



STRUCTURAL ENGINEERS

ASCE 41-17 Tier 1 Seismic Evaluation Report



Prepared for: CITY OF BERKELEY
African American Holistic Cultural Ctr
1890 Alcatraz Avenue
Berkeley, California 94703

June 2, 2022

IDA Job No. 18095.12



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1 Introduction

IDA Structural Engineers (IDA) has performed a seismic evaluation of African Amer Holistic Cultural Ctr, located at 1890 Alcatraz Avenue, Berkeley, California using an ASCE 41-17 Tier 1 procedure. ASCE 41-17, titled "Seismic Evaluation and Retrofit of Existing Buildings", published by the American Society of Civil Engineers (ASCE) in 2017, is the industry standard procedure for the seismic evaluation and retrofit of existing buildings.

A Tier 1 screening is a checklist-based procedure. The checklists identify potential deficiencies in a building based on performance of similar buildings in past earthquakes. The results from the Tier 1 screening forms the basis for the Tier 2 deficiency-based procedure. This report is limited to Tier 1 checklists. There was no nondestructive testing performed and observations were limited to visual observations only.

The information below forms the foundation for the Tier 1 screening. This information is either derived from owner requirements, such as risk category and desired structural performance level, or is site specific, such as seismic hazard level.

Subject Property	African American Holistic Cultural Ctr
Address	1890 Alcatraz Avenue, Berkeley, California
Latitude and Longitude	37.848856, -122.269222
Risk Category	II
Basic Performance Objective for Existing Buildings (BPOE)	Collapse Prevention Structural Performance at BSE-2E Life Safety Nonstructural Performance at BSE-1E

For Tier 1 assessments of Risk Category II buildings, structural performance of the Life Safety Structural performance for the BSE-1E hazard level is not explicitly checked. Conformance with the BSE-1E is implied through the structure meeting Collapse Prevention at the BSE-2E hazard. Nonstructural components are evaluated to Life Safety Performance level for the BSE-1E hazard.

2 Site Information

2.1 General

The site is bounded by Alcatraz Avenue on the north private residential lots on the east, west and south. The entrance to the building is on Alcatraz Avenue. An additional driveway

is provided at the west via Alcatraz Avenue. Parking is provided on site to the west and south of the building. In general, the site is flat.

2.2 Geotechnical and Seismic Hazard Information

No site-specific geotechnical data was available. Information used in the reports was found via publicly available USGS maps and information.

3 Building Information

The building, constructed in 1958 is a single story CMU structure. Roof height is approximately 12 ft. The building totals approximately 3910 square foot. The roof is framed with bowstring trusses clear spanning the width supported on CMU pilasters. The roof consists of plywood sheathing supported on wood rafters. The wood rafters span between trusses. The exterior walls at east, west and south consists of CMU. The CMU walls typically stops at 12 foot elevation. CMU walls are supported on continuous concrete footings. There is a 1000 square foot mezzanine at the center portion of the building plan. The mezzanine is framed with wood joists supported on wood beams, wood posts and concrete footings. The existing floor is a non-structural slab on grade.

Lateral forces are resisted by the fully grouted CMU walls. Roof diaphragm consists of plywood sheathing.

A renovation was performed in 1989. All floor, wall and ceiling finishes at the ground floor were removed. New finishes were installed. Windows were removed and replaced. The mezzanine framing was completely reframed.

4 Existing Building Information and Site Observations

IDA performed a site visit on June 27, 2022. The site visit consisted of visual observations only.

Masonry testing was completed on June 27, 2022. We are awaiting the results and will include those in the Tier 2 report.

5 Available Documents

The following drawings were available for review for this evaluation:

- Original architectural and structural drawings, dated 01/05/1958.
Architect: W. J Hubbard, George A. Shallow Architect
- Renovation drawings dated 05/25/89

Architect: Jack B. Byars, Dommer & Byars Architect & Planners

6 Structural Deficiencies

6.1 Vertical irregularities/ Load Path

There is no vertical line of resistance along exterior line at the north. The next line of resistance in east west direction is only at exterior line at the south.

6.2 Diaphragm discontinuity

There is a big step in the diaphragm near the north side of the roof diaphragm. The sloped diaphragm steps down to a flat diaphragm. Based on the evaluation of the diaphragm load path it appears that the diaphragm is insufficient to transfer seismic loads across the discontinuity.

6.3 Liquefaction

USGS soil type maps indicate liquefaction potential at the site.

6.4 Wall anchorage

The wall anchorage to the roof diaphragm doesn't appear to have sufficient capacity for out- of -plane forces.

6.5 Cross ties

Continuous cross ties between the diaphragm chords are needed to develop out of plane forces into the diaphragm. Along the longitudinal direction, there are not continuous cross ties.

6.6 Redundancy

There is only one line of wall along transverse direction. There is no shear wall line along exterior line at the north. The next line of shear wall is only at exterior line at south.

6.7 Torsion

There are shear wall lines along three exterior lines of the building. The south line doesn't have any line of resistance.

6.8 Unblocked diaphragm spans

The existing diaphragm is unblocked and has horizontal span greater than 40ft. Blocking may be necessary at diaphragm boundaries. The shear capacity of unblocked diaphragms

is less than of fully blocked wood structural panel diaphragms because of the limited ability for direct shear transfer at unsupported edges.

7 Mitigation

A retrofit could consist of the following:

7.1 Vertical irregularities/Load path

Add new vertical lines of resistance at exterior and interior in the transverse direction.

7.2 Diaphragm discontinuity

Continuity can be provided by adding continuous elements to connect the different levels of diaphragm. The elements would consist of new transfer shear walls, straps and hold downs.

7.3 Liquefaction

Liquefaction can be mitigated by soil improvements or use of deep foundations. Site specific geotechnical report might show that liquefaction is not an issue.

7.4 Wall anchorage

Wall anchors can be added.

7.5 Cross ties

Straps can be added for continuity.

7.6 Redundancy

Add new vertical lines of resistance in the transverse direction.

7.7 Torsion

Add new vertical lines of resistance in the transverse direction.

7.8 Unblocked diaphragm spans

The shear capacity of unblocked diaphragms can be improved by adding new blocking and fastening at the unsupported panel edges. Placing a new wood structural panel over the existing diaphragm also increase the shear capacity.

8 Conclusions

The existing building does not currently meet the Structural Performance Level required. The building is almost 64 years old. Seismic demands have increased and detailing demands have become more stringent since the original construction. Retrofits are required to meet the Structural Performance Level.

The Tier 1 criteria are conservative. Some of the non-complaint structural items may be shown to be complaint by a Tier 2 evaluation.

Thank you for the opportunity to be of service. Please call with any questions.

IDA Structural Engineers, Inc.



Tej Rokaya, P.E.



Stephen Dejesse, S.E.
President

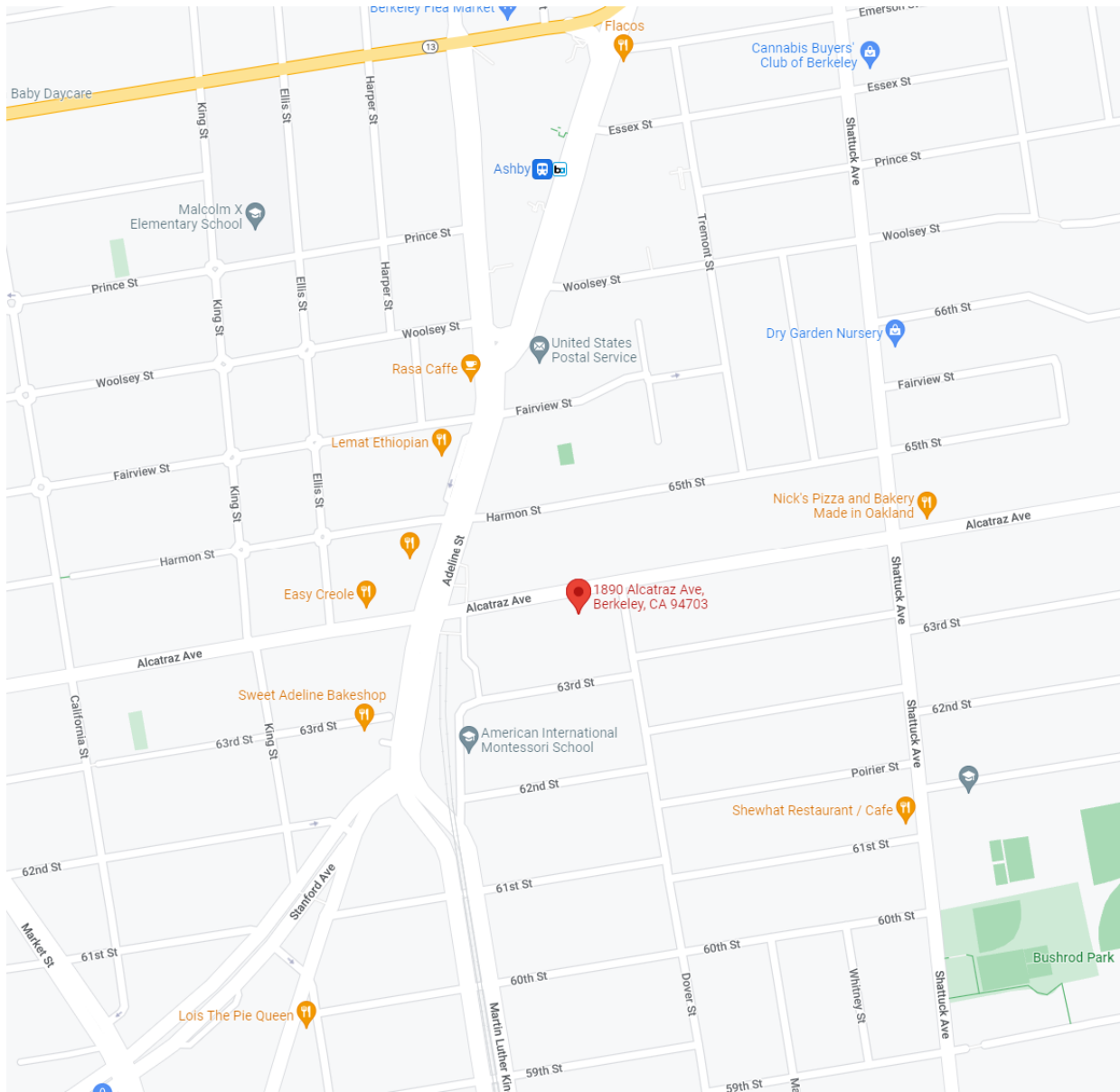


Figure 1. Proximity map of site

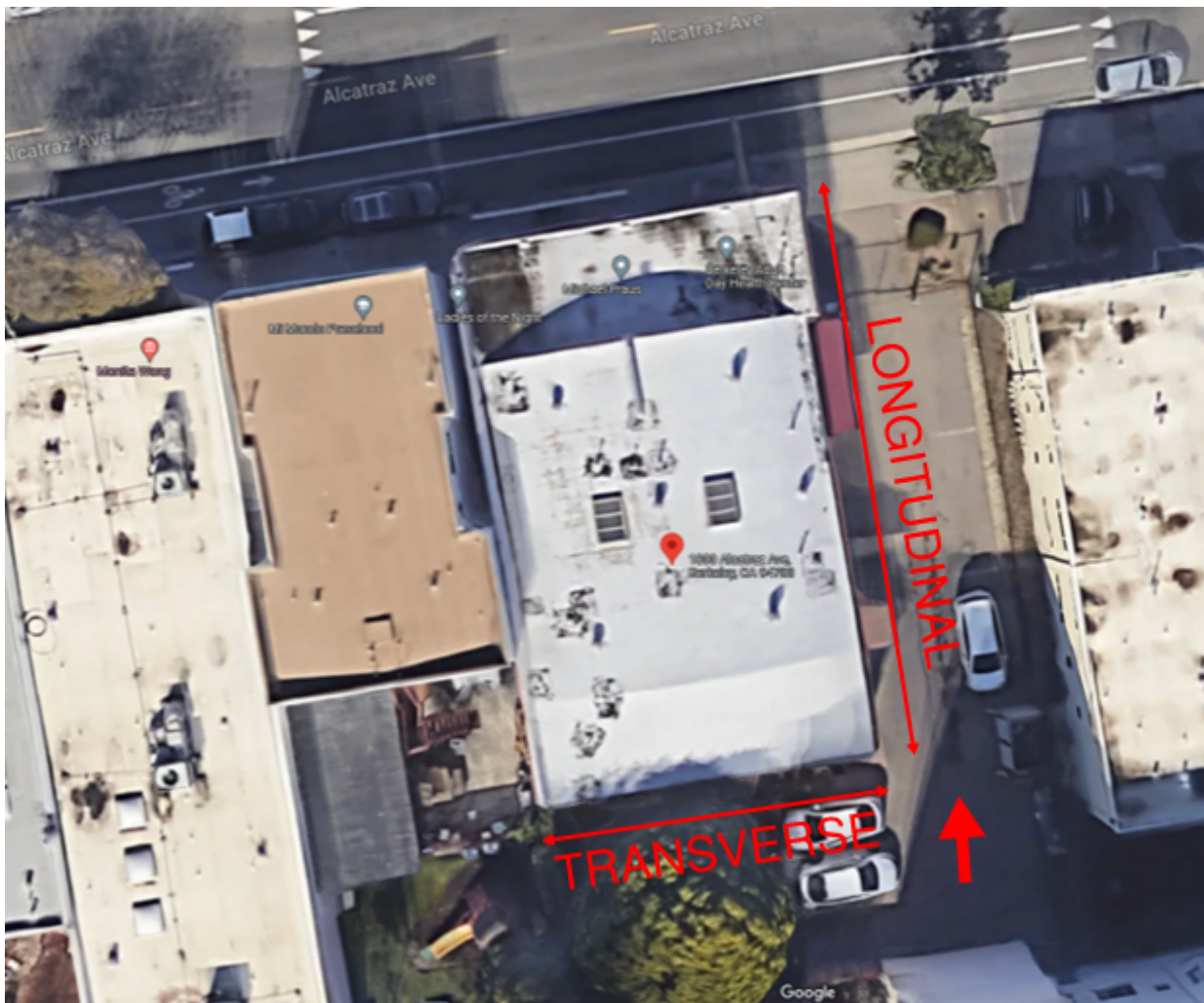


Figure 2. Aerial view

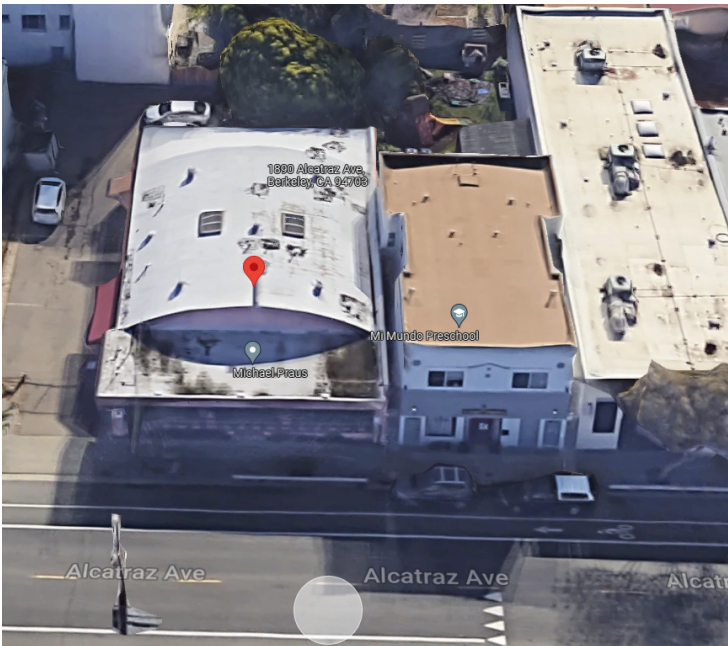


Figure 3. View from North

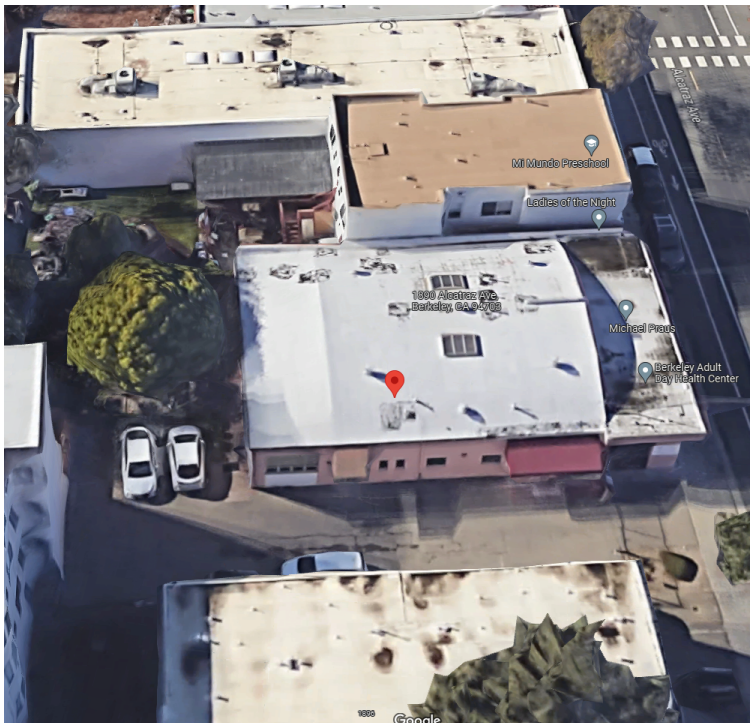


Figure 4. View from East

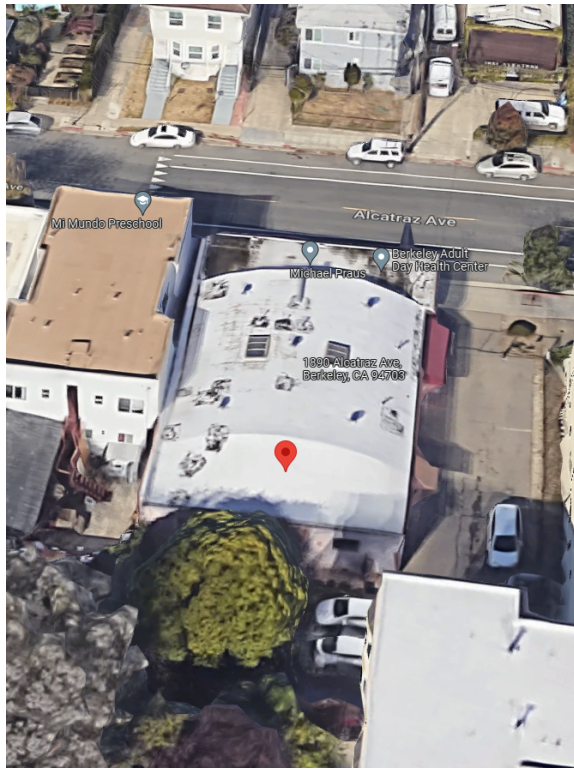


Figure 5. View from South

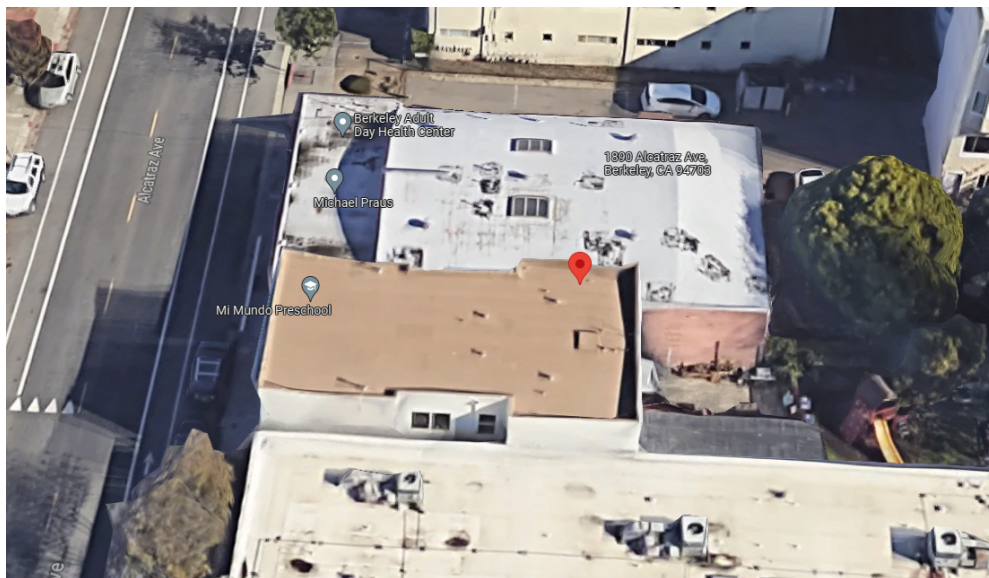


Figure 6. View from West



Figure 7. View from Alcatraz Avenue



Figure 8. Exterior East Wall



Figure 9. Exterior West Wall



Figure 10. View looking at Front



Figure 11. Exterior South Wall



Figure 12: Interior Elevations



Figure 13: Roof Framing Observed from Mezzanine



Figure 14: Restrained water heater at mezzanine floor



Figure 15: Furnaces at mezzanine floor.

Appendix A. General information

African Amer Holistic Cultural Ctr

1890 Alcatraz Ave, Berkeley, CA 94703, USA

Latitude, Longitude: 37.8487638, -122.269598



Date	6/1/2022, 9:58:38 AM
Design Code Reference Document	ASCE41-17
Custom Probability	
Site Class	D - Stiff Soil

Type	Description	Value
Hazard Level		BSE-2N
S _s	spectral response (0.2 s)	2.04
S ₁	spectral response (1.0 s)	0.784
S _{XS}	site-modified spectral response (0.2 s)	2.04
S _{X1}	site-modified spectral response (1.0 s)	1.332
F _a	site amplification factor (0.2 s)	1
F _v	site amplification factor (1.0 s)	1.7
ssuh	max direction uniform hazard (0.2 s)	2.645
crs	coefficient of risk (0.2 s)	0.908
ssrt	risk-targeted hazard (0.2 s)	2.401
ssd	deterministic hazard (0.2 s)	2.04
s1uh	max direction uniform hazard (1.0 s)	1.013
cr1	coefficient of risk (1.0 s)	0.898
s1rt	risk-targeted hazard (1.0 s)	0.91
s1d	deterministic hazard (1.0 s)	0.784

Type	Description	Value
Hazard Level		BSE-1N
S _{XS}	site-modified spectral response (0.2 s)	1.36
S _{X1}	site-modified spectral response (1.0 s)	0.888

Type	Description	Value
Hazard Level		BSE-2E
S_S	spectral response (0.2 s)	1.861
S_1	spectral response (1.0 s)	0.693
S_{XS}	site-modified spectral response (0.2 s)	1.861
S_{X1}	site-modified spectral response (1.0 s)	1.179
f_a	site amplification factor (0.2 s)	1
f_v	site amplification factor (1.0 s)	1.7

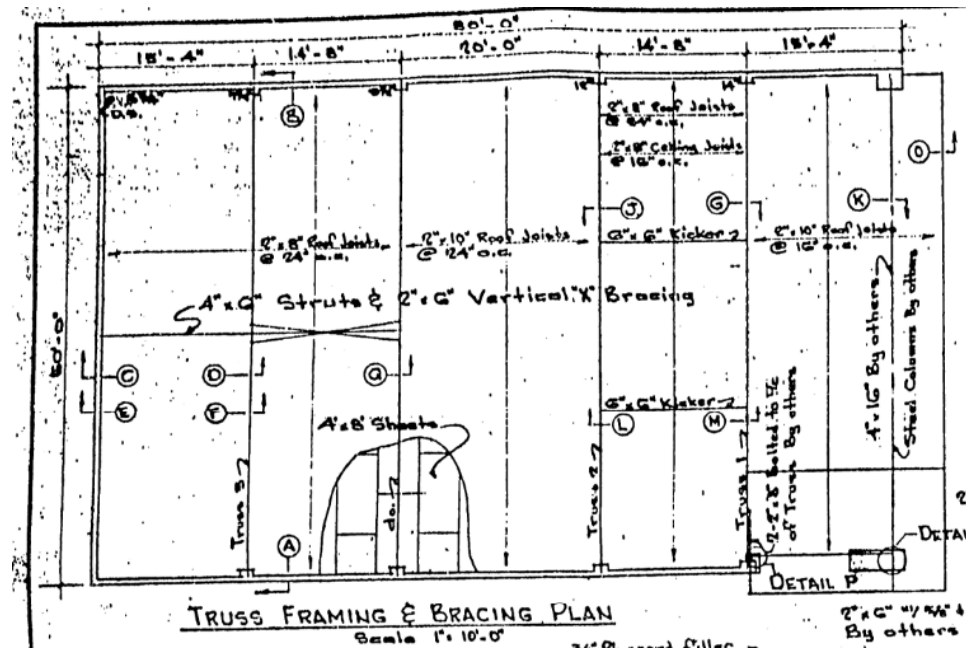
Type	Description	Value
Hazard Level		BSE-1E
S_S	spectral response (0.2 s)	0.918
S_1	spectral response (1.0 s)	0.321
S_{XS}	site-modified spectral response (0.2 s)	1.04
S_{X1}	site-modified spectral response (1.0 s)	0.635
F_a	site amplification factor (0.2 s)	1.133
F_v	site amplification factor (1.0 s)	1.979

Type	Description	Value
Hazard Level		TL Data
T-Sub-L	Long-period transition period in seconds	8

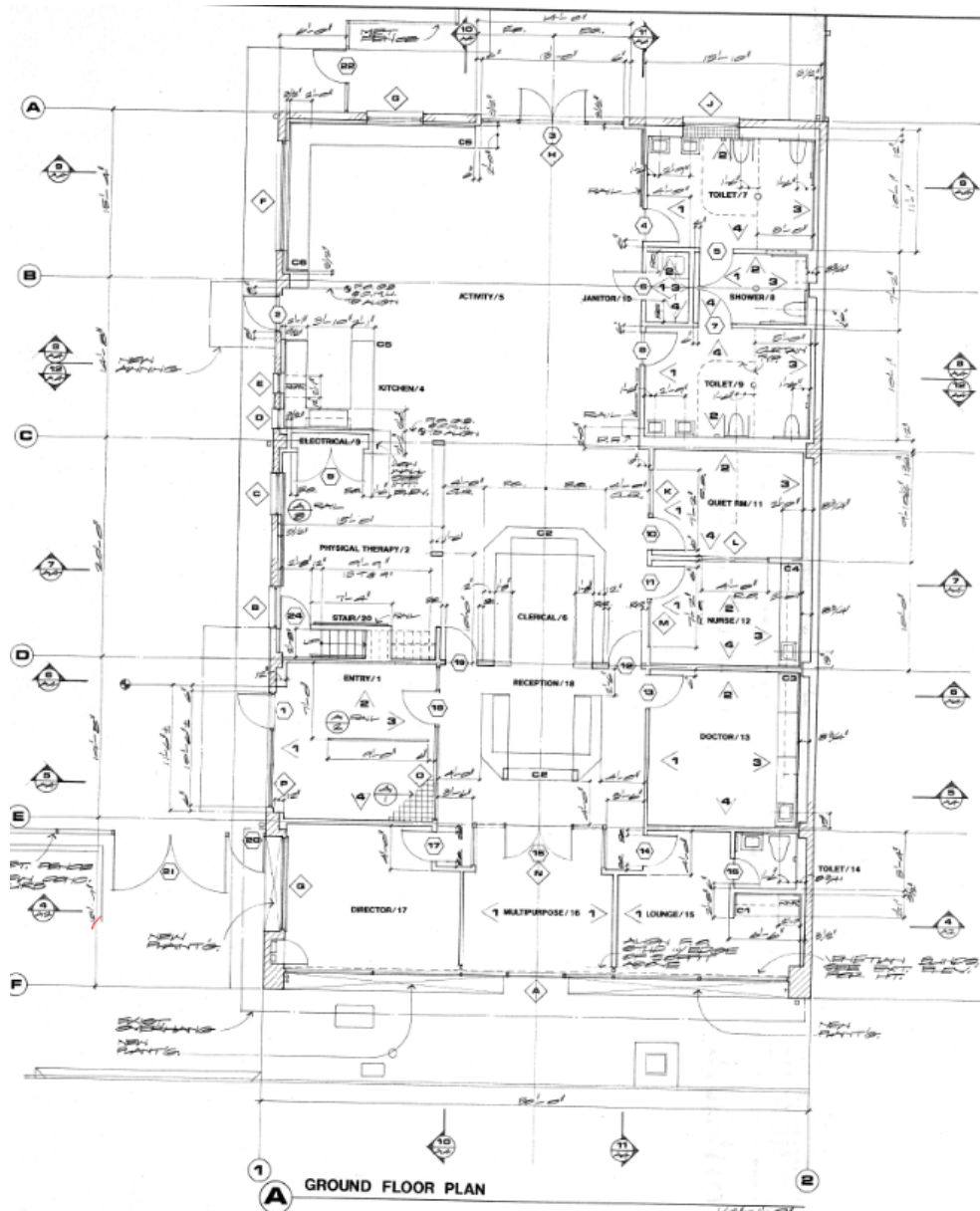
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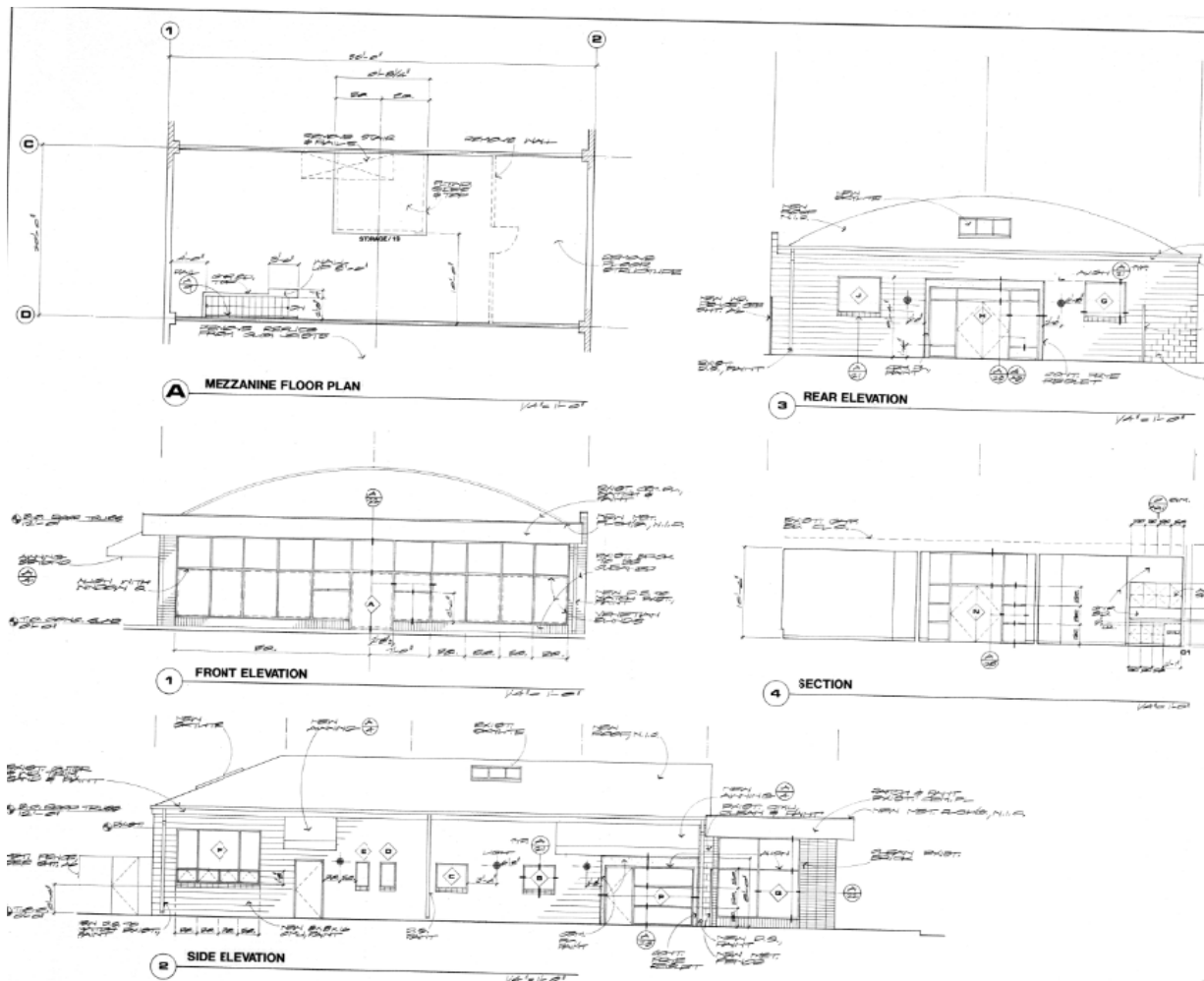




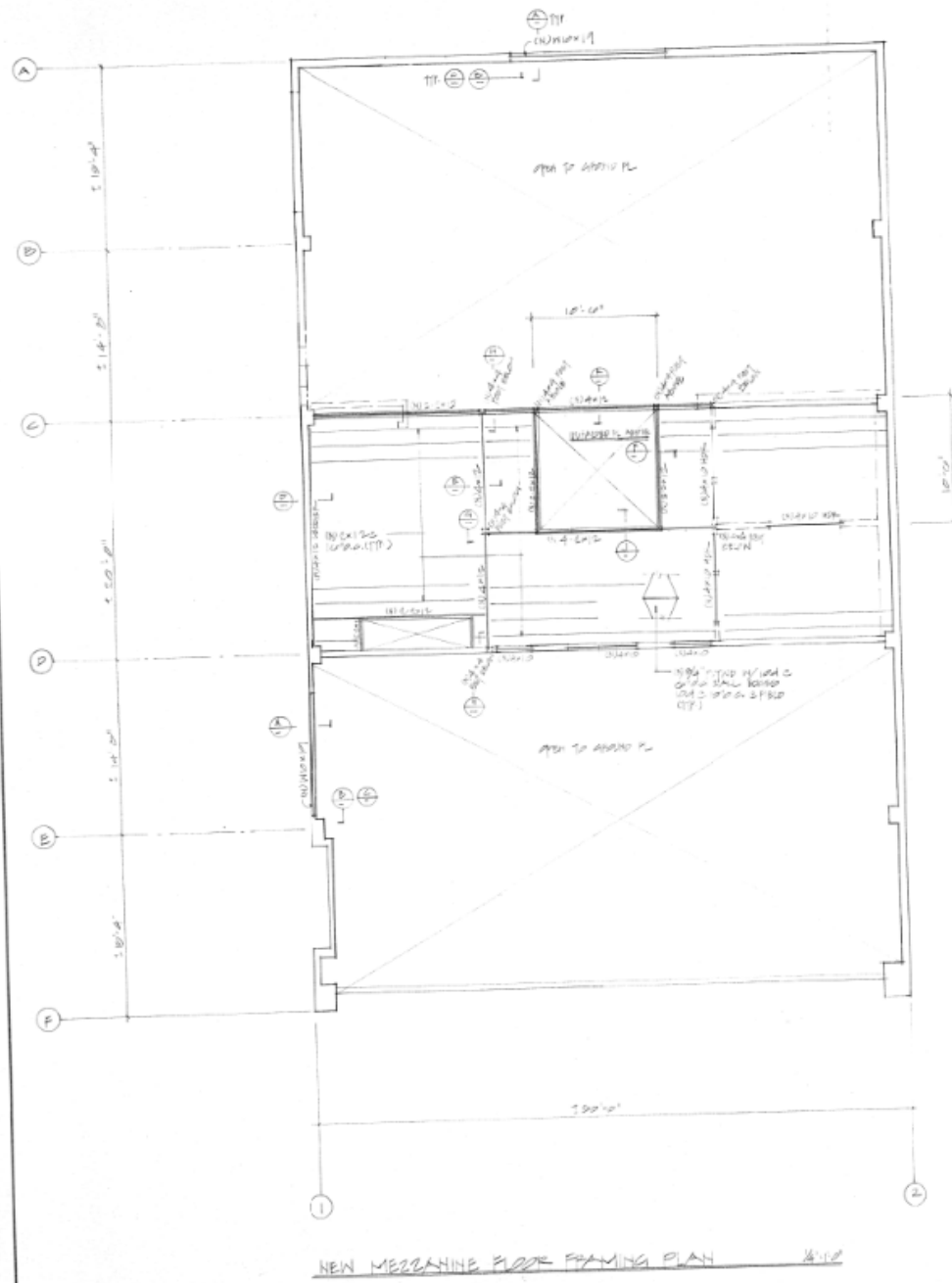
1958 Truss Framing Plan (Original Drawing).



1989 Architectural Floor Plan - 1st floor (Renovation Drawing)



1989 New Mezzanine Floor Plan and Exterior Elevations (Renovation Drawing)



1989 New Mezzanine Floor Plan (Renovation Drawing)

Appendix C. Checklists and Quick Check Calculations

appears to be
complaint with some
possible minor
exception

appears to rely on
pilaster for out of
plane lateral support

Table 17-2. Collapse Prevention Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low Seismicity			
Building System—General			
C NC N/A U	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.	5.4.1.1	A.2.1.1
C NC N/A U	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.	5.4.1.2	A.2.1.2
C NC N/A U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure.	5.4.1.3	A.2.1.3
Building System—Building Configuration			
C NC N/A U	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.	5.4.2.1	A.2.2.2
C NC N/A U	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.	5.4.2.2	A.2.2.3
C NC N/A U	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation.	5.4.2.3	A.2.2.4
C NC N/A U	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.	5.4.2.4	A.2.2.5
C NC N/A U	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.	5.4.2.5	A.2.2.6
C NC N/A U	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.	5.4.2.6	A.2.2.7

continues

Table 17-2 (Continued). Collapse Prevention Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Moderate Seismicity (Complete the Following Items in Addition to the Items for Low Seismicity)			
Geologic Site Hazards			
C NC N/A U	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 (15.2 m) under the building.	5.4.3.1	A.6.1.1
C NC N/A U	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.	5.4.3.1	A.6.1.2
C NC N/A U	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated.	5.4.3.1	A.6.1.3
High Seismicity (Complete the Following Items in Addition to the Items for Moderate Seismicity)			
Foundation Configuration			
C NC N/A U	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 $0.6S_a$.	5.4.3.3	A.6.2.1
C NC N/A U	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.	5.4.3.4	A.6.2.2

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

continues

There is no line of
shear wall along
exterior line L

Table 17-34. Collapse Prevention Structural Checklist for Building Types RM1 and RM2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low and Moderate Seismicity			
Seismic-Force-Resisting System			
C NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
C NC N/A U	SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than 70 lb/in. ² (0.48 MPa).	5.5.3.1.1	A.3.2.4.1
C NC N/A U	REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls is greater than 0.002 of the wall with the minimum of 0.0007 in either of the two directions; the spacing of reinforcing steel is less than 48 in. (1220 mm), and all vertical bars extend to the top of the walls.	5.5.3.1.3	A.3.2.4.2
Stiff Diaphragms			
C NC N/A U	TOPPING SLAB: Precast concrete diaphragm elements are interconnected by a continuous reinforced concrete topping slab.	5.6.4	A.4.5.1
Connections			
C NC N/A U	WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have strength to resist the connection force calculated in the Quick Check procedure of Section 4.4.3.7.	5.7.1.1	A.5.1.1
C NC N/A U	WOOD LEDGERS: The connection between the wall panels and the diaphragm does not induce cross-grain bending or tension in the wood ledgers.	5.7.1.3	A.5.1.2
C NC N/A U	TRANSFER TO SHEAR WALLS: Diaphragms are connected for transfer of seismic forces to the shear walls.	5.7.2	A.5.2.1
C NC N/A U	TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements are doweled for transfer of forces into the shear wall or frame elements.	5.7.2	A.5.2.3
C NC N/A U	FOUNDATION DOWELS: Wall reinforcement is doweled into the foundation.	5.7.3.4	A.5.3.5
C NC N/A U	GIRDER-COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support.	5.7.4.1	A.5.4.1
High Seismicity (Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)			
Stiff Diaphragms			
C NC N/A U	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length.	5.6.1.3	A.4.1.4
C NC N/A U	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long.	5.6.1.3	A.4.1.6

continues

Table 17-34 (Continued). Collapse Prevention Structural Checklist for Building Types RM1 and RM2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Flexible Diaphragms			
C NC N/A U	CROSS TIES: There are continuous cross ties between diaphragm chords.	5.6.1.2	A.4.1.2
C NC N/A U	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length.	5.6.1.3	A.4.1.4
C NC N/A U	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long.	5.6.1.3	A.4.1.6
C NC N/A U	STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered.	5.6.2	A.4.2.1
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.	5.6.2	A.4.2.2
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 (12.2 m) and aspect ratios less than or equal to 4-to-1.	5.6.2	A.4.2.3
C NC N/A U	OTHER DIAPHRAGMS: Diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing.	5.6.5	A.4.7.1
Connections			
C NC N/A U	STIFFNESS OF WALL ANCHORS: Anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 in. (3 mm) before engagement of the anchors.	5.7.1.2	A.5.1.4

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

continues

Table 17-38. Nonstructural Checklist

Status	Evaluation Statement ^{a,b}	Tier 2 Reference	Commentary Reference
Life Safety Systems			
C NC N/A U	HR—not required; LS—LMH; PR—LMH. FIRE SUPPRESSION PIPING: Fire suppression piping is anchored and braced in accordance with NFPA-13.	13.7.4	A.7.13.1
C NC N/A U	HR—not required; LS—LMH; PR—LMH. FLEXIBLE COUPLINGS: Fire suppression piping has flexible couplings in accordance with NFPA-13.	13.7.4	A.7.13.2
C NC N/A U	HR—not required; LS—LMH; PR—LMH. EMERGENCY POWER: Equipment used to power or control Life Safety systems is anchored or braced.	13.7.7	A.7.12.1
C NC N/A U	HR—not required; LS—LMH; PR—LMH. STAIR AND SMOKE DUCTS: Stair pressurization and smoke control ducts are braced and have flexible connections at seismic joints.	13.7.6	A.7.14.1
C NC N/A U	HR—not required; LS—MH; PR—MH. SPRINKLER CEILING CLEARANCE: Penetrations through panelized ceilings for fire suppression devices provide clearances in accordance with NFPA-13.	13.7.4	A.7.13.3
C NC N/A U	HR—not required; LS—not required; PR—LMH. EMERGENCY LIGHTING: Emergency and egress lighting equipment is anchored or braced.	13.7.9	A.7.3.1
Hazardous Materials			
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. HAZARDOUS MATERIAL EQUIPMENT: Equipment mounted on vibration isolators and containing hazardous material is equipped with restraints or snubbers.	13.7.1	A.7.12.2
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. HAZARDOUS MATERIAL STORAGE: Breakable containers that hold hazardous material, including gas cylinders, are restrained by latched doors, shelf lips, wires, or other methods.	13.8.3	A.7.15.1
C NC N/A U	HR—MH; LS—MH; PR—MH. HAZARDOUS MATERIAL DISTRIBUTION: Piping or ductwork conveying hazardous materials is braced or otherwise protected from damage that would allow hazardous material release.	13.7.3 13.7.5	A.7.13.4
C NC N/A U	HR—MH; LS—MH; PR—MH. SHUTOFF VALVES: Piping containing hazardous material, including natural gas, has shutoff valves or other devices to limit spills or leaks.	13.7.3 13.7.5	A.7.13.3
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. FLEXIBLE COUPLINGS: Hazardous material ductwork and piping, including natural gas piping, have flexible couplings.	13.7.3 13.7.5	A.7.15.4
C NC N/A U	HR—MH; LS—MH; PR—MH. PIPING OR DUCTS CROSSING SEISMIC JOINTS: Piping or ductwork carrying hazardous material that either crosses seismic joints or isolation planes or is connected to independent structures has couplings or other details to accommodate the relative seismic displacements.	13.7.3 13.7.5 13.7.6	A.7.13.6
Partitions			
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. UNREINFORCED MASONRY: Unreinforced masonry or hollow-clay tile partitions are braced at a spacing of at most 10 ft (3.0 m) in Low or Moderate Seismicity, or at most 6 ft (1.8 m) in High Seismicity.	13.6.2	A.7.1.1
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. HEAVY PARTITIONS SUPPORTED BY CEILINGS: The tops of masonry or hollow-clay tile partitions are not laterally supported by an integrated ceiling system.	13.6.2	A.7.2.1
C NC N/A U	HR—not required; LS—MH; PR—MH. DRIFT: Rigid cementitious partitions are detailed to accommodate the following drift ratios: in steel moment frame, concrete moment frame, and wood frame buildings, 0.02; in other buildings, 0.005.	13.6.2	A.7.1.2
C NC N/A U	HR—not required; LS—not required; PR—MH. LIGHT PARTITIONS SUPPORTED BY CEILINGS: The tops of gypsum board partitions are not laterally supported by an integrated ceiling system.	13.6.2	A.7.2.1
C NC N/A U	HR—not required; LS—not required; PR—MH. STRUCTURAL SEPARATIONS: Partitions that cross structural separations have seismic or control joints.	13.6.2	A.7.1.3

continues

Table 17-38 (Continued). Nonstructural Checklist

Status	Evaluation Statement ^{a,b}	Tier 2 Reference	Commentary Reference
C NC N/A U	HR—not required; LS—not required; PR—MH. TOPS: The tops of ceiling-high framed or panelized partitions have lateral bracing to the structure at a spacing equal to or less than 6 ft (1.8 m).	13.6.2	A.7.1.4
Ceilings			
C NC N/A U	HR—H; LS—MH; PR—LMH. SUSPENDED LATH AND PLASTER: Suspended lath and plaster ceilings have attachments that resist seismic forces for every 12 ft ² (1.1 m ²) of area.	13.6.4	A.7.2.3
C NC N/A U	HR—not required; LS—MH; PR—LMH. SUSPENDED GYPSUM BOARD: Suspended gypsum board ceilings have attachments that resist seismic forces for every 12 ft ² (1.1 m ²) of area.	13.6.4	A.7.2.3
C NC N/A U	HR—not required; LS—not required; PR—MH. INTEGRATED CEILINGS: Integrated suspended ceilings with continuous areas greater than 144 ft ² (13.4 m ²) and ceilings of smaller areas that are not surrounded by restraining partitions are laterally restrained at a spacing no greater than 12 ft (3.6 m) with members attached to the structure above. Each restraint location has a minimum of four diagonal wires and compression struts, or diagonal members capable of resisting compression.	13.6.4	A.7.2.2
C NC N/A U	HR—not required; LS—not required; PR—MH. EDGE CLEARANCE: The free edges of integrated suspended ceilings with continuous areas greater than 144 ft ² (13.4 m ²) have clearances from the enclosing wall or partition of at least the following: in Moderate Seismicity, 1/2 in. (13 mm); in High Seismicity, 3/4 in. (19 mm).	13.6.4	A.7.2.4
C NC N/A U	HR—not required; LS—not required; PR—MH. CONTINUITY ACROSS STRUCTURE JOINTS: The ceiling system does not cross any seismic joint and is not attached to multiple independent structures.	13.6.4	A.7.2.5
C NC N/A U	HR—not required; LS—not required; PR—H. EDGE SUPPORT: The free edges of integrated suspended ceilings with continuous areas greater than 144 ft ² (13.4 m ²) are supported by closure angles or channels not less than 2 in. (51 mm) wide.	13.6.4	A.7.2.6
C NC N/A U	HR—not required; LS—not required; PR—H. SEISMIC JOINTS: Acoustical tile or lay-in panel ceilings have seismic separation joints such that each continuous portion of the ceiling is no more than 2,500 ft ² (232.3 m ²) and has a ratio of long-to-short dimension no more than 4-to-1.	13.6.4	A.7.2.7
Light Fixtures			
C NC N/A U	HR—not required; LS—MH; PR—MH. INDEPENDENT SUPPORT: Light fixtures that weigh more per square foot than the ceiling they penetrate are supported independent of the grid ceiling suspension system by a minimum of two wires at diagonally opposite corners of each fixture.	13.6.4 13.7.9	A.7.3.2
C NC N/A U	HR—not required; LS—not required; PR—H. PENDANT SUPPORTS: Light fixtures on pendant supports are attached at a spacing equal to or less than 6 ft. Unbraced suspended fixtures are free to allow a 360-degree range of motion at an angle not less than 45 degrees from horizontal without contacting adjacent components. Alternatively, if rigidly supported and/or braced, they are free to move with the structure to which they are attached without damaging adjoining components. Additionally, the connection to the structure is capable of accommodating the movement without failure.	13.7.9	A.7.3.3
C NC N/A U	HR—not required; LS—not required; PR—H. LENS COVERS: Lens covers on light fixtures are attached with safety devices.	13.7.9	A.7.3.4
Cladding and Glazing			
C NC N/A U	HR—MH; LS—MH; PR—MH. CLADDING ANCHORS: Cladding components weighing more than 10 lb/ft ² (0.48 kN/m ²) are mechanically anchored to the structure at a spacing equal to or less than the following: for Life Safety in Moderate Seismicity, 6 ft (1.8 m); for Life Safety in High Seismicity and for Position Retention in any seismicity, 4 ft (1.2 m)	13.6.1	A.7.4.1

continues

Table 17-38 (Continued). Nonstructural Checklist

Status	Evaluation Statement ^{a,b}	Tier 2 Reference	Commentary Reference
C NC N/A U	HR—not required; LS—MH; PR—MH. CLADDING ISOLATION: For steel or concrete moment-frame buildings, panel connections are detailed to accommodate a story drift ratio by the use of rods attached to framing with oversize holes or slotted holes of at least the following: for Life Safety in Moderate Seismicity, 0.01; for Life Safety in High Seismicity and for Position Retention in any seismicity, 0.02, and the rods have a length-to-diameter ratio of 4.0 or less.	13.6.1	A.7.4.3
C NC N/A U	HR—MH; LS—MH; PR—MH. MULTI-STORY PANELS: For multi-story panels attached at more than one floor level, panel connections are detailed to accommodate a story drift ratio by the use of rods attached to framing with oversize holes or slotted holes of at least the following: for Life Safety in Moderate Seismicity, 0.01; for Life Safety in High Seismicity and for Position Retention in any seismicity, 0.02, and the rods have a length-to-diameter ratio of 4.0 or less.	13.6.1	A.7.4.4
C NC N/A U	HR—not required; LS—MH; PR—MH. THREADED RODS: Threaded rods for panel connections detailed to accommodate drift by bending of the rod have a length-to-diameter ratio greater than 0.06 times the story height in inches for Life Safety in Moderate Seismicity and 0.12 times the story height in inches for Life Safety in High Seismicity and Position Retention in any seismicity.	13.6.1	A.7.4.9
C NC N/A U	HR—MH; LS—MH; PR—MH. PANEL CONNECTIONS: Cladding panels are anchored out of plane with a minimum number of connections for each wall panel, as follows: for Life Safety in Moderate Seismicity, 2 connections; for Life Safety in High Seismicity and for Position Retention in any seismicity, 4 connections.	13.6.1.4	A.7.4.5
C NC N/A U	HR—MH; LS—MH; PR—MH. BEARING CONNECTIONS: Where bearing connections are used, there is a minimum of two bearing connections for each cladding panel.	13.6.1.4	A.7.4.6
C NC N/A U	HR—MH; LS—MH; PR—MH. INSERTS: Where concrete cladding components use inserts, the inserts have positive anchorage or are anchored to reinforcing steel.	13.6.1.4	A.7.4.7
C NC N/A U	HR—not required; LS—MH; PR—MH. OVERHEAD GLAZING: Glazing panes of any size in curtain walls and individual interior or exterior panes more than 16 ft ² (1.5 m ²) in area are laminated annealed or laminated heat-strengthened glass and are detailed to remain in the frame when cracked.	13.6.1.5	A.7.4.8
Masonry Veneer			
C NC N/A U	HR—not required; LS—LMH; PR—LMH. TIES: Masonry veneer is connected to the backup with corrosion-resistant ties. There is a minimum of one tie for every 2-2/3 ft ² (0.25 m ²), and the ties have spacing no greater than the following: for Life Safety in Low or Moderate Seismicity, 36 in. (914 mm); for Life Safety in High Seismicity and for Position Retention in any seismicity, 24 in. (610 mm).	13.6.1.2	A.7.5.1
C NC N/A U	HR—not required; LS—LMH; PR—LMH. SHELF ANGLES: Masonry veneer is supported by shelf angles or other elements at each floor above the ground floor.	13.6.1.2	A.7.5.2
C NC N/A U	HR—not required; LS—LMH; PR—LMH. WEAKENED PLANES: Masonry veneer is anchored to the backup adjacent to weakened planes, such as at the locations of flashing.	13.6.1.2	A.7.5.3
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. UNREINFORCED MASONRY BACKUP: There is no unreinforced masonry backup.	13.6.1.1 13.6.1.2	A.7.7.2
C NC N/A U	HR—not required; LS—MH; PR—MH. STUD TRACKS: For veneer with cold-formed steel stud backup, stud tracks are fastened to the structure at a spacing equal to or less than 24 in. (610 mm) on center.	13.6.1.1 13.6.1.2	A.7.6.1

continues

Table 17-38 (Continued). Nonstructural Checklist

Status	Evaluation Statement ^{a,b}	Tier 2 Reference	Commentary Reference
C NC N/A U	HR—not required; LS—MH; PR—MH. ANCHORAGE: For veneer with concrete block or masonry backup, the backup is positively anchored to the structure at a horizontal spacing equal to or less than 4 ft along the floors and roof.	13.6.1.1 13.6.1.2	A.7.7.1
C NC N/A U	HR—not required; LS—not required; PR—MH. WEEP HOLES: In veneer anchored to stud walls, the veneer has functioning weep holes and base flashing.	13.6.1.2	A.7.5.6
C NC N/A U	HR—not required; LS—not required; PR—MH. OPENINGS: For veneer with cold-formed-steel stud backup, steel studs frame window and door openings.	13.6.1.1 13.6.1.2	A.7.6.2
Parapets, Cornices, Ornamentation, and Appendages			
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. URM PARAPETS OR CORNICES: Laterally unsupported unreinforced masonry parapets or cornices have height-to-thickness ratios no greater than the following: for Life Safety in Low or Moderate Seismicity, 2.5; for Life Safety in High Seismicity and for Position Retention in any seismicity, 1.5.	13.6.5	A.7.8.1
C NC N/A U	HR—not required; LS—LMH; PR—LMH. CANOPIES: Canopies at building exits are anchored to the structure at a spacing no greater than the following: for Life Safety in Low or Moderate Seismicity, 10 ft (3.0 m); for Life Safety in High Seismicity and for Position Retention in any seismicity, 6 ft (1.8 m).	13.6.6	A.7.8.2
C NC N/A U	HR—H; LS—MH; PR—LMH. CONCRETE PARAPETS: Concrete parapets with height-to-thickness ratios greater than 2.5 have vertical reinforcement.	13.6.5	A.7.8.3
C NC N/A U	HR—MH; LS—MH; PR—LMH. APPENDAGES: Cornices, parapets, signs, and other ornamentation or appendages that extend above the highest point of anchorage to the structure or cantilever from components are reinforced and anchored to the structural system at a spacing equal to or less than 6 ft (1.8 m). This evaluation statement item does not apply to parapets or cornices covered by other evaluation statements.	13.6.6	A.7.8.4
Masonry Chimneys			
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. URM CHIMNEYS: Unreinforced masonry chimneys extend above the roof surface no more than the following: for Life Safety in Low or Moderate Seismicity, 3 times the least dimension of the chimney; for Life Safety in High Seismicity and for Position Retention in any seismicity, 2 times the least dimension of the chimney.	13.6.7	A.7.9.1
C NC N/A U	HR—LMH; LS—LMH; PR—LMH. ANCHORAGE: Masonry chimneys are anchored at each floor level, at the topmost ceiling level, and at the roof.	13.6.7	A.7.9.2
Stairs			
C NC N/A U	HR—not required; LS—LMH; PR—LMH. STAIR ENCLOSURES: Hollow-clay tile or unreinforced masonry walls around stair enclosures are restrained out of plane and have height-to-thickness ratios not greater than the following: for Life Safety in Low or Moderate Seismicity, 15-to-1; for Life Safety in High Seismicity and for Position Retention in any seismicity, 12-to-1.	13.6.2 13.6.8	A.7.10.1
C NC N/A U	HR—not required; LS—LMH; PR—LMH. STAIR DETAILS: The connection between the stairs and the structure does not rely on post-installed anchors in concrete or masonry, and the stair details are capable of accommodating the drift calculated using the Quick Check procedure of Section 4.4.3.1 for moment-frame structures or 0.5 in. for all other structures without including any lateral stiffness contribution from the stairs.	13.6.8	A.7.10.2
Contents and Furnishings			
C NC N/A U	HR—LMH; LS—MH; PR—MH. INDUSTRIAL STORAGE RACKS: Industrial storage racks or pallet racks more than 12 ft high meet the requirements of ANSI/RMI MH 16.1 as modified by ASCE 7, Chapter 15.	13.8.1	A.7.11.1

continues

Table 17-38 (Continued). Nonstructural Checklist

Status	Evaluation Statement ^{a,b}	Tier 2 Reference	Commentary Reference
C NC N/A U	HR—not required; LS—H; PR—MH. TALL NARROW CONTENTS: Contents more than 6 ft (1.8 m) high with a height-to-depth or height-to-width ratio greater than 3-to-1 are anchored to the structure or to each other.	13.8.2	A.7.11.2
C NC N/A U	HR—not required; LS—H; PR—H. FALL-PRONE CONTENTS: Equipment, stored items, or other contents weighing more than 20 lb (9.1 kg) whose center of mass is more than 4 ft (1.2 m) above the adjacent floor level are braced or otherwise restrained.	13.8.2	A.7.11.3
C NC N/A U	HR—not required; LS—not required; PR—MH. ACCESS FLOORS: Access floors more than 9 in. (229 mm) high are braced.	13.6.10	A.7.11.4
C NC N/A U	HR—not required; LS—not required; PR—MH. EQUIPMENT ON ACCESS FLOORS: Equipment and other contents supported by access floor systems are anchored or braced to the structure independent of the access floor.	13.7.7 13.6.10	A.7.11.5
C NC N/A U	HR—not required; LS—not required; PR—H. SUSPENDED CONTENTS: Items suspended without lateral bracing are free to swing from or move with the structure from which they are suspended without damaging themselves or adjoining components.	13.8.2	A.7.11.6
Mechanical and Electrical Equipment			
C NC N/A U	HR—not required; LS—H; PR—H. FALL-PRONE EQUIPMENT: Equipment weighing more than 20 lb (9.1 kg) whose center of mass is more than 4 ft (1.2 m) above the adjacent floor level, and which is not in-line equipment, is braced.	13.7.1 13.7.7	A.7.12.4
C NC N/A U	HR—not required; LS—H; PR—H. IN-LINE EQUIPMENT: Equipment installed in line with a duct or piping system, with an operating weight more than 75 lb (34.0 kg), is supported and laterally braced independent of the duct or piping system.	13.7.1	A.7.12.5
C NC N/A U	HR—not required; LS—H; PR—MH. TALL NARROW EQUIPMENT: Equipment more than 6 ft (1.8 m) high with a height-to-depth or height-to-width ratio greater than 3-to-1 is anchored to the floor slab or adjacent structural walls.	13.7.1 13.7.7	A.7.12.6
C NC N/A U	HR—not required; LS—not required; PR—MH. MECHANICAL DOORS: Mechanically operated doors are detailed to operate at a story drift ratio of 0.01.	13.6.9	A.7.12.7
C NC N/A U	HR—not required; LS—not required; PR—H. SUSPENDED EQUIPMENT: Equipment suspended without lateral bracing is free to swing from or move with the structure from which it is suspended without damaging itself or adjoining components.	13.7.1 13.7.7	A.7.12.8
C NC N/A U	HR—not required; LS—not required; PR—H. VIBRATION ISOLATORS: Equipment mounted on vibration isolators is equipped with horizontal restraints or snubbers and with vertical restraints to resist overturning.	13.7.1	A.7.12.9
C NC N/A U	HR—not required; LS—not required; PR—H. HEAVY EQUIPMENT: Floor-supported or platform-supported equipment weighing more than 400 lb (181.4 kg) is anchored to the structure.	13.7.1 13.7.7	A.7.12.10
C NC N/A U	HR—not required; LS—not required; PR—H. ELECTRICAL EQUIPMENT: Electrical equipment is laterally braced to the structure.	13.7.7	A.7.12.11
C NC N/A U	HR—not required; LS—not required; PR—H. CONDUIT COUPLINGS: Conduit greater than 2.5 in. (64 mm) trade size that is attached to panels, cabinets, or other equipment and is subject to relative seismic displacement has flexible couplings or connections.	13.7.8	A.7.12.12
Piping			
C NC N/A U	HR—not required; LS—not required; PR—H. FLEXIBLE COUPLINGS: Fluid and gas piping has flexible couplings.	13.7.3 13.7.5	A.7.13.2

continues

Table 17-38 (Continued). Nonstructural Checklist

Status	Evaluation Statement ^{a,b}	Tier 2 Reference	Commentary Reference
C NC  U	HR—not required; LS—not required; PR—H. FLUID AND GAS PIPING: Fluid and gas piping is anchored and braced to the structure to limit spills or leaks.	13.7.3 13.7.5	A.7.13.4
C NC  U	HR—not required; LS—not required; PR—H. C-CLAMPS: One-sided C-clamps that support piping larger than 2.5 in. (64 mm) in diameter are restrained.	13.7.3 13.7.5	A.7.13.5
C NC  U	HR—not required; LS—not required; PR—H. PIPING CROSSING SEISMIC JOINTS: Piping that crosses seismic joints or isolation planes or is connected to independent structures has couplings or other details to accommodate the relative seismic displacements.	13.7.3 13.7.5	A.7.13.6
Ducts			
C NC  U	HR—not required; LS—not required; PR—H. DUCT BRACING: Rectangular ductwork larger than 6 ft ² (0.56 m ²) in cross-sectional area and round ducts larger than 28 in. (711 mm) in diameter are braced. The maximum spacing of transverse bracing does not exceed 30 ft (9.2 m). The maximum spacing of longitudinal bracing does not exceed 60 ft (18.3 m).	13.7.6	A.7.14.2
C NC  U	HR—not required; LS—not required; PR—H. DUCT SUPPORT: Ducts are not supported by piping or electrical conduit.	13.7.6	A.7.14.3
C NC  U	HR—not required; LS—not required; PR—H. DUCTS CROSSING SEISMIC JOINTS: Ducts that cross seismic joints or isolation planes or are connected to independent structures have couplings or other details to accommodate the relative seismic displacements.	13.7.6	A.7.14.4
Elevators			
C NC N/A U	HR—not required; LS—H; PR—H. RETAINER GUARDS: Sheaves and drums have cable retainer guards.	13.7.11	A.7.16.1
C NC N/A U	HR—not required; LS—H; PR—H. RETAINER PLATE: A retainer plate is present at the top and bottom of both car and counterweight.	13.7.11	A.7.16.2
C NC N/A U	HR—not required; LS—not required; PR—H. ELEVATOR EQUIPMENT: Equipment, piping, and other components that are part of the elevator system are anchored.	13.7.11	A.7.16.3
C NC N/A U	HR—not required; LS—not required; PR—H. SEISMIC SWITCH: Elevators capable of operating at speeds of 150 ft/min (0.30 m/min) or faster are equipped with seismic switches that meet the requirements of ASME A17.1 or have trigger levels set to 20% of the acceleration of gravity at the base of the structure and 50% of the acceleration of gravity in other locations.	13.7.11	A.7.16.4
C NC N/A U	HR—not required; LS—not required; PR—H. SHAFT WALLS: Elevator shaft walls are anchored and reinforced to prevent toppling into the shaft during strong shaking.	13.7.11	A.7.16.5
C NC N/A U	HR—not required; LS—not required; PR—H. COUNTERWEIGHT RAILS: All counterweight rails and divider beams are sized in accordance with ASME A17.1.	13.7.11	A.7.16.6
C NC N/A U	HR—not required; LS—not required; PR—H. BRACKETS: The brackets that tie the car rails and the counterweight rail to the structure are sized in accordance with ASME A17.1.	13.7.11	A.7.16.7
C NC N/A U	HR—not required; LS—not required; PR—H. SPREADER BRACKET: Spreader brackets are not used to resist seismic forces.	13.7.11	A.7.16.8
C NC N/A U	HR—not required; LS—not required; PR—H. GO-SLOW ELEVATORS: The building has a go-slow elevator system.	13.7.11	A.7.16.9

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

^a Performance Level: HR = Hazards Reduced, LS = Life Safety, and PR = Position Retention.

^b Level of Seismicity: L = Low, M = Moderate, and H = High.



ASCE- 41 Tier 1 Quick check calculations

Shear stress in shear wall

Determine V , the pseudo lateral force from Equation 4-1. V is a function of

- C
- S_a , the response spectral acceleration at the fundamental period of the building in the direction under consideration. S_a shall be calculated in accordance with Section 4.5.2.3
- W , the total dead load

Building type RM1 CMU with flexible diaphragms

the modification factor to relate expected maximum inelastic displacements to displacements calculated for linear elastic response, taken from Table 4-7 $C := 1.0$

Determine S_a

1 second period spectral acceleration of the BSE-1E $S_{X1} := 0.635$

Short period spectral acceleration of the BSE-1E Design $S_{XS} := 1.04$

Factor per table 4-9 $M_s := 4.5$

Determine T

Coefficient to determine building period, from Section 4.4.2.4 $C_t := 0.020$
all other framing systems

Height in feet above the base to the roof level $h_n := 12 \text{ ft}$

Fundamental period of vibration of the building, calculated in accordance with Section 4.5.2.4 $T := C_t \cdot \left(\frac{h_n}{1 \text{ ft}} \right)^{.75} = 0.129$

$$S_a := \min \left(\frac{S_{X1}}{T}, S_{XS} \right) = 1.04$$



Minimum base dimension

$$base := 50 \text{ ft}$$

$$Overturning := \text{if} \left(\frac{base}{h_n} > 0.6 \cdot S_a, \text{"Compliant"}, \text{"Non compliant"} \right)$$

$$Overturning = \text{"Compliant"}$$

$$Floors := 1$$

Partition loads

$$PartitionDeadLoad := [7.5 \text{ psf}]$$

Areas of floors starting at
base going up

$$Areas := [4000 \text{ ft}^2]$$

Floor heights from base

$$h := [12 \text{ ft}]$$

Thickness of walls, 8 in
nominal, conservative

$$t := 7.625 \text{ in}$$

Conservative roof weight

$$FloorWeights := [35 \text{ psf}]$$

Total perimeter of walls for
weigh up

$$Perimeter := [210 \text{ ft}]$$

$$WallWeights := [80 \text{ psf}]$$

$$WallTrib := \left[\frac{h_1}{2} \right] = [6] \text{ ft}$$

Opening Area

$$A_{opening} := 420 \text{ ft}^2$$

Mezannine Area

$$A_{mezannine} := 20 \text{ ft} \cdot 50 \text{ ft} = 1000 \text{ ft}^2$$

Mezzanine weight

$$MezzanineWeight := 15 \text{ psf}$$

$$w_{mezannine} := MezzanineWeight \cdot A_{mezannine} = 15 \text{ kip}$$



Length of walls in north south direction

$$L_{NS} := 5.2 \text{ ft} + 2.1 \text{ ft} + 5.2 \text{ ft} + 6.5 \text{ ft} + 4 \text{ ft} + 1.5 \text{ ft} + 3.7 \text{ ft}$$

$$L_{NS} := L_{NS} + 4 \text{ ft} + 2.6 \text{ ft} + 80 \text{ ft} = 114.8 \text{ ft}$$

Length of walls in east west direction

$$L_{EW} := 8 \text{ ft} + 4.7 \text{ ft} + 5 \text{ ft} + 8 \text{ ft} = 25.7 \text{ ft}$$

Area of walls in north south
direction

$$A_{wNS} := [L_{NS} \cdot t] = [72.95] \text{ ft}^2$$

Area of walls in east west
direction, say worst case is
half of walls in north south

$$A_{wEW} := [L_{EW} \cdot t] = [2351.55] \text{ in}^2$$

$$w := \overrightarrow{Areas \cdot FloorWeights} + \overrightarrow{PartitionDeadLoad \cdot Areas} + \overrightarrow{Perimeter \cdot WallWeights \cdot (WallTrib)} - A_{opening}$$

$$w = [252] \text{ kip}$$

Total seismic weight of
structure

$$W := \sum_{i=1}^{\text{length}(w)} w_i = 252 \text{ kip}$$

Pseudo seismic force per
4.5.2.1 Eq. 4-1

$$V := C \cdot S_a \cdot W = 262 \text{ kip}$$

factor per 4.5.2.2

$$k := \text{if}(T > 2.5, 2, \text{if}(T \leq 0.5, 1, 0.5 \cdot T + 0.75))$$

$$k = 1$$

$$x := 1 \dots Floors$$

$$j := 1 \dots Floors$$



Vertical distribution of
psuedo seismic force per
4.5.2.2 Eq 4-3a

$$F_x := \frac{w_x \cdot h_x^k}{\sum_{i=1}^{Floors} w_i \cdot h_i^k} \cdot V = [262] \text{ kip}$$

Story shear at story level j

$$V_j := \sum_{x=j}^{Floors} F_x = [262] \text{ kip}$$

Shear stress in shear walls in
north south direction

$$v_{NS_j} := \frac{1}{M_s} \cdot \frac{V_j}{A_{wNS_j}} = [6] \text{ psi}$$

$$V_j = [262.29] \text{ kip}$$

Shear stress in shear walls in
east west direction

$$v_{EW_j} := \frac{1}{M_s} \cdot \frac{V_j}{A_{wEW_j}} = [25] \text{ psi}$$

ASCE 41-13 quick check limit is 70 psi



Wall Reinforcing Check for 8" CMU walls

$$\#5 @ 32" \text{ oc Vert} \quad \text{VertRatio} := \frac{0.31 \text{ in}^2}{7.625 \text{ in} \cdot 32 \text{ in}} = 0.0013$$

$$\#4 @ 48" \text{ oc horz} \quad \text{HorRatio} := \frac{0.19 \text{ in}^2}{7.625 \text{ in} \cdot 48 \text{ in}} = 0.0005$$

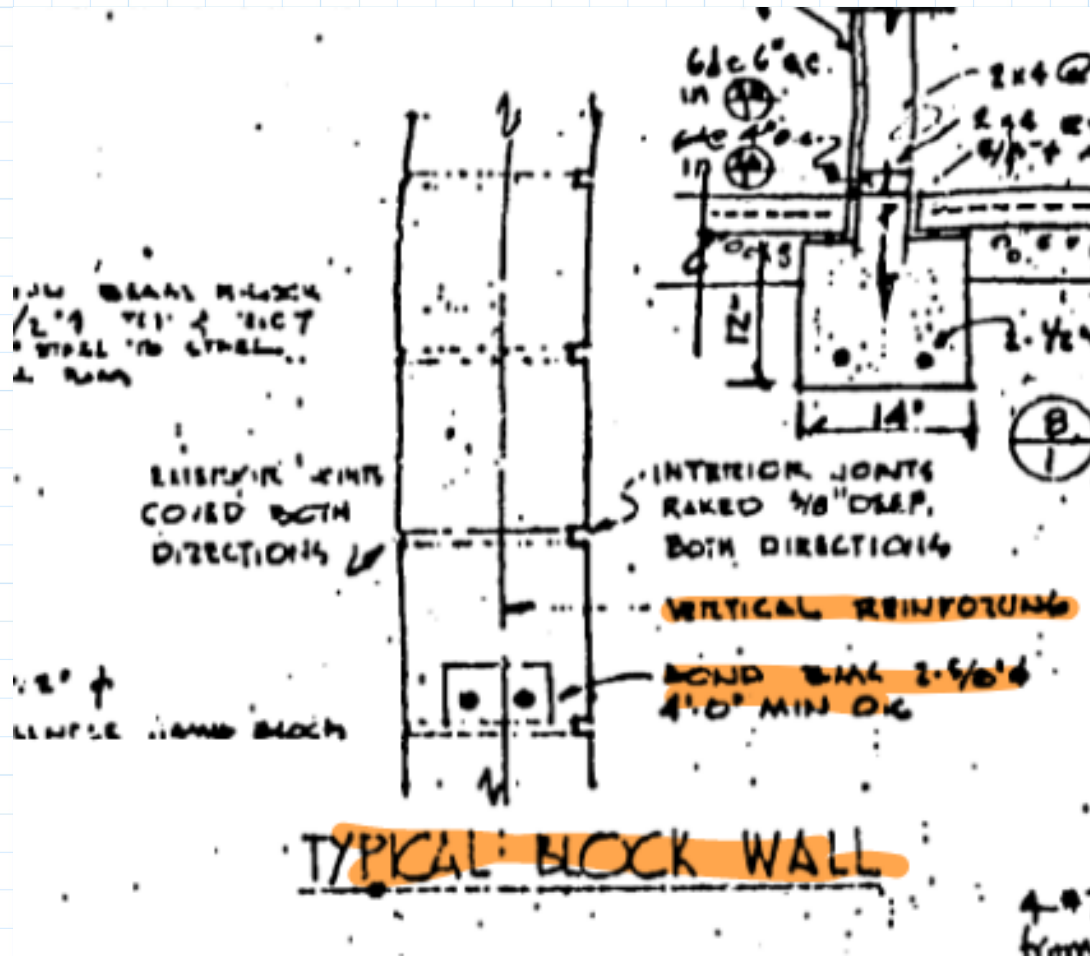
$$\text{Combined} := \text{VertRatio} + \text{HorRatio} = 0.0018$$

if($\text{VertRatio} < 0.0007$, "NG", "OK") = "OK"

if($\text{HorRatio} < 0.0007$, "NG", "OK") = "NG"

if($\text{HorRatio} + \text{VertRatio} < 0.002$, "NG", "OK") = "NG"

- on blocks. Fill joints with mortar from face to face and head to head, and fill bed joint completely on all points of contact, no voids. After finishing, go back and point up all pin holes and other blemishes. Joints shall be straight, true in each direction 3/16" thick.
4. In the event otherwise on the drawing the reinforcing shall be as follows:
- 5' at 32" o.c.
 - Bond Beams 2-5/8" continuous plus corner bars
 - Corner Bars 2-5/8" 18" long each way into joining units
 - Spacing: true 1-1/2" at top, 2-1/2" at head each end & when opening.
5. Anchor bolts in masonry to be in solid units only
6. At interruptions in pour, use 3" metal lath, NO FAPCA.
7. No cracked, chipped or blocks of warped or non uniform dimension shall be used.





Flexible Diaphragm Connection Force:

Unit weight of the wall

$$w_p := 80 \text{ } \text{psf}$$

Area of wall tributary to the connection

$$A_p := \left(\frac{20 \text{ } \text{ft}}{2} + \frac{14.6 \text{ } \text{ft}}{2} \right) \cdot \text{WallTrib} = [103.8] \text{ } \text{ft}^2$$

$$S_{XS} = 1.04$$

$$\psi := 1.0$$

The horizontal seismic forces associated with the connection of a flexible diaphragm to masonry wall

$$T_c := \psi \cdot S_{XS} \cdot w_p \cdot A_p = [8.64] \text{ } \text{kip}$$

It appears the connection of the truss to the pilaster for out of plane lateral force is not sufficient

Level of Seismicity: High

Table 2-4. Level of Seismicity Definitions

Level of Seismicity ^a	S_{DS}	S_{D1}
Very low	<0.167 g	<0.067 g
Low	≥0.167 g	≥0.067 g
	<0.33 g	<0.133 g
Moderate	≥0.33 g	≥0.133 g
	<0.50 g	<0.20 g
High	≥0.50 g	≥0.20 g

^a The higher level of seismicity defined by S_{DS} or S_{D1} shall govern.

Adjacent Building clear distance

$$ClearDistance := 1.5\% \cdot 12 \text{ ft} = 2.16 \text{ in}$$

seismic gap appears to be complaint with some possible minor exception.





Table 4-6. Checklists Required for a Tier 1 Screening

		Required Checklists ^a					
Level of Seismicity ^b	Level of Building Performance ^c	Very Low Seismicity Checklist (Sec 17.1.1)	Basic Configuration Checklist (Sec. 17.1.2)	Collapse Prevention Checklist (Sec. 17.2 through 17.17)	Immediate Occupancy Checklist (Sec. 17.2 through 17.17)	Hazards Reduced or Life Safety Nonstructural Checklist (Sec. 17.19)	Position Retention Nonstructural Checklist (Sec. 17.19)
Very low	CP	X					
Very low	IO		X		X		X
Low	CP		X	X		X	
Low	IO		X		X		X
Moderate	CP		X	X		X	
Moderate	IO		X		X		X
High	CP		X	X		X	
High	IO		X		X		X

^a An X designates the checklist that must be completed for a Tier 1 screening as a function of the Level of Seismicity and Level of Performance.

^b Defined in Section 2.5.

^c CP = Collapse Prevention Performance Level, and IO = Immediate Occupancy Performance Level (defined in Section 2.3.3).