FLOOR AREA (CONT.) DRGS: A1-A9, AB1 - AB4

(II) FIRST FLOOR (ELEV. 556.0') (NOTE: ALL NEW FRAMING SEE S-DWGS.)

(A) HABITABLES AREA

$A = [(24')(40.5')] - [(2')(6.5') + (1.7' \times 4.75') + (13.5')(6' \text{ MEASURED}) + (5.25')(11') + (5.5' \times 6.5')]$ Elev.

$= 1628 - 222$

$= 1,406 \text{ FT}^2$ ⟸

(B) DECK AREA (ELEVATED DECK)

$B = [(13.5')(6') + (15')(12')] + [(18' \times 3.75') + (9')(3.5')]$

$= 360 \text{ FT}^2$ ⟸

(C) ONE FLIGHT STAIR TO LIGHTWELL

(D) POWDER ROOM ⟸

(E) ONE ELEVATOR STOP ⟸

(F) ONE FIRE PLACE ⟸

FLOOR AREAS (CONT.) DRGS: A1 – A-9, AB1 – AB4

(III) SECOND FLOOR (ELEV. 545.5')

NOTE: ALL NEW FRAMING – 1/2 FL. AREA WITH 14" CONC. SLABS; FOR ESTIMATION, USE TYPE II-B FOR 2ND FLOOR.

(A). HABITABLE AREA

$A = [(43.5')(40.5')] - [(5.25')(17') + (5.5' \times 5.5') + (3.1' \times 5.5') + (1.5' \times 4.75') + (3.75' \times 11.75')]$ (Elevator)

$= 1,762 - 191$

$= 1,571\ FT^2$ ⟸

(B) DECK AREA (ELEV. AREA)

$B = [(17.5')(3') - (1/2)(3')(8.75')] + [(1/2)(3.75')(11.75')]$

$= 39 + 22$

$= 61\ FT^2$ ⟸

(C) TWO(2) BATHRMS + 1 MASTER BATHRM ⟸

(D) CONC. DECK AREA

$D = (9' \times 17') = 153\ FT^2$ ⟸

(E) ONE ELEVATOR STOP ⟸

(F) ONE FIRE PLACE ⟸

FLOOR AREA (CONT.) DRGS: A1 → A-9, AB1 - AB4

(III) THIRD FLOOR (ELEV. 535') NOTE: CONC. FOUNDATION SLAB

(A) HABITABLE AREA

A = 1,571 FT² (SAME AS 2ND FLOOR) ←

(B) DECK AREA (ELEVATED AREA)

B = [(13')(40.5') + (3.33')(6.5')] - [(½)(6.5')(11.25') + (½)(26.75')(8.7')]

= 395 FT² ←

(C) TWO BATHROOMS ←

(D) STORAGE AREA

D = (20')(9.5') = 190 FT² ←

(E) ONE ELEVATOR STOP ←

(F) ONE FIRE PLACE ←

TOTAL COST (SF DBI - COST SCHEDULE, MARCH 2009)

(A) HABITABLE AREA = (302 + 1,406 + 1,571 + 1,571) FT²
4,850 FT²

NON-RATED II (COUNTED FOR PARTITIONS & MEP)

SUBTOTAL = [(302 + 1,406 + 1,571)($155.07)] + [(1,571)($155.07)(1/3)]
= $508,474 + 81,204 = $589,678 ⟸

(B) BALCONIES & DECK & DRIVEWAY

B = (394 + 360 + 61) FT²
= 815 FT²

(NOT ACCOUNTED 395 FT² AT PATIO)

SUBTOTAL = (815 FT² X $64.97) = $ 52,950 ⟸

(C) BATHROOMS: 3/4 BATH, 1-POWDER RM, 5-BATHRMS.

SUBTOTAL = (4 X $11,329.42) + (1/2 X 11,329.42) + (3/4 X 11,329.42)
= $59,479 ⟸

(D) KITCHEN = $11,754 ⟸ SUBTOTAL

(E) STORAGE = (190 FT² X $61.79) = 11,740 ⟸ SUBTOTAL

TOTAL COST

(F) SPRINKLER SYSTEM = (4,850 + 190) FT² × $6.22/FT²
(HOB. AREA, storage)

= $31,348 ← SUBTOTAL

(G) FIREPLACE = (3 FIRE PLACE)($3,586.74)

= $10,760 ←

(H) ELEVATOR SHAFT = $27,836

ELEVATOR STOP (4) = $7,329 × 4 = $29,316

SUBTOTAL = $57,152 ←

TOTAL COST = (A + B + C + D + E + F + G + H)

= $(589,678 + 52,950 + 59,479 + 11,754
+ 11,740 + 31,348 + 10,760 + 57,152)

= $824,861 ← TOTAL

FOUNDATION

THIRD FLOOR & FOUNDATION DRG. SK1, 92

(A) CONC. VOLUMES - RETAINING WALL: (560'-535')

LINE (1) $= \frac{(1.67')(40.5')(25')}{27\ FT^3} = 62.5\ YD^3$

(556'-535')

LINE (A-D) $= \frac{(1.17')(48.5')(21')}{27} = 44\ YD^3$

LINE (E-D) $= \frac{(1.17')(40')(21')}{27} = 36\ YD^3$

LINE (B) $= \frac{(1.67')(28')(10')}{27} = 17\ YD^3$

LINES (3) & (16) $= \frac{(1.16')(26')(10')}{27} = 11\ YD^3$

LINE (1) $= \frac{(10/12')(40.5')(5')}{27} = 6.25\ YD^3$

PATIO WALL $= \frac{(10/12)(40.5')(5')}{27} = 6.25\ YD^3$

24" MAT $= \frac{(2')(40.5')(27')}{27} = 81\ YD^3$

18" MAT $= \frac{(1.5')(40.5')(16')}{27} = 36\ YD^3$

PATIO 12" MAT $= \frac{(1')(394)FT^2}{27} = 14.5\ YD^3$

1. FOUNDATION (CONT.)

(A) FOUNDATION CONC. COST (RETAINING WALL)

TOT. CONC. VOLUME = (62.5 + 44 + 36 + 17 + 6.25 + 6.25 + 81 + 36 + 14.5 + 11)

= 314.5 YD^3

SUBTOTAL COST = $(314.5\ YD^3)(\$813.47/YD^3)$

= $\$255,836$ ⟸

(B) CROWN TERRACE STREET RETAINING WALL: DWG. SK1 & SK5, S-9

CONC. VOL. (USE AVEG. HEIGHT 6' & 40' LENGTH)

CONC. VOL. = $\left[(10/12')(6')(40') + (1.5')(6')(40')\right](1/27)$ (BASE)

= 20.7 YD^3

18"ϕ CAISSONS = (11 CAISSONS)(14' DEEP)($\$90.80$/FT) = $\$13,983$

∴ SUBTOTAL = $(20.7\ YD^3)(\$813.47/YD^3)$ +

= 16,838 + 13,983

= $\$30,821$ ⟸

FOUNDATION

(9) MAT CAISSONS DWG S-2, S-9, S-10

NO. 18"ϕ CAISSON = 24, 20' DEEP Cost/Ft = (77.89/Ft) + (129.51 - 77.89)/4
= $90.80/Ft

NO. 18"ϕ CAISSON = 8, 14' DEEP

(a) CAISSON SET-UP COST = $10,838

(b) COST (18"ϕ CAISSON) = (24)(20' DEEP)($90.80/Ft)
= $43,584

(c) COST (18"ϕ CAISSON) = (8)(14' DEEP)($90.80/Ft)
= $10,170

∴ TOTAL CAISSON COST (a+b+c) = ($10,838 + $43,584 + 10,170)
= $64,592 ⟸

125 CROWN TERRACE

FOUNDATION

TOTAL FOUNDATION COST (NOT INCLUDE FILL & EXCAVATION)

TOTAL COST = A + B + C

= ₱(255,836 + 30,821 + 64,592)

= ₱351,249 ⟵

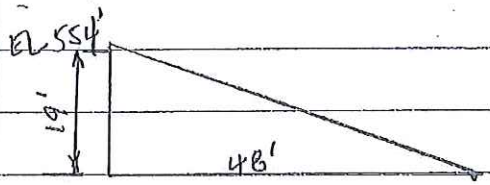
NOTE: DRAINAGE SHOWN ON DWG. SK5 ASSUMED TO BE INCLUDED WITH CONC. RETAINING WALL & MAT FOUNDATION

125 CROWN TERRACE

EXCAVATION & FILL

(A) EXCAVATION (DWGS: SK1, SK2, SK3, G2

NOTE USE THE AVERAGE VOLUME (ESTIMATED FROM ABOVE DWGS.)



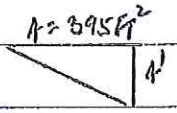
NOTE: WIDTH OF HOUSE = 40.5'

$$\text{VOLUME} = \frac{(19')(48' \times 40.5')}{27} = 1{,}368\ \text{YD}^3$$

$$\text{SUBTOTAL COST} = 1{,}368\ \text{YD}^3 \times \$69.59/\text{YD}^3$$

$$= \$95{,}199 \longleftarrow$$

(B) FILL (PATIO AREA = 395 FT²); (DEPTH OF FILL ≈ 4' AVG.)



$$\text{VOLUME} = \frac{(395\text{FT}^2)(4')(1/2)}{27}$$

$$= 29\ \text{YD}^3$$

$$\text{SUBTOTAL} = (29\ \text{YD}^3)(\$47.56/\text{YD})$$

$$= \$1{,}379 \longleftarrow$$

∴ TOTAL EXCAVATION & FILL = $95{,}199 + $1{,}379 =

$$= \$96{,}578 \longleftarrow$$

125 CROWN TERRACE

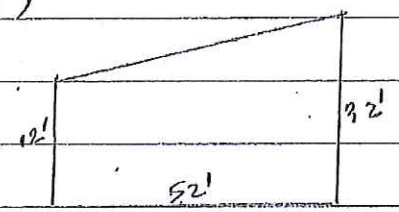
SHOTCRETE/SOIL NAIL ;

(A) SHOTCRETE/SOIL NAIL DWGS: SH1-N TO SH2-N;
SH1-S;
SH1-W

(a) WEST SHOTCRETE WALL (SH1-N)

AREA = SCALED: $\left(\frac{12+32}{2}\right)(52')$

$= 1{,}144\ FT^2$



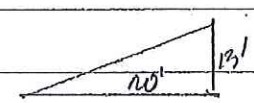
$COST/FT^2 = \$129.21 + (258.43 - 129.21)\ 10'/30' = \$172.28/FT^2$

$SUB\ COST = 1{,}144\ FT^2 \times \$172.28/FT^2$
$= \$197{,}088$

(NOTE: PART OF THE SOIL NAILS COULD BE PROJECTED TO PUBLIC WAY!)

(b) SOUTH SHOTCRETE WALL

AREA = $\frac{(20')(13')}{2} = 130\ FT^2$



$SUBTOTAL = (130\ FT^2)(\$129.21/FT^2$
$= \$16{,}797$

∴ TOTAL SHOTCRETE WALL = $(\$197{,}088) + (\$16{,}797)$
(125 CROWN TERRACE) $= \$213{,}885$ ⟸

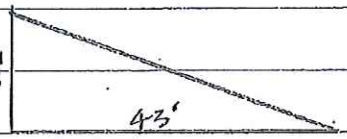
125 CROWN TERRACE

(A) SHOTCRETE WALL (SOUTH)

DWGS: SH1-N, SH2-N, S-2

(* NOTE: THIS WALL IS WITHIN "115 CROWN TERRACE" AND SHOULD BE UNDER SEPARATE PERMIT)

AREA = $\frac{28' \times 43'}{2}$ = 602 FT²



COST = (602 FT²)($172.28/FT²)

= $103,712 ; USE $103,000 ←

(* NEED SEPARATE PERMIT TO BE FILED UNDER 115 CROWN TERRACE)

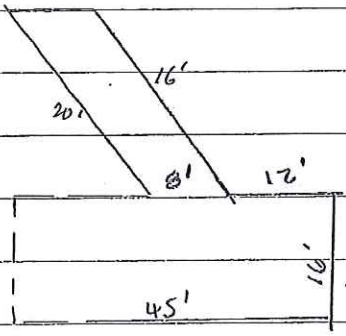
CONSTRUCTION BERM/RAMP

(A) BERM & RAMP Ref Dwg: SK-4

(a) SOLDIER PILE = 15 (W10X45), LENGTH 15' (AVG.)

SUB COST = (15)(15')($65.42/FT)
= $14,719

(b) WOOD LAGGING (ASSUME 5' HEIGHT AVG.)



AREA = (20+16+12+16)5'
= 320 FT²

SUBCOST = (320FT²)($21.05/FT²)
= $6,736

(c) RAMP (FILL VOLUME) (ASSUME 5' HEIGHT AVG FILL)

FILL VOL = $\frac{\left[(16)(45') \left(\frac{20+16}{2}\right)(8')\right] 5'}{27}$

= 160 YD³

SUBTOTAL = (160 YD³)($47.56/YD³)
= $7,609

(A) BERM & RAMP (CONT.)

TOTAL COST = a + b + c

= $(14,719 + 6,736 + 7,609)

= $ 29,064 ←

1215 CROWD TERRACE

TEMPORARY CRIBBING

REF. DWGS: SK-3, SK-4, SK-5

BASED ON VALUE PROVIDED BY "MARSHALL VALUATION SERVICES"
SEE ATTACHED SHEET PROVIDED BY
TECHNICAL SERVICES MANAGER: DAVID LEUNG

TOTAL COST = $43,134 ⟸

REMEDIATION COSTS

Pg. 17 of 17

DEMOLITION

Costs presented are average costs of removal per square foot of total building floor area, except as noted, including loading and hauling, but not dump fees. It is also assumed that the materials have no salvage value. For individual unit costs, see prior page.

Costs for removal vary greatly depending on the size and complexity of the job and extent of contamination regarding hazardous materials. The following cost ranges are in some cases based on one or only a few removal projects and should be considered as very rough guides. Due to the number of variables involved, we would suggest that, wherever possible, survey, bid or contract costs be obtained.

BUILDING DEMOLITION

(Cost range per square foot)

Class A:	$4.79 – $7.05	Class D:	$3.21 – $ 4.95
Class B:	6.25 – 8.60	Class S:	2.90 – 4.79
Class C:	3.79 – 5.65	Gutting only:	6.65 – 20.80

Small residences, total cost (approximately 1,000 – 1,500 sq. ft. per floor):

1-story: $3,225 – $7,550 2-story: $4,300 – $10,400 3-story: $5,700 – $12,500

SEISMIC RETROFITTING

EARTHQUAKE (HURRICANE) REINFORCEMENT: Complete foundation anchorage retrofit for small (approximately 1,000- to 1,500-square-foot) raised-floor residences cost $3,050 to $6,050.

UNIT COSTS	COST RANGE
Sill plate anchors (6' o.c.), each	$ 38.75 – $ 55.00
Rim joist anchoring (2' o.c.), each	29.00 – 44.75
Pier joist straps, each	25.50 – 59.00
Cripple, shearwall sheathing, per sq. ft.	1.58 – 3.11
Truss/rafter ties, each	38.75 – 62.00
Beam anchors, each	55.00 – 120.00
masonry construction	230.00 – 470.00

Per M&S Recommendation (attached).

MISCELLANEOUS

D. Leung 12/26/13

HOUSE LIFTING (elevated above flood plain): Cost $7,750 – $14,400 for raised floor to $20,800 – $34,500 for slab on grade residences. Add $8,500 – $17,100 for fill foundation, $16,900 – $27,900 for full-story raised substructure. (LOCAL MULTIPLIER)

½($20,800 + $34,500) × 1.56 = $43,134.00 XK

HOUSE MOVING (excluding new foundations or utilities): Cost $11,900 – $21,600 for a one-story residence (approximately 1,000 to 2,000 square feet), and $9,650 – $16,100 for a two-story residence (ground floor area of 500 to 1,000 square feet) up to a 5-mile distance. For masonry structures, add 50%.

HAZARDOUS MATERIAL REMOVAL

RADON REMOVAL: Residential basement ventilation retrofit costs $925 – $1,400 for a passive exhaust pipe ventilation system plus $315 – $525 for active fan and alarm.

ASBESTOS REMOVAL:	LOW COST	AVERAGE	GOOD	HIGH COST
Full abatement	$21.90	$29.75	$40.50	$55.00
Spot removal	8.60	11.40	15.10	20.50
Encapsulation	1.58	2.05	2.69	3.48
LEAD REMOVAL:				
Full abatement	$9.25	$11.80	$15.10	$19.60
Spot removal	7.90	9.25	11.10	13.20
Encapsulation	2.74	3.48	4.48	5.80
GRAFFITI REMOVAL:	$1.05	$1.26	$1.42	$1.58

SITE DECONTAMINATION: Biological soil remediation costs have averaged $100 per cu. yd. for land treatment (tilled soil-conditioning farming), $180 per cu. yd. for bioventing vapor extraction (air stripping and soil treatment) to $285 per cu. yd. for full bioreactor treatment (active slurry-aeration mixing), with costs having varied plus or minus 50%.

GROUND WATER CLEANUP: Pump and treat remediation costs have averaged $.11 to $.16 per gallon treated per year while permeable reactive barrier treatment systems averaged $.47 to $1.00 per gallon treated per year, with costs having varied plus or minus 50%.

STORMWATER MANAGEMENT

(Costs include trenching and backfill)

	COST RANGE
Polyethylene chamber system, complete, per gallon	$1.11 – $2.26
UNIT COSTS	
Chamber only (70 – 425 gallon), each	$57.00 – $250.00
Pipe drainage system, 10", per linear foot	13.20 – 16.10
12"	15.30 – 18.40
24"	29.75 – 34.75
36"	52.00 – 57.00
48"	84.00 – 89.00
Bioswale detention system, cost per sq.ft.	4.16 – 6.90
Compost filter berm system, cost per linear foot	1.95 – 4.69

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Tom, Hanson

From: Tom, Hanson
Sent: Friday, December 27, 2013 10:52 AM
To: Leung, David
Cc: Sweeney, Edward; Hui, Tom
Subject: 125 Crown Terrace - Estimated Construction Value Based with "DBI Cost Schedule, March 2009"
Attachments: 201312271039.pdf

David,

As assigned, I have completed the estimation for the above project. I would appreciate your review/comments ASAP.
I have the record drawings and you can use them for your checking!
If you have any questions, please contact me!
Thanks!

Hanson Tom, S.E.
Principal Engineer, DBI
1660 Mission St. 2nd Fl.
San Francisco, Ca. 94103
Tel: 415-558-6157
Fax: 415-558-6436

3) SAC Evaluation Report

(by Steven Lew, S.E.)

Tuan and Robinson
Structural Engineers, Inc.

Eugene Y. Tuan, S.E.
Alan Robinson, S.E.
Timothy C. Mathison, P.E.
Steven F. Lew, S.E.

December 31, 2013

By Electronic Mail

Tom C. Hui, SE, CBO
Director
Department of Building Inspection
City and County of San Francisco
1660 Mission Street, Sixth Floor
San Francisco, CA 94103

Re: 125 Crown Terrace – SFDBI Structural Advisory Committee
Review of Engineering Report in Response to Complaints Nos. 201343501 and 201343861

TRSE Reference Number: 2013.061.01

Dear Mr. Hui:

As part of the SFDBI Structural Advisory Committee, the following is my review of the Engineering Report for 125 Crown Terrace, dated December 23, 2013, and produced by Santos and Urrutia Structural Engineers, Inc. This report was produced in response to events occurring on December 16, 2013, resulting in Complaints Nos. 201343501 and 201343861.

There are the following comments:

1. The Collapsed Temporary Shoring Plan shows a total of three cribbing towers, a future tower, and two shoring beams. The condition shown on plan differs from the narrative, which indicated three towers along the north side of the building and two towers with a shoring beam along the south side. Please clarify this discrepancy.
2. The Emergency Shoring Plan shows that the existing tree trunk near the southeast corner of the lot will be shaped to accept 6x8 wood members to temporarily brace Building Zone 3. It is suggested that if possible, additional blocks/shims be placed between the tree trunk and the new adjacent retaining wall in the event the tree trunk is not stable. Verify adequacy of 6x8 wood members given their apparent long unbraced length and connections to the existing building. Verify that 6x8 wood members are rigidly attached at floor level to the existing building.
3. Verify if additional lateral loads (wind, seismic, other environmental) need to be considered in design of the temporary building supports during construction.
4. Clarify if additional temporary support is required for the south side of Building Zone 2 (temporary braces, chains, etc.).
5. Verify adequacy of existing soldier beams to resist additional loads from downhill building zones due to proposed chain restraints. Are chains themselves adequate for such loads?
6. The Mitigation Plan sheet indicates that Building Zone 2 will be relocated at Elevation 535' on W6 beams supported on 4'-0" high cribs upon completion of grading and leveling. Verify adequacy of W6 shoring beams and cribs shown and of existing framing to span between W6 beams. Clarify how Zone 2 will be supported during grading and leveling operations.

7. The Mitigation Plan sheet also indicates that Building Zone 2 is to be raised to Elevation 568' after completion of the foundation. Confirm if Zones 1 and 3 are to be raised to this level. Will an intermediate shoring plan showing temporary supports at Elevation 568' be required? Submit such a plan if so required with all required documentation.

8. The narrative discusses the addition of a shear wall at the northernmost building segment. This shear wall is not shown on any of the drawings in the report. Clarify intent of shear wall. Is this shear wall designed as a permanent wall for the completed building or is it designed for the temporary condition? Verify adequacy of shear wall design if so required.

Please note that Tuan and Robinson Structural Engineers Inc. makes no warranty, either expressed or implied, as to any findings, designs, recommendations or professional advice except that they were prepared in accordance with generally accepted professional engineering practice.

We trust this is the information you were seeking. Please do not hesitate to call should you have further questions or comments.

Very truly yours
Tuan and Robinson Structural Engineers, Inc.

Steven Lew, SE
License No. S4180, exp. 9/30/2015

cc: Edward Sweeney, SFDBI
Hanson Tom, SFDBI

4) EOR Reports

(by Santos & Urrutia Structural Engineers, Inc.)

SANTOS & URRUTIA
STRUCTURAL ENGINEERS INC

RECEIVED
DEC 23 2013
DEPT. OF BUILDING INSPECTION
THIS PLAN MEETS THE QUALITY STANDARD FOR IMAGING ACCEPTED

December 23, 2013

Mr. Hanson Tom
Department of Building Inspection
City of San Francisco
1660 Mission Street
San Francisco, CA 94103

Re: Structure Collapse: 125 Crown Terrace, San Francisco, CA

Complaint No.: 201343501 & 201343861
S&U Job: 9356
Block 2719B, Lot 003
Subject: Engineering Report

Mr. Hanson Tom,

At Director Tom Hui's request this is the engineering investigative report on 125 Crown Terrace.

Background

The original structure is one story of timber framing over a large crawl space. Under permit application 2011/10/06/6315, the building is in a process of being remodeled and added to. The addition is both vertical and horizontal, with the design adding floors under the existing structure. The permit was issued at the end of November 2013, which included both soil and structure shoring.

Construction commenced in the beginning of December 2013. In this process the building was placed on beams and cribbing with the lower crawl space walls removed. The house moving contractor decided that it was better to leave the building heavy (with plaster and finishes) in order to lessen the potential for wind uplift. The lower retaining walls were placed, the upper shoring beams and a portion of the upper wall was placed. In order to place the required retaining walls the beams and cribbing needed to be moved and readjusted several times.

On Monday, December 16, 2013 the contractor was in the process of moving the shoring towers to their latest locations. The building was supported by a beam to the north with three towers, a beam to the south on two towers and was in the process of digging the pit for the middle (future) tower. At 5pm of that day construction ceased, the excavator was left in place, under the house, with its arm in an inverted V.

The Failure

At 10:30pm, Monday, December 16, 2013, the south beam buckled, pulling the house off its cribbing toward the south. This pulled the north cribbing beam off its towers and the structure started to slide with the steel. At this point the eastern most portion of the structure landed and impaled itself on the arm of the excavator. Because the excavator was on a flat stable spot it did not move. This arrested the down hill movement of the structure. At this point the structure broke into three distinct sections; one eastern piece on the excavator and two western pieces resting on the eastern one. The southern most piece was listing towards the property to the directly to the south. In the attached calculations, they show that the southern beam was overstressed to 159% of allowable.

Temporary Stabilization

On December 17th, 2013, Santos & Urrutia obtained permit application 2013/12/17/4398 in order to provide emergency demolition of the southern most section of the building which was placing the greatest pressure on the excavator and was listing. The exterior walls were removed and retained for future use. Then the remaining portions were stabilized by chaining them back to the existing vertical soil shoring piles. The northern most and eastern portions were lightened (plaster and finishes removed) and a shear wall was added to the northern most section.

This stabilization is not recommended for any long term as weather can further destabilize the site.

Mitigation

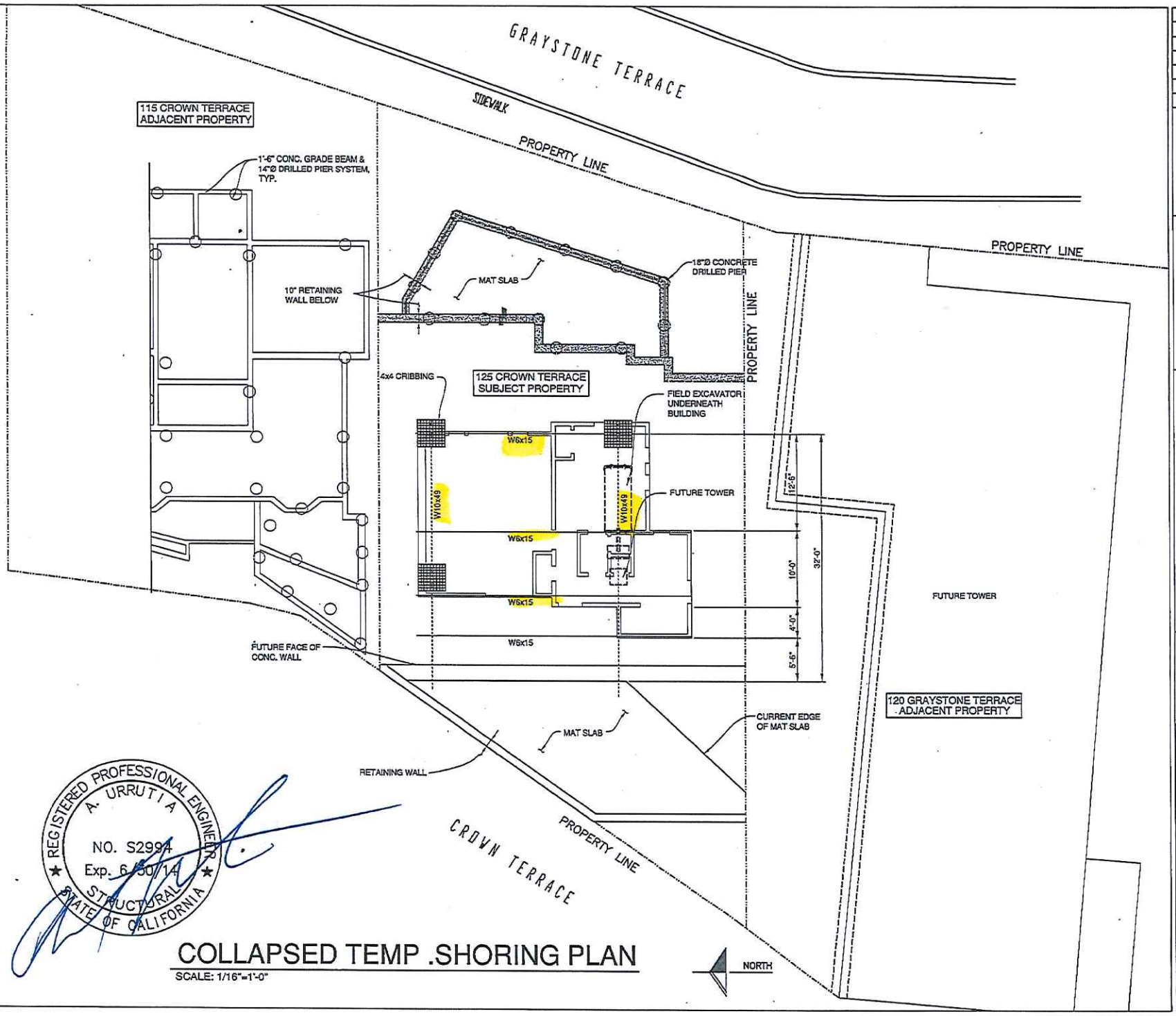
In order for construction to proceed, we will remove the walls of the eastern most section and retain them for reuse in their original position in the final structure, exposing the excavator. Stabilize the northern most section and move it to a flat space on the site. Demolish the remaining portions of the floor and remove the excavator. In the final design the walls that were retained (during the stabilization and mitigation) will be placed back to their proposed original locations.

Should you have any questions, please contact me.

Sincerely,

Albert Urrutia
Structural Engineer

Attachments: Collapse Temporary Shoring Plan, Beam Stress Calculations, Photos, Emergency Demolition and Stabilization Plan and Mitigation Plan



COLLAPSED TEMP .SHORING PLAN

SCALE: 1/16"=1'-0"

SANTOS & URRUTIA STRUCTURAL ENGINEERS
245 HARRISON STREET
SAN FRANCISCO, CA 94105
TELEPHONE (415) 243-7723
FAX (415) 243-7590

REVISIONS - BY

COLLAPSED TEMP SHORING PLAN

TEMPORARY SHORING PLAN
125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

Date:	12/20/13
Scale:	1/16"=1'-0"
Drawn by:	A.U.
Job No:	9356
Sheet	S1
Of 1	Sheets

STRUCTURAL CALCULATIONS FOR:

SHORING BEAM FAILURE

125 CROWN TERRACE

SAN FRANCISCO, CALIFORNIA

REPORT PREPARED BY:

SANTOS & URRUTIA, INC.
STRUCTURAL ENGINEERS
2451 HARRISON STREET
SAN FRANCISCO, CA 94110
Phone (415) 642-7722
Fax (415) 642-7590
Email – main@santosurrutia.com

S & U JOB # **9356**

DATE: December 23, 2013

PAGES: 2

125 CROWN TERRACE (#9356)
SAN FRANCISCO, CA

SHORING BEAM FAILURE

PURPOSE

THIS CALCULATION IS TO SHOW THE STRESS LEVEL OF THE EXISTING SOUTHERNMOST SHORING BEAM PRIOR TO BUCKLING AND COLLAPSE.

LOADS

ROOF/CEILING

ASPHALT SHINGLE ROOF	3 PSF
1 x SHEATHING	2.5 PSF
2 x 4 @ 16" O.C. (RAFTERS)	1.1 PSF
2 x 12 @ 16" O.C. (CEILING)	3.5 PSF
PLASTER + LATH	8 PSF
INSULATION	1 PSF
TOTAL	19.1 PSF

FLOOR

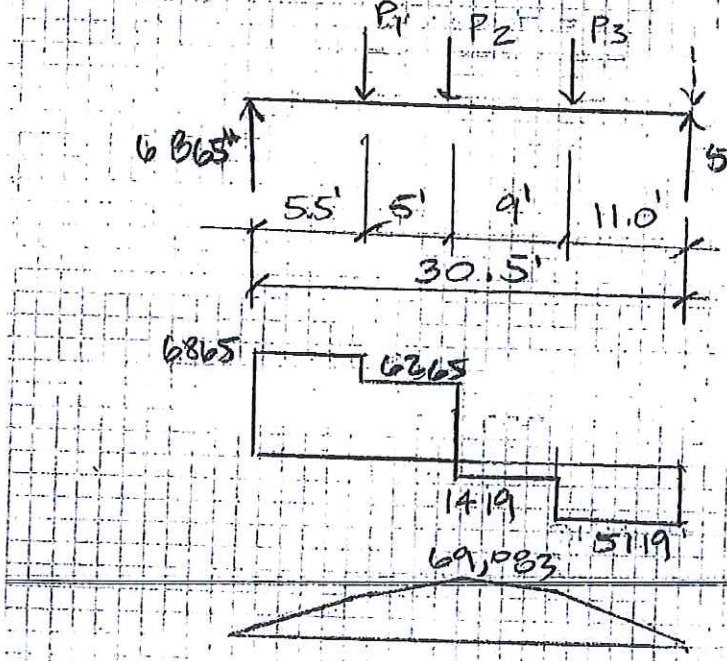
1 x SHEATHING	2.5 PSF
1 x HARDWOOD	3.0 PSF
2 x 12 @ 16" O.C.	3.5 PSF
TOTAL	9.0 PSF

WALLS

EXTERIOR SIDING		2.5 PSF
2×4 STUDS @ 16" o.c.		1.1 PSF
INSULATION		1.0 PSF
PLASTER		8.0 PSF
TOTAL		12.6 PSF

INTERIOR WALLS ADD 3PSF

LOAD TO BEAM W10X49



$P_1 = \left(\frac{4'}{2}\right)(8')(9.0+19.1) + \left(8+\frac{4}{2}\right)(12.6) = 600^{\#}$

$P_2 = P_1 + \left(\frac{10}{2}\right)\left(\frac{26}{2}+8\right)(3+9)$ (floor)
$+ \left(\frac{26}{2}+8\right)\left(\frac{22.5}{2}\right)(19.1)$ (roof)
$+ \left(\frac{26}{2}\right)(12.6)8' = 7684^{\#}$ (wall)

$P_3 = \left(\frac{12.5+10}{2}\right)(3+9)\left(\frac{26}{2}+6\right)$ (floor)
$+ \left(\frac{12.5+10}{2}\right)(8')(12.6)$ (ext. wall)
$= 3700^{\#}$

$f_b = \frac{69,083(12)}{S=54.6} = 15.18^{ksi}$

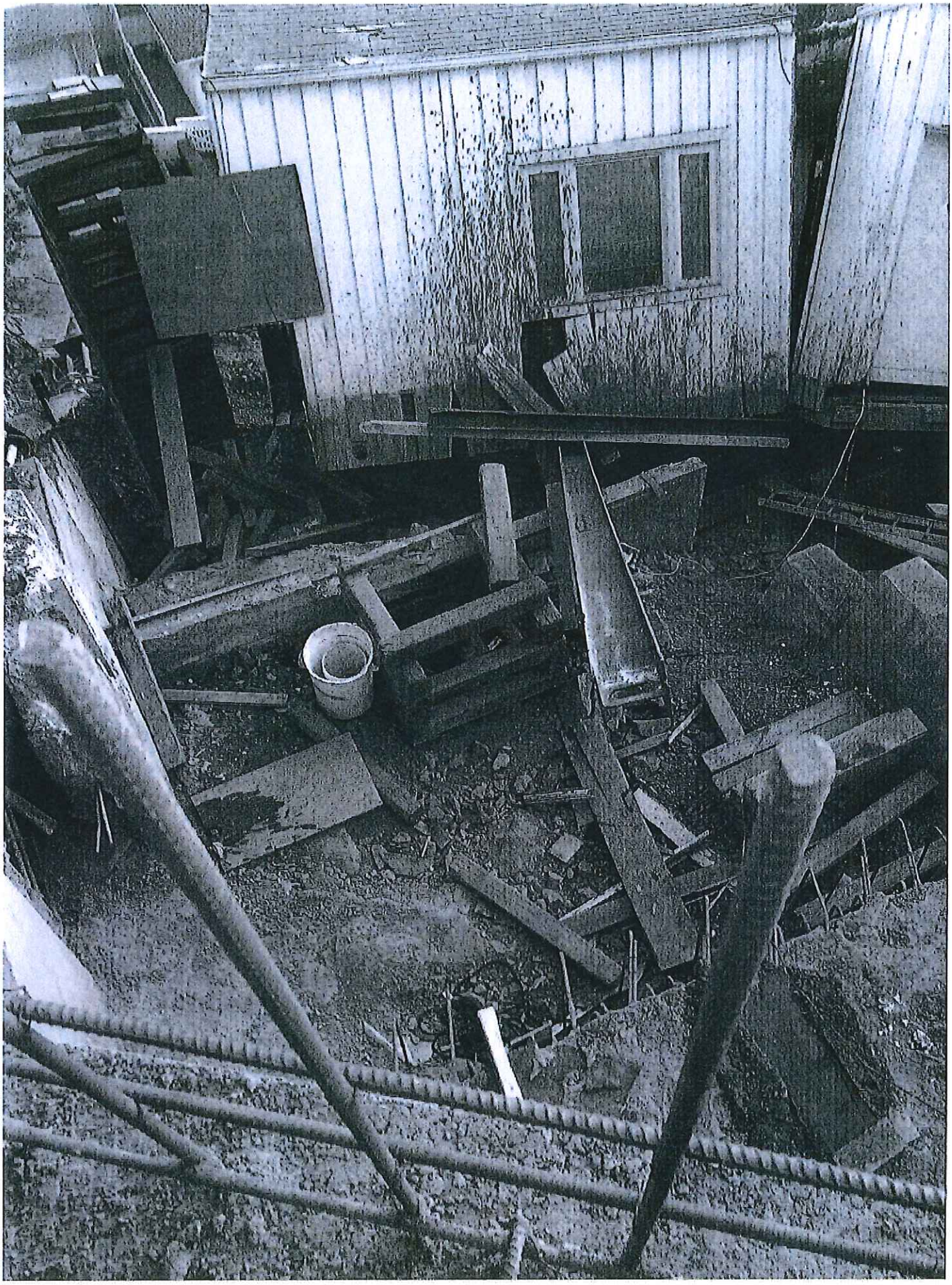
ALLOWABLE

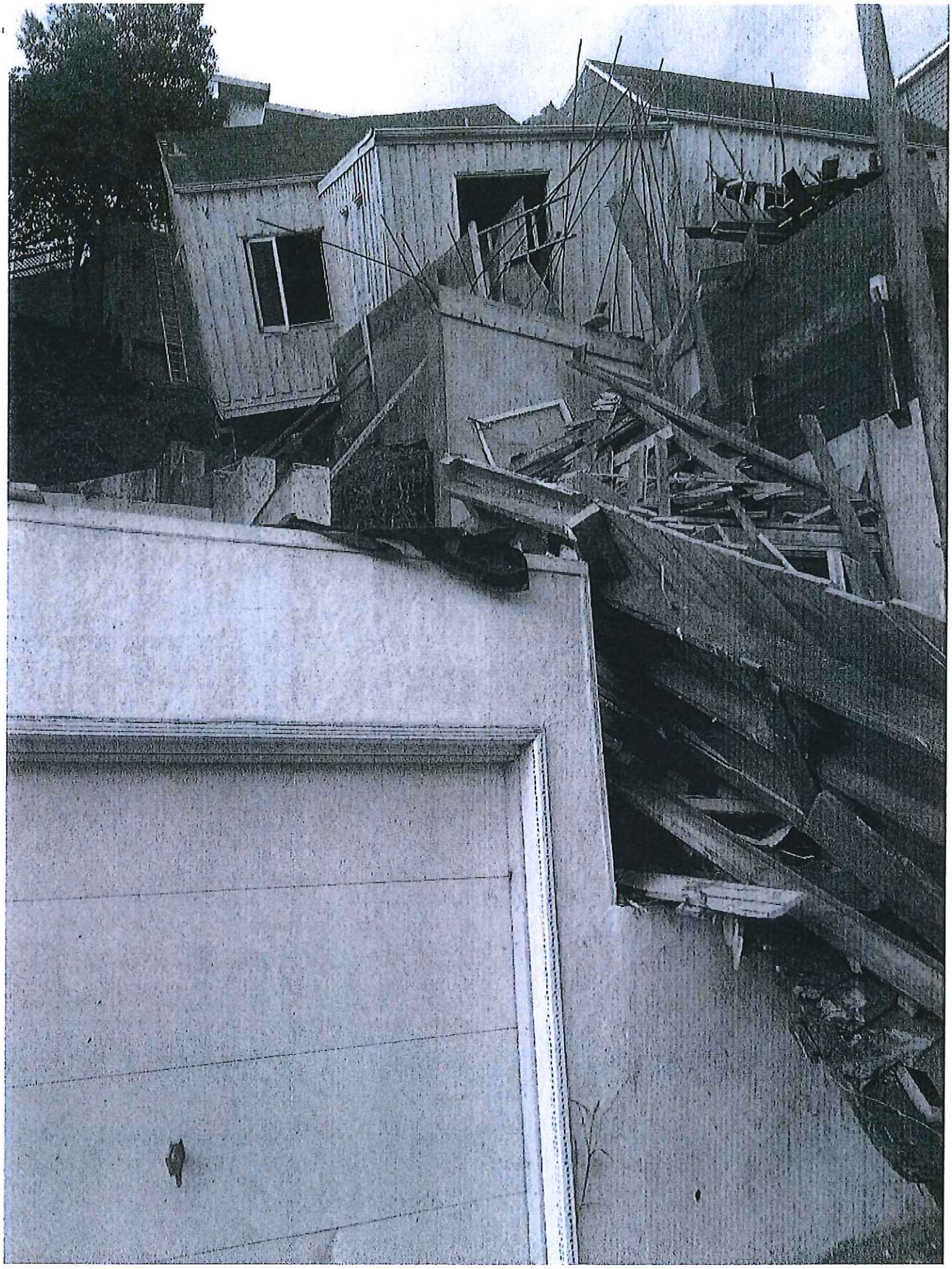
$\frac{\ell}{r_T} = \frac{30.5(12)}{2.74} = 133.5 > \sqrt{\frac{510\times10^3(1.0)}{36,000}} = 119$

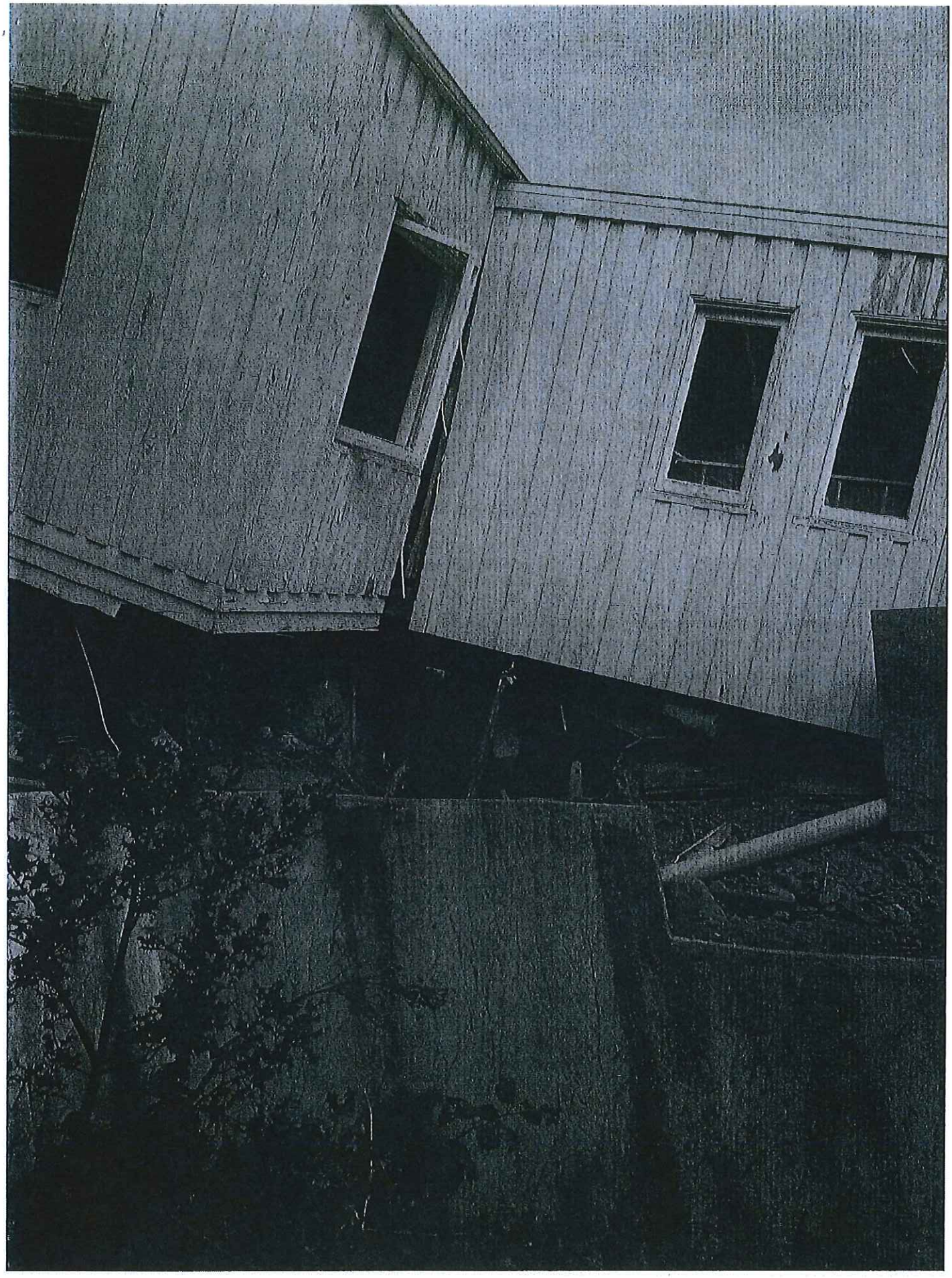
$F_b = \frac{170\times10^3(1.0)}{(133.5)^2} = 9.54^{ksi}$ ALLOWABLE

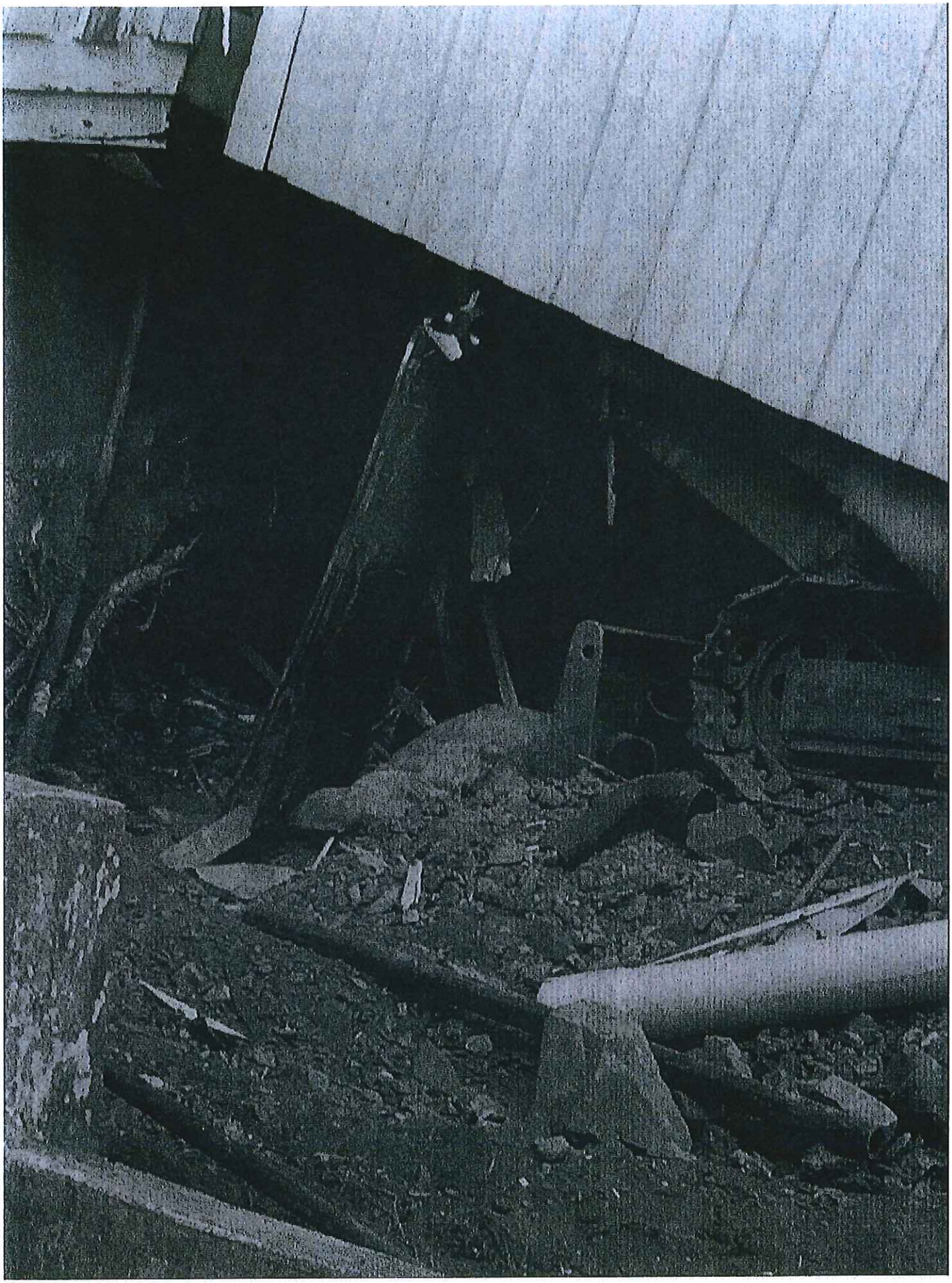
% OVER-STRESSED = 159%

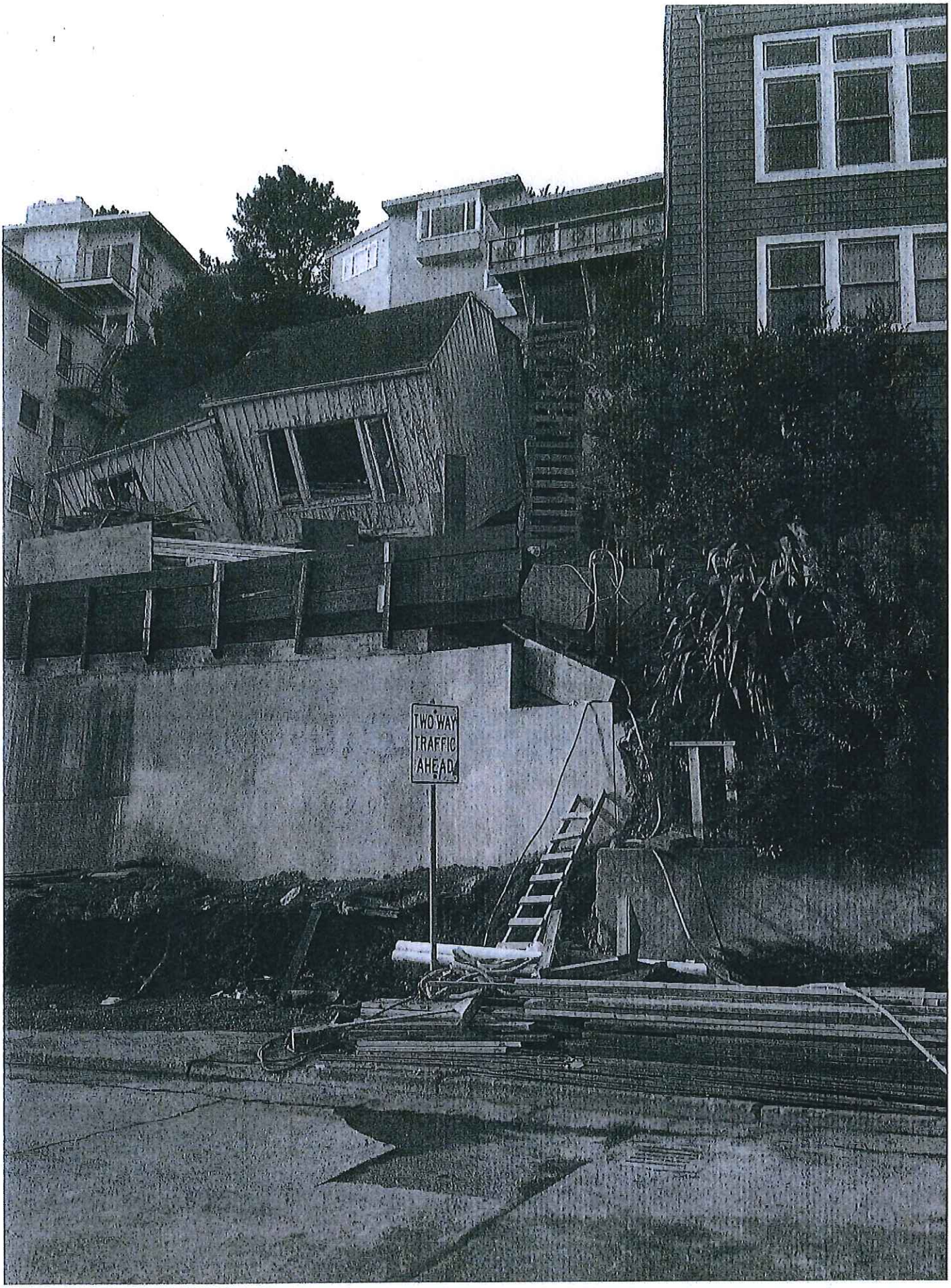
$\frac{15.18}{9.54} = 1.59$ or 159%

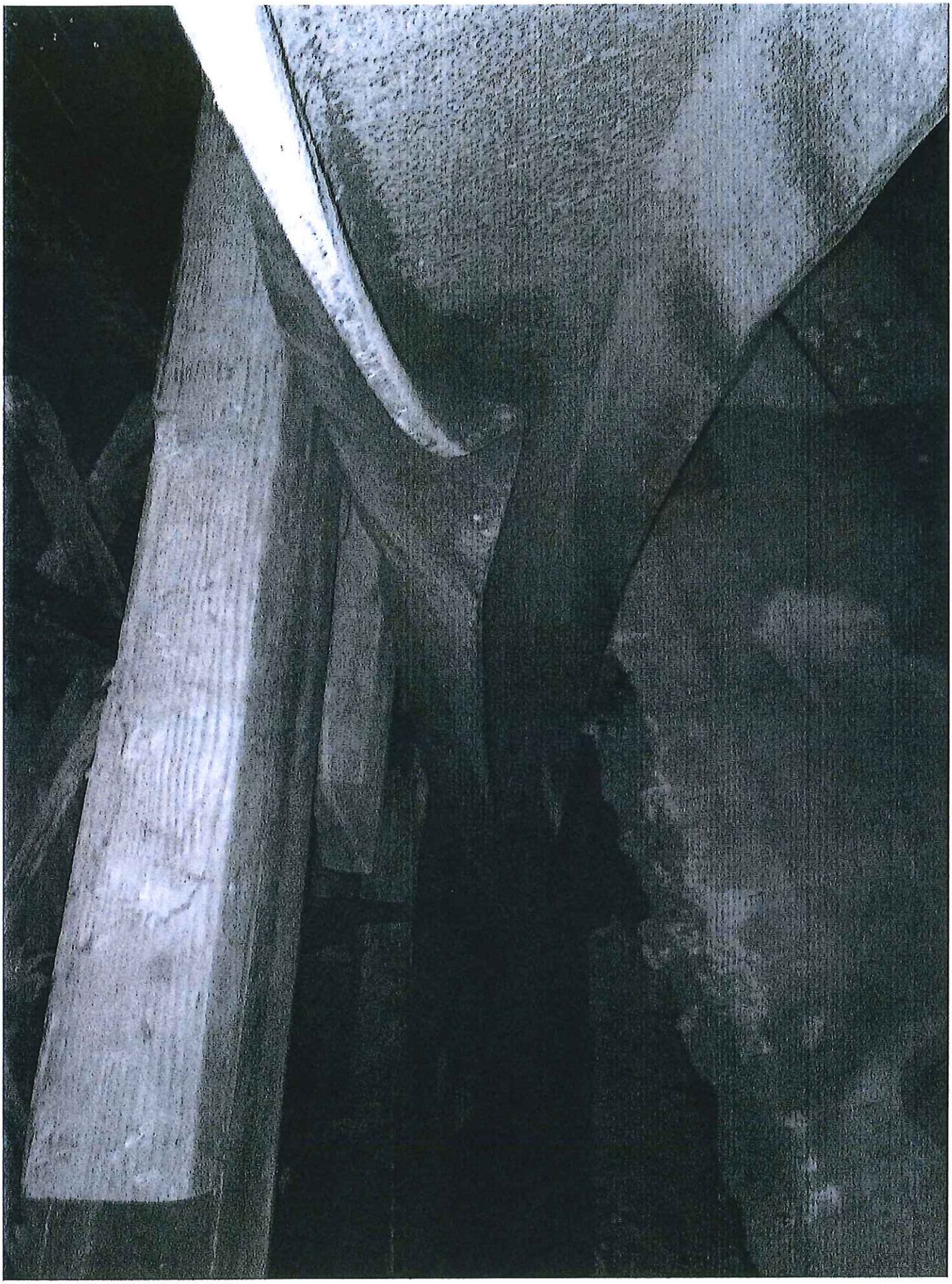


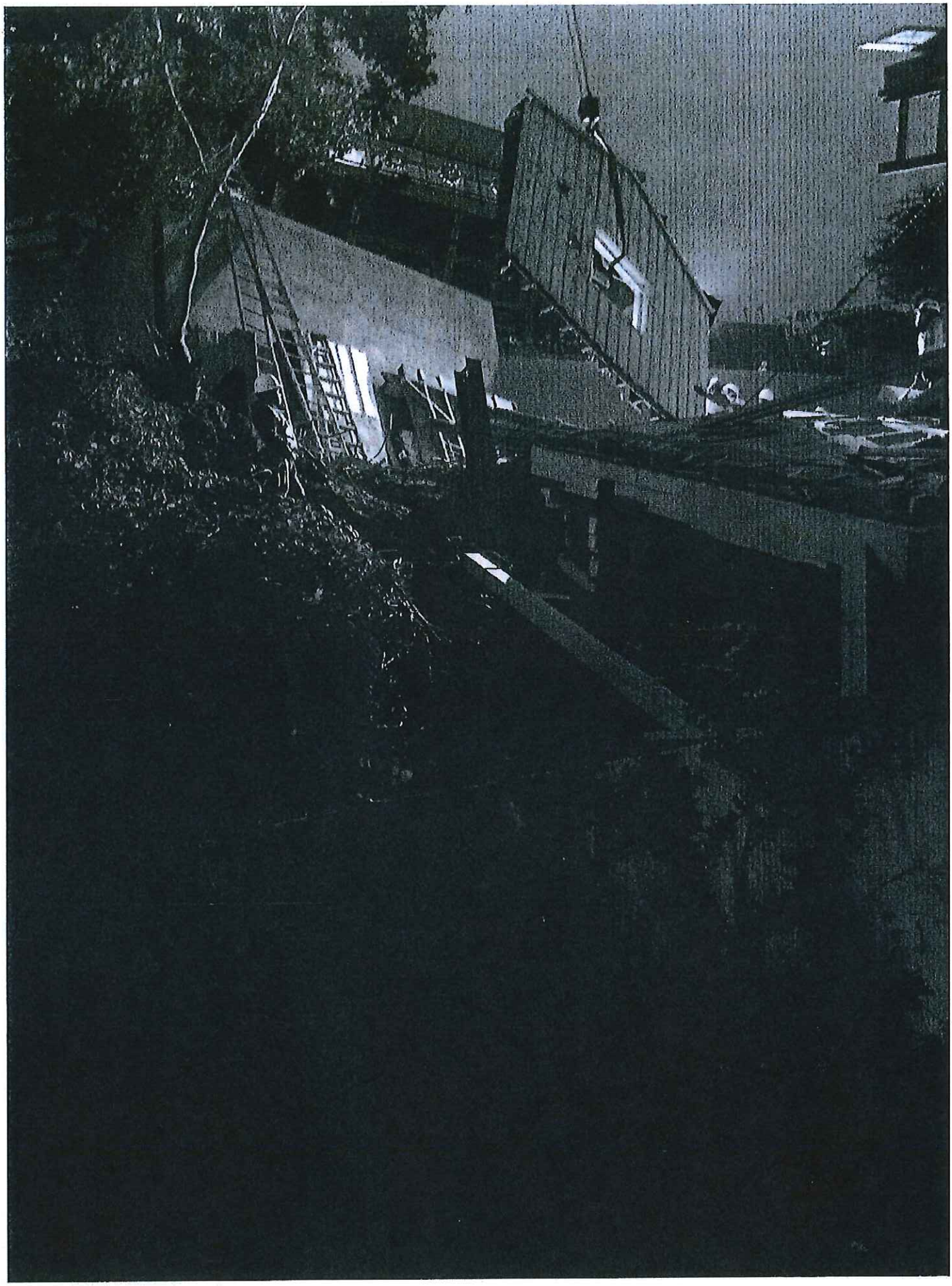


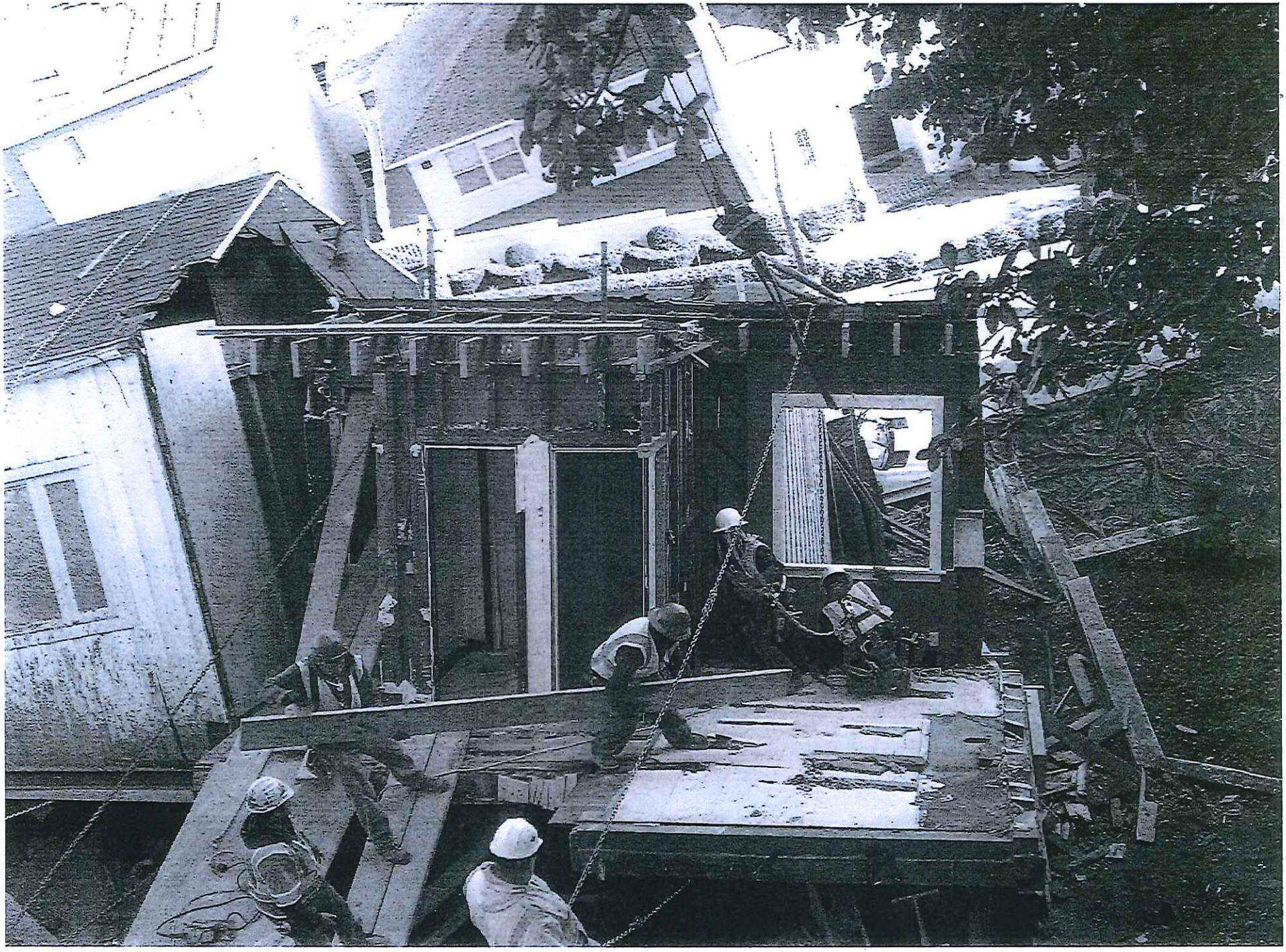





TWO WAY
TRAFFIC
AHEAD







PROJECT NAME: EMERGENCY SHORING/STABILIZATION
ADDRESS: 125 CROWN TERRACE
BLOCK: 2719B LOT: 003
CITY: SAN FRANCISCO, CA

BUILDING USE:
SINGLE FAMILY RESIDENTIAL

SCOPE OF WORK:
EMERGENCY SHORING AND STABILIZATION OF PARTIALLY COLLAPSED BUILDING.

CLIENT:
NAME: MEL MURPHY
ADDRESS: 125 CROWN TERRACE, SF, CA

ARCHITECT & STRUCTURAL ENGINEER:
NAME: RODRIGO SANTOS
COMPANY: SANTOS & URRUTIA STRUCTURAL ENGINEERS
ADDRESS: 2451 HARRISON STREET, SF, CA
PHONE: 415-642-7722

GEOTECHNICAL ENGINEER:
NAME: HAROLD LEWIS
COMPANY: HAROLD LEWIS & ASSOCIATES GEOTECHNICAL CONSULTANTS
ADDRESS: 2418 16TH AVENUE, SF, CA
PHONE: 415-665-9676
SOILS REPORT NUMBER: PROJECT SF-13-497-9
DATE OF SOILS REPORT: 5-28-13

GEOLOGIST:
NAME: PATRICK L. DRUMM
COMPANY: EARTH FOCUS GEOLOGICAL SERVICES, INC.
ADDRESS: 115 ORCHARD DRIVE, FREMONT, CALIFORNIA
PHONE: (510) 794-7495

DRAWING INDEX:

S1	TITLE SHEET
S2	SITE PLAN w/ SEQUENCE OF EMERGENCY SHORING/STABILIZATION OF (E) BUILDING

City and County of San Francisco
Department of Building Inspection

Gavin Newsom, Mayor
Vivian L. Day, C.B.O., Director

NOTICE

SPECIAL INSPECTION REQUIREMENTS

Please note that the Special Inspections shown on the approved plans and checked on the Special Inspections form issued with the permit are required for this project. The employment of special inspectors is the direct responsibility of the owner or the engineer/architect of record acting as the owner's representative.

These special inspections are required in addition to the called inspections performed by the Department of Building Inspection. The name of the special inspector shall be furnished to the district building inspector prior to start of work for which special inspection is required.

For questions regarding the details or extent of required inspection or tests, please call the Plan Checker assigned to this project or 415-558-6132. If there are any field problems regarding special inspection, please call your District Building Inspector or 416-558-6570.

Before final building inspection is scheduled, documentation of special inspection compliance must be submitted to and approved by the Special Inspection Services staff. To avoid delays in this process, the project owner should request final compliance reports from the architect or engineer of record and/or special inspection agency soon after the conclusion of work requiring special inspection. *The permit will not be finalized without compliance with the special inspection requirements.*

STRUCTURAL OBSERVATION REQUIREMENTS

Structural observation shall be provided as required per Section 1710. The building permit will not be finalized without compliance with the structural observation requirements.

Special Inspection Services Contact Information

1. Telephone: (415) 558-6132
2. Fax: (415) 558-6474
3. Email: dbi.specialinspections@sfgov.org
4. In person: 3rd floor at 1660 Mission Street

Note: We are moving towards a "paperless" mode of operation. All special inspection submittals, including final letters, may be emailed (preferred) or faxed. We will also be shifting to a paperless fax receipt mode.

Special Inspection Services
1660 Mission Street – San Francisco CA 94103
Office (415) 558-6132 – FAX (415) 558-6474 – www.sfdbi.org

SPECIAL INSPECTION AND STRUCTURAL OBSERVATION

A COPY OF THIS DOCUMENT SHALL BE KEPT WITH THE APPROVED STRUCTURAL DRAWING SET

JOB ADDRESS: 125 Crown Terrace APPLICATION NO.: ______ ADDENDUM NO. ______

OWNER NAME: Mel Murphy OWNER PHONE NO. (415) 300-4247

Employment of Special Inspection is the direct responsibility of the OWNER, or the engineer/architect of record acting as the Owner's representative. Special Inspector shall be one of those as prescribed in Sec.1704. Name of special inspector shall be furnished to DBI District inspector prior to start of the work for which the Special Inspection is required. Structural observation shall be performed as provided by Section 1710. A preconstruction conference is recommended for owner/builder or designer/builder projects, complex and high rise projects, and for projects utilizing new processes or materials.

In accordance with Sec. 1701;1702;1704 (2010 SFBC), Special Inspection and/or testing is required for the following work:

[illegible]

Prepared by: Rodrigo Santos Phone: 415-642-7722

FAX: 415-642-7590 Email: rsants@santosurrutia.com

Reviewed by: [signature] Phone: [illegible]

APPROVAL (Based on submitted reports)

DATE

QUESTIONS ABOUT SPECIAL INSPECTION AND STRUCTURAL OBSERVATION SHOULD BE DIRECTED TO: Special Inspection Services (415) 558-6132 or FAX (415) 558-6474

GENERAL STRUCTURAL NOTES

I. GENERAL

A. ALL CONSTRUCTION SHALL CONFORM TO THE CALIFORNIA BUILDING CODE 2010 EDITION w/ AMENDMENTS BY LOCAL JURISDICTIONS.
B. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT JOB SITE BEFORE COMMENCING WORK AND SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT OR ENGINEER.
C. OMISSIONS OR CONFLICT BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF ARCHITECT AND RESOLVED BEFORE PROCEEDING WITH THE WORK.
D. DO NOT USE SCALED DIMENSIONS; USE WRITTEN DIMENSIONS OR WHERE NO DIMENSION IS PROVIDED, CONSULT THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
E. DETAILS SHOWN SHALL BE INCORPORATED INTO THE PROJECT AT ALL APPROPRIATE LOCATIONS WHETHER SPECIFICALLY CALLED OUT OR NOT.
F. FOR WATERPROOFING, FIREPROOFING, ETC. REFER TO DRAWINGS OTHER THAN STRUCTURAL.
G. SEE DRAWINGS OTHER THAN STRUCTURAL FOR: KINDS OF FLOOR FINISH AND THEIR LOCATION, FOR DEPRESSIONS IN FLOOR SLABS, FOR OPENINGS IN WALLS AND FLOORS REQUIRED BY ARCHITECTURAL AND MECHANICAL FEATURES, FOR ROADWAY PAVING, WALKS, RAMPS, STAIRS, CURBS, ETC.
H. HOLES AND OPENINGS THROUGH WALLS AND FLOORS FOR DUCTS, PIPING AND VENTILATION SHALL BE CHECKED BY THE CONTRACTOR, WHO SHALL VERIFY SIZES AND LOCATION OF SUCH HOLES OR OPENINGS WITH THE PLUMBING HEATING, VENTILATING AND ELECTRICAL DRAWINGS AND THESE SUB-CONTRACTORS.
I. NO PIPES AND DUCTS SHALL BE PLACED IN SLABS OR WALLS UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE ARCHITECT.
J. DRAWINGS AND SPECIFICATIONS REPRESENT FINISHED STRUCTURE. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING BUT NOT LIMITED TO SHORING AND TEMPORARY BRACING. THE SUBCONTRACTOR SHALL UNDERTAKE ALL NECESSARY MEASURES TO INSURE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE AND ADJACENT TO THE SITE. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT, ENGINEER SHALL NOT RELIEVE THE SUBCONTRACTOR OF SUCH RESPONSIBILITY.
K. NOTE THAT SHEET S1 IS A STANDARD COVER SHEET AND AS SUCH, NOT ALL TYP. DETAILS AND OR NOTES APPLY TO EVERY PROJECT.

II. DESIGN CRITERIA

A. APPLICABLE CODE: CALIFORNIA BUILDING CODE 2010 & SFBC 2010.
B. VERTICAL LIVE LOADS: (REDUCIBLE). ROOF: 20 PSF. FLOOR: 40 PSF. HALLWAYS & CORRIDORS: 100 PSF.

III. MATERIALS

A. CONCRETE:
1. REINFORCING STEEL: ASTM A615, GRADE 60. #4 AND SMALLER, GRADE 40.
2. CONCRETE: NORMAL WEIGHT U.O.N. WITH COMPRESSIVE STRENGTH OF THE FOLLOWING AT 28 DAYS:

FOOTINGS, MAT SLAB & DRILLED PIERS	3000 psi
WALLS, COLUMNS	5000 psi
STRUCTURAL SLAB (L.W. P.T. SEE S3.2)	5000 psi

3. MINIMUM CONCRETE COVER FOR REINFORCING STEEL:
   a. SURFACE POURED AGAINST GROUND 3"
   b. ~~FORMED SURFACES-BELOW-GRADE~~ 2"
   c. SURFACES EXPOSED TO WEATHER 2"
   d. BEAM BARS (INCLUDING STIRRUPS) 1-1/2"
   e. ALL OTHER 1"
4. ANCHOR BOLT EPOXY*: HILTI HIT-RE 500-SD. (ICC ESR-2322) OR SIMPSON SET-XP (ICC ESR-2508)
5. SCREW ANCHORS*: SIMPSON TITEN HD (ICC ESR-2713)

* USE COMPRESSED AIR TO BLOW THE DUST OUT OF ANCHOR BOLT HOLES.

B. CMU: UNITS 1500 PSI, MORTAR (TYPE 'S'), GROUT 2000 PSI

C. STEEL
1. SHAPES AND PLATES: ASTM A 36; TUBES: ASTM A500, GRADE B.
2. MOMENT FRAMES (BEAMS, COLUMNS): ASTM A992 OR A913 (50 ksi)
   MOMENT FRAMES (PLATES): A572, GRADE 50.
3. METAL STUDS, SEE S1.4, NOTES
4. METAL JOISTS. 50 ksi
5. BOLTS: ASTM A307, U.O.N.
6. WELDING ELECTRODES: E-70
   FOR FULL PEN WELDS USE CHARPY V-NOTCH WIRE, MIN. 20 ft lb @ 0 F
7. METAL DECKING, SEE S1.5

D. WOOD
1. FRAMING LUMBER – DOUGLAS FIR LARCH
   a. HEADERS, PLATES, JOISTS: NO.1
   b. STUDS, BLOCKING: NO.2
   c. ALL LUMBER IN CONTACT WITH CONCRETE: PRESERVATIVE TREATED DOUGLAS FIR (NOT CCA-C)
   d. POSTS AND BEAMS: NO.1
2. PLYWOOD SHEATHING
   a. SHEARWALL PLYWOOD : 1/2 INCH STRUCTURAL I, C-D EXTERIOR, APA RATED 32/16, ~~SEE 6/S1.1A SHEARWALL SCHEDULE FOR THICKNESS~~
   b. ROOF SHEATHING: 5/8 INCH STRUCTURAL II, C-D EXTERIOR APA RATED 32/16
   c. FLOOR SHEATHING: 3/4 INCH STRUCTURAL II, C-D EXTERIOR APA RATED 48/24
3. FRAMING HARDWARE AND JOIST HANGERS: AS MANUFACTURED BY SIMPSON STRONGTIE CO. OR APPROVED EQUAL. SIMPSON DESIGNATIONS USED. USE NAILS PER I.C.C. APPROVAL FOR EACH DEVICE.
4. COMMON NAILS, UNLESS OTHERWISE NOTED. SHORT NAILS MAY BE USED PROVIDED THEY HAVE COMMON CODE SPECIFIED MINIMUM EMBEDMENT. ALL NAILING TO BE PER IBC TABLE NO. 2304.9.1 UNLESS NOTED OTHERWISE.
5. GLU-LAM BEAMS: 24F-V4 (Fb=2400 PSI)
6. PARALLAM & MICROLLAM BEAMS AND TJI's TO BE FABRICATED BY TRUS JOIST.
7. FOR MICROLLAMS SEE CODE EVALUATION: ICC-ES ESR-1387
   8. FOR TJI JOISTS SEE CODE EVALUATION: ICC-ES ESR-1153

IV. EXPOSURE TO WEATHER:

A. STEEL:
1. ALL EXPOSED MEMBERS SHALL BE COATED WITH A ZINC RICH PRIMER.
2. BOLTS, NUTS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED.

B. WOOD:
1. ALL EXTERIOR TIMBER AND GLU-LAM BEAMS SHALL BE PRESSURE TREATED (BUT NOT CHROMATED COPPER ARSENATE) OR WOOD OF NATURAL RESISTANCE TO DECAY.
2. ALL EXTERIOR HANGERS AND OTHER SIMPSON TYPE PRODUCTS SHALL BE GALVANIZED.
3. ALL PLYWOOD SHALL BE OF AN EXTERIOR GRADE.
4. METAL CONNECTORS IN CONTACT w/ PRESSURE TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED w/ MIN. ZINC COATING OF G185.
5. ALL NAILS & ANCHOR BOLTS IN CONTACT w/ PRESSURE TREATED WOOD SHALL BE HOT DIPPED GALVANIZED.

V. ABBREVIATIONS

B.N.	BOUNDARY NAILING	S.A.D.	SEE ARCHITECTURAL DRAWINGS
DIA.	DIAMETER	S.O.G.	SLAB-ON-GRADE
E.N.	EDGE NAILING	S.S.	STAINLESS STEEL
H.P.	HIGH POINT	T.O.	TOP OF
L.P.	LOW POINT	TYP.	TYPICAL
LVL	LAMINATED VENEER LUMBER	U.O.N.	UNLESS OTHERWISE NOTED
L.W.	LIGHT WEIGHT	W.W.F.	WELDED WIRE FABRIC
M.L.	MICROLLAM		
PLWD	PLYWOOD SHEATHING		
PSL	PARALLEL STRAND LUMBER		
P.T.	PRESSURE TREATED OR POST-TENSIONED		

SYMBOLS

(E) WALL BELOW	STEEL COLUMN ABOVE
(E) WALL ABOVE	STEEL COLUMN BELOW
(N) CONC. WALL ABOVE	MOMENT CONNECTION
BRICK OR CMU WALL ABOVE	CONCRETE TOPPING OVER PLYWOOD
WOOD SHEARWALL (BELOW)	CONCRETE TOPPING OVER CORRUGATED METAL DECK
WOOD JOIST HANGER (HUS TYPE, U.O.N.)	CONCRETE COLUMN ABOVE
WOOD POST BELOW	CONCRETE COLUMN BELOW w/ DROPCAP
WOOD POST ABOVE (OR ABOVE & BELOW)	DRILLED CONCRETE PIER
HOLDOWN @ WOOD POST	PRECAST, PRESTRESSED CONCRETE PILE
	DIAGONAL ABOVE
	DIAGONAL BELOW

APPROVED Dept. of Building Insp. DEC 17 2013 Tom C. Hui, Director, Dept. of Building Inspection

SPECIAL INSPECTION REQUIRED PER SFBC SECTION 1704

Notify Structural Engineer of Record during Construction

RODOLFO BONADA, DBI DEC 17 2013

RECEIVED DEC 17 2013 DEPT. OF BUILDING INSPECTION ACCEPTED

2013/1217/4338

SANTOS & URRUTIA STRUCTURAL ENGINEERS
2451 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7722
FAX (415) 642-7590

REVISIONS | BY

TITLE SHEET
GENERAL STRUCTURAL NOTES

EMERGENCY SHORING/STABILIZATION
125 CROWN TERRACE
SAN FRANCISCO, CA

Date:	12/17/2013
Scale:	N/A
Drawn By:	R.S.
Job No:	9356
Sheet	S1
Of 2 Sheets	

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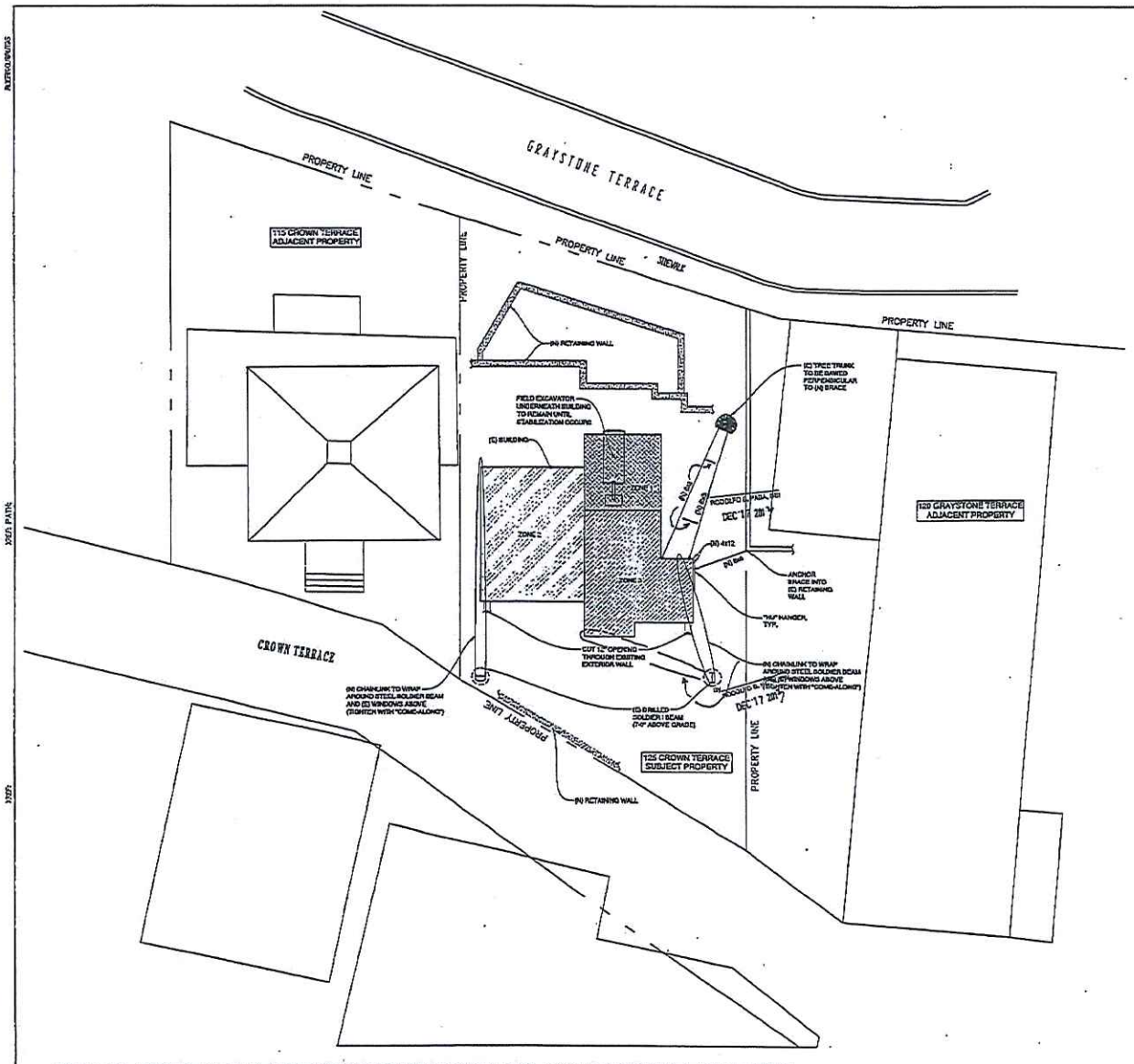


APPROVED
Dept. of Building Insp.
DEC 17 2013
Tom C. Hui, S.E.
DIRECTOR
DEPT. OF BUILDING INSPECTION

SEQUENCE OF CONSTRUCTION:
1. SHAPE TREE TRUNK PERPENDICULAR TO BRACE
2. INSTALL (N) 4x12 TO (E) BELLY BEAM WITH SDS SCREWS
3. INSTALL (N) 6x8 BRACES FROM TREE TRUNK TO (N) 4x12 WITH "HU" HANGERS
4. INSTALL CHAIN FROM STEEL SOLDIER BEAM TO
5. DEMOLISH ZONE 3 OF STRUCTURE
6. REVIEW SITE STABILIZATION AND ANALYZE THE STABILITY OF ZONES 1 &2
7. IF ZONES 1 & 2 REMAIN UNSTABLE, FURTHER DEMOLITION MAY BE REQUIRED

RODOLFO G. PADILLA, DSI
DEC 17 2013

RECEIVED
DEC 17 2013
DEPT. OF BUILDING INSPECTION
ACCEPTED

SITE PLAN WITH EMERGENCY SHORING/STABILIZATION OF (E) BUILDING

SCALE: 1/8"=1'-0"

NORTH

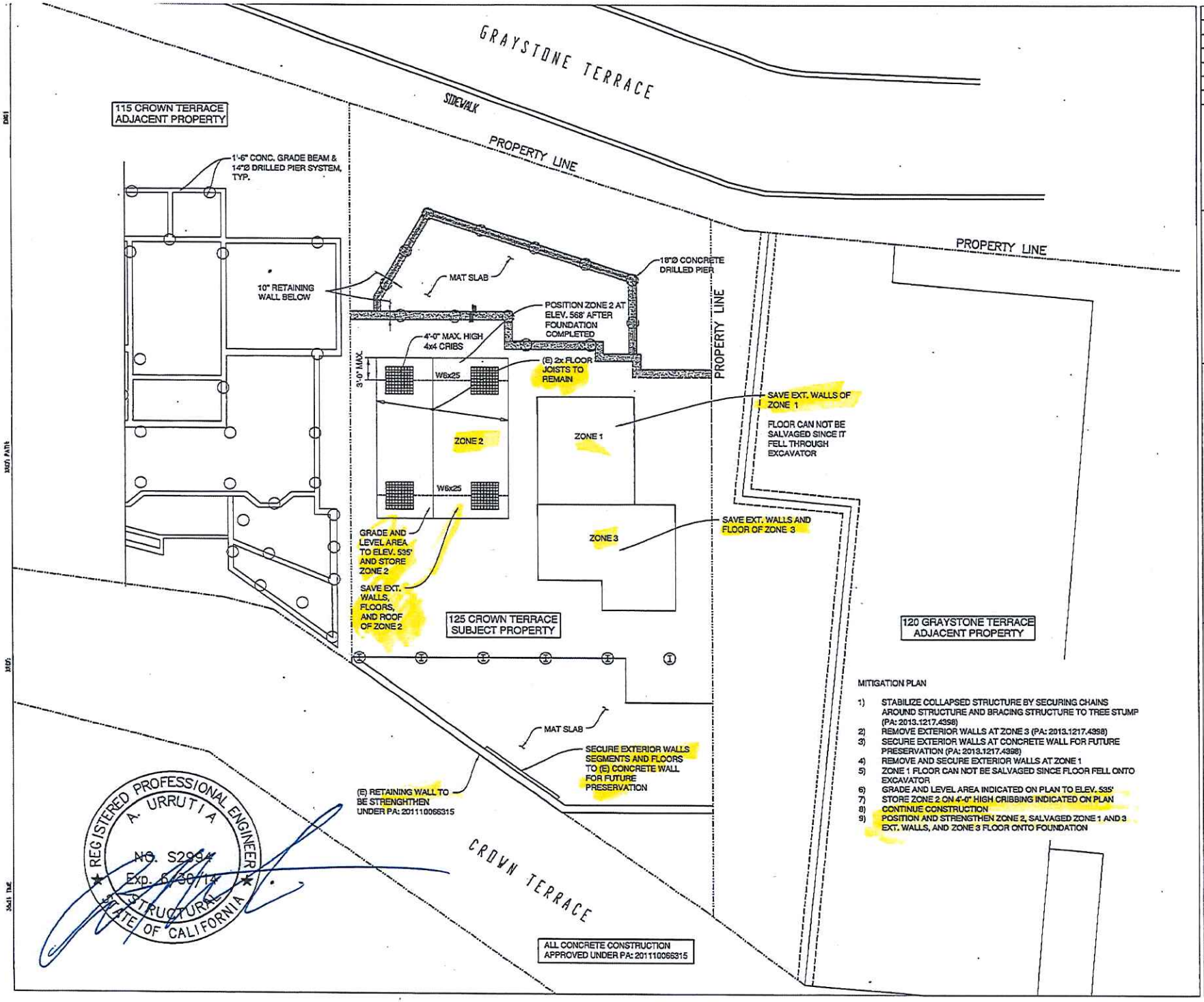
REVISIONS	BY

SANTOS & URRUTIA STRUCTURAL ENGINEERS
2483 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 643-7222
FAX (415) 643-7580

EXISTING SITE PLAN
SEQUENCE OF EMERGENCY SHORING & STABILIZATION OF (E) BUILDING

EMERGENCY SHORING/STABILIZATION
125 CROWN TERRACE
SAN FRANCISCO, CA

Date:	12/17/2013
Scale:	1/8" = 1'-0"
Drawn By:	R.S.
Job No:	9356
Sheet	S2
Of 2 Sheets	



MITIGATION PLAN

1) STABILIZE COLLAPSED STRUCTURE BY SECURING CHAINS AROUND STRUCTURE AND BRACING STRUCTURE TO TREE STUMP (PA: 2013.1217.4398)
2) REMOVE EXTERIOR WALLS AT ZONE 3 (PA: 2013.1217.4398)
3) SECURE EXTERIOR WALLS AT CONCRETE WALL FOR FUTURE PRESERVATION (PA: 2013.1217.4398)
4) REMOVE AND SECURE EXTERIOR WALLS AT ZONE 1
5) ZONE 1 FLOOR CAN NOT BE SALVAGED SINCE FLOOR FELL ONTO EXCAVATOR
6) GRADE AND LEVEL AREA INDICATED ON PLAN TO ELEV. 535'
7) STORE ZONE 2 ON 4'-0" HIGH CRIBBING INDICATED ON PLAN
8) CONTINUE CONSTRUCTION
9) POSITION AND STRENGTHEN ZONE 2, SALVAGED ZONE 1 AND 3 EXT. WALLS, AND ZONE 3 FLOOR ONTO FOUNDATION

REVISIONS

SANTOS & URRUTIA STRUCTURAL ENGINEERS
2401 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7733
FAX (415) 642-7590

MITIGATION PLAN

MITIGATION
125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

Date:	12/20/1
Scale:	1/16"=1'-
Drawn By:	A.U.
Job No:	9356
Sheet	S1
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Restoration Protocol

For

125 Crown Terrace
San Francisco, CA 94114

December 30, 2013

Prepared by Santos & Urrutia Structural Engineers, Inc.

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(from Approved Site Permit #2011/1006/6315 S R3) _____ 6

SANTOS & URRUTIA
STRUCTURAL ENGINEERS INC

December 23, 2013

Mr. Hanson Tom
Department of Building Inspection
City of San Francisco
1660 Mission Street
San Francisco, CA 94103

Re: Structure Collapse: 125 Crown Terrace, San Francisco, CA

Complaint No.: 201343501 & 201343861
S&U Job: 9356
Block 2719B, Lot 003
Subject: Engineering Report

Mr. Hanson Tom,

At Director Tom Hui's request this is the engineering investigative report on 125 Crown Terrace.

Background

The original structure is one story of timber framing over a large crawl space. Under permit application 2011/10/06/6315, the building is in a process of being remodeled and added to. The addition is both vertical and horizontal, with the design adding floors under the existing structure. The permit was issued at the end of November 2013, which included both soil and structure shoring.

Construction commenced in the beginning of December 2013. In this process the building was placed on beams and cribbing with the lower crawl space walls removed. The house moving contractor decided that it was better to leave the building heavy (with plaster and finishes) in order to lessen the potential for wind uplift. The lower retaining walls were placed, the upper shoring beams and a portion of the upper wall was placed. In order to place the required retaining walls the beams and cribbing needed to be moved and readjusted several times.

On Monday, December 16, 2013 the contractor was in the process of moving the shoring towers to their latest locations. The building was supported by a beam to the north with three towers, a beam to the south on two towers and was in the process of digging the pit for the middle (future) tower. At 5pm of that day construction ceased, the excavator was left in place, under the house, with its arm in an inverted V.

2451 Harrison Street San Francisco CA 94110 Phone 415-642-7722 Fax 415-642-7590 www.santosurrutia.com

The Failure

At 10:30pm, Monday, December 16, 2013, the south beam buckled, pulling the house off its cribbing toward the south. This pulled the north cribbing beam off its towers and the structure started to slide with the steel. At this point the eastern most portion of the structure landed and impaled itself on the arm of the excavator. Because the excavator was on a flat stable spot it did not move. This arrested the down hill movement of the structure. At this point the structure broke into three distinct sections; one eastern piece on the excavator and two western pieces resting on the eastern one. The southern most piece was listing towards the property to the directly to the south. In the attached calculations, they show that the southern beam was overstressed to 159% of allowable.

Temporary Stabilization

On December 17th, 2013, Santos & Urrutia obtained permit application 2013/12/17/4398 in order to provide emergency demolition of the southern most section of the building which was placing the greatest pressure on the excavator and was listing. The exterior walls were removed and retained for future use. Then the remaining portions were stabilized by chaining them back to the existing vertical soil shoring piles. The northern most and eastern portions were lightened (plaster and finishes removed) and a shear wall was added to the northern most section.

This stabilization is not recommended for any long term as weather can further destabilize the site.

Mitigation

In order for construction to proceed, we will remove the walls of the eastern most section and retain them for reuse in their original position in the final structure, exposing the excavator. Stabilize the northern most section and move it to a flat space on the site. Demolish the remaining portions of the floor and remove the excavator. In the final design the walls that were retained (during the stabilization and mitigation) will be placed back to their proposed original locations.

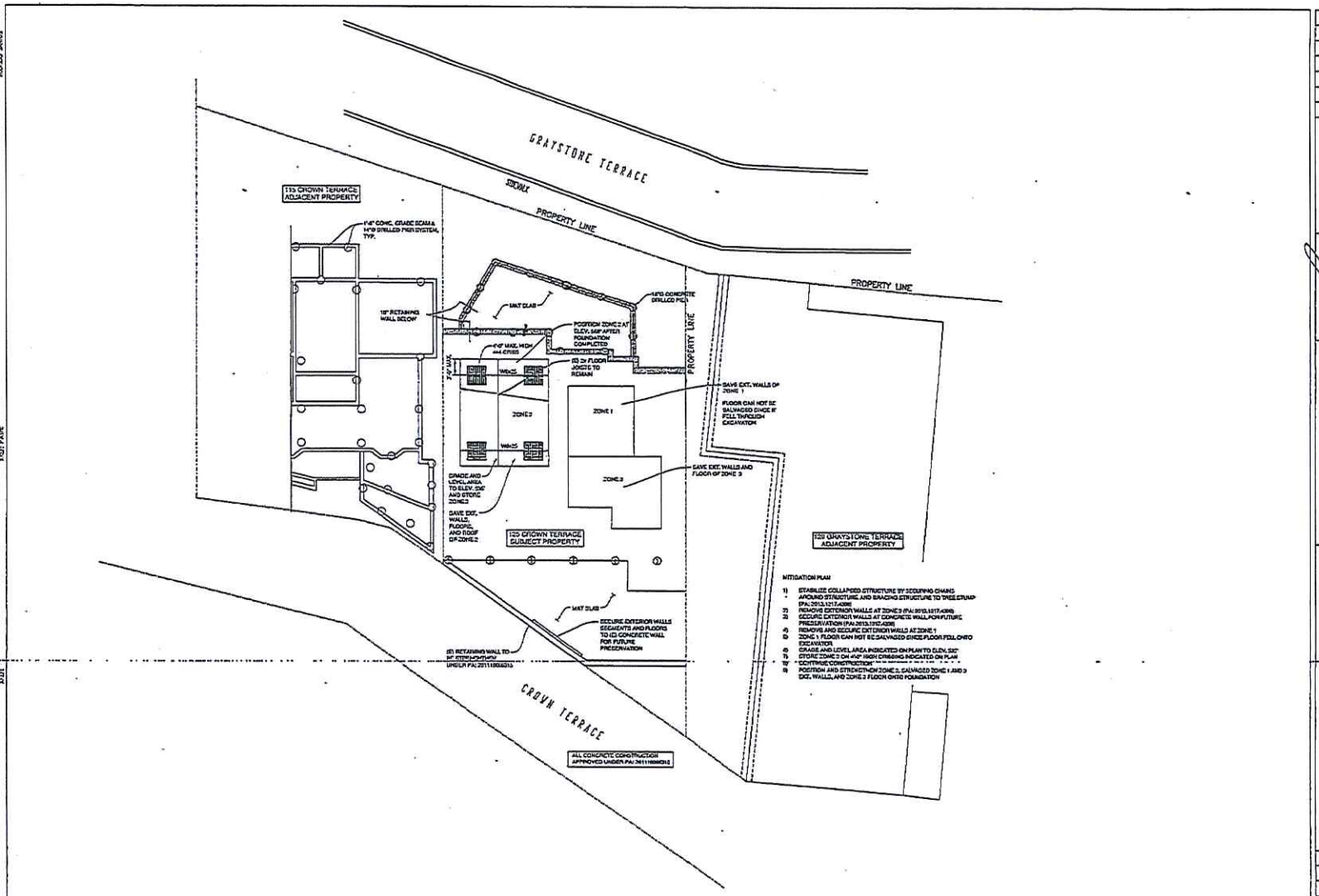
Should you have any questions, please contact me.

Sincerely,

Albert Urrutia
Structural Engineer

REGISTERED PROFESSIONAL ENGINEER
ALBERT URRUTIA
No. S 2994
Exp. 6-30-14
STRUCTURAL
STATE OF CALIFORNIA

Attachments: Collapse Temporary Shoring Plan, Beam Stress Calculations, Photos, Emergency Demolition and Stabilization Plan and Mitigation Plan



SITE PLAN WITH NEW SHORING PLAN @ ELEVATION 556'

SCALE: 1/8"=1'-0"

NORTH

REVISIONS	BY

SANTOS & URRUTIA STRUCTURAL ENGINEERS
2331 JACKSON STREET
SAN FRANCISCO, CA 94115
(415) 921-7772
FAX (415) 642-7580

RELOCATION & MITIGATION PLAN OF COLLAPSED STRUCTURE

MITIGATION

125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

Date:	12/20/13
Scale:	1/8"=1'-0"
Drawn By:	R.S.
Job No:	9356
Sheet	SK3
Of ____ Sheets	

PROJECT NAME: EMERGENCY SHORING/STABILIZATION

ADDRESS: 125 CROWN TERRACE

BLOCK: 2719B LOT: 603

CITY: SAN FRANCISCO, CA

BUILDING USE:

SINGLE FAMILY RESIDENTIAL

SCOPE OF WORK:
EMERGENCY SHORING AND STABILIZATION OF PARTIALLY COLLAPSED BUILDING.

CLIENT:
NAME: MEL MURPHY
ADDRESS: 125 CROWN TERRACE, SF, CA

ARCHITECT & STRUCTURAL ENGINEER:
NAME: RODRIGO SANTOS
COMPANY: SANTOS & URRUTIA STRUCTURAL ENGINEERS
ADDRESS: 2451 HARRISON STREET, SF, CA
PHONE: 415-642-7722

GEOTECHNICAL ENGINEER:
NAME: HAROLD LEWIS
COMPANY: HAROLD LEWIS & ASSOCIATES GEOTECHNICAL CONSULTANTS
ADDRESS: 2418 16TH AVENUE, SF, CA
PHONE: 415-665-9678
SOILS REPORT NUMBER: PROJECT SF-13-497-9
DATE OF SOILS REPORT: 6-28-13

GEOLOGIST:
NAME: PATRICK L. DRUMM
COMPANY: EARTH FOCUS GEOLOGICAL SERVICES, INC.
ADDRESS: 115 ORCHARD DRIVE, FREMONT, CALIFORNIA
PHONE: (510) 794-7495

DRAWING INDEX:

S1	TITLE SHEET.
S2	SITE PLAN w/ SEQUENCE OF EMERGENCY SHORING/STABILIZATION OF (E) BUILDING

City and County of San Francisco
Department of Building Inspection

Gavin Newsom, Mayor
Vivian L. Day, C.B.O., Director

NOTICE

SPECIAL INSPECTION REQUIREMENTS

Please note that the Special Inspections shown on the approved plans and checked on the Special Inspections form issued with the permit are required for this project. The employment of special inspectors is the direct responsibility of the owner or the engineer/architect of record acting as the owner's representative.

These special inspections are required *in addition to* the called inspections performed by the Department of Building Inspection. The name of the special inspector shall be furnished to the district building inspector prior to start of work for which special inspection is required.

For questions regarding the details or extent of required inspection or tests, please call the Plan Checker assigned to this project or 415-558-6132. If there are any field problems regarding special inspection, please call your District Building Inspector or 415-558-6570.

Before final building inspection is scheduled, documentation of special inspection compliance must be submitted to and approved by the Special Inspection Services staff. To avoid delays in this process, the project owner should request final compliance reports from the architect or engineer of record and/or special inspection agency soon after the conclusion of work requiring special inspection. *The permit will not be finalized without compliance with the special inspection requirements.*

STRUCTURAL OBSERVATION REQUIREMENTS

Structural observation shall be provided as required per Section 1710. The building permit will not be finalized without compliance with the structural observation requirements.

Special Inspection Services Contact Information

1. Telephone: (415) 558-6132
2. Fax: (415) 558-6474
3. Email: dbi.specialinspections@sfgov.org
4. In person: 3rd floor at 1660 Mission Street

Note: We are moving towards a 'paperless' mode of operation. All special inspection submittals, including final letters, may be emailed (preferred) or faxed. We will also be shifting to a paperless fax receipt mode.

Special Inspection Services
1660 Mission Street – San Francisco CA 94103
Office (415) 558-6132 – FAX (415) 558-6474 – www.sfdbi.org

SPECIAL INSPECTION AND STRUCTURAL OBSERVATION

A COPY OF THIS DOCUMENT SHALL BE KEPT WITH THE APPROVED STRUCTURAL DRAWING SET

JOB ADDRESS: 125 Crown Terrace APPLICATION NO: ______ ADDENDUM NO. ___

OWNER NAME: Mel Murphy OWNER PHONE NO. (415) 501-[illegible]

Employment of Special Inspection is the direct responsibility of the OWNER, or the engineer/architect of record acting as the owner's representative. Special Inspector shall be one of those as prescribed in Sec.1704. Name of special inspector shall be furnished to DBI District inspector prior to start of the work for which the Special Inspection is required. Structural observation shall be performed as provided by Section 1710. A preconstruction conference is recommended for owner/builder or designer/builder projects, complex and highrise projects, and for projects utilizing new processes or materials.

In accordance with Sec. 1701;1703;1704 (2010 SFBC), Special inspection and/or testing is required for the following work:

[illegible checklist]

Prepared by: Rodrigo Santos Phone: (415) 642-7722
Engineer/Architect of Record

Required information: FAX: (415) 643-7790 Email: [illegible]@santosurrutia.com

Reviewed by: [signature] Phone: (415) 558-6132
DBI Engineer or Plan Checker

APPROVAL (Based on submitted reports)

DATE ______ DBI Engineer or Plan Checker / Special Inspection Services Staff

QUESTIONS ABOUT SPECIAL INSPECTION AND STRUCTURAL OBSERVATION SHOULD BE DIRECTED TO: Special Inspection Services (415) 558-6132, or [illegible] or FAX (415) 558-6474

SPECIAL INSPECTION REQUIRED PER SFBC SECTION 1704

Notify Structural Engineer of Record during Construction

GENERAL STRUCTURAL NOTES

I. GENERAL

A. ALL CONSTRUCTION SHALL CONFORM TO THE CALIFORNIA BUILDING CODE 2010 EDITION w/ AMENDMENTS BY LOCAL JURISDICTIONS.
B. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT JOB SITE BEFORE COMMENCING WORK AND SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT OR ENGINEER.
C. OMISSIONS OR CONFLICT BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF ARCHITECT AND RESOLVED BEFORE PROCEEDING WITH THE WORK.
D. DO NOT USE SCALED DIMENSIONS; USE WRITTEN DIMENSIONS OR WHERE NO DIMENSION IS PROVIDED, CONSULT THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
E. DETAILS SHOWN SHALL BE INCORPORATED INTO THE PROJECT AT ALL APPROPRIATE LOCATIONS WHETHER SPECIFICALLY CALLED OUT OR NOT.
F. FOR WATERPROOFING, FIREPROOFING, ETC. REFER TO DRAWINGS OTHER THAN STRUCTURAL.
G. SEE DRAWINGS OTHER THAN STRUCTURAL FOR: KINDS OF FLOOR FINISH AND THEIR LOCATION, FOR DEPRESSIONS IN FLOOR SLABS, FOR OPENINGS IN WALLS AND FLOORS REQUIRED BY ARCHITECTURAL AND MECHANICAL FEATURES, FOR ROADWAY PAVING, WALKS, RAMPS, STAIRS, CURBS, ETC.
H. HOLES AND OPENINGS THROUGH WALLS AND FLOORS FOR DUCTS, PIPING AND VENTILATION SHALL BE CHECKED BY THE CONTRACTOR, WHO SHALL VERIFY SIZES AND LOCATION OF SUCH HOLES OR OPENINGS WITH THE PLUMBING HEATING, VENTILATING AND ELECTRICAL DRAWINGS AND THESE SUB-CONTRACTORS.
I. NO PIPES AND DUCTS SHALL BE PLACED IN SLABS OR WALLS UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE ARCHITECT.
J. DRAWINGS AND SPECIFICATIONS REPRESENT FINISHED STRUCTURE. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING BUT NOT LIMITED TO SHORING AND TEMPORARY BRACING. THE SUBCONTRACTOR SHALL UNDERTAKE ALL NECESSARY MEASURES TO INSURE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE AND ADJACENT TO THE SITE. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT, ENGINEER SHALL NOT RELIEVE THE SUBCONTRACTOR OF SUCH RESPONSIBILITY.
K. NOTE THAT SHEET S1 IS A STANDARD COVER SHEET AND AS SUCH, NOT ALL TYP. DETAILS AND OR NOTES APPLY TO EVERY PROJECT.

II. DESIGN CRITERIA

A. APPLICABLE CODE: CALIFORNIA BUILDING CODE 2010 & SFBC 2010.
B. VERTICAL LIVE LOADS: (REDUCIBLE). ROOF: 20 PSF. FLOOR: 40 PSF. HALLWAYS & CORRIDORS: 100 PSF.

III. MATERIALS

A. CONCRETE:
1. REINFORCING STEEL: ASTM A615, GRADE 60. #4 AND SMALLER, GRADE 40.
2. CONCRETE: NORMAL WEIGHT U.O.N. WITH COMPRESSIVE STRENGTH OF THE FOLLOWING AT 28 DAYS:

FOOTINGS, MAT SLAB & DRILLED PIERS	3000 psi
WALLS, COLUMNS	5000 psi
STRUCTURAL SLAB (L.W. P.T. SEE S3.2)	5000 psi

3. MINIMUM CONCRETE COVER FOR REINFORCING STEEL:
a. SURFACE POURED AGAINST GROUND 3"
b. FORMED SURFACES BELOW GRADE 2"
c. SURFACES EXPOSED TO WEATHER 2"
d. BEAM BARS (INCLUDING STIRRUPS) 1-1/2"
e. ALL OTHER 1"
4. ANCHOR BOLT EPOXY*: HILTI HIT-RE 500-SD. (ICC ESR-2322) OR SIMPSON SET-XP (ICC ESR-2508)
5. SCREW ANCHORS*: SIMPSON TITEN HD (ICC ESR-2713)

* USE COMPRESSED AIR TO BLOW THE DUST OUT OF ANCHOR BOLT HOLES.

B. CMU: UNITS 1500 PSI, MORTAR (TYPE 'S'), GROUT 2000 PSI

C. STEEL
1. SHAPES AND PLATES: ASTM A 36; TUBES: ASTM A500, GRADE B.
2. MOMENT FRAMES (BEAMS, COLUMNS): ASTM A992 OR A913 (50 ksi)
MOMENT FRAMES (PLATES): A572, GRADE 50.
3. METAL STUDS, SEE S1.4, NOTES
4. METAL JOISTS, 50 ksi
5. BOLTS: ASTM A307, U.O.N.
6. WELDING ELECTRODES: E-70 FOR FULL PEN WELDS USE CHARPY V-NOTCH WIRE, MIN. 20 ft # @ 0°F
7. METAL DECKING, SEE S1.5

D. WOOD
1. FRAMING LUMBER – DOUGLAS FIR LARCH
a. HEADERS, PLATES, JOISTS: NO.1
b. STUDS, BLOCKING: NO.2
c. ALL LUMBER IN CONTACT WITH CONCRETE: PRESERVATIVE TREATED DOUGLAS FIR (NOT CCA-C)
d. POSTS AND BEAMS: NO.1
2. PLYWOOD SHEATHING
a. SHEARWALL PLYWOOD : 1/2 INCH STRUCTURAL I, C-D EXTERIOR, APA RATED 32/16, ~~SEE 6/S1.1A SHEARWALL SCHEDULE FOR THICKNESS~~
b. ROOF SHEATHING: 5/8 INCH STRUCTURAL II, C-D EXTERIOR APA RATED 32/16
c. FLOOR SHEATHING: 3/4 INCH STRUCTURAL II, C-D EXTERIOR APA RATED 48/24
3. FRAMING HARDWARE AND JOIST HANGERS: AS MANUFACTURED BY SIMPSON STRONGTIE CO. OR APPROVED EQUAL. SIMPSON DESIGNATIONS USED. USE NAILS PER I.C.C. APPROVAL FOR EACH DEVICE.
4. COMMON NAILS, UNLESS OTHERWISE NOTED. SHORT NAILS MAY BE USED PROVIDED THEY HAVE COMMON CODE SPECIFIED MINIMUM EMBEDMENT. ALL NAILING TO BE PER IBC TABLE NO. 2304.9.1 UNLESS NOTED OTHERWISE.
5. GLU-LAM BEAMS: 24F-V4 (Fb=2400 PSI)
6. PARALLAM & MICROLLAM BEAMS AND TJI's TO BE FABRICATED BY TRUS JOIST.
7. FOR MICROLLAMS SEE CODE EVALUATION: ICC-ES ESR-1387
8. FOR TJI JOISTS SEE CODE EVALUATION: ICC-ES ESR-1153

IV. EXPOSURE TO WEATHER:

A. STEEL:
1. ALL EXPOSED MEMBERS SHALL BE COATED WITH A ZINC RICH PRIMER.
2. BOLTS, NUTS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED.

B. WOOD:
1. ALL EXTERIOR TIMBER AND GLU-LAM BEAMS SHALL BE PRESSURE TREATED (BUT NOT CHROMATED COPPER ARSENATE) OR WOOD OF NATURAL RESISTANCE TO DECAY.
2. ALL EXTERIOR HANGERS AND OTHER SIMPSON TYPE PRODUCTS SHALL BE GALVANIZED.
3. ALL PLYWOOD SHALL BE OF AN EXTERIOR GRADE.
4. METAL CONNECTORS IN CONTACT w/ PRESSURE TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED w/ MIN. ZINC COATING OF G185.
5. ALL NAILS & ANCHOR BOLTS IN CONTACT w/ PRESSURE TREATED WOOD SHALL BE HOT DIPPED GALVANIZED.

V. ABBREVIATIONS

B.N.	BOUNDARY NAILING	S.A.D.	SEE ARCHITECTURAL DRAWINGS
DIA.	DIAMETER	S.O.G.	SLAB-ON-GRADE
E.N.	EDGE NAILING	S.S.	STAINLESS STEEL
H.P.	HIGH POINT	T.O.	TOP OF
L.P.	LOW POINT	TYP.	TYPICAL
LVL	LAMINATED VENEER LUMBER	U.O.N.	UNLESS OTHERWISE NOTED
L.W.	LIGHT WEIGHT	W.W.F.	WELDED WIRE FABRIC
M.L.	MICROLLAM		
PLWD	PLYWOOD SHEATHING		
PSL	PARALLEL STRAND LUMBER		
P.T.	PRESSURE TREATED OR POST-TENSIONED		

SYMBOLS

(E) WALL BELOW
(E) WALL ABOVE
(N) CONC. WALL ABOVE
BRICK OR CMU WALL ABOVE
WOOD SHEARWALL (BELOW)
WOOD JOIST HANGER (HUS TYPE, U.O.N.)
WOOD POST BELOW
WOOD POST ABOVE (OR ABOVE & BELOW)
HOLDOWN @ WOOD POST
STEEL COLUMN ABOVE
STEEL COLUMN BELOW
MOMENT CONNECTION
CONCRETE TOPPING OVER PLYWOOD
CONCRETE TOPPING OVER CORRUGATED METAL DECK
CONCRETE COLUMN ABOVE
CONCRETE COLUMN BELOW w/ DROPCAP
DRILLED CONCRETE PIER
PRECAST, PRESTRESSED CONCRETE PILE
DIAGONAL ABOVE
DIAGONAL BELOW

APPROVED
Dept. of Building Insp.
DEC 17 2013
DIRECTOR
DEPT OF BUILDING INSPECTION

RECEIVED
DEC 17 2013

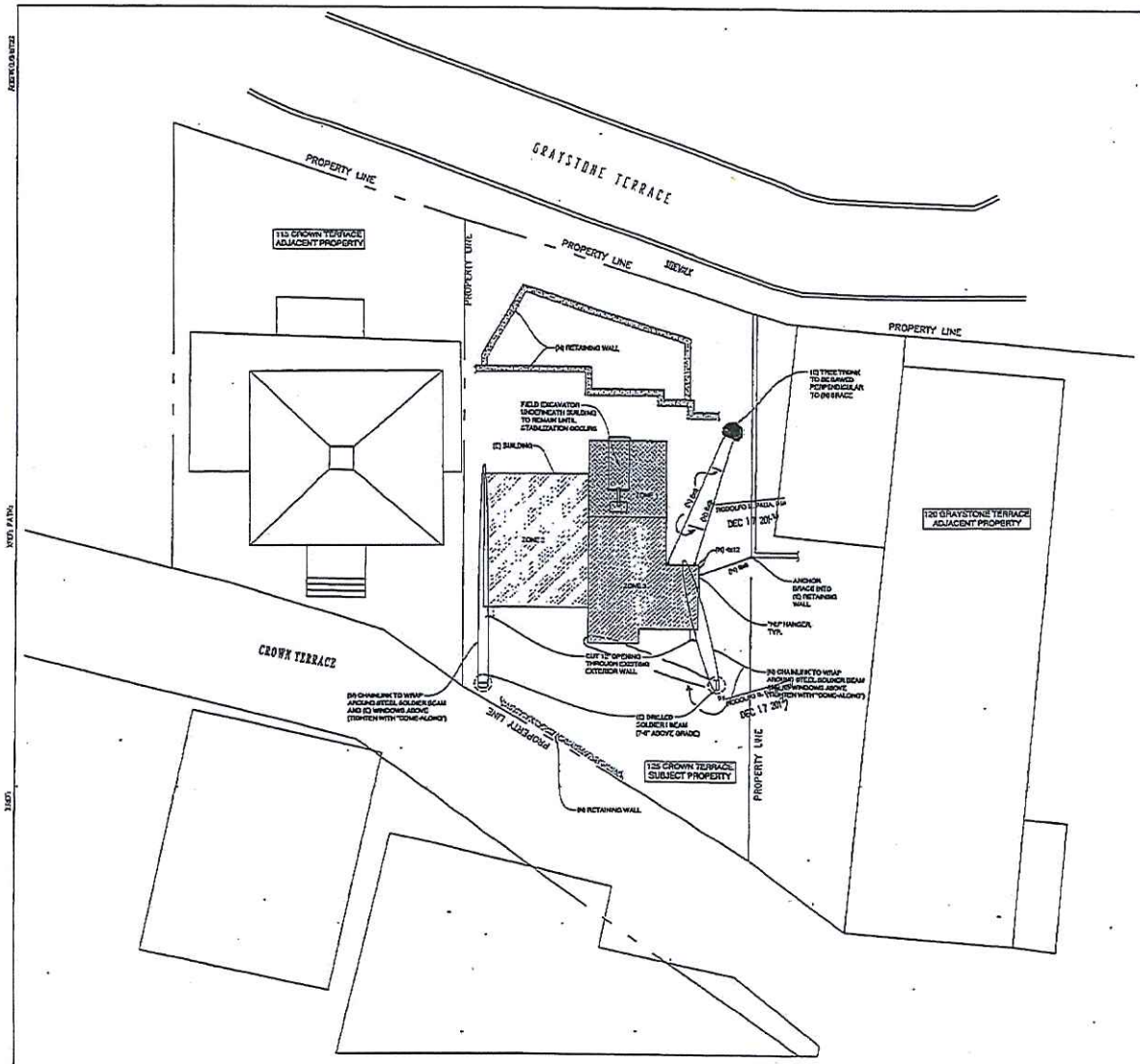
2013/12/17/4398

SANTOS & URRUTIA
STRUCTURAL ENGINEERS INC
2451 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7722
FAX (415) 642-7590

TITLE SHEET
GENERAL STRUCTURAL NOTES

EMERGENCY SHORING/STABILIZATION
125 CROWN TERRACE
SAN FRANCISCO, CA

Date:	12/17/2013
Scale:	N/A
Drawn by:	R.S.
Job No:	9356
Sheet	S1
of 2	Sheets



APPROVED
Dept. of Building Insp.
DEC 17 2013
DIRECTOR
DEPT. OF BUILDING INSPECTION

SEQUENCE OF CONSTRUCTION:

1. SHAPE TREE TRUNK PERPENDICULAR TO BRACE
2. INSTALL (N) 4x12 TO (E) BELLY BEAM WITH SDS SCREWS
3. INSTALL (N) 6x8 BRACES FROM TREE TRUNK TO (N) 4x12 WITH "HU" HANGERS
4. INSTALL CHAIN FROM STEEL SOLDIER BEAM TO
5. DEMOLISH ZONE 3 OF STRUCTURE
6. REVIEW SITE STABILIZATION AND ANALYZE THE STABILITY OF ZONES 1 & 2
7. IF ZONES 1 & 2 REMAIN UNSTABLE, FURTHER DEMOLITION MAY BE REQUIRED

RECEIVED
DEC 17 2013
DEPT. OF BUILDING INSPECTION
ACCEPTED

SITE PLAN WITH EMERGENCY SHORING/STABILIZATION OF (E) BUILDING

SCALE: 1/8"=1'-0"

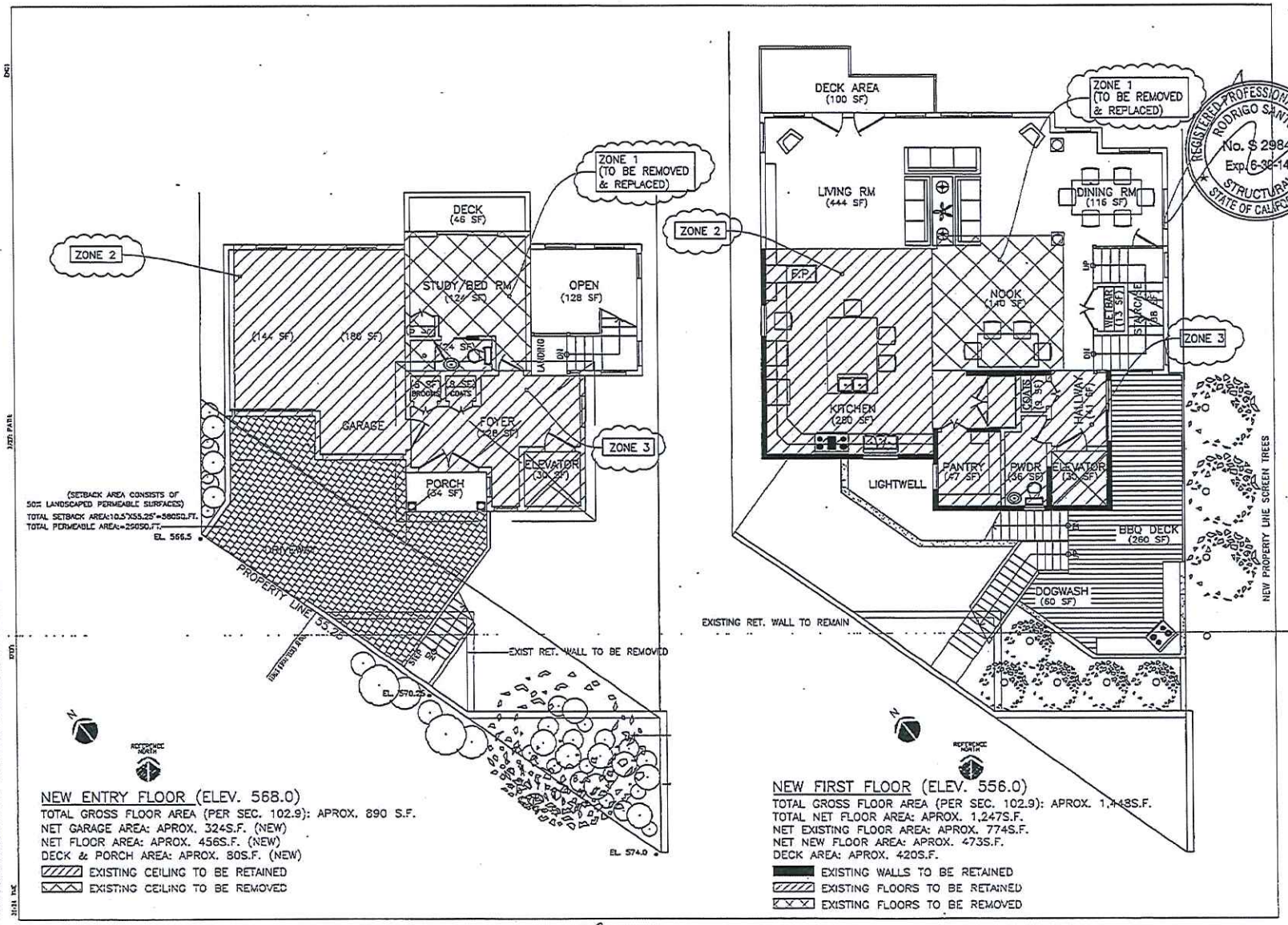
REVISIONS	BY

SANTOS & URRUTIA
STRUCTURAL ENGINEERS
2451 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7722
FAX (415) 642-7590

EXISTING SITE PLAN
SEQUENCE OF EMERGENCY SHORING & STABILIZATION OF (E) BUILDING

EMERGENCY SHORING/STABILIZATION
125 CROWN TERRACE
SAN FRANCISCO, CA

Date:	12/17/2013
Scale:	1/8" = 1'-0"
Drawn by:	R.S.
Job No:	9356
Sheet	S2
Of 2 Sheets	



REVISIONS

DATE		
10.01.10	11.01.12	
11.15.10		
03.15.11		
03.28.11		
04.25.11		
05.30.11		
08.26.12		
09.24.12		

DESIGN BY: ZONE DEVELOPMENT
DRAKE GARDNER
10 CARLILE DR.
NOVATO, CA. 94945
415.408.3403 (O)
415.408.3469 (F)
415.377.6694 (C)

PROJECT: SINGLE FAMILY RESIDENCIAL ALTERATION
125 CROWN TERRACE
SAN FRANCISCO, CA. 94114
LOT: 003 BLOCK: 2719B
OWNER: CROWN TERR., LLC
4153 24TH ST., S.F. 94114
(415) 648-1200

DATE: 05.24.10
SCALE: 1/4IN.=1'-0"
DESIGNER: D.G.

SHEET NO.: A2

REGISTERED PROFESSIONAL ENGINEER
RODRIGO SANTOS
No. S 2984
Exp. 6-30-14
STRUCTURAL
STATE OF CALIFORNIA

Tuan and Robinson
Structural Engineers, Inc.

Eugene Y. Tuan, S.E.
Alan Robinson, S.E.
Timothy C. Mathison, P.E.
Steven F. Lew, S.E.

December 31, 2013

By Electronic Mail

Tom C. Hui, SE, CBO
Director
Department of Building Inspection
City and County of San Francisco
1660 Mission Street, Sixth Floor
San Francisco, CA 94103

Re: 125 Crown Terrace – SFDBI Structural Advisory Committee
Review of Engineering Report in Response to Complaints Nos. 201343501 and 201343861

TRSE Reference Number: 2013.061.01

Dear Mr. Hui:

As part of the SFDBI Structural Advisory Committee, the following is my review of the Engineering Report for 125 Crown Terrace, dated December 23, 2013, and produced by Santos and Urrutia Structural Engineers, Inc. This report was produced in response to events occurring on December 16, 2013, resulting in Complaints Nos. 201343501 and 201343861.

There are the following comments:

1. The Collapsed Temporary Shoring Plan shows a total of three cribbing towers, a future tower, and two shoring beams. The condition shown on plan differs from the narrative, which indicated three towers along the north side of the building and two towers with a shoring beam along the south side. Please clarify this discrepancy.
2. The Emergency Shoring Plan shows that the existing tree trunk near the southeast corner of the lot will be shaped to accept 6x8 wood members to temporarily brace Building Zone 3. It is suggested that if possible, additional blocks/shims be placed between the tree trunk and the new adjacent retaining wall in the event the tree trunk is not stable. Verify adequacy of 6x8 wood members given their apparent long unbraced length and connections to the existing building. Verify that 6x8 wood members are rigidly attached at floor level to the existing building.
3. Verify if additional lateral loads (wind, seismic, other environmental) need to be considered in design of the temporary building supports during construction.
4. Clarify if additional temporary support is required for the south side of Building Zone 2 (temporary braces, chains, etc.).
5. Verify adequacy of existing soldier beams to resist additional loads from downhill building zones due to proposed chain restraints. Are chains themselves adequate for such loads?
6. The Mitigation Plan sheet indicates that Building Zone 2 will be relocated at Elevation 535' on W6 beams supported on 4'-0" high cribs upon completion of grading and leveling. Verify adequacy of W6 shoring beams and cribs shown and of existing framing to span between W6 beams. Clarify how Zone 2 will be supported during grading and leveling operations.

(SAC REPORT ATTACHMENT #2)

7. The Mitigation Plan sheet also indicates that Building Zone 2 is to be raised to Elevation 568' after completion of the foundation. Confirm if Zones 1 and 3 are to be raised to this level. Will an intermediate shoring plan showing temporary supports at Elevation 568' be required? Submit such a plan if so required with all required documentation.

8. The narrative discusses the addition of a shear wall at the northernmost building segment. This shear wall is not shown on any of the drawings in the report. Clarify intent of shear wall. Is this shear wall designed as a permanent wall for the completed building or is it designed for the temporary condition? Verify adequacy of shear wall design if so required.

Please note that Tuan and Robinson Structural Engineers Inc. makes no warranty, either expressed or implied, as to any findings, designs, recommendations or professional advice except that they were prepared in accordance with generally accepted professional engineering practice.

We trust this is the information you were seeking. Please do not hesitate to call should you have further questions or comments.

Very truly yours
Tuan and Robinson Structural Engineers, Inc.

Steven Lew, SE
License No. S4180, exp. 9/30/2015

cc: Edward Sweeney, SFDBI
Hanson Tom, SFDBI

SANTOS & URRUTIA
STRUCTURAL ENGINEERS INC

January 2, 2014

Mr: Tom Hui & Mr. Hanson Tom
Department of Building Inspection
City of San Francisco
1660 Mission Street
San Francisco, CA 94103

Re: Structure Collapse: 125 Crown Terrace, San Francisco, CA

Complaint No.: 201343501 & 201343861
S&U Job: 9356
Block 2719B, Lot 003
Subject: Response to Tuan & Robinson Letter 2013.061.01

Mr. Tom Hui & Mr. Hanson Tom,

We have received the Tuan & Robinson letter dated December 31, 2013. This letter has several comments on the Santos & Urrutia "Emergency Demolition & Stabilization" drawing and the subsequent report. The following is a response to those comments:

1. The original shoring prior to collapse was actually on two cribbing towers and the mat slab to the north and one cribbing tower and mat slab to the south. In my hurry to get the report out I described the mat slab support as cribbing towers.
2. The tree trunk that the structure is braced off is the remnants of a 100ft+ cedar tree that was recently removed as part of the construction. The trunk is in excellent condition and acts as an anchor for this section of the house. The 6x8 braces were SDS screwed into the trunk and dies have additional blocking.
3. The nature of the bracing and restraint is truly temporary and is not designed for any long term loadings. Besides the braces it is currently restrained by twelve loops of chain around the three portions of the structure and attached to cleats welded to the existing soil shoring I-beams. There are no calculations I can provide for this configuration.
4. There are approximately eight loops of chain around Zone 2.
5. The existing soldier beams are placed down to their depth with only the top five feet exposed. They have twenty feet embedded into the hill.

6. The Mitigation Plan is being revised for submission to the SAC. We will address these concerns at that time.

7. The Mitigation Plan is being revised for submission to the SAC. We will address these concerns at that time.

8. A shearwall was installed across Zone 2's south end in order to prevent the building from collapsing into it self. This wall will not be part of the final construction but simply is a temporary element to remain in place until the section is placed back into its permanent location.

Should you have any questions, please contact me.

Sincerely,

Albert Urrutia
Structural Engineer

Tuan and Robinson
Structural Engineers, Inc.

Eugene Y. Tuan, S.E.
Alan Robinson, S.E.
Timothy C. Mathison, P.E.
Steven F. Lew, S.E.

January 3, 2014

Tom C. Hui, SE, CBO
Director
Department of Building Inspection
City and County of San Francisco
1660 Mission Street, Sixth Floor
San Francisco, CA 94103

By Electronic Mail

Re: 125 Crown Terrace – SFDBI Structural Advisory Committee
Engineering Report in Response to Complaints Nos. 201343501 and 201343861
Review of Responses to TRSE Letter dated December 31, 2013

TRSE Reference Number: 2013.061.01

Dear Mr. Hui:

We are in receipt of the letter by Santos and Urrutia Structural Engineers, Inc., dated January 2, 2014. Their letter contains responses to our comments regarding the Engineering Report for 125 Crown Terrace, dated December 23, 1013, produced in response to events occurring on December 16, 2013, resulting in Complaints Nos. 201343501 and 201343861.

Our comments to the responses follow in the order listed in the January 2 letter:

1. No exception taken.
2. No exception taken, but please verify that 6x8 wood members are attached to rigid spots on the existing building, perhaps along floor level.
3. No exception taken.
4. No exception taken.
5. No exception taken.
6. We expect that Comment #6 concerning the adequacy of Zone #2 shoring before and after grading to Elevation 535' will be addressed in a revised Mitigation Plan per the responses, and in any accompanying documentation including calculations.
7. We expect that Comment #7 concerning an intermediate shoring plan for raising the existing building components to Elevation 568' will be addressed in a revised Mitigation Plan per the responses, and in any accompanying documentation including calculations.
8. No exception taken.

Many of our comments concerned the Emergency Shoring and Stabilization Plan, Sheet S2, with SFDBI approval stamp; December 17, 2013. We understand that due to the quick production of this Plan and emergency stabilization in the field, discrepancies likely occurred between the Plan and what was implemented. We assume such measures were approved by SFDBI in the field, so we have no additional comments on these. We have no other comments on the responses or on the Engineering Report.

Please note that this letter does not address any other comments, findings or directives from SFDBI or from any agency for the City and County of San Francisco concerning 125 Crown Terrace or the Engineering Report, nor does this letter address events occurring on December 16, 2013.

Tuan and Robinson Structural Engineers Inc. makes no warranty, either expressed or implied, as to any findings, designs, recommendations or professional advice except that they were prepared in accordance with generally accepted professional engineering practice.

We trust this is the information you were seeking. Please do not hesitate to call should you have further questions or comments.

Very truly yours
Tuan and Robinson Structural Engineers, Inc.

Steven Lew, SE
License No. S4180, exp. 9/30/2015

cc: Edward Sweeney, SFDBI
Hanson Tom, SFDBI

Tom, Hanson

From: Tom, Hanson
Sent: Friday, January 03, 2014 2:44 PM
To: Steve Lew (SL@trseinc.com)
Cc: Hui, Tom; Sweeney, Edward; Leung, David
Subject: FW: 125 Crown Terrace (Response to Steven Lew's comments)
Attachments: 2014_0103-125 Crown Terrace - Review of S&U responses.pdf

Steven,

Thanks for your hard work and quick response in contacting the EOR, Mr. Santos, and resolved the plan check comments that you produced on Dec. 31, 2013. Your letter is acceptable to DBI and therefore satisfied the directives ordered by our Director Tom Hui in his Action Plan dated Dec. 19, 2013.
We will contacting you and Mr. Timothy Mathison when the next SAC is reconvene to hear the appeal of the above project again!
Please let me know if you have any questions!
Sincerely yours,

Hanson Tom, S.E.
Principal Engineer, DBI
1660 Mission St. 2nd Fl.
San Francisco, Ca. 94103
Tel: 415-558-6157
Fax: 415-558-6436

From: Steven Lew [mailto:slew@trseinc.com]
Sent: Friday, January 03, 2014 11:44 AM
To: Tom, Hanson
Cc: Sweeney, Edward; Leung, David; Hui, Tom
Subject: RE: 125 Crown Terrace (Response to Steven Lew's comments)

Hanson,

No exception is taken to the responses. Attached is our letter stating such. I'll send you three hard copies of this letter in the mail as well. Let me know if any questions.

Steven Lew, SE
Tuan and Robinson
Structural Engineers, Inc.
221 Main Street, Suite 860
San Francisco, CA 94105
T: 415.957.2480 #107
F: 415.957.2483
www.trseinc.com

From: Tom, Hanson [mailto:hanson.tom@sfgov.org]
Sent: Friday, January 03, 2014 8:54 AM
To: Steven Lew

Cc: Sweeney, Edward; Leung, David
Subject: FW: 125 Crown Terrace (Response to Steven Lew's comments)

Steve,

Please review the responses from Mr. santos, EOR. Please try to resolve all issues ASAP. Director Hui is instructing that Mr. Santos' responses to your review comments to be resolved by close of business today!
If permit is require for any item please contact me so that I can work with Mr. Santos to file the permit.
If all issues are resolved, please sent me an approval letter stating that you have satisfied the responses. Thanks for your help!

Hanson Tom, S.E.
Principal Engineer, DBI
1660 Mission St. 2nd Fl.
San Francisco, Ca. 94103
Tel: 415-558-6157
Fax: 415-558-6436

From: Rodrigo Santos [mailto:rsantos@santosurrutia.com]
Sent: Thursday, January 02, 2014 3:09 PM
To: 'Steven Lew'
Cc: Tom, Hanson; Hui, Tom; 'Albert Urrutia'
Subject: FW: 125 Crown Terrace (Response to Steven Lew's comments)

For your review and comment.

Best Regards,
Rodrigo Santos, S.E.
Principal Engineer
Santos & Urrutia Structural Engineers
2451 Harrison St., San Francisco, CA 94110
Phone: (415) 642-7722 x103
Fax: (415) 642-7590
Cell: (415) 601-0641
rsantos@santosurrutia.com

CITY AND COUNTY OF SAN FRANCISCO

OFFICE OF THE CITY ATTORNEY

DENNIS J. HERRERA
City Attorney

December 18, 2013

Tom Hui
Director, Department of Building Inspection
1660 Mission Street
San Francisco, California 94103-2414

Re: 125 Crown Terrace, San Francisco, CA 94114

Dear Director Hui:

The City anticipates that it might become involved in litigation regarding the collapse of the building located at 125 Crown Terrace, San Francisco, CA 94114 ("Property") which occurred on December 17, 2013. For that reason, it is essential that your department preserve the Property and all buildings, structures, and materials located there and take no action to compromise, affect, change, or otherwise alter in any way the condition of the Property or permit or authorize the alteration or change of any aspect of the Property and/or the buildings or structures located there including the removal of any materials, altering or removing any false work, or altering or removing any temporary shoring. We understand that you have already taken steps adequate to secure the property in a manner that will avoid danger to health or property. Please take no further action until we notify you that we have completed our inspection and preservation of evidence of the condition of the property.

In addition, it is also crucial that your department identify all personnel who may have participated in any capacity with respect to the investigation, inspection, permitting, plan checking, engineering, or project management and inform them of their duty to RETAIN AND PRESERVE all documents in the department's and its employees' possession that relate in any way to the Property including any and all documents related to the December 17, 2013 collapse of any building or structure located at the Property. **Effective immediately, it is critical that none of the department's employees or contractors delete, overwrite, or otherwise alter or destroy any documents or files that may be relevant to this matter. This includes documents and information on personal devices.** The duty to preserve applies to BOTH HARD-COPY AND ELECTRONIC MATERIALS, and to drafts as well as final versions of documents, whether created, saved, or stored on devices issued by the Department or personal devices.

Your department therefore must temporarily suspend all automatic and routine document destruction procedures, including the recycling of back up tapes, until further notice from the City Attorney's Office. The documents to be preserved include those that refer or relate to:

- The December 17, 2013 collapse of any building or structure at the Property;
- The response to the December 17, 2013 collapse (whether by City personnel and other entities);
- Any investigation of the December 17, 2013 collapse;
- The condition of the Property on or before the December 17, 2013 collapse;
- Any photographs, video(s) or audio recordings related to the December 17, 2013 collapse;

- Costs incurred by the City as a result of the December 17, 2013 collapse; and
- Any permit applications, inspections, plan checking, engineering, or project management related to the Property generally.
- All evaluations, determinations, findings, approvals and/or correspondence to or from the SAC ("Structural Analysis Committee") regarding the Property, whether in electronic or hard copy format.

The type of documents likely to be relevant includes the following categories:

- All correspondence, including letters, memoranda, faxes, e-mails, electronic text messages or instant messages, to or from an employee of your department and/or the SAC relating to the permitting approvals for the Property preceding the December 17, 2013 collapse;
- All correspondence, including letters, memoranda, faxes, e-mails, electronic text messages or instant messages, to or from an employee of your department relating to the December 17, 2013 collapse;
- All documents or files of any type created by department employees in the course of their work relating to the December 17, 2013 collapse;
- All notes, meeting minutes, meeting agendas, calendar entries, summaries, or other documents of any kind relating to telephone calls, meetings, or other discussions involving employees of your department or third parties relating to the December 17, 2013 collapse;
- Video and audio tapes, photographs, spreadsheets and databases relating to the property, including the December 17, 2013 collapse and any response to the December 17, 2013 collapse;
- All correspondence, including letters, memoranda, faxes, e-mails, electronic text messages or instant messages, to or from an employee of your department relating to the Property generally, including but not limited to communications with the Property owner(s) or their principals, agents or employees and any internal communications and communications with third parties about the Property;
- All documents or files of any type created by department employees and/or the SAC in the course of their work relating to the Property generally;
- All notes, meeting minutes, meeting agendas, calendar entries, summaries, or other documents of any kind relating to telephone calls, meetings, or other discussions involving employees of your department or third parties, including but not limited to the SAC, relating to the Property generally; and
- All plans, drafts of plans, applications for permits and other documents submitted by the property owner(s) or agents on their behalf relating to any work done or sought to be done on the Property.

To ensure that all necessary electronic documents are preserved, all of the following sources must be considered:

- Back-up tapes, including the cloud, created during the time period beginning December 17, 2013 to the present, for all email and network data;
- Current and former employees' desktops or PCs, laptops, handheld devices (such as iPhone, iPad, Android, or BlackBerry devices), and other hardware provided to department employees (including removable storage devices such as USB thumb drives or removable hard drives);
- Personal electronic devices, including telephones, smart phones, and home computers, if used by employees, including personal emails, text messages and voicemails;
- Active Department network shared drives and individual user drives;
- Active Department e-mail servers;
- Active databases;
- Photographs and videos obtained from any source; and
- Any other local or centralized storage media that may be accessed by members of your department.

If you have any doubt about whether a document falls within a category listed above, please retain it. You should preserve the original and all non-identical copies and drafts of the same documents. You should preserve the documents in the files in which they would normally be stored, and should not segregate them in response to this notice.

You need not create any records that do not currently exist. You must simply preserve all documents in the categories described above that have already been created or that are created in the future as part of your normal business activities.

If you are aware of any documents that relate to this matter that are outside of your department's immediate control – for example, documents that may be in the possession of an outside vendor – please contact our office as soon as practicable so that we may see to their preservation.

PLEASE DESIGNATE A REPRESENTATIVE TO SUPERVISE PRESERVATION OF YOUR DEPARTMENT'S RELEVANT INFORMATION. Yvonne Meré from our office (415) 554-3874 will be in contact with you in the next day or so to discuss preservation issues, including strategies for implementing this litigation hold in a cost-effective manner.

Thank you in advance for your cooperation and effort in responding to this request.

Very truly yours,

Dennis J. Herrera TMS

DENNIS J. HERRERA
City Attorney

Cc: Daniel Lowrey, Deputy Director, Inspection Services, DBI

CITY AND COUNTY OF SAN FRANCISCO

DENNIS J. HERRERA
City Attorney

OFFICE OF THE CITY ATTORNEY

YVONNE R. MERÉ
Deputy City Attorney

DIRECT DIAL: (415) 554-3874
E-MAIL: yvonne.mere@sfgov.org

y

December 20, 2013

Tom Hui
Director, Department of Building Inspection
1660 Mission Street
San Francisco, California 94103-2414

Re: 125 Crown Terrace, San Francisco, CA 94114

Dear Director Hui:

Thank you so much for your assistance earlier this week regarding the December 17, 2013 collapse at the property located at 125 Crown Terrace, San Francisco, CA 94114 ("Property"). I understand that the Department issued a stop work order at the request of the City Attorney's Office to permit the Property to be inspected and evidence preserved. That initial inspection and investigation of the December 17, 2013 collapse has concluded.

At this point, this office withdraws the request that work at the Property be stopped. That said, we continue our request that you RETAIN AND PRESERVE all electronic and paper documents and information related to the Property generally and the December 17, 2013 collapse as outlined in the City Attorney's letter dated December 18, 2013.

Thank you in advance for your cooperation and effort in responding to this request.

Very truly yours,

DENNIS J. HERRERA
City Attorney

YVONNE R. MERÉ
Deputy City Attorney

Cc: Daniel Lowrey, Deputy Director, DBI

ATTACHMENT I

City and County of San Francisco
Department of Building Inspection

Edwin M. Lee, Mayor
Tom C. Hui, S.E., C.B.O., Director

December 24, 2013

To Whom It May Concern:

The assignment of specific Inspectors to perform inspections depends on many factors. Since the economic downturn Inspection Services has been constantly struggling with providing timely inspections due to layoffs and then with the sudden upswing the challenge was in the prolonged process of rehiring. Two Inspectors have been transferred to San Francisco International Airport, one was assigned to plan check and another has been promoted to the position of Senior Building Inspector also in plan check. This has left our division short staffed to a point where we are constantly shuffling and assigning the Inspectors so we can cover the requests for inspection.

The supervisory staff and management has discretion in assigning Inspectors to provide services where needed based on necessity. With staff taking vacation, sick leave and attending training it is necessary to continue to provide inspections in a timely manner. Some of the required inspections are very time sensitive and it is sometimes critical that an Inspector is dispatched without delay. I have previously stated at many Public Advisory Committee meetings that if an Inspection District is backed up that a supervisor may be contacted and another Inspector may be assigned to perform the inspection. This is especially true in the case of reinforcing steel where soil collapse is an immediate concern. As such, it has always been understood that customer requests are facilitated based on timelines and on mitigating hazard due to delay.

Mel Murphy's job at 125 Crown Terrace was an example of what is described above in so far as, drilled piers were being poured and there was a problem with soil falling back into the hole before the concrete could be poured encasing the reinforcing steel. Mr. Murphy called me and requested an inspection for pouring these piers. I couldn't get ahold of the District Inspector but was able to contact Inspector Matthew Greene who I knew was in a nearby District. Inspector Greene agreed to perform the inspection and in the interest of continuity service the next three inspection requests. Senior Building Inspector Bernard Curran who is the Senior Inspector for the area is now assigned to perform the inspections at the site.

Very truly yours,

Daniel Lowrey
Deputy Director of Inspection Services

J:\BID\DEP'YDIR\125 Crown Terrace.doc

ATTACHMENT J

Tuan and Robinson
Structural Engineers, Inc.

Eugene Y. Tuan, S.E.
Alan Robinson, S.E.

Timothy C. Mathison, P.E.
Steven F. Lew, S.E.

January 3, 2014

Tom C. Hui, SE, CBO
Director
Department of Building Inspection
City and County of San Francisco
1660 Mission Street, Sixth Floor
San Francisco, CA 94103

By Electronic Mail

Re: 125 Crown Terrace – SFDBI Structural Advisory Committee
Engineering Report in Response to Complaints Nos. 201343501 and 201343861
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