City and County of San Francisco
Department of Building Inspection

Edwin M. Lee, Mayor
Tom C. Hui, S.E., C.B.O., Director

ADMINISTRATIVE BULLETIN

NO. AB-109

DATE : DRAFT May 30, 2014

SUBJECT : Earthquake Evaluation of Private School Structures

TITLE : Application of Engineering Criteria in SFBC Section 3428

PURPOSE : The purpose of this Bulletin is to establish acceptable evaluation criteria and reporting standards for complying with Section 3428 of the 2013 San Francisco Building Code, as amended by Ordinance No. XX-XX.

REFERENCE : Chapter 34, 2013 San Francisco Building Code
ASCE 41-13, Seismic Evaluation and Retrofit of Existing Buildings

ATTACHMENTS : Template Scope Report, available at sfdbi.org
Template Evaluation Report, available at sfdbi.org

DISCUSSION : SFBC Section 3428, created with Ordinance XX-XX, mandates the seismic evaluation of certain existing buildings and accessory non-building structures used by elementary and secondary (K-12) schools that are not schools under the jurisdiction of the Division of the State Architectôs Structural Safety section.

SCOPE : Part A of this Bulletin provides regulations to implement the general requirements of SFBC Section 3428, as well as background commentary. Part B of this Bulletin provides interpretation and additional guidance regarding the application of technical provisions in ASCE 41-13, referenced by SFBC Section 3428.

Part A. Regulations and Commentary for SFBC Section 3428

Part A of this Bulletin provides interpretations and background commentary for certain provisions of Section 3428. Commentary is shown in italic font. Section numbers refer to SFBC Section 3428.

Submittal schedule

SFBC Sections 3428.3 and 3428.4 provide two submittal deadlines:

The Evaluation Scope document for each school is to be submitted within one year of the effective date of Section 3428.

The Evaluation Report for each school building and non-building structure is to be submitted within three years of the effective date of Section 3428.

Report templates for each submittal are provided as attachments to this Bulletin.

3428.1 General.

The intent of Section 3428.1 is to cover all buildings used primarily for the education or care of children or school administration of elementary and secondary schools (K-12) that are not under the jurisdiction of the Division of State Architectôs Structural safety section and non-building structures associated with those buildings.

For purposes of Section 3428, a ñnon-building structureòis defined in SFBC Chapter 2 as a structure that does not support or shelter any use or occupancy and is also defined in ASCE 7-10 Chapter 15. The intent of Section 3428.1 is to include non-building structures such as retaining walls, covered walkways, patio covers, and other structures that are prone to earthquake damage, but only when these non-building structures serve buildings subject to Section 3428. It is not the intent of Section 3428.1 to include lightweight structures with no history of poor earthquake performance, such as well-anchored playground equipment or light wood or metal fences. Some Department judgment is expected to apply during review of the Evaluation Scope document.

Per Exception 2, Section 3428.1 applies only to buildings whose occupancy is classified as Educational Group E and non-building structures accessory to those buildings. Note that SFBC Section 305.1 does not give an exhaustive list of E occupancy facilities and allows that portions of buildings may be classified as E occupancy. Thus, some Department judgment is expected to apply during review of the Evaluation Scope document.

It is not the intent of Section 3428.1 to cover:

- Buildings off of the schoolôs campus, even if used by students or faculty.
- Buildings on the schoolôs campus that are used primarily for non-school purposes, such as churches or convents, unless those buildings also contain spaces normally used for school operations, such as classrooms or school offices. Note that this is more lenient than DSA policy regarding public schools, which generally treats any building or non-

building structure on the parcel as subject to regulation as a school facility even if it does not house school functions.

SFBC Section 305.1.1 applies to spaces associated with the functions of the place of religious worship to which they are accessory. It is the intent of SFBC Section 3428.1 that classrooms in buildings housing places of religious worship are within the scope of Section 3428.1 if they are regularly and normally used for school purposes during school hours.

In accordance with SFBC Section 303.1.3, school gyms, bleachers, auditoriums, and other spaces or structures used for assembly purposes are nevertheless assigned an E occupancy and are thus within the scope of Section 3428.1.

Evaluations shall be conducted under the supervision of a licensed structural engineer. Department reviews and approvals, however, do not require a licensed structural engineer.

3428.2 Scope and Criteria

For purposes of Section 3428, previous versions of ASCE 41, specifically ASCE 31-03 and ASCE 41-06, are not acceptable as alternatives to ASCE 41-13. See Part B of this Bulletin for modifications and interpretations of ASCE 41-13 criteria.

> ***Commentary:*** *The intent of the evaluation is to identify hazards known to be associated with earthquake-related severe injury or death. The evaluation objective is selected to match, approximately, the safety-related criteria for existing public school buildings implied by programs of the California Division of the State Architect and the San Francisco Unified School District.*
>
> *In addition to the tabulated scope, voluntary mitigation of contents hazards is encouraged. Such mitigation could include bracing, restraint, or removal of supplies, stored items, or furnishings prone to hazardous tipping or sliding. It might also include nonstructural mitigation that is not required by Section 3428. References regarding contents bracing have been developed by FEMA, the Division of the State Architect, and others. For example, see "Guide and Checklist for Nonstructural Earthquake Hazards in California Schools," available at http://www.documents.dgs.ca.gov/dsa/pubs/SB1122.pdf.*

3428.5 Voluntary Seismic Strengthening

> ***Commentary:*** *Section 3428 requires evaluation only. Section 3428.5, however, anticipates that some schools will perform voluntary mitigation or retrofit either before or after completing their evaluation. To encourage this work and to relieve these schools from unknown future requirements, Section 3428.5 provides retrofit criteria that would qualify a building for a 15-year exemption from additional seismic improvements required by San Francisco. The criteria match those intended for code-triggered retrofit of public schools regulated by DSA, given in SFBC Section 3417.5.*

The criteria in SFBC Section 3417.5 are different from the evaluation criteria in SFBC Section 3428. The difference between evaluation and retrofit criteria is common in earthquake engineering and has long-standing precedents in risk reduction policy. The evaluation required by Section 3428 is intended to find only severe potential deficiencies in a cost-effective way; this avoids listing marginal deficiencies and non-conformance related to changes in building codes over the years. A safety-based retrofit such as that contemplated by SFBC Section 3417.5, however, will typically use more conservative criteria to address a more comprehensive list of deficiencies in a cost-beneficial way.

Part B. APPLICATION OF ASCE 41-13 TO EVALUATION

Part B of this Bulletin makes modifications to and interpretations of ASCE 41-13 as they relate to compliance with SFBC Section 3428 provisions for required evaluations. These interpretations do not necessarily apply to voluntary retrofits performed to qualify for the exemption in Section 3428.5. The section numbers refer to section numbers in ASCE 41-13.

1.4 Seismic Evaluation Process

With reference to Figure C1-1, Tier 3 Systematic evaluation is required for certain buildings, subject to Bulletin modifications to Section 3.3. Where Tier 3 Systematic evaluation is not required, Tier 1 Screening is required for all evaluations, and Tier 2 Deficiency-Based Evaluation is optional.

1.4.1 Selection of Performance Objective

Omit. The evaluation objective is given in SFBC Section 3428.2.

1.4.2 Level of Seismicity

Replace with the following:
The level of seismicity shall be taken as High for all schools subject to SFBC Section 3428.

1.4.4 Evaluation Procedures

Replace with the following:
Tier 3 Systematic evaluation is required for certain buildings, subject to Bulletin modifications to Section 3.3. Where Tier 3 Systematic evaluation is not required, Tier 1 Screening is required for all evaluations, and Tier 2 Deficiency-Based Evaluation is optional.

1.4.5 Evaluation Report

Omit. Evaluation reports should use the attached Template Evaluation Report.

1.5 Seismic Retrofit Process

Omit. Retrofit is beyond the required scope of SFBC Section 3428.

2.1 Scope – 2.3 Target Building Performance Levels

Omit. Evaluation objectives are given in SFBC Section 3428.2.

2.4 Seismic Hazard

Per SFBC Section 3428.2, all evaluations are required to consider only the BSE-1E hazard.

For purposes of compliance with SFBC Section 3428, the Site-Specific Procedure of Section 2.4.2 need not be used.

2.4.1 General Procedure for Hazard Due to Ground Shaking

Per SFBC Section 3428.2, all evaluations are required to consider only the BSE-1E hazard.

Seismicity parameters for the BSE-1E hazard may be obtained using the USGS tool available at http://geohazards.usgs.gov/designmaps/us/application.php. From the Design Code Reference Document menu, select ñ2013 ASCE 41.òFrom the Earthquake Hazard Level menu, select ñBSE-1Eò

For purposes of calculating seismicity parameters with the USGS tool, Site Class F need not be assumed.

2.4.1.6.1 Site Classes
Where the Site Class is known from available documents, the known Site Class should be used. Where the Site Class is not known, for purposes of compliance with SFBC Section 3428, the Site Class may be estimated from the USGS map available at http://earthquake.usgs.gov/regional/nca/soiltype/map/.

Unless site-specific investigations indicate otherwise, Site Class F shall be assumed for any site located within a zone of required investigation for liquefaction on the 2000 Department of Conservation map available at http://gmw.consrv.ca.gov/SHMP/download/pdf/ozn_sf.pdf.

Otherwise, Site Class F need not be assumed.

For purposes of compliance with SFBC Section 3428, site-specific investigation of potential Site Class F sites is not required as long as potential liquefaction is noted on the Deficiency List in the seismic evaluation report.

2.5 Level of Seismicity
Replace with the following:
The level of seismicity shall be taken as High for all schools subject to SFBC Section 3428.

3.2.4 Site and Foundation Information
For purposes of compliance with SFBC Section 3428, any requirement in ASCE41-13 for site-specific soils or geotechnical investigation is waived. Owners may perform and report the results of such investigations voluntarily.

3.3.1 Limitations on the Use of the Tier 1 and 2 Evaluation and Retrofit Procedures
For purposes of compliance with SFBC Section 3428, Tier 3 evaluation is not required. However, if ASCE 41-13 Section 3.3.1 would require Tier 3 evaluation, each Tier 1 checklist item subject to that requirement (which in some cases might be only those on Immediate Occupancy but not Life Safety checklists) shall be listed in the Deficiency List with a note indicating potential non-compliance subject to Tier 3 analysis.

_____ _____
Tom C. Hui, S.E., C.B.O. Date
Director
Department of Building Inspection
Approved by Building Inspection Commission on _____

City and County of San Francisco
Department of Building Inspection

Edwin M. Lee, Mayor
Tom C. Hui, S.E., C.B.O., Director

Earthquake Evaluation of Private School Structures

SCOPE REPORT ï NO FEE

San Francisco Building Code Section 3428 requires the seismic evaluation of certain school buildings and non-building structures and submittal of reports to the Department of Building Inspection. This template should be used to comply with Section 3428.3, which requires submittal of a document ñlisting each structure to be evaluated and other information requested by the Department.ò **This Scope Report does not constitute a seismic evaluation and does not represent an engineering judgment with respect to any building or non-building structure.**

The deadline for submitting this Scope Report is *, 2015. Submit the completed Scope Report either**:

- As a pdf attachment to ***@sfgov.org, with ñPrivate School Scope Reportòin the subject line, or
- As a hardcopy to Private School Seismic Evaluation Program, Department of Building Inspection, 1660 Mission Street, San Francisco, CA 94103

	Yes	*No*
Does this Scope Report replace or supplement a previously submitted Scope Report for the same school?	☐	☐

SECTION 1 – SCHOOL INFORMATION

School name

School street address

Block / Lot number(s)

SECTION 2 – CONTACT INFORMATION

Property/Building owner (individual or institution)

Ownerôs representative (individual)	Ownerôs representative telephone	Ownerôs representative email

Ownerôs representative mailing address

School representative (if different from ownerôs representative)	School representative telephone	School representative email

School representative mailing address

School Name (as on page 1) _____

SECTION 3 – LIST OF SCHOOL BUILDINGS & NON-BUILDING STRUCTURES

Complete Section 3A for structures expected to be addressed in a later seismic evaluation report, as required by SFBC Section 3428. Complete Section 3B for structures expected to be exempt from evaluation.

SECTION 3A – STRUCTURES EXPECTED TO BE SUBJECT TO SEISMIC EVALUATION

In the following table, list each stand-alone building on the school campus that serves school functions. If the school has more than one campus, or the campus buildings have more than one street address, include that information in the building description. Include here any buildings and non-building structures that are also listed in Section 4.

Building name or identifier	Primary use or function

Does the school campus contain any of the following non-building structures?	*Yes*	*No*
Retaining walls (structural walls creating a change of grade greater than 3 ft)	☐	☐
Masonry or concrete fences	☐	☐
Covered patios or outdoor seating areas	☐	☐
Covered walkways or bus shelters	☐	☐
Outdoor bleachers or stadium seating	☐	☐

Optional: Use this space to identify specific non-building structures that are not explicitly exempt from evaluation and are not represented in the foregoing list. The Department can then assist you in determining whether they are subject to evaluation.

_____

_____

_____

SECTION 3B – STRUCTURES EXPECTED TO BE EXEMPT FROM SEISMIC EVALUATION

Does the school campus contain any of the following?	*Yes*	*No*
Buildings used entirely for non-school purposes (not classified as E occupancy)	☐	☐
If yes, identify briefly: _____		
_____		
_____		
Buildings less than 250 square feet in floor area	☐	☐
Structures for which no building permit would be required (*Reference: SFBC Section 105.2)*	☐	☐

Optional: Use this space to identify other structures that might be exempt from evaluation. The Department can then assist you in determining whether they are subject to evaluation.

_____

_____

_____

School Name (as on page 1) _____

SECTION 4 – INTENT TO PERFORM VOLUNTARY SEISMIC STRENGTHENING

With reference to the buildings and non-building structures identified in Section 3, list in the following table those for which you intend to obtain a building permit for seismic strengthening prior to the Evaluation Report submittal deadline (Reference: SFBC Section 3428.5). Note: Submittal of this completed Scope Report is required even if all buildings and non-building structures are intended for seismic strengthening.

It is the intent of the undersigned to obtain permits for the seismic strengthening of the following buildings and non-building structures in accordance with SFBC Section 3428.5 by ***, 2017, and therefore for these buildings and non-building structures to be exempt from seismic evaluation.

Building or structure name or identifier	Primary use or function after strengthening

SECTION 5 – OWNER & SCHOOL REPRESENTATIVE AFFIDAVIT

OWNER'S REPRESENTATIVE
Under penalty of perjury, I certify that the information provided in Sections 1, 2 and 4 of this Scope Report is correct to the best of my knowledge, and I acknowledge that submittal of Seismic Evaluation Reports by ***, 2017 is required by San Francisco Building Code Section 3428.

_____ _____
Signature Date

SCHOOL REPRESENTATIVE
Under penalty of perjury, I certify that the information provided in this Scope Report is correct to the best of my knowledge.

_____ _____
Signature Date

FOR DBI USE ONLY

Report is incomplete or requires revision. ☐

DBI notes on Section 3 scope:

_____

_____

_____

Report appears complete and is assumed correct based on the statements of the Owner's Representative and the School Representative. ☐

DBI Reviewer: _____

Date: _____

SEISMIC EVALUATION REPORT

School: Report Date:
Building Name/ID: Previous Versions:
Building Address:

This is a template document intended to ensure complete and consistent reports to DBI. It is not meant to preclude separate correspondence or reporting between engineers and clients. Blue highlights are instructions to the engineer using this template. Remove all instructions and highlights before submittal. In most sections, the template text should be retained, but the engineer should modify or correct any misstatements and may supplement the text as needed.

A single report may be used to cover multiple buildings or non-building structures subject to the same criteria. Alternatively, each building and non-building structure may have its own report. Clarity of presentation, subject to Department approval, is the priority.

This report complies with requirements of San Francisco Building Code Section 3428. It is submitted on behalf of the owner of the subject buildings and structures.

SE seal and signature

Report Outline ***It is not necessary to provide page numbers***

Date signed _____

FOR DBI USE ONLY

Report is incomplete or requires revision. See separate comment form. ☐

Report appears complete as to form and is assumed correct based on the statement of the Structural Engineer whose seal and signature appear above. ☐

DBI Reviewer: _____
Date: _____

SE Firm Name (Logo optional)
SE Address, phone (website or email address optional)

1. Evaluation process and criteria

1.1 Purpose

The purpose of this report is to comply with San Francisco Building Code Section (SFBC) 3428, as implemented by Department of Building Inspection Administrative Bulletin 109 (AB-109).

1.2 Scope

This report covers only the following buildings and non-building structures on the school campus. See Appendix A for a list of other buildings and non-building structures on the school campus that might be subject to SFBC Section 3428 but are not covered in this report.

Insert list; coordinate with site plan in Section 2.

1.3 Evaluation criteria: Modifications to ASCE 41-13

As provided in SFBC Section 3428.2 and AB-109, the evaluation applied the engineering standard known as ASCE 41-13[1] with the following evaluation objective:

	Performance Level	Hazard Level
Structural components	Life Safety	BSE-1E
Nonstructural components	Life Safety	BSE-1E

In accordance with SFBC Section 3428.2 and AB-109, the following modifications were applied to the standard ASCE 41-13 requirements:

Following is a list of variations allowed or required by AB-109. Retain the ones that apply to this evaluation. Delete the others. Add items as needed to reflect the work that was actually done:

- The Site Class was taken from the USGS map at http://earthquake.usgs.gov/regional/nca/soiltype/map/.
- The Site Class is possibly Site Class F, but no site-specific soils or geotechnical investigation was performed.
- Liquefaction and landslide potential were assumed from the Department of Conservation map at http://gmw.consrv.ca.gov/SHMP/download/pdf/ozn_sf.pdf.
- Despite a lack of original design and construction documentation, investigation of existing details was limited for budget and disruption purposes.
- Tier 3 Systematic Evaluation is required for this building by ASCE 41-13 Section 3.3 but for budget purposes was not done.

[1] *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE/SEI 41-13), American Society of Civil Engineers, 2013.

1.4 Document review

The following documents were used to complete the evaluation, in general compliance with ASCE 41-13 Section 3.2.2. The Set ID is used to identify the documents cited in Appendix B of this report.

Set ID	Date	Description
		For each document (set of plans, report, etc.), give the title and author, indicate the number of sheets or pages (especially if only part of the set was available), and state the context in which the document was produced (original construction, alteration, retrofit, repair, etc.)

1.5 Site visit

A site visit was made to verify certain information and to assist in completing the evaluation, in general compliance with ASCE 41-13 section 3.2.

Date of site visit:
Visiting engineer(s) and staff:
School contact:
School on-site liaison:

The scope of the site visit was based on our judgment, accessibility of certain areas, and convenience of the school on-site liaison. The purpose of the following list is merely to record the work that was done. That some listed items are not checked does not indicate an incomplete evaluation. The site visit included:

- ☐ Interview w/ on-site liaison
  Engineer may add optional notes after each item to clarify the scope, make specific observations, reference photographs in Appendix, suggest need for destructive investigation, etc.
- ☐ Grounds, for observation of soil, slopes, drainage, general condition
- ☐ Exterior observation to verify basic massing, configuration, general condition
- ☐ Interior observation to verify use, wall line configuration, general condition
- ☐ Roof
- ☐ Basement
- ☐ Ceiling plenum
- ☐ Unfinished spaces (mechanical rooms, closets, crawl spaces, etc.)
- ☐ Details of structure-architecture interaction
- ☐ Roof-to-wall connections
- ☐ Gravity system framing
- ☐ Seismic force resisting system elements or components
- ☐ Adjacent buildings subject to pounding or falling hazard
- ☐ Other:

Engineer to edit and/or complete the following paragraph as needed, using the table format for more detailed descriptions:

The site visit confirmed that the existing structure generally conforms to the available drawings listed in Section 1.4, with the following exceptions:

Set ID	Condition shown on plans	Condition observed at site visit

2. Site and building description

2.1 Site plan

If the school contains more than one structure, as listed in Appendix A, provide a site plan identifying each building, in coordination with the building names in Appendix A and Section 1.2.

2.2 Structure description

If this report addresses more than one building or non-building structure, provide all the information required by this section for each structure, using structure IDs in coordination with Section 1.2.

Year originally built:
Number of stories above grade:
Number of stories below grade:
Total floor area [sq ft, approx]:
Original design code

History of significant structural alteration (non-seismic)	*For purposes of this report, "significant alteration" means work that could have affected the building's seismic demands by changing the weight or the distribution of story shear or overturning forces. It would generally not include replacement of finishes, upgrade of HVAC equipment (except possibly for heavy tanks or rooftop units), or architectural work that did not involve changes to structural elements. Describe the changes to structural elements.*
History of seismic retrofit	*If applicable, give the retrofit design code/criteria/performance objective, as well as dates and reference to Set ID(s) in Section 1.4.*

Exterior elevation photograph, looking **direction**, taken **date**:

Provide one or two exterior elevation photographs sufficient to give a general sense of the building's massing.

- *Complete the caption above the photo box by adding a compass direction and the date of the photo.*
- *Additional annotations (north arrow, grid lines, etc. to match the plan sketch below) are useful but optional.*
- *If two photos are provided here, provide a similar caption above the second photo.*
- *Additional photographs, if needed, should be provided in Appendix D.*

Plan sketch:

Provide a rough sketch of a plan section showing:

- *Plan configuration, with approximate overall dimensions*
- *Substantially different parts of the building – original v. additions, different heights, different uses, etc.*
- *Grid lines or key notes, so that other sections of this report can reference certain areas or SFRS elements consistently*
- *Location and orientation of key SFRS walls and frame lines*
- *Project North arrow*

If the building plan varies over the height, show the first story and other stories as needed to convey significant information regarding basic SFRS configuration.

2.3 BSE-1E Seismicity Parameters

Latitude:
Longitude:
Site Class:
Basis for Site Class: *See AB-109 re ASCE 41-13 Section 2.4.1.6.1. If unknown, list the USGS map. If known, cite the Set ID and page/detail from the list in Section 1.4.*

Period [sec]	Mapped BSE-1E values [g]	Site Coefficients	S_a spectral values [g]	Need not exceed values (optional) [g]
0.2	$S_{S,20/50}$ =	F_a =	$S_{XS,BSE\text{-}1E} = F_a\, S_{S,20/50}$ =	$S_{XS,BSE\text{-}1N}$ =
1.0	$S_{1,20/50}$ =	F_v =	$S_{X1,BSE\text{-}1E} = F_v\, S_{1,20/50}$ =	$S_{X1,BSE\text{-}1N}$ =

2.4 Gravity system

Roof diaphragm and framing *For each item, briefly describe the structural material and structural elements.*

Typical floor diaphragm and framing
Ground floor framing
Vertical load-bearing elements
Basement walls
Foundation

2.5 Seismic force resisting system

Common building type per ASCE 41-13 Section 3.2.1		North-South	East-West
Wood frame, Light	W1	☐	☐
Wood frame, multi-story, multi-unit residential	W1A	☐	☐
Wood frame, commercial / industrial	W2	☐	☐
Steel moment frame, rigid diaphragm	S1	☐	☐
Steel moment frame, flexible diaphragm	S1A	☐	☐
Steel braced frame, rigid diaphragm	S2	☐	☐
Steel braced frame, flexible diaphragm	S2A	☐	☐
Steel light frame	S3	☐	☐
Dual system w/ backup steel moment frame	S4	☐	☐
Steel frame w/ infill masonry shear wall, rigid diaphragm	S5	☐	☐
Steel frame w/ infill masonry shear wall, flexible diaphragm	S5A	☐	☐
Steel plate shear wall	S6	☐	☐
Concrete moment frame	C1	☐	☐
Concrete shear wall, rigid diaphragm	C2	☐	☐
Concrete shear wall, flexible diaphragm	C2A	☐	☐
Concrete frame w/ infill masonry shear wall, rigid diaphragm	C3	☐	☐
Concrete frame w/ infill masonry shear wall, flexible diaphragm	C3A	☐	☐
Precast/tilt-up concrete shear wall, flexible diaphragm	PC1	☐	☐
Precast/tilt-up concrete shear wall, rigid diaphragm	PC1A	☐	☐
Precast concrete frame w/ shear walls	PC2	☐	☐
Precast concrete frames w/o shear walls	PC2A	☐	☐
Reinforced masonry bearing wall, flexible diaphragm	RM1	☐	☐
Reinforced masonry bearing wall, rigid diaphragm	RM2	☐	☐
Unreinforced masonry bearing wall, flexible diaphragm	URM	☐	☐
Unreinforced masonry bearing wall, rigid diaphragm	URMA	☐	☐
Seismic Isolation or Passive Dissipation	SI/PD	☐	☐
Combination of type(s) checked above and the following other SFRS type(s): *List the other SFRS type(s) here.*		☐	☐
None of the above *List the present SFRS type(s) here.*		☐	☐

Benchmark year check:
In accordance with ASCE 41-13 Section 4.3 and Table 4-6, the structure qualifies ****or [select one, delete the other]**** does not qualify as a benchmark building. *If the building qualifies, state the building type and qualifying provisions.*
See ASCE 41-13 Section 4.3 and Table 4-6. State whether the combination(s) of common building type and design/retrofit/evaluation provisions qualify the building as a benchmark building. Note: Benchmark year exemptions apply only to structural elements.

For each item following, give a brief response or description.

Horizontal system combinations	*If more than one common building type is indicated in the table above, describe the horizontal combination, if any. Distinguish combinations in a single direction from combinations that involve a single system in each direction. In particular, address the Tier 1 & Tier 2 eligibility conditions for combined systems given in ASCE 41-13 Section 3.3.1.2.*
Vertical system combinations	*If more than one common building type is indicated in the table above, describe the vertical combination, if any. In particular, address the Tier 1 & Tier 2 eligibility conditions for combined systems given in ASCE 41-13 Section 3.3.1.2.*
SFRS foundation	
Gravity loading	*Describe the degree to which the SFRS elements also carry gravity load, distinguishing as appropriate between elements on different frame lines or in different directions.*
System details	*Give a brief description of the typical and critical SFRS elements in each direction to supplement the SFRS description by common building type. For example, describe column and girder sizes, infill thickness, spacing of roof-to-wall ties, etc.*
Structural materials	*List concrete, rebar, and masonry specified material properties, as well as the source of information, citing documents by Set ID and page/detail as listed in Section 1.4. See ASCE 41-13 section 4.2.3 for default values.*

3. Deficiency list

As further described in Appendix B, the following Deficiency List is based on:

☐ Tier 1 evaluation only
☐ Tier 1 evaluation, plus voluntary Tier 2 analysis for selected items
☐ Tier 1, Tier 2, and Tier 3 evaluation due to requirements of ASCE 41-13 Section 3.3

The Deficiency List includes the following checklist items associated with full structural collapse:
After completing Appendix B and the summary list of NC and U items below, complete this table to highlight those items associated with structural collapse. The engineer may add items at the bottom of the list at his or her discretion.

	Non-compliant condition	Unknown condition
Load Path	☐	☐
Weak Story	☐	☐
Soft Story	☐	☐
Vertical Irregularities	☐	☐
Geometry	☐	☐
Mass	☐	☐
Torsion	☐	☐
***Additional system-specific items to be added	☐	☐
Slope Failure	☐	☐
Surface Fault Rupture	☐	☐
Other: ***for building-specific conditions. Provide reference to checklist item in summary table below***	☐	☐

The following table summarizes the potential deficiencies identified in Appendix B of this report.
Instructions for the tables below

- *Deficiencies correspond to discrete items in the Tier 1 checklists.*
- *Do NOT list an item here as a potential deficiency if Tier 2 or Tier 3 analysis has shown the corresponding condition to be acceptable, even if the corresponding condition is non-compliant by Tier 1.*
- *In the column labeled "Additional evaluation recommended," indicate whether additional work would likely result in the potential deficiency being removed from the list. There is no need to provide details or scope. Possible entries in this column are*
  - *None*
  - *Tier 2 evaluation*
  - *Tier 3 evaluation*
  - *Additional non-destructive investigation*
  - *Destructive investigation*
  - *Material testing*

Non-compliant condition	Discussion	Additional evaluation recommended
Restate in this column the titles of each checklist item marked NC.	*For each item, describe:* • *The extent of non-compliance: Isolated? Widespread? Only in certain directions, along certain lines, in certain stories?*	

Unknown condition	Discussion	Additional evaluation recommended
Restate in this column the titles of each checklist item marked U.	*For each item, describe:* • *The extent of non-compliance: Isolated? Widespread? Only in certain directions, along certain lines, in certain stories?*	

Appendix A. Approved Scope Report

Provide a copy of the DBI-approved Scope Report.

Appendix B. ASCE 41-13 Tier 1 Checklists

Tier 1 and Tier 2 eligibility check:
See ASCE 41-13 Section 3.3.1 and Table 3-2. Provide a statement indicating whether the building is eligible for Tier 1 and Tier 2 procedures alone, or whether Tier 3 evaluation is necessary. Give building details as needed to address the various cases covered in Sections 3.3.1.1 and 3.3.1.2.

Applicable Tier 1 checklists: *Edit the following list as appropriate to the building type or types.*

- Life Safety Basic Configuration Checklist (ASCE 41-13 Section 16.1.2LS)
- Life Safety Structural Checklist for Building Type *** (ASCE 41-13 Section 16.***LS)
- Nonstructural Checklist (ASCE 41-13 Section 16.17)

Provide completed Tier 1 checklists, in ASCE 41-13 sequence. Instructions for formatting the checklists:

- *For each checklist item, indicate C, NC, N/A, or U. Recommended means of indicating C, NC, N/A, or U: Do not insert a circle or other graphic element that could get separated from the text. Instead, in Word, select the response and use "Borders and Shading" to put a box/border around just the selected text.*
- *IMPORTANT: For each evaluation statement, provide a brief note citing the source of the information that justifies C, NC, etc. Refer to the Set ID and page/detail as listed in Section 1.4. Where applicable, provide additional discussion, Quick Check calculation, etc.*
- *Lengthy explanations, Tier 2 calculations, photos, etc. may be added here if convenient to do so in Word format. Otherwise, provide those in the Appendix C or D, and provide a reference there to the relevant Appendix B checklist item.*

Appendix C. Structural Calculations

Provide calculations or calc summary directly in Word format, or insert graphics/screeenshots from spreadsheet, hand calcs, etc.

Alternatively, if appendix materials are provided in a separate file, use Appendix C to provide a table of contents or guide to that file indicating what's in it and how many pages it is. If a separate file is provided, each of its pages must include all of the identifying information shown in the header and footer to this report.

Provide the general calculations as needed to complete the evaluation of Appendix B. These will likely include weight take-offs, period calculation, base shear calculation and distribution, and general analysis results (such as story shear distributions by frame line).

Provide calculations and supporting information needed to complete the response to specific checklist items. Brief calculations or explanations should go in Appendix B directly. If this appendix section is used, organize it by the title of the checklist item. It is acceptable to omit checklist items from this appendix if no information is needed to supplement what's already provided in Appendix B.

Appendix D. Photographs and Details

Provide additional photographs or graphic information, with captions, in this optional appendix.