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4-8-2020

UCSF Building Seismic Ratings
1490 5TH AVENUE

CAAN #2021
1490 5th AVENUE, SAN FRANCISCO, CA 94122
UCSF Campus: Parnassus



4/8/2020



Plan



West Elevation

Rating summary	Entry	Notes
UC Seismic Performance Level (rating)	V	Findings based on drawing review and ASCE 41-17 Tier 1 evaluation ¹
Rating basis	Tier 1	ASCE 41-17
Date of rating	2020	
Recommended UCSF priority category for retrofit	Priority B	Priority A = Retrofit ASAP Priority B=Retrofit at next permit application for modification
Ballpark total project cost to retrofit to IV rating	High	See recommendations on further evaluation and retrofit.
Is 2018-2019 rating required by UCOP?	Yes	
Further evaluation recommended?	No	

¹ The evaluations at UCSF translate the Tier 1 evaluation to a Seismic Performance Level rating using professional judgment discussed among the Seismic Review Committee. Non-compliant items in the Tier 1 evaluation do not automatically put a building into a particular rating category, but such items are evaluated along with the combination of building features and potential deficiencies, focused on the potential for collapse or serious damage to the gravity supporting structure that may threaten occupant safety.

Building information used in this evaluation

- Architectural Drawings by Community Design Center, “Additions and Alterations: 1490 5th Avenue,” dated 23 August 1985 (5 sheets)
- Existing Architectural Drawings by Hearst & Chen Architects, “UCSF 1490 Fifth Avenue,” dated 14 February 1985 (2 sheets)

Scope for completing this form

Architectural drawings were reviewed and an ASCE 41-17 Tier 1 evaluation was performed. A site visit was made on December 12, 2019 where the building exterior and basement were observed. Access to the upper floors was not available.

Brief description of structure

The building functions as faculty housing. It was reportedly built in 1905 as a single-family home. There is a three-bedroom apartment on the first and second floors. The main floor plate is approximately 25 ft north-south by 41 ft east-west.

Identification of Levels: Levels are identified on plan as Ground Floor, First Floor, Second Floor, and Roof. The site slopes downward toward the northwest. The ground floor (varies, average approximately 6’-0”) contains a garage, utilities, and laundry. The first floor (approximately 10’-0”) consists of a kitchen, dining room, living room, den, one bedroom, a bathroom, and an entry. The second floor (approximately 10’-0”) consists of two bedrooms and one bathroom. The roof is a hip roof. The basement is at grade/street level and is used as the base of the building for this evaluation.

Foundation system: Existing foundation drawings are not available. It is presumed there are continuous footings below bearing walls. During the site visit on December 12, 2019 continuous concrete stem wall footings were observed around the ground floor level.

Structural system for vertical (gravity) load: Drawings showing the existing framing are not available. It is presumed based on the age of the building that wood joists span to load bearing wood framed walls.

Structural system for lateral forces: Drawings showing the existing framing are not available. It is presumed based on the age of the building that a sheathed diaphragm distributes load to the interior and exterior wood framed walls sheathed with gypsum board and/or plaster. Although most of the basement ceiling was finished, we were able to determine the first floor has straight sheathing. No evidence of seismic retrofit was observed.

Building Code: The building was reportedly constructed in 1905, prior to a building code being enacted. However, no documentation was available to confirm the construction date.

Building Condition: What could be observed of the structure of the building appeared to be in fair condition; however, most of the structure was concealed behind finishes. The concrete stem walls in the garage were in poor condition, with widespread spalling and/or poor consolidation. The stucco seemed to be in good condition.

Building response in 1989 Loma Prieta Earthquake: The report titled “Performance of UCSF Buildings During the October 17, 1989 Loma Prieta Earthquake” by Impell Corporation stated the exterior of the building was inspected prior to the earthquake and no damage was observed.

Brief description of seismic deficiencies and expected seismic performance including structural behavior modes

- The building relies on interior and exterior walls for shear resistance. There is not enough wall present to pass the Tier 1 quick check in the transverse or longitudinal direction in any story.
- Based on the age of construction, the walls between levels are not expected to be detailed to transfer shear and overturning forces between levels.
- The building is located on a sloped site. However, there is a significant length of wall on the downhill side of the building.

- There is nearly no separation to the north and the separation to the south is approximately 2 inches. The floor levels do not align with the adjacent buildings due to the sloped site.
- The basement cripple walls were primarily sheathed with plaster and gypsum board. Based on the age of construction it is assumed the anchor bolts for the sill plate are not adequate.

Structural deficiency	Affects rating?	Structural deficiency	Affects rating?
Lateral system stress check (wall shear, column shear or flexure, or brace axial as applicable)	Y	Openings at shear walls (concrete or masonry)	N
Load path	Y	Liquefaction	N
Adjacent buildings	Y	Slope failure	N
Weak story	N	Surface fault rupture	N
Soft story	N	Masonry or concrete wall anchorage at flexible diaphragm	N
Geometry (vertical irregularities)	N	URM wall height-to-thickness ratio	N
Torsion	N	URM parapets or cornices	N
Mass – vertical irregularity	N	URM chimney	N
Cripple walls	Y	Heavy partitions braced by ceilings	N
Wood sills (bolting)	Y	Appendages	N
Diaphragm continuity	N		

Summary of review of non-structural life-safety concerns, including at exit routes. ²

It appeared the chimney had been replaced with a sheet metal flue. It is likely the fireplace has been blocked off.

The water heater in the basement was anchored.

UCOP non-structural checklist item	Life safety hazard?	UCOP non-structural checklist item	Life safety hazard?
Heavy ceilings, feature or ornamentation above large lecture halls, auditoriums, lobbies or other areas where large numbers of people congregate	None Observed	Unrestrained hazardous materials storage	None Observed
Heavy masonry or stone veneer above exit ways and public access areas	None Observed	Masonry chimneys	None Observed
Unbraced masonry parapets, cornices or other ornamentation above exit ways and public access areas	None Observed	Unrestrained natural gas-fueled equipment such as water heaters, boilers, emergency generators, etc.	None Observed

Basis of Seismic Performance Level Rating

The length of wall in the subject building is below the amount required by the ASCE 41 Tier 1 procedures, and connections between walls between levels of the building and to the foundation are not adequate for resisting seismic loading. The building is listed as Priority B because there is a relatively low risk to occupant life-safety posed by conventional wood-framed construction.

Recommendations for further evaluation or retrofit

No further evaluation of this building is recommended. There is relatively low risk to occupant life-safety posed by this type of building based on historical performance of similar building types. It is recommended that work to improve the seismic performance of the building be included with any future renovation requiring a building permit.

² For these Tier 1 evaluations, we do not visit all spaces of the building; we rely on campus staff to report to us their understanding of if and where non-structural hazards may occur.

Peer review comments on rating

The structural members of the UCSF Seismic Review Committee (SRC) reviewed the evaluation on January 8, 2020 and are unanimous that the rating is IV.

Additional building data	Entry	Notes
Latitude	37.76073	
Longitude	-122.46161	
Are there other structures besides this one under the same CAAN#	No	
Number of stories above lowest perimeter grade	3	
Number of stories (basements) below lowest perimeter grade	0	
Building occupiable area (OGSF)	2,406	
Risk Category per 2016 CBC 1604.5	II	
Building structural height, h_n	30 ft	Structural height defined per ASCE 7-16 Section 11.2
Coefficient for period, C_t	0.02	Per ASCE 41-17 equation 4-4
Coefficient for period, β	0.75	Per ASCE 41-17 equation 4-4
Estimated fundamental period	0.256 sec	Per ASCE 41-17 equation 4-4
Site data		
975 yr hazard parameters S_s, S_1	1.565, 0.618	UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)
Site class	C	
Site class basis	Geotech Parameters	UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)
Site parameters F_a, F_v	1.200, 1.400	UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)
Ground motion parameters S_{cs}, S_{c1}	1.878, 0.865	UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)
S_D at building period	1.878	
Site V_{s30}	440 m/s	
V_{s30} basis	Geotech Parameters	UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)
Liquefaction potential/basis	No	UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)
Landslide potential/basis	No	UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)
Active fault-rupture hazard identified at site?	No	
Site-specific ground motion study?	No	
Applicable code		
Applicable code or approx. date of original construction	Built: 1905	Reported date, not confirmed

Applicable code for partial retrofit	None	No partial retrofit known
Applicable code for full retrofit	None	No full retrofit known
Model building data		
Model building type North-South	W1 : Wood Light Frames	
Model building type East-West	W1: Wood Light Frames	
FEMA P-154 score	N/A	Not included here because an ASCE 41 Tier 1 evaluation was performed.
Previous ratings		
Most recent rating	V	2013 Report
Date of most recent rating	10/7/2013	Basis: Qualitative assessment based on drawing reviewed
2 nd most recent rating	-	
Date of 2 nd most recent rating	-	
3 rd most recent rating	-	
Date of 3 rd most recent rating	-	
Appendices		
ASCE 41 Tier 1 checklist included here?	Yes	Refer to attached checklist file

Appendix A

Additional Images

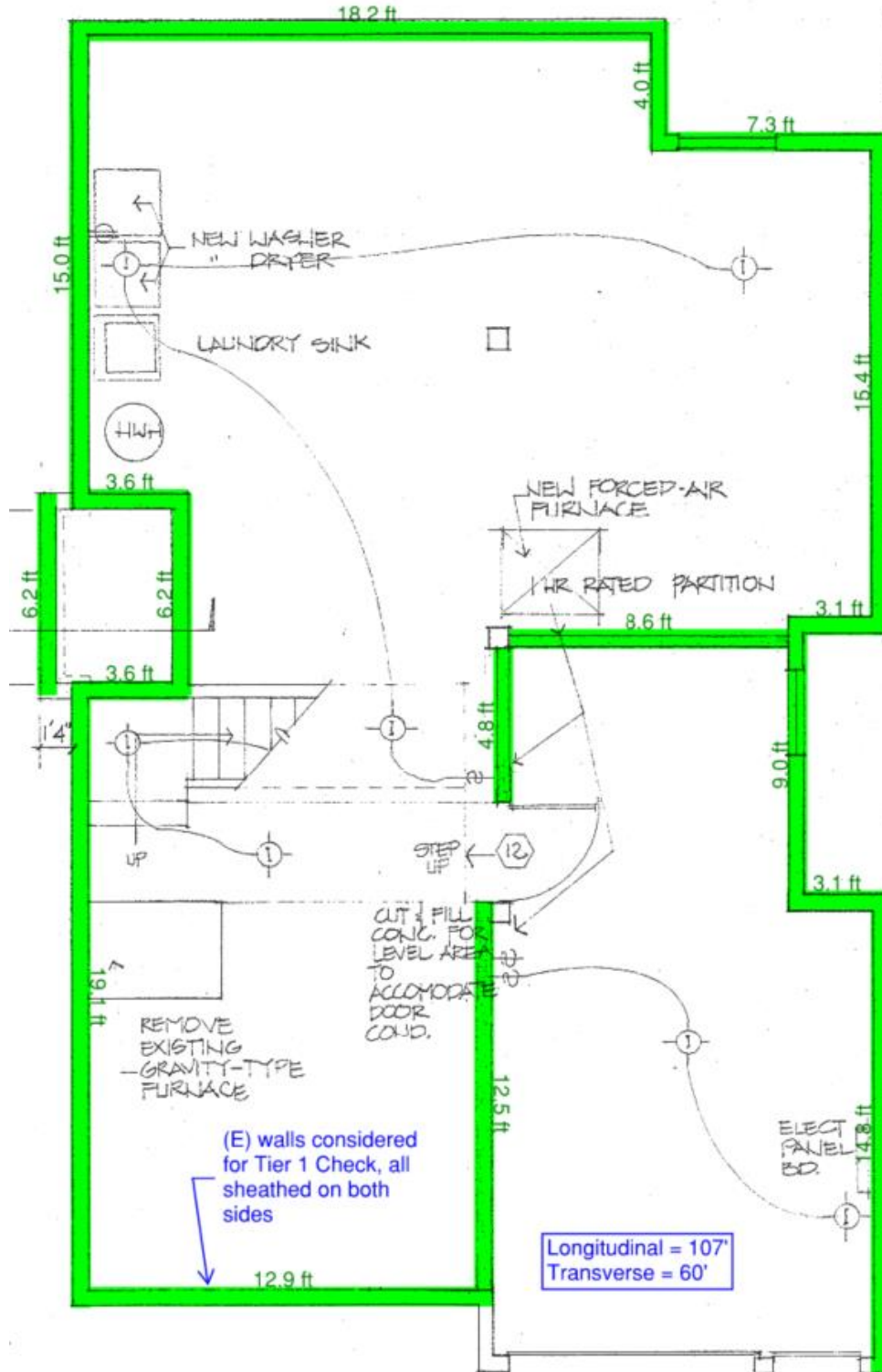


Figure 1 - Basement/Garage Floor Plan

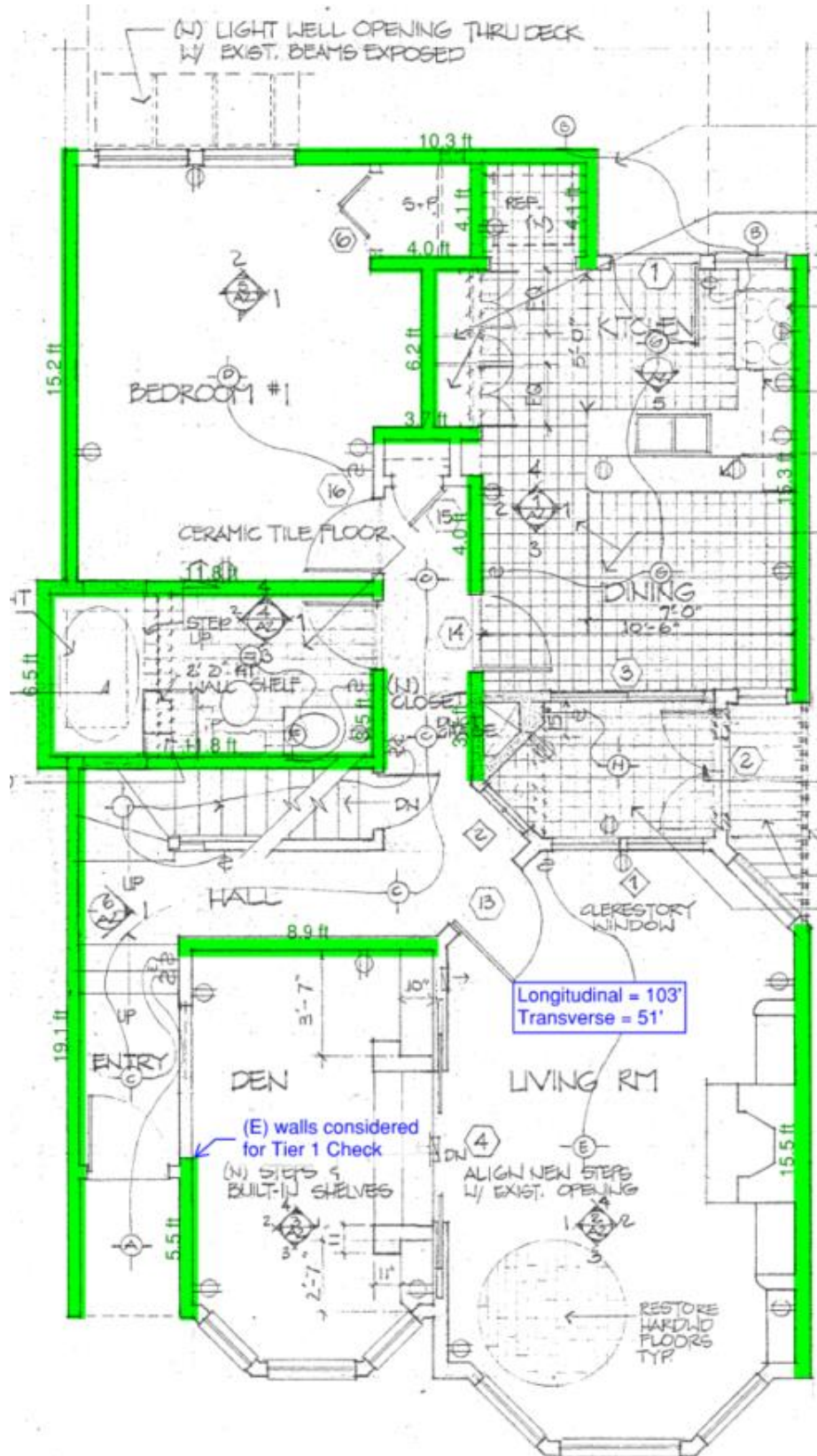


Figure 2 - First Floor Plan

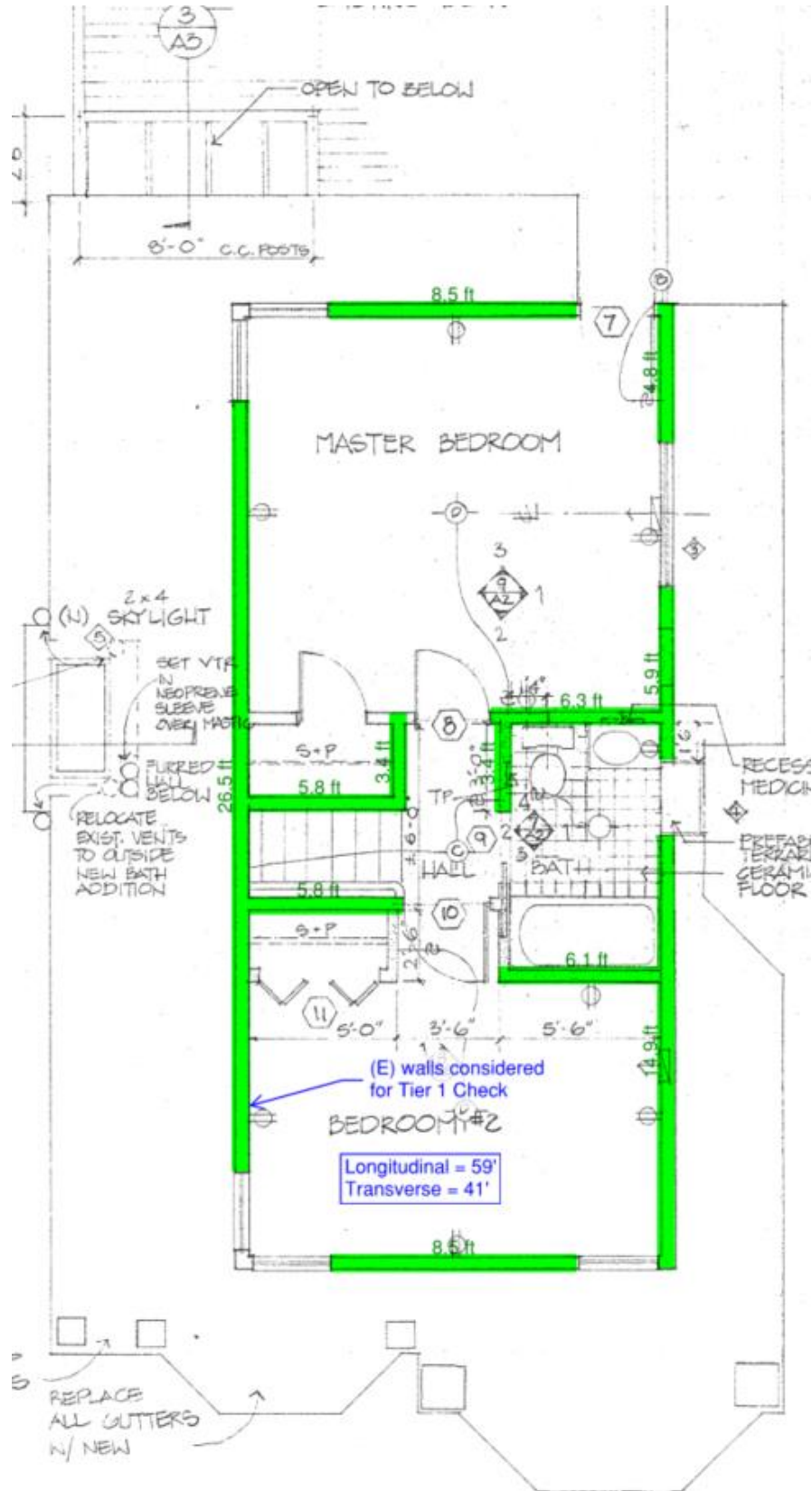


Figure 3 - Second Floor Plan



Figure 4 - Building Separation to the North (Left) and South (Right)



Figure 5 – Concrete Spalling at Garage



Figure 6 – Concrete Spalling of Garage Slab



Figure 7 – Storage Area of Basement with Gyp Board



Figure 8 – Anchored Water Heater



Figure 9 – Furnace in Basement



Figure 10 – Interior Basement Post

Appendix B

ASCE 41- 17 Tier 1 Checklists (Structural)

UC Campus:	San Francisco			Date:	1/5/2020		
Building CAAN:	2021	Auxiliary CAAN:		By Firm:	Estructure		
Building Name:	1490 5 th Avenue			Initials:	AJS	Checked:	MTP
Building Address:	1490 5 th Avenue, San Francisco, CA 94122			Page:	1	of	3

ASCE 41-17 Collapse Prevention Basic Configuration Checklist

LOW SEISMICITY

BUILDING SYSTEMS - GENERAL

	Description
C NC N/A U <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	<p>LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation. (Commentary: Sec. A.2.1.1. Tier 2: Sec. 5.4.1.1)</p> <p>Comments: Based on the age of construction, it is presumed detailing does not provide transfer of forces between walls and between levels of the building.</p>
C NC N/A U <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	<p>ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 0.25% of the height of the shorter building in low seismicity, 0.5% in moderate seismicity, and 1.5% in high seismicity. (Commentary: Sec. A.2.1.2. Tier 2: Sec. 5.4.1.2)</p> <p>Comments: Buildings to the north and south are built to the property line and minimal separation from the subject building.</p>
C NC N/A U <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	<p>MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure. (Commentary: Sec. A.2.1.3. Tier 2: Sec. 5.4.1.3)</p> <p>Comments:</p>

BUILDING SYSTEMS - BUILDING CONFIGURATION

	Description
C NC N/A U <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<p>WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above. (Commentary: Sec. A.2.2.2. Tier 2: Sec. 5.4.2.1)</p> <p>Comments</p>
C NC N/A U <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	<p>SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above. (Commentary: Sec. A.2.2.3. Tier 2: Sec. 5.4.2.2)</p> <p>Comments:</p>

Note: C = Compliant NC = Noncompliant N/A = Not Applicable U = Unknown

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ASCE 41-17 Collapse Prevention Basic Configuration Checklist

C <input type="radio"/> NC <input checked="" type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation. (Commentary: Sec. A.2.2.4. Tier 2: Sec. 5.4.2.3) Comments: Some walls are discontinuous between the ground and first story.
C <input checked="" type="radio"/> NC <input type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines. (Commentary: Sec. A.2.2.5. Tier 2: Sec. 5.4.2.4) Comments:
C <input checked="" type="radio"/> NC <input type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	MASS: There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered. (Commentary: Sec. A.2.2.6. Tier 2: Sec. 5.4.2.5) Comments:
C <input checked="" type="radio"/> NC <input type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension. (Commentary: Sec. A.2.2.7. Tier 2: Sec. 5.4.2.6) Comments:

MODERATE SEISMICITY (COMPLETE THE FOLLOWING ITEMS IN ADDITION TO THE ITEMS FOR LOW SEISMICITY)

GEOLOGIC SITE HAZARD

	Description
C <input checked="" type="radio"/> NC <input type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance do not exist in the foundation soils at depths within 50 ft (15.2m) under the building. (Commentary: Sec. A.6.1.1. Tier 2: 5.4.3.1) Comments:
C <input checked="" type="radio"/> NC <input type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	SLOPE FAILURE: The building site is located away from potential earthquake-induced slope failures or rockfalls so that it is unaffected by such failures or is capable of accommodating any predicted movements without failure. (Commentary: Sec. A.6.1.2. Tier 2: 5.4.3.1) Comments:

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Building Address:	1490 5 th Avenue, San Francisco, CA 94122			Page:	3	of	3

ASCE 41-17 Collapse Prevention Basic Configuration Checklist

MODERATE SEISMICITY (COMPLETE THE FOLLOWING ITEMS IN ADDITION TO THE ITEMS FOR LOW SEISMICITY)

GEOLOGIC SITE HAZARD

C	NC	N/A	U	<p>SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated. (Commentary: Sec. A.6.1.3. Tier 2: 5.4.3.1)</p> <p>Comments:</p>
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

HIGH SEISMICITY (COMPLETE THE FOLLOWING ITEMS IN ADDITION TO THE ITEMS FOR MODERATE SEISMICITY)

FOUNDATION CONFIGURATION

				Description
C	NC	N/A	U	<p>OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$. (Commentary: Sec. A.6.2.1. Tier 2: Sec. 5.4.3.3)</p> <p>Comments:</p> <p style="margin-left: 20px;">$0.6 S_a = 0.6 * 1. = 1.127$ Base = 25 ft; height = 30 ft Base/Height = $0.833 < 1.127$</p>
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
C	NC	N/A	U	<p>TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C. (Commentary: Sec. A.6.2.2. Tier 2: Sec. 5.4.3.4)</p> <p>Comments:</p> <p style="margin-left: 20px;">Site class C.</p>
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

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ASCE 41-17 Collapse Prevention Structural Checklist For Building Type W1-W1A

LOW AND MODERATE SEISMICITY															
SEISMIC-FORCE-RESISTING SYSTEM															
				Description											
C <input checked="" type="radio"/> NC <input type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2. (Commentary: Sec. A.3.2.1.1. Tier 2: Sec. 5.5.1.1) Comments:														
C <input type="radio"/> NC <input checked="" type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: (Commentary: Sec. A.3.2.7.1. Tier 2: Sec. 5.5.3.1.1) <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px 5px;">Structural panel sheathing</td> <td style="padding: 2px 5px;">1,000 lb/ft (14.6 kN/m)</td> </tr> <tr> <td style="padding: 2px 5px;">Diagonal sheathing</td> <td style="padding: 2px 5px;">700 lb/ft (10.2 kN/m)</td> </tr> <tr> <td style="padding: 2px 5px;">Straight sheathing</td> <td style="padding: 2px 5px;">100 lb/ft (1.5 kN/m)</td> </tr> <tr> <td style="padding: 2px 5px;">All other conditions</td> <td style="padding: 2px 5px;">100 lb/ft (1.5 kN/m)</td> </tr> </table> Comments: No walls pass the quick check stress check. At the ground floor the wall stresses in the quick check are 336 plf in the east-west direction and 599 plf in the north-south direction compared with the allowable 200 plf.							Structural panel sheathing	1,000 lb/ft (14.6 kN/m)	Diagonal sheathing	700 lb/ft (10.2 kN/m)	Straight sheathing	100 lb/ft (1.5 kN/m)	All other conditions	100 lb/ft (1.5 kN/m)
Structural panel sheathing	1,000 lb/ft (14.6 kN/m)														
Diagonal sheathing	700 lb/ft (10.2 kN/m)														
Straight sheathing	100 lb/ft (1.5 kN/m)														
All other conditions	100 lb/ft (1.5 kN/m)														
C <input type="radio"/> NC <input checked="" type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system. (Commentary: Sec. A.3.2.7.2. Tier 2: Sec. 5.5.3.6.1) Comments: The street-side exterior wall is covered in stucco and counted in the quick check.														
C <input type="radio"/> NC <input checked="" type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building. (Commentary: Sec. A.3.2.7.3. Tier 2: Sec. 5.5.3.6.1) Comments: Interior walls provide much of the shear resistance, particularly in the transverse (north-south) direction.														
C <input type="radio"/> NC <input checked="" type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces. (Commentary: Sec. A.3.2.7.4. Tier 2: Sec. 5.5.3.6.1) Comments: Some of the walls considered for the quick check have an aspect ratio greater than 2 to 1.														
C <input type="radio"/> NC <input checked="" type="radio"/> N/A <input type="radio"/> U <input type="radio"/>	WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor. (Commentary: Sec. A.3.2.7.5. Tier 2: Sec. 5.5.3.6.2) Comments: Existing drawings showing wall details are not provided but it is presumed there are no ties between floors to transfer load between floors.														

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ASCE 41-17 Collapse Prevention Structural Checklist For Building Type W1-W1A

C <input type="radio"/>	NC <input checked="" type="radio"/>	N/A <input type="radio"/>	U <input type="radio"/>	<p>HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-1. (Commentary: Sec. A.3.2.7.6. Tier 2: Sec. 5.5.3.6.3)</p> <p>Comments: The basement and second floor have walls with aspect ratios less than 1-to-1, but the first floor is mostly open.</p>
C <input type="radio"/>	NC <input checked="" type="radio"/>	N/A <input type="radio"/>	U <input type="radio"/>	<p>CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels. (Commentary: Sec. A.3.2.7.7. Tier 2: Sec. 5.5.3.6.4)</p> <p>Comments: No plywood sheathing could be observed on cripple walls in the basement. It is presumed, based on the age of construction and available existing drawings, that the cripple walls are not sheathed with wood structural panels.</p>
C <input type="radio"/>	NC <input checked="" type="radio"/>	N/A <input type="radio"/>	U <input type="radio"/>	<p>OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces. (Commentary: Sec. A.3.2.7.8. Tier 2: Sec. 5.5.3.6.5)</p> <p>Comments: The ground floor front wall has significant openings first floor bay windows. There are no wood structural panels present.</p>

CONNECTIONS

				Description
C <input checked="" type="radio"/>	NC <input type="radio"/>	N/A <input type="radio"/>	U <input type="radio"/>	<p>WOOD POSTS: There is a positive connection of wood posts to the foundation. (Commentary: Sec. A.5.3.3. Tier 2: Sec. 5.7.3.3)</p> <p>Comments: Wood posts did not have positive connections to the foundation.</p>
C <input type="radio"/>	NC <input type="radio"/>	N/A <input type="radio"/>	U <input checked="" type="radio"/>	<p>WOOD SILLS: All wood sills are bolted to the foundation. (Commentary: Sec. A.5.3.4. Tier 2: Sec. 5.7.3.3)</p> <p>Comments: All wood sills in the basement space were concealed by finishes. However, based on the age of the building it is anticipated the wood sill bolting is not adequate.</p>
C <input checked="" type="radio"/>	NC <input type="radio"/>	N/A <input type="radio"/>	U <input type="radio"/>	<p>GIRDER-COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support. (Commentary: Sec. A.5.4.1. Tier 2: Sec. 5.7.4.1)</p> <p>Comments: Girders did not have positive connections to the posts.</p>

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ASCE 41-17 Collapse Prevention Structural Checklist For Building Type W1-W1A

HIGH SEISMICITY (COMPLETE THE FOLLOWING ITEMS IN ADDITION TO THE ITEMS FOR LOW AND MODERATE SEISMICITY)

CONNECTIONS

				Description
C	NC	N/A	U	WOOD SILL BOLTS: Sill bolts are spaced at 6 ft or less with acceptable edge and end distance provided for wood and concrete. (Commentary: Sec. A.5.3.7. Tier 2: Sec. 5.7.3.3)
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Comments: All wood sills in the basement space were concealed by finishes. However, based on the age of the building it is anticipated the wood sill bolting is not adequate.

DIAPHRAGMS

				Description
C	NC	N/A	U	DIAPHRAGM CONTINUITY: The diaphragms are not composed of split-level floors and do not have expansion joints. (Commentary: Sec. A.4.1.1. Tier 2: Sec. 5.6.1.1)
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Comments: No split levels or expansion joints.
C	NC	N/A	U	ROOF CHORD CONTINUITY: All chord elements are continuous, regardless of changes in roof elevation. (Commentary: Sec. A.4.1.3. Tier 2: Sec. 5.6.1.1)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Comments: Chords are at one elevation. However, existing drawings showing splice details are not available.
C	NC	N/A	U	STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered. (Commentary: Sec. A.4.2.1. Tier 2: Sec. 5.6.2)
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Comments:
C	NC	N/A	U	SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing. (Commentary: Sec. A.4.2.2. Tier 2: Sec. 5.6.2)
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Comments: All diaphragm spans are less than 24 ft.
C	NC	N/A	U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12 m) and have aspect ratios less than or equal to 4-to-1. (Commentary: Sec. A.4.2.3. Tier 2: Sec. 5.6.2)
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Comments: All diaphragm spans are less than 40 ft.

Note: **C** = Compliant **NC** = Noncompliant **N/A** = Not Applicable **U** = Unknown

UC Campus:	San Francisco		Date:	1/5/2020		
Building CAAN:	2021	Auxiliary CAAN:	By Firm:	Estructure		
Building Name:	1490 5 th Avenue		Initials:	AJS	Checked:	MTP
Building Address:	1490 5 th Avenue, San Francisco, CA 94122		Page:	4	of	4

ASCE 41-17
Collapse Prevention Structural Checklist For Building Type W1-W1A

C	NC	N/A	U	OTHER DIAPHRAGMS: The diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Commentary: Sec. A.4.7.1. Tier 2: Sec. 5.6.5)
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
				Comments:

Appendix C

UCOP Seismic Safety policy Falling Hazards Assessment Summary

UC Campus:	San Francisco		Date:	1/5/2019		
Building CAAN:	2021	Auxiliary CAAN:	By Firm:	Estructure		
Building Name:	1490 5 th Avenue		Initials:	AJS	Checked:	MTP
Building Address:	1490 5 th Avenue, San Francisco, CA 94122		Page:	1	of	1

UCOP SEISMIC SAFETY POLICY Falling Hazard Assessment Summary

		Description
P <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Heavy ceilings, features or ornamentation above large lecture halls, auditoriums, lobbies, or other areas where large numbers of people congregate (50 ppl or more) Comments:
P <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Heavy masonry or stone veneer above exit ways or public access areas Comments:
P <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Unbraced masonry parapets, cornices, or other ornamentation above exit ways or public access areas Comments:
P <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Unrestrained hazardous material storage Comments:
P <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Masonry chimneys Comments: It appeared the chimney had been replaced with a sheet metal flue.
P <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Unrestrained natural gas-fueled equipment such as water heaters, boilers, emergency generators, etc. Comments: The water heater was restrained.
P <input type="checkbox"/>	N/A <input type="checkbox"/>	Other: Comments:
P <input type="checkbox"/>	N/A <input type="checkbox"/>	Other: Comments:
P <input type="checkbox"/>	N/A <input type="checkbox"/>	Other: Comments:

Falling Hazards Risk: *Low*

Appendix D
Quick Check Calculations

Dead loads & Seismic Weight Calculation		
Roof Assembly		
Roofing	3 psf	Estimate, Assume Asphalt Shingles
Sheathing	3 psf	Estimate, Assumed 1x Sheathing
Roof Joists	6 psf	Estimate, Assumed 2x10 @16
Ceiling	9 psf	
MEP	0.5 psf	
Misc	0.5 psf	
Walls	5 psf	
Sub-total	27 psf	
4:12 Slope Projection	1.05	Assumed Average Slope
Total	Σ 28 psf	

Floor Assembly		
Flooring	2 psf	Estimate, Assume Carpet
Sheathing	3 psf	Estimate, Assumed 1x Sheathing
Wood Framing	6 psf	Estimate, Assumed 2x10 @16
Ceilings	2.25 psf	Estimate, 5/8" Gyp Board
MEP	0.5 psf	
Misc	0.5 psf	
Partitions	10 psf	
Total	Σ 24 psf	

Exterior Wall Assembly - Wood Siding		
Finish	2 psf	Estimate, Wood Siding
Sheathing	3 psf	Estimate, Assumed 1x Sheathing
Wood Framing	1.5 psf	Estimate, Assumed 2x6 @16
Insulation	0.5 psf	
Interior Finish	2.25 psf	Estimate, 5/8" Gyp Board
MEP	0.5 psf	
Misc	0.5 psf	
Total	Σ 10 psf	

Exterior Wall Finish - Stucco		
Finish	10 psf	Estimate, Stucco
	-2 psf	Less wood siding
Total	Σ 8 psf	Add to typical ext. wall assembly, where occurs

Level 3 (Roof / Attic)			
Roof Assembly	p	28 psf	
	A	587 ft ²	
	Wt	16.71 kips	
Exterior Wall - Wood	p	10 psf	
	h _{trib}	5 ft	Half approximate floor height
	L	96 ft	
	Wt	4.92 kips	
Exterior Wall - Stucco	p	8 psf	
	h _{trib}	5 ft	Half approximate floor height
	L	25 ft	Along front wall only
	Wt	1.00 kips	
Seismic Weight	ΣW_{typ}	17 kips	

Level 2			
Roof Assembly	p	28 psf	
	A	508 ft ²	
	Wt	14.46 kips	
Floor Assembly	p	24 psf	
	A	590 ft ²	
	Wt	14.31 kips	
Exterior Wall - Wood	p	10 psf	
	h _{trib}	10 ft	Approximate floor height
	L	120 ft	
	Wt	12.25 kips	
Exterior Wall - Stucco	p	8 psf	
	h _{trib}	10 ft	Approximate floor height
	L	25 ft	Along front wall only
	Wt	2.00 kips	
Seismic Weight	ΣW_{typ}	29 kips	

Level 1			
<i>Floor Assembly</i>	p	24 psf	
	A	1030 ft ²	
	Wt	24.98 kips	
<i>Exterior Wall - Wood</i>	p	10 psf	
	h _{trib}	10 ft	<i>Approximate floor height</i>
	L	143 ft	
	Wt	14.66 kips	
<i>Exterior Wall - Stucco</i>	p	8 psf	
	h _{trib}	5 ft	<i>Half approximate floor height</i>
	L	25 ft	<i>Along front wall only</i>
	Wt	1.00 kips	
Seismic Weight	ΣW_{typ}	41 kips	

Earthquake		Site Parameters - UCSF Group 3 Buildings – Tier 1 Geotechnical Assessment, Egan (2019)		
BSE-C	$S_s = 1.565$	$F_a = 1.2$	$S_{CS} = 1.878$	
	$S_1 = 0.618$	$F_v = 1.4$	$S_{C1} = 0.865$	

Building Period			
Empirical factor	C_t	0.02	ASCE 41-17 Sec. 4.4.2.4
Roof level height	h	27 ft	ASCE 7-18, 11.2
Empirical factor	β	0.75	ASCE 41-17 Sec. 4.4.2.4
Fundamental period, $T = C_t h_n^\beta =$		0.237 sec	ASCE 41-17 Sec. 4.4.2.4 eqn. 4-4

Calculate Base Shear			
Spectral Acceleration	$S_a = S_{X1} / T = 3.65$		ASCE 41-17, 4.4.2.3
	$S_{a,max} = S_{XS} = 1.878$	<i>governs</i>	ASCE 41-17, 4.4.2.3
Modification Factor	$C = 1.00$		ASCE 41-17, Table 4-7
Pseudo Seismic Force	$V = S_a \times C \times W =$	$1.88 \times W$	ASCE 41-17, Eqn. 4-1
	V =	162 kips	

Seismic Force Vertical Distribution						
Level	Weight (kips)	Height (ft)	$w_x h_x$ (kip_ft)	$C_{vx} = w_x h_x / \sum w_x h_x$	$F_x = C_{vx} V$	Story Shear, V
3rd	17	30	501	0.42	67	67
2nd	29	16	459	0.38	62	129
1st	41	6	244	0.20	33	162
Σ	86	Σ	1204	1.00	162	

Longitudinal Direction (East-West)							
Story	Story Shear (kips)	Length of Wall (ft)	M _s Factor (ASCE 41-17, Table 4-8)	Average Story Shear Stress (plf)	Quick Check Shear Capacity ⁽¹⁾ (plf)	Pass? (Y/N)	Lvl N Strength / Lvl N+1 Strength
2	67	59	4.5	253	200	N	--
1	129	103	4.5	278	200	N	175%
Ground	162	107	4.5	336	200	N	104%

Transverse Direction (North-South)							
Story	Story Shear (kips)	Length of Wall (ft)	M _s Factor (ASCE 41-17, Table 4-8)	Average Story Shear Stress (plf)	Quick Check Shear Capacity ⁽¹⁾ (plf)	Pass? (Y/N)	Lvl N Strength / Lvl N+1 Strength
2	67	41	4.5	365	200	N	--
1	129	51	4.5	562	200	N	124%
Ground	162	60	4.5	599	200	N	118%

1. Shear capacity is doubled where walls are covered on both sides.