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08-06-2019

UCSF Building Seismic Ratings
Aldea San Miguel 7

CAAN #3025
95 Behr Avenue, San Francisco, CA 94131
UCSF Campus: Parnassus



Plan



East Elevation

Rating summary	Entry	Notes
UC Seismic Performance Level (rating)	IV	Findings based on drawing review and ASCE 41-17 Tier 1 evaluation ¹
Rating basis	Tier 1	ASCE 41-17
Date of rating	2019	
Recommended UCSF priority category for retrofit	N/A	
Ballpark total project cost to retrofit to IV rating	N/A	
Is 2018-2019 rating required by UCOP?	Yes	
Further evaluation recommended?	No	

Building information used in this evaluation

- Architectural drawings by Gordon H. Chong & Partners, “Aldea Housing”, dated 1997-10-29 (71 Sheets)
- Structural drawings by Nishkian & Assoc. Inc, “Aldea Housing,” dated 1997-07-25 (35 sheets).

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.

Additional building information known to exist

- Geotechnical report by Treadwell & Rollo Environmental and Geotechnical Consultants, "Geotechnical Investigation Aldea Married Student Housing UCSF Medical Center San Francisco, California," dated 8 November 1996.

Scope for completing this form

Architectural and structural drawings for original construction were reviewed and an ASCE 41-17 Tier 1 evaluation was performed. A site visit was made on July 31, 2019 where the building exterior and crawl space were observed.

Brief description of structure

The building functions as graduate student housing. It was designed in 1997 by Nishkian & Assoc., Inc. to replace an existing student housing building constructed in 1958 of approximately the same footprint. The building is identified in the original drawings as Building B4. The building is 3-stories; the bottom story is only a partial story as the building is built into the hillside. It has an area of approximately 10,000 square feet. The main floor plate is approximately 133 ft north-south by 52 ft east-west.

Identification of Levels: Levels are identified on plan as Ground Floor, Second Floor, Third Floor, and Roof. The site slopes downward toward the south. The Ground Floor (0'-0") is a partial level with dwellings and shared utility spaces on the west side and crawl space on the east. The Second Floor (9'-6") consists of dwellings, a large deck and a roof over the shared utility space. The Third Floor (19'-0") consists of dwellings. The roof is pitched with a slope of 4:12, and average height of 35'-6". The ground floor is used as the base of the building for this evaluation.

Foundation system: The foundation system consists of concrete footings, stepped concrete stub walls, and strip footings. The foundation on the south side of the building consists of grade beams over drilled piers. Existing concrete walls from the 1957 building remain in the crawl space, these foundation elements are identified on the 1997 drawings to remain and are not a part of the foundation system of the 1997 building.

Structural system for vertical (gravity) load: The gravity-load-carrying system at the roof consists of ½" plywood sheathing over roof trusses spanning to wood stud walls. The floor framing consists of ¾" T&G plywood sheathing supported by wood joists spanning to wood stud walls. The floor framing has a light weight concrete topping which varies from ¾" to 1½" thick.

Structural system for lateral forces: The roof diaphragm consists of ½" plywood sheathing. The floor diaphragm consists of ¾" T&G plywood. Vertical elements of the lateral-force-resisting system consists of OSB shear walls. The drawings call for plywood or OSB shear walls; OSB was observed in the crawl space.

Building Code: The structural design drawings are dated July 25, 1997. The structural drawings indicate the 1995 California Building Code governed the structural design.

Building Condition: Good. Minor deterioration was observed in the existing siding at the south-east corner of the building.

Building response in 1989 Loma Prieta Earthquake: Not Applicable.

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

Potential seismic deficiencies identified by the Tier 1 procedure include the following:

- In a quick check of the lateral-force-resisting system, the shear walls do not have adequate shear capacity at the second level in the transverse direction based on wall layout shown on the structural drawings. When wood shear walls are included as shown on the architectural drawings there is sufficient wall to pass the quick check.
- On the downhill slope of the building, the exterior longitudinal walls have aspect ratios greater than 1:1 due to window openings. There is significant wall along the south side of the crawl space, which resists torsion due to the hillside site.

Structural deficiency	Affects rating?	Structural deficiency	Affects rating?
Lateral system stress check (wall shear, column shear or flexure, or brace axial as applicable)	N	Openings at shear walls (concrete or masonry)	N
Load path	N	Liquefaction	N
Adjacent buildings	N	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	N	Heavy partitions braced by ceilings	N
Wood sills (bolting)	N	Appendages	N
Diaphragm continuity	N		

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

None identified.

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	Unrestrained hazardous materials storage	None
Heavy masonry or stone veneer above exit ways and public access areas	None	Masonry chimneys	None
Unbraced masonry parapets, cornices or other ornamentation above exit ways and public access areas	None	Unrestrained natural gas-fueled equipment such as water heaters, boilers, emergency generators, etc.	None

Basis of Seismic Performance Level Rating

The subject building benefits from being lightweight conventional wood-framed construction. Based on the historic performance of similar buildings, the risk to life safety is judged to be exceedingly small. The wood shear walls are well-distributed throughout the building plan. Based on the anticipated seismic demands, the elements are judged to be adequate to protect against collapse. Torsion due to the sloping site is mitigated by significant length of wall along the south side of the crawl space (along gridline 1.9 and 2).

Recommendations for further evaluation or retrofit

No further evaluation or retrofit is recommended.

Peer review comments on rating

The structural members of the UCSF Seismic Review Committee (SRC) reviewed the evaluation on August 07, 2019 and are unanimous that the rating is **IV**.

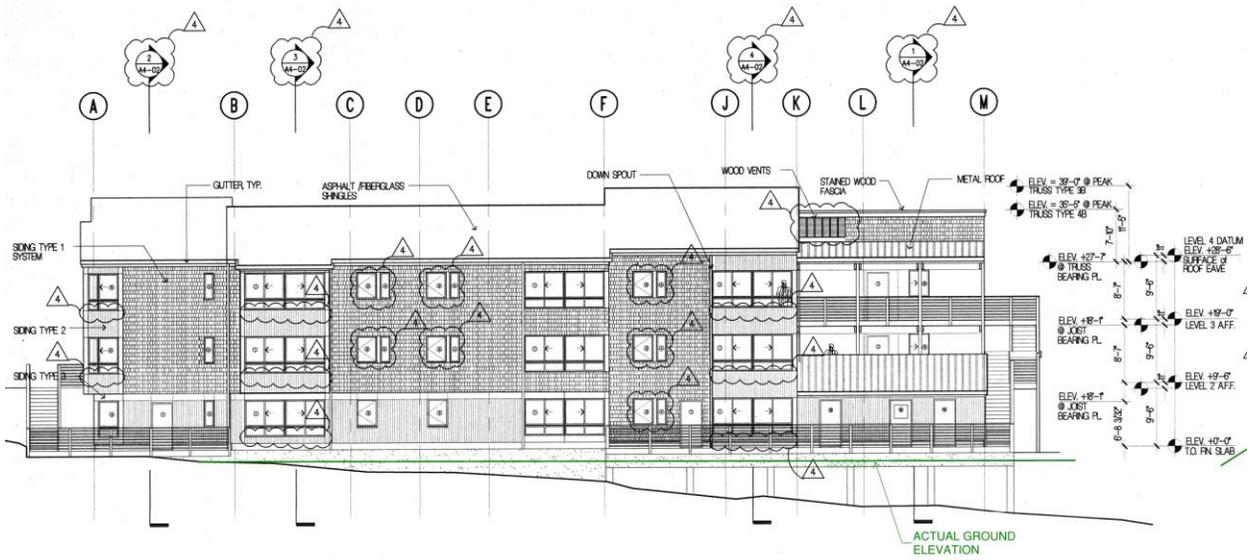
² For these Tier 1 evaluations, we do not visit all spaces of the building; we rely on campus staff to report to us their understanding of if and where non-structural hazards may occur.

Additional building data	Entry	Notes
Latitude	37.75735	
Longitude	-122.45496	
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)	10,118	
Risk Category per 2016 CBC 1604.5	II	
Building structural height, h_n	35.5 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	0.291 sec	Per ASCE 41-17 equation 4-4
Site data		
975 yr hazard parameters S_s, S_1	1.553,0.604	
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	
Ground motion parameters S_{cs}, S_{c1}	1.854,0.853	
S_o at building period	1.854	
Site V_{s30}	730 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	Yes	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: 1998 Code: 1995 CBC	Code identified on Sheet S1
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	

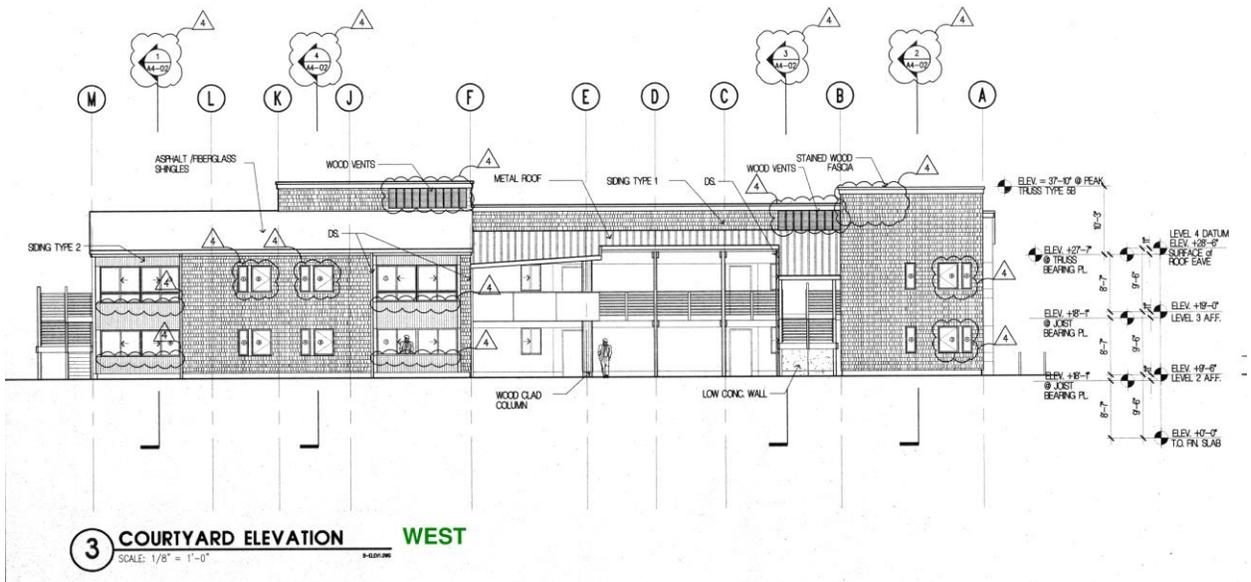
Model building type East-West	W1: Wood Light Frames	
FEMA P-154 score	N/A	Not included here because we performed ASCE 41 Tier 1 evaluation.
Previous ratings		
Most recent rating	IV	2013 Report
Date of most recent rating	10/7/2013	Basis: Qualitative assessment based on drawing reviewed
2 nd most recent 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

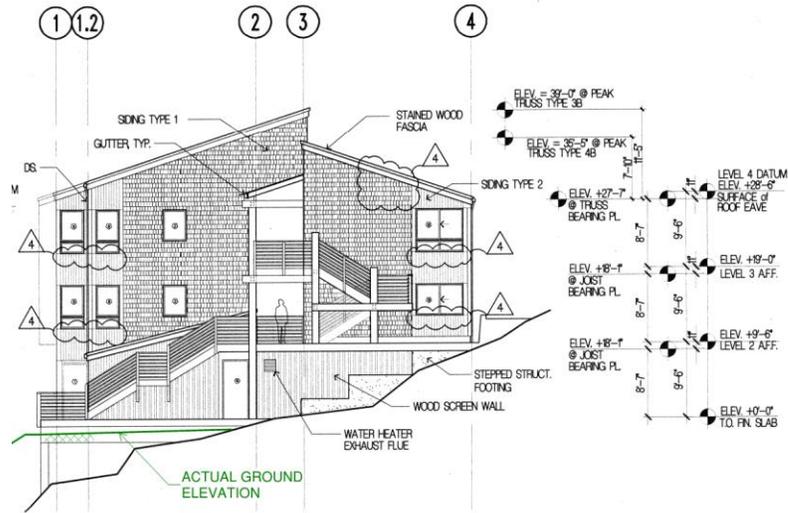


4 HILLSIDE ELEVATION EAST
SCALE: 1/8" = 1'-0"

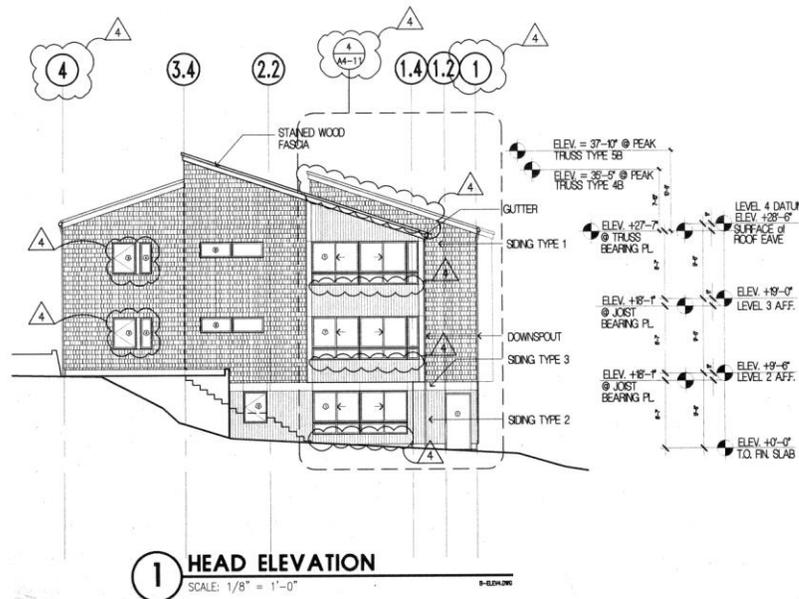


3 COURTYARD ELEVATION WEST
SCALE: 1/8" = 1'-0"

Figure 1. – Exterior Longitudinal Elevations

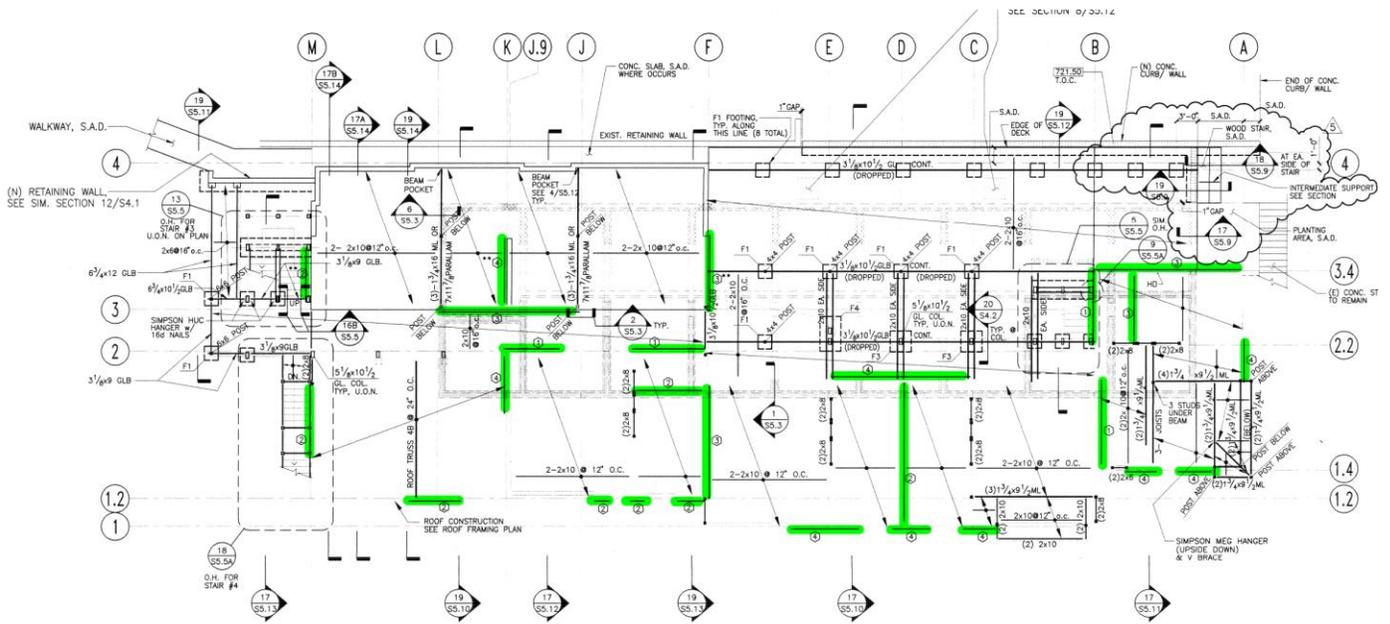


2 TAIL ELEVATION
SCALE: 1/8" = 1'-0" B-BL03.DWG

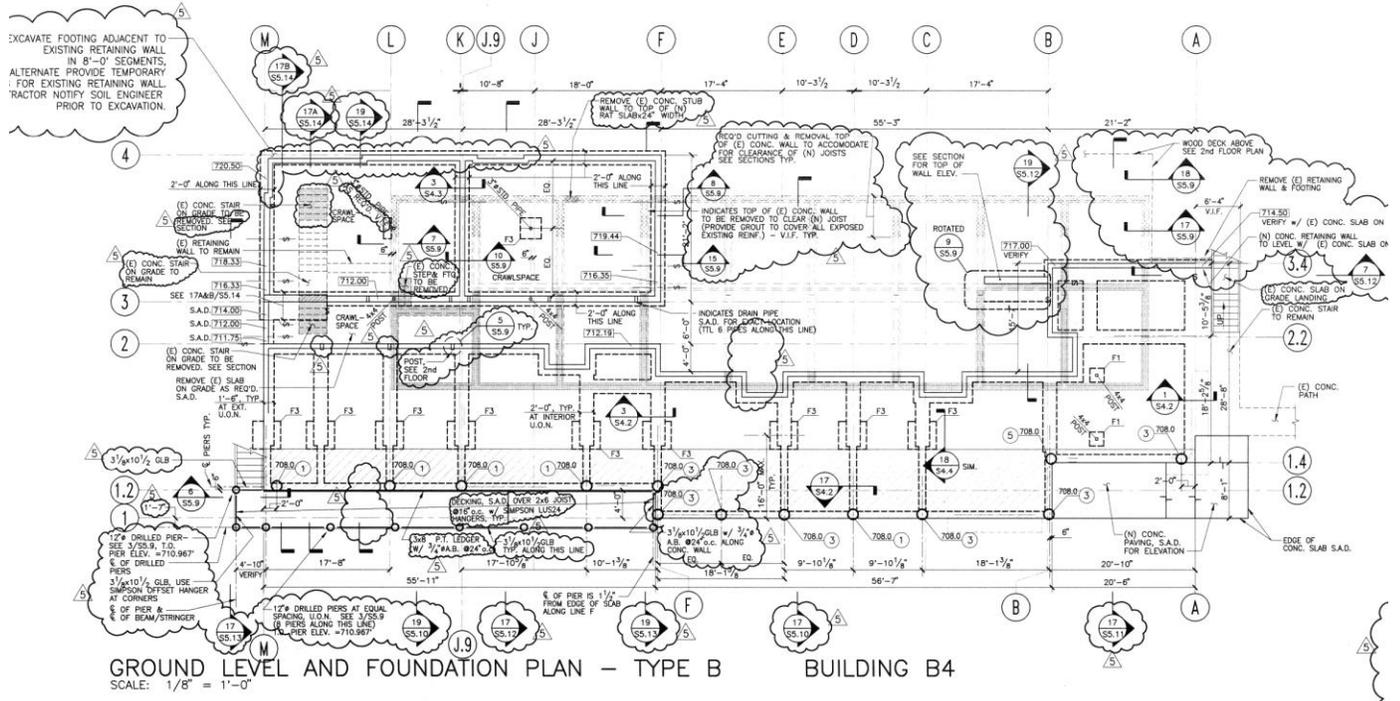


1 HEAD ELEVATION
SCALE: 1/8" = 1'-0" B-BL04.DWG

Figure 2. – Exterior Transverse Elevation (Typical Both Sides)

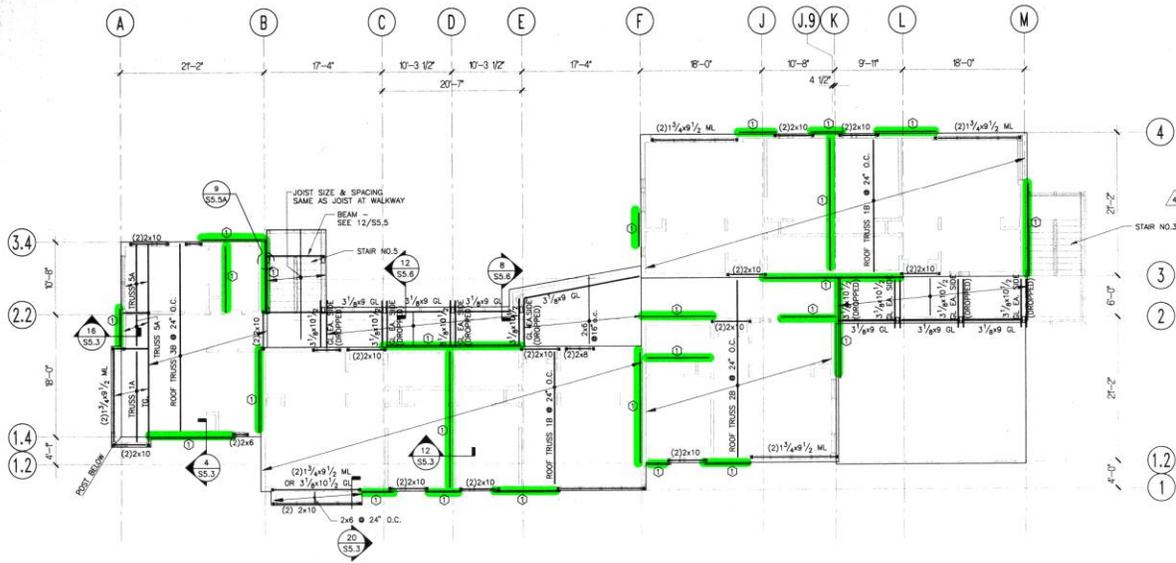


SECOND LEVEL FRAMING PLAN – TYPE B BUILDING B4
SCALE: 1/8" = 1'-0"



GROUND LEVEL AND FOUNDATION PLAN – TYPE B BUILDING B4
SCALE: 1/8" = 1'-0"

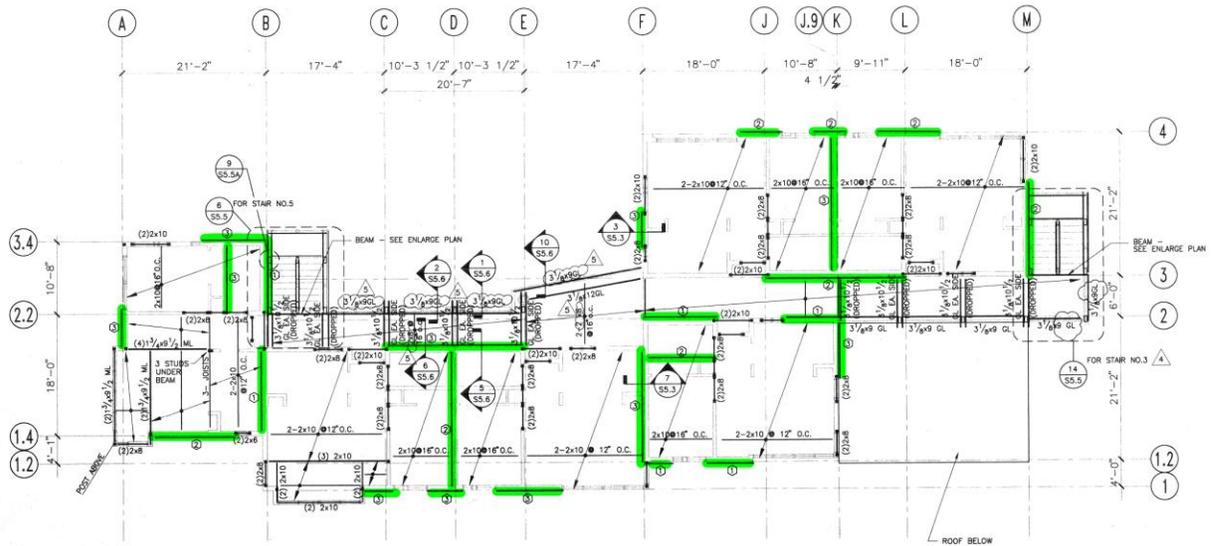
Figure 3. – Structural Foundation, Ground Level, and Second Level Plan



ROOF LEVEL FRAMING PLAN – TYPE B
SCALE: 1/8" = 1'-0"

BUILDING B8
BUILDING B4 MIRRORED

NOTES:
1. FOR POST NOT SHOWN ON THIS PLAN, SEE LEVEL/ ABOVE FOR THE LOCATIONS, FOR SIZE OF POST –SEE LEGEND.
2. FOR POST NOT SHOWN ON PLAN, PROVIDE POST AT EA. END OF BEAM AND HEADER. FOR POST SIZE – SEE LEGEND.



THIRD LEVEL FRAMING PLAN – TYPE B
SCALE: 1/8" = 1'-0"

BUILDING B8
BUILDING B4 MIRRORED

NOTES:
1. FOR POST NOT SHOWN ON THIS PLAN, SEE LEVEL/ ABOVE FOR THE LOCATIONS, FOR SIZE OF POST –SEE LEGEND.
2. FOR POST NOT SHOWN ON PLAN, PROVIDE POST AT EA. END OF BEAM AND HEADER. FOR POST SIZE – SEE LEGEND.

Figure 4. – Structural Third Level and Roof Plan

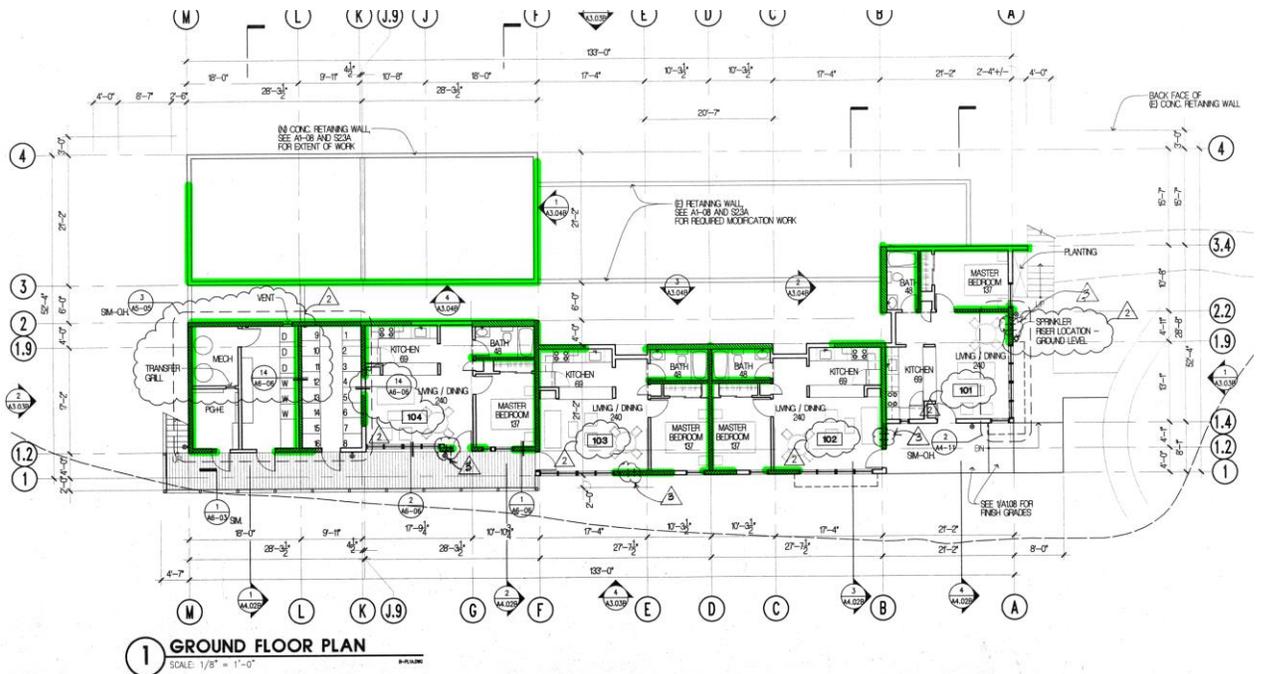
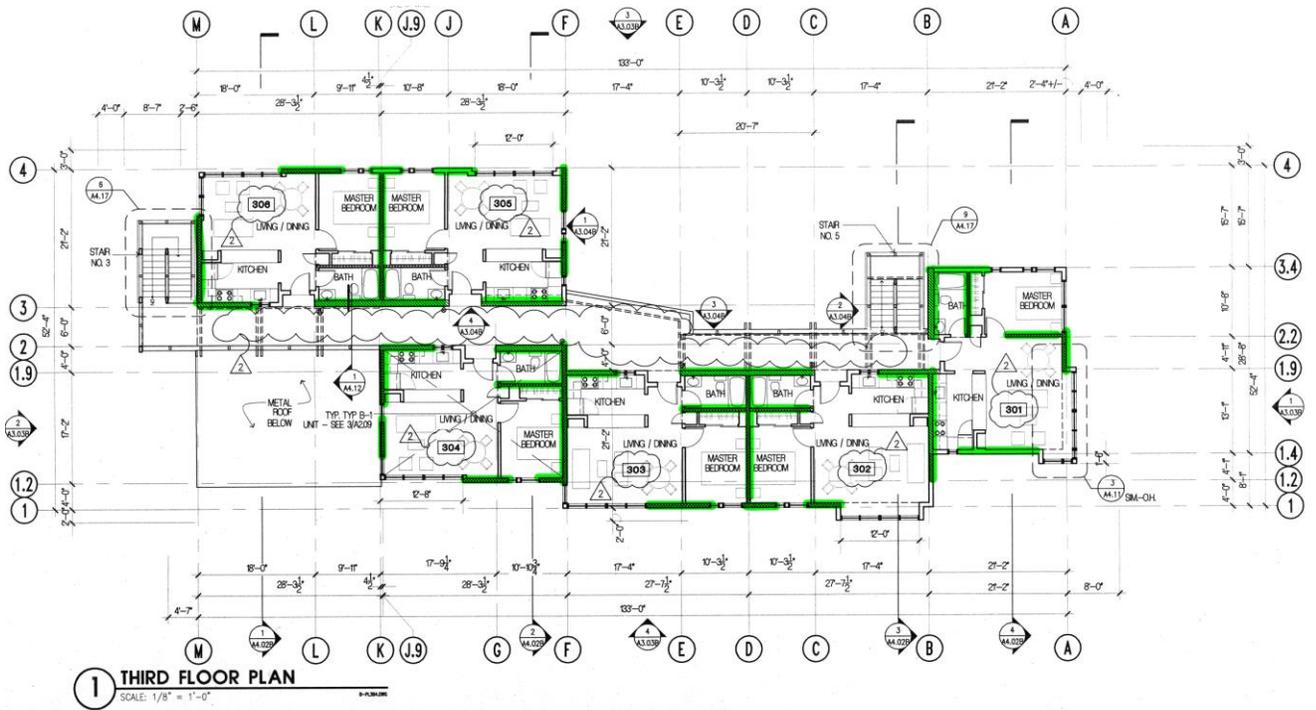


Figure 5. – Architectural Typical Floor and Ground Level Plan



Figure Key



Figure 6. – South elvation



Figure 7. – North elevation



Figure 8. – East elevation



Figure 8. – Crawlspace

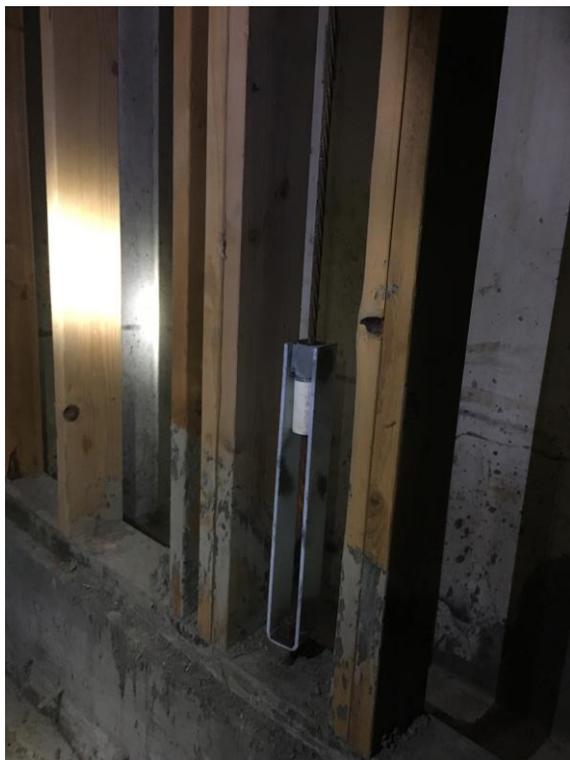


Figure 9. – Typical holddown in crawlspace

Appendix B

ASCE 41- 17 Tier 1 Checklists (Structural)

Appendix C

UCOP Seismic Safety policy Falling Hazards Assessment Summary

Appendix D

Quick Check Calculations