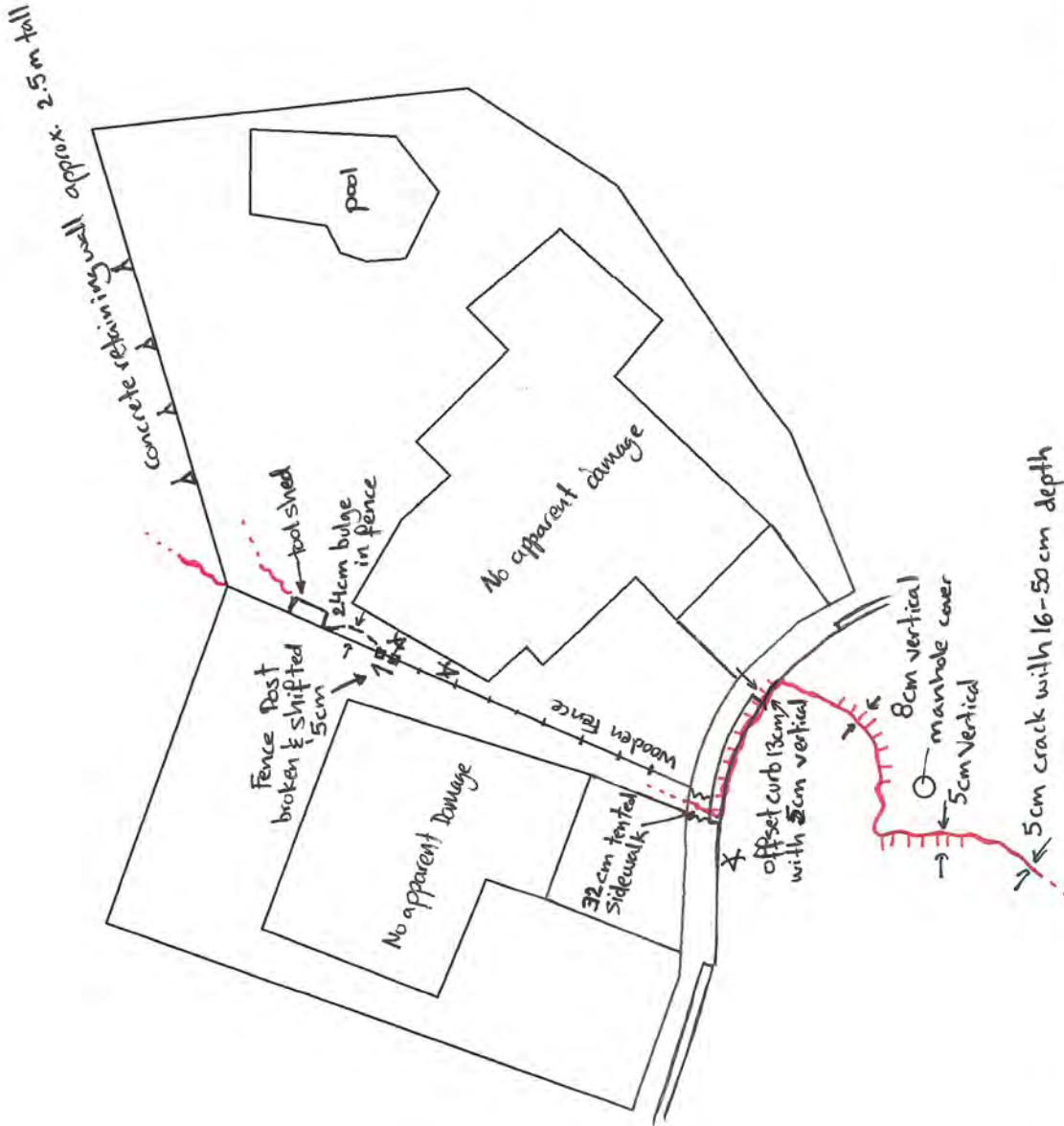
Figure C-H27-2: Structure shifted off of foundation. [NSF-GEER; N 38.3036 W 122.3432; 08/25/14 13:15]



Figure C-H27-3: Gap between structure and patio. [NSF-GEER; N 38.3036 W 122.3432; 08/25/14 13:28]



Legend  
 Trace of surface rupture



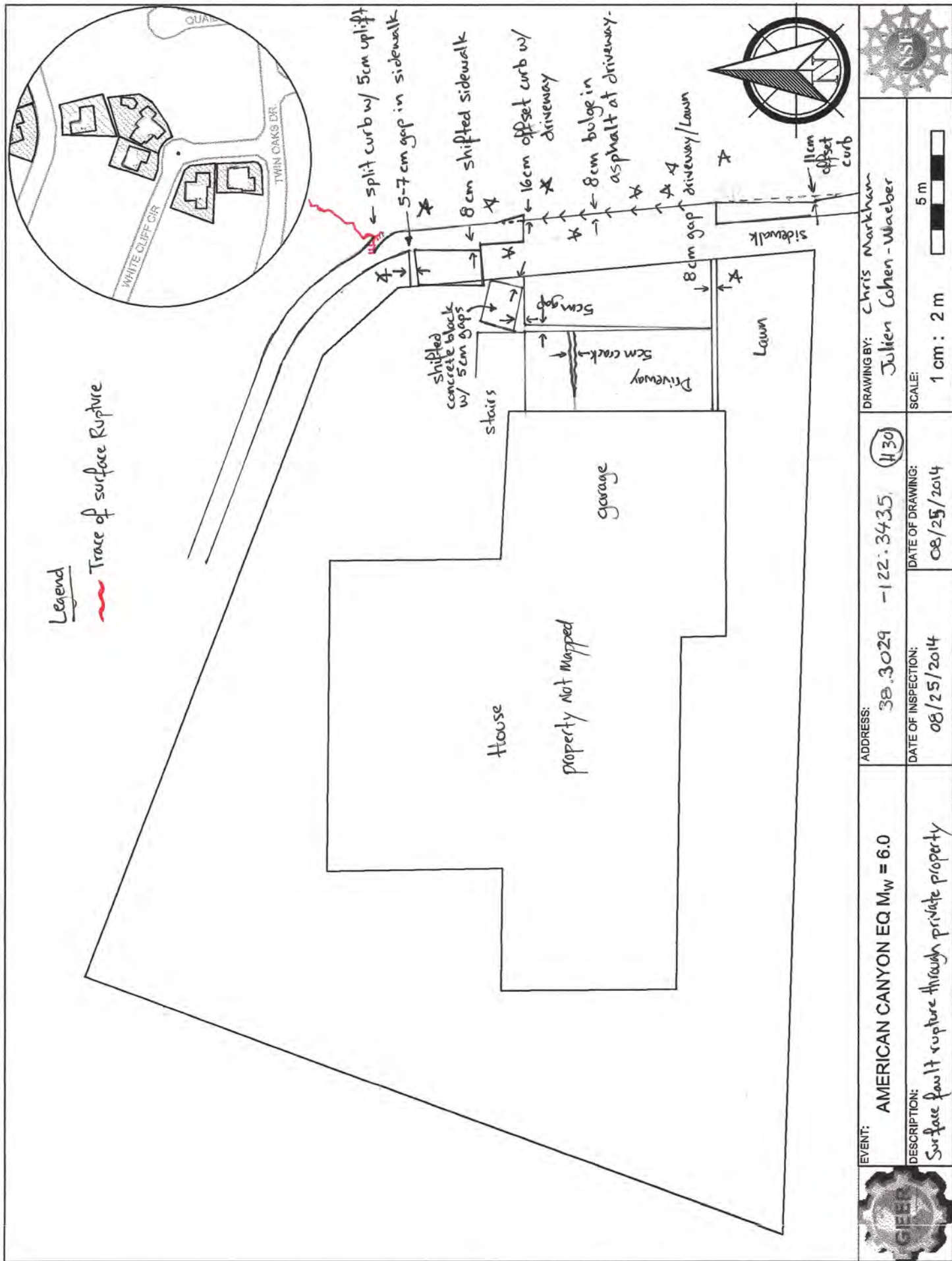
	DRAWING BY: C. Markham, J. Bray Julien Cohen-Waerber	
	ADDRESS: 38.3033 -122.3434 DATE OF INSPECTION: 08/25/2014	SCALE: 1 cm : 4 m 
EVENT: AMERICAN CANYON EQ Mw = 6.0 DESCRIPTION: Surface Fault Rupture through private property	DATE OF DRAWING: 08/25/2014	(428) (429)



Figure C-H28-H29-2: Compression between asphalt and curb showing right lateral movement. [NSF-GEER; N 38.3033 W 122.3434; 08/25/14 09:29]



Figure C-H28-H29-3: Buckling of wooden fence showing post displacement [NSF-GEER; N 38.3033 W 122.3434; 08/25/14 09:52]



Legend

Trace of surface Rupture

	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: 38.3029 -122.3435 (H30)	DRAWING BY: Chris Markham Julien Cohen-Waerber
	DESCRIPTION: Surface fault rupture through private property	DATE OF INSPECTION: 08/25/2014	DATE OF DRAWING: 08/25/2014
SCALE: 1 cm : 2 m		5 m	

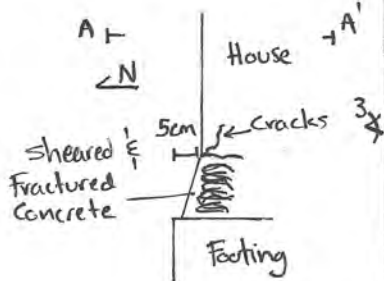
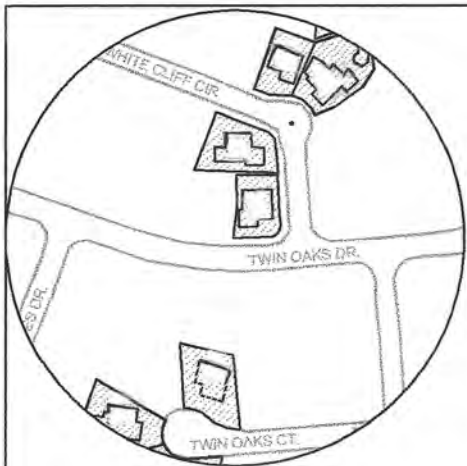




Figure C-H30-2: Compression between asphalt and curb showing. [NSF-GEER; N 38.3029 W 122.3435; 08/25/14 09:15]



Figure C-H30-3: Severe cracking across White Cliff Circ. [NSF-GEER; N 38.3029 W 122.3435; 08/25/14 09:17]

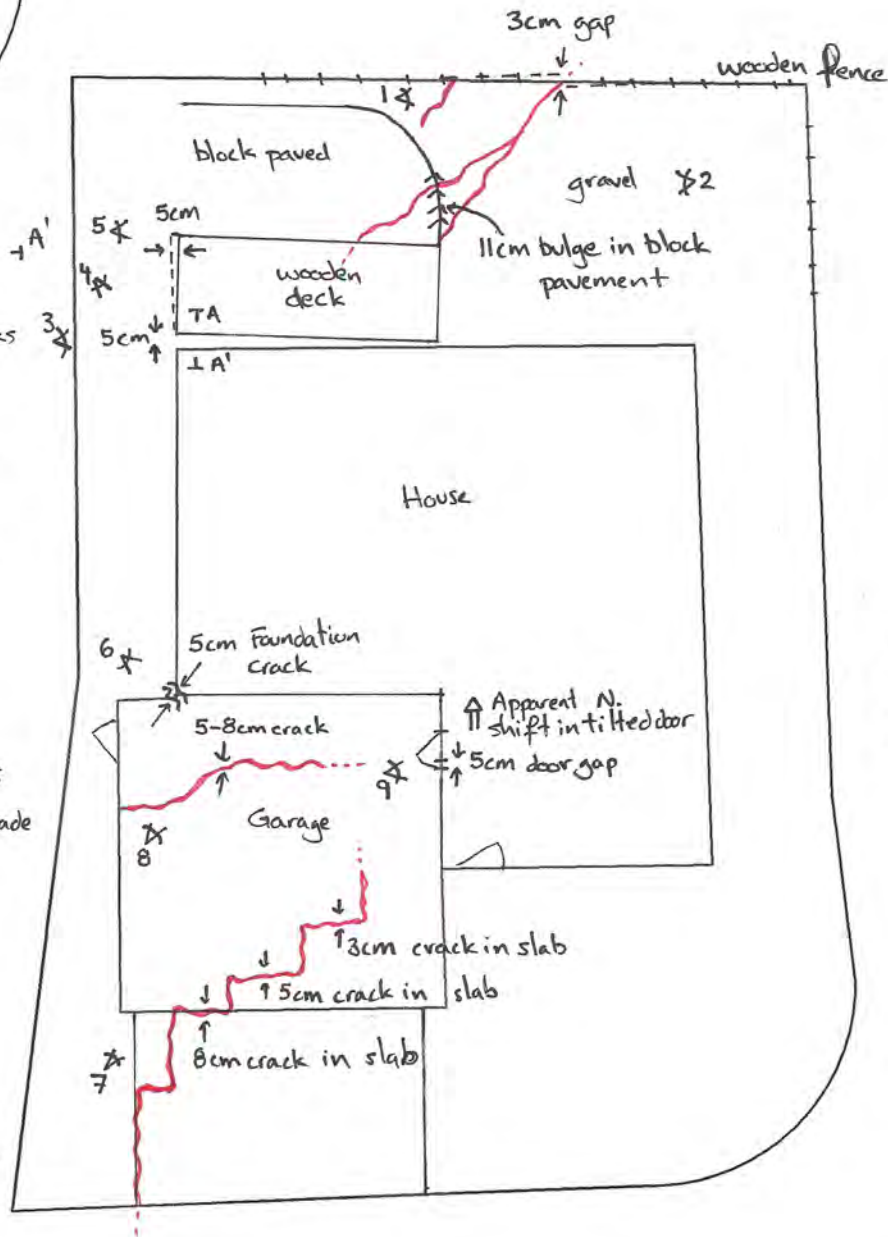


Note: section not drawn to scale

Garage has spread footings & unreinforced slab on grade

Legend

Surface Rupture Trace



White cliff Circ.

Twin Oaks Dr.



	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: 38.3027 -122.3436 (H30)	DRAWING BY: C. Markham J. Cohen-Waeber
	DESCRIPTION: Surface Fault Rupture through Private Property.	DATE OF INSPECTION: 08/25/2014	DATE OF DRAWING: 08/25/2014
		SCALE: 1 cm : 2 m	

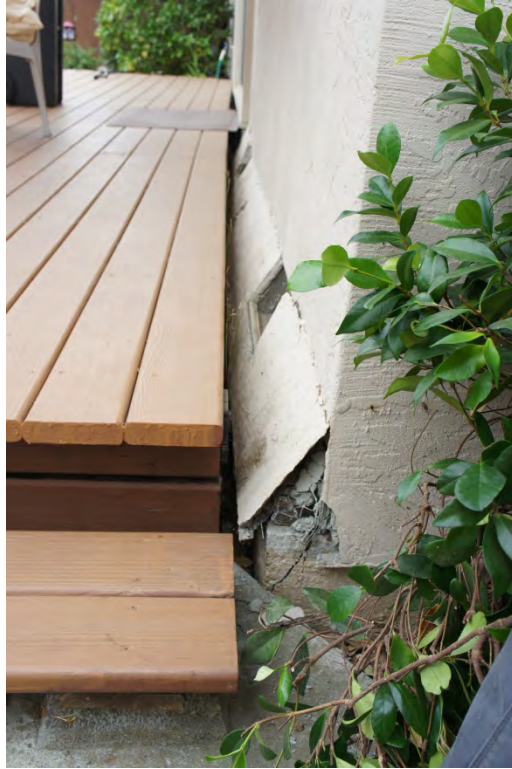
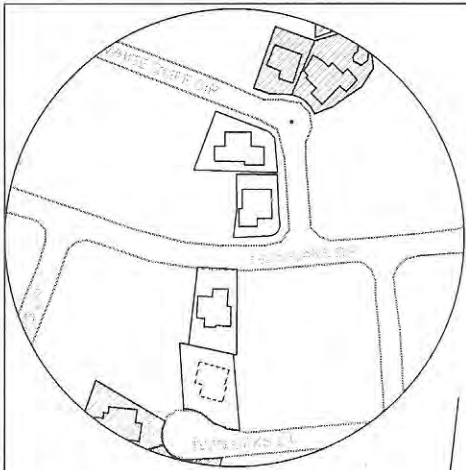


Figure C-H31-2: Structure shifted on foundation. [NSF-GEER; N 38.3027 W 122.3436; 08/25/14 10:11]



Figure C-H31-3: Structure shifted on foundation and foundation crack [NSF-GEER; N 38.3027 W 122.3436; 08/25/14 10:22]

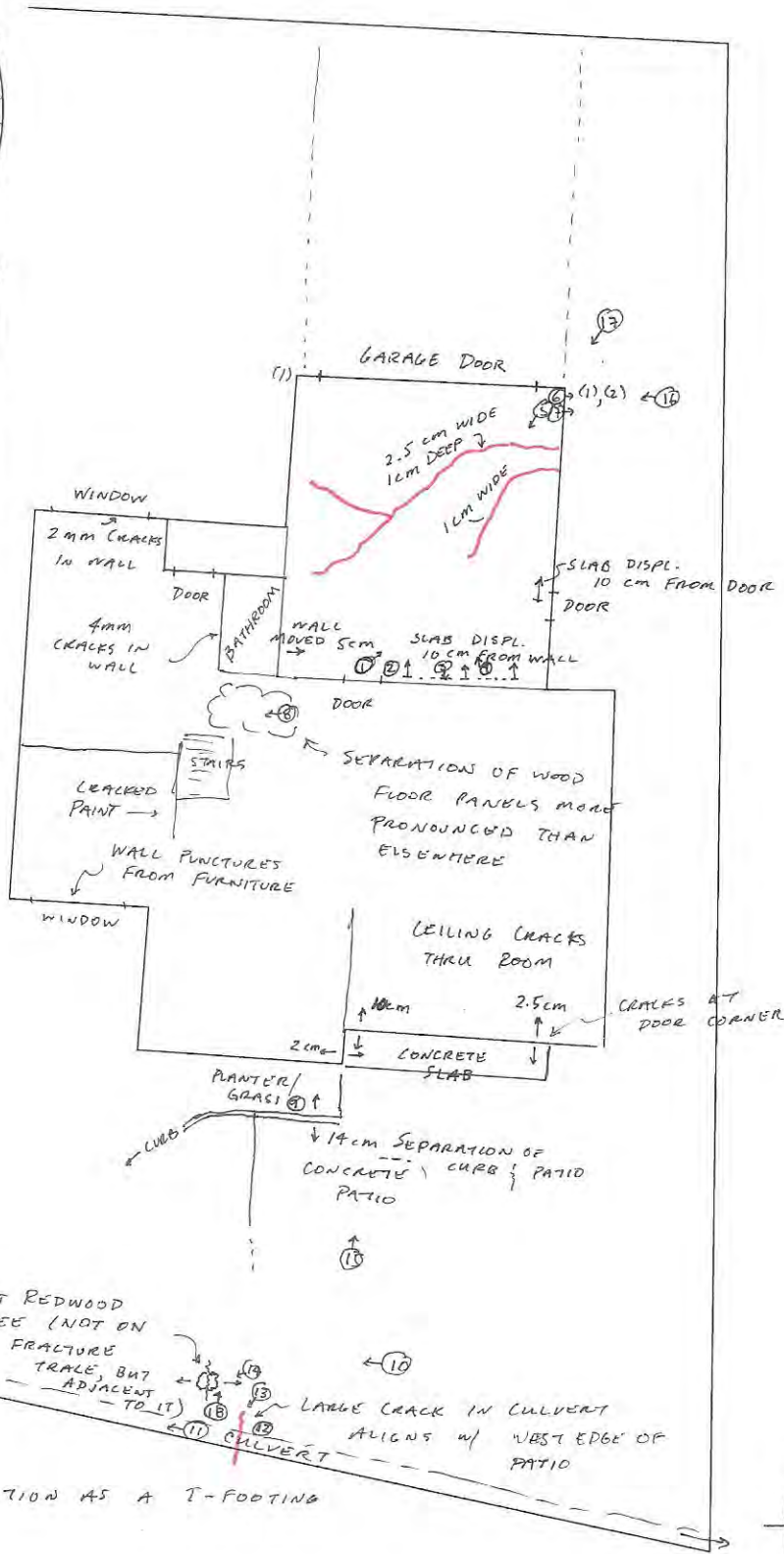


**LEGEND**

FRACTURES IN CONCRETE

**NOTES:**

1. GARAGE WALLS SUPP. ON GRADE BEAMS SEPARATE FROM GARAGE SLAB.
2. BEAM UNDER N.E. GARAGE WALL CORNER ROTATE OUT TO STREET AT TOP  $\sim 7^\circ$
3. FRACTURED GARAGE SLAB SLOPES DOWN TO NORTHWEST
4. NO DAMAGE ON SECOND FLOOR
5. GAP BETWEEN CROWN MOLDING & WALL UP TO 2mm THROUGHOUT HOUSE (1st Floor)
6. APPROX. 5-15 cm OFFSET OF 1st STORY SHINGLE FLASHING AND 2nd FLOOR OUTER WALL.
7. OWNER DESCRIBED FOUNDATION AS A T-FOOTING ON "A FEW" PIERS.



EVENT:  
AMERICAN CANYON EQ  $M_w = 6.0$

LOCATION:  
N 38.3022° W 122.3438°

DRAWING BY: R. LANZAFAME  
M. GARDNER  
N. WAGNER

DESCRIPTION:  
HOUSE MAPPING (32)

DATE OF INSPECTION:  
8/27/14

DATE OF DRAWING:  
8/27/14

SCALE:  
1 cm : 2 m

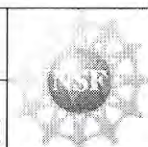
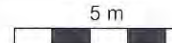




Figure C-H32-2: Garage slab cracking [NSF-GEER; N 38.3024 W 122.3436; 08/27/14 11:33]



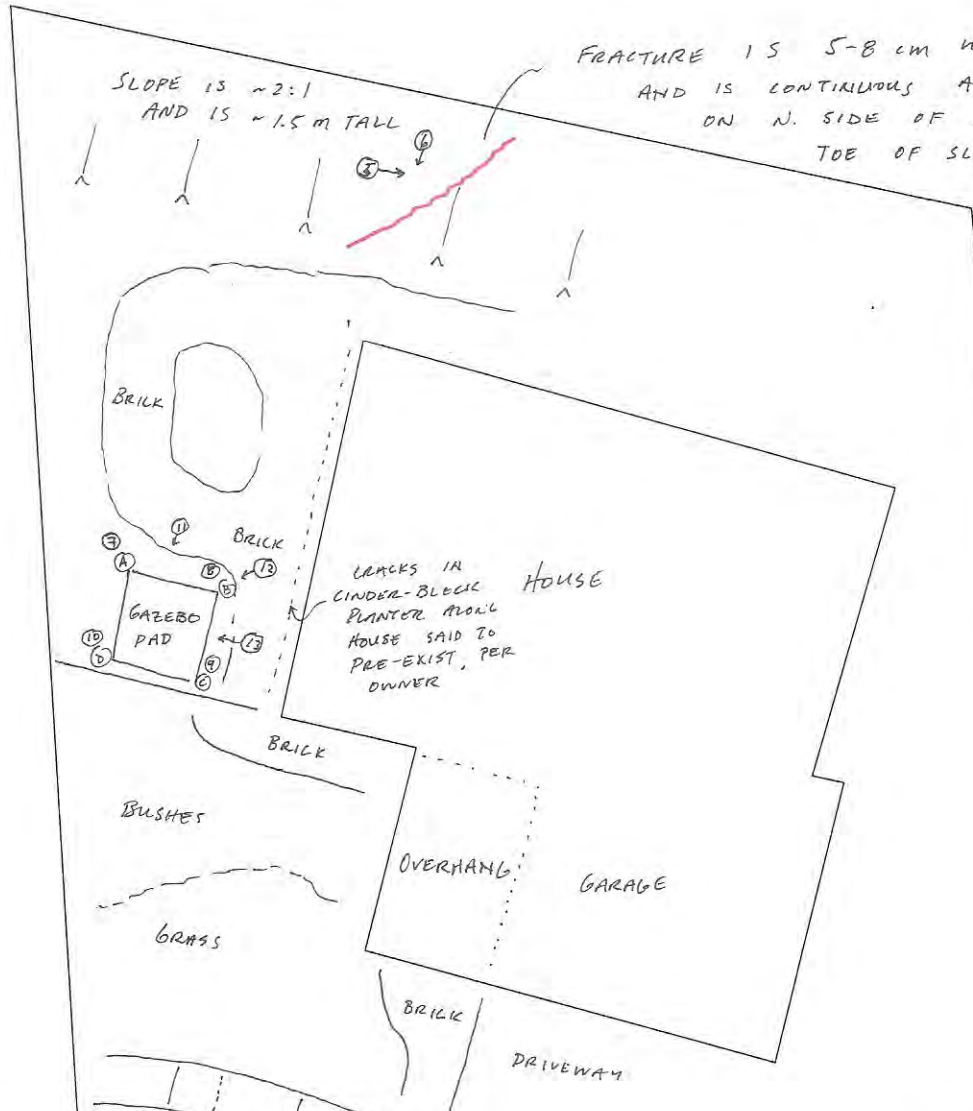
Figure C-H32-3: Separation of garage slab and wall [NSF-GEER; N 38.3022 W 122.3438; 08/27/14 11:33]



Figure C-H32-4: Damage to strip footing at garage corner [NSF-GEER; N 38.3023 W 122.3438; 08/27/14 11:47]



Figure C-H32-5: Split tree trunk adjacent to rupture alignment [NSF-GEER; N 38.3021 W 122.3439; 08/27/14 15:13]



FRACTURE IS 5-8 cm WIDE, 18-20 cm DEEP AND IS CONTINUOUS ACROSS DIRT SLOPE ON N. SIDE OF PROPERTY (I.E., TOP TO TOE OF SLOPE).

SLOPE IS ~2:1 AND IS ~1.5 m TALL

LEGEND

FRACTURE ON GROUND SURFACE

PHOTO NUMBER, LOCATION & DIR.

CRACKS IN CINDER-BLOCK PLANTER AROUND HOUSE SAID TO PRE-EXIST, PER OWNER

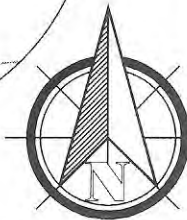
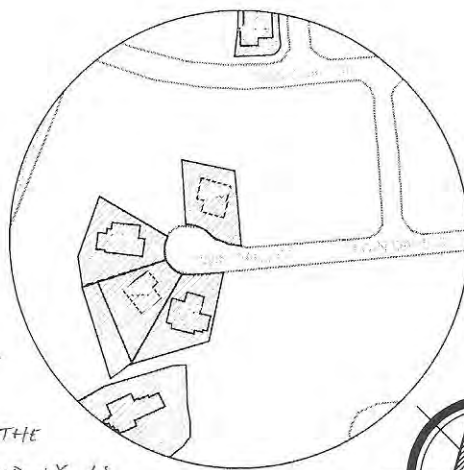
GRASS BULGE TO SOUTH OF BUCKLE

BUCKLED SIDEWALK  
CURB SEPARATED 5.5cm FROM ASPHALT

"GAZEBO" IS A WOOD TRELLIS SUPPORTED BY 4 4"x4" BEAMS ~2m HIGH. MOVEMENT OF EACH BEAM IS SUMMARIZED IN THE TABLE BELOW:

CORNER	$\Delta X$ (cm)	$\Delta Y$ (cm)
A	25	11
B	33	22
C	14	20
D	4	0

THE X AND Y DIRECTIONS ARE PERPENDICULAR TO THE CONCRETE PAD, AND +X IS NORTHWEST; +Y IS SOUTHWEST (I.E., )



EVENT: AMERICAN CANYON EQ  $M_w = 6.0$

ADDRESS: N 38.3019° W 122.3439°

DRAWING BY: R. LANZAFAME  
N. WAGNER

DESCRIPTION: House Mapping (33)

DATE OF INSPECTION: 8/25/14

DATE OF DRAWING: 8/25/14

SCALE: 1 cm : 2 m



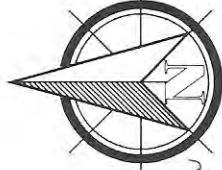
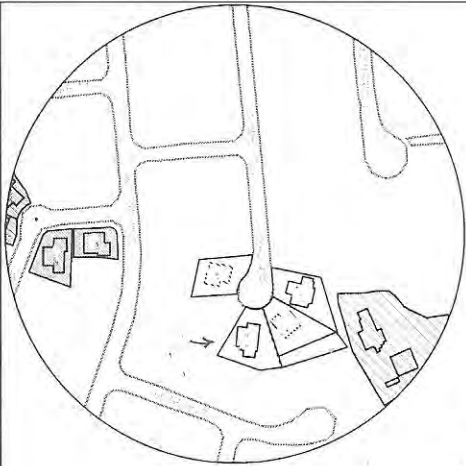


Figure C-H33-2: View across court to residence [NSF-GEER; N 38.3015 W 122.3443; 08/25/14 10:23]



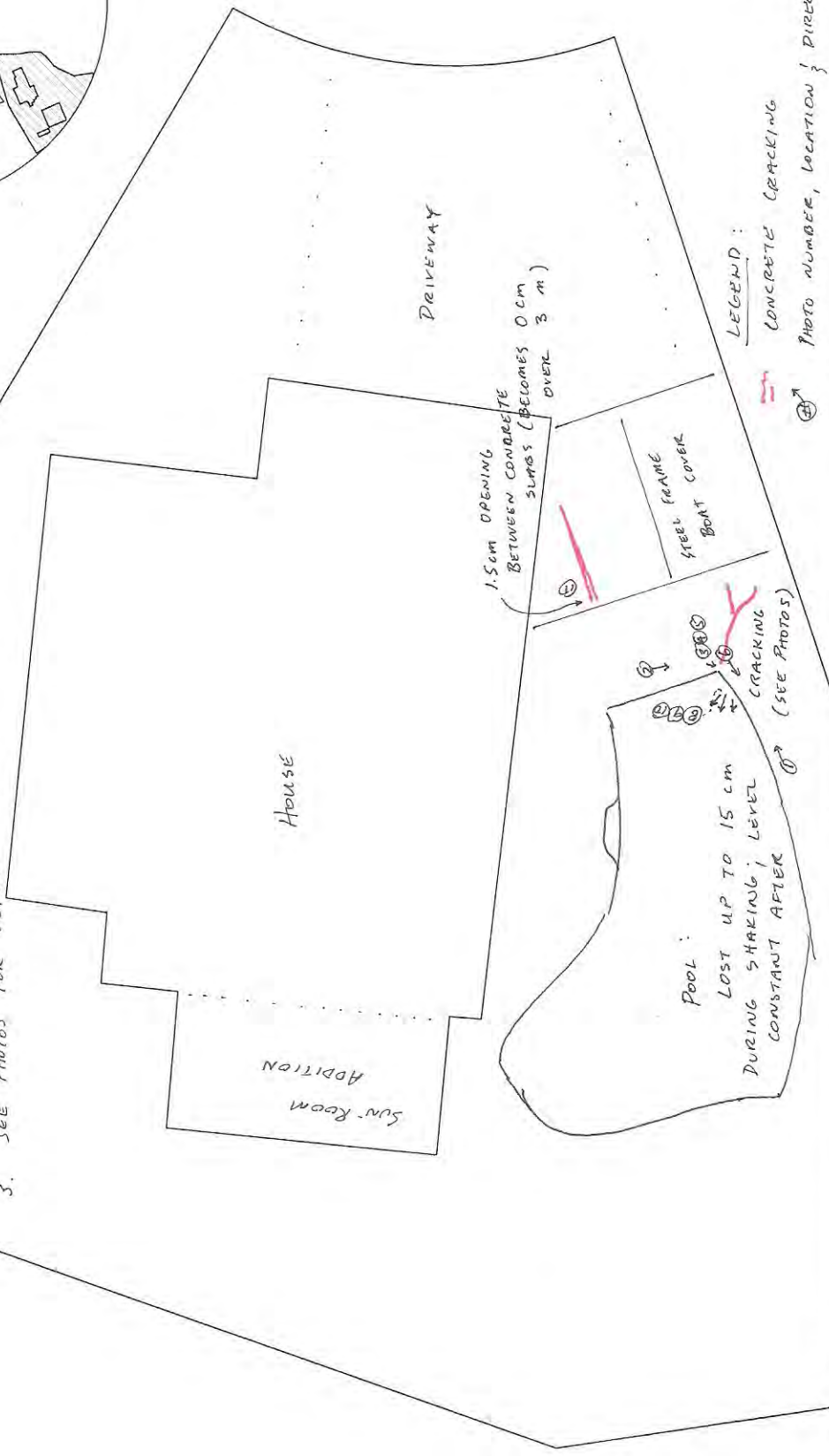
Figure C-H33-3: Fracture along backyard slope [NSF-GEER; N 38.3020 W 122.3439; 08/25/14 11:22]





NOTES:

1. POOL CONCRETE BORDER CRACKED OVER 15m ALONG SOUTHEAST CORNER
2. SLAB LIFTED 4cm AND WAS OFFSET 1.5 cm HORIZONTALLY
3. SEE PHOTOS FOR DETAIL

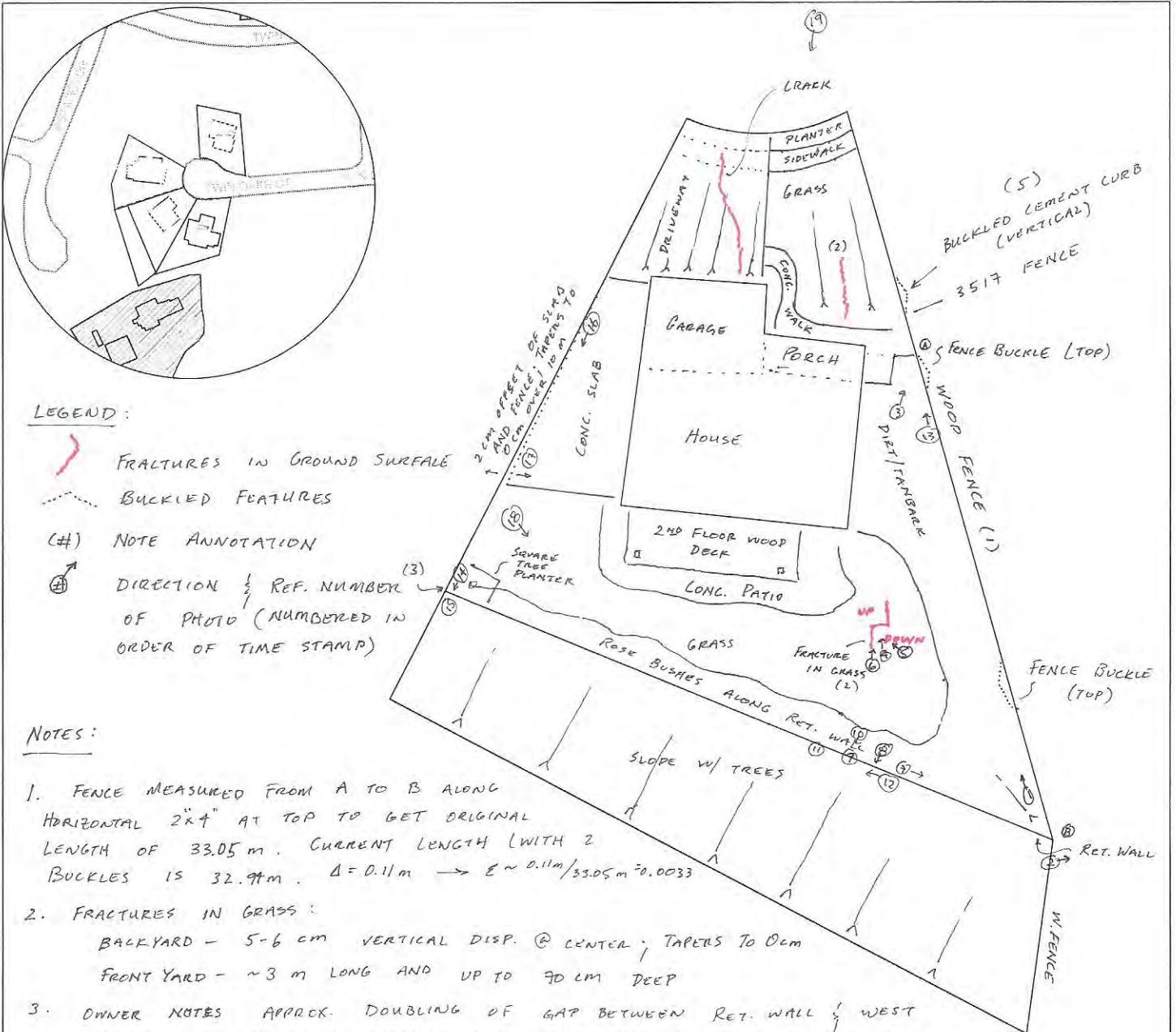


	EVENT:	AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS:	N 38, 3017° W 122, 3443°	DRAWING BY:	R. LANZAFAME N. WAGNER
	DESCRIPTION:	House Mapping (34)	DATE OF INSPECTION:	8/25/14	SCALE:	1 cm : 2 m 5 m



Figure C-H34-2: Concrete cracking at edge of pool

[NSF-GEER; N 38.3016 W 122.3443; 08/25/14 11:05]



**LEGEND:**

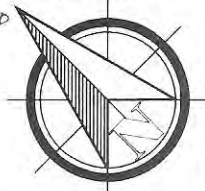
- FRACTURES IN GROUND SURFACE
- BUCKLED FEATURES
- (#) NOTE ANNOTATION
- DIRECTION & REF. NUMBER OF PHOTO (NUMBERED IN ORDER OF TIME STAMP)

**NOTES:**

1. FENCE MEASURED FROM A TO B ALONG HORIZONTAL 2"x4" AT TOP TO GET ORIGINAL LENGTH OF 33.05 m. CURRENT LENGTH (WITH 2 BUCKLES) IS 32.94 m.  $\Delta = 0.11 \text{ m} \rightarrow E \approx 0.11 \text{ m} / 33.05 \text{ m} = 0.0033$
2. FRACTURES IN GRASS:
  - BACKYARD - 5-6 cm VERTICAL DISP. @ CENTER; TAPERS TO 0cm
  - FRONT YARD - ~3 m LONG AND UP TO 70 cm DEEP
3. OWNER NOTES APPROX. DOUBLING OF GAP BETWEEN RET. WALL & WEST FENCE; AT TIME OF MEASUREMENT, GAP WAS 8 cm AT BOTTOM, 10 cm AT TOP; WALL IS ~80 cm HIGH
4. RETAINING WALL IS 20 cm THICK UNREINFORCED LINDERBLOCK COATED WITH GUNNITE AND CONTAINS 2 BREAKS FOR STAIRS AT ~1/3 & 2/3 THROUGH IT'S 41.8 m LENGTH. THERE IS A 1 cm GAP BETWEEN WALL TOP AND RETAINED SOIL FOR THE ENTIRE SOUTHEASTERN HALF. CRACKS (VERTICAL) ARE SUMMARIZED IN THE FOLLOWING TABLE:

LENGTH (FROM S.E. END)	MAX. CRACK THICKNESS	WALL HEIGHT
4.01 m	8 mm	40 cm
6.10 m	10 mm	30 cm
8.84 m	5 mm	29 cm
11.1 m	8 mm	80 cm
15.1 m	5 mm	80 cm
20.2 m	4 mm	80 cm

5. BUCKLED CURB MEASURED 210 cm ORIGINAL LENGTH (128 cm & 82 cm PIECES) AND 203 cm CURRENT LENGTH.



20.2 m to ~30 m 6 HAIRLINE CRACKS; 80cm HIGH TO END

	EVENT: AMERICAN CANYON EQ $M_w = 6.0$	ADDRESS: N 38.3015° W 122.3442°	DRAWING BY: R. LANZAFAME N. WAGNER
	DESCRIPTION: House Mapping (35)	DATE OF INSPECTION: 8/25/14	DATE OF DRAWING: 8/25/14
		SCALE: 10 m 1 cm = 4 m	



Figure C-H35-2: Fracture in grass [NSF-GEER; N 38.3015 W 122.3440; 08/25/14 10:49]



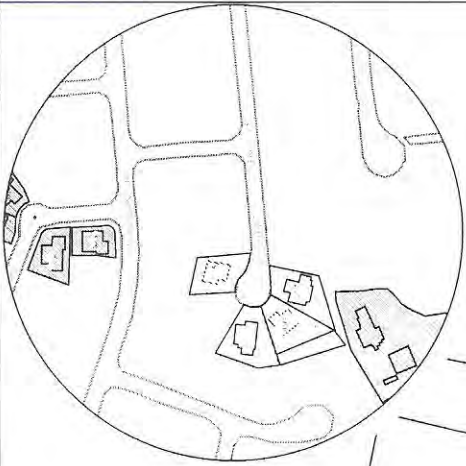
Figure C-H35-3: Buckled wood fence [NSF-GEER; N 38.3015 W 122.3440; 08/25/14 10:55]



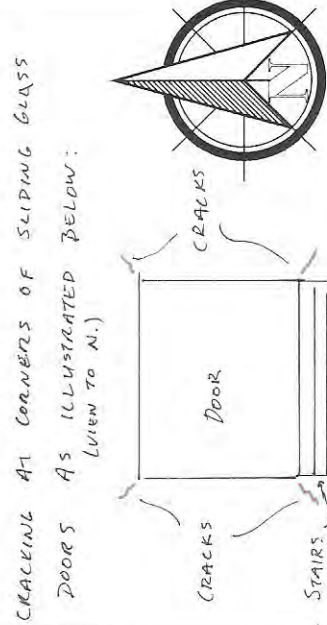
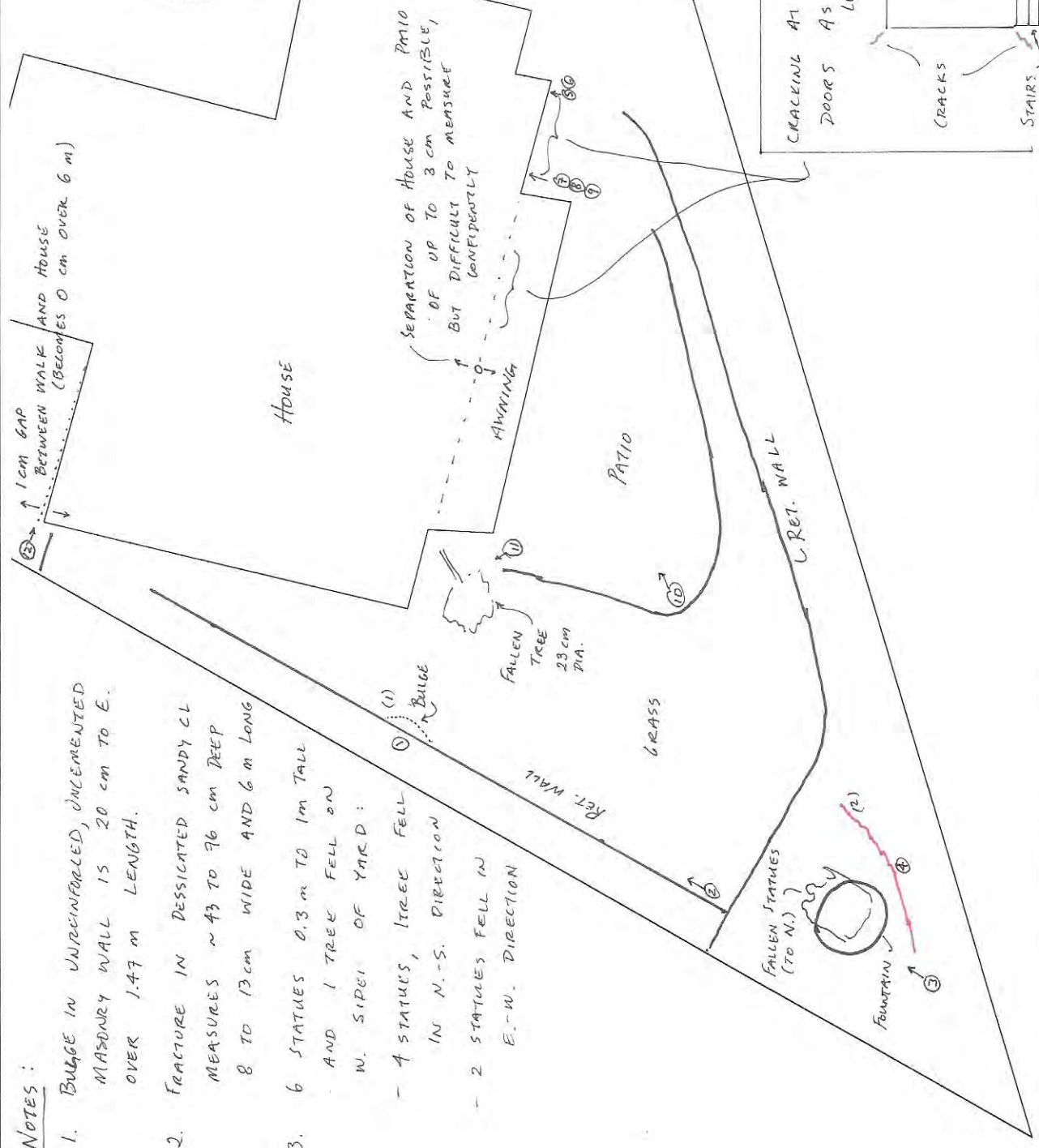
Figure C-H35-4: Retaining wall crack [NSF-GEER; N 38.3015 W 122.3440; 08/25/14 10:58]




NOTES:

1. BULGE IN UNREINFORCED, UNCEMENTED MASONRY WALL IS 20 cm TO E. OVER 1.47 m LENGTH.
2. FRACTURE IN DESICCATED SANDY CL MEASURES ~43 TO 76 cm DEEP 8 TO 13 cm WIDE AND 6 m LONG
3. 6 STATUES 0.3 m TO 1 m TALL AND 1 TREE FELL ON N. SIDE OF YARD:  
 - 4 STATUES, TREE FELL IN N.-S. DIRECTION  
 - 2 STATUES FELL IN E.-W. DIRECTION



LEGEND:  
 ~~~~~ FRACTURE ON GROUND SURFACE  
 (A) NOTE ANNOTATION  
 ↗ PHOTO NUMBER AND DIRECTION

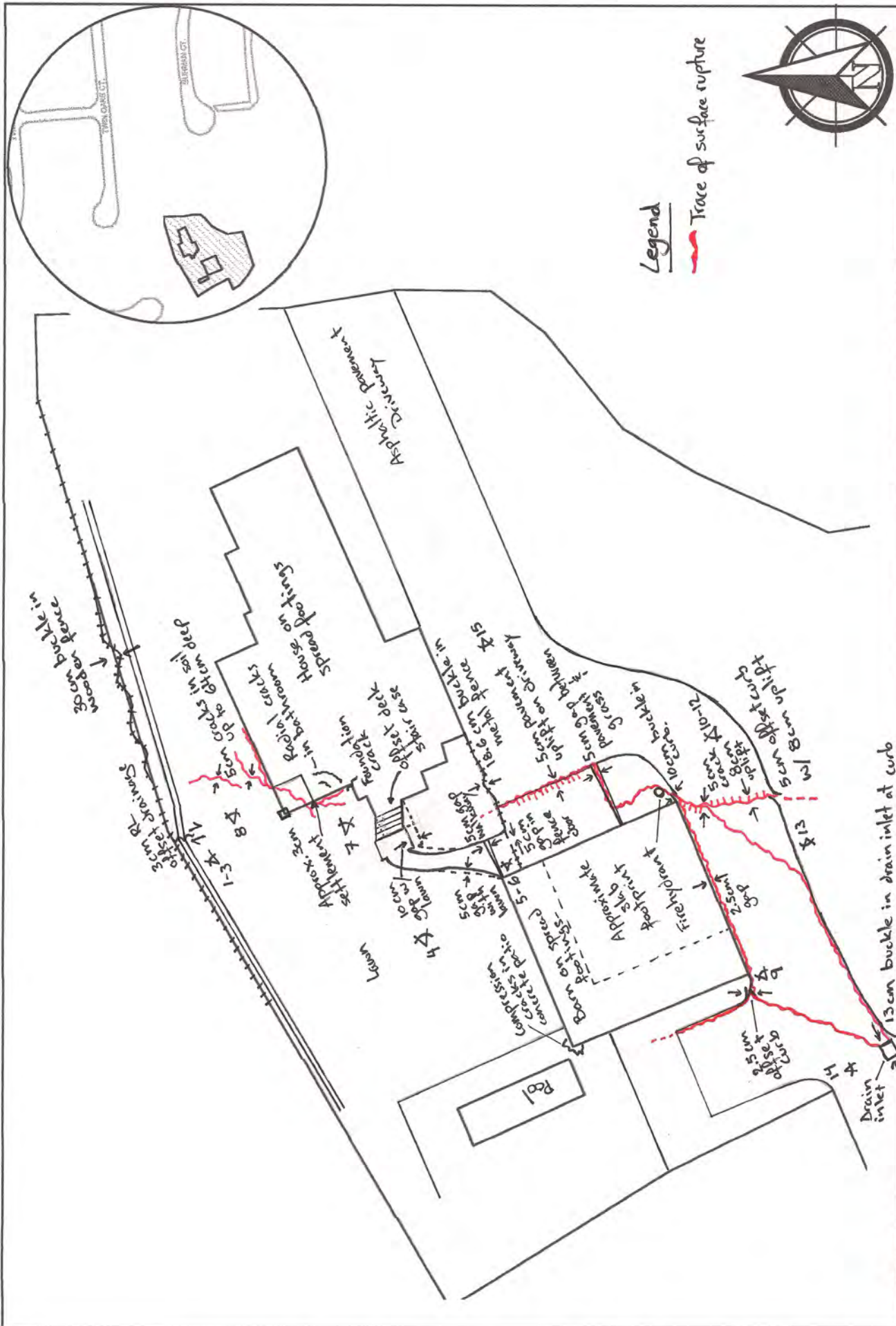


|                                                                                       |                                                |                                 |                                       |                                                                                                          |
|---------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------|
|  | EVENT: AMERICAN CANYON EQ M <sub>w</sub> = 6.0 | ADDRESS: N 38.3015° W 122.3440° | DRAWING BY: R. LAUZAFAME<br>N. WAGNER |                       |
|                                                                                       | DESCRIPTION: HOUSE MAPPING                     | DATE OF INSPECTION: 8/25/14     | DATE OF DRAWING: 8/25/14              | SCALE: 1 cm : 2 m<br> |

(36)



Figure C-H36-2: Buckled retaining wall [NSF-GEER; N 38.3013 W 122.3441; 08/25/14 11:57]




|                                                                                       |                                                             |                                |                                                  |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------|--------------------------------------------------|
|  | EVENT: AMERICAN CANYON EQ Mw = 6.0                          | ADDRESS: 38.3011 - 122.3442    | DRAWING BY: Chris Markham<br>Julien Cohen-Waeber |
|                                                                                       | DESCRIPTION: Surface fault rupture through private property | DATE OF INSPECTION: 08/25/2014 | DATE OF DRAWING: 08/25/2014                      |
|                                                                                       |                                                             | SCALE: 1 cm : 4 m              | SCALE: 10 m                                      |

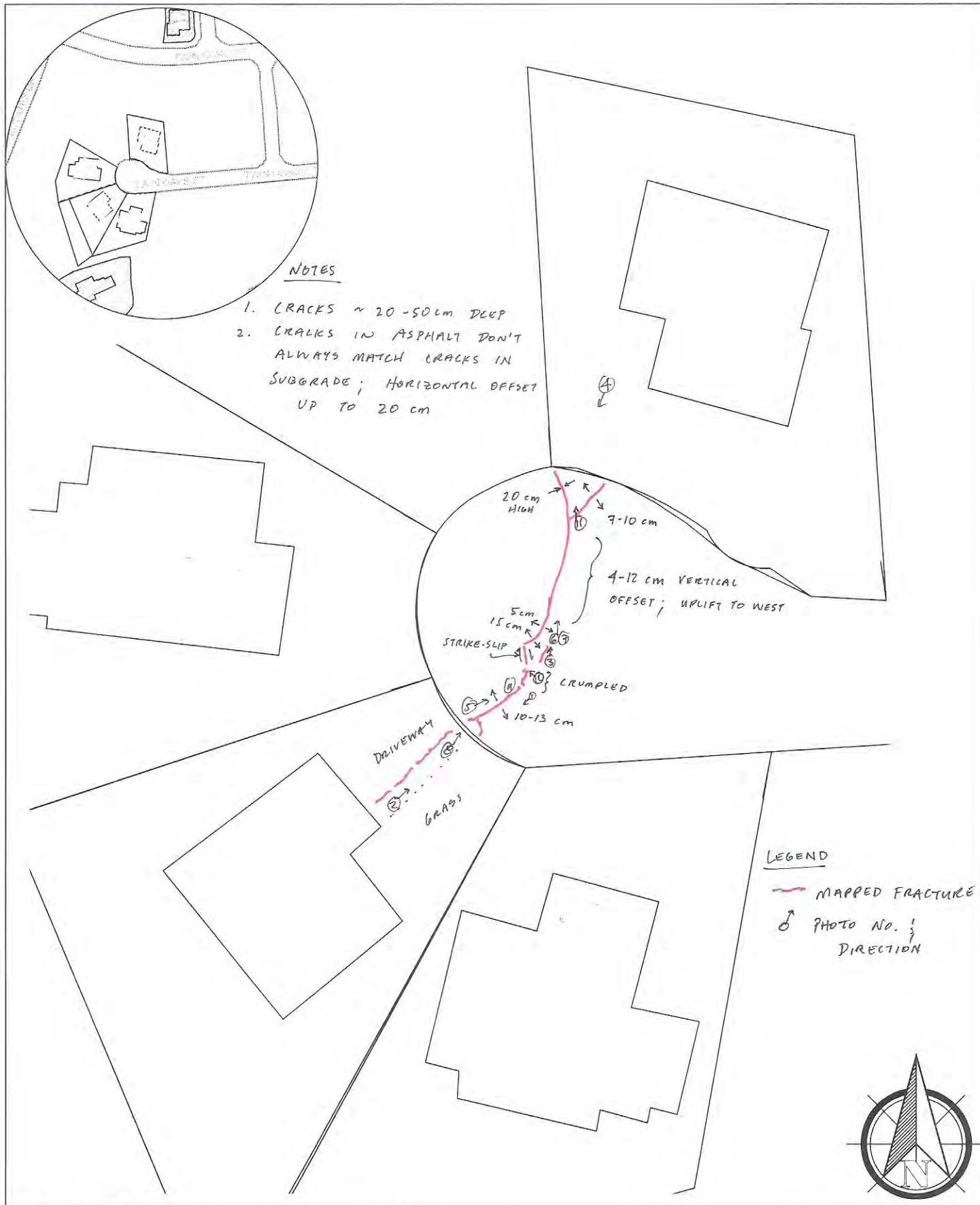




Figure C-H37-2: Cracked and settling strip footing [NSF-GEER; N 38.3011 W 122.3442; 08/25/14 11:41]



Figure C-H37-3: Open cracks in pavement [NSF-GEER; N 38.3011 W 122.3442; 08/25/14 11:36]



NOTES

1. CRACKS ~ 20-50 cm DEEP
2. CRACKS IN ASPHALT DON'T ALWAYS MATCH CRACKS IN SUBGRADE; HORIZONTAL OFFSET UP TO 20 cm

LEGEND

- MAPPED FRACTURE
- ♂ PHOTO NO. & DIRECTION



|  |                                          |                                       |                                       |                              |  |
|--|------------------------------------------|---------------------------------------|---------------------------------------|------------------------------|--|
|  | EVENT:<br>AMERICAN CANYON EQ $M_w = 6.0$ | ADDRESS:<br>PAVEMENT IN TWIN OAKS CT. | DRAWING BY: N. WAGNER<br>R. LANZAFAME |                              |  |
|  | DESCRIPTION:<br>HOUSE MAPPING (P1)       | DATE OF INSPECTION:<br>8/25/14        | DATE OF DRAWING:<br>8/25/14           | SCALE:<br>10 m<br>1 cm : 4 m |  |



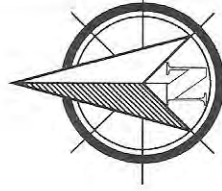
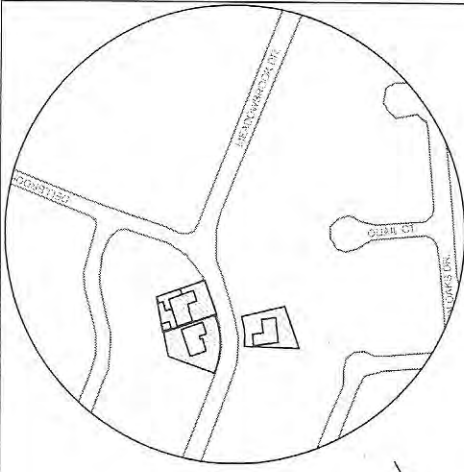
Figure C-P1-2: General view of fracturing [NSF-GEER; N 38.3016 W 122.3441; 08/25/14 10:24]



Figure C-P1-3: General view of fracturing [NSF-GEER; N 38.3018 W 122.3437; 08/25/14 10:42]



Figure C-P1-4: Asphalt fracture [NSF-GEER; N 38.3017 W 122.3440; 08/25/14 11:33]



DRAWING BY: **A. LANZAFAME**  
**N. WAGNER**

SCALE: 1 cm : 4 m      10 m

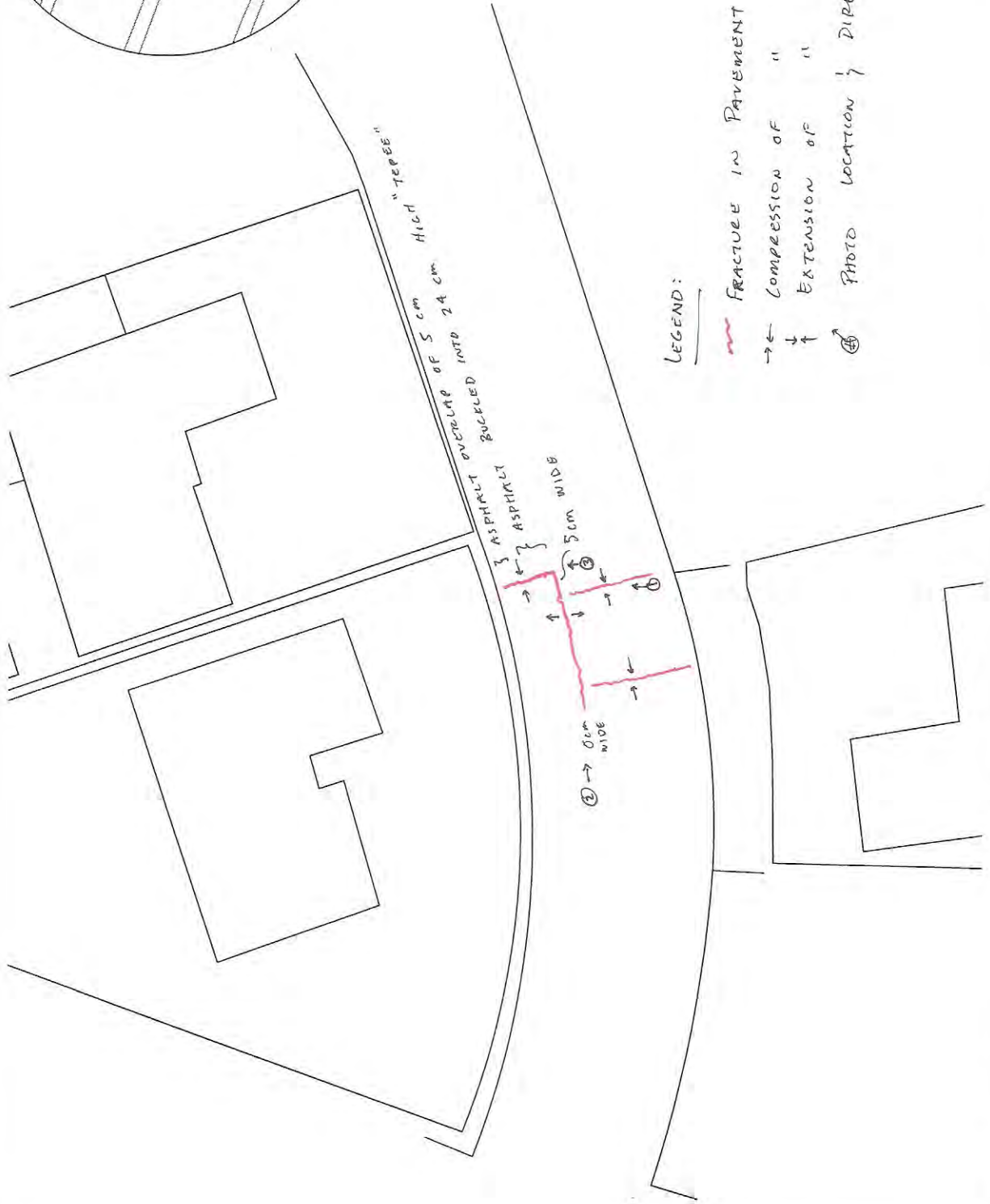
ADDRESS: **PAVEMENT IN MEADOWBROOK DR**

DATE OF INSPECTION: **8/25/14**

DATE OF DRAWING: **8/25/14**

EVENT: **AMERICAN CANYON EQ  $M_w = 6.0$**

DESCRIPTION: **HOUSE MAPPING** (P2)



**LEGEND:**

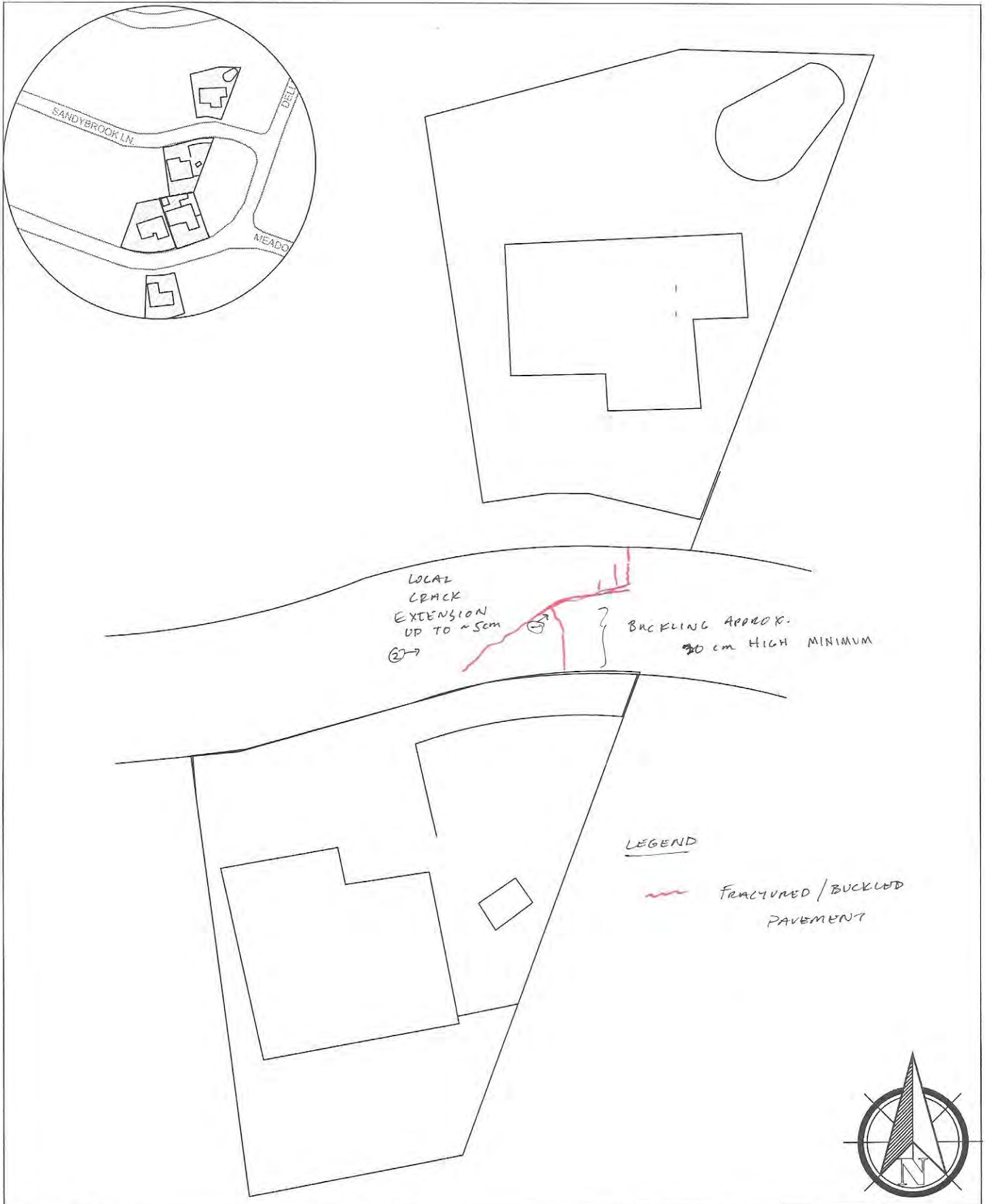
- FRACTURE IN PAVEMENT
- COMPRESSION OF "
- EXTENSION OF "
- PHOTO LOCATION ; DIRECTION



Figure C-P2-2: General view of fracturing [NSF-GEER; N 38.3038 W 122.3441; 08/25/14 13:18]



Figure C-P2-3: Asphalt buckling from end [NSF-GEER; N 38.3038 W 122.3430; 08/25/14 13:20]





|                                                                                    |                                          |                                        |                                          |                                                                                       |
|------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|
|  | EVENT:<br>AMERICAN CANYON EQ $M_w = 6.0$ | ADDRESS:<br>PAVEMENT IN SANDYBROOK DR. | DRAWING BY:<br>R. LANZAFAME<br>N. WAGNER |  |
|                                                                                    | DESCRIPTION:<br>House Mapping P3         | DATE OF INSPECTION:<br>8/25/14         | DATE OF DRAWING:<br>8/25/14              |                                                                                       |



Figure C-P3-2: [NSF-GEER; N 38.3046 W 122.3428; 08/25/14 15:26]



Figure C-P3-3: [NSF-GEER; N 38.3046 W 122.3428; 08/25/14 15:28]