Investigation and Mitigation Report on Incident Occurring at

125 CROWN TERRACE

December 16, 2013

Prepared by

Tom C. Hui, S.E., C.B.O.

Department of Building Inspection

City & County of San Francisco

TABLE OF CONTENTS

ATTACHMENT L: LETTER FROM LANGAN TREADWELL ROLLO REGARDING THEIR RECOMMENDATION TO PROCEED WITH FOUNDATION INSTALLATION DATED JANUARY 6, 2014

ATTACHMENT M: 9X PENALTY FOR INACCURATE CONSTRUCTION VALUATION

ATTACHMENT N: PERMIT AND INSPECTION HISTORY FOR 125 CROWN TERRACE

ATTACHMENT O: INSPECTION REPORT FOR 125 CROWN TERRACE BY SANTOS & URRUTIA DATED JANUARY 9, 2014

ATTACHMENT P: FRANK ROLLO EMAIL REVIEW OF 125 CROWN TERRACE PLANS BY SANTOS & URRUTIA DATED JANUARY 21, 2014

City and County of San Francisco
Department of Building Inspection

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

SUBJECT: Briefing on 125 Crown Terrace project
PREPARED BY: Tom C. Hui, S.E., C.B.O., Director
San Francisco Department of Building Inspection
DATE: February 5, 2014

INCIDENT

On December 16, 2013, at approximately 10:30 p.m., the single-family house at 125 Crown Terrace in San Francisco's Twin Peaks neighborhood fell off its site preparation shoring and slid down the property slope. Scheduled construction work for the day had stopped about 5 p.m.

The 1947 one-story wood-framed structure with a large crawl space below was under construction for a major remodel when the failure occurred. The structure had been raised off its foundation for the construction project and placed atop temporary supports. A steel cradle beam that spanned between two temporary wood cribbing towers buckled. That caused the house to come off its shoring and to slide downhill toward Graystone Terrace, forcing the temporary evacuation of a neighboring home. No injuries were reported. The house remained within its property lot; no adjacent buildings were damaged.

Emergency shoring work began on December 17, 2013. The City Attorney called on DBI to halt the emergency work, pending investigation of the site (Attachment H). The City Attorney's office gave its OK to lift the stop-work order on December 20, 2013 (Attachment H), allowing the temporary shoring to prevent any additional slippage and to make the compromised structure safe for the time being.

BACKGROUND

The San Francisco Department of Building Inspection (DBI) issued a building permit for structural shoring, structural additions and soil stabilization on November 28, 2012 (Attachment N). DBI acted on the permit after the project was approved by the Planning Commission in October 2012 and upheld by the Board of Appeals over the objection of some neighbors in May 2013, and after the construction details were reviewed and approved by the independent Structural Advisory Committee (SAC), as required by ordinance in designated steep slope neighborhoods. SAC is a five-member independent body comprised of an architect, geotechnical engineer, geologist, shoring engineer and structural engineer.

At the time of the structural failure, a lower retaining wall adjacent to Graystone Terrace and a segment of the upper wall below Crown Terrace already had been installed.

FINDINGS

The structural collapse and slide occurred because the developer, Pattani Construction, Inc., managed by Mel Murphy:

1) failed to follow and implement the approved plans and the sequence of construction as stipulated and outlined in the DBI permit, and

2) failed to follow and implement the special inspection instructions, as mandated under the approved DBI permit and the State of California Building Code. As a result, the required independent inspection of the shoring work was not conducted, leaving an unsafe condition undiscovered until after the collapse occurred.

The combination of these two factors contributed to a site situation where one of the steel support beams gave way. Photos of the construction site hours before the failure suggest the work performed was dramatically different than the approved plan. Had the contractor brought in inspectors during installation of the shoring structure, the work would have been halted prior to the collapse.

The findings were based on a report submitted by the project developerôs engineer of record, Santos & Urrutia Structural Engineers. Inc., (Attachment D), field inspections and document reviews by DBI engineers (Attachment G), and a third-party peer review by Steven Lew, a structural engineer with the firm Tuan and Robinson Structural Engineers, Inc., and his colleague, shoring engineer, Timothy Mathison, P.E. (Attachment F), who served on the Structural Advisory Committee originally convened for the 125 Crown Terrace project.

Rodrigo Santos, the engineer of record for 125 Crown Terrace, testified at the January 15, 2014 Building Inspection Commission meeting that the developerôs entire design and construction team took full responsibility for the structural failure. ñDBI did everything right and took all proper stepsé This was a failure to implement the approved plans. This accident could have been prevented, and we are very fortunate no one was injuredé .,òMr. Santos testified.

NEXT STEPS

1) FEES AND PENALTIES: Prior to any future work commencing, the developer must pay an additional $24,181in permit fees for work valued at $72,198 that was performed without permit; and a $6,010.71 penalty for failing to set up a shoring structure as stipulated in the approved plans. The fine ï the maximum allowable -- is based upon the correct valuation of the work done without permit multiplied by a factor of nine (9). The penalty schedule is outlined in the San Francisco Building Code and stipulated in Sec. 110A, table 1A-K. Total: $30,191.71

2) SAFETY MANDATE: As recommended by the DBI Director, the developer must immediately provide a design and obtain a permit to install a temporary surface drainage system to control surface runoff, and to protect the job siteôs stability from winter storm conditions. The developerôs geotechnical engineer will design the system. Once submitted, DBI will review the plan, as will Frank Rollo, the geotechnical representative from the independent SAC. Per the recommendations outlined by Rollo (See Attachment P), the ownerôs special inspectors and engineer will provide DBI with daily reports, including photos, and follow all other recommended steps to document correct implementation of this surface drainage plan. DBI also will conduct unscheduled site inspections to make sure the contractor adheres to the approved plan. DBI will issue a stop-work order if the plan is not followed.

3) Once steps One and Two are satisfied, the developer must start installing a new foundation, which is an essential part of the required shoring and detailed in DBIôs approved permit application.

4) Throughout construction, DBI will conduct unannounced inspections, and the developer will be required to pay for those inspections. In addition, the developerôs engineer of record and geotechnical engineer must observe and supervise the installation on a full-time basis.

5) Going forward, any DBI inspections of the property will be overseen by a deputy director and performed by a team that includes the district inspector assigned to the Twin Peaks area, and either the chief building inspector, or the senior building inspector.

6) Future permitting requirements for construction of the house to proceed:

- To continue with construction of the house, which was damaged during the collapse, the developer must file a new permit application with DBI.
- DBI then will forward the application to City Planning to determine whether the revised plan is a demolition or remodel. If the determination is made that the project constitutes a remodel, then Planning staff would decide whether to approve the plan at staff level or send the plan to the Planning Commission for a hearing.
- If the determination is made that the project constitutes a demolition, then the developer must revise the application and file a Form 6 total demolition permit, and a Form 2 new building permit. Planning then would decide whether or not its commission should hear the matter.
- DBI will review and approve the permit application once and if the Planning Department/Commission grants approval. The DBI director will retain the right to reconvene the Structural Advisory Committee to review the plan and make recommendations. If DBI approves the permit, opponents would have 15 days to file an appeal with the Cityôs Board of Appeals.

- Once the appeals process is complete, and if a permit is issued, construction of the house then could resume.
- The developer will be subject to special inspections protocol for any future shoring and foundation work, with the engineer of record and geotechnical engineer required to submit to DBI weekly reports and photos. In addition, DBI will carry out unannounced spot-check inspections, to be paid for by the developer.

PERMIT PROCESS UNDER REVIEW

Discrepancies were found between the developer's valuation of the building site plan permit issued on November 28, 2012 and calculations made in the Marshall & Swift construction-cost calculation tables, which are widely used by building departments throughout the United States to quantify appropriate permit fees.

The developer originally estimated the cost in October 2011 at $60,000 on his submitted permit application form. A DBI plan checker revised the cost to $300,000 on November 26, 2012 as part of the standard site plan permit review. The value was again revised by DBI to $610,500 on December 9, 2013 due to a site plan review prompted by a filed complaint. On December 31, 2013 DBI's Principal Engineer reviewed the approved plans/drawings in detail and revised the cost of construction to $1,570,000 (Attachment G).

Investigations into the permit valuation discrepancies were initiated following the structural failure on the site (See INVESTIGATIONS section below). In addition, DBI Director Tom Hui ordered additional mandatory construction-cost valuation training for all staff involved in the related permitting and plan-checking processes. Random audits will be conducted to ensure the ongoing integrity of the permitting process. In addition, the Department will implement the six other recommendations set forth in this report (See NEXT STEPS section).

INVESTIGATIONS

1) DBI engineers, in consultation with a peer review, investigated the December 16, 2013 collapse of the structure at 125 Crown Terrace. (Completed, see findings above.)

2) The City Attorney's Office is conducting an investigation, and has requested documents related to the structural collapse and the issuance of the building permit, plan-checking, engineering, project management and inspections related to 125 Crown Terrace. (Pending.)

3) The General Services Administration, Human Resources division, conducted an independent investigation into the permitting process, plan-checking and inspections as they are related to 125 Crown Terrace and whether any DBI and/or City and County of San Francisco protocols or policies were violated by City personnel. (Completed.)


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City and County of San Francisco
Department of Building Inspection

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

CHRONOLOGY OF EVENTS

SUBJECT: 125 Crown Terrace, San Francisco

PREPARED BY: Tom C. Hui, S.E., C.B.O., Director

1. CCSF Alert dated December 17, 2013 of a house under construction that collapsed at 10:41p.m.

2. December 17, 2013

6:22 a.m.	Joe Duffy texted me regarding this incident.
9:00 a.m.	City Engineer (Fuad Sweiss) and Ray Lui, DPW called me and William Strawn. City Engineer suggested DBI declare an emergency demolition of subject building.
11:00 a.m.	William Strawn and I attended the ground-breaking event for 299 Fremont. We met the Channel 5 reporter at the door and briefed Mayor Lee on DBI's action plan.
1:00 p.m.	Engineer of Record obtained the emergency shoring permit issued by the 5th Floor plan review counter.
2:00 p.m.	Dan Lowrey, William Strawn, and I visited the site and were interviewed by reporters. The Engineer of Record, Albert Urrutia, came to the site at 3:00 p.m. for structural observation. The contractor started to work on the shoring.

3. December 18, 2013

9:00 a.m.	BIC Meeting: This project was discussed with the Commission. President McCarthy expressed concerns on the urgency for corrective actions.
12:30 p.m.	City Attorney Dennis Herrera called DBI to stop all construction on the site, pending City Attorney

investigation per the Building Inspection Commission's request. His office followed up with a formal letter to DBI

4. December 19, 2013

9:00 a.m.	I sent out DBI's Action Plan to the Building Inspection Commission.
12:00 p.m.	Dan Lowrey and I went to the ground breaking event for 333 Brannan, and I informed Mayor Lee of DBI's Action Plan.

5. December 20, 2013

8:15 a.m.	I discussed with DBI Principal Engineer Hanson Tom the implementation of DBI's Action Plan.
3:41 p.m.	Yvonne Mere from the City Attorney's Office sent a letter to DBI withdrawing the Stop Work Order and enabling partial demolition to temporarily secure and stabilize the building structure at the site.

6. December 24, 2013

8:15 a.m.	I met with staff including DBI inspectors Dan Lowrey, Patrick O'Riordan and Matthew Greene, and DBI engineers Hanson Tom, Rudy Pada, and Robert Chun to remind them to perform their professional duties on all projects with fairness.

7. December 31, 2013

8:30 a.m.	I met with Hanson Tom, Ed Sweeney, William Strawn, and Angus McCarthy, to discuss the reports from Santos & Urrutia on this incident.

8. January 2, 2014

9:30 a.m.	Meeting between Hanson Tom, Ed Sweeney, Patrick Buscovich, and Rodrigo Santos to discuss DBI's concerns.

ATTACHMENT B

City and County of San Francisco
Department of Building Inspection

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

MEMORANDUM

DATE: December 19, 2013

TO: Honorable Members of the Building Inspection Commission

FROM: Tom C. Hui, S.E., C.B.O.
Director

SUBJECT: **DBI Action Plan to Investigate the 125 Crown Terrace Building Collapse of December 16, 2013**

As I proposed to the Building Inspection Commission at yesterday's Commission meeting, I am taking the following steps to understand what caused the construction site incident at 125 Crown Terrace, and what the mitigation plan will be to restore the structure to the newly-installed foundation.

First: The property owner's engineering firm Santos & Urrutia, will provide to DBI by 3:00 p.m. on Monday, December 23, 2013, its technical report explaining the cause of the structure's collapse and slide down the property slope. This report also will include the engineering firm's proposed mitigation plan, and timeline, to place the structure back upon its newly-poured foundation.

Second: The Director instructed the engineer of record to prepare an investigation report to explain the cause of the incident and what is the proposed mitigation and restoration plan in the future by no later than Monday, December 23, 2013. In addition to DBI engineers' review and professional critique of the owner's proposed mitigation and restoration plan, the Director ordered DBI's Deputy Director Edward Sweeney and DBI's Principal Engineer, Hanson Tom, to have a third-party structural engineering peer review to evaluate the technical feasibility of the report. The third-party's structural engineering peer review shall be done by Tim Mathison and Steve Lew of the original peer review group.

With the holidays upon us, we expect this third-party structural peer group evaluation to occur and to provide the DBI Director with its evaluation by no later than December 31, 2013. Once the Director has both this third-party professional report, and the evaluation from DBI's own engineers, the Director will then decide whether or not the owner's mitigation and restoration plan is technically feasible.

OFFICE OF THE DIRECTOR
1660 Mission Street – San Francisco CA 94103
Office (415) 558-6131 – FAX (415) 558-6225
Email: Tom.Hui@sfgov.org

Third: If the Director's decision is to implement the approved mitigation and restoration plan, Director Hui will have the Deputy Director for Inspections, a Chief Building Inspector and the District Director to be involved and monitoring, daily, the implementation of any approved work plan for this project. These inspections will ensure that all building code requirements are met, and that what is proposed in the approved plans can be implemented in the actual field conditions presented by the job site.

Fourth: The Director has ordered the Deputy Director for Permit Services, which includes oversight of DBI's professional plan review services, to work closely with Hanson Tom and DBI's Manager of Technical Services, who also is certified as a Marshall & Swift construction cost evaluator, and to make calculations of this specific project's valuation compared to other similar projects in San Francisco. Marshall & Swift is recognized, and used actively, by building departments throughout the United States to obtain accurate project and construction cost valuations. DBI has long utilized the Marshal & Swift published tables to examine project valuation estimates made by the property owner's contractors, and to provide trusted metrics to DBI Plan Review staff when evaluating whether or not submitted project valuations are accurate. When any discrepancy is found between the owner's estimate and the Marshall & Swift calculations, DBI issues a correction notice to the owner and revises the estimate to reflect accurate construction cost numbers for the location and local market.

Fifth: If all the technical engineering issues are resolved, the new application will be reviewed by DBI and Planning.

In addition to the above DBI Action Plan, please note that per a request by BIC Commissioner Walker, the City Attorney began a separate investigation into the 125 Crown Terrace construction incident. DBI is cooperating fully with the City Attorney's inquiry and welcomes this additional evaluation by the City's legal experts.

cc: Mayor Edwin M. Lee
Supervisor Scott Wiener
Steve Kawa, Mayor's Office
John Rahaim, Director of City Planning
Edward Sweeney, DBI Deputy Director of Permit Services
Dan Lowrey, DBI Deputy Director of Inspection Services
Hanson Tom, DBI Principal Engineer

ATTACHMENT C

City and County of San Francisco
Department of Building Inspection

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

MEMORANDUM

DATE: December 31, 2013

TO: Honorable Members of the Building Inspection Commission

FROM: Tom C. Hui
Tom C. Hui, S.E., C.B.O.
Director

SUBJECT: **Update of DBI Action Plan for 125 Crown Terrace and 3418 - 26th Street**

I would like to acknowledge and extend my appreciation to my staff who have been working hard on reviewing these projects during the past two weeks. It is my top priority to take all appropriate steps to ensure our permit review and inspection processes are transparent and to treat all customers fairly and equitably.

I have instructed Daniel Lowrey, Deputy Director, to oversee future building inspection for both projects at 125 Crown Terrace and 3418 – 26th Street. It will be required to have the district inspector, along with the chief building inspector or senior building inspector, to perform future inspections. All communications, including inspection scheduling, shall be handled by the Inspection Services clerks on the 3rd Floor.

I also have asked Hanson Tom, DBI Principal Engineer and Edward Sweeney, DBI Deputy Director, to review and comment upon the mitigation and restoration report for 125 Crown Terrace that was submitted by the engineer of record on Monday, December 23.

The third-party independent structural engineering peer review will be performed by Tim Mathison and Steve Lew of the original peer review group. They are among the best structural engineers in the Bay Area. The Department is still waiting for the independent SAC report, prior to issuing its final report. The final report should be ready by next week.

In addition to the report review and evaluation, I have asked Hanson Tom to evaluate the construction cost of Crown Terrace for both original and emergency shoring permits.

The new application shall be submitted to Planning and the Department of Building Inspection for review once all the technical engineering issues have been resolved.

OFFICE OF THE DIRECTOR
1660 Mission Street – San Francisco CA 94103
Office (415) 558-6131 – FAX (415) 558-6225
Email: Tom.Hui@sfgov.org

cc: Mayor Edwin M. Lee
Supervisor Scott Wiener
Steve Kawa, Mayor's Office
John Rahaim, Director of City Planning
Edward Sweeney, DBI Deputy Director of Permit Services
Dan Lowrey, DBI Deputy Director of Inspection Services
Hanson Tom, DBI Principal Engineer

SANTOS & URRUTIA
STRUCTURAL ENGINEERS INC

ATTACHMENT D

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

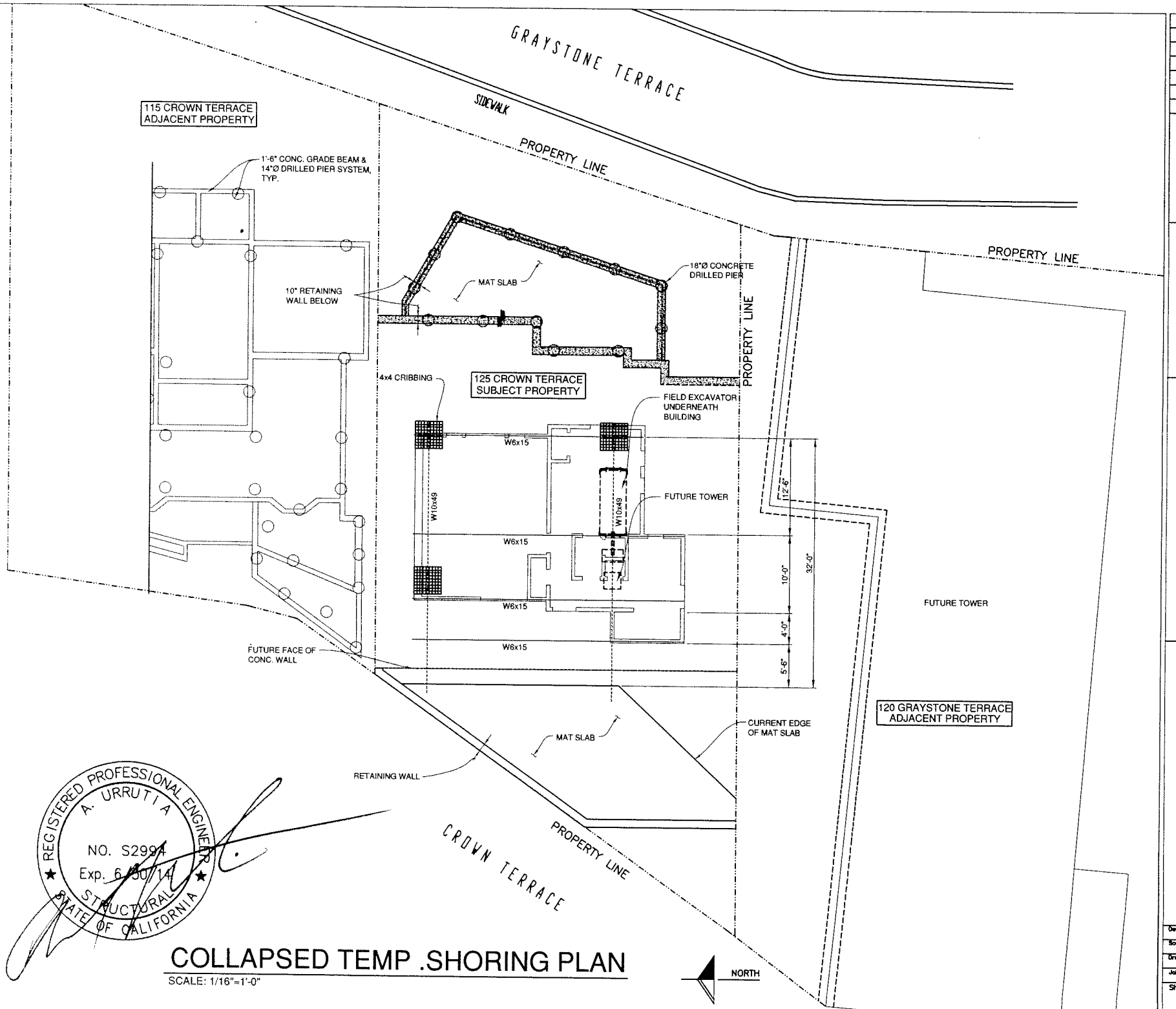
In order for construction to proceed, we will remove the walls of the eastern most section and retain them for reuse in their original position in the final structure, exposing the excavator. Stabilize the northern most section and move it to a flat space on the site. Demolish the remaining portions 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

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



REGISTERED PROFESSIONAL ENGINEER
A. URRUTIA
NO. S2994
Exp. 6/30/14
STRUCTURAL
STATE OF CALIFORNIA

COLLAPSED TEMP .SHORING PLAN

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

SANTOS & URRUTIA
STRUCTURAL
ENGINEERS
2401 HARRISON STREET
SAN FRANCISCO, CA. 94110
TEL (415) 642-7200
FAX (415) 642-7580

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:

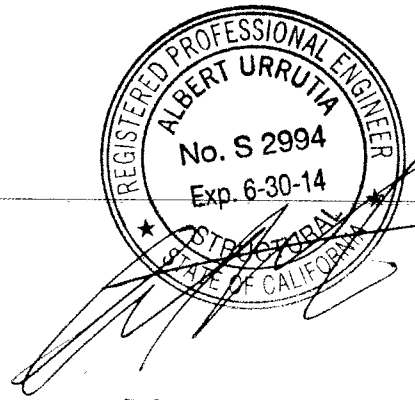
SHORING BEAM FAILURE

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
1x SHEATHING	2.5PSF
2x4 @ 16" O.C. (RAFTERS)	1.1 PSF
2x12 @ 16" O.C. (CEILING)	3.5 PSF
PLASTER + LATH	8 PSF
INSULATION	1 PSF
TOTAL	19.1 PSF

FLOOR

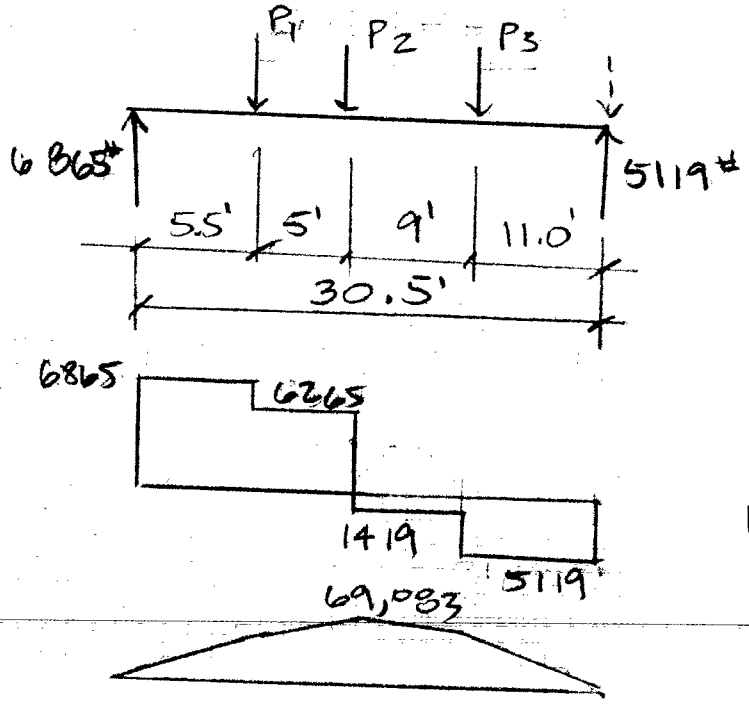
1x SHEATHING	2.5 PSF
1x HARDWOOD	3.0 PSF
2x 12 @ 16" O.C.	3.5 PSF
TOTAL	9.0 PSF

WALLS

EXTERIOR SIDING		2.5 PSF
2x4 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



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

$P_2 = P_1 + (\frac{10}{2})(\frac{26}{2}+8)(3+9)$ FLOOR
$+ (\frac{26}{2}+8)(\frac{22.5}{2})(19.1)$ ROOF
$+ (\frac{26}{2})(12.6)8' = 7684^{\#}$ WALL

$P_3 = (\frac{12.5+10}{2})(3+9)(\frac{26}{2}+6)$ FLOOR
$+ (\frac{12.5+10}{2})(8')(12.6)$ 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%

Figure 1: Collapse of Structure from Crown Terrace

Figure 2: Collapse of Structure from Graystone Terrace

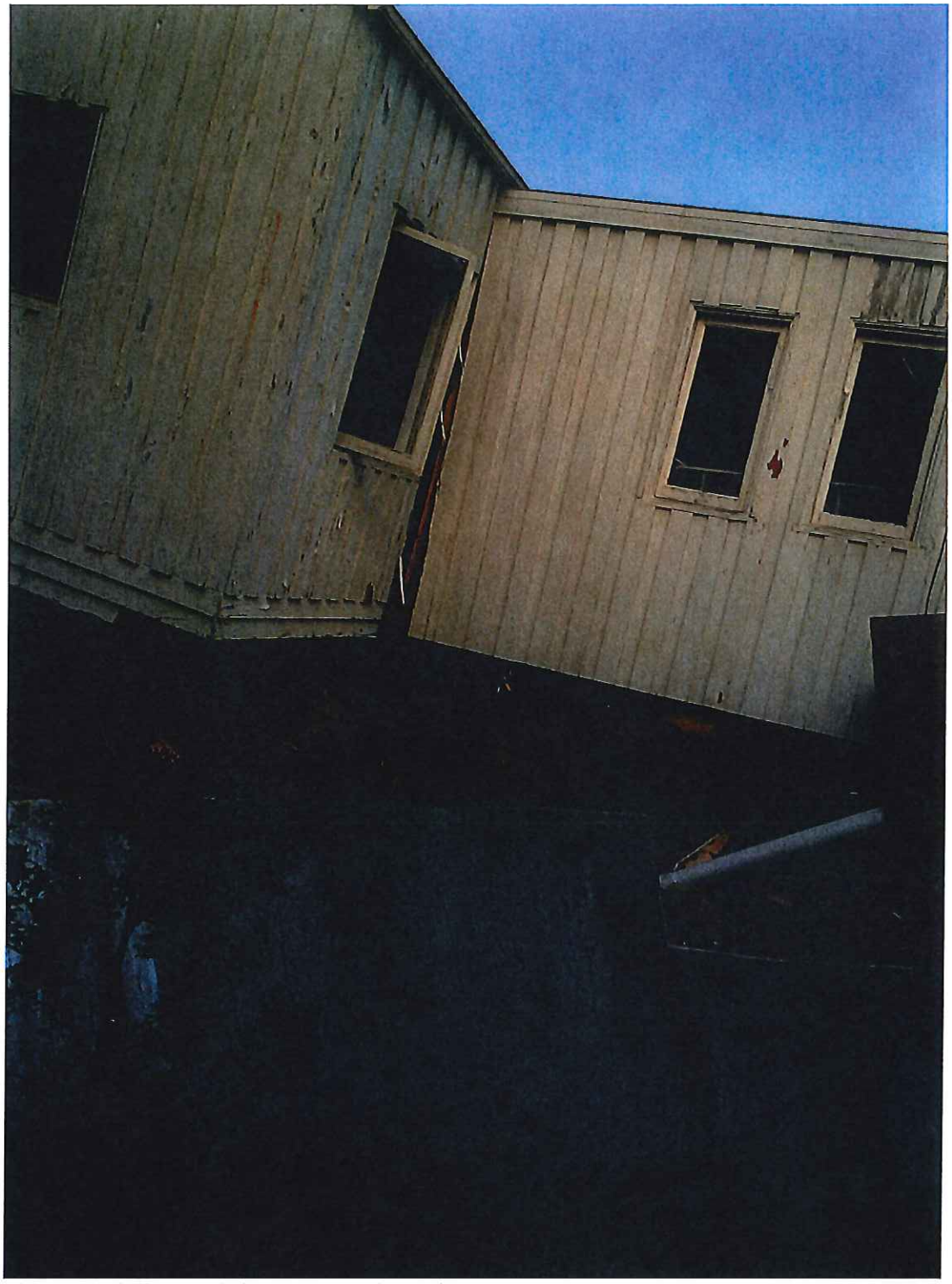


Figure 3: Collapse of Structure on Southside

Figure 4: Collapse of Structure on Southside

Figure 5: Collapse of Structure from Graystone Terrace

Figure 7: Beam Buckle Failure

Figure 8: Removal and Retention of Exterior Walls

Figure 9: Removal and Retention of Exterior Walls

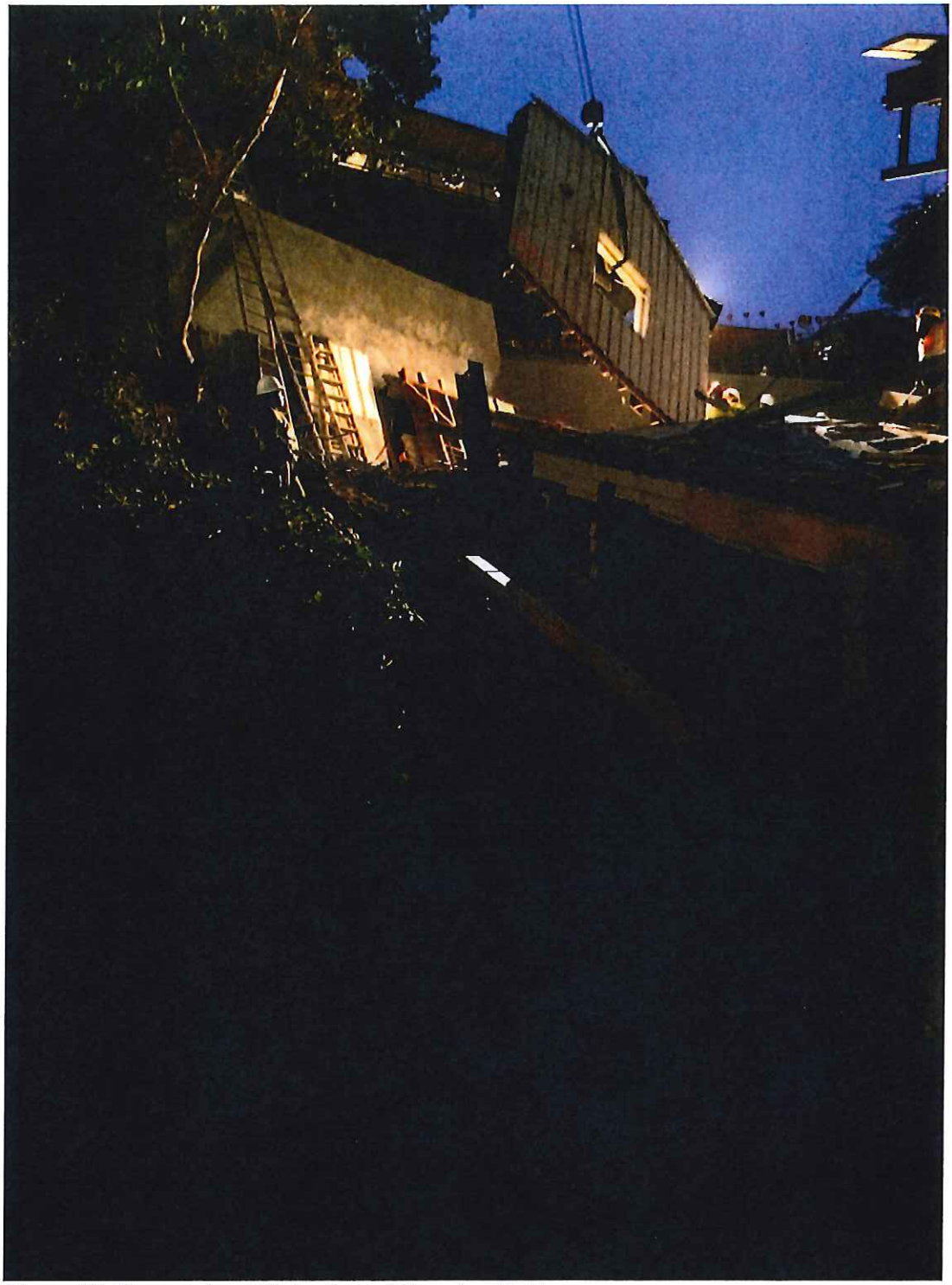


Figure 10: Removal and Retention of Exterior Walls

Figure 11: Removal and Retention of Exterior Walls

Figure 12: Removal and Retention of Exterior Walls

Figure 13: Removal and Retention of Exterior Walls

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: 415-665-9678
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

City and County of San Francisco
Department of Building Inspection

Edwin M. Lee, 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) 504-4949

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 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 design/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

Required Information: FAX: (415) 642-7590 Email: rsantos@santosurrutia.com

Reviewed by: [signature] Phone: [illegible]

DBI Engineer / 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 dbi.specialinspections@sfgov.org / 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.

SPECIAL INSPECTION REQUIRED PER SFBC SECTION 1704

Notify Structural Engineer of Record during Construction

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
(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

RECEIVED
DEC 17 2013
DEPT OF BUILDING INSPECTION

2013/12/17/4398

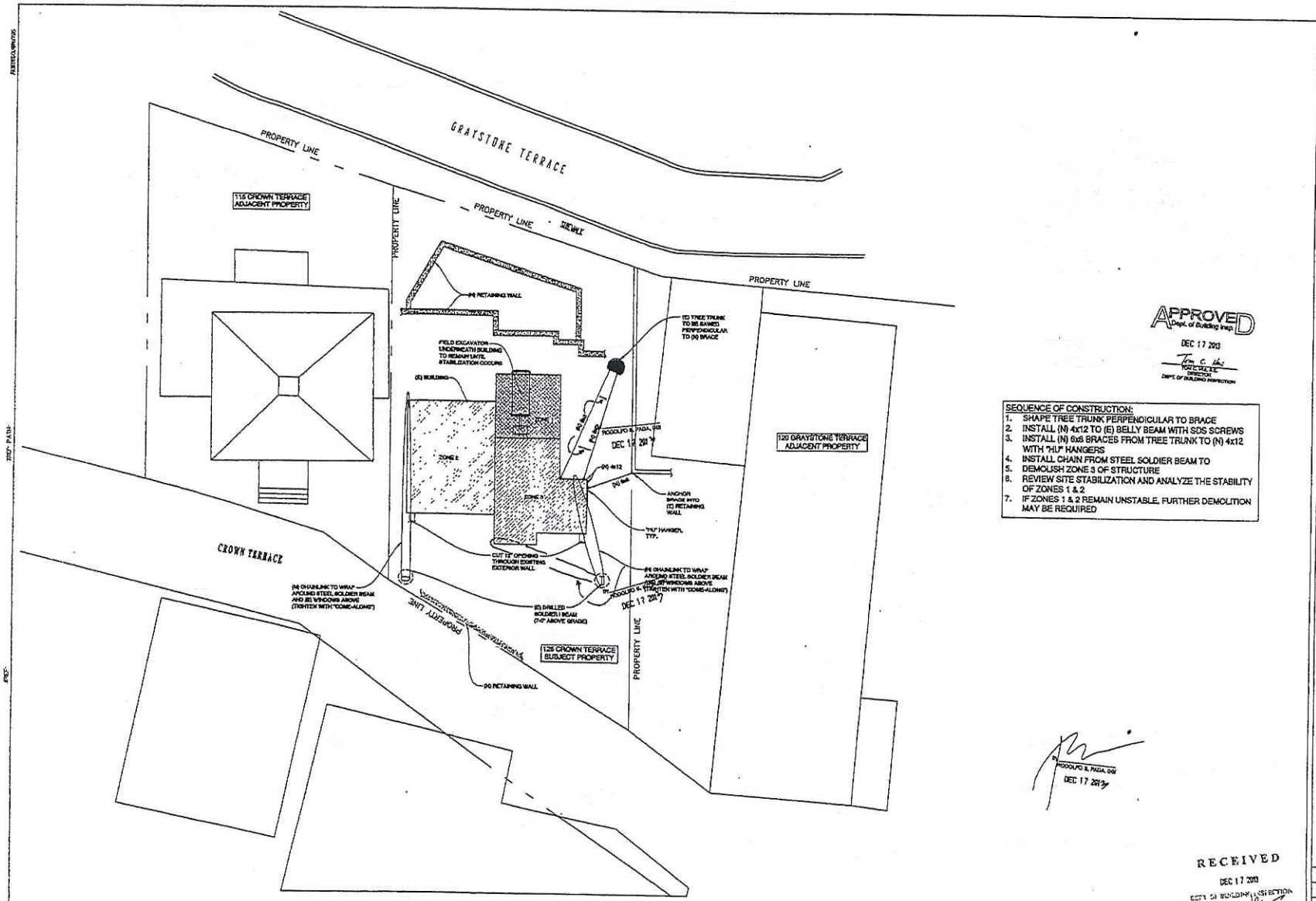
SANTOS & URRUTIA
STRUCTURAL ENGINEERS
2451 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7722
FAX (415) 642-7590

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	



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

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

NORTH

APPROVED
Dept. of Building Insp.
DEC 17 2013
TOM C. HUI
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) 6x6 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 M. PADA, GE
DEC 17 2013

RECEIVED
DEC 17 2013
DEPT OF BUILDING INSPECTION
ACCEPTED

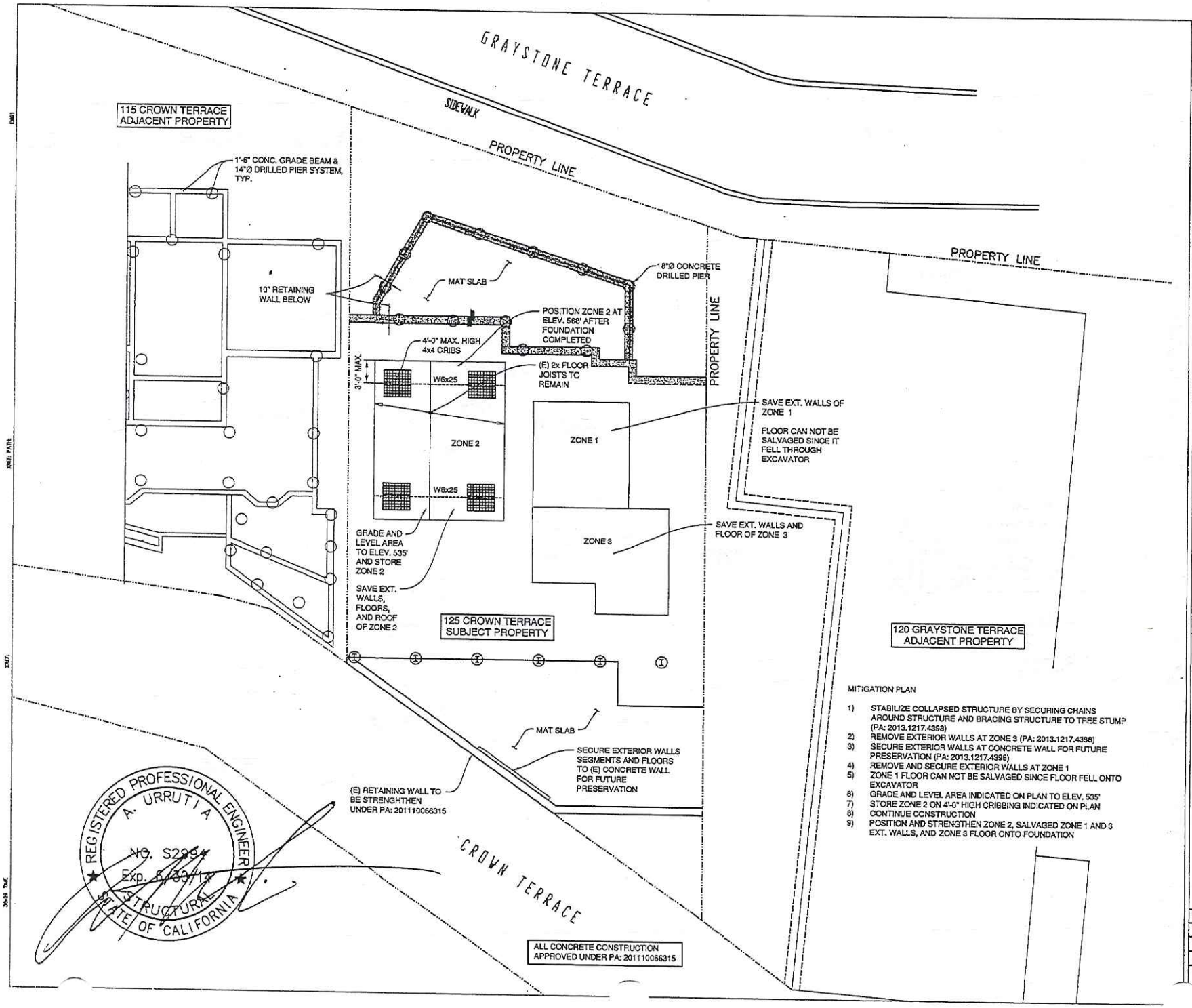
REVISIONS	BY

SANTOS & URRUTIA
STRUCTURAL
ENGINEERS
2421 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7123
FAX (415) 642-7990

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

SANTOS & URRUTIA STRUCTURAL ENGINEERS
2151 HARRISON STREET
SAN FRANCISCO, CA 94110
TEL: PHONE (415) 642-7722
FAX (415) 642-7580

REVISIONS

MITIGATION PLAN

MITIGATION
125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

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

ATTACHMENT E

Restoration Protocol

For

125 Crown Terrace
San Francisco, CA 94114

December 30, 2013

Prepared by Santos & Urrutia Structural Engineers, Inc.

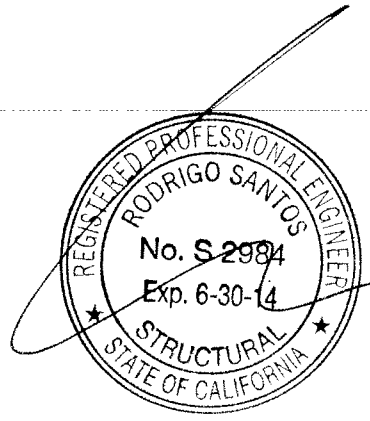


TABLE OF CONTENTS

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.

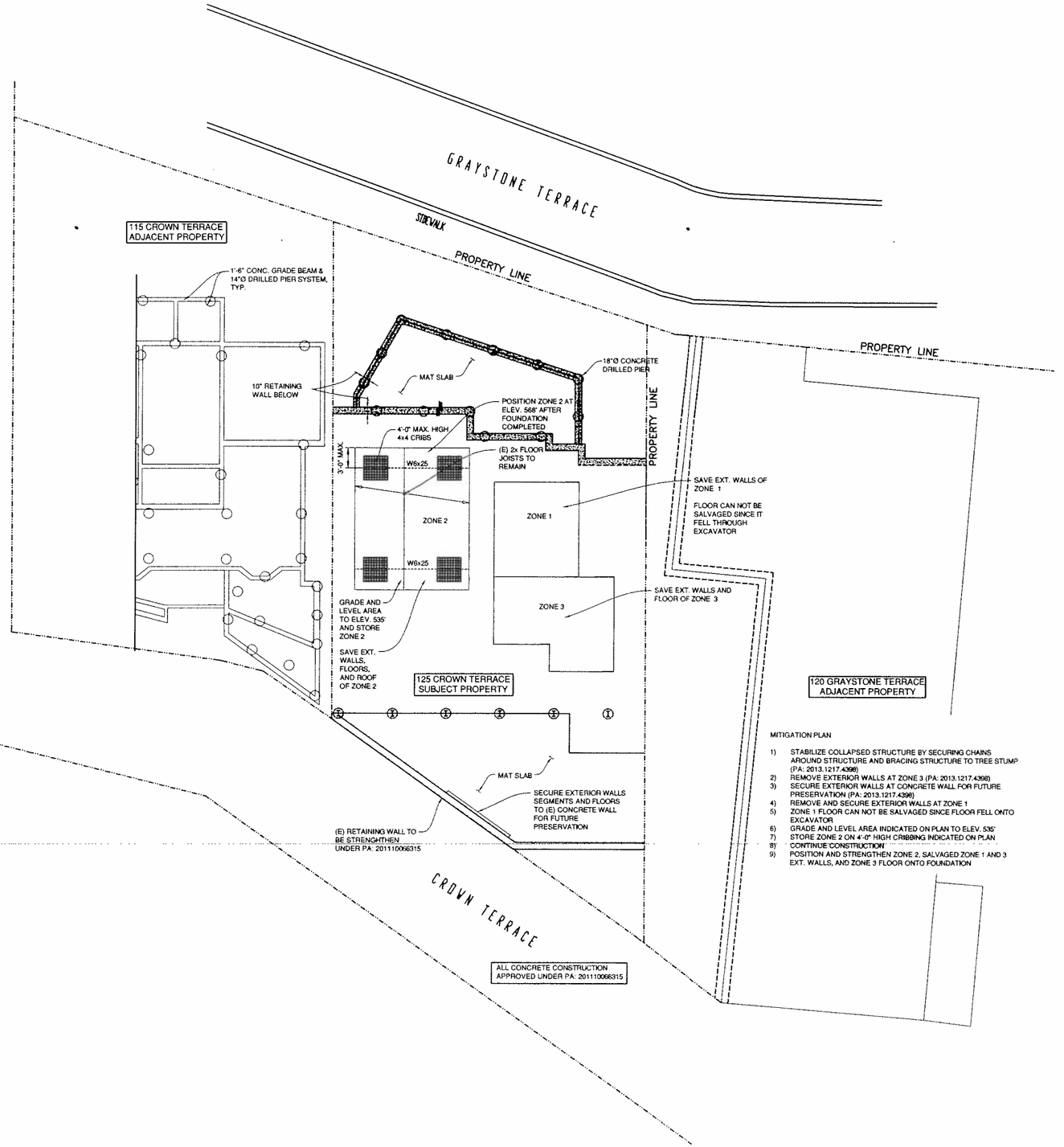
Should you have any questions, please contact me.

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
2451 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7722
FAX (415) 642-7590

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: 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: 415-665-9678
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:

City and County of San Francisco
Department of Building Inspection

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

NOTICE

SPECIAL INSPECTION REQUIREMENTS

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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.***

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

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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) 305-4903

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:

1. [ ] Concrete (Placement & sampling)
2. [ ] Bolts installed in concrete
3. [ ] Special moment - Resisting concrete frame
4. [ ] Reinforcing steel and prestressing tendons
5. Structural welding:
   A. Partially visual inspection
   [ ] Single pass fillet welds 5/16" or smaller
   [ ] Steel deck
   [ ] Welded studs
   [ ] Cold formed studs and joists
   [ ] Stair and railing systems
   [ ] Reinforcing steel
   B. Continuous visual inspection and NDT (Section 1704)
   [ ] All other welding (NDT exception: Fillet welds)
   [ ] Reinforcing steel; and [ ] NDT required
   [ ] Moment-resisting frames
   [ ] Others_____
6. [ ] High-strength bolting
7. [ ] Structural masonry
8. [ ] Reinforced gypsum concrete
9. [ ] Insulating concrete fill
10. [ ] Sprayed-on fireproofing
11. [ ] Piling, drilled piers and caissons
12. [ ] Shotcrete
13. [ ] Special grading, excavation and filling (Geo. Engineered)
14. [ ] Smoke-control system
15. [ ] Demolition
16. [ ] Exterior Facing
17. Retrofit of unreinforced masonry buildings:
    [ ] Testing of mortar quality and shear tests
    [ ] Inspection of repointing operations
    [ ] Installation inspection of new shear bolts
    [ ] Pre-installation inspection for embedded bolts
    [ ] Pull/torque tests per SFBC Sec.1607C & 1615C
18. Bolts installed in existing concrete or masonry:
    [ ] Concrete [ ] Masonry
    [ ] Pull/torque tests per SFBC Sec.1607C & 1615C
19. [ ] Shear walls and floor systems used as shear diaphragms
20. [ ] Hillsides
21. Special cases:
    [X] Shoring
    [ ] Underpinning; [ ] Not affecting adjacent property
    [ ] Affecting adjacent property: PA_____
    [ ] Others
22. [ ] Crane safety (Apply to the operation of tower cranes on highrise building) (Section 1704.3D)
23. [X] Others: "As recommended by professional of record" SHORING/STABILIZATION OF (E) BUILDING

24. Structural observations per Sec. 1710 (2010 SFBC) for the following: [ ] Foundations [ ] Steel framing
    [ ] Concrete construction [ ] Masonry construction [X] Wood framing
    [ ] Other_____

25. Certification is required for: [ ] Glu-lam components

Prepared by: RODRIGO SANTOS Phone: (415) 642-7722
Engineer/Architect of Record

Required information:
FAX: (415) 642-7722 Email: rsantos@santosurrutia.com

Review by: _____ Phone: (415) 558-6192
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, dbi.specialinspections@sfgov.org ; or FAX (415) 558-6474

SPECIAL INSPECTION REQUIRED PER SFBC SECTION 1704

Notify Structural Engineer of Record during construction

BY RODOLFO SPANDA, DBI
DEC 17 2013

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

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

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

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

RECEIVED
DEC 17 2013
DEPT OF BUILDING INSPECTION
COMPLETE

REVISIONS	BY

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

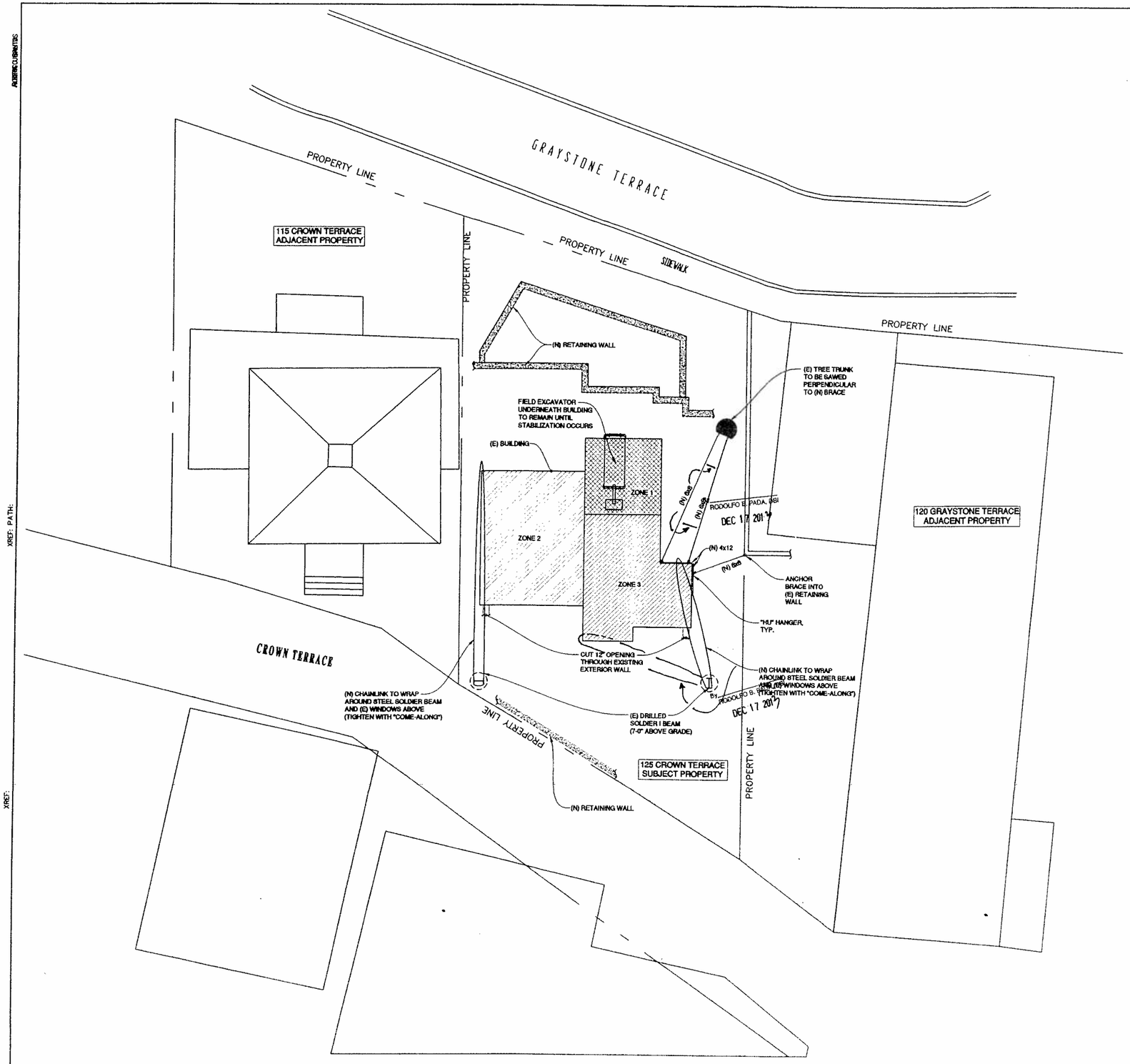
RODRIGO SANTOS No. S3804 STRUCTURAL ENGINEER

12/13/13

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

XREF:
XREF: PATH:
12/17/2013 11:35 AM Plotted by: rsantos
X:\Drawings\9300-9399\9356\9356PLOTSHEETS.dwg
36x24



APPROVED
Dept. of Building Insp.
DEC 17 2013
Tom C. Hui
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 B. PADA, DBI
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"

REVISIONS	BY

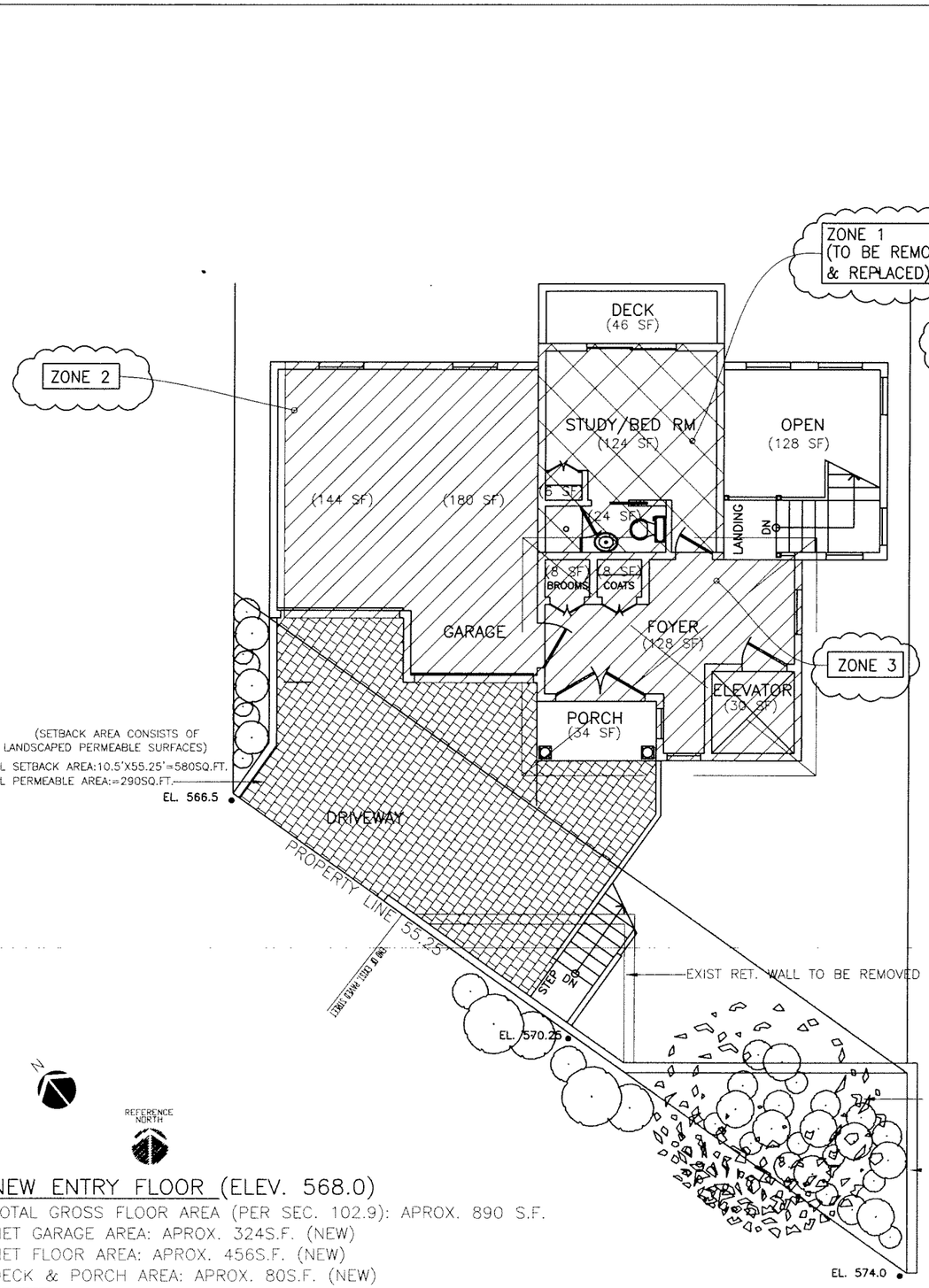
SANTOS & URRUTIA
STRUCTURAL ENGINEERS
2451 HARRISON STREET
SAN FRANCISCO, CA 94110
TELEPHONE (415) 642-7722
FAX (415) 642-7590

REGISTERED PROFESSIONAL ENGINEER RODOLFO B. PADA No. 52084 Exp. 8/2014 STATE OF CALIFORNIA

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

EMERGENCY SHORING/STABILIZATION
125 CROWN TERRACE
SAN FRANCISCO, CA

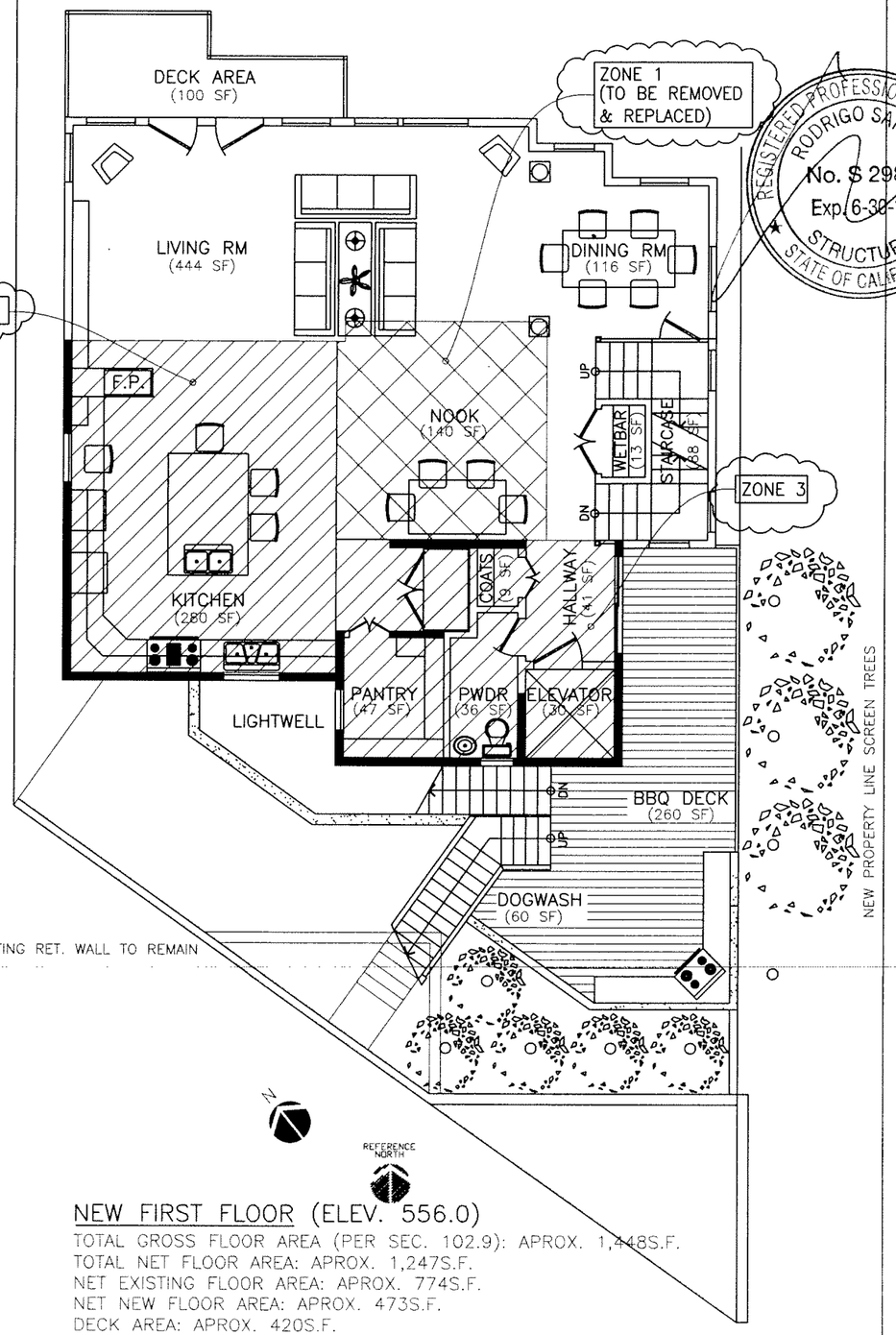
Date:	12/17/2013
Scale:	1/8" = 1'-0"
Drawn By:	R.S.
Job No:	9356
Sheet	S2
Of 2	Sheets



NEW ENTRY FLOOR (ELEV. 568.0)

TOTAL GROSS FLOOR AREA (PER SEC. 102.9): APROX. 890 S.F.
NET GARAGE AREA: APROX. 324S.F. (NEW)
NET FLOOR AREA: APROX. 456S.F. (NEW)
DECK & PORCH AREA: APROX. 80S.F. (NEW)

EXISTING CEILING TO BE RETAINED
EXISTING CEILING TO BE REMOVED



NEW FIRST FLOOR (ELEV. 556.0)

TOTAL GROSS FLOOR AREA (PER SEC. 102.9): APROX. 1,448S.F.
TOTAL NET FLOOR AREA: APROX. 1,247S.F.
NET EXISTING FLOOR AREA: APROX. 774S.F.
NET NEW FLOOR AREA: APROX. 473S.F.
DECK AREA: APROX. 420S.F.

EXISTING WALLS TO BE RETAINED
EXISTING FLOORS TO BE RETAINED
EXISTING FLOORS TO BE REMOVED

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

REVISIONS	
DATE	
10.01.10	11.01.12
11.15.10	
03.15.11	
03.28.11	
04.25.11	
08.30.11	
03.15.12	
09.24.12	

DESIGN BY: ZONE DEVELOPMENT SERVICES

DRAKE GARDNER 415.408.3401 (O)
10 CARLILE DR. 415.408.3429 (F)
NOVATO, CA. 94945 415.377.6694 (C)

PROJECT: SINGLE FAMILY RESIDENCIAL ALTERATION

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

DATE: 06.24.10
SCALE: 1/4IN.=1'-0"
DESIGNER: D.G.
JOB NO.:
SHEET NO.: A2

ATTACHMENT F

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

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
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.

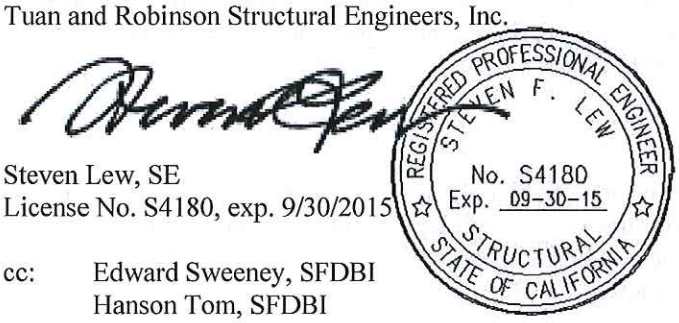
7. The Mitigation Plan sheet also indicates that Building Zone 2 is to be raised to Elevation 568' after completion of the foundation. Confirm if Zones 1 and 3 are to be raised to this level. Will an intermediate shoring plan showing temporary supports at Elevation 568' be required? Submit such a plan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

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 22, 2014

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

By Electronic Mail

Subject:: **125 Crown Terrace Shoring Collapse Causation**
SFDBI Structural Advisory Committee

Reference: 1. Shoring Letter Re: Structure Collapse 125 Crown Terrace dated 12/23/2013 by Santos & Urritia

2. Temporary Shoring Plan SK1 to SK5 dated 8/30/2013 by Santos & Urritia

Dear Mr. Hui,

The referenced August 8, 2013 Temporary Shoring Plans for the existing structure to remain required the portion of the existing building to remain be shored on steel beams supported by a total of 9 shoring towers placed under the existing building. Required spacing between shoring towers shown on the plans approved by DBI and included in the approved permit drawings was 9 to 12-feet.

The referenced Structure Collapse letter, by Santos & Urritia, the engineer of record for the shoring design, indicates the collapse resulted from buckling failure of an over-stressed steel beam at the south side of the temporary shoring. We note that the Collapsed Shoring Plan attached to the referenced letter indicates only 3 shoring towers were used and shoring beam span between towers was with an approximately 20-feet.

The above-described shoring at the site was not in accordance with the DBI permitted plans. The reduced number of shoring towers, associated increased tower spacing and longer span of the shoring beams is likely the cause of the reported beam failure and subsequent collapse.

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.

Very truly yours
Tuan and Robinson Structural Engineers, Inc

Timothy C. Mathison
Vice President

cc: Edward Sweeney, SFDBI; Hanson Tom, SFDBI; Frank L Rollo SFDBI SAC Chair

ATTACHMENT G

City and County of San Francisco
Department of Building Inspection

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

December 31, 2013

Dear Director Hui,

As assigned in accordance with the instructions in the Action Plan dated December 19, 2013, here are our recommendations for 125 Crown Terrace:

1) The Engineer of Record (EOR) needs to expand in the report explaining the reasons that the construction sequences are deviated from the approved permit.

2) The EOR shall submit to the department all relevant inspection record performed by the Structural Engineer, the Geotechnical Engineer and the Geologist.

3) The EOR shall engage and work with the City Planning Department for the purpose of preservation of the existing house; identify existing walls and flooring system to be preserved and used for the new house.
The EOR shall start this process immediately to avoid prolonging the existing house from exposing to the environment.
The EOR shall monitor the collapsed house daily and provide addition of supports to secure the house as needed. EOR is required to submit to DBI for permit to perform hazard mitigation work.

4) The EOR shall provide responses to the evaluation reports, dated December 31, 2013, prepared by Structural Advisory Committee (SAC) member Steven Lew. The EOR is required to submit to DBI for permit to perform remedial work, as necessary, to meet the requirements of this evaluation report. (Resolved: See Attachment #2)

5) The EOR shall submit new permit to revise the permit application #201110066315, especially the structural drawings, to incorporate the reuse of the existing house walls and flooring system.
In the event the new structural system and the shoring system changed drastically from the approved permit application #201110066315, a SAC shall be required.

6) The EOR shall perform items 1, 2, 3 & 4 within one week of the issuance of this report; or, as approved by DBI. In addition, the EOR shall provide a schedule to perform item #5. DBI and City Planning shall review and approve the schedule.

1660 Mission Street – San Francisco CA 94103
Office (415) 558-6088 – FAX (415) 558-6401
Website: www.sfdbi.org

7) Additional Permit Fees to DBI:
   125 Crown Terrace: 2011-1006-6315 .... $24,181.53
   115 Crown Terrace: 2013-1008-8806 .... $2,127.79

From: Ed Sweeney, Deputy Director
Hanson Tom, Principal Engineer
David Leung, TSD Manager

Attachments:
1) Evaluation Report (by Ed Sweeney, Hanson Tom, David Leung)
2) Construction value and permit fee (by Ed Sweeney, Hanson Tom, David Leung)
3) SAC evaluation report (by Steven Lew, S.E.)
4) EOR reports (by Santos & Urrutia Structural Engineers, Inc.)

1) Evaluation Report

(by Ed Sweeney, Hanson Tom, David Leung)

City and County of San Francisco
Department of Building Inspection

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

Evaluation Report:

In response to Santos & Urrutia Structural Engineers' EOR Reports
Ref: Engineer of Record (EOR) Reports Attached:
Dated Dec. 23, 2013 & Dec. 30, 2014
Address: 125 Crown Terrace

Date: Dec. 30, 2013
To: Tom Hui, Director
Thru: Ed Sweeney, Deputy Director
From: Hanson Tom, Principal Engr.
David Leung, TSD Manager

Dear Director Hui:

FINDING:

We have reviewed the EOR reports and found the reports are incomplete with many details not totally in agreement with your requests stipulated in your Action Plan dated on Dec. 19, 2013. (Attachment #1)

In your Action Plan to the DBI Commission, you specially required the EOR provide engineering report in explain these items: the "cause of the structure collapse; mitigation plan; and timeline to place the structure back upon its newly-poured foundation".

The EOR report explained the cause of collapse is due to the buckling of one of the cradle beams! The failure of this beam caused the existing house sliding downward to the slope; and the existing house splitting into three portions!

However, the report didn't address the construction sequence which the contractor must follow in accordance with the approved drawings SK-4 and SK-5. In these two drawings, the construction sequences were stipulated by the EOR and were reviewed and approved by the "Structural Advisory Committee (SAC). Nine temporary cribbings have to be in place prior to install the cradle beams to lift the existing house. In addition, these nine cribbings are required to design to resist for environmental loads such as earthquake and wind load. Drawing SK-5 clearly shown the cribbings are to be secured by lateral bracings. However, the field pictures clearly shown there are only few cribbings installed to lift the house upward and there is no lateral bracing in place, which probably is the main cause of the collapse of the temporary supports and the sliding of the house downward of the slope.

There is no indication in the report spelled out the interfacing of the EOR, the Soil Engineer / Geologist and the contractor. The approved drawing clearly stipulated that the shoring contractor is required to work and coordinate with these three parties! Special inspection for shoring is clearly stipulated in the approved drawing S1.0 and the EOR report didn't address this inspection requirement!

Since the existing house collapsed, the EOR has obtained a permit application #201312174398 stabled and also removed some portion of the existing house to mitigate the falling hazards. However, as noted by the EOR, these temporary measures are only useful for the short time. There are no longer team measures stipulated by the EOR to prevent the existing portion of the house from moving further downward!

The EOR stipulated that the collapsed existing house to be removed into three portions and preserved for future restoration back with the new house. The three existing portions identified into three zones, the southern portion as Zone 1, the eastern portion as Zone 2 and the northern portion as Zone 3. Due to the impact of collapse, the southern portion Zone 1 suffered damages beyond preservation and will be demolished; the eastern portion Zone 2 walls to be removed and reused into the final position of the new building; the northern portion Zone 3 to be relocated to a flat area in the site and preserved for future restoration back with the new house. The EOR shown in its sketches how the preserved portions to be used with the new house.

However, upon reviewed the record permit structural drawings S2, S3 and S4 under issued permit application # 201110066315 S1, the framings for the new house are shown with new construction; there is no indication that any existing framings, walls and floor structural elements to be used.

The EOR report didn't include any schedule of submittal of permit application for reconstruction!

Recommendation:

The staff recommending the following action items for the department:

1) The EOR needs to expand in the report explaining the reasons that the construction sequences are deviated from the approved permit.

2) The EOR shall submit to the department all relevant inspection record performed by the Structural Engineer, the Geotechnical Engineer and the Geologist.

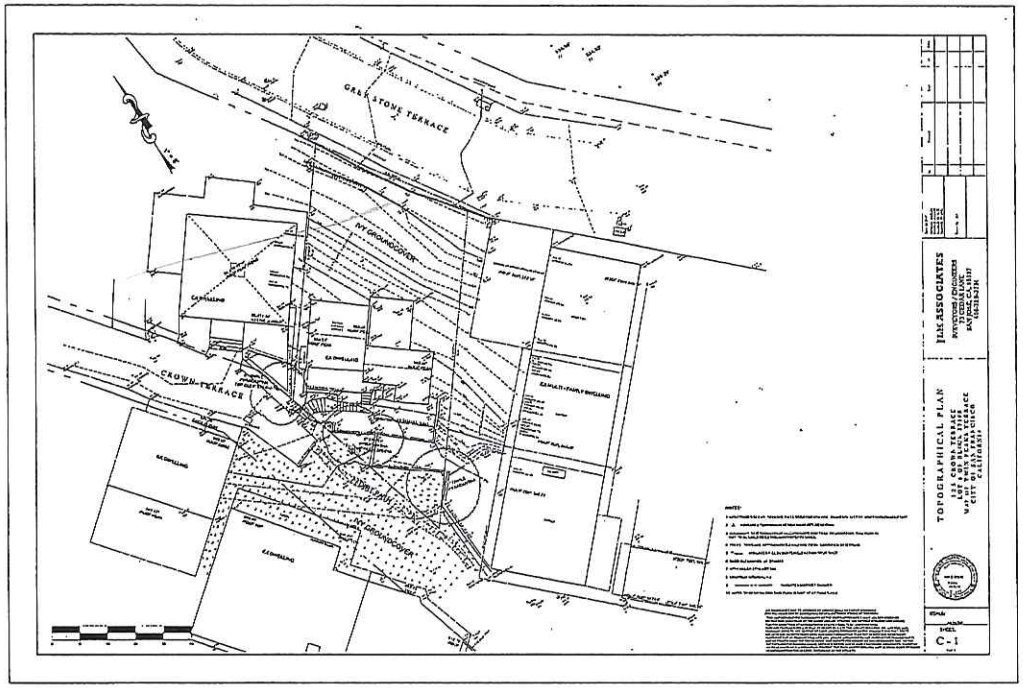
3) The EOR shall engage and work with the City Planning Department for the purpose of preservation of the existing house; identify existing walls and flooring system to be preserved and used for the new house. The EOR shall start this process immediately to avoid prolonging the existing house from exposing to the environment.

The EOR shall monitor the collapsed house daily and provide addition of supports to secure the house as needed. EOR is required to submit to DBI for permit to perform hazard mitigation work.

4) The EOR shall submit new permit to revise the permit application #201110066315, especially the structural drawings, to incorporate the reuse of the existing house walls and flooring system.

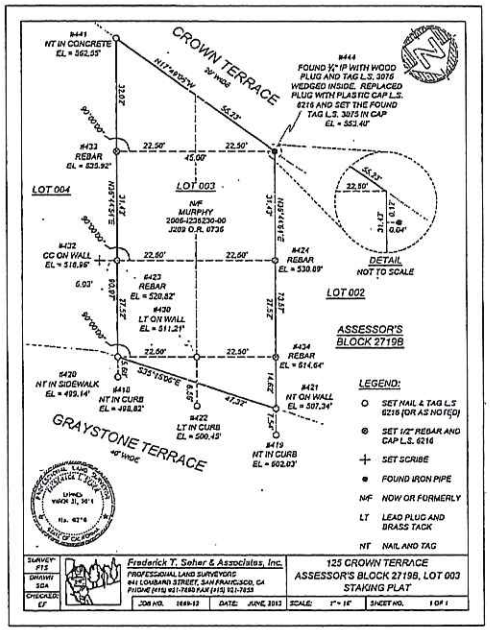
   In the event the new structural system and the shoring system changed drastically from the approved permit application #201110066315, a SAC shall be required.

5) The EOR shall perform items 1, 2, & 3 within one week of the issuance of this report; or, as approved by DBI. In addition, the EOR shall provide a schedule to perform item #4. DBI and City Planning shall review and approve the schedule.



ORIGINAL TOPOGRAPHIC MAP (DATED 09/27/12)

SCALE: AS NOTED



NEW TOPOGRAPHIC MAP (DATED 06/13)

SCALE: AS NOTED

HAROLD LEWIS & ASSOCIATES
GEOTECHNICAL CONSULTANTS

2418 Sixteenth Ave. * San Francisco, 94116 * 4168658678

September 26, 2013
Project SF-13-497-SA

Mr. Neil J. Murphy
4153 24th. Street
San Francisco, CA. 94114

RE: Review of Soil Engineering
Aspects of Shoring Plans
Proposed Addition to
125 Crown Terrace
San Francisco, California

Dear Mr. Murphy:

We have reviewed the soil engineering aspects of the shoring plans (Sheets SK1, SK2, SK3, SK4, SK5, SH1-N, SH2-N, SH1-S and SH2-N dated 09-20-13) prepared by Santos & Urrutia, Inc. - Structural Engineers.

Our review indicates that the soil engineering aspects of the shoring plans generally conform to the recommendations presented in our Foundation Investigation Report dated June 28, 2013.

As mentioned on page 11 of our report, our office should: (1) review the final grading, underpinning and shoring plans prior to construction, (2) observe the general excavation operations at the site, (3) observe the installation of the temporary shoring and all tie-backs (soak anchors), (4) observe the final subgrade conditions in the foundation excavation for the building, (5) observe the installation of drains behind the retaining walls and beneath the Mat foundation and (6) observe the placement of all backfill materials behind retaining walls.

SF-13-497-SA PAGE 2

These observations will be necessary in order to write the letter covering the Soil Engineering aspects of the new construction, as required by the City of San Francisco Building Code, Special Inspections Code Sections 75-13 and 1701.

Our review services have been performed in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

If you have any questions concerning our review, please call us.

Very truly yours
Harold Lewis & Associates
Harold L. Lewis
C.E. 33759

HLL/ram EV

Copies: Addressee (2)
Santos & Urrutia, Inc. - Structural Engineers (6)

HAROLD LEWIS & ASSOCIATES

Robert Chun, DBI
SEP 24 2013

APPROVED
Dept. of Building Insp.
OCT 08 2013
for C. Ho
ACTING DIRECTOR
DEPT. OF BUILDING INSPECTION

ADDENDUM #

SEP 25 2013

SITE PERMIT ADDENDUM
FOR CONSTRUCTION OF:

REVISIONS	BY

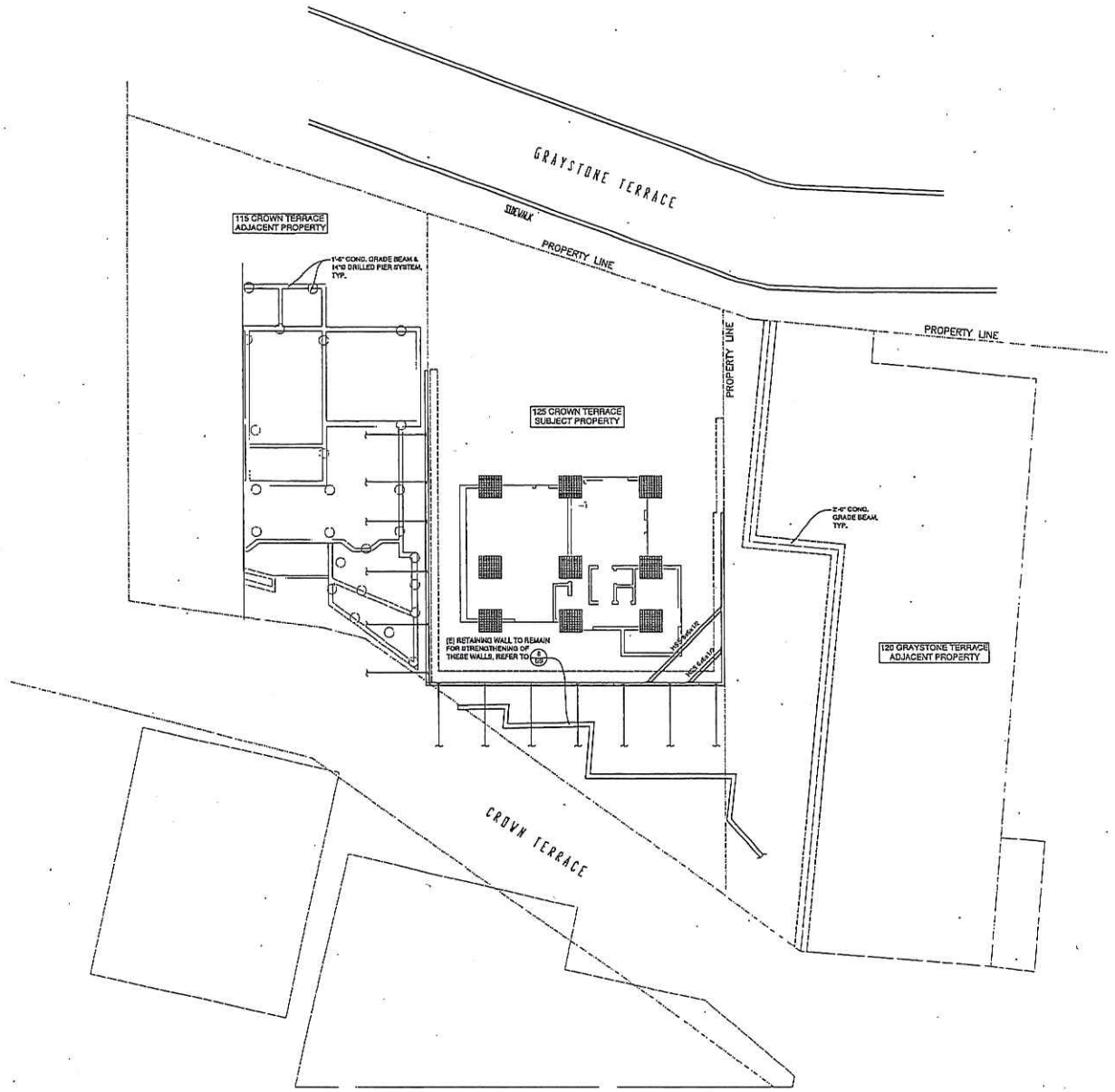
SANTOS & URRUTIA STRUCTURAL ENGINEERS
245 HARRISON STREET
SAN FRANCISCO, CA 94105
TELEPHONE (415) 543-7722
FAX (415) 543-7590

TEMPORARY SHORING

TOPOGRAPHIC MAPS AND SOILS COMPLIANCE LETTER FOR TEMPORARY SHORING BY HAROLD LEWIS

SINGLE FAMILY RESIDENCE
125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

Date:	08/30/13
Scale:	AS NOTED
Drawn By:	R.S.
Job No:	8180
Sheet	SK2
Of 9	Sheets.



SITE PLAN WITH NEW SHORING PLAN @ ELEVATION 556'

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

NORTH

Robert Chun, DBI
SEP 24 2013

APPROVED
Dept. of Building Insp.
OCT 08 2013
ACTING INSPECTOR
DEPT. OF BUILDING INSPECTION

ADDENDUM #

SEP 25 2013

SITE PERMIT ADDENDUM
FOR CONSTRUCTION OF:

REVISIONS	BY

SANTOS & URRUTIA STRUCTURAL ENGINEERS
235 MONTGOMERY STREET
SAN FRANCISCO, CA 94104
TELEPHONE (415) 543-4788
FAX (415) 543-7782

TEMPORARY SHORING

SUBJECT SITE PLAN w/ SHORING PLAN & NEIGHBOR FOUNDATION PLAN

SINGLE FAMILY RESIDENCE

125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

Date:	08/30/13
Scale:	1/8"=1'-0"
Drawn By:	R.S.
Job No:	8180
Sheet	S3
of 9	Sheets

RODRIGO SANTOS

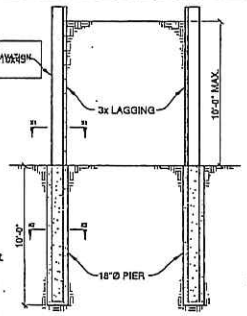
XREF: PATH:

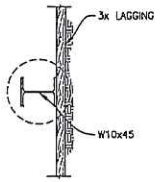
3621

GENERAL SITE NOTES:

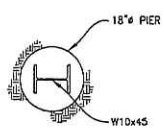
- ALL SITE GRADING, FOUNDATION EXCAVATIONS, BACKFILL, AND GEOTECHNICAL CONSTRUCTION SHOULD BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE PROJECT GEOTECHNICAL REPORT PREPARED BY HAROLD LEWIS & ASSOCIATES GEOTECHNICAL CONSULTANTS, (DATED JUNE 28, 2013) AS WELL AS THE PROJECT GEOLOGIC REPORT PREPARED BY EARTH FOCUS GEOLOGICAL SERVICES, INC (DATED JULY 22, 2013).
- THE CONTRACTOR SHOULD COORDINATE ALL SUCH WORK WITH THE GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST SO THAT THE NECESSARY TESTS AND ON-SITE CONSTRUCTION REVIEWS CAN BE MADE. THE GEOTECHNICAL ENGINEER AND GEOLOGIST SHOULD BE NOTIFIED AT LEAST 48 HOURS PRIOR TO OUR REQUIRED SITE OBSERVATIONS OF FOUNDATION EXCAVATIONS AND GEOTECHNICAL/GEOLOGIC-RELATED CONSTRUCTION.
- CONTRACTOR SHOULD BE PREPARED TO PROVIDE TEMPORARY MEANS OF SUPPORT IF RECOMMENDED BY ENGINEERING GEOLOGIST. THIS MAY INCLUDE INSTALLING INCLINE RAKERS OR STEEL PLATES

AREA OF EXCAVATION



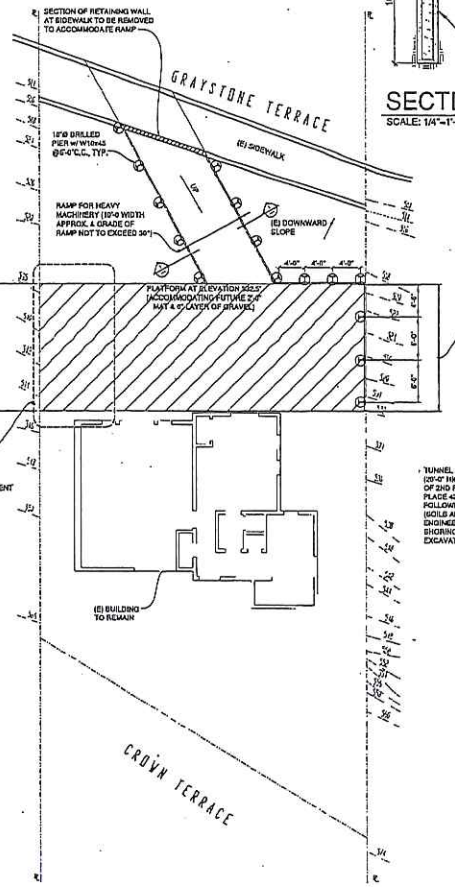


SECTION X1–X1 (PLAN VIEW)
SCALE: 3/4"=1'-0"

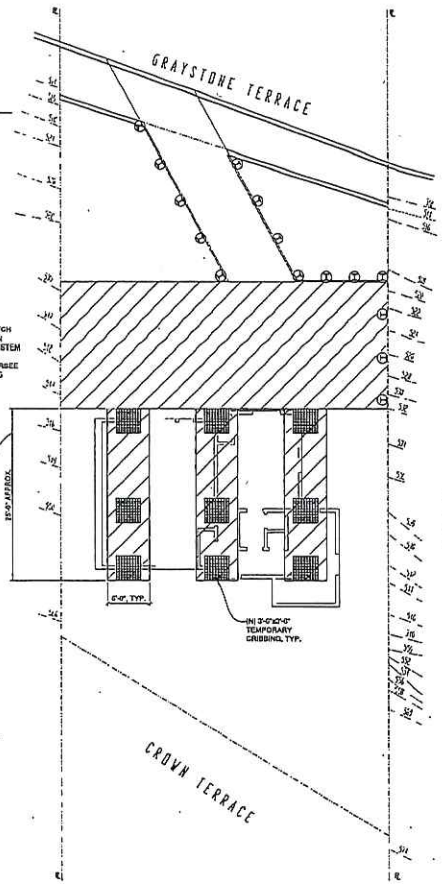


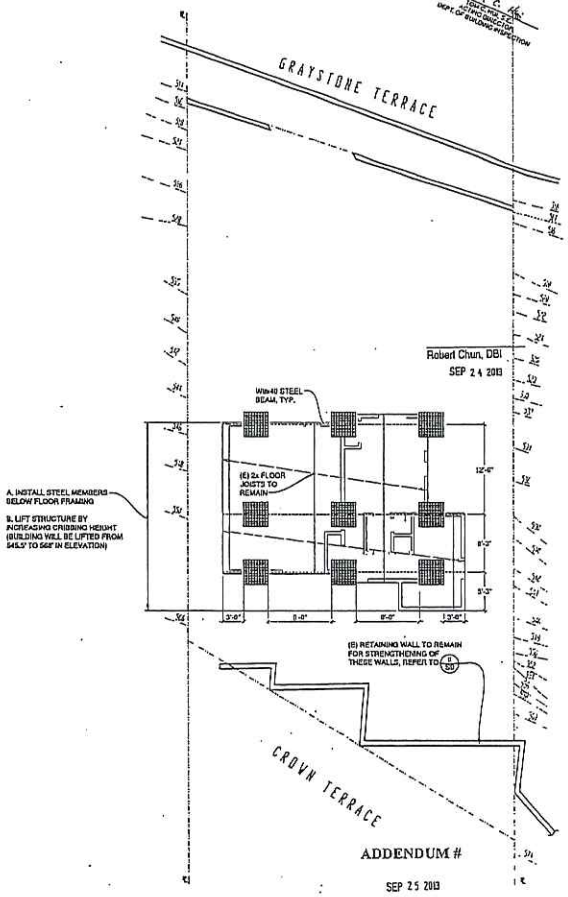
SECTION X2–X2 (PLAN VIEW)
SCALE: 3/4"=1'-0"

APPROVED
Dept. of Building Insp.
OCT 0 8 2013
DEPT. OF BUILDING INSPECTION



SECTION 1-1
SCALE: 1/4"=1'-0"





ADDENDUM #
SEP 25 2013
SITE PERMIT ADDENDUM FOR CONSTRUCTION OF:

SEQUENCE OF
SHORING CONST. STAGE 1 (535')
SCALE: 1/8"=1'-0"

NORTH

SEQUENCE OF
SHORING CONST. STAGE 2 (532.5')
SCALE: 1/8"=1'-0"

NORTH

SEQUENCE OF SHORING
CONSTRUCTION STAGE 3 (545.5' TO 568')
SCALE: 1/8"=1'-0"

NORTH

REVISIONS	BY

SANTOS & URRUTIA
STRUCTURAL
ENGINEERS
NC
401 Alabama Street
San Francisco, CA 94110
Telephone (415) 621-7722
Fax (415) 642-7300

TEMPORARY SHORING

SEQUENCE OF SHORING
CONSTRUCTION STAGES 1, 2 & 3

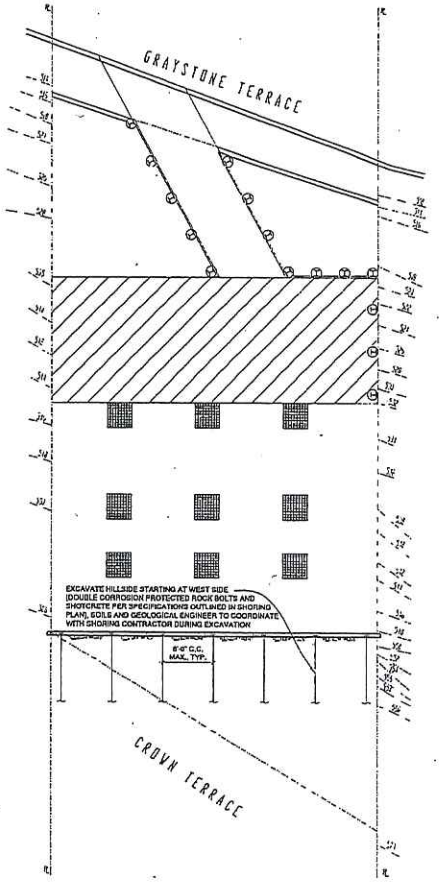
SINGLE FAMILY RESIDENCE
125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

Date:	08/30/13
Scale:	1/8"=1'-0"
Drawn By:	R.S.
Job No:	8180
Sheet	S4
Of 9	Sheets

GENERAL SITE NOTES:

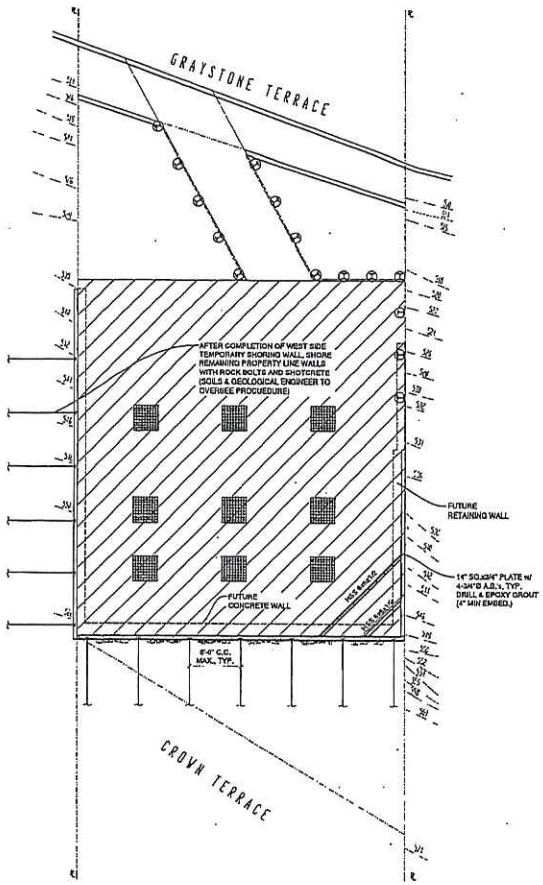
- ALL SITE GRADING, FOUNDATION EXCAVATIONS, BACKFILL, AND GEOTECHNICAL CONSTRUCTION SHOULD BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE PROJECT GEOTECHNICAL REPORT PREPARED BY HAROLD LEWIS & ANNOCIATES GEOTECHNICAL CONSULTANTS, (DATED JUNE 29, 2012) AS WELL AS THE PROJECT GEOLOGIC REPORT PREPARED BY EARTH FOCUS GEOLOGICAL SERVICES, INC (DATED JULY 22, 2013).
- THE CONTRACTOR SHOULD COORDINATE ALL SUCH WORK WITH THE GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST SO THAT THE NECESSARY TESTS AND ON-SITE CONSTRUCTION REVIEWS CAN BE MADE. THE GEOTECHNICAL ENGINEER AND GEOLOGIST SHOULD BE NOTIFIED AT LEAST 48 HOURS PRIOR TO OUR REQUIRED SITE OBSERVATIONS OF FOUNDATION EXCAVATIONS AND GEOTECHNICAL/GEOLOGIC-RELATED CONSTRUCTION.
- CONTRACTOR SHOULD BE PREPARED TO PROVIDE TEMPORARY MEANS OF SUPPORT IF RECOMMENDED BY ENGINEERING GEOLOGIST. THIS MAY INCLUDE INSTALLING INCLINE RAKERS OR STEEL PLATES

AREA OF EXCAVATION



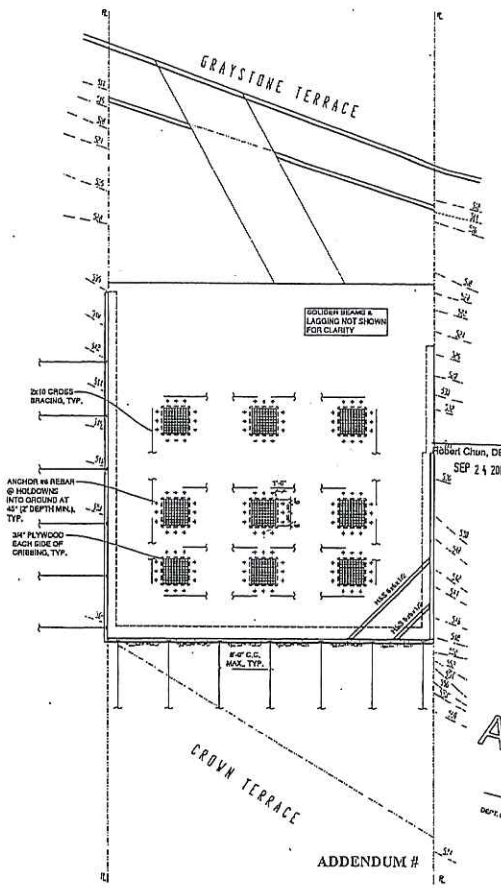
SEQUENCE OF SHORING
CONSTRUCTION STAGE 4 (532.5')
SCALE: 1/8"=1'-0"

NORTH



SEQUENCE OF SHORING
CONSTRUCTION STAGE 5 (532.5')
SCALE: 1/8"=1'-0"

NORTH



Robert Chun, DBI
SEP 24 2013

ADDENDUM #
SEP 25 2013
SITE PERMIT ADDENDUM FOR CONSTRUCTION OF:

APPROVED
Dept. of Building Inspection
OCT 09 2013
DEPT. OF BUILDING INSPECTION

SEQUENCE OF SHORING
CONSTRUCTION STAGE 6 (532.5')
SCALE: 1/8"=1'-0"

NORTH

REVISIONS	BY

SANTOS & URRUTIA STRUCTURAL ENGINEERS
SAN FRANCISCO STREET
SAN FRANCISCO, CA 94133
TELEPHONE (415) 642-7722
FAX (415) 642-7590

TEMPORARY SHORING

SEQUENCE OF SHORING
CONSTRUCTION STAGES 4, 5 & 6

SINGLE FAMILY RESIDENCE
125 CROWN TERRACE
SAN FRANCISCO, CALIFORNIA

Date:	08/30/13
Scale:	1/8"=1'-0"
Drawn By:	R.S.
Job No:	8180
Sheet	S5
of 9	Sheets

ROPOO SANTOS
XREF: PATH:
XREF:
3x24

City and County of San Francisco
Department of Building Inspection

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

MEMORANDUM

DATE: December 19, 2013

TO: Honorable Members of the Building Inspection Commission

FROM: Tom C. Hui
Tom C. Hui, S.E., C.B.O.
Director

SUBJECT: **DBI Action Plan to Investigate the 125 Crown Terrace Building Collapse of December 16, 2013**

As I proposed to the Building Inspection Commission at yesterday's Commission meeting, I am taking the following steps to understand what caused the construction site incident at 125 Crown Terrace, and what the mitigation plan will be to restore the structure to the newly-installed foundation.

First: The property owner's engineering firm Santos & Urrutia, will provide to DBI by 3:00 p.m. on Monday, December 23, 2013, its technical report explaining the cause of the structure's collapse and slide down the property slope. This report also will include the engineering firm's proposed mitigation plan, and timeline, to place the structure back upon its newly-poured foundation.

Second: The Director instructed the engineer of record to prepare an investigation report to explain the cause of the incident and what is the proposed mitigation and restoration plan in the future by no later than Monday, December 23, 2013. In addition to DBI engineers' review and professional critique of the owner's proposed mitigation and restoration plan, the Director ordered DBI's Deputy Director Edward Sweeney and DBI's Principal Engineer, Hanson Tom, to have a third-party structural engineering peer review to evaluate the technical feasibility of the report. The third-party's structural engineering peer review shall be done by Tim Mathison and Steve Lew of the original peer review group.

With the holidays upon us, we expect this third-party structural peer group evaluation to occur and to provide the DBI Director with its evaluation by no later than December 31, 2013. Once the Director has both this third-party professional report, and the evaluation from DBI's own engineers, the Director will then decide whether or not the owner's mitigation and restoration plan is technically feasible.

OFFICE OF THE DIRECTOR
1660 Mission Street – San Francisco CA 94103
Office (415) 558-6131 – FAX (415) 558-6225
Email: Tom.Hui@sfgov.org

(ATTACHMENT #1)

2) Construction Value and Permit Fees

(by Ed Sweeney, Hanson Tom, David Leung)

Valuation Fee for 125 Crown Terrace

Permit Application	Original Construction Cost	Final Construction Cost Valuation	Difference in Construction Cost	Permit Fee			Date
				At Filing	At Issuance	Post Issuance	
201110066315	$ 60,000.00			$ 2,737.37			10/6/2011
201110066315	$ 60,000.00	$ 300,000.00	$240,000.00		$ 14,847.34		11/28/2012
201110066315 (Addenda) Receipt #13095920 Receipt #13106615	$ 300,000.00	$ 300,000.00	$0.00			$2,882.35 $1,806.54	9/25/2013 10/08/2013
201312174363	$ 300,000.00	$ 610,000.00	$ 310,000.00		$ 15,270.29		12/17/2013
201110066315 Receipt #1401658 Receipt #1401934	$ 610,500.00	$ 1,570,000.00	$ 959,500.00			$24,181.53 $617.22	1/16/2014 1/23/2014
201401216754 NOV 201447604	$72,198.00	$ 72,198.00	$0.00	$0.00	$ 6,010.71	$0.00	1/21/2014

Valuation Fee for 115 Crown Terrace

Permit Application	Original Construction Cost	Final Construction Cost Valuation	Difference in Construction Cost	Permit Fee			Date
				At Filing	At Issuance	Post Issuance	
201310088806	$ 25,000.00	$ 25,000.00			$974.69		10/9/2013

PTS POSTISSUE FEES: 201110066315

Code	Description	Account	Date Paid	Fee Amount	Fee Due At	Pay
PLAN REV-P	Plan Review Fee (Postissue)	1961101		8,399.10		☑
SITE S/C-P	Site surcharge (Postissue)	1961101		1,679.82		☑
TECH SUR-P	Technology Surcharge (P)	1961106	10/08/2013	3.12		☐
TECH SUR-P	Technology Surcharge (P)	1961106	10/08/2013	32.30		☐
TECH SUR-P	Technology Surcharge (P)	1961106		33.60		☑
TECH SUR-P	Technology Surcharge (P)	1961106	09/25/2013	56.52		☐
TECH SUR-P	Technology Surcharge (P)	1961106		72.00		☑
TECH SUR-P	Technology Surcharge (P)	1961106		167.98		☑
TECH SUR-P	Technology Surcharge (P)	1961106		196.33		☑
REC RET-P	Records Retention Fee(POSTISSUE)	1961184	10/08/2013	156.00		☐

Amount paid 4,688.89

Amount to be paid 24,181.53

Total amount due 28,870.42

NEW PAYMENT

RECEIPT

POSTISSUE CHARACTERISTICS

PTS POSTISSUE FEES: 201110066315

Code	Description	Account	Date Paid	Fee Amount	Fee Due At	Pay
STRG MO-P	Strong Motion Instrumentation Fee	1960645		165.10		☑
BLDGSTD-P	Bldg Stds Admin Spec Revolv Fund	1961164		51.00		☑
DCP-P	DCP Plancheck (P)	1960173		9,816.60		☑
BLDG-P	Bldg Permit Insp Fee (Postissue)	1961115	10/08/2013	1,615.12		☐
BLDG-P	Bldg Permit Insp Fee (Postissue)	1961115		3,600.00		☑
PLAN REV-P	Plan Review Fee (Postissue)	1961101	09/25/2013	2,825.83		☐
PLAN REV-P	Plan Review Fee (Postissue)	1961101		8,399.10		☑
SITE S/C-P	Site surcharge (Postissue)	1961101		1,679.82		☑
TECH SUR-P	Technology Surcharge (P)	1961106	10/08/2013	3.12		☐
TECH SUR-P	Technology Surcharge (P)	1961106	10/08/2013	32.30		☐

Amount paid 4,688.89

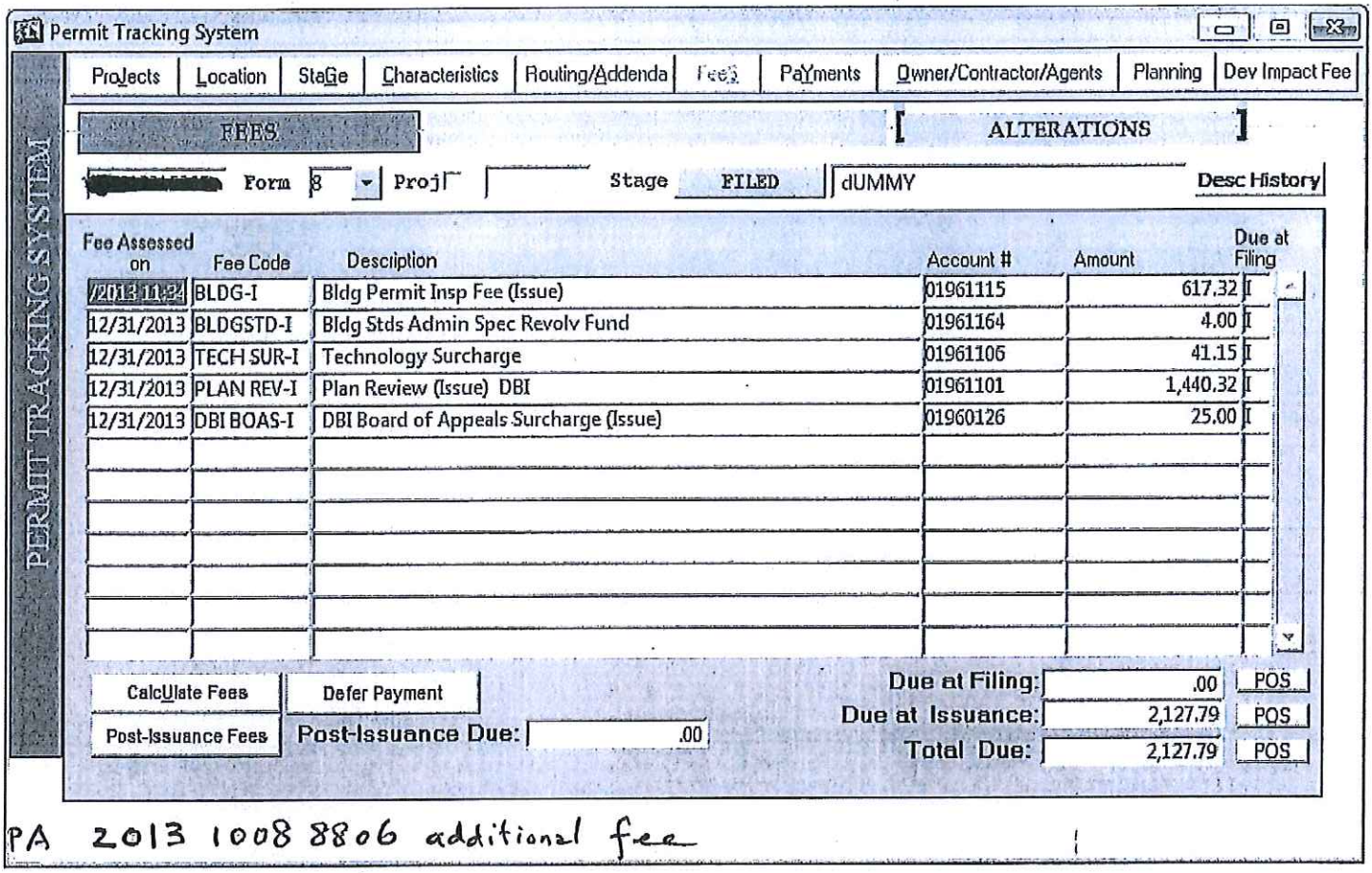
Amount to be paid 24,181.53

Total amount due 28,870.42

NEW PAYMENT

RECEIPT

POSTISSUE CHARACTERISTICS



Permit Tracking System

PERMIT TRACKING SYSTEM

ProJects | Location | StaGe | Characteristics | Routing/Addenda | Fees | PaYments | Owner/Contractor/Agents | Planning | Dev Impact Fee

FEES [ALTERATIONS]

[redacted] Form 8 Proj Stage FILED dUMMY Desc History

Fee Assessed on	Fee Code	Description	Account #	Amount	Due at Filing
/2013 11:24	BLDG-I	Bldg Permit Insp Fee (Issue)	01961115	617.32	I
12/31/2013	BLDGSTD-I	Bldg Stds Admin Spec Revolv Fund	01961164	4.00	I
12/31/2013	TECH SUR-I	Technology Surcharge	01961106	41.15	I
12/31/2013	PLAN REV-I	Plan Review (Issue) DBI	01961101	1,440.32	I
12/31/2013	DBI BOAS-I	DBI Board of Appeals Surcharge (Issue)	01960126	25.00	I

CalcUlate Fees | Defer Payment

Post-Issuance Fees | Post-Issuance Due: .00

Due at Filing: .00 POS

Due at Issuance: 2,127.79 POS

Total Due: 2,127.79 POS

PA 2013 1008 8806 additional fee

125 CROWN TERRACE

SUMMARY

NOTE: 1. ESTIMATION BASED WITH:
(1) DBE PERMIT RECORD #20111006315
(2) DBE "COST SCHEDULE, MARCH 2009"

(A) 125 CROWN TERRACE

ITEM	ESTIMATE	PAGE
(1) BLDG ALLEY	# 824,861	6
(2) FOUNDATION	# 351,249	10
(3) EXCAVATION AND FILL	# 96,578	11
(4) SHOTCRETE/SOIL NAILS	# 213,885	12
(5) CONSTRUCTION BERM & RAMP	# 29,064	15
(6) TEMPORARY CRIBBING	# 43,134	17
TOTAL	# 1,558,771	
RECOMMEND TOTAL	# 1,550,000	

(B) 115 CROWN TERRACE

115 CROWN TERRACE (FILE UNDER SEPARATE PERMIT)		PAGE
SHOTCRETE/SOIL NAILS (SOUTH SIDE OF 115 CROWN TERRACE	# 103,000	13

125 CROWN TERRACE

FLOOR AREA

DRGS: A1-A9, AB1-AB4

(A) NEW ENTRY FLOOR (ELEV. 568.0) (NOTE: ALL NEW FRAMING SEE S-DWGS.)

(A.) GARAGE AREA

$(17' \times 20.5') - (4.33' \times 9') = 310\ FT^2$ ⟸

(B): HABITABLE AREA

$B = [(12.5' + 11')(13.5' + 13.75')] - [(11' \times 9.75') + (5.75' \times 13.5') + (8' \times 11') - (5.5' \times 5.5')]$

(COPN. SPACE → ; Porch ; Elev.)

$628.6 - 327$

$= 302\ FT^2$ ⟸

(C) DRIVEWAY + PORCH AREA

$C = [(17' + 8')(72') - (4.25')(76')] + [(1\frac{1}{2})(25')(9')] + [(4')(12.5')]$

(SMEARED)

$= 394\ FT^2$ ⟸

(D) Elevator stop

(ONE STOP!) ⟸

(E) ONE ¾ BATHROOM ⟸

(F) ONE FLIGHT OF STAIR ⟸

TO LOWER DECK (CONC.)