Campus: U.C.L.A.
Building Name: SUNSETCYNREC
CAAN ID: 4205A
Auxiliary Building ID:

UNIVERSITY OF CALIFORNIA

Date: 06/27/2019

FORM 1
CERTIFICATE OF SEISMIC PERFORMANCE LEVEL
☒ **UC-Designed & Constructed Facility**
☐ **Campus-Acquired or Leased Facility**

BUILDING DATA
Building Name: Sunset Canyon Recreation Center – Main Office & Conference Center
Address: 111 Easton Drive
Site location coordinates: Latitude 34.075283 Longitudinal -118.451105

UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): IV

ASCE 41-17 Model Building Type:
a. Longitudinal Direction: W1: Wood Light Frame
b. Transverse Direction: W1: Wood Light Frame

Gross Square Footage: 8,290
Number of stories *above* grade: 2
Number of basement stories *below* grade: 0

Year Original Building was Constructed: 1965
Original Building Design Code & Year: 1961 UBC
Retrofit Building Design Code & Code (if applicable): N/A

SITE INFORMATION
Site Class: D Basis: Assumed
Geologic Hazards:
Fault Rupture: No Basis: Beverly Hills EZRIM
Liquefaction: No Basis: Beverly Hills EZRIM
Landslide: No Basis: Beverly Hills EZRIM

ATTACHMENT
Original Structural Drawings:
Seismic Evaluation: Structural Evaluation of UCLA Sunset Canyon Recreation Center, Nabih Youssef Associates, June 27, 2014, ASCE 31/Tier 1
Retrofit Structural Drawings:

CERTIFICATION & PRESUMPTIVE RATING VERIFICATION STATEMENT

I, Nabih Youssef, a California-licensed structural engineer, am responsible for the completion of this certificate, and I have no ownership interest in the property identified above. My scope of review to support the completion of this certificate included both of the following ("No" responses must include an explanation):

a) the review of structural drawings indicating that they are as-built or record drawings, or that they otherwise are the basis for the construction of the building: ☑ Yes ☐ No
b) visiting the building to verify the observable existing conditions are reasonably consistent with those shown on the structural drawings: ☑ Yes ☐ No

Based on my review, I have verified that the UCOP Seismic Performance Level (SPL) is presumptively permitted by the following UC Seismic Program Guidebook provision (choose one of the following):

☐ 1) Contract documents indicate that the original design and construction of the aforementioned building is in accordance with the benchmark design code year (or later) building code seismic design provisions for UBC or IBC listed in Table 1 below.

☑ 2) The existing SPL rating is based on an acceptable basis of seismic evaluation completed in 2006 or later.

☐ 3) Contract documents indicate that a comprehensive[1] building seismic retrofit design was fully-constructed with an engineered design based on the 1997 UBC/1998 ***or later*** CBC, and (choose one of the following):

☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1E (or BSE-R) and BSE-2E (or BSE-C) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 CBC ***or later*** for EXISTING buildings, and is presumptively assigned an SPL rating of IV.
☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1 (or BSE-1N) and BSE-2 (or BSE-2N) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 ***or later*** CBC for NEW buildings, and is presumptively assigned an SPL rating of III.
☐ the retrofit project was not completed by the UC campus following UC policies, and is presumptively assigned an SPL rating of IV.

[1] A comprehensive retrofit addresses the entire building structural system as indicated by the associated seismic evaluation, as opposed to addressing selective portions of the structural system.

Campus: U.C.L.A.
Building Name: SUNSETCYNREC
CAAN ID: 4205A
Auxiliary Building ID:

UNIVERSITY OF CALIFORNIA

Date: 06/27/2019

CERTIFICATION SIGNATURE

AFFIX SEAL HERE

Nabih Youssef — Print Name

Principal — Title

S2026 — CA Professional Registration No.

09/30/2019 — License Expiration Date

Signature

06/27/2019 — Date

REGISTERED PROFESSIONAL ENGINEER
NABIH F.G. YOUSSEF
S 2026
EXP. 9/30/19
STRUCTURAL
STATE OF CALIFORNIA

Nabih Youssef Associates, (213) 362-0707
550 S Hope Street, Suite 1700
Los Angeles, CA 90071
Firm Name, Phone Number, and Address

Table 1: Benchmark Building Codes and Standards

Building Type[a,b]	Building Seismic Design Provisions	
	UBC	IBC
Wood frame, wood shear panels (Types W1 and W2)	1976	2000
Wood frame, wood shear panels (Type W1a)	1976	2000
Steel moment-resisting frame (Types S1 and S1a)	1997	2000
Steel concentrically braced frame (Types S2 and S2a)	1997	2000
Steel eccentrically braced frame (Types S2 and S2a)	1988[g]	2000
Buckling-restrained braced frame (Types S2 and S2a)	[f]	2006
Metal building frames (Type S3)	[f]	2000
Steel frame with concrete shear walls (Type S4)	1994	2000
Steel frame with URM infill (Types S5 and S5a)	[f]	2000
Steel plate shear wall (Type S6)	[f]	2006
Cold-formed steel light-frame construction—shear wall system (Type CFS1)	1997[h]	2000
Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2)	[f]	2003
Reinforced concrete moment-resisting frame (Type C1)[i]	1994	2000
Reinforced concrete shear walls (Types C2 and C2a)	1994	2000
Concrete frame with URM infill (Types C3 and C3a)	[f]	[f]
Tilt-up concrete (Types PC1 and PC1a)	1997	2000
Precast concrete frame (Types PC2 and PC2a)	[f]	2000
Reinforced masonry (Type RM1)	1997	2000
Reinforced masonry (Type RM2)	1994	2000
Unreinforced masonry (Type URM)	[f]	[f]
Unreinforced masonry (Type URMa)	[f]	[f]
Seismic isolation or passive dissipation	1991	2000

Note: This table has been adapted from ASCE 41-17 Table 3-2. Benchmark Building Codes and Standards for Life Safety Structural Performed at BSE-1E.

Note: UBC = *Uniform Building Code*. IBC = *International Building Code*.

[a] Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

[b] Buildings on hillside sites shall not be considered Benchmark Buildings.

[c] not used

[d] not used

[e] not used

[f] No benchmark year; buildings shall be evaluated in accordance with Section III.J.

[g] Steel eccentrically braced frames with links adjacent to columns shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.

[h] Cold-formed steel shear walls with wood structural panels only.

[i] Flat slab concrete moment frames shall not be considered Benchmark Buildings.

FORM 1
CERTIFICATE OF SEISMIC PERFORMANCE LEVEL
☒ **UC-Designed & Constructed Facility**
☐ **Campus-Acquired or Leased Facility**

BUILDING DATA
Building Name: Sunset Canyon Recreation Center – Buenos Ayres Room
Address: 111 Easton Drive
Site location coordinates: Latitude 34.075283 Longitudinal -118.451105

UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): IV

ASCE 41-17 Model Building Type:
a. Longitudinal Direction: W1: Wood Light Frame
b. Transverse Direction: W1: Wood Light Frame

Gross Square Footage:
Number of stories *above* grade: 1
Number of basement stories *below* grade: 0

Year Original Building was Constructed: 1965
Original Building Design Code & Year: 1961 UBC
Retrofit Building Design Code & Code (if applicable): N/A

SITE INFORMATION
Site Class: D Basis: Assumed
Geologic Hazards:
Fault Rupture: No Basis: Beverly Hills EZRIM
Liquefaction: No Basis: Beverly Hills EZRIM
Landslide: No Basis: Beverly Hills EZRIM

ATTACHMENT
Original Structural Drawings:
Seismic Evaluation: Structural Evaluation of UCLA Sunset Canyon Recreation Center, Nabih Youssef Associates, June 27, 2014, ASCE 31/Tier 1
Retrofit Structural Drawings:

CERTIFICATION & PRESUMPTIVE RATING VERIFICATION STATEMENT

I, Nabih Youssef, a California-licensed structural engineer, am responsible for the completion of this certificate, and I have no ownership interest in the property identified above. My scope of review to support the completion of this certificate included both of the following ("No" responses must include an explanation):

a) the review of structural drawings indicating that they are as-built or record drawings, or that they otherwise are the basis for the construction of the building: ☑ Yes ☐ No
b) visiting the building to verify the observable existing conditions are reasonably consistent with those shown on the structural drawings: ☑ Yes ☐ No

Based on my review, I have verified that the UCOP Seismic Performance Level (SPL) is presumptively permitted by the following UC Seismic Program Guidebook provision (choose one of the following):

☐ 1) Contract documents indicate that the original design and construction of the aforementioned building is in accordance with the benchmark design code year (or later) building code seismic design provisions for UBC or IBC listed in Table 1 below.

☑ 2) The existing SPL rating is based on an acceptable basis of seismic evaluation completed in 2006 or later.

☐ 3) Contract documents indicate that a comprehensive[1] building seismic retrofit design was fully-constructed with an engineered design based on the 1997 UBC/1998 ***or later*** CBC, and (choose one of the following):

☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1E (or BSE-R) and BSE-2E (or BSE-C) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 CBC ***or later*** for EXISTING buildings, and is presumptively assigned an SPL rating of IV.
☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1 (or BSE-1N) and BSE-2 (or BSE-2N) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 ***or later*** CBC for NEW buildings, and is presumptively assigned an SPL rating of III.
☐ the retrofit project was not completed by the UC campus following UC policies, and is presumptively assigned an SPL rating of IV.

[1] A comprehensive retrofit addresses the entire building structural system as indicated by the associated seismic evaluation, as opposed to addressing selective portions of the structural system.

Campus: U.C.L.A.
Building Name: SUNSETCYNREC
CAAN ID: 4205A.1
Auxiliary Building ID:

UNIVERSITY OF CALIFORNIA

Date: 06/27/2019

CERTIFICATION SIGNATURE

AFFIX SEAL HERE

Nabih Youssef — Print Name

Principal — Title

S2026 — CA Professional Registration No.

09/30/2019 — License Expiration Date

Signature

06/27/2019 — Date

REGISTERED PROFESSIONAL ENGINEER
NABIH F.G. YOUSSEF
S 2026
EXP. 9/30/19
STRUCTURAL
STATE OF CALIFORNIA

Nabih Youssef Associates, (213) 362-0707
550 S Hope Street, Suite 1700
Los Angeles, CA 90071
Firm Name, Phone Number, and Address

Table 1: Benchmark Building Codes and Standards

	Building Seismic Design Provisions	
Building Type[a,b]	**UBC**	**IBC**
Wood frame, wood shear panels (Types W1 and W2)	1976	2000
Wood frame, wood shear panels (Type W1a)	1976	2000
Steel moment-resisting frame (Types S1 and S1a)	1997	2000
Steel concentrically braced frame (Types S2 and S2a)	1997	2000
Steel eccentrically braced frame (Types S2 and S2a)	1988[g]	2000
Buckling-restrained braced frame (Types S2 and S2a)	[f]	2006
Metal building frames (Type S3)	[f]	2000
Steel frame with concrete shear walls (Type S4)	1994	2000
Steel frame with URM infill (Types S5 and S5a)	[f]	2000
Steel plate shear wall (Type S6)	[f]	2006
Cold-formed steel light-frame construction—shear wall system (Type CFS1)	1997[h]	2000
Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2)	[f]	2003
Reinforced concrete moment-resisting frame (Type C1)[i]	1994	2000
Reinforced concrete shear walls (Types C2 and C2a)	1994	2000
Concrete frame with URM infill (Types C3 and C3a)	[f]	[f]
Tilt-up concrete (Types PC1 and PC1a)	1997	2000
Precast concrete frame (Types PC2 and PC2a)	[f]	2000
Reinforced masonry (Type RM1)	1997	2000
Reinforced masonry (Type RM2)	1994	2000
Unreinforced masonry (Type URM)	[f]	[f]
Unreinforced masonry (Type URMa)	[f]	[f]
Seismic isolation or passive dissipation	1991	2000

Note: This table has been adapted from ASCE 41-17 Table 3-2. Benchmark Building Codes and Standards for Life Safety Structural Performed at BSE-1E.

Note: UBC = *Uniform Building Code*. IBC = *International Building Code*.

[a] Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

[b] Buildings on hillside sites shall not be considered Benchmark Buildings.

[c] not used

[d] not used

[e] not used

[f] No benchmark year; buildings shall be evaluated in accordance with Section III.J.

[g] Steel eccentrically braced frames with links adjacent to columns shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.

[h] Cold-formed steel shear walls with wood structural panels only.

[i] Flat slab concrete moment frames shall not be considered Benchmark Buildings.

FORM 1

CERTIFICATE OF SEISMIC PERFORMANCE LEVEL

☒ **UC-Designed & Constructed Facility**

☐ **Campus-Acquired or Leased Facility**

BUILDING DATA

Building Name: Sunset Canyon Recreation Center – Santa Fe Room
Address: 111 Easton Drive
Site location coordinates: Latitude 34.075283 Longitudinal -118.451105

UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): V

ASCE 41-17 Model Building Type:

a. Longitudinal Direction: W1: Wood Light Frame
b. Transverse Direction: W1: Wood Light Frame

Gross Square Footage: 1,218
Number of stories *above* grade: 1
Number of basement stories *below* grade: 0

Year Original Building was Constructed: 1965
Original Building Design Code & Year: 1961 UBC
Retrofit Building Design Code & Code (if applicable): N/A

SITE INFORMATION

Site Class: D Basis: Assumed
Geologic Hazards:
Fault Rupture: No Basis: Beverly Hills EZRIM
Liquefaction: No Basis: Beverly Hills EZRIM
Landslide: No Basis: Beverly Hills EZRIM

ATTACHMENT

Original Structural Drawings:
Seismic Evaluation: Structural Evaluation of UCLA Sunset Canyon Recreation Center, Nabih Youssef Associates, June 27, 2014, ASCE 31/Tier 1
Retrofit Structural Drawings:

CERTIFICATION & PRESUMPTIVE RATING VERIFICATION STATEMENT

I, Nabih Youssef, a California-licensed structural engineer, am responsible for the completion of this certificate, and I have no ownership interest in the property identified above. My scope of review to support the completion of this certificate included both of the following ("No" responses must include an explanation):

a) the review of structural drawings indicating that they are as-built or record drawings, or that they otherwise are the basis for the construction of the building: ☑ Yes ☐ No
b) visiting the building to verify the observable existing conditions are reasonably consistent with those shown on the structural drawings: ☑ Yes ☐ No

Based on my review, I have verified that the UCOP Seismic Performance Level (SPL) is presumptively permitted by the following UC Seismic Program Guidebook provision (choose one of the following):

☐ 1) Contract documents indicate that the original design and construction of the aforementioned building is in accordance with the benchmark design code year (or later) building code seismic design provisions for UBC or IBC listed in Table 1 below.

☑ 2) The existing SPL rating is based on an acceptable basis of seismic evaluation completed in 2006 or later.

☐ 3) Contract documents indicate that a comprehensive[1] building seismic retrofit design was fully-constructed with an engineered design based on the 1997 UBC/1998 ***or later*** CBC, and (choose one of the following):

☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1E (or BSE-R) and BSE-2E (or BSE-C) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 CBC ***or later*** for EXISTING buildings, and is presumptively assigned an SPL rating of IV.
☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1 (or BSE-1N) and BSE-2 (or BSE-2N) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 ***or later*** CBC for NEW buildings, and is presumptively assigned an SPL rating of III.
☐ the retrofit project was not completed by the UC campus following UC policies, and is presumptively assigned an SPL rating of IV.

[1] A comprehensive retrofit addresses the entire building structural system as indicated by the associated seismic evaluation, as opposed to addressing selective portions of the structural system.

Campus: U.C.L.A.
Building Name: SNSTCYNRCSFR
CAAN ID: 4205C
Auxiliary Building ID:

UNIVERSITY OF CALIFORNIA

Date: 06/27/2019

CERTIFICATION SIGNATURE

AFFIX SEAL HERE

REGISTERED PROFESSIONAL ENGINEER
NABIH F.G. YOUSSEF
S 2026
EXP. 9/30/19
STRUCTURAL
STATE OF CALIFORNIA

Nabih Youssef
Print Name

Principal
Title

S2026
CA Professional Registration No.

09/30/2019
License Expiration Date

Signature

06/27/2019
Date

Nabih Youssef Associates, (213) 362-0707
550 S Hope Street, Suite 1700
Los Angeles, CA 90071
Firm Name, Phone Number, and Address

Table 1: Benchmark Building Codes and Standards

Building Type[a,b]	Building Seismic Design Provisions	
	UBC	IBC
Wood frame, wood shear panels (Types W1 and W2)	1976	2000
Wood frame, wood shear panels (Type W1a)	1976	2000
Steel moment-resisting frame (Types S1 and S1a)	1997	2000
Steel concentrically braced frame (Types S2 and S2a)	1997	2000
Steel eccentrically braced frame (Types S2 and S2a)	1988[g]	2000
Buckling-restrained braced frame (Types S2 and S2a)	f	2006
Metal building frames (Type S3)	f	2000
Steel frame with concrete shear walls (Type S4)	1994	2000
Steel frame with URM infill (Types S5 and S5a)	f	2000
Steel plate shear wall (Type S6)	f	2006
Cold-formed steel light-frame construction—shear wall system (Type CFS1)	1997[h]	2000
Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2)	f	2003
Reinforced concrete moment-resisting frame (Type C1)[i]	1994	2000
Reinforced concrete shear walls (Types C2 and C2a)	1994	2000
Concrete frame with URM infill (Types C3 and C3a)	f	f
Tilt-up concrete (Types PC1 and PC1a)	1997	2000
Precast concrete frame (Types PC2 and PC2a)	f	2000
Reinforced masonry (Type RM1)	1997	2000
Reinforced masonry (Type RM2)	1994	2000
Unreinforced masonry (Type URM)	f	f
Unreinforced masonry (Type URMa)	f	f
Seismic isolation or passive dissipation	1991	2000

Note: This table has been adapted from ASCE 41-17 Table 3-2. Benchmark Building Codes and Standards for Life Safety Structural Performed at BSE-1E.

Note: UBC = *Uniform Building Code*. IBC = *International Building Code*.

[a] Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

[b] Buildings on hillside sites shall not be considered Benchmark Buildings.

[c] not used

[d] not used

[e] not used

[f] No benchmark year; buildings shall be evaluated in accordance with Section III.J.

[g] Steel eccentrically braced frames with links adjacent to columns shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.

[h] Cold-formed steel shear walls with wood structural panels only.

[i] Flat slab concrete moment frames shall not be considered Benchmark Buildings.

FORM 1

CERTIFICATE OF SEISMIC PERFORMANCE LEVEL

☒ **UC-Designed & Constructed Facility**

☐ **Campus-Acquired or Leased Facility**

BUILDING DATA

Building Name: Sunset Canyon Recreation Center – Family Pool Restrooms
Address: 111 Easton Drive
Site location coordinates: Latitude 34.075283 Longitudinal -118.451105

UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): IV

ASCE 41-17 Model Building Type:

a. Longitudinal Direction: W1: Wood Light Frame
b. Transverse Direction: W1: Wood Light Frame

Gross Square Footage: 1,044
Number of stories *above* grade: 1
Number of basement stories *below* grade: 0

Year Original Building was Constructed: 1965
Original Building Design Code & Year: 1961 UBC
Retrofit Building Design Code & Code (if applicable): N/A

SITE INFORMATION

Site Class: D	Basis: Assumed
Geologic Hazards:	
Fault Rupture: No	Basis: Beverly Hills EZRIM
Liquefaction: No	Basis: Beverly Hills EZRIM
Landslide: No	Basis: Beverly Hills EZRIM

ATTACHMENT

Original Structural Drawings:
Seismic Evaluation: Structural Evaluation of UCLA Sunset Canyon Recreation Center, Nabih Youssef Associates, June 27, 2014, ASCE 31/Tier 1
Retrofit Structural Drawings:

CERTIFICATION & PRESUMPTIVE RATING VERIFICATION STATEMENT

I, Nabih Youssef, a California-licensed structural engineer, am responsible for the completion of this certificate, and I have no ownership interest in the property identified above. My scope of review to support the completion of this certificate included both of the following ("No" responses must include an explanation):

a) the review of structural drawings indicating that they are as-built or record drawings, or that they otherwise are the basis for the construction of the building: ☑ Yes ☐ No
b) visiting the building to verify the observable existing conditions are reasonably consistent with those shown on the structural drawings: ☑ Yes ☐ No

Based on my review, I have verified that the UCOP Seismic Performance Level (SPL) is presumptively permitted by the following UC Seismic Program Guidebook provision (choose one of the following):

☐ 1) Contract documents indicate that the original design and construction of the aforementioned building is in accordance with the benchmark design code year (or later) building code seismic design provisions for UBC or IBC listed in Table 1 below.

☑ 2) The existing SPL rating is based on an acceptable basis of seismic evaluation completed in 2006 or later.

☐ 3) Contract documents indicate that a comprehensive[1] building seismic retrofit design was fully-constructed with an engineered design based on the 1997 UBC/1998 ***or later*** CBC, and (choose one of the following):

☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1E (or BSE-R) and BSE-2E (or BSE-C) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 CBC ***or later*** for EXISTING buildings, and is presumptively assigned an SPL rating of IV.
☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1 (or BSE-1N) and BSE-2 (or BSE-2N) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 ***or later*** CBC for NEW buildings, and is presumptively assigned an SPL rating of III.
☐ the retrofit project was not completed by the UC campus following UC policies, and is presumptively assigned an SPL rating of IV.

[1] A comprehensive retrofit addresses the entire building structural system as indicated by the associated seismic evaluation, as opposed to addressing selective portions of the structural system.

Campus: U.C.L.A.
Building Name: SNSTCYNFPLRR
CAAN ID: 4205G
Auxiliary Building ID:

UNIVERSITY OF CALIFORNIA

Date: 06/27/2019

CERTIFICATION SIGNATURE

AFFIX SEAL HERE

Nabih Youssef — Print Name
Principal — Title

S2026 — CA Professional Registration No.
09/30/2019 — License Expiration Date

Signature
06/27/2019 — Date

REGISTERED PROFESSIONAL ENGINEER
NABIH F.G. YOUSSEF
S 2026
EXP. 9/30/19
STRUCTURAL
STATE OF CALIFORNIA

Nabih Youssef Associates, (213) 362-0707
550 S Hope Street, Suite 1700
Los Angeles, CA 90071
Firm Name, Phone Number, and Address

Table 1: Benchmark Building Codes and Standards

	Building Seismic Design Provisions	
Building Type[a,b]	**UBC**	**IBC**
Wood frame, wood shear panels (Types W1 and W2)	1976	2000
Wood frame, wood shear panels (Type W1a)	1976	2000
Steel moment-resisting frame (Types S1 and S1a)	1997	2000
Steel concentrically braced frame (Types S2 and S2a)	1997	2000
Steel eccentrically braced frame (Types S2 and S2a)	1988[g]	2000
Buckling-restrained braced frame (Types S2 and S2a)	[f]	2006
Metal building frames (Type S3)	[f]	2000
Steel frame with concrete shear walls (Type S4)	1994	2000
Steel frame with URM infill (Types S5 and S5a)	[f]	2000
Steel plate shear wall (Type S6)	[f]	2006
Cold-formed steel light-frame construction—shear wall system (Type CFS1)	1997[h]	2000
Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2)	[f]	2003
Reinforced concrete moment-resisting frame (Type C1)[i]	1994	2000
Reinforced concrete shear walls (Types C2 and C2a)	1994	2000
Concrete frame with URM infill (Types C3 and C3a)	[f]	[f]
Tilt-up concrete (Types PC1 and PC1a)	1997	2000
Precast concrete frame (Types PC2 and PC2a)	[f]	2000
Reinforced masonry (Type RM1)	1997	2000
Reinforced masonry (Type RM2)	1994	2000
Unreinforced masonry (Type URM)	[f]	[f]
Unreinforced masonry (Type URMa)	[f]	[f]
Seismic isolation or passive dissipation	1991	2000

Note: This table has been adapted from ASCE 41-17 Table 3-2. Benchmark Building Codes and Standards for Life Safety Structural Performed at BSE-1E.

Note: UBC = *Uniform Building Code*. IBC = *International Building Code*.

[a] Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

[b] Buildings on hillside sites shall not be considered Benchmark Buildings.

[c] not used

[d] not used

[e] not used

[f] No benchmark year; buildings shall be evaluated in accordance with Section III.J.

[g] Steel eccentrically braced frames with links adjacent to columns shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.

[h] Cold-formed steel shear walls with wood structural panels only.

[i] Flat slab concrete moment frames shall not be considered Benchmark Buildings.

FORM 1
CERTIFICATE OF SEISMIC PERFORMANCE LEVEL
☒ **UC-Designed & Constructed Facility**
☐ **Campus-Acquired or Leased Facility**

BUILDING DATA
Building Name: Sunset Canyon Recreation Center – Park Pool Locker Rooms
Address: 111 Easton Drive
Site location coordinates: Latitude 34.075283 Longitudinal -118.451105

UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): IV

ASCE 41-17 Model Building Type:
a. Longitudinal Direction: W1: Wood Light Frame
b. Transverse Direction: W1: Wood Light Frame

Gross Square Footage: 4,980
Number of stories *above* grade: 1
Number of basement stories *below* grade: 0

Year Original Building was Constructed: 1965
Original Building Design Code & Year: 1961 UBC
Retrofit Building Design Code & Code (if applicable): N/A

SITE INFORMATION

Site Class: D	Basis: Assumed
Geologic Hazards:	
Fault Rupture: No	Basis: Beverly Hills EZRIM
Liquefaction: No	Basis: Beverly Hills EZRIM
Landslide: No	Basis: Beverly Hills EZRIM

ATTACHMENT
Original Structural Drawings:
Seismic Evaluation: Structural Evaluation of UCLA Sunset Canyon Recreation Center, Nabih Youssef Associates, June 27, 2014, ASCE 31/Tier 1
Retrofit Structural Drawings:

CERTIFICATION & PRESUMPTIVE RATING VERIFICATION STATEMENT

I, Nabih Youssef, a California-licensed structural engineer, am responsible for the completion of this certificate, and I have no ownership interest in the property identified above. My scope of review to support the completion of this certificate included both of the following ("No" responses must include an explanation):

a) the review of structural drawings indicating that they are as-built or record drawings, or that they otherwise are the basis for the construction of the building: ☑ Yes ☐ No
b) visiting the building to verify the observable existing conditions are reasonably consistent with those shown on the structural drawings: ☑ Yes ☐ No

Based on my review, I have verified that the UCOP Seismic Performance Level (SPL) is presumptively permitted by the following UC Seismic Program Guidebook provision (choose one of the following):

☐ 1) Contract documents indicate that the original design and construction of the aforementioned building is in accordance with the benchmark design code year (or later) building code seismic design provisions for UBC or IBC listed in Table 1 below.

☑ 2) The existing SPL rating is based on an acceptable basis of seismic evaluation completed in 2006 or later.

☐ 3) Contract documents indicate that a comprehensive[1] building seismic retrofit design was fully-constructed with an engineered design based on the 1997 UBC/1998 ***or later*** CBC, and (choose one of the following):

☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1E (or BSE-R) and BSE-2E (or BSE-C) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 CBC ***or later*** for EXISTING buildings, and is presumptively assigned an SPL rating of IV.

☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1 (or BSE-1N) and BSE-2 (or BSE-2N) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 ***or later*** CBC for NEW buildings, and is presumptively assigned an SPL rating of III.

☐ the retrofit project was not completed by the UC campus following UC policies, and is presumptively assigned an SPL rating of IV.

[1] A comprehensive retrofit addresses the entire building structural system as indicated by the associated seismic evaluation, as opposed to addressing selective portions of the structural system.

Campus: U.C.L.A.
Building Name: SNSTCYNFPLLR
CAAN ID: 4205H
Auxiliary Building ID:

UNIVERSITY OF CALIFORNIA

Date: 06/27/2019

CERTIFICATION SIGNATURE

AFFIX SEAL HERE

Nabih Youssef — Print Name
Principal — Title

S2026 — CA Professional Registration No.
09/30/2019 — License Expiration Date

Signature
06/27/2019 — Date

REGISTERED PROFESSIONAL ENGINEER
NABIH F.G. YOUSSEF
S 2026
EXP. 9/30/19
STRUCTURAL
STATE OF CALIFORNIA

Nabih Youssef Associates, (213) 362-0707
550 S Hope Street, Suite 1700
Los Angeles, CA 90071
Firm Name, Phone Number, and Address

Table 1: Benchmark Building Codes and Standards

Building Type[a,b]	Building Seismic Design Provisions	
	UBC	IBC
Wood frame, wood shear panels (Types W1 and W2)	1976	2000
Wood frame, wood shear panels (Type W1a)	1976	2000
Steel moment-resisting frame (Types S1 and S1a)	1997	2000
Steel concentrically braced frame (Types S2 and S2a)	1997	2000
Steel eccentrically braced frame (Types S2 and S2a)	1988[g]	2000
Buckling-restrained braced frame (Types S2 and S2a)	[f]	2006
Metal building frames (Type S3)	[f]	2000
Steel frame with concrete shear walls (Type S4)	1994	2000
Steel frame with URM infill (Types S5 and S5a)	[f]	2000
Steel plate shear wall (Type S6)	[f]	2006
Cold-formed steel light-frame construction—shear wall system (Type CFS1)	1997[h]	2000
Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2)	[f]	2003
Reinforced concrete moment-resisting frame (Type C1)[i]	1994	2000
Reinforced concrete shear walls (Types C2 and C2a)	1994	2000
Concrete frame with URM infill (Types C3 and C3a)	[f]	[f]
Tilt-up concrete (Types PC1 and PC1a)	1997	2000
Precast concrete frame (Types PC2 and PC2a)	[f]	2000
Reinforced masonry (Type RM1)	1997	2000
Reinforced masonry (Type RM2)	1994	2000
Unreinforced masonry (Type URM)	[f]	[f]
Unreinforced masonry (Type URMa)	[f]	[f]
Seismic isolation or passive dissipation	1991	2000

Note: This table has been adapted from ASCE 41-17 Table 3-2. Benchmark Building Codes and Standards for Life Safety Structural Performed at BSE-1E.

Note: UBC = *Uniform Building Code*. IBC = *International Building Code*.

[a] Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

[b] Buildings on hillside sites shall not be considered Benchmark Buildings.

[c] not used

[d] not used

[e] not used

[f] No benchmark year; buildings shall be evaluated in accordance with Section III.J.

[g] Steel eccentrically braced frames with links adjacent to columns shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.

[h] Cold-formed steel shear walls with wood structural panels only.

[i] Flat slab concrete moment frames shall not be considered Benchmark Buildings.

STRUCTURAL EVALUATION

Of

UCLA Sunset Canyon Recreation Center

Los Angeles, CA

Prepared for:

UCLA Capital Programs
1060 Veteran Avenue
Los Angeles, CA

Prepared by:

Nabih Youssef & Associates
Structural Engineers
550 South Hope Street, Suite 1700
Los Angeles, California 90071

NYA Job # 13525.00

June 27, 2014

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0.0 EXECUTIVE SUMMARY

The objective of this report is to present the results of the structural evaluation of the existing buildings which comprise the UCLA Sunset Canyon Recreation Center site and provide a seismic rating based on the UC Seismic Rating Policy.

The Sunset Canyon Recreation Center consists of several wood framed buildings on the north side of the UCLA campus. The complex consists of eight single and two-story wood-framed structures constructed on a sloping site.

The site was visited by NYA staff to observe the general condition of the visible portions of the structures. In general, the construction of the existing buildings consists of exposed wood framing. The exposed wood appears to have visible signs of deterioration throughout the site. The most prevalent observed damage includes dry rot of exposed roof and floor beams. Destructive investigation was not performed at this time. Observations were limited to exposed visible portions of the structure.

An evaluation of the buildings was performed based on the ASCE 31, *Seismic Evaluation of Existing Buildings*. The criteria used to evaluate the performance of the building, the analysis procedures and results are discussed in this report.

Following is a list describing the seismic deficiencies, seismic rating and proposed recommendations to improve the seismic performance of each building.

BUILDING "A"

Deficiencies:
Although the concrete retaining walls on three sides of the structure provide the primary lateral resisting system for structure, the south side of the structure does not have a well-defined lateral resisting system.

UC Rating:

The concrete walls provide the primary lateral resisting system for the structure. Although a secondary lateral system is required on the south side, the existing wall siding provides some level of seismic resistance to that side of the structure. Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by wood deterioration the UC Seismic Rating for this building is **III/IV (three/four).**

Recommendations:
In order to improve the seismic performance of the structure we recommend that plywood sheathing be applied either to the interior or exterior face of the south wall and new uplift anchors be added at each end of the new wall. Due to observed roof damage, exposure and inspection of the connection between the top of the concrete wall and the wood roof framing is recommended.

BUILDING "B"

Deficiencies:
Deficiencies in this structure include: 1) the lack of continuity between the upper level shearwalls and the lower level walls, and 2) Insufficient amount of shear wall length at each floor.

UC Rating:

The existing structure has a continuous load path and the existing plywood shearwalls provide some level of seismic resistance to the structure. Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **IV (four).**

Recommendations:
In order to improve the seismic performance of the structure we recommend that the existing sheathed walls be resheathed with ½" plywood and the condition of the hold-down anchorage connections be investigated. Alternatively, new shearwalls can be provided to increase the strength capacity of the building.

BUILDING "C"
Deficiencies:
The lateral system used in this structure consists of diagonal "let-in" bracing. This archaic wood framed lateral system provides minimal seismic resistance to the structure.

The first floor diaphragm is supported on concrete wall piers along the center of the structure; therefore the wood diaphragm cantilevers from the center wall piers. The first floor wood diaphragm requires some type of lateral resisting elements to laterally support the north and south sides of the structure.

In addition, two gravity supporting posts on the north and south side were observed to have substantial deterioration at the Beam/Post connection which should be mitigated.

UC Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **V (five).**

Recommendations:

We recommend that support connections at the north and south side be mitigated as depicted in Figure 5.2.

A plywood overlay should be applied to the wall stud framing and hold-downs added.

A lateral resisting element should be provided between the slab on grade and the first floor on the north and south side of the structures to provide some lateral resistance. The lateral system can consist of diagonal rod bracing to minimize the aesthetic impact of the retrofit.

Verification of the condition of the existing Beam to Concrete Wall Piers connections should be performed.

BUILDING "D"

Deficiencies:

Due to the glass skylight openings around the perimeter of the building, the diaphragm to shearwall connection is inadequate.

UC Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **IV (four).**

Recommendations:

We recommend that the diaphragm to wall connection be strengthened to be able to deliver the seismic inertial forces to the exterior walls. This can be done by adding steel struts between the skylight openings in place of the existing wood bracing.

Verification of the condition of the existing hold-down anchors at the wall ends should be performed.

BUILDING "E"

Deficiencies:

This stair structure is seismically connected to Building D. However, the main deficiency in this building includes the lack of lateral resisting system on the south side of the structure to resist east/west seismic inertial forces.

UC Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **IV (four).**

Recommendations:

We recommend that a seismic resisting element be provided to the south elevation. This can consist of a series of diagonal steel rods between floors, down to the foundation.

Verification of the condition of the connecting elements between the roof of Building D and E

BUILDING "F"

Deficiencies:

The main deficiency in this structure consists of the lack of a defined lateral resisting system.

UC Rating:

Non-building structures are not addressed in the UC Seismic Policy; however this structure has been converted from its original use to an office space. Since this structure does not have a reliable lateral resisting system and there is evidence of visible damage to the "frame" connections, the UC Seismic Rating for this building is **V (five).**

Recommendations:

If UCLA wishes to maintain this structure as an inhabitable structure, we recommend that the lateral system be modified into a well-defined lateral system.

Alternatively, the structures can continue to be used only as outdoor shade structures with structural repairs to the existing connections and removal and replacement of deteriorated wood elements.

Deteriorated wood elements that pose a falling hazard should be removed.

BUILDING "G"

Deficiencies:

The structure consists of a structure within a structure including a roof canopy above a small wood framed office. The posts of the canopy extend into the wood framed office.

The main deficiency in office building includes the lack of lateral resisting system to the east side of the structure.

The main deficiency in this canopy structure consists of the lack of a defined lateral resisting system. The lateral systems of both structures do not appear to be detailed for compatibility which can lead to localized damage at the intersection of both building systems.

UC Rating:

Non-building structures are not addressed in the UC Seismic Policy; however this structure has been converted from its original use to an office space. Since the canopy structure does not have a reliable lateral resisting system and the lateral system for the office is not compatible with the canopy the UC Seismic Rating for this building is **V (five).**

Recommendations:

We recommend that a lateral resisting system be provided on the east elevation of the office building. The connections of the canopy to the roof of the office building should be detailed for compatibility.

BUILDING "H"

Deficiencies:

Structural drawings were not available for this structure. Based on the site observation the existing structure is a wood framed rectangular structure with solids walls on 4 sides. There are no visible signs of distress on the structure.

UC Rating:

Based on the structural observation and comparison with similar structures on the site the UC Seismic Rating for this building is **III/IV (three/four).**

Recommendations:

Verification of the existing lateral resisting system should be performed.

BUILDING "P"

Deficiencies:

No structural deficiencies have been identified for this structure.

UC Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **III (three).**

Recommendations:

Verification of the condition of the connecting elements between the wood roof and the concrete walls is recommended.

1.0 INTRODUCTION

1.1 General

The objective of this report is to present the results of the structural evaluation of the existing buildings which comprise the UCLA Sunset Canyon Recreation Center. Figure 1.1 shows a vicinity map of the site.

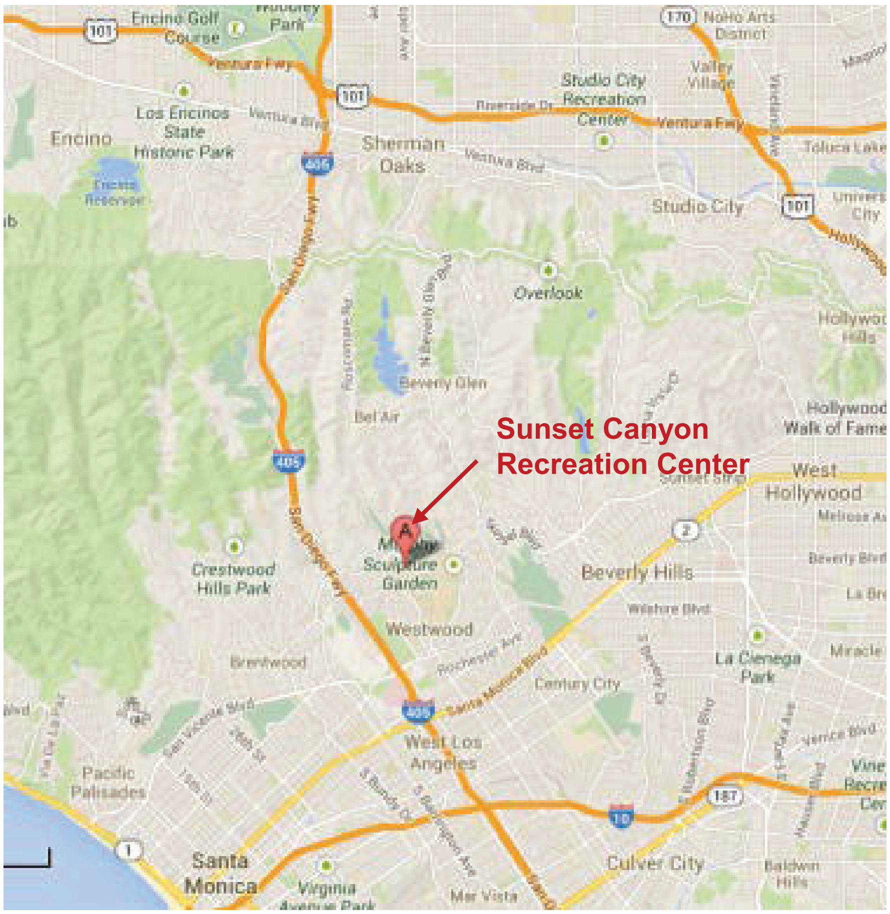


Figure 1.1 – Site Vicinity Map

The property was visited by *Nabih Youssef and Associates* (NYA) staff on January 6, 2014 and again on January 17, 2014 to observe the general condition of the visible structural elements of the existing structures. A general review of the structural elements was performed during the site visit to develop an understanding of the building construction.

The expected seismic performance of the building was determined by a site review of the buildings, review of existing structural drawings, a general seismic hazard analysis for the region, and a linear static analysis.

A conceptual strengthening scheme was developed to mitigate the structural deficiencies and improve building performance.

This evaluation of the structural system represents the opinion of *Nabih Youssef & Associates (NYA)* based on the available information. This review is not intended to preempt the responsibility of the original design consultants.

1.2 Scope of Work

The following tasks outline the scope of work for the structural evaluation of the complex:

a. Perform a site visit to observe the general condition of the structures.
b. Review existing structural reports and documents provided by the owner.
c. Identify location of visible deteriorated elements.
d. Identify gravity force resisting elements for the buildings.
e. Develop professional opinion of the adequacy of the structure to resist gravity and seismic forces based on existing conditions.
f. Provide recommendations for repair of existing deteriorated elements. Strengthening recommendations will focus on methods of improving the performance with minimal intervention to be economical, and to preserve the historical, character-defining features of the structure.
g. Perform a structural analysis of the deteriorated portions of the buildings to review for expected seismic performance.
    i. Perform a Tier 1 analysis according to ASCE-31, "Seismic Evaluation of Existing Buildings."
    ii. For items not compliant with the Tier 1 analysis, preform a Tier 2 analysis for a more detailed evaluation.
h. Develop professional structural opinion of the adequacy of the structure to resist seismic forces and provide a Rating based on the UC Seismic Policy for each building.
i. Provide preliminary strengthening recommendations based on the analysis.
    i. Strengthening recommendations will focus on methods of improving the performance with minimal intervention to be economical, and to preserve the historical, character-defining features of the structure.
j. Prepare a written report summarizing the results of the site visit, structural evaluation, and repair study.

1.3 Evaluation References

The following documents and available information were examined in the evaluation:

- Set of structural drawings "Canyon Recreation Center Project #940530 University of California, Los Angeles." prepared by Smith and Williams Architects and Engineers and John Kariotis and Associates Structural Engineers and dated 9/3/1963.
- Set of architectural and structural drawings for "Sunset Canyon Recreation Center Dry Rot Reconstruction" prepared by A Whittle Associates, Inc. Architects and dated 6/29/1981
- Sunset Canyon Recreation Center Historic Resource Evaluation prepared by Page & Turnbull and dated 10/21/2013
- Wood Destroying Pests and Organisms Inspection Report prepared by Terminix and dated 10/5/2013.

- Structural Repair Drawings prepared by TMAD Taylor *& Gaines and dated 11/03/2010
- UC Seismic Safety Policy; Effective Date August 25, 2011

2.0 SITE DESCRIPTION

2.1 General

The Sunset Canyon Recreation Center consists of several wood framed buildings on the north side of the UCLA campus. The complex consists of eight single and two-story wood-framed structures constructed on a sloping site. Figure 2.1 shows a plan view of the site.

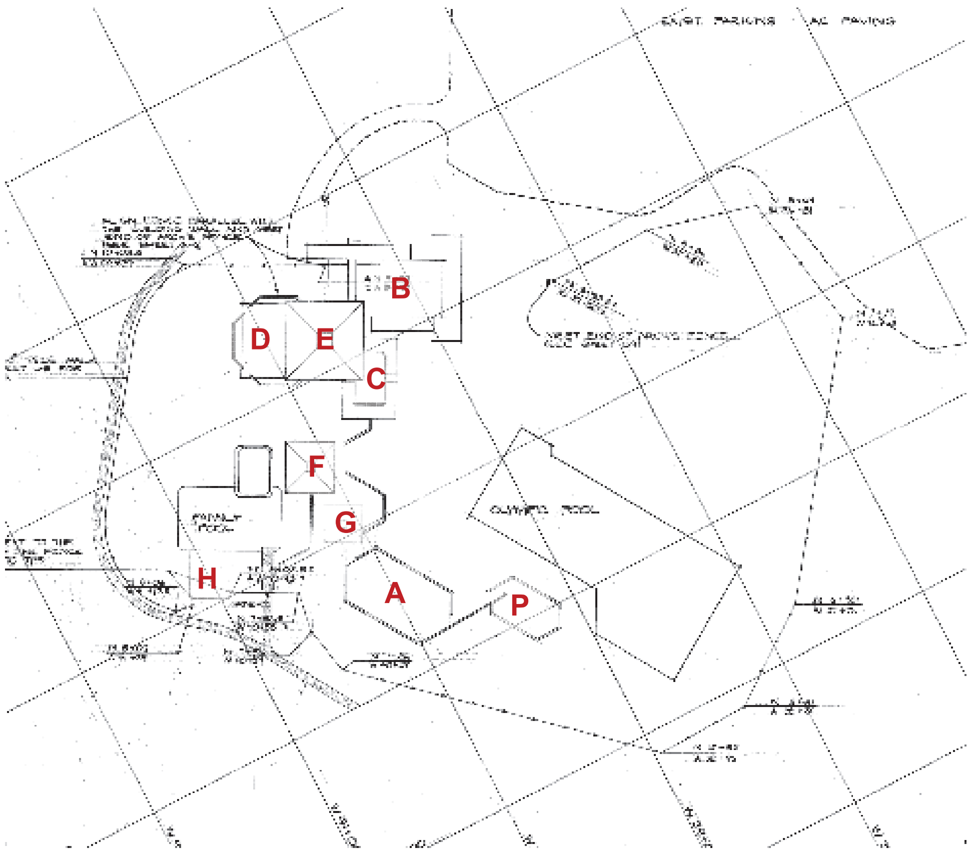


Figure 2.1 – Plan View of Site

The structures are referenced as follows throughout this report:

Building A: Locker Rooms
Building B: Office/Storage/Ticketing/Multi-Purpose Room/Kitchen
Building C: Meeting Room
Building D: Multi-Purpose Room
Building E: Stair Tower/Restrooms/Office
Building F: Poolside Office
Building G: Offices
Building H: Bathroom
Building P: Pool Equipment Room

Following is a description of the structural systems of each building.

2.2 Gravity System – Building A

Building A is a single story hexagonal shaped building approximately 2600 sf in plan. Photo 2.1 depicts the north elevation of the structure.

The gravity framing system typically consists of the following:

- ½"thick plywood sheathing spans between wood joists to support the roof.
- Typically 2x8 wood joists, spaced at 16" on center, span the short direction of the building and are supported by interior bearing walls or wood beams to the concrete retaining wall on the south and wood header on the exterior north wall.
- The interior wood beams are supported by the 3" diameter steel columns. The exterior header beam on the south wall is supported by 8x8 wood posts spaced approximately at 7'-7" on center.
- The foundation system consists of a series of deep concrete caissons, interconnected by concrete grade beams. The caissons support the posts, bearing walls and retaining wall. A 5" thick concrete slab-on-grade forms the first floor.

2.3 Lateral System – Building A

The seismic system of the building typically consists of the following:

- The wood roof sheathing acts as a structural diaphragm that transfers seismic inertial forces to vertical resisting elements.
- The concrete retaining wall on the south provides the primary vertical resisting system on 3 sides of the structure. The north side appears to lack a structural resisting system, however, the exterior wood siding and interior wall finishes do provide some level of seismic resistance.

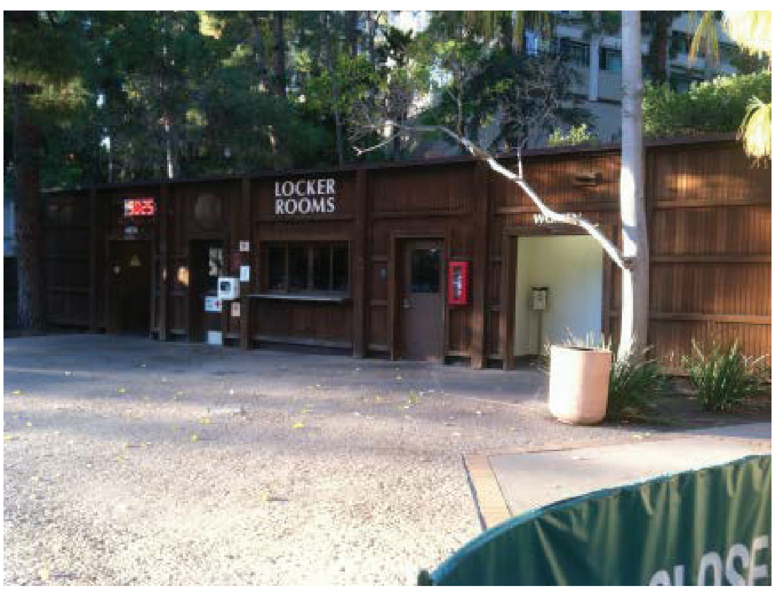


Photo 2.1: Building A

2.4 Gravity System – Building B

Building B is a two-story rectangular shaped building approximately 4000 sf in plan. Photo 2.2 depicts the north elevation of the structure.

The gravity framing system typically consists of the following:

- 5/16"thick plywood sheathing over 2x6" tongue and groove decking spans between wood beams to support the roof.
- Typically 6x10 wood beams, spaced at 48" on center, span the east/west direction of the building. The beams are supported by Glu-Lam wood girders.
- The girders are typically 2-5-1/4" x13" glu-lam beams. The girders span to 8x8 wood posts.
- The 8x8 wood posts are supported by the 2nd floor wood girders.
- ½" plywood sheathing spans between the floor joists.
- Typically, 2"x14" wood joists support the floor sheathing and are spaced at 16" on center.
- At the perimeter of the 2nd floor, an open wood deck spans between the glu-lam beams.
- The floor joists span between and are supported by 2 - 5-1/4" x 21-1/2" deep glu-lam beams.
- The glu-lam beams are supported by 8x8 wood posts. The wood posts extend down to the foundation.
- The foundation system consists of a series of deep concrete caissons, interconnected by concrete grade beams. The caissons support the wood posts. A concrete slab-on-grade forms the first floor.

2.5 Lateral System – Building B

The seismic system of the building typically consists of the following:

- The floor and wood roof sheathing acts as a structural diaphragm that transfers seismic inertial forces to vertical resisting elements.
- At the 2nd floor, wood framed walls sheathed with 3/8" thick plywood at the perimeter of the structure provide the lateral resisting system of the building.
- At the first floor level, 3 – U-shaped walls sheathed with 3/8" plywood provide the lateral resisting system for the structure. The location of the walls on the upper and lower levels are not continuous.

Photo 2.2: Building B

2.6 Gravity System – Building C

Building C is a single-story rectangular shaped building approximately 700 sf in plan. It sits above a concrete retaining wall, with open area below the main floor level. Photo 2.3 depicts the west elevation of the structure.

The gravity framing system typically consists of the following:

- ½″ thick sheathing spans between wood joists to support the roof.
- The roof framing consists of 2x10 wood joists spaced at 16″ on center.
- The wood joists span in the north/south direction to the exterior bearing wall on the south and a wood header beam on the north.
- The west side header beam spans between 4x4 wood posts. The posts are supported by the 2nd floor framing.
- 3″ wood decking spans between the floor beams.
- 6″x12″ or 10″x12″ wood beams support the floor decking. The beams are spaced at 5′-0″ on center.
- The floor beams are supported by 8x8 wood posts on the east side, and a concrete retaining wall on the interior, mid-span of the floor framing.
- The foundation system consists of a shallow concrete footings,

2.7 Lateral System – Building C

The seismic system of the building typically consists of the following:

- The floor decking and wood roof sheathing acts as a structural diaphragm that transfers seismic inertial forces to vertical resisting elements.

- Wood framed walls are braced in plane, on 3 sides with 1"x4" "let-in" diagonal wood bracing. The west elevation appears to lack a lateral resisting system, however a short 4'-0" length of wall with exterior wood siding can provide some level of seismic resistance.
- At the raised first floor, concrete retaining wall with thickened pilasters provides the lateral resisting system for the structure.

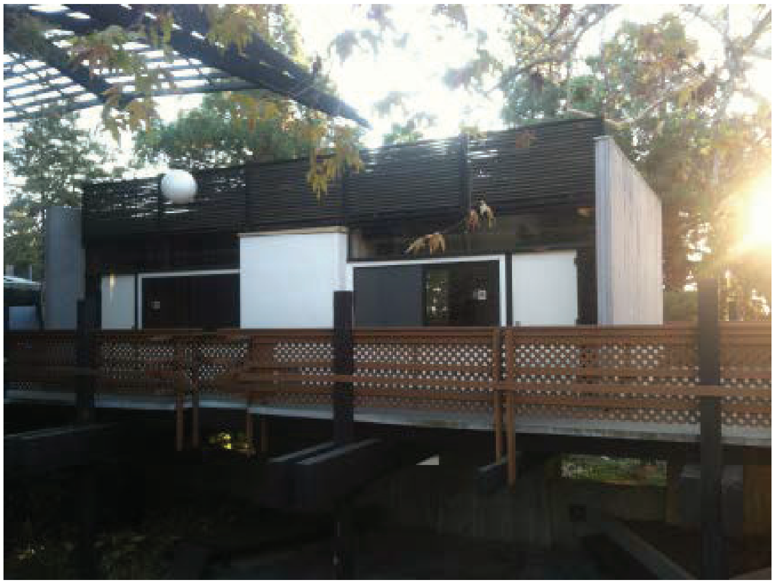


Photo 2.3: Building C

2.8 Gravity System – Building D

Building D is a single story octagonal shaped building approximately 2400 sf in plan. Photo 2.4 depicts the west elevation of the structure.

The gravity framing system typically consists of the following:

- ½"thick sheathing spans between wood joists to support the roof.
- Typically 2x12 or 2x8 wood joists, spaced at 24" on center, span the north/south direction of the building and are supported by steel beams.
- Wide flange shaped steel beams support the wood roof joists and are supported by 8x8 wood posts.
- The foundation system consists of a series of deep concrete caissons, at the perimeter of the building and single deep caissons below each support post.

2.9 Lateral System – Building D

The seismic system of the building typically consists of the following:

- The wood roof sheathing acts as a structural diaphragm that transfers seismic inertial forces to vertical resisting elements.
- The exterior wood framed walls with 3/8" thick sheathing provide the primary vertical resisting system the perimeter of the structure.

Photo 2.4: Building D

2.10 Gravity System – Building E

Building E is a 3-level stair structure that connects the upper, middle, and upper levels of the sloped site. Photo 2.5 depicts the north elevation of the structure.

The gravity framing system typically consists of the following:

- The upper trellis roof framing consists of diagonal wood struts and tension rods.
- The trellis roof is supported on 4 – 8x8 wood posts.
- The wood posts are supported on 4- deep concrete caissons.
- A glass enclosure and wood framed roof within the 4 posts creates this building.

2.13 Lateral System – Building E

The seismic system of the building typically consists of the following:

- The diagonal wood struts and tension rods act as a horizontal truss to transfer seismic inertial forces to the vertical resisting elements.
- The wood roof sheathing above the office enclosure acts as a structural diaphragm to transfer seismic inertial forces to vertical resisting elements.
- The 4 wood posts of the trellis provide some level of seismic resistance to the trellis roof. The detailing is such that the wood posts and beams can behave as a wood frame to resist seismic inertial forces.

- The roof and floor landing levels are laterally connected to the Building D roof and floor slab to resist out-of-plane seismic loads and in-plane loads on the west side.
- The east elevation does not have a vertical resisting system for loads in the north/south direction.

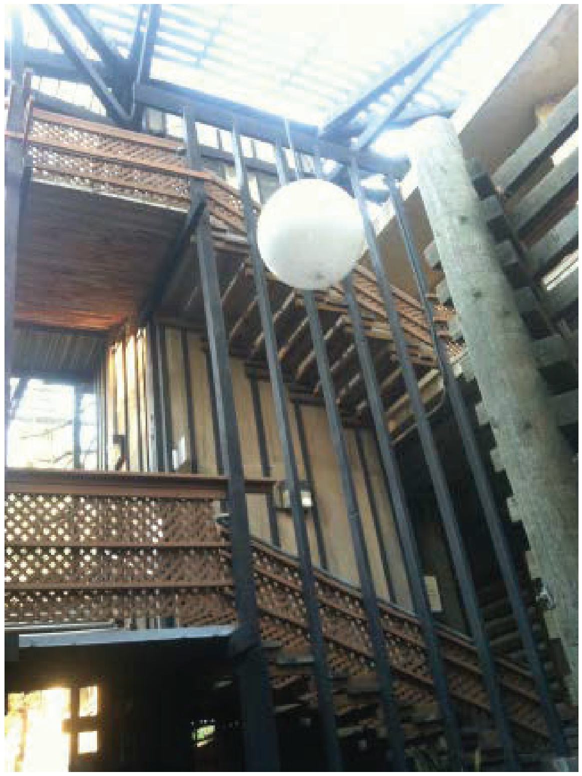


Photo 2.5: Building E

2.12 Gravity System – Building F

Building F is a single story rectangular shaped building approximately 100 sf in plan. The structure is constructed within a Pop-Up wood trellis. The pop-up roof measures approximately 900 sf in plan. Photo 2.6 depict the west elevation of Building F.

The gravity framing system typically consists of the following:

- The upper trellis roof framing consists of diagonal wood struts and tension rods.
- The trellis roof is supported on 4 – 8x8 wood posts.
- The wood posts are supported on 4- deep concrete caissons.
- A glass enclosure and wood framed roof within the 4 posts creates this building.

2.13 Lateral System – Building F

The seismic system of the building typically consists of the following:

- The diagonal wood struts and tension rods act as a horizontal truss to transfer seismic inertial forces to the vertical resisting elements.

- The wood roof sheathing above the office enclosure acts as a structural diaphragm to transfer seismic inertial forces to vertical resisting elements.
- The 4 wood posts of the trellis provide some level of seismic resistance to the trellis roof. The detailing is such that the wood posts and beams can behave as a wood frame to resist seismic inertial forces.

Photo 2.6: Building F

2.14 Gravity System – Building G

Building G is a single story rectangular shaped building approximately128 sf in plan. The structure is constructed below a Pop-Up wood trellis. The wood pop-up roof trellis measures approximately 570 sf in plan. Photo 2.7 depicts the north elevation of Building G.

The gravity framing system typically consists of the following:

- Wood sheathing spans between wood joists to support the roof of the offices.
- The upper trellis roof framing consists of diagonal wood struts and tension rods.
- Typically 2x6 wood joists, spaced at 16″ on center, span the short direction of the building and are supported by exterior wood bearing wall on the west and a wood header on the east.
- The exterior wood bearing wall on 3 sides supports the low roof. The trellis roof is supported on 4 – 8x8 wood posts.
- The bearing walls are supported partially by a 4″ Slab-on-grade, and a 7″ thick partial basement roof slab.
- The basement roof slab is supported by 8″ thick concrete retaining walls which are supported by deep concrete caissons.
- The foundation system of the trellis consists of 4 – 8′-0″ deep concrete caissons interconnected with concrete grade beams.

2.15 Lateral System – Building G

The seismic system of the building typically consists of the following:

- The diagonal wood struts and tension rods act as a horizontal truss to transfer seismic inertial forces to the vertical resisting elements.
- The wood roof sheathing above the offices acts as a structural diaphragm to transfer seismic inertial forces to vertical resisting elements.
- The 4 wood posts of the trellis provide some level of seismic resistance to the trellis roof. The detailing is such that the wood posts and beams can behave as a wood frame to resist seismic inertial forces.
- On three sides of the offices, wood shearwalls provide the primary lateral resisting system of the structure. The north side of the offices do not appear to have a lateral resisting system.

Photo 2.7: Building G

2.16 Gravity System – Building H

Building H is a single story rectangular shaped building approximately 100 sf in plan. Structural drawings were not available for this structure.
The following descriptions are based on the site observation and comparison to other similar structures on the site.

The gravity framing system typically consists of the following:

- Wood sheathing spans between wood joists to support the roof.
- Roof joists support the wood framing, typically spaced at 16” o.c.
- The roof joists span to the exterior walls of the structure.
- The foundation system of this structure is unknown, but is most likely supported on concrete caissons.

2.17 Lateral System – Building H

The seismic system of the building typically consists of the following:

- The wood roof sheathing acts as a structural diaphragm to transfer seismic inertial forces to vertical resisting elements.
- On four sides of the structure, wood shearwalls provide the primary lateral resisting system of the structure.

Photo 2.8: Building H

2.18 Gravity System – Building P

Building P is a single story hexagonal shaped building approximately 1100 sf in plan. Photo 2.8 depicts the north elevation of the building.

The gravity framing system typically consists of the following:

- 3/8″thick wood sheathing spans between wood joists to support the roof.
- Typically 2x14 wood joists, spaced at 16″ on center, span the short direction of the building and are supported by exterior bearing walls
- The exterior bearing walls consist of 8″ thick concrete walls. The south side wall also retains the soil against the hillside.
- The foundation system consists of a series of deep concrete caissons. The caissons support perimeter concrete walls. A 4″ thick concrete slab-on-grade forms the first floor.

2.19 Lateral System – Building P

The seismic system of the building typically consists of the following:

- The wood roof sheathing acts as a structural diaphragm to transfer seismic inertial forces to vertical resisting elements.

- The perimeter concrete retaining walls provides the vertical resisting system of the structure.

Photo 2.8: Building P

3.0 FIELD OBSERVATIONS

3.1 General

The property was visited by *Nabih Youssef and Associates* (NYA) staff on January 6, 2014 and again on January 17, 2014 to observe the general condition of the visible structural elements of the existing structures. Destructive investigation was not performed for this review. A general review of the structural elements was performed during the site visit to develop an understanding of the building construction.

3.2 Structural Observations

In general, the construction of the existing buildings consists of exposed wood framing. The exposed wood appears to have visible signs of deterioration throughout the site. The most prevalent observed damage includes dry rot of exposed roof and floor beams.

In addition, the following observations were made:

- Building A: No visible damage observed.
- Building B: Dry rot of wood framing above exterior walkway. Intermediate trellis framing had been removed due to substantial damage prior to our visit.

Photo 3.1: Exterior Walkway at Building B – Beam Damage

- Building C: Dry rot damage similar to Building A. An interior roof beam appears to have excessive deflection relative to the adjacent beams. See Photo 3.2. Below the floor level the exposed Floor Girder to Post connections appear to have extensive deterioration at 2 post locations. The base of the wood post to foundation has extensive wood deterioration.

Photo 3.2 : Interior Building C – Deflected Roof Beam

- Building D: Floor cracks adjacent to the fireplace on the north side of the structure. Concrete slab cracks at the connection between the stair (Building E) and the floor.

Photo 3.3: Interior Building D – Concrete Cracks at Stage

- Building E: Concrete slab cracks at the connection between the stair and Building D.

Photo 3.4: Building D/F: Concrete Slab Cracks at Connection

- Building F: No visible damage observed.
- Building G: No visible damage observed on the building. The walkway cover between Building G and Building C had dry rot damage of the wood beams and deterioration of the steel anchor plates at the posts. Intermediate trellis framing had been removed due to substantial damage prior to our visit.

Photo 3.5: Trellis Post to Slab Connection

- Building H: No visible damage observed on the building.
- Building P: Water damage and/or dry rot of the wood sheathing on the north side of the structure.

Photo 3.6: Building P: Roof Sheathing Damage

4.0 BUILDING PERFORMANCE IN EARTHQUAKES

An evaluation of the buildings was performed based on the ASCE 31, *Seismic Evaluation of Existing Buildings*. The criteria used to evaluate the performance of the building, the analysis procedures, results, and UC Seismic Rating, as described in Appendix A.2, are discussed in the following sections.

4.1 Evaluation Criteria

The ASCE 31 standard, *Seismic Evaluation of Existing Buildings* provides guidelines for evaluating existing buildings. The procedure consists of a Tier 1 evaluation based on review of existing drawings and visual observation and a Tier 2 evaluation when the recommended criteria specified in the Tier 1 evaluation are not met. Following is a summary of the results of our evaluation based on the specified criterion.

4.2 Structural Performance in Earthquakes

For each building, several items were found to be non-compliant. Items found to be non-compliant require further investigation of the building.

4.2.1 Building A

Hillside Site:

The existing retaining walls surrounding the structure on three sides provide the primary lateral resistance for the building. The roof diaphragm of the existing structure is utilized to transfer seismic inertial forces to the structure as well as horizontal soil pressures from the hillside. The soil loads and seismic loads are transferred to interior wood framed walls which deliver the lateral loads to the foundations.

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Due to the condition of the exposed wood framing throughout the site, limited intrusive investigation is recommended to determine the cause and relative magnitude of the damage and the effects it may have to the seismic resisting system of the building. The seismic rating assigned to each building assumes that the connections of the lateral resisting system have not been affected by the wood deterioration.

Deterioration of Concrete:

There were no visible signs of spalled concrete around this building.

Load Path:

The typical seismic load path in a structure is from the diaphragm, to the walls, to the foundations, to the soil. Additional investigation is required to confirm that there is a positive connection between the concrete walls as detailed in Figure 4.1. Also along the north side of the structure, the wood walls do not appear to have a competent lateral resisting element, such as plywood sheathing. Verification of plywood sheathing on the south side of the wall is recommended. Structural detailing indicates that the wood sills are anchored to the foundation.

Concrete Wall Anchorage:

Exterior concrete walls that are dependent on wood diaphragms for lateral support require anchorage for out of plane forces at each diaphragm level. The structural repair drawings, prepared in 1981, for the rehab of the pool equipment room (Building P) indicate the addition of horizontal wall anchors at the top of the concrete wall to the wood roof framing. She Figure 4.1. A similar repair detail to Building B is required.

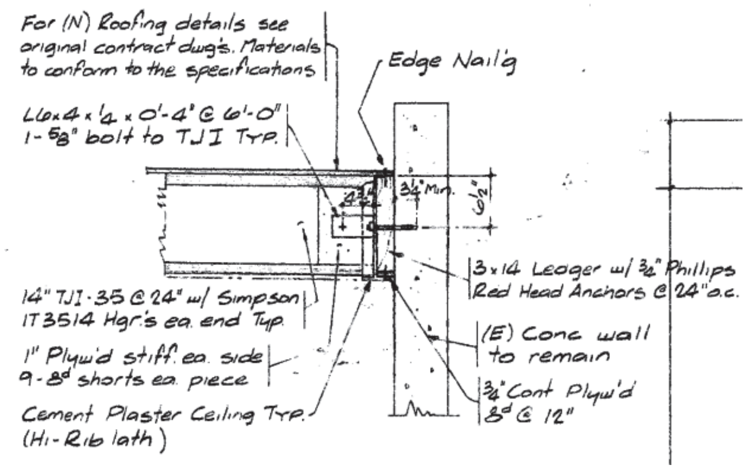


Figure 4.1: Out-of-plane Wall Anchor

Wood Posts:

A positive connection between the beams and posts and posts and foundation is required. Structural detailing indicates that the posts are positively connected to the beams and foundations. Based on the exposed deterioration of the post bases, it is recommended that limited intrusive investigation be provided to verify adequacy of the post to foundation connections.

Shear Stress:

The south side of the building exceeds the allowable shear stress for non-structural sheathing such as gyp-board and wood siding, therefore plywood sheathing applied to the south wall is recommended.

UC Seismic Rating:

The concrete walls provide the primary lateral resisting system for the structure. Although a secondary lateral system is required on the south side, the existing wall siding provides some level of seismic resistance to that side of the structure. Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by wood deterioration the UC Seismic Rating for this building is **III/IV (three/four).**

4.2.2 Building B

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Due to the condition of the exposed wood framing throughout the site, limited intrusive investigation is recommended to determine the cause and relative magnitude of the damage and the effects it may have to the seismic resisting system of the building. Structural Repair drawings dated 2010 were provided which indicate that some of the floor and roof girders have been classified to be in poor condition. It is unclear if repair of these girders has been performed.

Load Path:

The typical seismic load path in a structure is from the diaphragms, to the walls, to the foundations, to the soil. Structural detailing indicates that there is a complete seismic load path between of the lateral resisting system, including, diaphragm to shearwall connections, shearwall to sill plate connection, and uplift anchors at shearwall ends. However, the second floor shearwalls are discontinuous, in that they do not line up with the walls first floor shearwalls. However, the second floor sherawalls are supported by heavy glu-lam beams to provide a means to transfer the overturning forces to the foundations. Intrusive investigation is recommended to determine the condition of the existing connection between the upper shearwalls and the support beams.

Wood Posts: A positive connection between the beams and posts and posts and foundation is required. Structural detailing indicates that the posts are positively connected to the beams and foundations. Based on the exposed deterioration of the post bases, it is recommended that limited intrusive investigation be provided to verify adequacy of the post to foundation connections.

Shear Stress:

A seismic analysis of the existing structure indicates that the amount of shearwalls are insufficient to resist the seismic demands of the evaluation criteria. We recommend that existing walls be sheathed with new plywood to increase the shear capacity of the existing structure.

UC Seismic Rating:

The existing structure has a continuous load path and the existing plywood shearwalls provide some level of seismic resistance to the structure. Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **IV (four).**

4.2.3 Building C

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Due to the condition of the exposed wood framing throughout the site, limited intrusive investigation is recommended to determine relative magnitude of the damage and the effects it may have to the seismic resisting system of the building. Structural repair drawings dated 2010 indicate that the some of the floor girders and floor joists appear to be in poor condition. It is unclear if the members indicated in the report have been repaired.

Load Path:

The typical seismic load path in a structure is from the diaphragms, to the walls, to the foundations, to the soil. Structural detailing indicates that there is a complete seismic load path between of the lateral resisting system, including, diaphragm to shearwall connections, shearwall to sill plate connection, and uplift anchors at shearwall ends. At the base of the structure, concrete wall piers transfer the seismic inertial forces to the foundation. Due to the condition of the exposed wood framing, limited intrusive investigation is recommended to determine the condition of the existing connection between the upper shearwalls and the concrete piers.

Wood Posts: A positive connection between the beams and posts and posts and foundation is required. Structural detailing indicates that the posts are positively connected to the beams and foundations. Based on the exposed deterioration of the post bases, it is recommended that limited intrusive investigation be provided to verify adequacy of the post to foundation connections.

Shear Stress:

A seismic analysis of the existing structure indicates that the amount of shearwalls are insufficient to resist the seismic demands of the evaluation criteria. The north side of the building appears to be lacking any lateral resisting element. We recommend that existing walls be sheathed with new plywood to increase the shear capacity of the existing structure and small wall piers or frame be added to the north side of the building.

UC Seismic Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **V (five).**

4.2.4 Building D

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Due to the condition of the exposed wood framing throughout the site, limited intrusive investigation is recommended to determine the cause and relative magnitude of the damage and the effects it may have to the seismic resisting system of the building.

Load Path:

The typical seismic load path in a structure is from the diaphragms, to the walls, to the foundations, to the soil. Structural detailing indicates that there is a complete seismic load path between of the lateral resisting system, including, diaphragm to shearwall connections, shearwall to sill plate connection, and uplift anchors at shearwall ends. The roof diaphragm includes large skylight openings on all 4 sides which increases the shear stress demand to of the diaphragm at the connections to the shearwalls. Due to the condition of the exposed wood framing, limited intrusive investigation is recommended to determine the condition of the existing connection between the roof diaphragm and the exterior walls.

Wood Posts: A positive connection between the beams and posts and posts and foundation is required. Structural detailing indicates that the posts are positively connected to the beams and foundations. Based on the exposed deterioration of the post bases, it is recommended that limited intrusive investigation be provided to verify adequacy of the post to foundation connections.

Shear Stress:

A seismic analysis of the existing structure indicates that the amount of shearwalls are adequate to resist the seismic demands of the evaluation criteria.

UC Seismic Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **IV (four).**

4.2.5 Building E

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Due to the condition of the exposed wood framing throughout the site, limited intrusive investigation is recommended to determine the cause and relative magnitude of the damage and the effects it may have to the seismic resisting system of the building.

Load Path:

The typical seismic load path in a structure is from the diaphragms, to lateral resisting elements, to the foundations, to the soil. Structural detailing indicates that there is a complete seismic load path for seismic forces in the north/south direction. The stair structure relies on its connection to Building D for seismic resistance in the north south direction. The east/west direction, i.e. the south side of the stair, does not have a lateral resisting system. New Tension Rod Bracing can be provided to resist seismic inertial forces in the east/west direction.

Due to the condition of the exposed wood framing, limited intrusive investigation is recommended to determine the condition of the existing connection between the roof diaphragm and the exterior walls.

Wood Posts: A positive connection between the beams and posts and posts and foundation is required. Structural detailing indicates that the posts are positively connected to the beams and foundations. Based on the exposed deterioration of the post bases, it is recommended that limited intrusive investigation be provided to verify adequacy of the post to foundation connections.

UC Seismic Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **IV (four).**

4.2.6 Building F

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Structural Repair drawings dated 2010 indicate that some roof girders are in poor condition and require replacement.

Load Path:

The existing structure is an infill of the existing wood trellis. The lateral system of the wood trellis consists of the wood roof framing acting as a structural diaphragm to transfer seismic inertial forces to the vertical resisting elements. The lateral resisting system of the trellis is detailed as if the wood columns were cantilevered off of the foundation. The columns are supported on the deep drilled piers.

Due to the condition of the exposed wood framing, limited intrusive investigation is recommended to determine the condition of the existing connection between the wood posts and the foundations.

Wood Posts: A positive connection between the beams and posts and posts and foundation is required. Structural detailing indicates that the posts are positively connected to the beams and foundations.

UC Seismic Rating:

Non-building structures are not addressed in the UC Seismic Policy; however this structure has been converted from its original use to an office space. Since this structure does not have a reliable lateral resisting system and there is evidence of visible damage to the “frame” connections, the UC Seismic Rating for this building is **V (five).**

4.2.7 Building G

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Due to the condition of the exposed wood framing throughout the site, and existing repair drawings, limited intrusive investigation is recommended to determine the relative magnitude of the damage and the effects it may have to the seismic resisting system of the building.

Load Path:

The existing structure is actually a lower structure below an upper trellis. The lateral system of the wood trellis consists of the wood roof framing acting as a structural diaphragm to transfer seismic inertial forces to the vertical resisting elements. The lateral resisting system of the trellis is detailed as if the wood columns were cantilevered off of the foundation. The columns are supported on the deep drilled piers. The lateral system of the lower structure consists a wood roof diaphragm which transfers lateral forces to the shearwalls on 3 sides. The east side of the building is missing a lateral resisting system.

Due to the condition of the exposed wood framing, limited intrusive investigation is recommended to determine the condition of the existing connection between the wood posts and the foundations.

Wood Posts: A positive connection between the beams and posts and posts and foundation is required. Structural detailing indicates that the posts are positively connected to the beams and foundations. Based on the exposed deterioration of the post bases, it is recommended that limited intrusive investigation be provided to verify adequacy of the post to foundation connections

UC Seismic Rating:

Non-building structures are not addressed in the UC Seismic Policy; however this structure has been converted from its original use to an office space. Since the canopy structure does not have a reliable lateral resisting system and the lateral system for the office is not compatible with the canopy the UC Seismic Rating for this building is **V (five).**

4.2.8 Building H

Load Path:

The typical seismic load path in a structure is from the diaphragms, to the walls, to the foundations, to the soil. Based on the structural observation, there appears to be a complete seismic load path between of the lateral resisting system, including, diaphragm to shearwall connections, shearwall to sill plate connection, and uplift anchors at shearwall ends.

Shear Stress:

A seismic analysis of the existing structure was not performed for this structure. However, based on the size of the structure and the fact that there are no openings in any of the perimeter walls, we believe that the existing structure is adequate to support seismic induced lateral forces.

UC Seismic Rating:

Based on the structural observation and comparison with similar structures on the site the UC Seismic Rating for this building is **III/IV (three/four).**

4.2.9 Building P

Hillside Site:

The existing retaining walls surrounding the structure on three sides provide the primary lateral resistance for the building. The roof diaphragm of the existing structure is utilized to transfer seismic inertial forces to the structure as well as horizontal soil pressures from the hillside. The soil loads and seismic loads are transferred to interior wood framed walls which deliver the lateral loads to the foundations.

Deterioration of Wood:

The condition of the wood in a structure has a direct relationship to its performance in a seismic event. Wood that is split, rotten or has insect damage may have a lower capacity to resist loads imposed by earthquakes. Due to the condition of the exposed wood framing throughout the site, limited intrusive investigation is recommended to determine the relative magnitude of the damage and the effects it may have to the seismic resisting system of the building.

Deterioration of Concrete:

There were no visible signs of spalled concrete around this building.

Load Path:

The typical seismic load path in a structure is from the diaphragm, to the walls, to the foundations, to the soil. Structural repair drawings dated 1981 indicate the addition of out-of-plane wall anchors between the concrete walls and roof diaphragm as depicted in Figure 4.1. Additional investigation is required to confirm that there is a positive connection between the concrete walls. Structural detailing indicates that the concrete walls are connected to the foundation.

Concrete Wall Anchorage:

Exterior concrete walls that are dependent on wood diaphragms for lateral support require anchorage for out of plane forces at each diaphragm level. The structural repair drawings, prepared in 1981, for the rehab of the pool equipment room (Building P) indicate the addition of horizontal wall anchors at the top of the concrete wall to the wood roof framing.

Shear Stress:

The concrete walls are adequate to resist seismic inertial forces as required by the evaluation standard.

UC Seismic Rating:

Based on the structural analysis and the assumption that the connections of the primary lateral force resisting system have not been adversely affected by the wood deterioration the UC Seismic Rating for this building is **III (three).**

5.0 RECOMMENDATIONS

Based on our evaluation each structure appears to contain some level of seismic resistance and a complete gravity load path. However, based on the observed visual deterioration of the wood we recommend that additional intrusive discover be provided to verify is required to determine the relative magnitude of the damage and the effects it may have to the seismic resisting system of the building. In addition to the intrusive investigation, following is our recommendations for each structure.

5.1 Building A

The concrete retaining wall of the structure provides the lateral resisting system for this structure on three sides. The north side of the structure appears to lack a lateral resisting element. In order to meet the design intent of the code, we recommend that plywood sheathing be applied either to the interior or exterior face of the north wall and new uplift anchors be added at each end of the walls.

Due to observed roof damage, exposure and inspection of the connection between the top of the concrete wall and the wood roof framing is recommended.

5.2 Building B

The main deficiency in this building is the lack of continuity between the upper level shearwalls and the lower level walls as well as the insufficient amount of shear length at each floor. We recommend that additional sheathing be applied to the existing walls on both the lower and upper floors. Alternatively, new shearwalls can be provided to increase the strength capacity of the building.

Verification of the condition of the existing hold-down anchors should be performed.

5.3 Building C

The main deficiency in this building is the insufficient amount of shear wall length around the building. A plywood overlay should be applied to the wall stud framing and hold-downs added to mitigate this deficiency.

A lateral resisting element should be provided on the north and south side of the structures between the first floor and foundation level to provide some lateral resistance The lateral system can consist of diagonal rod bracing to minimize the aesthetic impact of the retrofit.

Verification of the condition of the existing hold-down anchors should be performed, as well as the connection between the floor deck and the concrete piers.

We recommend that the 3 support connections identified in Figure 5.1 should be repaired as depicted in Figure 5.2.

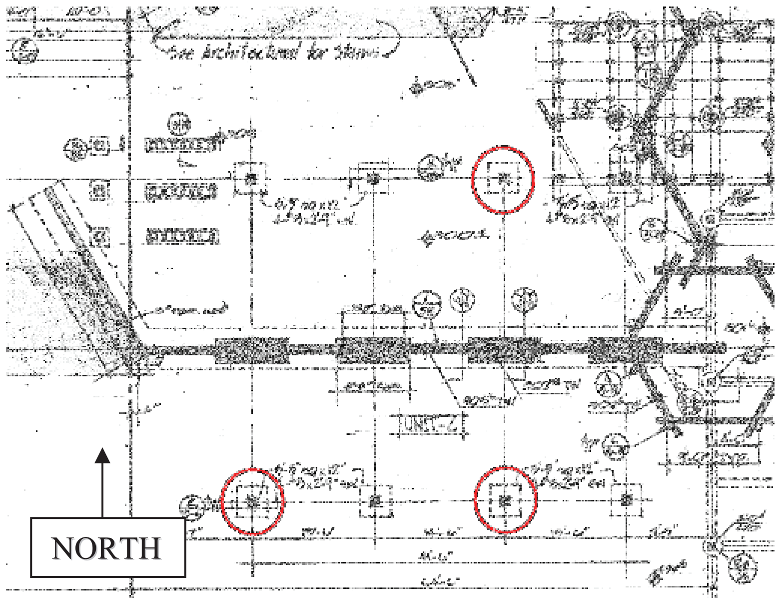


Figure 5.1: Building C Plan: Posts Requiring Immediate Repair

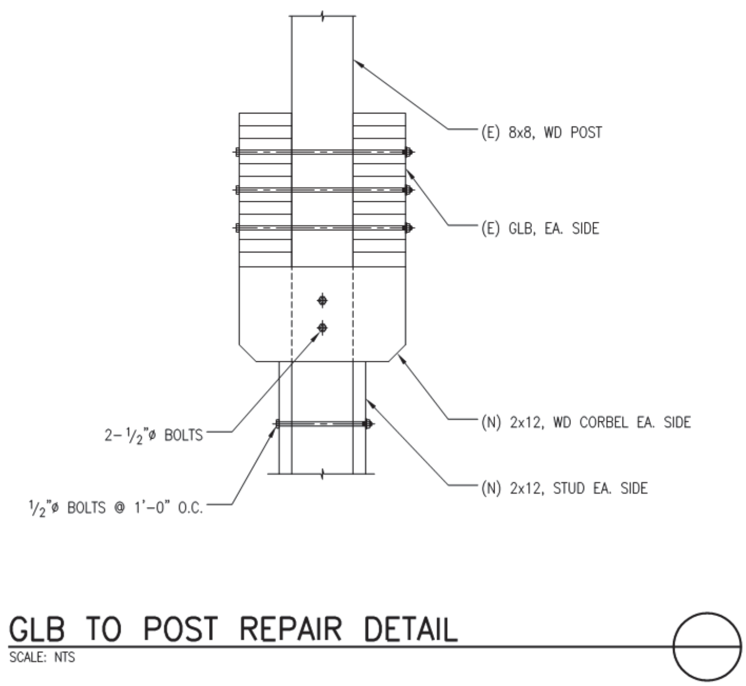


Figure 5.2: Recommended Repair Detail

5.4 Building D

The main deficiency in this building is the insufficient length between the diaphragm and wall connections. We recommend that the diaphragm to wall connection be strengthened to deliver the seismic inertial forces to the exterior walls. This can be done by adding steel struts between the skylight openings in place of the existing wood bracing.

Verification of the condition of the existing hold-down anchors at the wall ends should be performed.

5.5 Building E

The main deficiency in this building includes the lack of lateral resisting system to the south side of the structure. We recommend that a seismic resisting element be provided to the east elevation. This can consist of a series of diagonal steel rods between floors, down to the foundation.

Verification of the condition of the connecting elements between the roof of Building D and E

5.6 Building F

The main deficiency in this building includes the lack of a defined lateral resisting system. We recommend that the lateral system be modified into a well-defined lateral system.

Verification of the condition of post to foundation connection is recommended.

5.7 Building G

The main deficiency in this building includes the lack of lateral resisting system to the east side of the structure. We recommend that a lateral resisting system be provided on the north elevation. Alternatively the roof diaphragm can be strengthened to deliver torsional forces to the existing wood walls.

Verification of the condition of post to foundation connection is recommended.

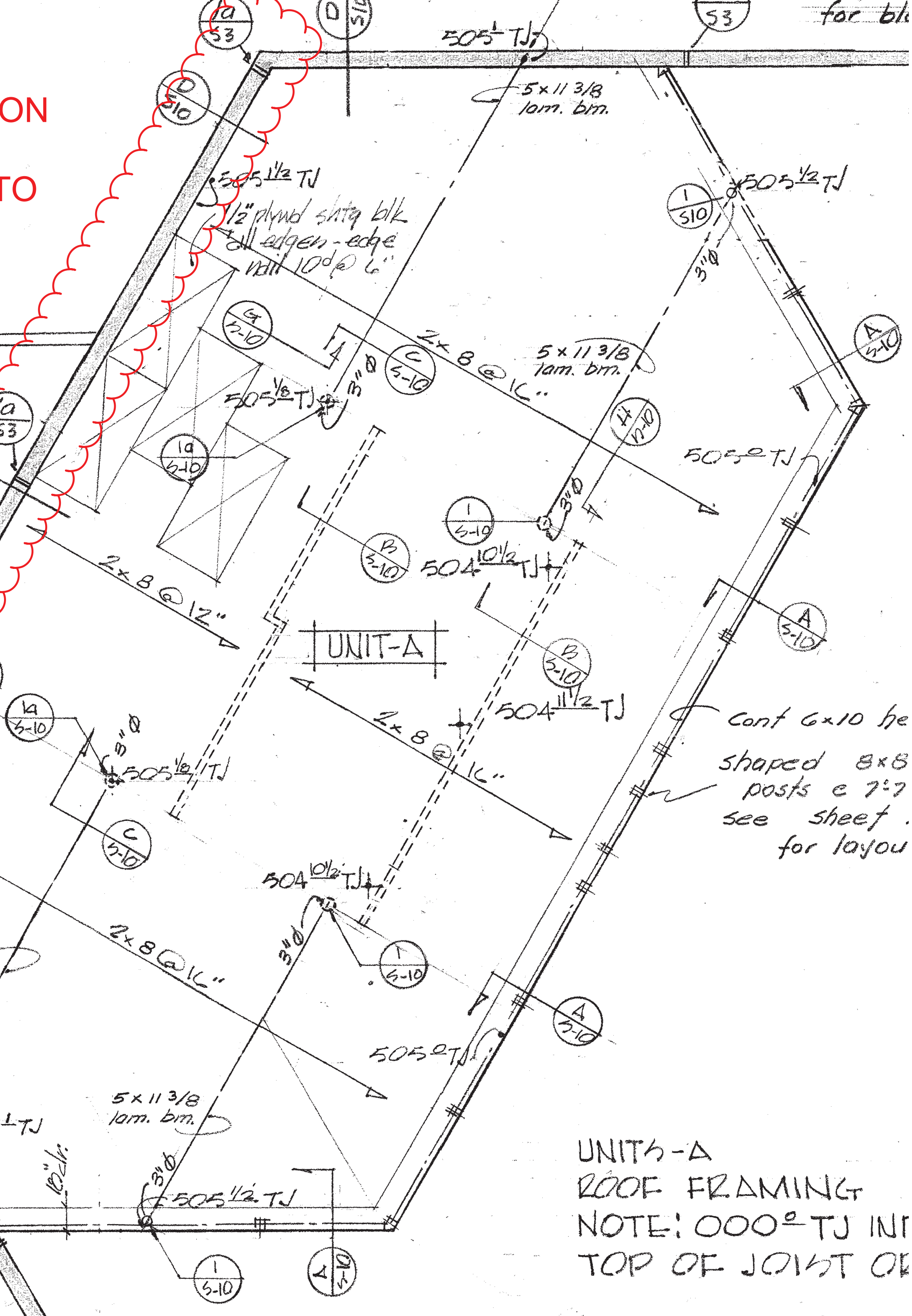
5.8 Building H

Verification of the existing lateral resisting system should be performed.

5.9 Building P

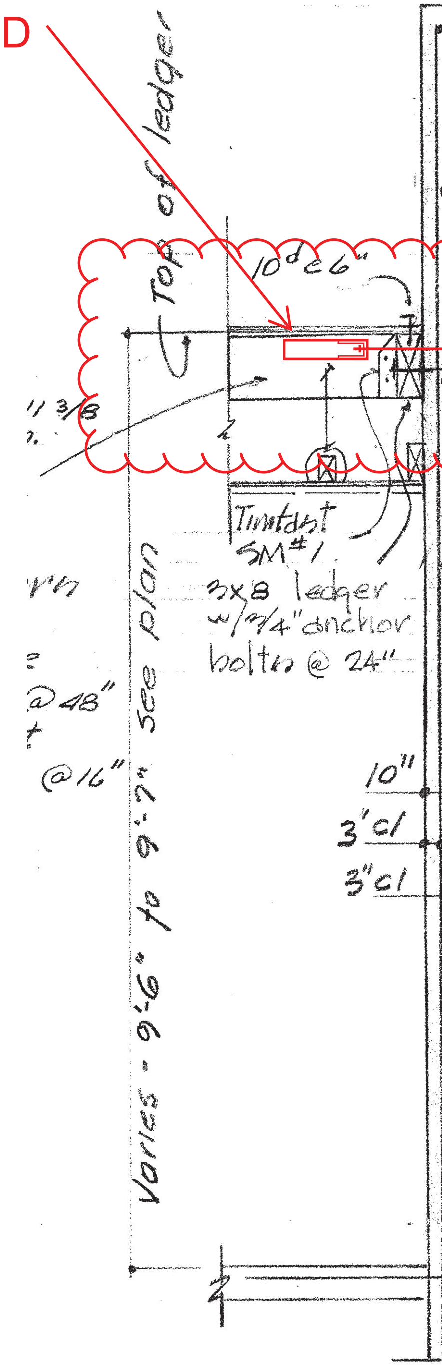
Verification of the condition of the connecting elements between the wood roof and the concrete walls is recommended.

APPENDIX – A-1
INVESTIGATION RECOMMENDATIONS

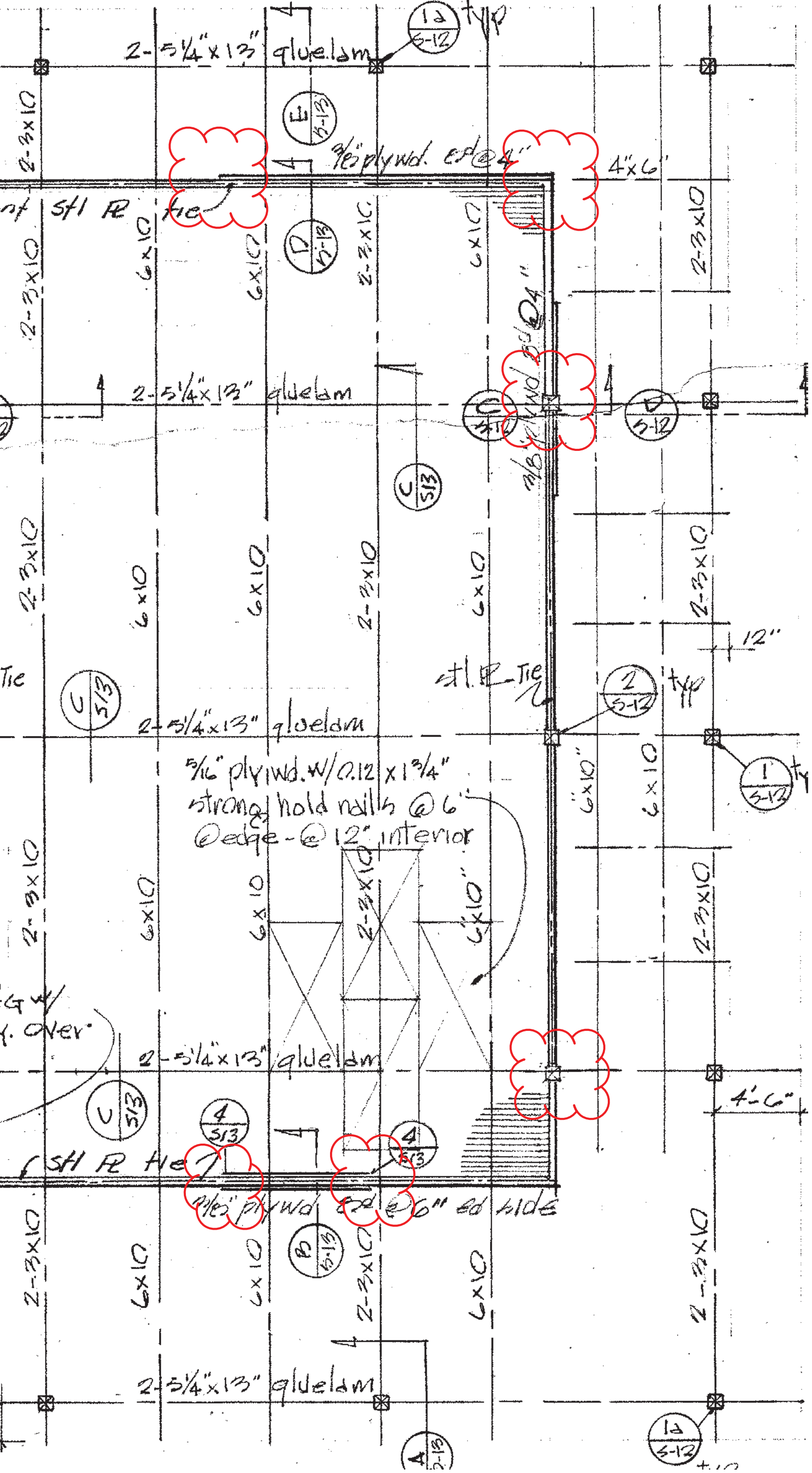


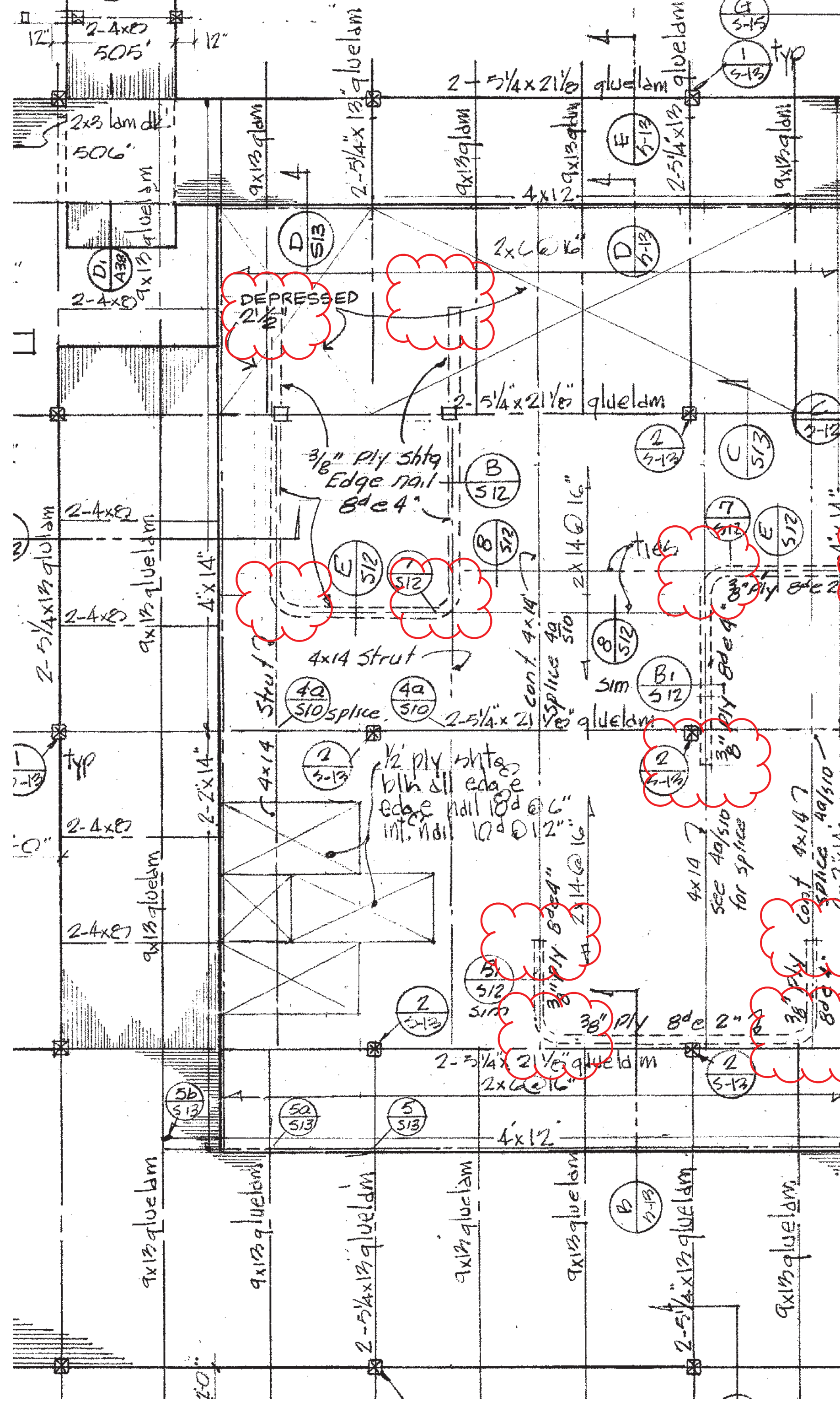
UNIT-A
ROOF FRAMING
NOTE: 000° TJ IN
TOP OF JOIST O

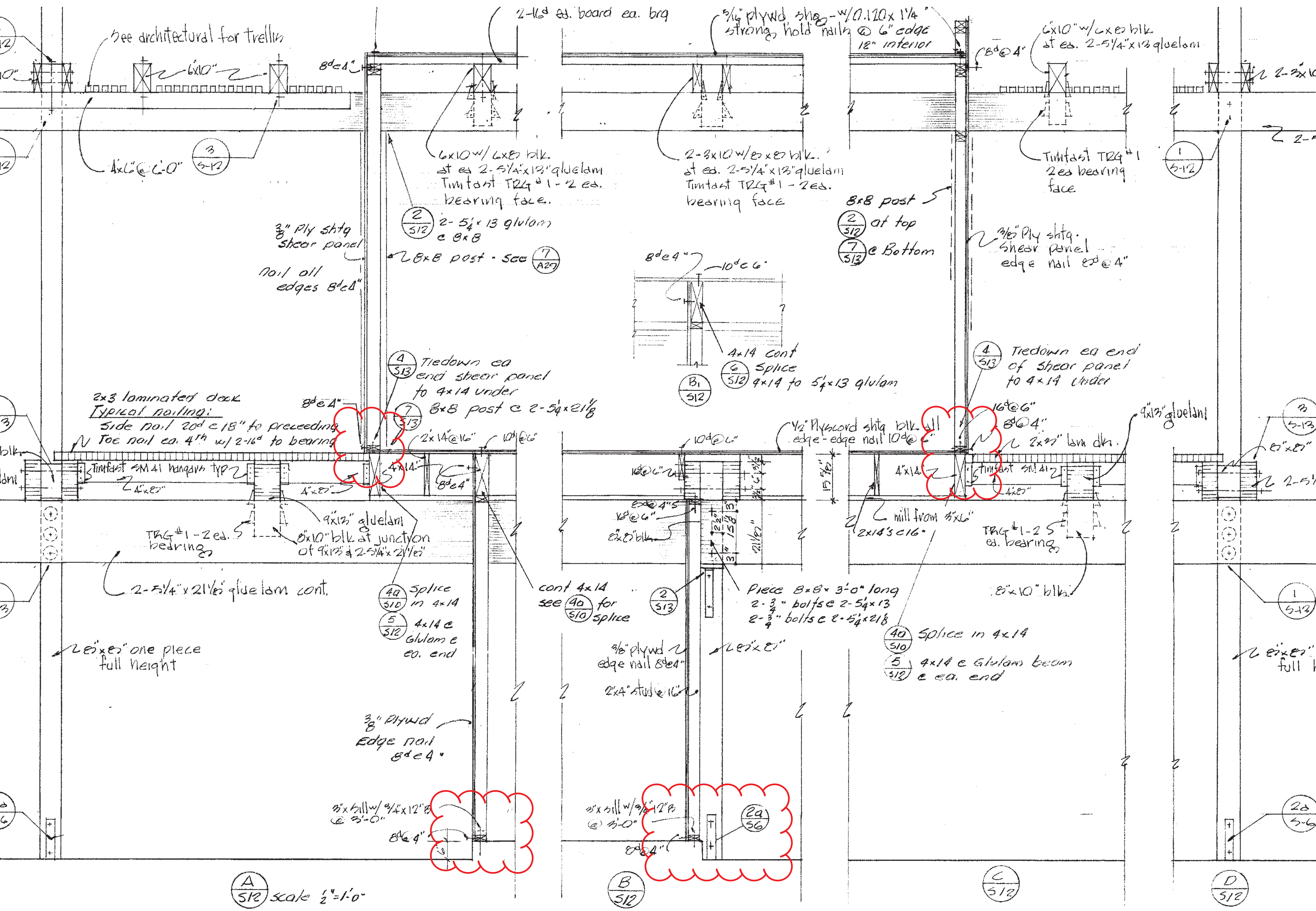
CONFIRM HD ANCHOR
HAS BEEN PROVIDED



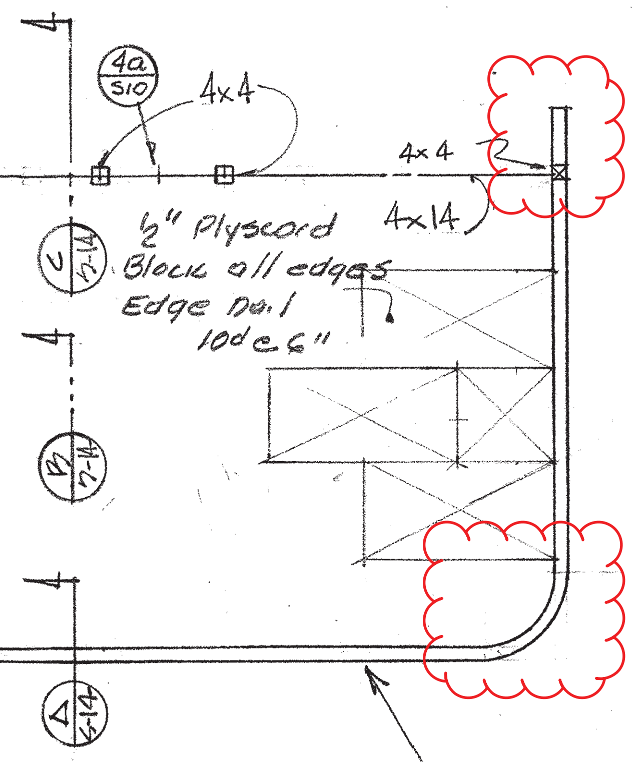
MINIMUM PER FLOOR.



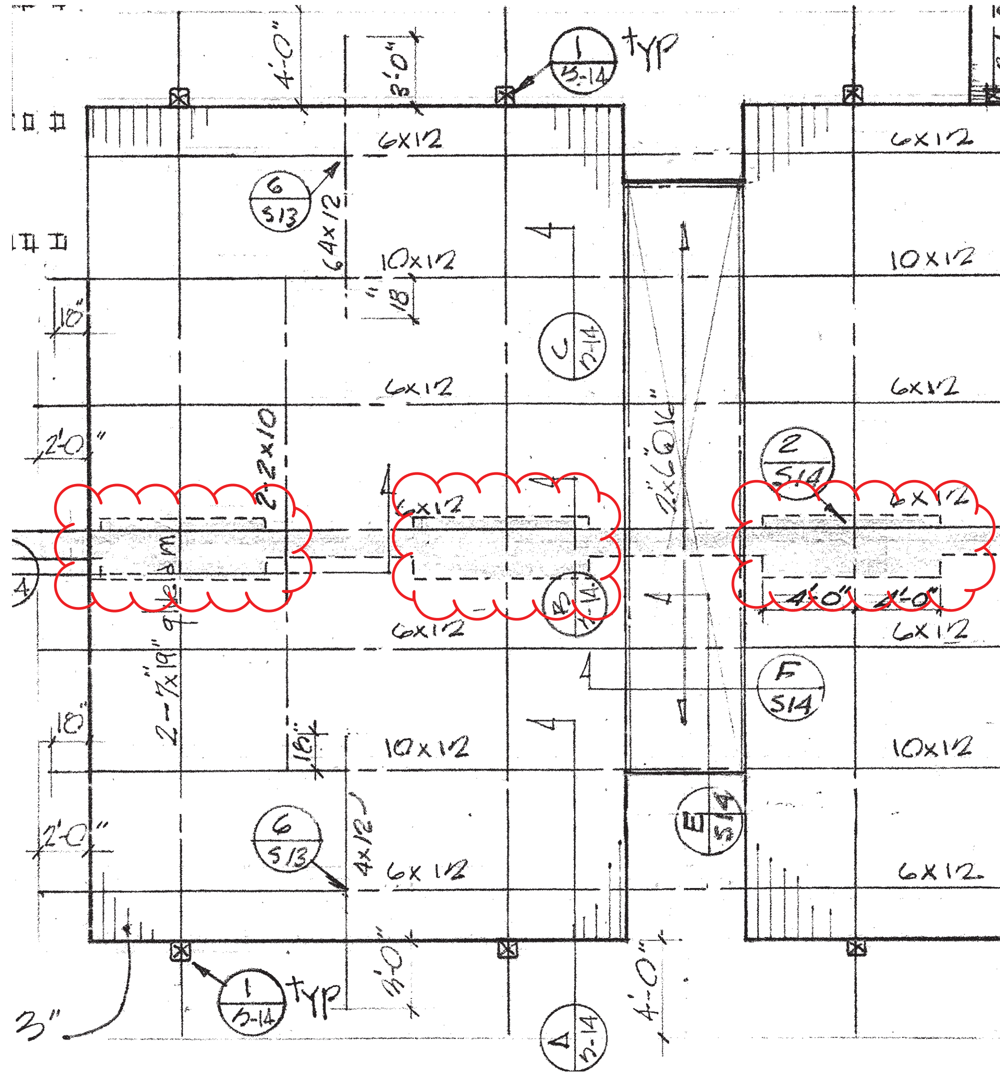




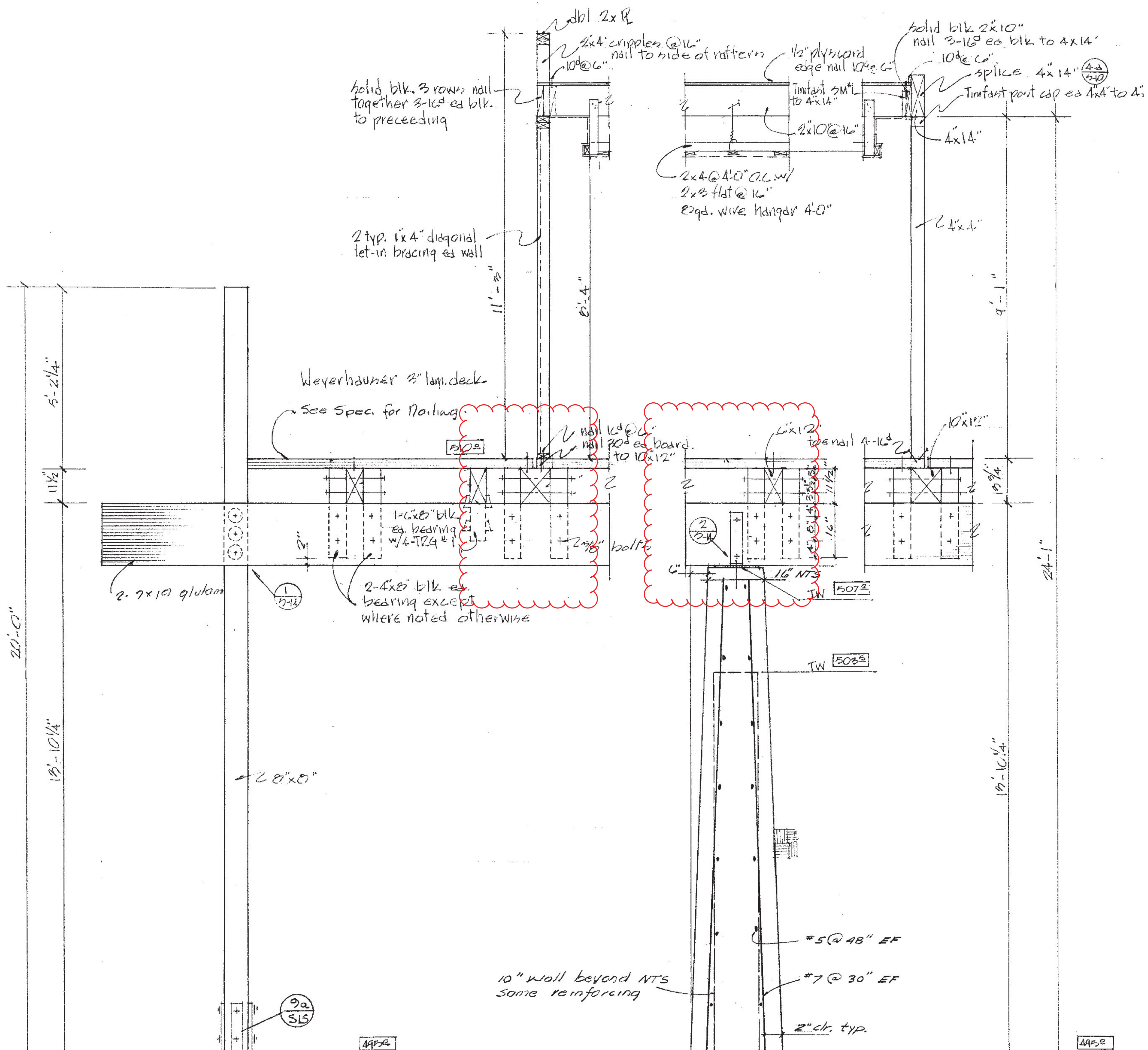
See architectural for trellis
6x10"
4x6"@6'-0"
8d@4"
2-16d ea. board ea. brg
6x10 w/ 6x8 blk. at ea 2-5¼x13" glulam Timtast TRG #1 - 2 ea. bearing face.
2-5¼x13 glulam @ 8x8
8x8 post - see 7/A29
3/8" Ply shtg shear panel
nail all edges 8d@4"
5/16" plywd shtg - w/ 0.120x 1¼" strong hold nails @ 6" edge 12" interior
2-3x10 w/ 8x8 blk. at ea. 2-5¼"x13" glulam Timtast TRG #1 - 2 ea. bearing face
8x8 post 2/S12 at top 7/S13 @ Bottom
6x10" w/ 6x8 blk at ea. 2-5¼"x13 glulam
Timtast TRG #1 2 ea bearing face
3/8" Ply shtg. shear panel edge nail 8d@4"
8d@4"
10d@6"
4x14 cont
6/S12 Splice 4x14 to 5¼x13 glulam
B1/S12
4/S13 Tiedown ea end shear panel to 4x14 under
7/S13 8x8 post @ 2-5¼x21⅛
4/S13 Tiedown ea end of shear panel to 4x14 under
2x3 laminated deck
Typical nailing:
Side nail 20d @ 18" to preceding
Toe nail ea. 4th w/ 2-16d to bearing
Timtast SM41 hangers typ
4"x8"
2x14"@16"
10d@6"
4x14"
8d@4"
9"x13" glulam
8"x10" blk at junction of 9x13 & 2-5¼x21⅛
TRG #1 - 2 ea. bearing
2-5¼"x21⅛ glulam cont.
4a/S10 Splice in 4x14
5/S12 4x14 @ Glulam @ ea. end
cont 4x14 see 4a/S10 for splice
½" Plywood shtg blk all edge - edge nail 10d@6"
16d@6"
8d@4"
2x8" lam dk.
9x13" glulam
Timtast SM41
4x14
mill from 8"x6"
2x14's @16"
TRG #1 - 2 ea. bearing
8"x10" blk.
Piece 8x8x 3'-0" long
2-¾" bolts @ 2-5¼x13
2-¾" bolts @ 2-5¼x21⅛
4a/S10 Splice in 4x14
5/S12 4x14 @ Glulam beam @ ea. end
2/S13
2x8"x8" one piece full height
2x8"x8"
3/8" plywd edge nail 8d@4"
2x4" stud @16"
3/8" Plywd Edge nail 8d@4"
3"x sill w/ ¾"x12" B @ 3'-0"
8d@4"
2a/S6
A/S12 scale ½"=1'-0"
B/S12
C/S12
D/S12



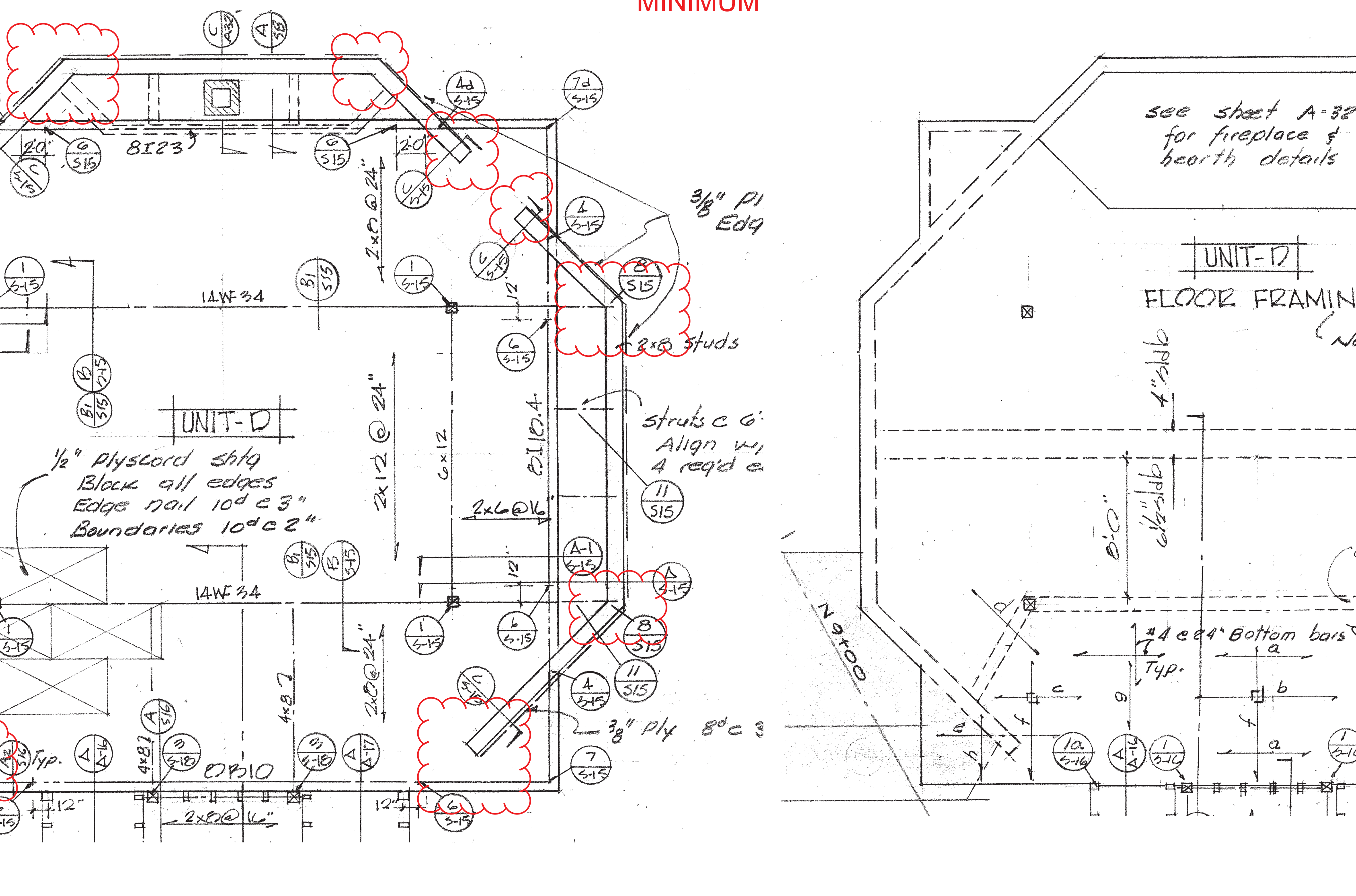
RIFY HOLD-DOWN
ONNECTION AT WALL
IDS. 2 LOCATIONS
NIMUM

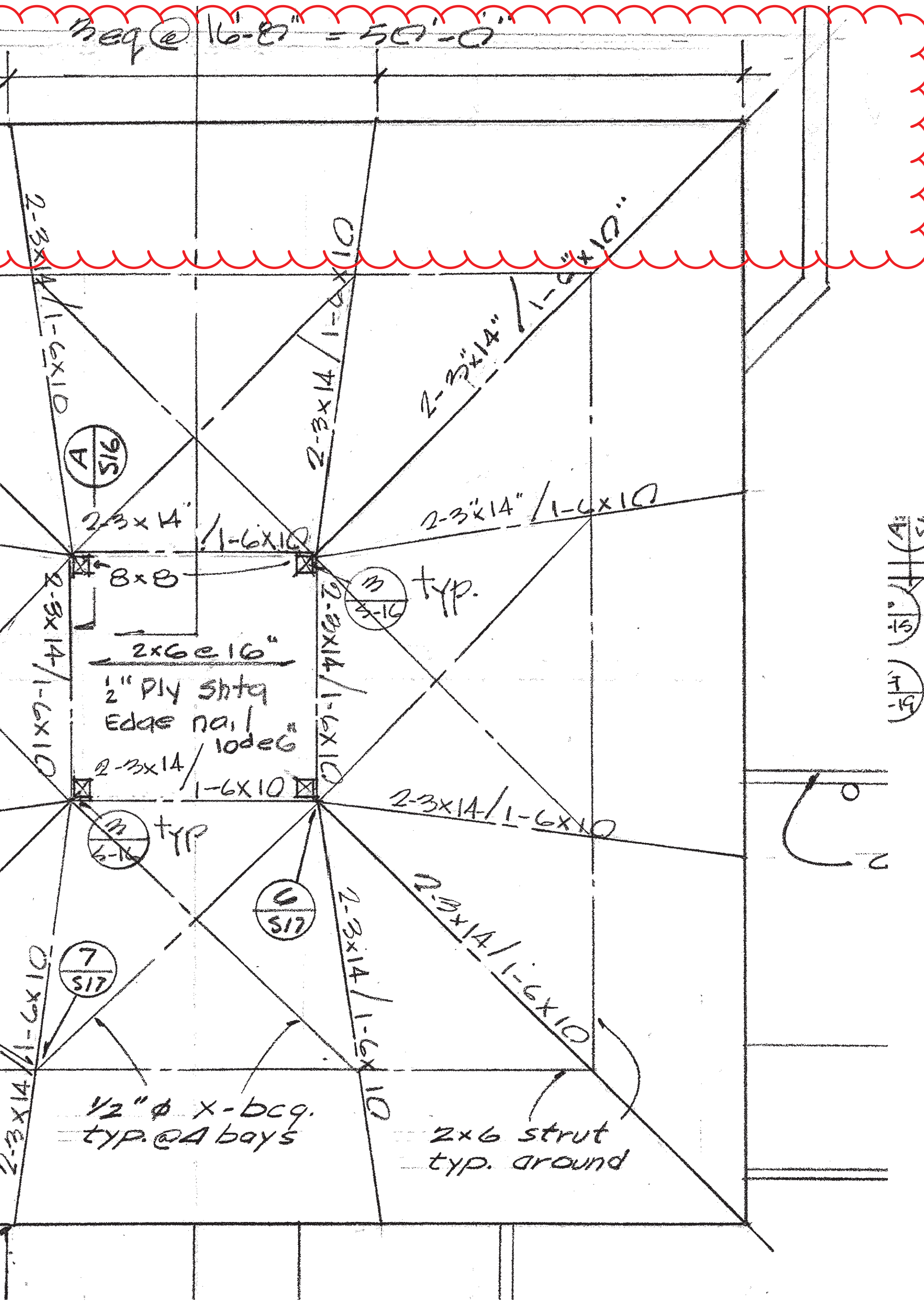


VERIFY ANCHOR
CONNECTION TO
CONCRETE WALL
PIERS 2 LOCATIONS
MINIMUM

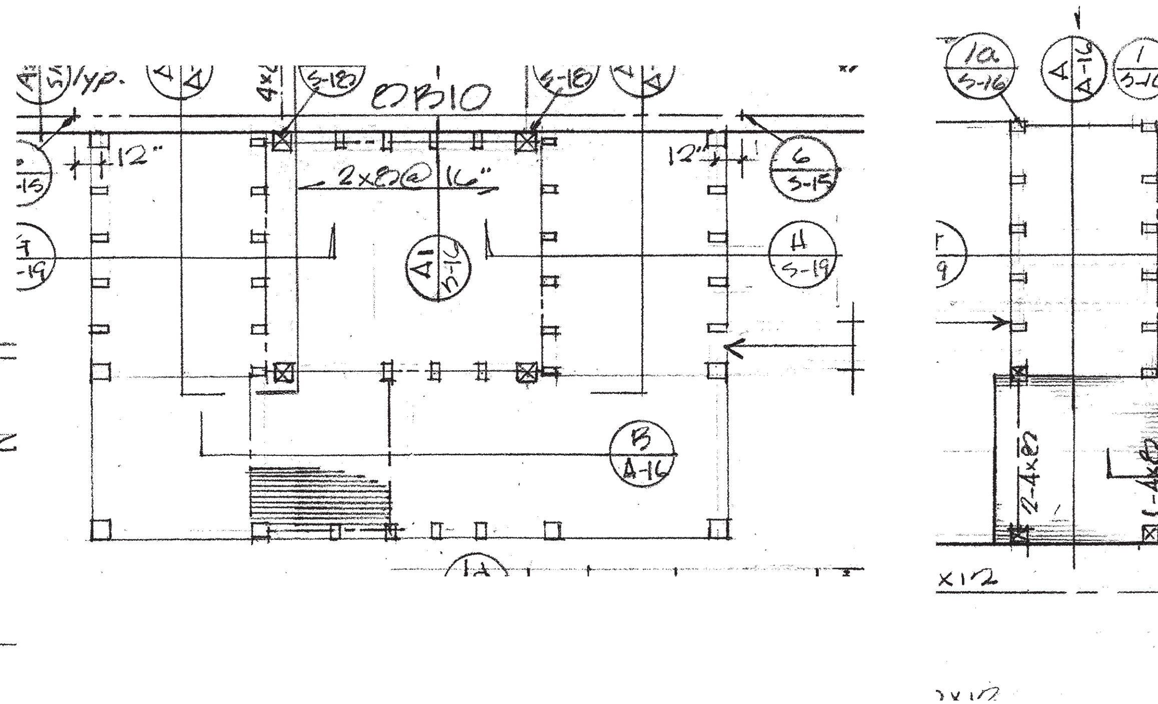

dbl 2x12
2x4" cripples @16" nail to side of rafters
10d @6"
solid blk. 3 rows nail together 3-16d ea blk. to preceeding
1/2" plywood edge nail 10d @6"
solid blk. 2x10" nail 3-16d ea blk. to 4x14"
10d @6"
splice 4"x14"
Timfast post cap ea 4x4" to 4"
Timfast SM#L to 4x14"
2x10"@16"
4"x14"
2x4@4'-0" O.C. w/ 2x3 flat@16" 8ga. wire hanger 4'-0"
2 4"x4"
2 typ. 1x4" diagonal let-in bracing ea wall
11'-3"
8'-4"
9'-1"
24'-1"
13'-10¼"
5'-2¼"
11½"
13¾"
20'-0"
13'-10¼"
Weyerhauser 3" lam. deck
See Spec. for Nailing
nail 16d @6" nail 20d ea board to 10x12"
6"x12
toe nail 4-16d
10"x12"
1-6"x8" blk ea bearing w/4-TRG #1
2-4"x8" blk ea bearing except where noted otherwise
2-5/8" bolts
2. 7x10 glulam
2 8"x8"
16" NTS
6"
TW 507.2
TW 503.5
#5 @ 48" EF
#7 @ 30" EF
2" clr. typ.
10" wall beyond NTS same reinforcing
9a S15
2 S-4
1 S-4

VERIFY HOLD-DOWN CONNECTION AT WALL ENDS. 2 LOCATIONS MINIMUM

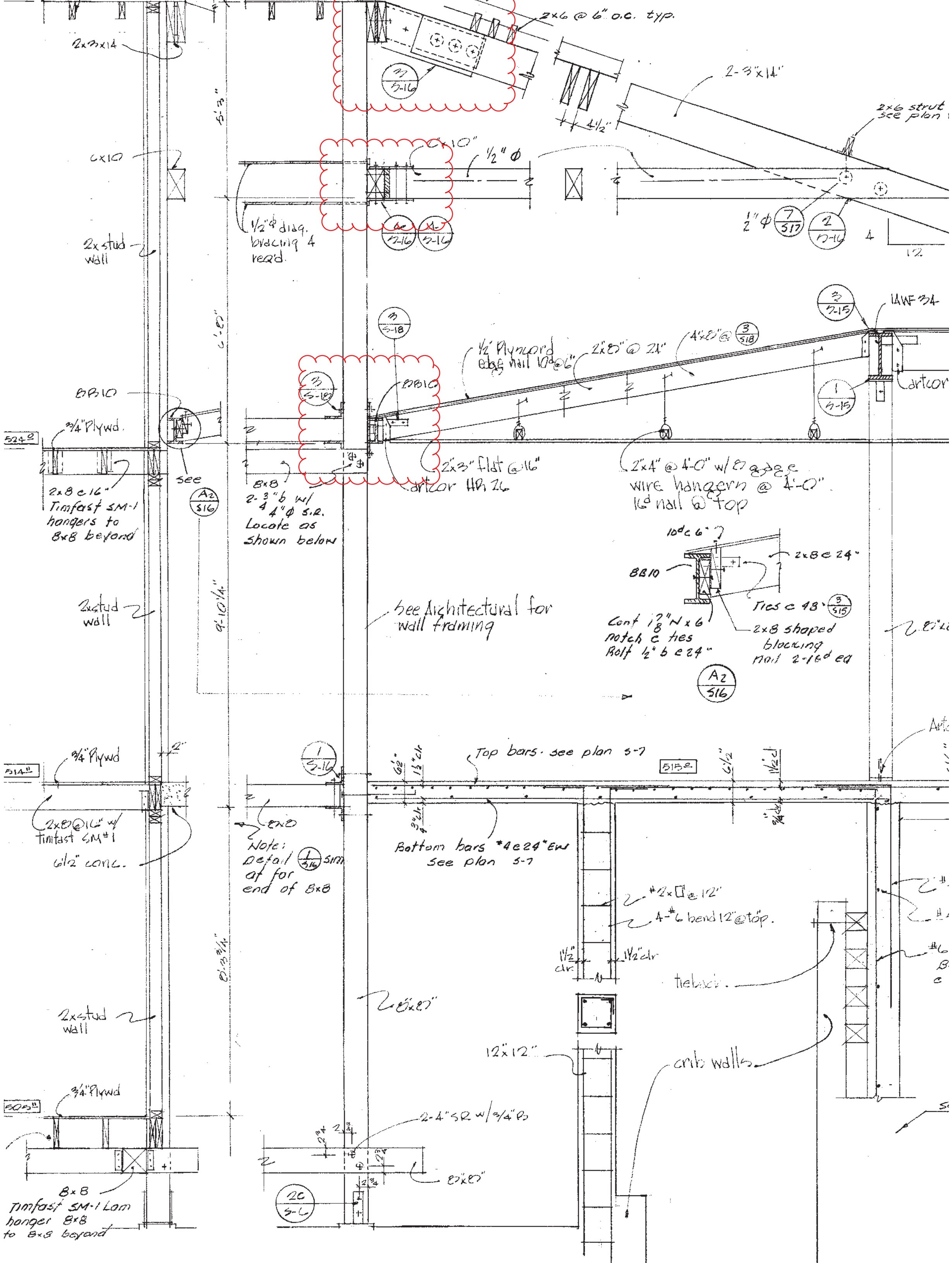




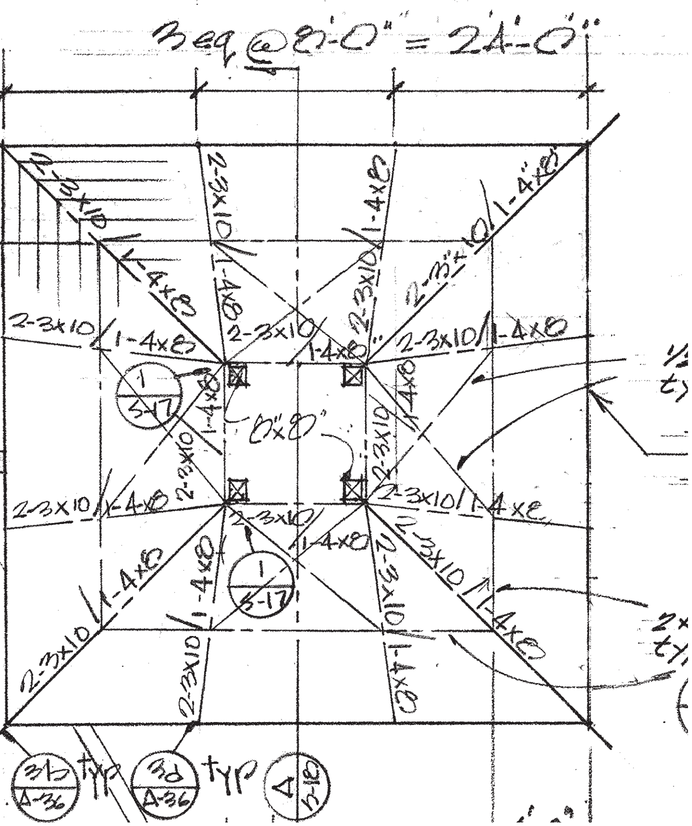
VERIFYCONNECTION
BETWEEN BUILDING D
AND E

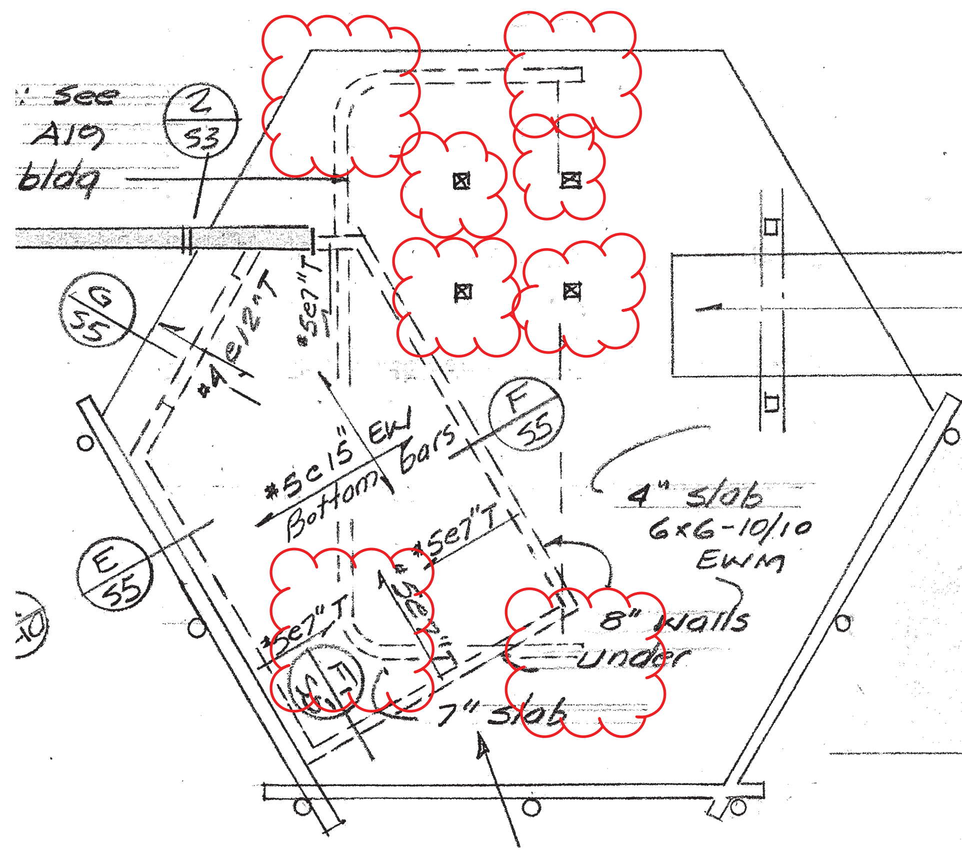


Y CONNECTION
EEN BUILDING D



VERIFY HOLD-DO
FOUNDATION CO





APPENDIX – A-2
UC Seismic Safety Policy
Rating Tables

Table A.1. Determination of Expected Seismic Performance Based on Structural Compliance with the 2010 Edition, California Code of Regulations, Part 2, California Building Code (CBC)

Definitions based upon California Building Code (CBC) requirements for seismic evaluation of buildings using Occupancy Categories of CBC Table 1604A.5, depending on which applies, and performance criteria in CBC Table 3417.5 [2]	Rating Level [1]	
	No Peer Review [5]	Peer Review [5]
A building evaluated as meeting or exceeding the requirements of CBC Chapter 34 for Occupancy Category IV performance criteria with BSE-1 and BSE-2 hazard levels replacing BSE-R and BSE-C as given in Chapter 34.	I	I
A building evaluated as meeting or exceeding the requirements of CBC Chapter 34 for Occupancy Category IV performance criteria.	II	II
A building evaluated as meeting or exceeding the requirements of CBC Chapter 34 for Occupancy Category I-III performance criteria with BSE-1 and BSE-2 hazard levels replacing BSE-R and BSE-C respectively as given in Chapter 34; alternatively, a building meeting CBC requirements for a new building.	III	II[5]
A building evaluated as meeting or exceeding the requirements of CBC Chapter 34 for Occupancy Category I-III performance criteria.	IV	III[5]
A building evaluated as meeting or exceeding the requirements of CBC Chapter 34 for Occupancy Category I-III performance criteria only if the BSE-R and BSE-C values are reduced to 2/3 of those specified for the site.	V	IV[5]
A building evaluated as not meeting the minimum requirements for Level V designation and not requiring a Level VII designation.	VI	VI
A building evaluated as posing an immediate life-safety hazard to its occupants under gravity loads. The building should be evacuated and posted as dangerous until remedial actions are taken to assure the building can support CBC prescribed dead and live loads.	VII	VII

For Notes, see page 14

Table A.2. Indications of Implied Risk to Life and Implied Seismic Damageability

Rating Level [1,5]	Historic Risk Ratings of [6,7]		Implied Risk to Life [3]	Implied Seismic Damageability [4]
	DSA/SSC[7]	UC[6]		
I	*I*		Negligible	0% to 10%
II	*II*		Insignificant	0% to 15%
III	*III*	Good	Slight	5% to 20%
IV	*IV*	Fair	Small	10% to 30%
V	*V*	Poor	Serious	20% to 50%
VI	*VI*	Very Poor	Severe	40% to 100%
VII	*VII*	Very Poor	Dangerous	100%

Notes:

1. Earthquake damageability levels are indicated by Roman numerals I through VII. Assignments are to be made following a professional assessment of the building's expected seismic performance as measured by the referenced technical standard and earthquake ground motions. Equivalent Arabic numerals, fractional values, or plus or minus values are not to be used. These assignments were prepared by a task force of state agency technical personnel, including the California State University, the University of California, the California Department of General Services, the Division of the State Architect, and the Administrative Office of the Courts. The ratings apply to structural and non-structural elements of the building as contained in Chapter 34, CBC requirements. These definitions replace those previously used by these agencies.

2. Chapter 34 of the California Building Code, current edition, regulates existing buildings. It uses and references the American Society of Civil Engineers Standard *Seismic Rehabilitation of Existing Buildings, ASCE-41.* All earthquake ground motion criteria are specific to the site of the evaluated building. The CBC definitions for earthquake ground motions to be assessed are paraphrased below for convenience:

   BSE-2, the 2,475-year return period earthquake ground motion, or 150% of the Maximum Considered Earthquake ground motion for the site.
   BSE-C, the 975-year return period earthquake ground motion.
   BSE-1, two-thirds of the BSE-2, nominally, the 475-year return period earthquake ground motion.
   BSE-R, the 225-year return period earthquake ground motion.

   Occupancy Category is defined in the CBC Table 1604A.5. The occupancy category sets the level of required seismic building performance under the CBC. Occupancy Category IV includes acute care hospitals, fire, rescue and police stations and emergency vehicle garages, designated emergency shelters, emergency operations centers, and structures containing highly toxic materials where the quantities exceed the maximum allowed quantities, among others. Occupancy categories I-III includes all other building uses that include most state owned buildings.

3. Implied Risk to Life is a subjective measure of the threat of a life threatening injury or death that is expected to occur in an average building in each rank following the indicated technical requirements. The terms negligible through dangerous are not specifically defined, but are linguistic indications of the relative degree of hazard posed to an individual occupant.

4. Implied Damageability is the level of damage expected to the average building in each rank following the indicated technical requirements when a BSE-1 level earthquake occurs. The damage includes both the structural and non-structural systems, but does not consider furnishing and tenant contents. Damage is measured as the ratio of the cost to repair the building divided by the current cost to reconstruct the building from scratch. Such assessments are to be completed to the requirements of ASTM E-2026 at ASTM Level 1 or higher in order to be considered appropriate, where the damage ratio is the Scenario Expected Loss (SEL) in the BSE-1 earthquake ground motion evaluated. ASTM E2026 is the standard for evaluating the seismic damageability of buildings for financial transactions.

5. In those cases where the engineer making the assessment using the requirements for a given Rating Level concludes that the expected seismic performance is consistent with a one-level higher or lower rating, this alternative Rating Level may be assigned if and only if an independent technical peer reviewer concurs in the evaluation. The peer review must be completed consistent with the requirements of Chapter 34 of the CBC. It is