



City of Palo Alto

City Council Staff Report

(ID # 11489)

Report Type: Consent Calendar

Meeting Date: 9/21/2020

Summary Title: Appeal of a Director's Interpretation Regarding Seismic Rehabilitation

Title: Consideration of an Appeal of a Director's Interpretation Made Pursuant to Palo Alto Municipal Code Section 18.01.025 and Related to Seismic Rehabilitation. The Project is Exempt from the California Environmental Quality Act (CEQA) in Accordance With CEQA Guidelines 15061(b)(3).

From: City Manager

Lead Department: Planning and Development Services

Recommendation

Staff recommends the City Council uphold the director's determination on the consent calendar, thereby denying the appeal.

Executive Summary

This report provides background information in support of the director's interpretation, presents the appellant's arguments for the appeal and concludes that the City's public safety interests justify the director's action.

Background

The City's zoning and building codes incentivize downtown area property owners to rehabilitate seismically vulnerable buildings by offering a floor area bonus of 2,500 square feet (or greater) in exchange for mitigating the seismic risk. Staff's original implementation of this program granted the bonus following the complete removal or demolition of these at-risk buildings. However, several years ago for an unrelated matter, the City Council directed staff to strictly interpret the zoning code. This direction followed Council review of a number of development projects where it disagreed on appeal with some staff interpretations. Accordingly, while previously allowing for demolition of buildings to receive the floor area bonus, staff subsequently required owners to retain and rehabilitate the building instead of demolishing it. The Design Within Reach building on University Avenue is one example of how this code

provision has more recently been applied.

On December 7, 2015, the City Council amended the zoning code to authorize the director to make interpretations of the zoning code and established a process to post formal interpretations on the City's website.¹ No prior determinations have been made in reliance on this code provision.

The subject director's interpretation attempts to implement the intent of the code to promote public health and allows a property owner to receive a floor area bonus when demolition is the only feasible means to eliminate the seismic risk.

In accordance with the municipal code, this interpretation was posted online² and as a courtesy emailed to known interested community members. On July 13, 2020, a timely appeal was filed by three former Councilmembers (Attachment B). To accept the director's interpretation and deny the appeal the matter can be approved on consent with an affirmative vote. To consider the appeal three Councilmembers would need to pull the item from consent whereupon a future noticed public hearing would be scheduled.

Discussion

In the 1980s the City established a seismic hazards identification program that required owners of buildings constructed before a certain period to submit engineering reports evaluating the building's structural systems and present solutions to remedy any deficiencies. There are other requirements to the program but upgrading the building to meet contemporary seismic standards was voluntary. The downtown commercial district has an incentive that grants a floor area bonus of 25% of the existing floor area or 2,500 square feet, whichever is greater, to owners that seismically rehabilitate their buildings. This floor area bonus can be used onsite or sold to a qualifying interested party.

These ordinances were established in recognition of Palo Alto's proximity to the San Andreas

¹ Palo Alto Municipal Code Section 18.01.025 (Zoning Code Interpretation) sets forth the provision: Whenever in the opinion of the Planning and Community Environment Director (PCE Director) there is any question regarding the interpretation of the Comprehensive Plan or the planning and land use provisions of Titles 16, 18 or 21 to any specific case or situation, the PCE Director shall have the authority to interpret such planning codes. When in the opinion of the PCE Director a formal written decision is warranted, the Director shall make the written decision available to the public by posting on the City's website. The interpretation shall become effective fourteen consecutive calendar days from the date of posting unless appealed under this section. The interpretation shall become the standard interpretation for future application of that provision of this Chapter unless changed by the Council on appeal. In accordance with the provisions of Section 18.77.070(f), any person may appeal the PCE Director's written interpretation prior to its effective date. All final written interpretations made under this section shall be made publicly available on the City's website. Staff shall prepare a quarterly Information Report to the Council summarizing all final interpretations made under this section.

² https://www.cityofpaloalto.org/gov/depts/pln/current/pds_director_interpretations.asp

and Hayward faults and to promote public safety by identifying those buildings that exhibit structural deficiencies and the extent to which these buildings have the potential for causing loss of life or injury.

While this program was progressive when adopted and resulted in many buildings being upgraded, it does not reflect contemporary standards that blend voluntary and mandatory regulations to improve the safety of the City's older building inventory. In fact, many buildings have not been updated, including some of the more vulnerable building typologies, such as unreinforced masonry buildings.

The City Council has directed staff to update the seismic ordinance and progress has been made on this endeavor. However, the next steps require additional consultant work. A request for funding was dropped by staff when City departments needed to make budget reductions in response to the current downturn in the economy. When funding is available and staff is able to secure a consultant, it will take about 12 months of effort before hearings can be scheduled, but this project is currently unfunded and will likely be delayed several years.

Director's Interpretation

The subject interpretation attempts to balance the Council's direction to strictly interpret the zoning code with the public interest in remediating buildings that are seismically vulnerable and more susceptible to causing loss of life, injury or property damage within the parameters of an incentive program designed to encourage owners of such buildings to upgrade and make safer those buildings.

The code section being interpreted is Palo Alto Municipal Code Section 18.18.070(a)(2) and is excerpted below:

A building that is in Seismic Category I, II, or III, and is undergoing seismic rehabilitation, but is not in Historic Category 1 or 2, shall be allowed to increase its floor area by 2,500 square feet or 25% of the existing building, whichever is greater, without having this increase count toward the FAR, subject to the restrictions in subsection (b). Such increase in floor area shall not be permitted for buildings that exceed a FAR of 3.0:1 in the CD-C subdistrict or a FAR of 2.0:1 in the CD-N or CD-S subdistricts. This bonus area must be fully parked. In addition to any applicable parking provisions, this bonus may be parked by the payment of in lieu parking fees under Section 18.18.090.

The formal director's interpretation is provided in Attachment A. There has been discussion in the past about the term "rehabilitation" in the context of granting floor area bonuses to property owners that upgrade seismically vulnerable buildings. Under this provision, City staff routinely granted the bonus to seismically vulnerable buildings that were demolished and

replaced with new construction, as that eliminated the identified seismic risk. During a City Council meeting in 2014/15, one or two Councilmembers commented on staff's application of the code to development projects and offered a perspective that demolition was inconsistent with the plain reading of the code. Since then, projects have been required to retain and upgrade the seismically vulnerable structure to qualify for the bonus. In 2015, staff sought to codify this approach in the zoning code, but the matter was deferred by the Planning and Transportation Commission and not acted upon by the City Council.

While staff generally accepts the notion that rehabilitation is not demolition, the proposed interpretation bridges the historical application of the code section with a strict reading of the text to carve out a rare exception in the interest of protecting life and limiting property damage. The proposed interpretation does not simply return to staff's historical application of the code; rather, it would apply only to a very narrow set of circumstances.

The project that precipitated the interpretation is the Mills Florist building at 233 University Avenue. This project has received Architectural Review Board approval and was designed with the intent to seismically upgrade portions of the building. The approved project largely retains the look and character of the existing building and will reuse the existing brick façade on the new building.³ However, when preparing construction drawings and engaging structural engineers on the project, the applicant learned of concerns that made it impractical to retain the existing walls. An engineer's report found that the existing brick and masonry walls have low strength and expected dangerous brittle failure – i.e. in any redevelopment scenario, this wall would need to be rebuilt. Further, to construct the project, existing flooring and roof diaphragms would need to be removed creating the potential for increased instability and requiring supplemental bracing and greater excavation to keep the remaining walls in place. Retaining and strengthening the unreinforced masonry building requires considerably more effort, results in a less safe construction site, prolongs the time and expense of construction, and achieves no measurable benefit to the City or the owner. Conversely, allowing for demolition in this case not only addresses the noted concerns, it improves compliance with building separation requirements (from the adjoining structure) and once constructed will have an aesthetic that reflects the character of the existing building by cleaning and reusing the existing bricks that are visible from University Avenue and Ramana Street.

Moreover, staff is under the impression that the project would not go forward without the seismic floor area bonus, which would be used to help finance the project. This is a less favorable outcome as unreinforced masonry buildings are particularly susceptible to collapse during a seismic event. While staff recognizes this relies on the applicant's representation as to the future redevelopment of this property – and that it is the owner's responsibility for maintaining a safe building for its occupants and pedestrians – the City's current seismic

³ The subject property has been evaluated and determined ineligible as an historic resource.

policies do not compel property owners to upgrade seismically vulnerable buildings. Any such policy change is several years from completion, if ultimately endorsed by the City Council. Nevertheless, the engineer's report and potential outcome of foregoing the necessary remediation of the seismic risk prompted the director's action.

The interpretation is anticipated to have limited applicability and only applies in the downtown area. The interpretation is written to cover Seismic Category I, II, and III buildings, however, it is the unreinforced masonry buildings, Seismic Category I, that face the greatest challenge for rehabilitation when adding floor area because of the lack of existing structural systems to support the building. Due to the risk factors associated with this building typology, it is appropriate to use the City's incentive program to aggressively mitigate these buildings. While it is certainly the case that unreinforced masonry buildings can be strengthened to reduce this risk, the project referenced above was able to demonstrate to the city's building official that there was no practical means to do so in this instance. Documentation provided by the applicant is included with this report (Attachment C) and was peer reviewed before the building official concurred with the analysis.

If the interpretation stands after appeal, other requests for demolition would similarly require an engineer's report to be prepared by the applicant and peer reviewed. The building official in consultation with the department director would similarly need to conclude, based on the supporting documentation that it is not practical to retain and strengthen a building in order to mitigate a seismic risk and, in the downtown, receive a floor area bonus as an incentive for abating that risk.

Appeal Statement

The appeal filed by three former Councilmembers is included with this report as Attachment B. The appellants assert the director's action is not an interpretation of the code, but rather establishes new policy through a ministerial process. The appellants argue that a text amendment is required to implement the director's interpretation and requires public hearings before the Planning and Transportation Commission and ultimately to the City Council, which is the legislative body responsible for establishing policy. The appellant's also object to the practicality standard for determining whether rehabilitation is feasible noting it is undefined and relies on the developer's assertions as opposed to the plain reading of the code. There is also a suggestion that the interpretation conflicts with regulations concerning historic rehabilitations and that the interpretation itself is at odds with comments made by the director in prior public meetings.

Staff Response

The appellants argue that the subject interpretation improperly establishes new City policy as opposed to a clarifying interpretation of the existing policy. Staff's perspective is that the interpretation applies existing code, prioritizing the City's interest to promote public safety over

a narrow reading of the zoning code, which may forestall the removal of seismically vulnerable buildings.

Accordingly, in this context, the appeal is principally about process. If the interpretation is viewed as establishing new policy – its application is improper, and a text amendment is the appropriate course of action. If the interpretation is viewed as a clarification of the intent of existing code or applies the code to a unique circumstance, then the interpretation is an acceptable means to address the issue. As noted above, the use of the word rehabilitation in combination with other City policies inform one’s perspective on the issue.

The City’s comprehensive plan includes a number of policies and programs related to minimizing the exposure of people and structures to seismic hazards; continuing to provide incentives for seismic upgrades; and, using the results of the City’s seismic hazards identification program and inventory to establish priorities and incentives to encourage structural retrofits. Attachment D includes an excerpt from the City’s comprehensive plan listing policies and programs related to earthquakes and natural hazards. More information is also available online detailing the purpose and regulations related to the seismic hazards identification program⁴ and process for approving floor area bonus for seismic rehabilitation.⁵

Beyond the process question, the appellants express concern that the term “infeasibility” is undefined. Infeasibility is frequently used as a standard without express definition, relying instead on reasonable, professional judgment. By way of example, documentation reviewed by the City’s building official for the referenced property at 233 University Avenue is provided in Attachment C. Included in this material are calculations the building official required to further analyze the seismic systems and structural integrity of the building. These calculations were prepared by the owner’s consultant and reviewed by City/contract staff before the building official reviewed the data and concluded that keeping the building and seismically strengthening it to support the approved project was infeasible. This example shows the extent to which staff seeks to retain and strengthen buildings, but upon a finding of infeasibility, would rather promote the City’s public safety interests and allow for the demolition of an unreinforced masonry building known to be seismically insufficient to withstand a strong earthquake. This conclusion stands in contrast to the arguments in the appeal statement that the interpretation one-dimensionally addresses property owners’ objectives and not the objectives of the code. Mitigating the seismic risk of buildings is in the City’s interest particularly in areas with a lot of pedestrians.

⁴ Palo Alto Municipal Code Chapter 16.42

[http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/title16buildingregulations*/chapter1642seismic hazardsidentificationp?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:paloalto_ca\\$anc=JD_Chapter16.42](http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/title16buildingregulations*/chapter1642seismic hazardsidentificationp?f=templates$fn=default.htm$3.0$vid=amlegal:paloalto_ca$anc=JD_Chapter16.42)

⁵ Palo Alto Municipal Code Section 18.18.070(b)

[http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/title16buildingregulations*/chapter1642seismic hazardsidentificationp?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:paloalto_ca\\$anc=JD_Chapter16.42](http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/title16buildingregulations*/chapter1642seismic hazardsidentificationp?f=templates$fn=default.htm$3.0$vid=amlegal:paloalto_ca$anc=JD_Chapter16.42)

The appellants also suggest the interpretation undermines the City's interests in historic preservation. The examples cited in the appeal statement ignores other City and state regulations concerning historic resources and by inference exaggerates the limited scope of the interpretation, which specifically states that all other municipal code requirements are unchanged by the interpretation. Lastly, with respect to comments made previously by the director regarding this code section, in 2015 staff did recommend a zoning amendment to prohibit demolition as a means of qualifying for rehabilitation. This amendment was in response to prior comments articulated by one or more Councilmembers prior to this time and attempted to offer clarity as to what constituted rehabilitation. The Planning and Transportation Commission and later the City Council both deferred making any change to the municipal code, however.

Unreinforced masonry buildings are particularly vulnerable to partial or total collapse during a strong seismic event. While the interpretation would permit demolition over seismically strengthening the building, it does so in rare circumstances and only after preparation of professional analysis, which is peer reviewed by a licensed structural engineer. Central to the interpretation is whether demolition is ever an appropriate solution to mitigate a seismic risk and whether such action is intended to convey a floor area bonus incentive to downtown area property owners.

Policy Implications

The interpretation itself presents a policy consideration for the City Council and the argument offered by the appellants is that the interpretation improperly establishes new policy as opposed to interprets existing policy. If the Council agrees with this conclusion then the appeal should be upheld. If the interpretation is a proper implementation of PAMC 18.01.025, then the subsequent consideration for Council is whether demolition should be allowed in certain circumstances to achieve the City's public safety goals, which also results in downtown area property owners receiving a floor area incentive bonus.

Resource Impact

There are no significant fiscal or budgetary impacts associated with the recommendation in this report.

Timeline

If this item is pulled from the consent calendar it will be scheduled for a future public hearing likely around late October or November.

Stakeholder Engagement

The interpretation was posted online as required by the municipal code and sent to known interested parties.

Environmental Review

Council action to deny or uphold the appeal is exempt from the California Environmental Quality Act (CEQA) in accordance with Section 15061(b)(3).

Attachments:

Attachment A: Director's Interpretation (Seismic Rehabilitation)

Attachment B: Appeal Statement

Attachment C: 233 University Seismic Information

Attachment D: Comprehensive Plan Natural Hazards Excerpt



Formal Zoning Interpretation

DATE: June 29, 2020
TO: Planning & Development Services Staff and Interested Community Members
FROM: Jonathan Lait, Director
SUBJECT: Director's Interpretation Related to Seismic Rehabilitation and Floor Area Bonuses

Authority

Palo Alto Municipal Code Section 18.01.025 conveys authority to the Director of Planning and Development Services to interpret planning and land use provisions of Title 16, 18, and 21. When warranted, a formal written determination may be prepared and shared with the public by posting on the City's website.¹ Written decisions shall be effective fourteen days following posting unless appealed to the City Council in accordance with PAMC 18.77.070.

Director's Interpretation

A floor area bonus in accordance with PAMC 18.18.070 (a)(2) shall be available to qualifying Seismic Category I, II or III buildings in instances where seismic rehabilitation is determined infeasible by the Chief Building Official. The Building Official may require an engineering analysis or other studies appropriate to validate any claims of infeasibility.

Applicable Code Sections

Chapter 16.42 (Seismic Hazards Identification Program)
Section 18.18.070(a)(2) Available Floor Area Bonuses / Seismic Rehabilitation Bonus
Section 18.18.070(d)(1) Procedure for Granting Floor Area Bonuses

Discussion

Palo Alto is vulnerable to strong or moderate earthquakes due to its proximity to the San Andreas and Hayward Faults and may experience loss of life or serious injury as a result from damage to or collapse of buildings (PAMC 16.42.010). City regulations encourage seismic upgrades to particularly vulnerable buildings, including unreinforced masonry buildings, which pose a significant localized risk. To incentivize safer buildings, the City offers a floor area bonus up to 25% of the building floor area or 2,500 square feet, whichever is greater, for qualifying seismically rehabilitated buildings.

¹ This determination is available online at: <https://www.cityofpaloalto.org/pdsinterpretations>

In the recent past, several buildings in Palo Alto were allowed to be completely demolished as a means to correct the seismically vulnerable building and received a seismic bonus.² A closer review of the municipal code, however, suggests that to qualify for the bonus floor area, the building must be seismically rehabilitated, or retained and strengthened to contemporary structural standards. This later interpretation has been the approach followed by staff for the past several years.

Recently, a project applicant demonstrated to the satisfaction of the City's Chief Building Official that structurally rehabilitating the building at 233 University Avenue (Mills Florist) was not practical. While technical rehabilitation compliance could be documented, the effort to do so was determined not feasible nor safe by an engineering analysis.

In this instance, the plain reading of the municipal code and floor area bonus does not provide sufficient incentive to encourage seismic strengthening of a building type known to be hazardous to building occupants and pedestrians. Allowing replacement of the building – new building construction – would remedy the seismic hazard. Moreover, the project as previously approved, retains the existing exterior masonry brick (restored and reapplied), which preserves the look and character of the building.

Based on the foregoing and to support overriding public health interests, this interpretation would allow qualifying buildings (Seismic Category I, II or III), the opportunity to rebuild as new construction upon a finding by the City's Chief Building Official that rehabilitation is not practical. All other municipal code requirements are unaffected or unchanged by this interpretation.

DocuSigned by:

293CF322E1294F6...
Jonathan Lait, Director
Planning and Development Services

Posted on Website: June 29, 2020
Appeal Deadline: July 13, 2020

² 657 Alma St. (101 Forest Ave.); 901 Alma St.; 431 Florence St.; 820 Ramona St.; 150 University Ave.; 171 University Ave.; 201 University Ave.; 270 University Ave.; 274 University Ave.; 380 University Ave.; and, 416/428 University Ave.



CITY OF PALO ALTO
Office of the City Clerk
**APPEAL FROM THE DECISION OF DIRECTOR OF
PLANNING & DEVELOPMENT SERVICES***

For appeals of final decisions on Architectural Review Board and Home Improvement Exception applications (rendered after public hearing), this appeal form shall be completed and submitted by appellant within fourteen days from date of the Director's decision. Appeals of final decisions on Individual Review applications (rendered after public hearing) must be submitted within ten days of the Director's decision. Complete form, the current fee and a letter stating reasons for the appeal shall be submitted to front desk staff of the Planning Division, 5th floor, City Hall, 250 Hamilton Avenue, *except* for 9/80 Fridays when City Hall is closed, when these items shall be submitted to Planning staff at the Development Center, 285 Hamilton Avenue (glass storefront across from City Hall on the corner of Bryant and Hamilton).

* Director of Planning includes his designees, which are Planning Managers or the Chief Planning Official

Appeal Application No. _____ Receipt No. _____
Name of Appellant Pat Burt, Greg Schmid, Karen Holman Phone (650) 224, 2627
Address 1249 Harriet PA 94301, 3428 Janice Way PA 94303, 725 Homer Ave PA 94301
Street City ZIP

LOCATION OF PROPERTY SUBJECT TO APPEAL:

Street Address 250 Hamilton Ave PA 94301
Name of Property Owner (if other than appellant) N/A
Property Owner's Address 250 Hamilton Ave PA 94301
Street City ZIP

The decision of the Director of Planning & Development Services dated June 29, 20 20
whereby the application N/A by Director's Interpretation
(file number) (original project applicant)

was N/A, is hereby appealed for the reasons stated in the attached letter (in duplicate)
(approved/denied)

Date: July 13, 2020 Signature of Appellant Karen Holman
Burt & Schmid confirming co-appellants via email 7/13/2020

PLANNING COMMISSION RECOMMENDATION TO THE CITY COUNCIL (TO BE FILLED OUT BY STAFF):

Date _____ Approved _____ Denied _____

Remarks and/or Conditions:

CITY COUNCIL DECISION (TO BE FILLED OUT BY STAFF):

Date _____ Approved _____ Denied _____

Remarks and/or Conditions:

SUBMITTAL REQUIREMENTS SATISFIED:

1. Letter stating reasons for appeal _____ Received by: _____
2. Fee (currently \$595.00) _____ Received by: _____

July 13, 2020

To: Planning Director Jonathan Lait
Mayor Adrian Fine, Vice Mayor Tom DuBois, City Council members

Re: Appeal of the Director's Interpretation Related to Seismic Rehabilitation and Floor Area Bonuses.

The code establishing bonus square footage and TDRs (Transferrable Development Rights) for Seismic buildings is clear:

Municipal Code Section 18.18.070 Floor Area Bonuses (a) (2) Seismic Rehabilitation Bonus:

*"A building that is in Seismic Category I, II, or III, **and is undergoing seismic rehabilitation** (emphasis added) but is not in Historic Category 1 or 2, shall be allowed to increase its floor area by 2,500 square feet or 25% of the existing building, whichever is greater..."*

The staff, via an "Interpretation", is proposing to use a ministerial process to establish city policy and change the code to allow bonus square footage for demolished buildings. This interpretation is counter to what staff itself writes in the Interpretation: "A closer review of the municipal code, however, suggests that **to qualify for the bonus floor area, the building must be seismically rehabilitated, or retained and strengthened** to contemporary structural standards." (Emphasis added). Demolished buildings by definition are not rehabilitated buildings.

Further, the Interpretation suggests replacing a clear and simple zoning law with a completely undefined process that considers "financial infeasibility" or "impracticality" based on a developer's assertion of it being so. With no substantiating evidence, the Interpretation speculates "the plain reading of the municipal code and floor area bonus does not provide sufficient incentive to encourage seismic strengthening of a building type known to be hazardous...". The Interpretation thereby only addresses owners' objectives and not the objective of the code: to incentivize the rehabilitation of hazardous buildings. The code allows for on-site bonus square footage of a rehabilitated building OR sale of qualified TDRs resulting from the rehabilitation. In other words, owners' objective may not be accomplished on site, but they may be otherwise incented to conduct the seismic rehabilitation via TDR sale/s.

Furthermore, staff's assertion that the "plain reading" of the current code does not provide an adequate incentive for developers or property owners, which is a clear acknowledgement that staff believes there should be a change in policy and code, but has chosen to use a ministerial tool to establish policy, thereby bypassing the PTC, City Council and public review.

This interpretation also carries with it an inherent conflict regarding historic buildings that are in need of seismic retrofit. Will the new "Interpretation" extend to **historic rehabilitations** and the President's Hotel or the Post Office be vulnerable to the wrecker's ball if an applicant is successful in convincing the Building Official of some undefined "financial infeasibility" or "impracticality" if a similar Interpretation determines the fate of such buildings? The PTC, City Council and the public must not be circumvented by such an Interpretation as they are with the June 29 Interpretation.

The Interpretation includes that bonus square footage has been allowed for several demolished seismic buildings. This runs counter to the code, counter to staff plain reading of the code, counter to comments by the Director in the October 28, 2015 Planning Commission minutes and counter to information in the December 7, 2015 CMR...all indicating that the code and the Council intentions were that seismic bonus square footage are to be granted only for **rehabilitated** buildings.

In summary, this proposal is a significant code change and should not be subject to a Director's Interpretation, resulting in an expensive appeal process rather than normal and proper public hearings for zoning code changes.

Submitted by:

Karen Holman, former Mayor, Councilmember

Greg Schmid, former Vice-Mayor, Councilmember

Pat Burt, Former Mayor, Councilmember



HOHBACH-LEWIN, INC. *STRUCTURAL & CIVIL ENGINEERS*

"Timely Solutions Based On Timeless Principles"

June 11, 2020
Revised June 16, 2020

Mills Family, LLC
c/o Ms. Leslie Mills
PO Box 44
Palo Alto, CA 94301

cc: Ken Hayes
Hayes Group Architects

Project: 233 University Avenue Seismic Evaluation
Palo Alto, CA 94301
Hohbach-Lewin Project No. 12929.2B

Dear Ms. Mills:

As you know, we are structural consultants to Hayes Group Architects for the reconstruction of your building at 233 University Avenue. The existing building on the site reportedly dates from the early 1900s, is rectangular, one-story with a partial mezzanine, a partial basement and with a wood framed roof and floor and perimeter unreinforced masonry walls. The rear portion of the building is an addition and is constructed with hollow clay tiles, while the original construction is brick. The footprint of the building is approximately 4,300 square feet.

You have copied us on communication to Ken Hayes from George Hoyt, the Chief Building Official of Palo Alto, regarding the building. Mr. Hoyt has requested that we review the strength of materials testing data and the historical structural analyses for the building and utilize this information to prepare a detailed analysis, that will include the calculation of Demand/Capacity ratios in accordance with PAMC 16.42.050 for the two walls that are proposed to remain, as shown in the most recent Hayes Group Architect's documents.

Historical Seismic Information

You have provided us the following historical analyses, listed below in chronological order:

1935-36 Earthquake Hazard Survey prepared by the City of Palo Alto Board of Public Work, 233-235 University Avenue excerpt – this document notes that the mortar in the face brick is very soft and thus the originally provided anchors in the mortar joints connecting the walls to the roof framing will likely be ineffective. This survey also contains several useful sections showing the construction at the framing connections to both the University Avenue and Ramona Street walls.

Per PAMC Chapter 16.42, Seismic Hazards Identification Program, dating from 1986, the subject building has been identified as subject to an engineering report requirement, based on the unreinforced masonry walls as well as the vintage and number of occupants of the building. The required engineering report is intended to determine if the building has the capability to resist the seismic forces codified in the 1973 Uniform Building Code without collapse or partial collapse. If the building is not shown to have

PRINCIPALS:

DOUGLAS HOHBACH	S.E.
DAN LEWIN	S.E.
JOAQUIM ROBERTS	S.E.
ANTHONY LEE	S.E.
VIKKI BOURCIER	S.E.
SAM SHOTANI	S.E.
LES TSO	S.E.

ASSOCIATE PRINCIPALS:

KEVIN MORTON	S.E.
STUART LOWE	S.E.
MICHAEL RESCH	S.E.

SENIOR ASSOCIATES:

VICKY RUNDORFF	S.E.
GREG RODRIGUES	S.E.
EDDIE HUI	S.E.
MIKE DAVIES	S.E.
STACY GADDINI	S.E.

ASSOCIATES:

BRIAN HO	S.E.
PHYLLIS MAK	S.E.
MICHAEL MORGAN	P.E.
MOHAMED IBRAHIM	S.E.
MOLLY SOUKHASEUM	S.E.

CE DEPT MANAGER:

BILL HENN

this capability, a retrofit solution sufficient to “substantially eliminate a potential collapse failure” is to be included in the report, described in sufficient detail to allow for a construction cost estimate to be made. There is no requirement to implement the retrofit.

The November 29, 1986 letter from Anthony J. Angelo, P.E. to Frank Mills was apparently written to fulfill this requirement for an engineering report. Mr. Angelo had visited the subject building and found the bracing of the unreinforced masonry walls to be seriously deficient and the University Avenue wall to contain no bracing elements, and stated his professional opinion that “any proposed scheme of reconstruction to meet the requirements of the Seismic Hazard Reduction Program would involve such extensive reworking of the existing structural components as to make complete replacement a more logical course of action.”

In 2004, the Stanford Theatre Gallery Building was constructed adjacent to the subject property at 227 University Avenue. Apparently, the concrete property line wall of the previous building at 227 University was constructed utilizing the wall of 233 University as a backside form, thus when this wall was demolished some portions of the 233 University wall needed to be repaired. Also of interest was the new wall at 227 University was reportedly constructed 4” in board from the property line in order to create a seismic separation between the buildings. This information was provided in a December 9, 2004 letter by Meserve Engineering. This letter also provides results for brick shear tests taken at various locations of this property line wall, which range from a low of 18 psi to a high of 148 psi, with an average of 73 psi.

As part of the effort to utilize portions of the existing building in a future remodel, testing of key structural materials in the building was performed a couple of years ago. The May 8, 2018 Structural Investigation report by CEL Consulting Inc., which includes a Concrete Coring Inspection Report, a Concrete Compression Core Test Report, a Ground Penetrating Radar Scanning Report to determine reinforcing steel in the concrete and a Brick In-planar Mortar Strength Shear Report summarizes the test results. Of particular interest is the brick shear test #3, which tested a portion of the University Avenue frontage wall and found the net mortar strength to be 20 psi, a very low value.

The most recent seismic information is contained in a letter to you dated February 25, 2020 from Rick Lennen, P.E. of AKC Engineering, Inc. It provides a recap of the technical issues that were presented at a meeting you had on 2/13/20 with the City of Palo Alto. He references the current proposal to substantively build a new building at 233 University but keep two of the unreinforced masonry walls. He makes several statements addressing the deficiencies of unreinforced masonry buildings in general and recommends removing all of the existing unreinforced masonry walls.

Seismic Analysis

We have completed a basic seismic assessment of the subject property in its existing condition based on information obtained from field measurements and testing results and other info referenced above.

As noted, the building is of archaic construction, utilizing unreinforced masonry walls to support gravity loads as well as provide lateral resistance. This is no longer permitted by



the California Building code, thus the building needs to be evaluated and any retrofit designed, per a standard appropriate for existing buildings. Currently the standard of practice is to utilize ASCE 41-17, *Seismic Evaluation and Retrofit of Existing Buildings*.

The seismic performance goal delineated in the PAMC Chapter 16.42 Seismic Hazards Identification Program, is to resist the seismic forces codified in the 1973 Uniform Building Code without collapse or partial collapse. A similar performance criterion is passing a Tier 1 life safety analysis per ASCE 41-13, *Seismic Evaluation and Retrofit of Existing Buildings* when subjected to a BSE-1 earthquake ground motion. We have analyzed the building per this criterion and this is expected to be deemed equivalent to the Chapter 16.42 criterion by the Palo Alto Building Department.

We have prepared calculations to determine the mass of the building, the seismic pseudo-forces that will be induced by a BSE-1 event and the demand-capacity ratios comparing the in-plane shear strength of the key structural elements in the University Avenue wall to the seismic demand. These calculations are attached.

Quickly summarizing, even with the most optimistic assumptions regarding the existing brick mortar properties, the demand-capacity ratio of the piers in the University Avenue wall is in excess of 10, compared to a maximum allowed value of 3. This indicates that the building is indeed a potential collapse failure as defined by Chapter 16.42. Thus, any new construction will need to provide a completely new lateral force resisting element in the plane of this wall, with the wall being converted to a decorative veneer.

We did not perform calculations for the property line wall, however based on the approximately 75 foot length of the brick front portion of the wall, we expect that the front brick portion of the wall will have an acceptable in-plane shear demand-capacity ratio. The approximately 25 foot length of the hollow clay tile rear portion of the wall however will have an unacceptable in-plane shear demand capacity ratio and thus is a definite collapse risk. In addition, the entire wall, including in particular the parapet, is not currently adequately braced out of plane and is expected to be significantly damaged in the evaluated seismic event.

Recommendation

In our professional opinion, the most straightforward approach to meet the intent of PAMC Chapter 16.42 and mitigate the risk of collapse of the subject unreinforced masonry walls in a seismic event is to demolish them when the balance of the building is demolished for the proposed new construction. None of the existing masonry walls are suitable for use as part of the new construction and if retained, will add seismic mass and irregularity to the building. In addition, the hollow clay tile portion of the wall will need to be rebuilt in any case, due to its low strength and expected dangerous brittle failure mode.

In addition, we are concerned about the practicality of retaining these two walls during the course of construction of the new building, since they will be unstable when the existing floor and roof diaphragms are removed and will need to be braced by supplemental bracing. The need to deepen the basement to make it reasonable to occupy will require the underpinning of the foundations of these walls, again creating a potential instability that will need to be carefully addressed in the course of construction.



In any case, we recommend that these walls not be maintained in place during construction, to create a safer construction site and allow construction to be completed more expeditiously. From our perspective it is difficult to perceive any reason to preserve the property line wall, due to its concealed location and its potential to make the renovated building less seismically safe. Also an advantage to demolishing the property line wall is that a code compliant separation between the new building and the building at 227 University could be constructed.

We hope that the Palo Alto Building Department finds this letter to be informative.

Please contact me with any questions or comments.

Sincerely,



Douglas Hohbach, S.E. S3131
Principal

Attachment: 233 University Calculations



DATE SIGNED: _____





HOHBACH-LEWIN INC.

STRUCTURAL ENGINEERS

260 Sheridan Avenue, Suite 150
Palo Alto, CA 94306
(650) 617-5930 Fax:(650) 617-5932

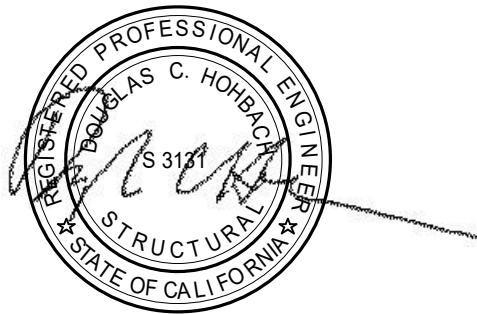
Structural Calculations

For

233 University Ave
Palo Alto, CA 94301

June 10 2020

Project No: 12929.2F




HOHBACH-LEWIN INC.
STRUCTURAL ENGINEERS

 260 Sheridan Avenue, Suite 150
 Palo Alto, CA 94306
 (650) 617-5930 Fax (650) 617-5932

 PAGE:
 PROJECT NO.: 12929
 DATE: Jun-20
 BY: RVS

FLAT LOAD TABLES
PROJECT NAME: 233 University Ave

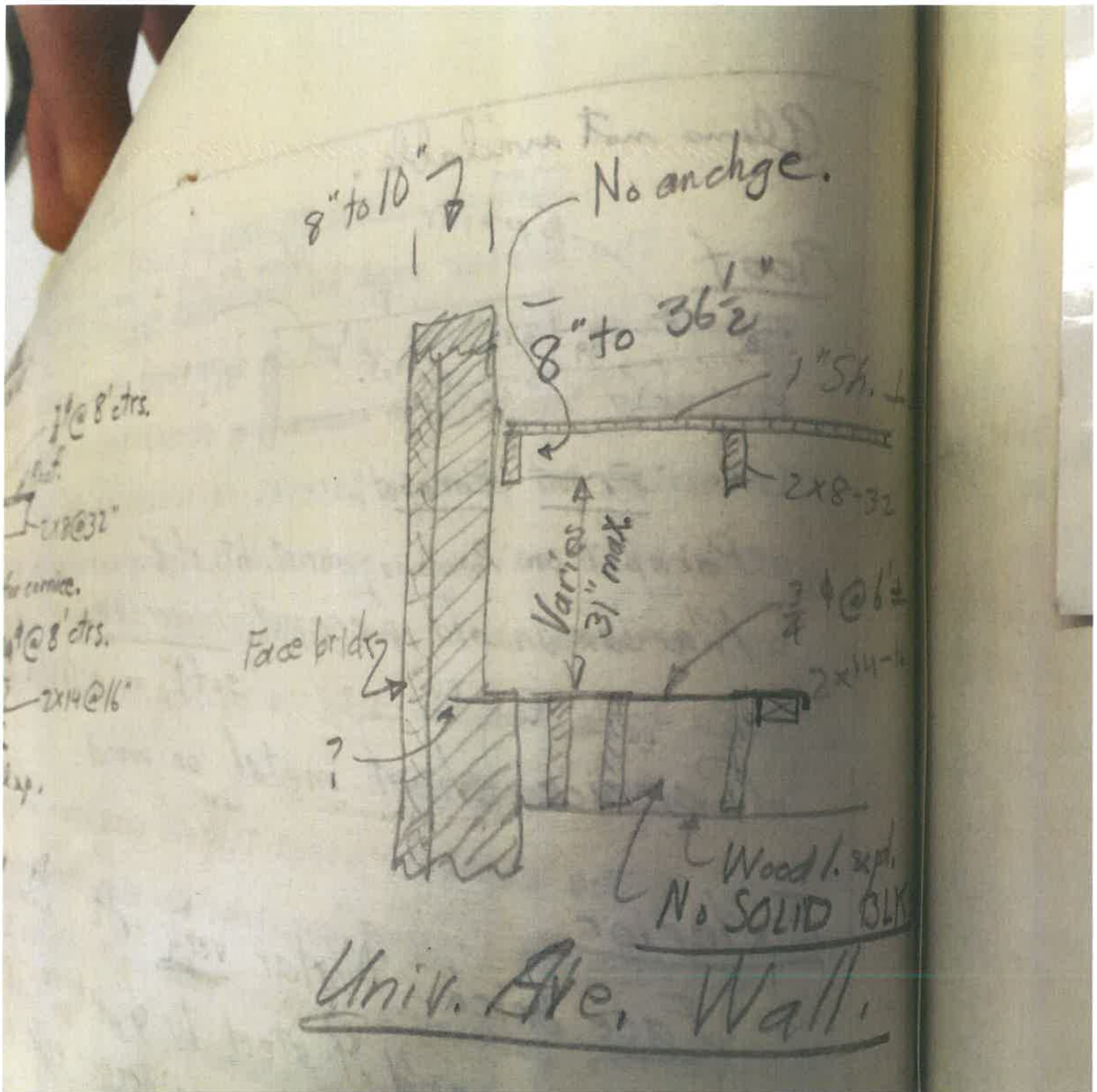
All loads shown are pounds per square foot, unless otherwise noted.

(E) Flat Roof

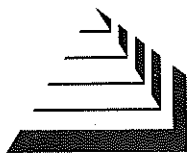
		Beams	Lateral
Roofing		3.0	3.0
1" Straight Sheathing		3.0	3.0
2x10 Joist		2.4	2.4
Beams		3.0	3.0
1" Straight Sheathing		3.0	3.0
2x10 Joist		2.4	2.4
Beams		3.0	3.0
Insulation		1.0	1.0
Ceiling		2.0	2.0
M/E/P		3.0	3.0
Partitions			5.0
Misc.		1.2	1.2
TOTAL	DL	27.0	32.0
TOTAL	DL	27.0	32.0
TOTAL	* LL	20.0	

** LL IS REDUCIBLE

 } ROOF
 } ATTIC



Section Cut used for Load Table



SUBJECT: 233 UNIVERSITY AVE

PAGE: 003

PROJECT NO: 12929

DATE: 6/2020

BY: RJS

PSEUDO SEISMIC FORCE

BUILDING PERIOD

$$T_N = C_t h_N^B$$

$$C_t = 0.02$$

$$h_N = 15.75'$$

$$B = 0.75$$

$$T = 0.158 \text{ s}$$

SEISMIC PARAMETER

$$S_{XS} = 0.964 \text{ g}$$

$$S_{X1} = 0.589 \text{ g}$$

$$T_S = S_{X1}/S_{XS} = 0.611 \text{ s}$$

$$T_0 = 0.2 T_S = 0.122 \text{ s}$$

$$T_0 < T < T_S$$

$$\therefore S_a = S_{XS}/B = 0.961 \quad W/B = 1.0$$

BASE SHEAR

$$V = C_1 C_2 C_m S_a W$$

$$C_1 C_2 = 1.4$$

$$2.0 < M_{MAX} < 6.0$$

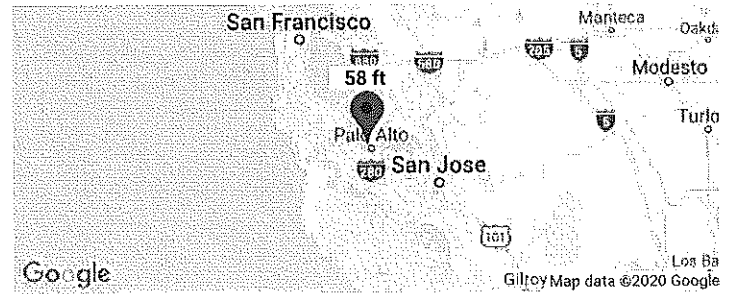
$$C_m = 1.0$$

$$V = (1.4)(1.0)(0.961) W = 1.345 W$$

ATC Hazards by Location

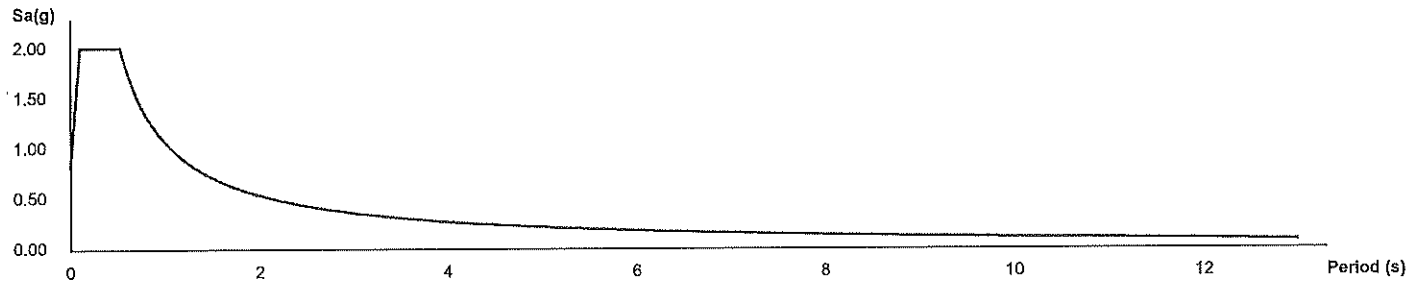
Search Information

Coordinates: 37.44522, -122.16234
 Elevation: 58 ft
 Timestamp: 2020-06-03T19:20:08.473Z
 Hazard Type: Seismic
 Reference Document: ASCE41-17
 Site Class: D-default



Custom Probability:

Horizontal Response Spectrum - Hazard Level BSE-2N



Hazard Level BSE-2N

Name	Value	Description
SsUH	2.206	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
CR _S	0.917	Coefficient of risk (0.2s)
SsRT	2.023	Probabilistic risk-targeted ground motion (0.2s)
SsD	1.672	Factored deterministic acceleration value (0.2s)
S _S	1.672	MCE _R ground motion (period=0.2s)
F _a	1.2	Site amplification factor at 0.2s
S _{XS}	2.007	Site modified spectral response (0.2s)
S1UH	0.895	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
CR ₁	0.902	Coefficient of risk (1.0s)
S1RT	0.807	Probabilistic risk-targeted ground motion (1.0s)
S1D	0.628	Factored deterministic acceleration value (1.0s)
S ₁	0.628	MCE _R ground motion (period=1.0s)
F _v	1.7	Site amplification factor at 1.0s
S _{X1}	1.068	Site modified spectral response (1.0s)

Hazard Level BSE-1N

Name	Value	Description
S _{XS}	1.338	Site modified spectral response (0.2s)
S _{X1}	0.712	Site modified spectral response (1.0s)

Hazard Level BSE-2E

Name	Value	Description
------	-------	-------------

S_S	1.583	MCE_R ground motion (period=0.2s)
F_a	1.2	Site amplification factor at 0.2s
S_{XS}	1.9	Site modified spectral response (0.2s)
S_1	0.619	MCE_R ground motion (period=1.0s)
F_v	1.7	Site amplification factor at 1.0s
S_{X1}	1.053	Site modified spectral response (1.0s)

Hazard Level BSE-1E

Name	Value	Description
S_S	0.804	MCE_R ground motion (period=0.2s)
F_a	1.2	Site amplification factor at 0.2s
S_{XS}	0.964	Site modified spectral response (0.2s) *
S_1	0.292	MCE_R ground motion (period=1.0s)
F_v	2.015	Site amplification factor at 1.0s
S_{X1}	0.589	Site modified spectral response (1.0s) *

 T_L Data

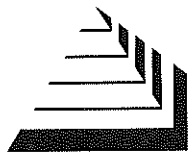
Name	Value	Description
T_L	12	Long-period transition period (s)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

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HOHBACH-LEWIN, INC.
STRUCTURAL ENGINEERS

SUBJECT: 233 UNIVERSITY AVE

PAGE: 006

PROJECT NO: 12929

DATE: 6/20/20

BY: RUS

SEISMIC WEIGHT

FLOOR WEIGHT

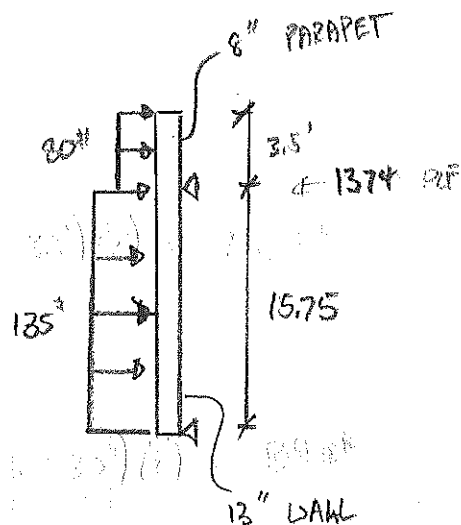
$$W_{\text{Floor}} = 32' \times 99' \times 45' \times \frac{1 \text{ KIP}}{1000 \text{ lb}} = 142.6 \text{ K}$$

N-S WALLS (TRIB TO ROOF)

$$W_{\text{N-S}} = (1374 \text{ PLF}) (99') \left(\frac{1 \text{ KIP}}{1000 \text{ lb}} \right) (2) = 272 \text{ K}$$

E-W WALLS (TRIB TO ROOF)

$$W_{\text{E-W}} = (1374 \text{ PLF}) (45') \left(\frac{1 \text{ KIP}}{1000 \text{ lb}} \right) (2) = 123.7 \text{ K}$$





HOHBACH-LEWIN, INC.
STRUCTURAL ENGINEERS

SUBJECT: 233 UNIVERSITY AVE

PAGE: _____ 007

PROJECT NO: 12929

DATE: 6/2020

BY: KVS

SEISMIC FORCE DISTRIBUTION

NORTH - SOUTH DIRECTION

$$F_{P1} = 1.345 (142.6^K + 272^K) = 557.6^K$$

$$W_1 = 557.6^K / 99 = 5.63^K/FT$$

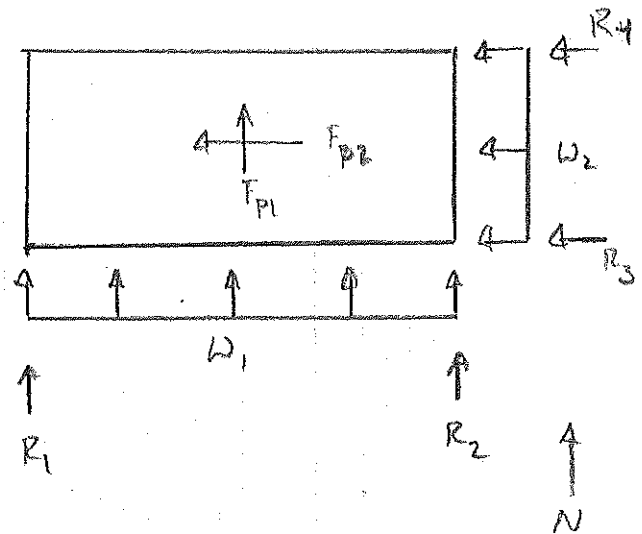
$$R_1 = R_2 = 278.8^K$$

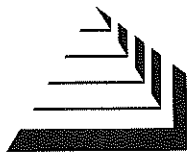
EAST - WEST DIRECTION

$$F_{P2} = 1.345 (147.6^K + 123.7^K) = 364.9^K$$

$$W_2 = 364.9^K / 45 = 8.11^K/FT$$

$$R_3 = R_4 = 182.5^K$$





HOHBACH-LEWIN, INC.
STRUCTURAL ENGINEERS

SUBJECT: 233 UNIVERSITY AVE

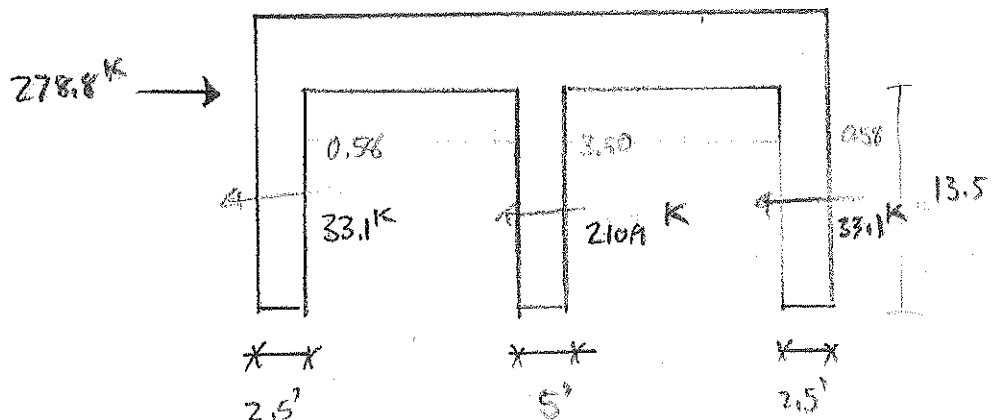
PAGE: 008

PROJECT NO: 12929

DATE: 6/20/20

BY: RVS

CHECK MASONRY PIER



BED-JOINT SLIDING

$$V_{to} = \frac{V_{test}}{A_b} - P_{DL} \quad \text{GIVEN IN "MISERABLE ENGINEERING" REPORT}$$

AS 18 PSI, 91 PSI, 148 PSI, 64 PSI, 60 PSI & 39 PSI

$$V_{ME} = \frac{0.75 (0.75 V_{te} + \frac{P_D}{A_W})}{1.5} \quad \text{NEGLECT}$$

$$= \frac{0.75 (0.75 (73.3 \text{ PSI}))}{1.5} = 27.5 \text{ PSI}$$

$$Q_{CE} = V_{ME} A_W = (27.5 \text{ PSI}) (5' \times 12 \text{ IN/FT}) (13") = 21.5 \text{ K}$$

$$DCR = 9.81 > 3 \quad \text{m-FACTOR URM WALL PIER}$$

BED JOINT SLIDING
(TABLE 11-3)



HOHBACH-LEWIN, INC.
STRUCTURAL ENGINEERS

SUBJECT: 233 UNIVERSITY AVE

PAGE: 009

PROJECT NO: 12929

DATE: 6/20/10

BY: RUS

CHECK MASONRY PIER

ROCKING STRENGTH

$$Q_{CE} = 0.9 (\alpha P_D + 0.5 P_u) L / h_{eff}$$

$$P_D = (27 \# \times 16'' / 12^{5/8}'' \times 1/2 \times 45 \frac{1}{2}') (1 \text{ KIP} / 1000 \text{ lb}) = 0.4 \text{ K}$$

$$P_u = (135 \text{ PSF}) (5' \times 13.5') (1 \text{ KIP} / 1000 \text{ lb}) = 9.11 \text{ K}$$

$$Q_{CE} = 0.9 (1.0 \times 0.4 \text{ K} + 0.5 \times 9.11 \text{ K}) (5') / 13.5' = 1.7$$

$$f_n / f_m = \frac{(400 + 911) / (5' \times 12^{5/8}'' \times 13' \times 15'')}{1000 \text{ lb/ft}^2} = 0.012 < 0.04$$

$$3 h_{eff} / L = 8.1 \leftarrow \text{USE } m = 3.75$$

$$DCR = 124 > 3.75 \leftarrow \text{M-FACTOR URM WALL PIER}$$

WALL PIER ROCKING
(TABLE 11-3)

NEED TO RETROFIT PIER

IN-PLACE MASONRY SHEAR TEST REPORT

Project Address: Stanford Theater Gallery Project
227 University Avenue
Palo Alto, CA

Dates: August 13, 2004

CEL: 50-51491R
Page 2 of 2

Test No.	Location I=Interior E=exterior	Wall height above test	Wall width (inches) Note 1	Percent collar joint	Brick width (inches)	Brick length (inches)	Area (Sq.In.)	Gauge pressure (p.s.i.)	First movement (pounds)	*First movement (p.s.i.)
1 E	West wall, 43' from North end	1'-6"	13	30	3.75	7.75	58	400	1,031	18
n/a										
n/a										
n/a										
- n/a										
n/a										
n/a										

* Please note these values include the weight of overburden at each test location.

Additional Comments:

Note 1: Wall thickness is estimated only and was not verified.

All reports are submitted as the confidential property of clients. Publication of statements, conclusions or extracts is reserved pending our written approval.

CSL 004-R2423

TABLE 1⁰¹⁰



CONSOLIDATED ENGINEERING
LABORATORY

IN-PLACE MASONRY SHEAR TEST REPORT

Project Address: Stanford Theater Gallery Project
227 University Avenue
Palo Alto, CA

Dates: September 7, 2004

CEL: 50-51491R
Page 2 of 2

Test No.	Location I=Interior E=exterior	Wall height above test	Wall width (inches) Note 1	Percent collar joint	Brick width (inches)	Brick length (inches)	Area (Sq.in.)	Gauge pressure (p.s.i.)	First movement (pounds)	*First movement (p.s.i.)
1 E	West wall, 56' from South end	9'-8"	13	50	3.87	8.50	66	2000	6,031	91
2 E	West wall, 40' from South end	15'-8"	13	50	3.75	8.25	62	3000	9,156	148
3 E	West wall, 28' from South end	12'-10"	13	50	4.00	8.75	70	1500	4,469	64
4 E	West wall, 35' from South end	7'	13	25	4.00	8.50	68	1800	5,406	80
5 E	West wall, 16' from South end	5'-9"	13	25	4.00	8.25	66	900	2,594	39
n/a										
n/a										

* Please note these values include the weight of overburden at each test location.

Additional Comments:

Note 1: Wall thickness is estimated only and was not verified.

All reports are submitted as the confidential property of clients. Publication of statements, conclusions or extracts is reserved pending our written approval.

CSL CD4-R2423



HOHBACH-LEWIN, INC.
STRUCTURAL ENGINEERS

SUBJECT: 233 UNIVERSITY AVENUE

PAGE: _____ 012

PROJECT NO: 12929

DATE: 6/2020

BY: RLS

BED - JOINT SLIDING RECHECKED

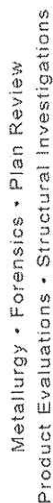
$$V_{fb} = \frac{V_{test}}{A_b} - P_{D+L} = 20 \text{ PSI} \leftarrow \text{CEL TESTING REPORT}$$

$$V_{ME} = \frac{0.75(0.75 V_{fb} - \cancel{P_{D+L}})}{1.5} \quad \text{NEGLIGIBLE}$$
$$= \frac{0.75(0.75(20 \text{ PSI}))}{1.5} = 7.5 \text{ PSI}$$

$$Q_{CB} = V_{ME} A_N = (7.5 \text{ PSI})(5' \times 12 \text{ in/ft})(13") = 5.9 \text{ K}$$

$$DCR = 35.7 > 3 \leftarrow \text{M-FACTOR URM WALL PIER}$$

BED JOINT SLIDING
(TABLE 11-3)



013

AKC ENGINEERING INC.

1200 Industrial Road, Suite 13
San Carlos, CA 94070

(650) 591-3050

Mills Family LLC
P.O. Box 44
Palo Alto, CA 94302

Date: February 25, 2020
Re: 233/235 University Avenue, Palo Alto, CA
Unreinforced Masonry Components
Proj: OSNC2646

Attn: Leslie Mills

This letter provides a recap of the technical issues we presented during our meeting on 2/13/20 at the City of Palo Alto. Any non-technical, permit related or planning issues are beyond the scope of our comments.

It is proposed that the building at 233/235 University Avenue be fully renovated while keeping two of the existing unreinforced masonry (URM) walls. One wall is at the front along the sidewalk and the other is along the adjacent building (movie theatre).

For structural reasons as noted below we recommend removing all of the existing URM walls.

1. **CODE CRITERIA:** URM buildings have been deemed unsafe and the *Uniform Code for Building Conservation, 1991 Edition* was developed to reduce risk but not eliminate it: its crucial to understand that it does not provide the level of life safety provided by current standards. The lesser standards were intended to balance safety with economics since the State of California took the rare step of mandating that URM buildings be upgraded even though they were in compliance when first built.
2. **URM AS VENEER:** Once the renovation is complete the building will no longer be URM and the remaining brick walls will act as a very thick veneer. The repurposed veneer will have much of the same characterizes of the original URM walls. During an earthquake the URM veneer will try to pull away from the structural frame. Normally the veneer is secured with mechanical anchors and bolts. With consideration of the weak mortar, minimum spacing of anchor bolts, depth of walls, property lines and the adjacent building; it is not possible to

AKC ENGINEERING INC.

1200 Industrial Road, Suite 13
San Carlos, CA 94070

(650) 591-3050

adequately secure all of the existing URM veneer and there will be a significant risk to life safety.

3. **STIFFNESS COMPADABILITY:** Earthquake forces in a building will go the stiffest elements but not necessarily the strongest. The URM wall along the adjacent building is very long and thick and will take most all of the loading unless isolated from the structure. The paradox is that it needs to be supported by the new structural system and can't be fully isolated.
4. **STORE FRONT:** Having field checked numerous similar buildings over the years, we expect substandard grouting and very little structural continuity in the URM of the at the store front. There is no engineering reason to risk the front URM parapet peeling away from the structural frame and falling on to the sidewalk along University Avenue.

It is our opinion that there is no technical reason to accept a lesser life safety standard for any major remodel.

The conclusions and recommendations presented herein are in accordance with the current standards of structural engineering practice and no warranty is expressed or implied. We trust this letter provides the information required at this time. If you have any questions, please call.

Sincerely
AKC Engineering



Rick Lennen, P.E.
Principal





CEL CONSULTING, INC

Product Evaluations - Metallurgy
Structural Investigations - Forensics

STRUCTURAL INVESTIGATION

233 UNIVERSITY
233 University Avenue, Palo Alto, CA 94301

Performed for
Mills Family, LLC
Palo Alto, California

by: CEL Consulting

Anil Nethinsinghe, P.E.
Structural Investigation Manager



May 8th, 2018

Report Number 180430-S

CEL Project No. 50-53563-S

Attachments: Coring Inspection Report
Compression Test Report
Ground Penetrating Radar Scanning Report
Brick-Shear Report



1. INTRODUCTION

The purpose of this testing program is to provide the structural condition of existing construction.

2. SCOPE OF TESTING

The scope of the testing program was to perform tests based on the *Recommended Testing Scope* dated March 27th, 2018, by Hohbach-Lewin, INC.

1. Sampling and testing of (5) concrete cores for compressive strength and unit weight testing per ASTM C42 and ASTM C39. The unit weight of samples were calculated by dividing the saturated-surface-dry weight by the measured volume.
2. Scanning of concrete walls and one column at (2) locations using ground penetrating radar to determine reinforcing steel layout and orientation.
3. Testing of (4) brick walls to determine the average in-planar mortar strength per IFBC 2012 Section A106.

3. TEST RESULTS

See attached reports for results of testing.



Coring Inspection Report

Project Name: 233 University

CEL Project #: 50-53563-S

Location: 233 University Avenue

Report #: 180430S

Date: 4/26 and 4/30

Day: Thurs and Mon

IR#: _____

☒ Reported to Richard Cody with Hohback-Lewin, INC.

☒ Material being cored includes: Four concrete walls and one column.

☒ Cored a total of 5 locations.

☒ Core locations include: See attached pages titled "Test Locations".

☐ Technicians reviewed core locations with _____ prior to leaving the jobsite.

☒ Samples were returned to the lab for the following tests: Compression Test.

☒ See attached for compression test report, map of core locations, and pictures of cores for additional information.

☒ Additional Comments: Please note that additional sample was taken from locations C-2 and C-3 due to poor consolidation. The original samples were compromised in the extraction process.

Signature: Alex Cuevas

Date: 4/26/2018

Print Name: Alex Cuevas, Jose Jacobo



CEL CONSULTING, INC

Metallurgy • Forensics • Plan Review
Product Evaluations • Structural Investigations

Compression Test Report

Project Name: 233 University

CEL #: 50-53563-S

Report #: 180430S

Sampled By: Jose Jacobo and Alex Cuevas

Tested By: J. B.

Mix #: N/A

Design Strength: N/A

Nom. Agg Size: N/A

Placement Date: N/A

Sample Date: 4/30/2018

Date Prepared: 5/2/2018

Time Prepared: 11:00 AM

Date Tested: 5/7/2018

Time Tested: 12:00 PM

Test Age: 28+ days

Table #1 - Compression Test Data (ASTM C42)

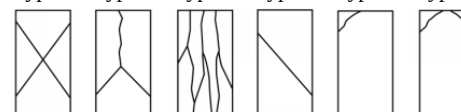
Sample #	Core ID	Core Orientation	Average Length (in)	Average Diameter (in)	Calculated Density (lb/ft ³)	Average Length After Cap (in)	Correction Factor	Break Type	Corrected Compressive Strength (psi)
1	C-1 (Wall)	Horizontal	5.97	3.76	140.9	6.20	0.97	2	3,530
2	C-2 (Wall)	Horizontal	6.46	3.74	142.9	6.87	0.99	3	1,680
3	C-3 (Wall)	Horizontal	5.93	3.76	137.6	6.20	0.97	5	1,800
4	C-4 (Wall)	Horizontal	5.73	3.75	139.0	5.98	0.97	3	1,410
5	C-5 (Column)	Horizontal	5.91	3.74	146.5	6.25	0.97	3	3,650
6									
7									
8									
9									
10									
11									
12									

¹Testing in accordance with ASTM C42, ASTM C39 and ACI 318.

²ACI 318 requires the average strength of three cores to be at least 85% of the specified strength and no single core strength less than 75% of the specified strength.

³Date and time prepared indicates when samples were last in contact with moisture after being wet sawed and sealed in plastic.

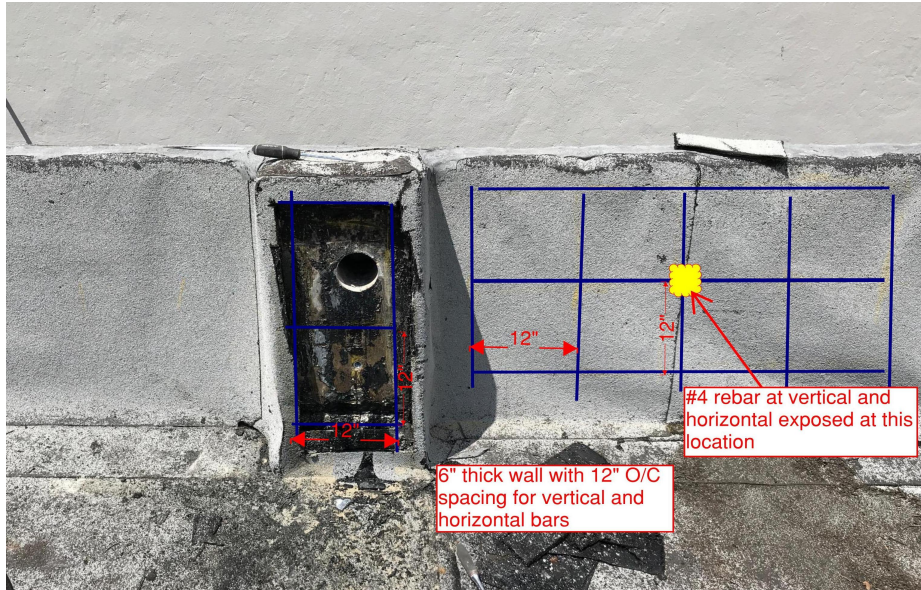
Break Types: Type 1 Type 2 Type 3 Type 4 Type 5 Type 6





CEL CONSULTING, INC

Product Evaluations - Metallurgy
Structural Investigations - Forensics



Location S1: Scan area at roof for rebar spacing and size. Rebar at 12" O.C. E.W. Bar size is #4 round with deformation.



Rebar size for S1 location



CEL CONSULTING

Metallurgy • Forensics • Plan Review
Product Evaluations • Structural Investigations

In Situ Masonry Mortar Shear Strength Report

Project Name: 233 University

CEL Project #: 50-53563-S

Location: 233 University Ave, Palo Alto, CA 94301

Report #: 180430S

Date: 4/30/2018

Day: Monday

IR#: _____

- ☒ Reported to Ed Paul with Cody Brock Commercial Builders.
- ☒ Tested a total of 4 locations.
- ☒ Technicians reviewed test locations with Ed Paul prior to leaving the jobsite.
- ☒ Testing was performed in accordance to: IEBC 2012 Section A106
- ☒ Bricks were left in place for client after testing.
- ☒ See attached for test result, map of test locations, and/or pictures of test locations for additional
- ☒ Additional Comments:

Four (4) Test locations on the existing brick walls was performed to determine the average in-plane mortar strength of the wall.

Signature: *Jose Jacobo*

Date: 5/2/2018

Print Name: J. Jacobo, A. Cuevas, J. Bayless



CEL CONSULTING, INC

Metallurgy • Forensics • Plan Review
Product Evaluations • Structural Investigations

In Situ Masonry Mortar Shear Strength Report

Project Name: 233 University

CEL #: 50-53563-S

Report #: 180430S

Test Date: 4/30/2018

Tested By: J. Jacobo, A. Cuevas, J. Bayless

Table #1 - In-Place Masonry Testing Result

Test #	Location	Interior / Exterior	Wall Height Above Test (ft)	Estimated Wall Thickness (in)	Collar Joint Cover (%)	Bedded Area (sq in)	Load at First Flaking (lbs)	Mortar Strength (psi)	Net Mortar Strength (psi)
1	Level 1- 4' from East wall (University Ave)	Interior	12.00	N/A	50	66.0	8885	135	123
2	Level 1- 60' from East wall (University Ave)	Interior	11.00	N/A	70	66.0	6808	103	92
3	Level 2- 12' from North Wall (Ramona St)	Interior	9.00	4.00	0	66.0	1912	29	20
4	Roof Level- 5' from South Wall	Exterior	1.00	12.00	30	66.0	963	15	14

¹Testing in accordance with IEBC 2012 Section A106

Core location

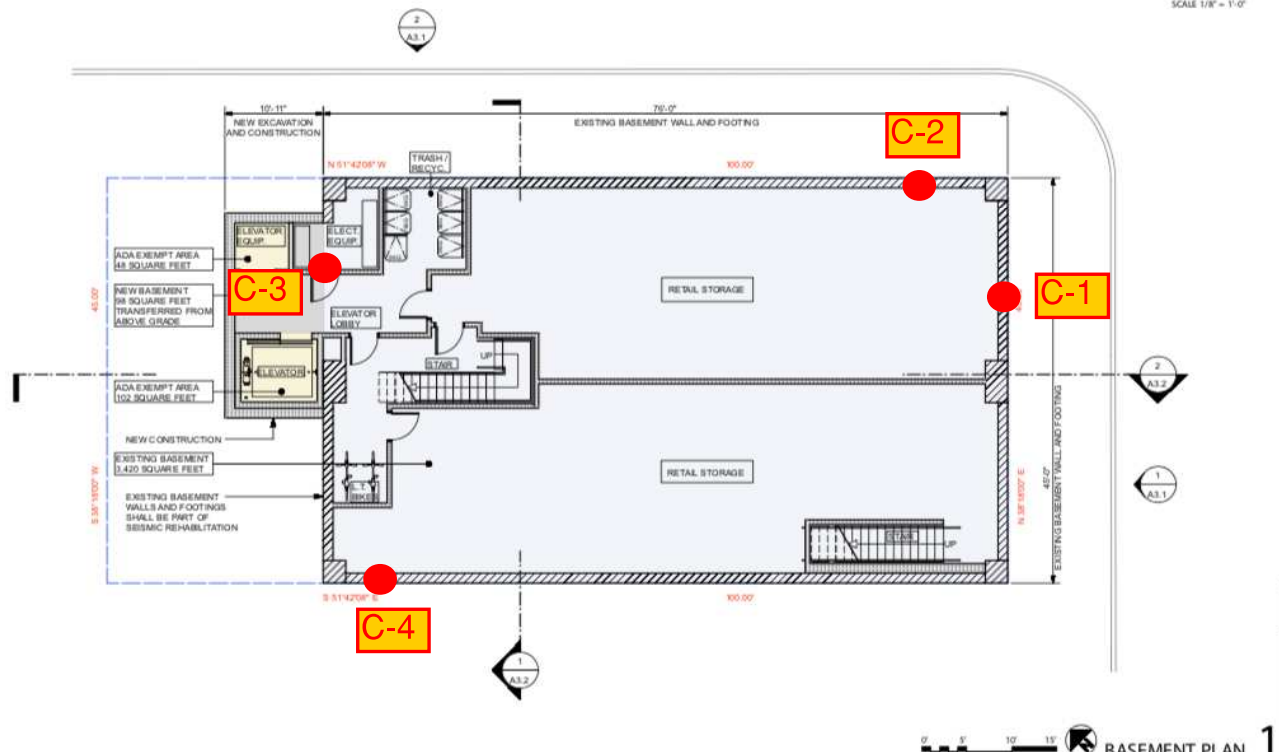
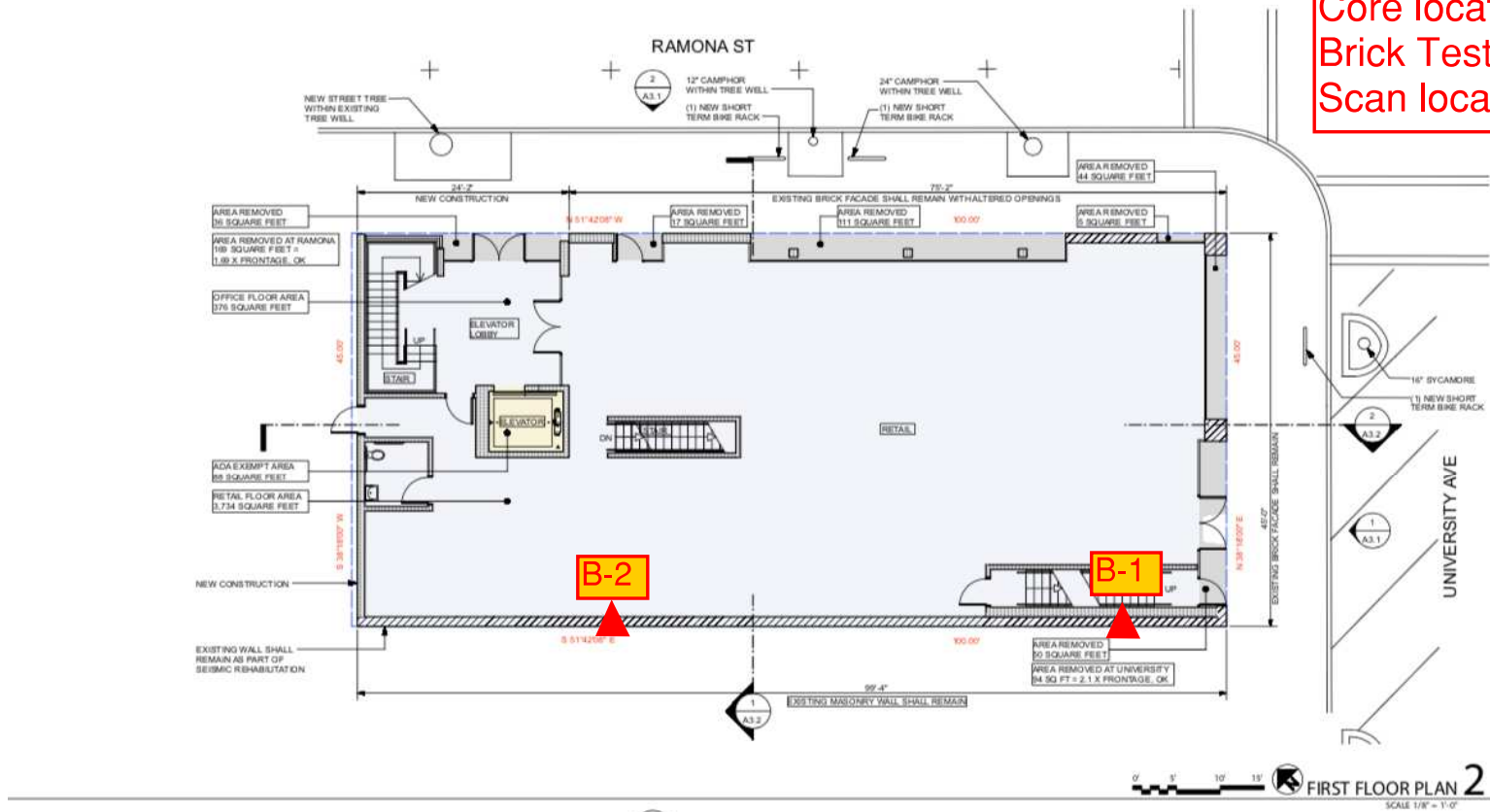
Brick Test location

Scan location

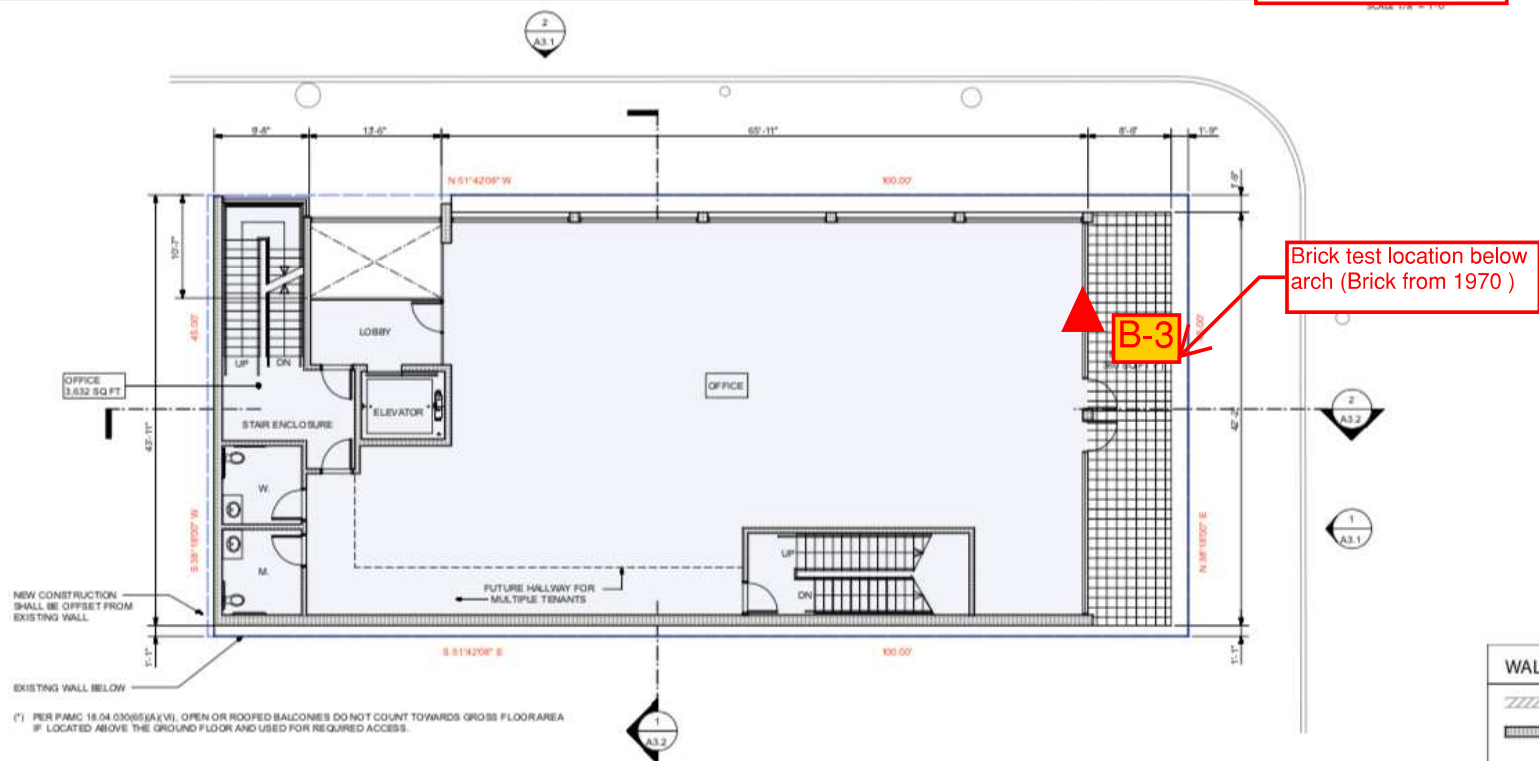
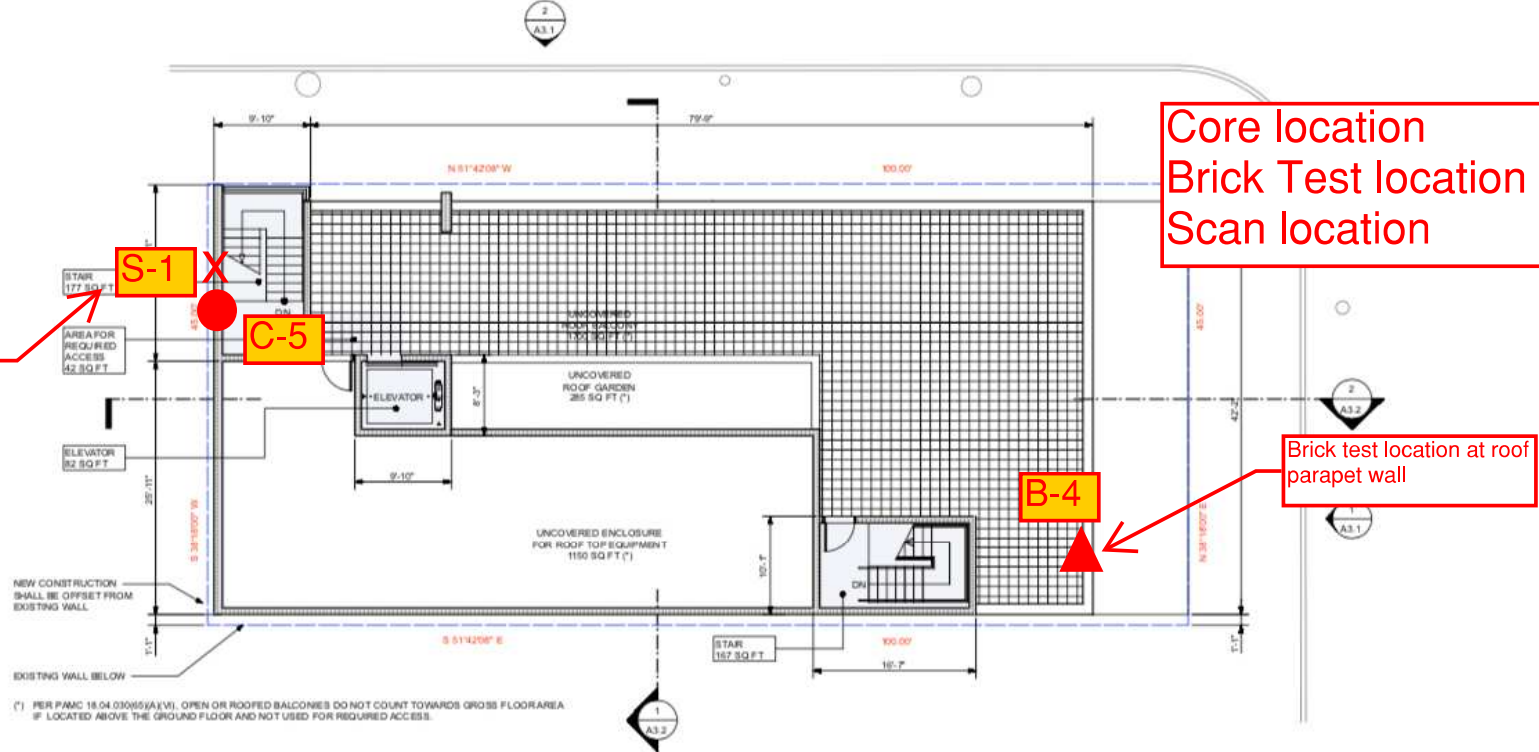
●

▲

X



Scanned performed at
parapet wall and
column, rebar
exposed for size at
parapet wall



WALL TYPE & SYMBOL LEGEND	
	EXISTING WALL, SHALL REMAIN AS PART
	NEW WALL
	WALL LAYOUT CONTROL POINT
	ALIGN



HOHBACH-LEWIN, INC. *STRUCTURAL & CIVIL ENGINEERS*

"Timely Solutions Based On Timeless Principles"

March 27, 2018

The Hayes Group
Terrence Murphy
2657 Spring Street
Redwood City, CA 94063

Project: 233 University Avenue
Palo Alto, CA
Hohbach-Lewin, Inc. Project No. 12929E

Subject: Recommended Testing Scope

Dear Terrence:

The purpose of this letter is to summarize our recommendations for third party testing of the existing construction. These recommendations are based on the site visit performed on March 26, 2018 in addition to the review of the preliminary architectural drawings prepared by the Hayes Group dated July 15, 2017. The information we would like verified includes the following:

- Concrete compressive strength of the existing perimeter basement walls. This can likely be achieved using a Schmidt hammer in lieu of coring.
- Thickness of the existing perimeter basement walls
- Vertical and horizontal reinforcement size and spacing at the perimeter basement walls. We recommend this be obtained via radiographic (x-ray) or similar methodology.
- Footing width and thickness at the perimeter basement walls. We recommend one location at each of the 4 perimeter basement walls.
- Push test on the existing brick walls to determine the average in-plane mortar strength of the wall. This would require removing one brick at each testing locations in order to install the jack. We recommend testing in a minimum of three locations. One location at the front elevation and one location at each of the side walls.

PRINCIPALS:

DOUGLAS HOHBACH	S.E.
DAN LEWIN	S.E.
JOAQUIM ROBERTS	S.E.
ANTHONY LEE	S.E.
VIKKI BOURCIER	S.E.
SAM SHIOTANI	S.E.
LES TSO	S.E.

ASSOCIATE PRINCIPALS:

KEVIN MORTON	S.E.
--------------	------

SENIOR ASSOCIATES:

VICKY RUNDORFF	S.E.
GREG RODRIGUES	S.E.
BILL DALEY	S.E.
STUART LOWE	S.E.
EDDIE HUI	S.E.
MICHAEL RESCH	S.E.

ASSOCIATES:

MIKE DAVIES	S.E.
STACY GADDINI	S.E.
BRIAN HO	S.E.
TJ WU	S.E.

SENIOR STRUCTURAL
ENGINEERS:

MOHAMED IBRAHIM	S.E.
-----------------	------

CE DEPT MANAGER:

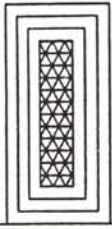
BILL HENN

Please contact me with any questions or comments.

Sincerely,

Hohbach-Lewin, Inc.

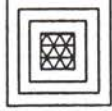
Michael Resch, S.E.
Senior Associate



MESERVE ENGINEERING

Structural and Civil

15951 LOS GATOS BOULEVARD, SUITE 10, LOS GATOS, CALIFORNIA 95032



TELEPHONE 408-358-1517 FAX 408-356-0847 www.mes-eng.com

December 9, 2004

Mr. Mike Messick
DPR Construction Inc.
1450 Veterans Boulevard
Redwood City, CA 94063

Mills Building URM Wall
Adjacent to
227 University Ave., Palo Alto, CA

As part of the new Stanford Theatre Gallery Building construction, located at 227 University Avenue, you have recently completed removal of the old concrete wall that was discovered to have been poured against the adjacent Mills Building. The Mills Building is listed in the city records as an unreinforced masonry (URM) structure, located at 233- 235 University Avenue. Like the building at 227 University, the Mills building has a basement, except in the back portion.

The City of Palo Alto passed Ordinance #3666 in 1986 that required an engineering evaluation with plans be made to determine the structural condition of each unreinforced masonry building. It also required the owner of each URM building to state his intentions with regard to the anticipated repair program developed by the owner's engineer. Such a report was not submitted to the city by Mr. Mills. The city file on the Mills building contains a simple memo from a Berkeley engineer which says "the building has major problems and will collapse in a major earthquake", but no analysis or field data was included to support that position. The city file also contains a letter from Mr. Mills, dated October, 1988, stating that he is planning to "replace the building in the reasonably near future".

Your removal of the old concrete wall and the subsequent four-inch gap created as the new building is constructed will enable Mr. Mills to proceed with his future demolition and replacement without impacting our newly built concrete block wall. Of course, the basement concrete walls do remain in contact with each other. Just as you have constructed a new code-compliant concrete wall inboard of the original basement wall, I anticipate that any future construction at the adjacent site will similarly construct a new code-compliant basement wall inboard of the current basement wall. Note that the survey results indicate the brick wall is actually about two inches over the property line.

In accordance with our Agreement, I visited the construction site multiple times as your firm was carefully removing the old concrete wall along the easterly side of our project site. The wall was removed in small blocks due its having been poured directly against the adjacent Mills building unreinforced masonry wall. The back 25 feet of the Mills building was apparently built at a later time, as it has no basement and consists of a concrete column and spandrel beam system with a hollow clay tile infill wall. At this location, a layer of form boards provided a one-inch gap, and no damage to the hollow clay tile infill by your firm was observed. Along the remaining 75 feet on contact, bricks were inadvertently removed at various random points during the demolition process. Brick removal was espe-

Mills Building URM Wall

cially concentrated at the location where an old chimney flue had been built within the Mills building wall by eliminating the middle wythe of brick.

When you had completed the demolition process, I made a visual record of the existing unreinforced masonry wall's condition. The photos taken to create this record are stored as xxx.jpg files on the enclosed CD-R disk. These files are contained in the folders labeled "visitNo1", "visitNo2", and "visitNo3". These photos were taken on August 27, August 31, and September 9, 2004. In order to keep track of where the photos were taken, the high back wall at the theatre was treated as the origin, and photos taken at five foot increments as we moved towards the front, which is 100 feet from the theatre wall. Vertically, the original wood floor - which was level with the front sidewalk - was where the bottom of the survey rod was placed. Therefore, all vertical dimensions are measured up from the floor, which was about the same elevation as the main floor of the Mills building. There is sufficient overlap in these photos that virtually every exposed brick in this wall was documented.

Several in-plane shear tests were also performed, to obtain some measure of the mortar strength. In accordance with standard procedures, one brick was removed and a vertical slot created in front of the brick to be tested. The testing company then inserted a small jack and pushed on the brick until movement occurred. The results obtained are shown in Tables One and Two. The first test, performed high on the wall towards the back (photo P8270036.jpg, file visitNo1), showed the mortar was below the minimum accepted value (30 psi) required for retrofit considerations. However, the other five tests showed the existing mortar is well above the minimum value required. Only six tests were performed, since the "failure rate" was not over the recommended maximum of twenty percent. The test data values demonstrate that the demolition process did not damage the existing mortar in this unreinforced masonry wall. Since the clay bricks are typically stronger than the old mortar in URM, there was no reason to test the bricks.

Where bricks had been removed, they were remortared in place, using mortar mixed in accordance with the procedure outlined in Appendix A. In addition, at locations where the mortar did not appear to meet the provisions contained in Appendix A, or the saw cuts were too deep, the horizontal mortar lines were locally repointed as needed. The resulting repaired, replaced, and/or repointed brick areas are shown in the CD-R photo folder labeled "URMrepairs," containing xxx.jpg photos taken in November, 2004.

Conclusions

It is my professional opinion that the demolition work did not damage the existing unreinforced masonry wall of the Mills Building. Where bricks were inadvertently pulled out, they were replaced with new bricks installed with mortar that meets or exceeds the existing joint mortar strength. At various locations, I believe we have actually improved the condition of the joint mortar. Never-the-less, this is still an unreinforced masonry wall. I recommend that Mr. Mills move forward with his plans to replace his building and protect the occupants and the general public from the seismic hazard that it represents.

Sincerely yours,



C. Edward Meserve, S.E. 1995

Appendix A - Pointing Requirements

Unreinforced Masonry Wall Pointing Guideline - UBC Standard 21-8

Where mortar is suspect or in question it shall be tested by scratching it with a mason's tool.

1. If less than a 3/8-inch depth is missing or deteriorated, no pointing is required.
2. Joints shall be pointed (or tuck-pointed) where the mortar has deteriorated to a depth greater than 3/8-inch, per the paragraph below. See the attached figure.
3. If the deteriorated joint is greater than 2-inches, the brick shall be removed and replaced with new mortar, per the paragraph below. See the attached figure.

The old mortar shall be cut out, by means of a toothing chisel or a grinder, to a uniform depth of 1.5-inches. Care must be taken not to damage the brick edges. All dust and debris must be removed from the joint by brushing, blowing with compressed air or rinsing with water (not high pressure).

Mortar mix shall be type "S" proportions. Add lamp black or coloring agent as needed to match the existing mortar color where the brick will be exposed.

The pointing (or tuck-pointing) mortar shall be pre-hydrated to reduce excessive shrinkage. The proper pre-hydration process is as follows:

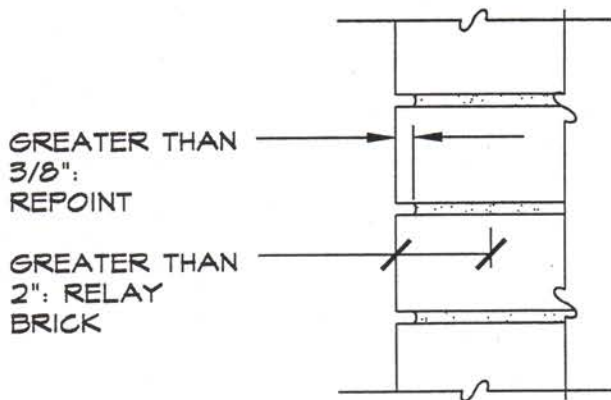
All dry ingredients should be thoroughly mixed. Only enough clean water should be added to the dry mix to produce a damp, workable consistency which will retain its shape when formed into a ball. The mortar should stand in this dampened condition for one to 1.5 hours.

The joints to be pointed should be dampened, but to ensure a good bond, the brick work must absorb all surface water. Water should be added to the pre-hydrated mortar to bring it to a workable consistency (somewhat drier than conventional mortar). The mortar should be packed tightly into the joints in thin layers (1/4-inch maximum). Each layer should become "thumbprint" hard before applying the next layer. The joints should be tooled to match the original profile after the last layer of mortar is "thumbprint" hard.

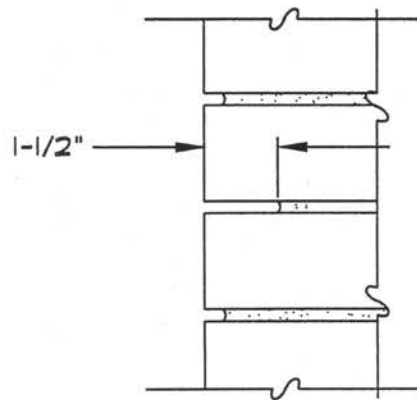
Replacement bricks must match the originals with respect to size (and color and texture where exposed). A tuck-pointing toothing chisel should be used to cut out the old mortar which surrounds the affected units. Power driven impact tools are not allowed, but a grinder may be utilized. Once the units are removed, all of the old mortar should be carefully chiseled out and all dust and debris should be swept out.

If used brick is to be relayed, it shall be cleaned of all old mortar. The brick surfaces in the wall shall be dampened before new units are placed, but the masonry should absorb all surface moisture to ensure a good bond. The appropriate surfaces of the surrounding brickwork and the replacement brick should be buttered with mortar. The replacement brick should be centered in the opening and pressed into position. The excess mortar should be removed with a trowel. Pointing around the replacement brick will help to ensure full contact between the old and new units. All head and bed joints should be tooled to match the original profile.

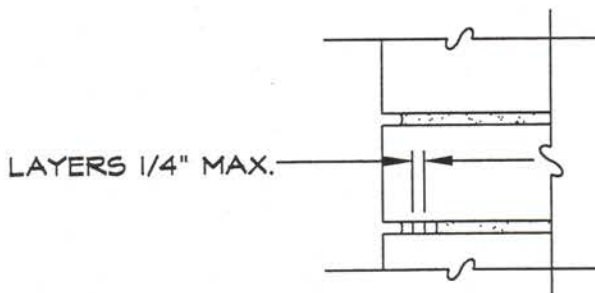
FIGURE 1



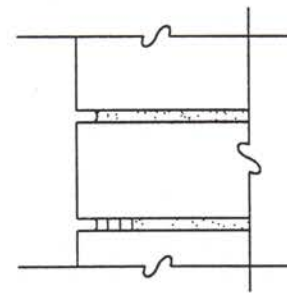
A) DETERIORATED MORTAR JT.



B) MORTAR CUT BACK TO A UNIFORM DEPTH



C) PLACE TUCK-POINTING MORTAR IN THIN LAYERS



D) TOOL JT. TO MATCH ORIGINAL PROFILE

TUCK - POINTING MORTAR JOINTS

FILE: 0254Detail



CONSOLIDATED ENGINEERING
LABORATORIES

IN-PLACE MASONRY SHEAR TEST REPORT

Project Address: Stanford Theater Gallery Project 227 University Avenue Palo Alto, CA										Dates: August 13, 2004	
CEL: 50-51491R Page 2 of 2											
Test No.	Location I=Interior E=exterior	Wall height above test	Wall width (inches) Note 1	Percent collar joint	Brick width (inches)	Brick length (inches)	Area (Sq.in.)	Gauge pressure (p.s.i.)	First movement (pounds)	*First movement (p.s.i.)	
1 E	West wall, 43' from North end	1'-6"	13	30	3.75	7.75	58	400	1,031	18	
n/a											
n/a											
n/a											
n/a											
n/a											
n/a											

* Please note these values include the weight of overburden at each test location.

Additional Comments:

Note 1: Wall thickness is estimated only and was not verified.

All reports are submitted as the confidential property of clients. Publication of statements, conclusions or extracts is reserved pending our written approval.

CSL 004-R2423

TABLE 1



CONSOLIDATED ENGINEERING
LABORATORIES

IN-PLACE MASONRY SHEAR TEST REPORT

Project Address: Stanford Theater Gallery Project
227 University Avenue
Palo Alto, CA

Dates: September 7, 2004

CEL: 50-51491R
Page 2 of 2

Test No.	Location I=Interior E=exterior	Wall height above test	Wall width (inches) Note 1	Percent collar joint	Brick width (inches)	Brick length (inches)	Area (Sq.In.)	Gauge pressure (p.s.i.)	First movement (pounds)	*First movement (p.s.i.)
1 E	West wall, 56' from South end	9'-8"	13	50	3.87	8.50	66	2000	6,031	91
2 E	West wall, 40' from South end	15'-8"	13	50	3.75	8.25	62	3000	9,156	148
3 E	West wall, 28' from South end	12'-10"	13	50	4.00	8.75	70	1500	4,469	64
4 E	West wall, 35' from South end	7'	13	25	4.00	8.50	68	1800	5,406	80
5 E	West wall, 16' from South end	5'-9"	13	25	4.00	8.25	66	900	2,594	39
n/a										
n/a										

* Please note these values include the weight of overburden at each test location.

Additional Comments:

Note 1: Wall thickness is estimated only and was not verified.

All reports are submitted as the confidential property of clients. Publication of statements, conclusions or extracts is reserved pending our written approval.

CSL C04-R2423

TABLE 2

19 November 1986

Mr. Frank H. Mills
548 Palo Alto Avenue
Palo Alto, CA 94301

Subject: Building at 233-235 University Avenue,
Preliminary Structural Investigation.

Dear Mr. Mills:

Having conducted an on-site visual investigation of the structural system of subject building, I conclude that further detailed analysis of the existing system would not be warranted.

The building is a one-story structure with basement and partial mezzanine, and dates back to the early years of this century. The original exterior walls are of brick, and are surely unreinforced. A 1920's addition with concrete frame and unreinforced hollow clay tile infill walls connects to the rear of the original structure. The floor and roof are framed with wood joists and square-laid sheathing with no appreciable diaphragm-type bracing value. Positive connections of floor and roof systems to the exterior brick walls appear to be virtually non-existent; the joists simply bear on brick shoulders at their junction with the walls. The open store-front adjoining University Avenue contains no bracing elements, so no logical system of load paths exists for transfer of lateral forces in this direction.

In my opinion, any proposed scheme of reconstruction to meet the requirements of the Seismic Hazard Reduction Program would involve such extensive reworking of the existing structural components as to make complete replacement a more logical course of action.

Very truly yours,

Anthony J. Angelo
ANTHONY J. ANGELO



City of Palo Alto
California

EARTHQUAKE HAZARD SURVEY
1935-36

BOARD OF PUBLIC WORKS

Shirley 2/20

1-8-81 Existing

233-1



Building _____

Street No. 233-5 Univ. Av. corner Ramona.

Occupancy Stores.

Type Brick walls - wood interior.

Number of stories 1

Plans available No.

Owner or Agt. Jennie R.

Address Bessie Murphy

Phone 412 Cowper

Conclusions and Recommendations See next page.

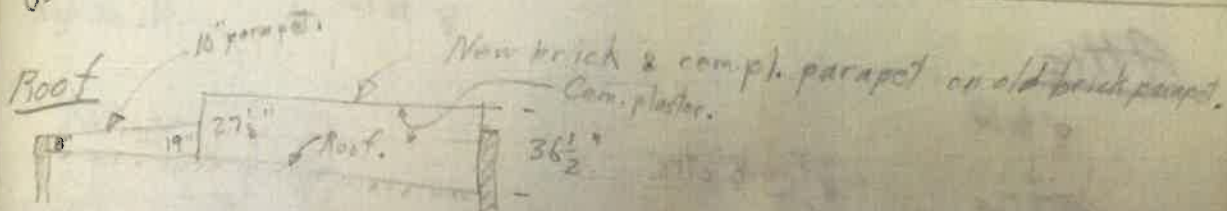
Action Taken 1st letter 6-18-36

2nd letter 12-8-36

3rd letter 2-14-39

#233-35 Univ. Ave.

Plans not available.

Front Parapet.

Parapet on Ramona, const. ht. of 8".

Mortar in old parapet miserable.

new "soft", or a trifle better.

Cornice sheet metal on wood.

ExteriorFace brick. Mortar very soft. Crack over door in Ramona.

Crack over end of steel lintel, above front window, on Ramona.

Front elev. - brick over corner entr. has mortar washed out.

Cem. plaster on Rhodes Clothing Store front.

Corner pier 21" sq.

8" to 10" $\downarrow$ No anchge.

8" to 36 1/2" 1" Sh. $\perp$
2x8-32

Varies $\updownarrow$
3 1/2" max.

Face bridge

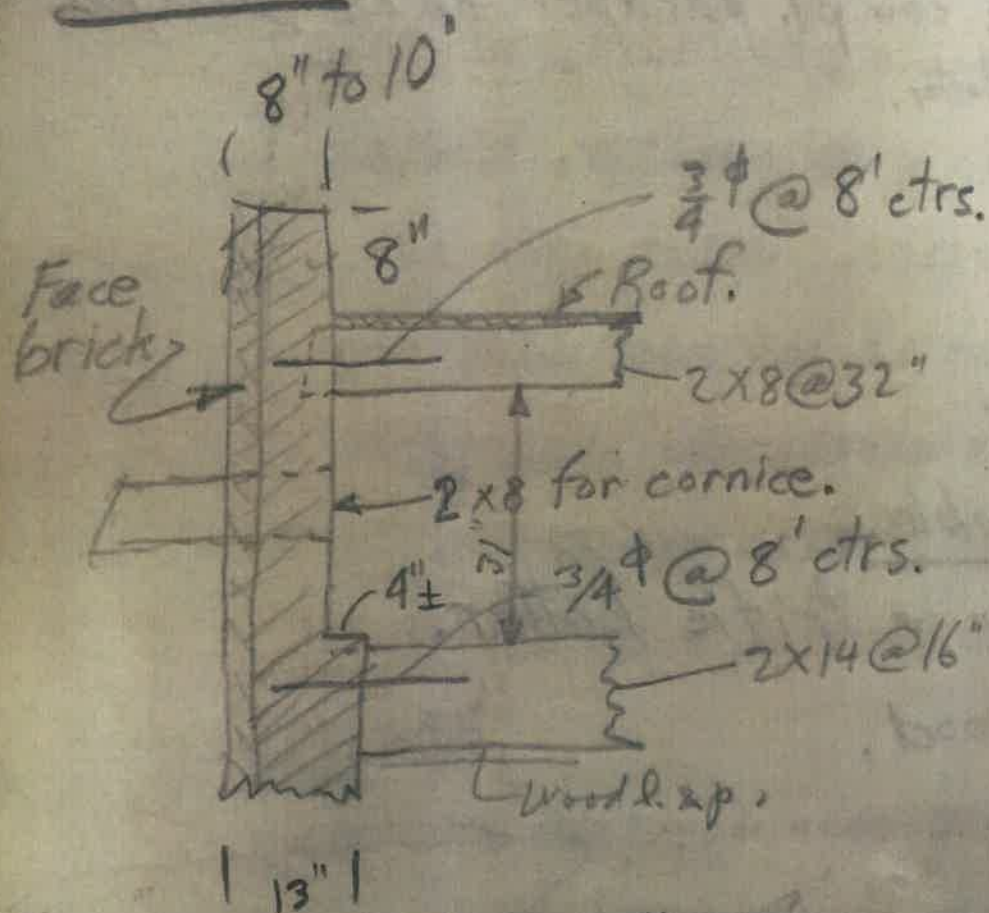
3/4" ϕ @ 6"
2x14-16

Wood l. xpl.
No SOLID BLK

Univ. Ave. Wall.

1" @ 8' ctrs.
1" @ 32"
for cornice.
1" @ 8' ctrs.
2x14 @ 16"
exp.

Attic



Ramona St. Wall.

CONCLUSIONS & RECOMMENDATIONS

The mortar used in the brick walls and facing of this one-story building is of an extremely poor quality, having entirely inadequate cementing properties. Joist anchors intended to provide lateral restraint at the roof line are of little value in such a wall; past earthquake experience has proven that they readily pull out. With masonry of this type the building is subject to partial collapse in a severe earthquake.

The separate steel lintels used over openings are an unfavorable type of construction when earthquakes are considered, particularly when good anchorage is impossible, as in masonry of this character. At the corner pier these lintels introduce a plane of weakness.

The Ramona Street facing shows marked cracking in two places. The University Avenue parapet is a particularly serious hazard.

Adequate reconstruction for a building of this character involves some such method as channelling the walls at proper intervals and installing reinforced ^{concrete} or steel columns, with a continuous bond beam along the top which would relieve the walls of the roof and ceiling load. New column footings, a new parapet, and thorough anchorage to roof and ceiling framing would be included.



RECEIVED

NOV 17 1988

INSPECTIONAL SERVICES

10 October 1988

City of Palo Alto, Division of Inspectional Services
250 Hamilton Avenue, P.O.Box 10250, Palo Alto, CA94303

Attention: Mr. Fred Herman, Chief Building Official

Subject: Building at 233-235 University Avenue,
Letter of Intent. *Seismic*

Dear Sirs:

This letter is intended to comply with the requirements of the City of Palo Alto Seismic Hazard Identification Ordinance, Section 16.42.070(b).

My intent is to replace the present structure with a new building in the reasonably near future.

In the meantime, I plan to take the following steps to minimize hazards at the existing building:

- 1.) Brace the top of the cantilever parapet wall by means of anchors to the roof framing.
- 2.) Anchor wood frame roof and floor systems to the exterior walls by means of bolted steel connectors.

Very truly yours,

233-235 University Avenue

RECEIVED
NOV 20 1987
INSPECTIONAL SERVICES

19 November 1986

Mr. Frank H. Mills
548 Palo Alto Avenue
Palo Alto, CA 94301

Subject: Building at 233-235 University Avenue,
Preliminary Structural Investigation.

Dear Mr. Mills:

Having conducted an on-site visual investigation of the structural system of subject building, I conclude that further detailed analysis of the existing system would not be warranted.

The building is a one-story structure with basement and partial mezzanine, and dates back to the early years of this century. The original exterior walls are of brick, and are surely unreinforced. A 1920's addition with concrete frame and unreinforced hollow clay tile infill walls connects to the rear of the original structure. The floor and roof are framed with wood joists and square-laid sheathing with no appreciable diaphragm-type bracing value. Positive connections of floor and roof systems to the exterior brick walls appear to be virtually non-existent; the joists simply bear on brick shoulders at their junction with the walls. The open store-front adjoining University Avenue contains no bracing elements, so no logical system of load paths exists for transfer of lateral forces in this direction.

In my opinion, any proposed scheme of reconstruction to meet the requirements of the Seismic Hazard Reduction Program would involve such extensive reworking of the existing structural components as to make complete replacement a more logical course of action.

Very truly yours,

Anthony J. Angelo
ANTHONY J. ANGELO



233-235 University Avenue

POWER

POLICY S-1.13

Support the development of an independent, redundant power grid with local generation in Palo Alto, in order to ensure energy resiliency in the event of natural disasters or other threats.

PROGRAM S1.13.1 Identify solutions to add an additional power line to Palo Alto to ensure redundancy.

PROGRAM S1.13.2 Explore incentives to adopt emerging, residential off-grid capabilities and technologies, including back-up power sources vital in the event of natural disasters or other threats.

PROGRAM S1.13.3 Continue citywide efforts to underground utility wires to limit injury, loss of life and damage to property in the event of human-made or natural disasters.

PROGRAM S1.13.4 Enhance the safety of City-owned natural gas pipeline operations. Work with customers, public safety officials and industry leaders to ensure the safe delivery of natural gas throughout the service area. Provide safety information to all residents on City-owned natural gas distribution pipelines.

PROGRAM S1.13.5 Provide off-grid and/or backup power sources for critical City facilities to ensure uninterrupted power during emergencies and disasters.

NATURAL HAZARDS

GOAL S-2 Protection of life, ecosystems and property from natural hazards and disasters, including earthquake, landslide, flooding, and fire.

GENERAL SAFETY MEASURES

POLICY S-2.1

Incorporate the City's Local Hazard Mitigation and Adaptation Plan (LHMP), as periodically adopted by the City Council and certified by the Federal Emergency Management Agency (FEMA), into the Safety Element. In the event of any conflict between the provisions of the LHMP and any other provision of the Safety Element, the LHMP shall control.



POLICY S-2.2

Focus efforts to reduce exposure to natural hazards in areas of the city identified as vulnerable to the greatest risks, as shown on the maps in this Element.

POLICY S-2.3

Implement public safety improvements, such as access roads and other infrastructure, in a manner that is sensitive to the environment.

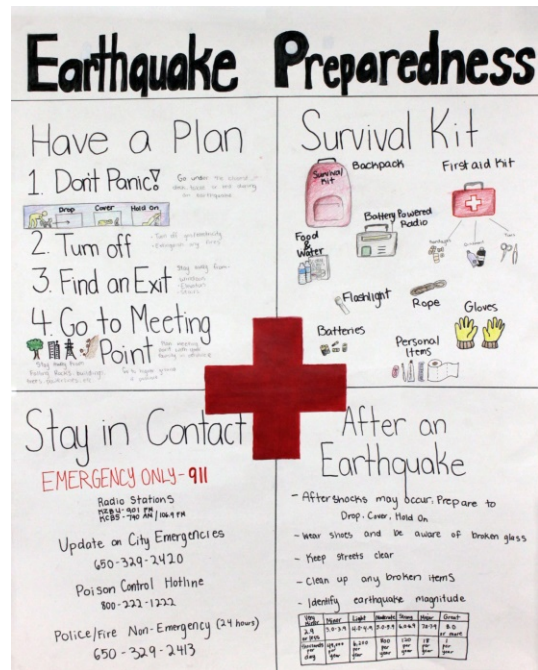
EARTHQUAKES AND GEOLOGIC HAZARDS

POLICY S-2.4 Expand citizen awareness of seismic and geologic hazards through public education and preparedness.

POLICY S-2.5 Minimize exposure of people and structures to geologic hazards, including slope stability, subsidence and expansive soils, and to seismic hazards including groundshaking, fault rupture, liquefaction and landslides.

PROGRAM S2.5.1 Periodically review and update the City's Seismic Hazard Ordinance.

PROGRAM S2.5.2 Continue to provide incentives for seismic retrofits of structures throughout the city, particularly those building types that would affect the most people in the event of an earthquake.



POLICY S-2.6 Promote seismic rehabilitation and renovation of existing buildings, particularly those whose loss would have the greatest community impacts, using incentives as a way to ensure safe and structurally sound buildings.

PROGRAM S2.6.1 Encourage efforts by individual neighborhood or block-level groups to pool resources for seismic retrofits.

PROGRAM S2.6.2 Continue to use a seismic bonus and a Transfer of Development Rights (TDR) Ordinance for seismic retrofits for eligible structures in the Commercial Downtown (CD) zone.

PROGRAM S2.6.3 Evaluate the TDR Ordinance so that transferred development rights may be used for residential development on the receiver sites.

PROGRAM S2.6.4 Study the possibility of revising the TDR program to encourage seismic retrofits.

PROGRAM S2.6.5 Explore the use of Community Development Block Grants, Palo Alto Housing Funds and other sources of funding to support owners of lower income and senior housing to retrofit seismically-unsafe construction.

POLICY S-2.7 Encourage property owners, business owners and the PAUSD to evaluate their vulnerability to earthquake hazards and take appropriate action to minimize their risk.

- PROGRAM S2.7.1** As part of the construction permitting process for proposed new and redeveloped buildings in areas of identified hazard shown on Map S-2, require submittal to the City of a geotechnical/seismic report that identifies specific risks and appropriate mitigation measures.
- PROGRAM S2.7.2** Review and update, as appropriate, City code requirements for excavation, grading, filling and construction to ensure that they conform to currently accepted and adopted State standards.
- PROGRAM S2.7.3** Utilize the results of Palo Alto's Seismic Hazards Identification Program and inventory of potentially seismically vulnerable building types to establish priorities and consider incentives to encourage structural retrofits.

FLOOD HAZARD AND MITIGATION

POLICY S-2.8 Minimize exposure to flood hazards by protecting existing development from flood events and adequately reviewing proposed development in flood prone areas.

- PROGRAM S2.8.1** Implement flood mitigation requirements of FEMA in Special Flood Hazard Areas as illustrated on the Flood Insurance Rate Maps.
- PROGRAM S2.8.2** Continue participating in FEMA's Community Rating System to reduce flood insurance for local residents and businesses and strive to improve Palo Alto's rating in order to lower the cost of flood insurance.
- PROGRAM S2.8.3** Collaborate with the San Francisquito Creek Joint Powers Authority and the Santa Clara Valley Water District on environmentally-sensitive efforts to stabilize, restore, maintain and provide one percent (100-year) flood protection adjacent to San Francisquito Creek.
- PROGRAM S2.8.4** Work with East Palo Alto, Santa Clara Valley Water District and San Francisquito Creek Joint Powers Authority on efforts to increase the flows within the San Francisquito Creek possible solutions include replacing the City-owned Newell Road Bridge and District-owned Pope Chaucer Street Bridge.

POLICY S-2.9 Partner with appropriate agencies to expand flood zones as appropriate due to sea level rise, changes in creek channels, street flooding or storm drain overload due to increased likelihood of extreme storm events caused by climate change.

POLICY S-2.10 Prohibit new habitable basements in the development of single-family residential properties within 100-year flood zones of the FEMA-designated Special Flood Hazard Area.

- PROGRAM S2.10.1** Keep basement restrictions up to date with changing flood hazard zones.