

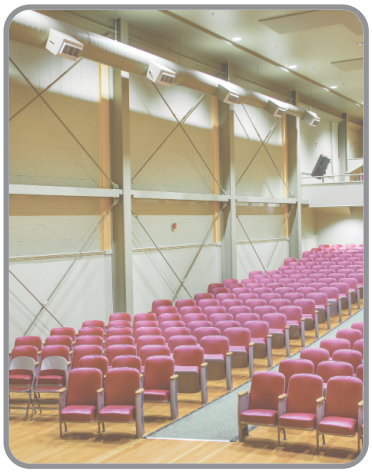

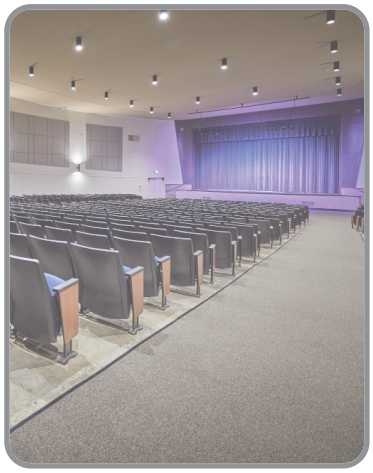







STRUCTURAL SEISMIC EVALUATION REPORT FOR:

HUMBOLT ELEMENTARY SCHOOL PHASE 2

329 N Humbolt St, Canyon City, OR 97820
Grant County School District

PREPARED BY ZCS ENGINEERING & ARCHITECTURE

Matthew R. Smith, PE, SE | Principal In Charge
524 Main Street, Suite 2, Oregon City, OR 97045
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MattS@zcsea.com

Project Summary Information						
Building Part	Building Part Name	Included in Retrofit	Year Built	Building Type***	Nonstructural Retrofits Included in Scope Y/N***	Previous Seismic Retrofit Y/N*** (Year if Yes)
A	Classroom & Cafeteria	N	1956	W2	N	Y (2018)
B	Gym	Y	1990	W2	Y	N
C	Classroom	Y	1956	W2	Y	N
*** Entries required **ONLY** for building parts included in proposed seismic retrofit						
Nonstructural deficiencies posing life safety risk **MUST** be included in the scope of work and budget.						
Seismic fragility inputs for existing buildings with **previous seismic retrofits MUST** be adjusted to reflect previous seismic retrofit measures completed for a building part.						
Total Retrofit Cost	$1,417,965					
Retrofit Square Feet	27,400					
Retrofit Cost per Square Foot	$51.75					
Is the campus within a tsunami, FEMA flood zone, landslide/slope instability, liquefaction potential or other high hazard area? **If so, provide documentation.**						See Engineering Report

Engineering Report Checklist		
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1.0 Executive Summary

The Grant School District is located in Canyon City, Oregon in Grant County. The District operates 3 schools located within the community including the property of interest, Humbolt Elementary School approximately *150* miles East of Bend, Oregon. The District has retained ZCS Engineering and Architecture (ZCS) to perform a seismic evaluation of Humbolt Elementary School that provides the Districtwith an objective, comprehensive analysis of the condition of the building's seismic resisting systems. The purpose of the evaluation is to determine the seismic lateral resisting system deficiencies when compared to buildings designed using modern building codes. This evaluation was performed in accordance with the American Society of Civil Engineers "Seismic Rehabilitation of Existing Buildings ASCE/SEI 41-17".

Humbolt Elementary School is located at 329 North Humbolt Street in Canyon City, Oregon (See Sheet G0.0 – Vicinity Map). The structures reviewed in our analysis include: the activity/gymnasium building and the west classroom building of the Humbolt Elementary School campus. The west classroom building was originally built in approximately 1960 with additions constructed in 1972 and 1987 and in total has a building footprint of approximately 20,000 square feet which serves as learning spaces for elementary school students. The activity building was built in 1990 with a building footprint of approximately 7,600 square feet and serves physical education learning space in addition to after school recreation space.

The evaluation of the facility indicates, rehabilitation of existing lateral system components are necessary to meet the following requirements as outlined in ASCE 41-17:

- School buildings, other than areas which may be used as emergency shelters, shall be categorized as Risk Category III and evaluated to meet the Limited Safety structural performance and Hazards Reduced nonstructural performance level for BSE-2E loading.

- Emergency service buildings and school areas that may be used as emergency shelters shall be categorized as Risk Category IV and evaluated to meet:

    - The Life Safety structural performance and Hazards Reduced nonstructural performance level for BSE-2E level, AND

    - The Immediate Occupancy structural performance and Position Retention nonstructural performance level for BSE-1E level.

See section 3.2 for performance level definitions.

The following is a brief list of seismic deficiencies encountered:

- The roof diaphragms are not properly attached to the perimeter walls for in-plane forces.
- The transverse walls of the gymnasium building do not have adequate in-plane shear capacity to support the prescribed seismic loads.
- The unblocked roof diaphragm does not meet the prescribed aspect ratio. the code limits the aspect ratios (length to depth) to minimize the shear demands and deflections.
- The straight sheathed roof diaphragms of the classroom building do not meet the prescribed aspect ratio. the code limits the aspect ratios (length to depth) to minimize the shear demands and deflections.
- The longitudinal roof chords of the classroom building are not continuous across the roof beams.

Recommendations mitigating the known deficiencies determined by our analysis are outlined in section 4.0 of this report. In addition to the rehabilitation recommendations, we prepared schematic seismic retrofit drawings to convey the intent of the rehabilitation effort. These drawings are included in Appendix E.

To help the Districtunderstand the magnitude of the rehabilitation effort and secure funding sources for the seismic system rehabilitation of the building, a preliminary construction cost estimate was developed. With the assistance of a seismic retrofit contractor a total construction cost of **$1,445,205** including all soft costs associated with architecture/engineering, permitting, and District Project Management was developed. Refer to section 5.0 of the report body.

In addition to the construction cost estimation efforts we performed a “Benefit Cost Analysis” using the tool provided by the State of Oregon Infrastructure Finance Authority. The building has a benefit cost score of **0.079**. Refer to Appendix D for BCA worksheets.

It is our final recommendation that given the BCA score and the general condition of the seismic resisting systems, this building is an excellent candidate to be rehabilitated to meet the currently prescribed seismic demands for Limited Safety (BSE-2E) and Damage Control (BSE-1E) for the classroom building and Life Safety (BSE-2E) and Immediate Occupancy (BSE-1E) for the gymnasium building per ASCE 41-17. Once rehabilitated, this building will meet the needs of the District and community for future generations.

2.0 Project Introduction

Grant School District is centrally located in Canyon City, Oregon in Grant County. Humbolt Elementary School is located at 329 North Humbolt Street in Canyon City, Oregon (See Sheet G0.0 – Vicinity Map).

The District has retained ZCS Engineering and Architecture (ZCS) to perform a seismic evaluation of Humbolt Elementary School. The purpose of the evaluation is to provide the District with an objective, comprehensive analysis of the condition of the existing seismic force resisting systems of the facility when compared to a building constructed using modern building codes. In addition to evaluating the building's seismic performance, schematic seismic retrofit plans have been developed. The rehabilitation plans have been developed using our extensive knowledge of seismic rehabilitation and are intended to meet the objectives and the level of performance of Limited Safety (BSE-2E) and Damage Control (BSE-1E) for the classroom building, and Life Safety (BSE-2E) and Immediate Occupancy (BSE-1E) for the activity/gymnasium building of which both are based on the ASCE 41-17 requirements. Based on the seismic evaluation and schematic rehabilitation design drawings, a preliminary construction cost estimate was developed. Based on the preliminary construction cost estimate, a benefit cost analysis was prepared to help the District determine whether or not the rehabilitation efforts outlined in this report are financially responsible.

This work was conducted at the request of Bret Uptmor, Superintendent under an engineering services contract between the District and ZCS.

2.1 Scope of Work

The following scope of work was developed to meet the objectives outlined above.

Seismic Evaluation & Preliminary Rehabilitation Services:

- Review original building construction drawings to determine existing structural systems and areas of concern.
- Perform site visits of the structure to observe structural systems and visually review structural condition and deficiencies.
- Observe lateral system (seismic) components and load path.
- Observe gravity system components and load path.
- Observe for damage and failing elements.
- Verify original building drawings for use in developing schematic level as-builts.
- Evaluate existing construction based on visual observations and available as-constructed documentation against ASCE 41 Tier 1 requirements.
- Collate findings and perform preliminary calculations to assist in the determination of each building's seismic deficiencies.

- Prepare an evaluation report for the facility identifying the structural integrity and seismic deficiencies stamped by a registered Structural Engineer licensed in the State of Oregon.

Preliminary Construction Cost Consulting Services:

- Develop project base sheets based on the District provided original drawings.
- Prepare conceptual rehabilitation drawings based on ASCE 41 guidelines to convey the intent of rehabilitation recommendations.
- Prepare a project cost estimate based on historic projects of similar scope and magnitude.
- Review constructability and cost estimate with a licensed contractor.
- Revise plans based on contractor input as required to optimize the efficiency of the rehabilitation plan and develop final construction cost recommendations.
- Prepare cost benefit analysis based on SRGP methodologies
  *Financial and enrollment information has been provided by the District
- Summarize findings in final report package stamped by a registered Structural Engineer licensed in the State of Oregon.

3.0 Structural Evaluation

3.1 Introduction

ZCS was tasked with evaluating the lateral force resisting systems of the facility. The structures reviewed in our analysis include: the activity/gymnasium building and the west classroom building. The west classroom building was originally built in approximately 1960 and has a building footprint of approximately 20,000 square feet which serves as learning spaces for elementary school students. The activity room/gymnasium building was built in 1990 with a building footprint of approximately 7,600 square feet and serves physical education learning space in addition to after school recreation space. Other building on the school campus site not included in this evaluation include: the main classroom and cafeteria building that was previously seismically retrofitted in the summer of 2018 and two small modular buildings.

The classroom building is a single level structure with 13 classroom spaces and supporting restrooms all of which are detached from the main school building. This building consists of glulam beams with 2x rafter roof structure supported by wood stud framed bearing shear walls. The foundation consists of concrete strip footings and stem walls at the perimeter with stud framed pony walls on concrete footings in the crawl space supporting the floor framing and interior walls.

The primary lateral system for the classroom building consists of perimeter plywood and diagonal sheathed shear walls and a combination of plywood sheathed and straight sheathed roof diaphragm.

The activity building is a single level structure with a gymnasium room and office/storage spaces. Above the storage and office spaces is a small mezzanine used for storage and mechanical equipment. The structure consists of wood roof trusses supported by stud framed bearing shear walls. The foundation consists of perimeter strip footings with interior pony walls and strip footings supporting the wood framed gymnasium floor and the interior walls for the office and storage rooms. From review of the original construction drawings and site observations the building configuration has not been substantially altered since its original construction.
The primary lateral system for the activity/gymnasium building consists of gypsum sheathed perimeter shear walls and a plywood sheathed roof diaphragm.

3.2 Structural Evaluation

The following outlines the evaluation of the existing structural components of the building. The evaluation includes site observations of the existing structural elements and follows the guidelines outlined in the American Society of Civil Engineer's "Seismic Evaluation of Existing Buildings – ASCE 41-17". This manual is the required evaluation tool per the Seismic Rehabilitation Grant Program through Business Oregon Infrastructure Finance Authority. Per ASCE 41-17 a Tier 1 evaluation has been performed. The purpose of a Tier 1 evaluation is to provide "Quick Checks" to properly evaluate a building and determine deficiencies related to the lateral resisting elements.

It is the intent of the District, as part of this study, to determine the structural deficiencies of the buildings as compared to current prescribed loading and detailing requirements for lateral (wind/seismic) loading to a performance level of "Limited Safety (BSE-2E)" for the classroom building, and "Life Safety" (BSE-2E) and "Immediate Occupancy" (BSE-1E) for the activity room buildings per ASCE 41-17. The level of performance is defined per ASCE 41-17 as:

"The Limited Safety Structural Performance Level is set forth as a midway point between Life Safety and Collapse Prevention. It is intended to provide a structure with a greater reliability of resisting collapse than a structure that only meets the Collapse Prevention Performance Level, but not to the full level of safety that the Life Safety Performance Level would imply."

"Structural Performance Level S-3, Life Safety, means the post-earthquake damage state in which significant damage to the structure has occurred but some margin against either partial or total structural collapse remains. Some structural elements and components are severely damaged, but this damage has not resulted in large falling debris hazards, either inside or outside the building. Injuries might occur during the earthquake; however, the overall risk of life-threatening injury as a result of structural damage is expected to be low. It should be possible to repair the structure; however, for economic reasons, this repair might not be practical. Although the damaged structure is not an imminent collapse risk, it would be prudent to implement structural repairs or install temporary bracing before reoccupancy."

"Structural Performance Level, Collapse Prevention, means the post-earthquake damage state in which the building is on the verge of partial or total collapse. Substantial damage to the structure has occurred, potentially including significant degradation in the stiffness and strength of the lateral-force-resisting system, large permanent lateral deformation of the structure, and - to a more limited extent - degradation in vertical-load-carrying capacity. However, all significant components of the gravity-load-resisting system must continue to carry their gravity loads. Significant risk of injury caused by falling hazards from structural debris might exist. The

structure might not be technically practical to repair and is not safe for reoccupancy because after shock activity could induce collapse."

"Structural Performance Level S-3, Life Safety, means the post-earthquake damage state in which significant damage to the structure has occurred but some margin against either partial or total structural collapse remains. Some structural elements and components are severely damaged, but this damage has not resulted in large falling debris hazards, either inside or outside the building. Injuries might occur during the earthquake; however, the overall risk of life-threatening injury as a result of structural damage is expected to be low. It should be possible to repair the structure; however, for economic reasons, this repair might not be practical. Although the damaged structure is not an imminent collapse risk, it would be prudent to implement structural repairs or install temporary bracing before reoccupancy.

"Structural performance level, Immediate Occupancy, means the post-earthquake damage state in which only very limited structural damage has occurred. The basic vertical- and lateral-force resisting systems of the building retain nearly all of their pre-earthquake strength and stiffness. The risk of life threatening injury as a result of structural damage is very low and although some minor structural repairs may be appropriate, these would generally not be required prior to reoccupancy."

Per ASCE 41-17 a seismic performance objective is required. The performance levels selected for this evaluation in order to obtain a performance levels of "Life Safety" and "Limited Safety" was the BSE-2E design level as defined in ASCE 41-17 section 2.4.1.3. The BSE-2E design earthquake has a probability of occurring once in every 975 years, or 5% chance in 50 years. This design level earthquake represents ground motions approximately 75% as large as those prescribed for new buildings. In addition, to obtain a performance level of "Immediate Occupancy," the BSE-1E design level as defined in the ASCE 41-17 section 2.4.1.4 was selected. The BSE-1E design earthquake has the probability of occurring once in every 227 years or 20% chance in 50 years. We feel this provides an appropriate level of improvement for this facility.

Lateral resisting systems work in conjunction with gravity framing systems. As such, the existing gravity framing system was also reviewed for structural deficiencies during our site observations. Section 3.2.3 outlines the existing gravity system and its structural deficiencies found during the evaluation.

Geologic hazards were assessed as part of our engineering evaluation. The main hazards evaluated in our analysis included liquefaction, slope failure, and surface fault rupture potential. These potential hazards were evaluated using ASCE 41-17 guidelines, as well as information provided by the online Oregon HazVu: Statewide Geohazards Viewer, maintained by DOGAMI. Results from the HazVu analysis are included in Appendix B along with a report from GN

Northern addressing the potential concerns. It was determined that the risk associated with soil liquefaction and landslides at the site are low. Because GN Northern's assessment concluded the area to have a low risk for liquefaction and landslides, these geologic hazards have not been indicated as a deficiency.

3.2.1 Lateral Resisting Systems

After reviewing the facility and the existing drawings we have determined the lateral system, for both buildings evaluated are defined as wood framed, commercial and industrial W2. Per ASCE 41-17 lateral system is defined as:

Wood Frames, Commercial and Industrial W2 – These buildings are commercial or industrial buildings with a floor area of 5,000 ft^2 or more. There are few, if any, interior walls. The floor and roof framing consist of wood or steel trusses, glulam or steel beams, and wood posts or steel columns. The foundation system may consist of a variety of elements. Seismic forces are resisted by wood diaphragms and exterior stud walls sheathed with plywood, oriented strand board, stucco, plaster, or straight or diagonal wood sheathing, or they may be braced with rod bracing. Wall openings for storefronts and garages, where present, are framed by a post-and-beam framing.

3.2.2 Lateral Resisting Element Deficiencies

The following lateral resisting element deficiencies are based on visual observations of the existing structural elements and the structural analysis performed during the Tier 1 "Quick Checks" of the ASCE 41-17. The Tier 1 checklists are attached in Appendix B. The following outlines the deficiencies for each portion of the facility.

S1. The roof diaphragms are not properly attached to the perimeter walls for in-plane forces.
S2. The transverse walls of the gymnasium building do not have adequate in-plane shear capacity to support the prescribed seismic loads.
S3. The unblocked roof diaphragm does not meet the prescribed aspect ratio. the code limits the aspect ratios (length to depth) to minimize the shear demands and deflections.
S4. The straight sheathed roof diaphragms of the classroom building do not meet the prescribed aspect ratio. the code limits the aspect ratios (length to depth) to minimize the shear demands and deflections.
S5. The nailing and/or anchorage between the roof diaphragm and supporting shear walls and shear walls to foundation are unknown.
S6. Long wall segments filled with window openings are not braced with structural panel shear walls with aspect ratios of equal or less than 1.5 to 1.
S7. The longitudinal roof chords of the classroom building are not continuous across the roof beams.
S8. Wood shear walls of the gymnasium lack hold-down anchors at the end studs.

S9. The free-standing canopy at the classroom building main entrance does not have adequate lateral capacity for the prescribed seismic loads.

3.2.3 Gravity Resisting Systems and General Observations

The following gravity resisting deficiencies are based on visual observations of the existing structural elements. No formal structural analysis was performed during this evaluation of the gravity resisting elements.

- No known gravity deficiencies were observed.
- The gravity resisting system was found to be in good general condition based on the visual observations performed.

3.2.4 Evaluation of Incidental Items

Incidental, non-structural items can play a major role in the overall expense of rehabilitating an existing building. These costs can be significant and can be very difficult to estimate prior to construction.

N1: Proper attachment and bracing of storage racks/cabinets over 4' or 3:1(height:width) ratio.
N2: Attachment of all emergency lighting, power equipment and associated wiring.
N3: Verification/installation of bracing for overhead piping and HVAC unit should be evaluated for stability under seismic conditions.
N4: Verification of hazardous material storage and distribution piping stability under seismic conditions.
N5. The ceiling tile grid of the gymnasium building lacks expansion joints.

Based upon ZCS's previous experience and discussions with site personnel the classroom building described in this report contains some form of hazardous material. These materials will need to be dealt with on a case-by-case basis as they are encountered during the project.

4.0 Seismic Rehabilitation Recommendations

The following structural improvements are required to resolve the deficiencies noted in section 3.2.2. These improvements are detailed below and in the attached schematic seismic rehabilitation drawings found in Appendix E. These drawings were prepared to assist in defining the rehabilitation scope of work.

4.0.1 Rehabilitation Recommendations for Lateral Resisting Elements (See Section 3.2.2)

S1. The perimeter walls for classroom and gymnasium buildings need to be properly attached to roof diaphragm for in-plane loading. Additional blocking and in-plane shear transfer connections should be added to properly transfer in-plane loading into the shear walls

S2. The existing gypsum wall board will be removed in strategic locations and new plywood sheathing will be installed to increase the shear capacity to resist the prescribed in-plane seismic forces. Where required, additional anchor bolts shall be installed using post-installed concrete anchors.

S3. The plywood roof sheathing of the gymnasium building roof will receive new panel edge blocking and panel edge nailing to increase the allowable shear capacity of the roof diaphragm to acceptable levels.

S4. A new layer of plywood sheathing will be added over the top of the existing straight sheathed decking to increase the allowable shear capacity of the roof diaphragm to acceptable levels.

S5. Additional blocking and in-plane shear transfer connections should be added to properly transfer in-plane load path to the foundation.

S6. Selective windows should be in-filled and new wall sheathing installed on the face of the wall framing to provide adequate support of the wall lines with large amounts of window and door openings.

S7. Blocking and strapping shall be installed at the roof above perimeter walls of the classroom building to provide continuous roof chords in the longitudinal direction.

S8. Where required, new holdown devices shall be installed to resist overturning forces.

S9. The existing entry canopy of the classroom building will receive new columns and pole footing to adequately resist the prescribed seismic loads.

4.0.2 Rehabilitation Recommendations for Gravity Resisting Systems and General Observations (See Section 3.2.3)

- Rehabilitation of the gravity resisting system is not required at this time.

4.0.3 Rehabilitation Recommendations for Incidental Items (See Section 3.2.4)

N1. Storage racks, cabinets, and bookshelves shall be adequately braced to structure.
N2. Properly brace all light fixtures and suspended or overhead electrical equipment.
N3. Properly brace all existing fluid piping, ducting, gas piping, and mechanical equipment as required.
N4. Consult with hazardous material specialist to determine extent of hazardous material mitigation. Materials deemed hazardous and planned to be removed as part of seismic retrofit operations shall be abated by licensed professionals.
N5. Install new expansion joints at the existing ceiling of the activity room.

5.0 Preliminary Construction Cost Estimate

The attached engineer's opinion of probable cost has been developed by ZCS for Humbolt Elementary School. ZCS has a successful record of completing seismic rehabilitation projects within the State of Oregon. The prices provided in the attached cost estimate have been developed using the extensive list of past projects as a baseline for this project. These prices are based on Oregon BOLI wage rates. The cost estimate is broken down into multiple line items associated with each major task (general conditions, foundation, structural steel, MEP, etc) associated with the rehabilitation. Additional line items are included for design associated permit costs, and owner construction management.

The generation of the preliminary construction cost estimate line item costs, were reviewed with a local construction company representative who has participated in similar construction projects. This representative is a highly qualified commercial contractor that has worked on multiple essential facilities and performed seismic retrofits to existing structures. They reviewed the values presented in the construction cost estimate and provided insight into current construction costs from a contractor's perspective. After final review the preliminary opinion of probable cost is **$1,445,205**.

The engineer responsible for the evaluation of the building and design of the retrofit scheme has reviewed the cost estimate and deemed it to be valid and accurate. The cost estimate includes mitigation of all the seismic deficiencies in the retrofit scope of work through inclusion of scope of work elements identified in the report and plans. To the best of our knowledge, based on known and readily identifiable existing conditions, the cost estimate is all inclusive of items required to perform the retrofit and will result in a project that can be constructed within the proposed budget.

6.0 Benefit Cost Analysis

The provided benefit-cost analysis (BCA) included in Appendix D, has been prepared by ZCS using the BCA tool as provided by the State of Oregon Infrastructure Finance Authority. The costs associated with the building replacement value, contents replacement value, and occupancy values have been developed by District staff using recent data.

The Humbolt Elementary School was surveyed during the statewide assessment of emergency buildings performed by Department of Geology, Mineral and Industries' (DOGAMI) Rapid Visual Screening (RVS) process in 2005 as part of senate bill 2. The gymnasium building is part (B) and the classroom is part (C) of the RVS scoring provided by DOGAMI. The occupancy and budget data provided by the District is for the entire school campus.

The BCA for this project is **0.079**. Given the BCA score of **0.079** is less than 1.0, we still recommend the proposed seismic retrofit and feel this building is a great candidate for the grant given its importance to the community it serves**.**

7.0 Conclusion and Recommendations

The findings described in this report have been limited to the lateral force-resisting structural system and general assessment of the gravity force-resisting elements. Based on our visual observations, we find the structure to be in good condition and generally safe for occupancy. No significant damage to the existing structural system was discovered.

Given the current condition of the structure, the current code section on existing buildings does not mandate that upgrades are required unless the building is scheduled for repairs, alterations, additions, or change in occupancy. However, it is our understanding the goal of the District is to continue utilizing the existing buildings as classrooms and physical education/ recreation uses, and the District wants the seismic structural system to be compliant with the current code. To clarify, upgrades outlined in this report are strictly at the discretion of the District.

We have attempted to identify all areas requiring upgrades to achieve a scope of work for current code compliance, associated estimated costs and project schedule.

Please contact our office if you would like to discuss our findings. Please review the attached schematic drawings that can be used to refine a scope and budget.

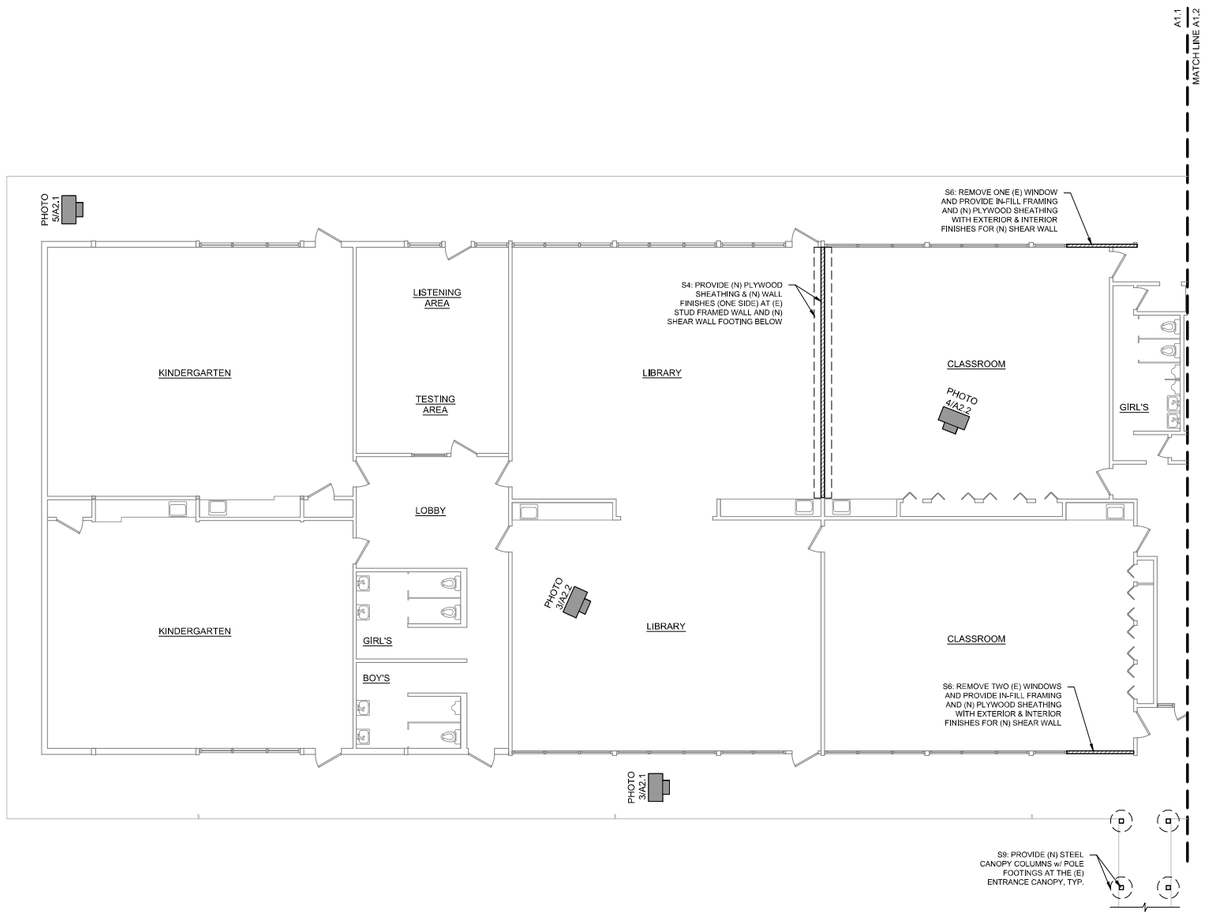
Appendix A: Figures

ZCS
ENGINEERING
ARCHITECTURE

524 Main Street, Suite 2, Oregon City, Oregon 97045 | 503-659-2205

GRANT SCHOOL DISTRICT
329 N. HUMBOLT ST.
CANYON CITY, OREGON
97820

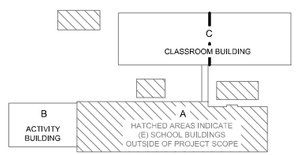
HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT



ONE INCH EQUALS FULL SCALE

1 A1.1 **CLASSROOM BLDG. FLOOR PLAN AREA 'A'**

1/8" = 1'-0"



2 A1.1 **BUILDING KEY**

NTS

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER OREGON JUNE 08, 2004 MATTHEW R. SMITH
EXPIRES: 06-30-20

PRELIMINARY: NOT FOR CONSTRUCTION

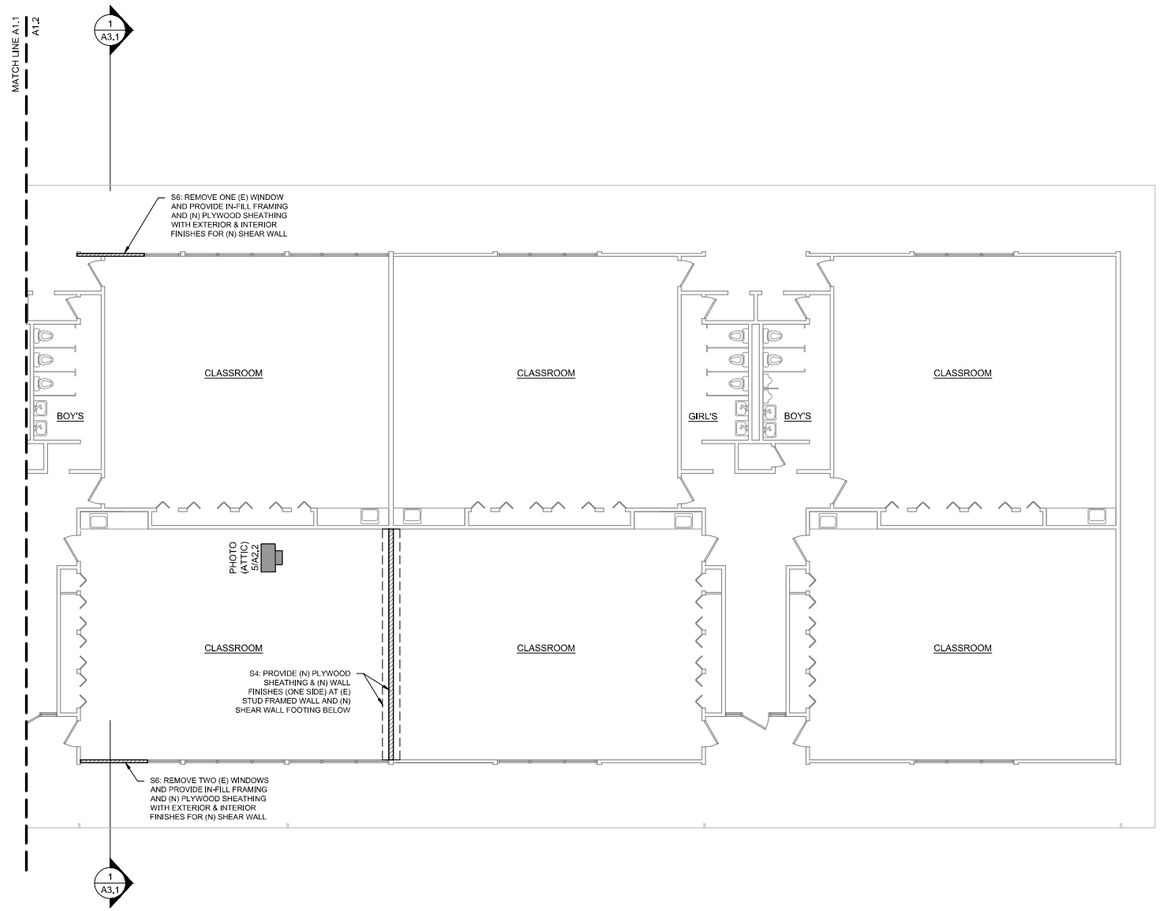
REVISION ID:	DATE:

PROJECT NO:	P-2460-19
DRAWN:	SDW
CHECKED:	
DATE:	12-18-19

CLASSROOM BLDG.
FLOOR PLAN AREA 'A'

A1.1

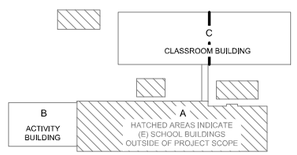
FOR AGENCY REVIEW - NOT FOR CONSTRUCTION



ONE INCH EQUALS FULL SCALE

1 A1.2 **CLASSROOM BLDG. FLOOR PLAN AREA 'B'**

1/8" = 1'-0"



2 2 **BUILDING KEY**

NTS

ZCS ENGINEERING ARCHITECTURE
524 Main Street, Suite 2, Oregon City, Oregon 97045 | 503-659-2205

GRANT SCHOOL DISTRICT
329 N. HUMBOLT ST.
CANYON CITY, OREGON
97820

HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER OREGON 08. 2014 ANDREW R. SMITH
EXPIRES: 06-30-20

PRELIMINARY - NOT FOR CONSTRUCTION

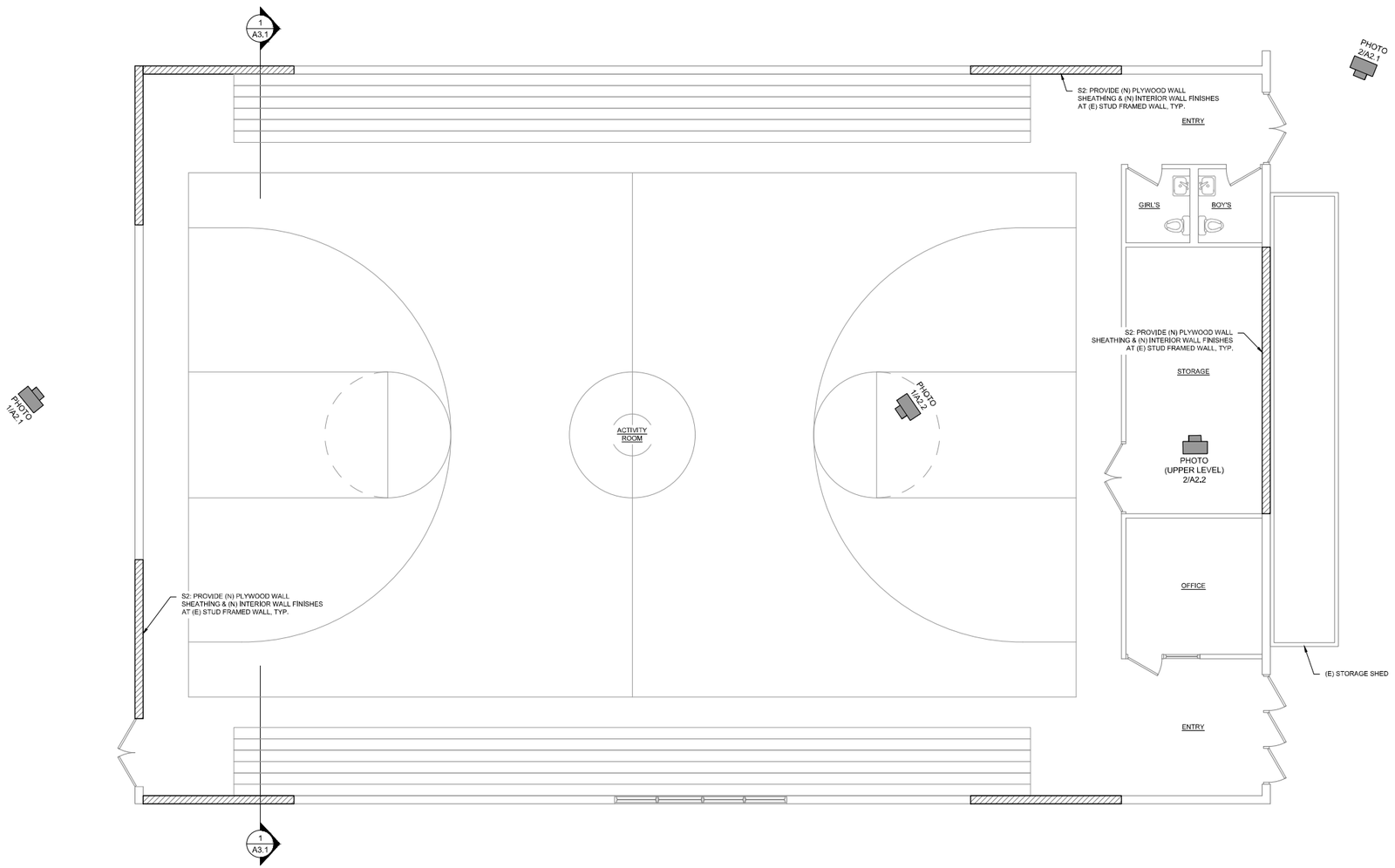
REVISION ID:	DATE:

PROJECT NO:	P-2460-19
DRAWN:	SDW
CHECKED:	
DATE:	12-18-19

CLASSROOM BLDG. FLOOR PLAN AREA 'B'

A1.2

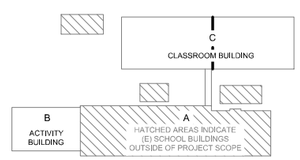
FOR AGENCY REVIEW - NOT FOR CONSTRUCTION



ONE INCH EQUALS FULL SCALE

1 / A1.3 **ACTIVITY BLDG. FLOOR PLAN**

3/16" = 1'-0"



2 / A1.3 **BUILDING KEY**

NTS

ZCS
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524 Main Street, Suite 2, Oregon City,
Oregon 97045 | 503-659-2205

GRANT SCHOOL DISTRICT
329 N. HUMBOLT ST.
CANYON CITY, OREGON
97820

HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

STRUCTURAL ENGINEER
REGISTERED PROFESSIONAL ENGINEER
OREGON
08. 20M
MATTHEW R. SMITH
EXPIRES: 06-30-20

PRELIMINARY - NOT FOR CONSTRUCTION

REVISION ID:	DATE:

PROJECT NO:	P-2460-19
DRAWN:	SDW
CHECKED:	
DATE:	12-18-19

ACTIVITY BLDG.
FLOOR PLAN

A1.3

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

1 A2.1 **PHOTO**

N.T.S.

3 A2.1 **PHOTO**

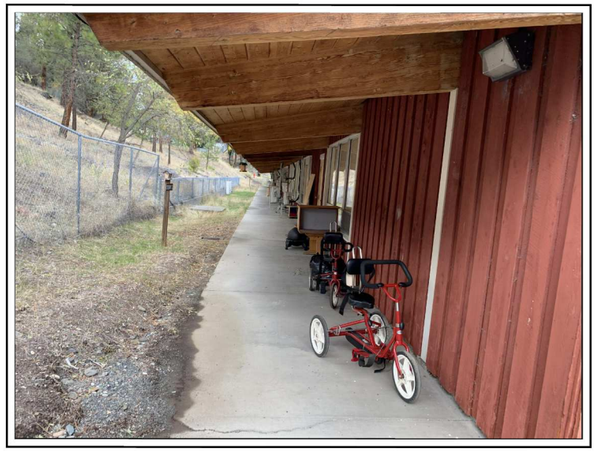
N.T.S.

2 A2.1 **PHOTO**

N.T.S.

4 A2.1 **PHOTO**

N.T.S.



5 A2.1 **PHOTO**

N.T.S.

ONE INCH EQUALS FULL SCALE

ZCS
ENGINEERING
ARCHITECTURE

524 Main Street, Suite 2, Oregon City, Oregon 97045 | 503-659-2205

GRANT SCHOOL DISTRICT
329 N. HUMBOLT ST.
CANYON CITY, OREGON
97820

HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER OREGON 08. 2014 MATTHEW R. SMITH EXPIRES: 06-30-20

PRELIMINARY - NOT FOR CONSTRUCTION

REVISION ID:	DATE:

PROJECT NO:	P-2460-19
DRAWN:	SDW
CHECKED:	
DATE:	12-18-19

EXTERIOR PHOTOS

A2.1

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

1 A2.2 **PHOTO**

N.T.S.

3 A2.2 **PHOTO**

N.T.S.

2 A2.2 **PHOTO**

N.T.S.

4 A2.2 **PHOTO**

N.T.S.

5 A2.2 **PHOTO**

N.T.S.

ONE INCH EQUALS FULL SCALE

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ARCHITECTURE
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HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

STRUCTURAL
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 08, 2014
MATTHEW R. SMITH
EXPIRES: 06-30-20

PRELIMINARY NOT FOR CONSTRUCTION

REVISION ID:	DATE:

PROJECT NO:	P-2460-19
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CHECKED:	
DATE:	12-18-19

INTERIOR PHOTOS

A2.2

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

Appendix B: Structural Tier 1 Check Sheets

Tier 1 Deficiency Summary		
Noncompliant Item in Tier 1	Deficiency Number(s) Per Sections 3.2.2 - 3.2.4 & Retrofit Drawings	Comments
Classroom Building		
Table 17-1. Very Low Seismicity Checklist		
Structural Components		
LOAD PATH	S1, S5, S9	

Table 17-2. Collapse Prevention Basic Configuration Checklist		
Low Seismicity		
Building System—General		
LOAD PATH	S1, S5	

Table 17-6. Collapse Prevention Structural Checklist for Building Type W2		
Low and Moderate Seismicity		
Seismic-Force-Resisting System		
OPENINGS	S6	
Diaphragms		
ROOF CHORD CONTINUITY	S7	
STRAIGHT SHEATHING	S4	
SPANS	S4	
DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS	S4	

Table 17-38. Nonstructural Checklist		
Life Safety Systems		
Hazardous Materials		
HAZARDOUS MATERIAL STORAGE	N4	
HAZARDOUS MATERIAL DISTRIBUTION	N4	
SHUTOFFVALVES	N4	
FLEXIBLECOUPLINGS	N4	
Light Fixtures		
INDEPENDENT SUPPORT	N2	
Contents and Furnishings		

TALL NARROW CONTENTS	N1	
FALL-PRONE CONTENTS	N1	
Mechanical and Electrical Equipment		
FALL-PRONE EQUIPMENT	N2, N3	
IN-LINE EQUIPMENT	N2, N3	
TALL NARROW EQUIPMENT	N2, N3	

Activity Building		
Table 17-6. Collapse Prevention Structural Checklist for Building Type W2		
Low and Moderate Seismicity		
Seismic-Force-Resisting System		
SHEAR STRESS CHECK		
High Seismicity		
Diaphragms		
DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS		

Table 17-7. Immediate Occupancy Checklist for Building Type W2		
Very Low Seismicity		
Seismic-Force-Resisting System		
SHEAR STRESS CHECK	S2	
HOLD-DOWN ANCHORS	S8	
Low, Moderate, and High Seismicity		
Diaphragms		
DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS	S3	

Table 17-38. Nonstructural Checklist		
Ceilings		
SEISMIC JOINTS	N5	
Contents and Furnishings		
TALL NARROW CONTENTS	N1	
FALL-PRONE CONTENTS	N1	
Mechanical and Electrical Equipment		
FALL-PRONE EQUIPMENT	N3	
IN-LINE EQUIPMENT	N3	

SUSPENDED EQUIPMENT	N3	
HEAVY EQUIPMENT	N3	
ELECTRICAL EQUIPMENT	N3	
Piping		
FLEXIBLE COUPLINGS	N4	
FLUID AND GAS PIPING	N4	
PIPING CROSSING SEISMIC JOINTS	N4	

APPENDIX C
SUMMARY DATA SHEET

BUILDING DATA

Building Name: Humbolt Elementary School West Classroom Wing Date: 11/20/2019
Building Address: 329 N. Humbolt St. Canyon City, Or 97820
Latitude: 44.399 Longitude: -118.950 By: SDW

Year Built: 1960 (approx) Year(s) Remodeled: 1972 & 1987 Original Design Code:
Area [ft² (m²)]: 21,200 Length [ft (m)]: 265 Width [ft (m)]: 80
No. of Stories: 1 Story Height: 9' Total Height: 16'

USE ☐ Industrial ☐ Office ☐ Warehouse ☐ Hospital ☐ Residential ☒ Educational ☐ Other: _____

CONSTRUCTION DATA

Gravity Load Structural System: Wood Posts & Beams
Exterior Transverse Walls: Wood Walls Openings? Yes
Exterior Longitudinal Walls: Wood Walls Openings? Yes
Roof Materials/Framing: Wood Beams with Wood Straight Decking
Intermediate Floors/Framing: N/A
Ground Floor: 2x12 Floor Joists with
Columns: Wood Foundation: Concrete
General Condition of Structure: Fair
Levels Below Grade? No
Special Features and Comments:

LATERAL-FORCE-RESISTING SYSTEM

	Longitudinal	Transverse
System:	Wood Framing	Wood Framing
Vertical Elements:	Walls	Walls
Diaphragms:	Straight Decking & plywood	Straight Decking & plywood
Connections:	Nails & Anchors	Nails & Anchors

EVALUATION DATA

BSE-1N Spectral Response Accelerations: S_{DS} = 0.320 S_{D1} = 0.193
Soil Factors: Class = D F_a = F_v=
BSE-2E Spectral Response Accelerations: S_{XS} = 0.31 S_{X1} = 0.202
Level of Seismicity: Moderate Performance Level: Limited Safety
Building Period: T = 0.133
Spectral Acceleration: S_a = 0.31
Modification Factor: $C_mC_1C_2$ = Building Weight: W = 372.4 kips
Pseudolateral Force: $V = C_mC_1C_2S_aW$ = 150.1kips

BUILDING CLASSIFICATION:

REQUIRED TIER 1 CHECKLISTS

	Yes	No
Basic Configuration Checklist	☒	☐
Building Type W2 Structural Checklist	☒	☐
Nonstructural Component Checklist	☒	☐

FURTHER EVALUATION REQUIREMENT:

Table 17-1. Very Low Seismicity Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Structural Components			
C (NC) N/A U	LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation.	5.4.1.1	A.2.1.1
C NC (N/A) U	WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 4.4.3.7.	5.7.1.1	A.5.1.1

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

Table 17-2. Collapse Prevention Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low Seismicity			
Building System—General			
C (NC) N/A U	LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation.	5.4.1.1	A.2.1.1
(C) NC N/A U	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 0.25% of the height of the shorter building in low seismicity, 0.5% in moderate seismicity, and 1.5% in high seismicity.	5.4.1.2	A.2.1.2
C NC (N/A) U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure.	5.4.1.3	A.2.1.3
Building System—Building Configuration			
C NC (N/A) U	WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above.	5.4.2.1	A.2.2.2
C NC (N/A) U	SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above.	5.4.2.2	A.2.2.3
(C) NC N/A U	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation.	5.4.2.3	A.2.2.4
C NC (N/A) U	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines.	5.4.2.4	A.2.2.5
C NC (N/A) U	MASS: There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered.	5.4.2.5	A.2.2.6
(C) NC N/A U	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension.	5.4.2.6	A.2.2.7

continues

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

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Moderate Seismicity (Complete the Following Items in Addition to the Items for Low Seismicity)			
Geologic Site Hazards			
C NC N/A U	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance do not exist in the foundation soils at depths within 50 ft (15.2 m) under the building.	5.4.3.1	A.6.1.1
C NC N/A U	SLOPE FAILURE: The building site is located away from potential earthquake-induced slope failures or rockfalls so that it is unaffected by such failures or is capable of accommodating any predicted movements without failure.	5.4.3.1	A.6.1.2
C NC N/A U	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated.	5.4.3.1	A.6.1.3
High Seismicity (Complete the Following Items in Addition to the Items for Moderate Seismicity)			
Foundation Configuration			
C NC N/A U	OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$.	5.4.3.3	A.6.2.1
C NC N/A U	TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C.	5.4.3.4	A.6.2.2

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

Table 17-3. Immediate Occupancy Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Very Low Seismicity			
Building System—General			
C NC N/A U	LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation.	5.4.1.1	A.2.1.1
C NC N/A U	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 0.5% of the height of the shorter building in low seismicity, 1.0% in moderate seismicity, and 3.0% in high seismicity.	5.4.1.2	A.2.1.2
C NC N/A U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure.	5.4.1.3	A.2.1.3
Building System—Building Configuration			
C NC N/A U	WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above.	5.4.2.1	A.2.2.2
C NC N/A U	SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above.	5.4.2.2	A.2.2.3
C NC N/A U	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation.	5.4.2.3	A.2.2.4
C NC N/A U	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines.	5.4.2.4	A.2.2.5
C NC N/A U	MASS: There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered.	5.4.2.5	A.2.2.6

continues

Table 17-6. Collapse Prevention Structural Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low and Moderate Seismicity			
Seismic-Force-Resisting System			
(C) NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
(C) NC N/A U	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing 1,000 lb/ft Diagonal sheathing 700 lb/ft Straight sheathing 100 lb/ft All other conditions 100 lb/ft	5.5.3.1.1	A.3.2.7.1
C NC (N/A) U	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system.	5.5.3.6.1	A.3.2.7.2
C NC (N/A) U	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building.	5.5.3.6.1	A.3.2.7.3
(C) NC N/A U	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces.	5.5.3.6.1	A.3.2.7.4
C NC (N/A) U	WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor.	5.5.3.6.2	A.3.2.7.5
C NC (N/A) U	HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-1.	5.5.3.6.3	A.3.2.7.6
C NC (N/A) U	CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels.	5.5.3.6.4	A.3.2.7.7
C (NC) N/A U	OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces.	5.5.3.6.5	A.3.2.7.8
Connections			
(C) NC N/A U	WOOD POSTS: There is a positive connection of wood posts to the foundation.	5.7.3.3	A.5.3.3
(C) NC N/A U	WOOD SILLS: All wood sills are bolted to the foundation.	5.7.3.3	A.5.3.4
(C) NC N/A U	GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support.	5.7.4.1	A.5.4.1
High Seismicity (Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)			
Connections			
(C) NC N/A U	WOOD SILL BOLTS: Sill bolts are spaced at 6 ft (1.8 m) or less with acceptable edge and end distance provided for wood and concrete.	5.7.3.3	A.5.3.7
Diaphragms			
(C) NC N/A U	DIAPHRAGM CONTINUITY: The diaphragms are not composed of split-level floors and do not have expansion joints.	5.6.1.1	A.4.1.1
C (NC) N/A U	ROOF CHORD CONTINUITY: All chord elements are continuous, regardless of changes in roof elevation.	5.6.1.1	A.4.1.3
C NC (N/A) U	DIAPHRAGM REINFORCEMENT AT OPENINGS: There is reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension.	5.6.1.5	A.4.1.8
C (NC) N/A U	STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered.	5.6.2	A.4.2.1
C (NC) N/A U	SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing.	5.6.2	A.4.2.2

continues

Table 17-6 *(Continued)*. Collapse Prevention Structural Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
C NC N/A U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and have aspect ratios less than or equal to 4-to-1.	5.6.2	A.4.2.3
C NC N/A U	OTHER DIAPHRAGMS: The diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing.	5.6.5	A.4.7.1

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

Table 17-7. Immediate Occupancy Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Very Low Seismicity			
Seismic-Force-Resisting System			
C NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
C NC N/A U	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing 1,000 lb/ft (14.6 kN/m) Diagonal sheathing 700 lb/ft (10.2 kN/m) Straight sheathing 100 lb/ft (1.5 kN/m) All other conditions 100 lb/ft (1.5 kN/m)	5.5.3.1.1	A.3.2.7.1
C NC N/A U	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system.	5.5.3.6.1	A.3.2.7.2
C NC N/A U	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building.	5.5.3.6.1	A.3.2.7.3
C NC N/A U	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces.	5.5.3.6.1	A.3.2.7.4
C NC N/A U	WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor.	5.5.3.6.2	A.3.2.7.5
C NC N/A U	HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-2.	5.5.3.6.3	A.3.2.7.6
C NC N/A U	CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels.	5.5.3.6.4	A.3.2.7.7
C NC N/A U	OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces.	5.5.3.6.5	A.3.2.7.8
C NC N/A U	HOLD-DOWN ANCHORS: All shear walls have hold-down anchors attached to the end studs constructed in accordance with acceptable construction practices.	5.5.3.6.6	A.3.2.7.9
Connections			
C NC N/A U	WOOD POSTS: There is a positive connection of wood posts to the foundation.	5.7.3.3	A.5.3.3
C NC N/A U	WOOD SILLS: All wood sills are bolted to the foundation.	5.7.3.3	A.5.3.4
C NC N/A U	GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support.	5.7.4.1	A.5.4.1

continues

Table 17-38. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.
[a] Performance Level: HR = Hazards Reduced, LS = Life Safety, and PR = Position Retention.
[b] Level of Seismicity: L = Low, M = Moderate, and H = High.

APPENDIX C
SUMMARY DATA SHEET

BUILDING DATA

Building Name: Humbolt Elementary School Activity Building Date: 11/20/2019

Building Address: 329 N. Humbolt St. Canyon City, Or 97820

Latitude: 44.399 Longitude: -118.950 By: SDW

Year Built: 1990 Year(s) Remodeled: - Original Design Code:

Area [ft² (m²)]: 4500 Length [ft (m)]: 100 Width [ft (m)]: 45

No. of Stories: 1 Story Height: 20.5' Total Height: 25.5'

USE ☐ Industrial ☐ Office ☐ Warehouse ☐ Hospital ☐ Residential ☒ Educational ☐ Other: _____

CONSTRUCTION DATA

Gravity Load Structural System: Wood Trusses & Wood bearing walls

Exterior Transverse Walls: Wood Walls Openings? Yes

Exterior Longitudinal Walls: Wood Walls Openings? Yes

Roof Materials/Framing: 2x Wood Trusses with Plywood Sheathing

Intermediate Floors/Framing: 2x10 joists w/ plywood sheathing. (Mech. mezzanine)

Ground Floor: 2x12 Floor Joists with plywood sheathing

Columns: Wood Foundation: Concrete

General Condition of Structure: Good

Levels Below Grade? No

Special Features and Comments:

LATERAL-FORCE-RESISTING SYSTEM

	Longitudinal	Transverse
System:	Wood Framing	Wood Framing
Vertical Elements:	Walls	Walls
Diaphragms:	Plywood Sheathing	Plywood Sheathing
Connections:	Nails & Anchors	Nails & Anchors

EVALUATION DATA

BSE-1N Spectral Response Accelerations: S_{DS} = 0.320 S_{D1} = 0.193

Soil Factors: Class = D F_a = F_v=

BSE-2E Spectral Response Accelerations: S_{XS} = 0.31 S_{X1} = 0.202

Level of Seismicity: Moderate Performance Level: Immediate Occupancy

Building Period: T = 0.210 sec.

Spectral Acceleration: S_a = 0.31

Modification Factor: $C_m C_1 C_2$ = Building Weight: W = 173.75 kips

Pseudolateral Force: $V = C_m C_1 C_2 S_a W$ = 70.0 kips

BUILDING CLASSIFICATION:

REQUIRED TIER 1 CHECKLISTS

	Yes	No
Basic Configuration Checklist	☒	☐
Building Type W2 Structural Checklist	☒	☐
Nonstructural Component Checklist	☒	☐

FURTHER EVALUATION REQUIREMENT: _____

Table 17-1. Very Low Seismicity Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Structural Components			
C NC N/A U	LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation.	5.4.1.1	A.2.1.1
C NC N/A U	WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 4.4.3.7.	5.7.1.1	A.5.1.1

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

Table 17-2. Collapse Prevention Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low Seismicity			
Building System—General			
C NC N/A U	LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation.	5.4.1.1	A.2.1.1
C NC N/A U	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 0.25% of the height of the shorter building in low seismicity, 0.5% in moderate seismicity, and 1.5% in high seismicity.	5.4.1.2	A.2.1.2
C NC N/A U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure.	5.4.1.3	A.2.1.3
Building System—Building Configuration			
C NC N/A U	WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above.	5.4.2.1	A.2.2.2
C NC N/A U	SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above.	5.4.2.2	A.2.2.3
C NC N/A U	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation.	5.4.2.3	A.2.2.4
C NC N/A U	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines.	5.4.2.4	A.2.2.5
C NC N/A U	MASS: There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered.	5.4.2.5	A.2.2.6
C NC N/A U	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension.	5.4.2.6	A.2.2.7

continues

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

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Moderate Seismicity (Complete the Following Items in Addition to the Items for Low Seismicity)			
Geologic Site Hazards			
C NC N/A U	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance do not exist in the foundation soils at depths within 50 ft (15.2 m) under the building.	5.4.3.1	A.6.1.1
C NC N/A U	SLOPE FAILURE: The building site is located away from potential earthquake-induced slope failures or rockfalls so that it is unaffected by such failures or is capable of accommodating any predicted movements without failure.	5.4.3.1	A.6.1.2
C NC N/A U	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated.	5.4.3.1	A.6.1.3
High Seismicity (Complete the Following Items in Addition to the Items for Moderate Seismicity)			
Foundation Configuration			
C NC N/A U	OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$.	5.4.3.3	A.6.2.1
C NC N/A U	TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C.	5.4.3.4	A.6.2.2

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

Table 17-3. Immediate Occupancy Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Very Low Seismicity			
Building System—General			
C NC N/A U	LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation.	5.4.1.1	A.2.1.1
C NC N/A U	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 0.5% of the height of the shorter building in low seismicity, 1.0% in moderate seismicity, and 3.0% in high seismicity.	5.4.1.2	A.2.1.2
C NC N/A U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure.	5.4.1.3	A.2.1.3
Building System—Building Configuration			
C NC **N/A** U	WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above.	5.4.2.1	A.2.2.2
C NC **N/A** U	SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above.	5.4.2.2	A.2.2.3
C NC **N/A** U	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation.	5.4.2.3	A.2.2.4
C NC **N/A** U	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines.	5.4.2.4	A.2.2.5
C NC **N/A** U	MASS: There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered.	5.4.2.5	A.2.2.6

continues

Table 17-3 *(Continued)*. Immediate Occupancy Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
C NC N/A U	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension.	5.4.2.6	A.2.2.7
Low Seismicity (Complete the Following Items in Addition to the Items for Very Low Seismicity)			
Geologic Site Hazards			
C NC N/A U	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance do not exist in the foundation soils at depths within 50 ft (15.2 m) under the building.	5.4.3.1	A.6.1.1
C NC N/A U	SLOPE FAILURE: The building site is located away from potential earthquake-induced slope failures or rockfalls so that it is unaffected by such failures or is capable of accommodating any predicted movements without failure.	5.4.3.1	A.6.1.2
C NC N/A U	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated.	5.4.3.1	A.6.1.3
Moderate and High Seismicity (Complete the Following Items in Addition to the Items for Low Seismicity)			
Foundation Configuration			
C NC N/A U	OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$.	5.4.3.3	A.6.2.1
C NC N/A U	TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C.	5.4.3.4	A.6.2.2

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

Table 17-4. Collapse Prevention Structural Checklist for Building Types W1 and W1a

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low and Moderate Seismicity			
Seismic-Force-Resisting System			
C NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
C NC N/A U	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing 1,000 lb/ft (14.6 kN/m) Diagonal sheathing 700 lb/ft (10.2 kN/m) Straight sheathing 100 lb/ft (1.5 kN/m) All other conditions 100 lb/ft (1.5 kN/m)	5.5.3.1.1	A.3.2.7.1
C NC N/A U	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system.	5.5.3.6.1	A.3.2.7.2
C NC N/A U	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building.	5.5.3.6.1	A.3.2.7.3
C NC N/A U	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces.	5.5.3.6.1	A.3.2.7.4
C NC N/A U	WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor.	5.5.3.6.2	A.3.2.7.5
C NC N/A U	HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-1.	5.5.3.6.3	A.3.2.7.6

continues

Table 17-6. Collapse Prevention Structural Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low and Moderate Seismicity			
Seismic-Force-Resisting System			
(C) NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
C (NC) N/A U	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing 1,000 lb/ft Diagonal sheathing 700 lb/ft Straight sheathing 100 lb/ft All other conditions 100 lb/ft	5.5.3.1.1	A.3.2.7.1
C NC (N/A) U	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system.	5.5.3.6.1	A.3.2.7.2
C NC (N/A) U	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building.	5.5.3.6.1	A.3.2.7.3
C NC (N/A) U	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces.	5.5.3.6.1	A.3.2.7.4
(C) NC N/A U	WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor.	5.5.3.6.2	A.3.2.7.5
C NC (N/A) U	HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-1.	5.5.3.6.3	A.3.2.7.6
C NC (N/A) U	CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels.	5.5.3.6.4	A.3.2.7.7
C NC (N/A) U	OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces.	5.5.3.6.5	A.3.2.7.8
Connections			
(C) NC N/A U	WOOD POSTS: There is a positive connection of wood posts to the foundation.	5.7.3.3	A.5.3.3
(C) NC N/A U	WOOD SILLS: All wood sills are bolted to the foundation.	5.7.3.3	A.5.3.4
(C) NC N/A U	GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support.	5.7.4.1	A.5.4.1
High Seismicity (Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)			
Connections			
(C) NC N/A U	WOOD SILL BOLTS: Sill bolts are spaced at 6 ft (1.8 m) or less with acceptable edge and end distance provided for wood and concrete.	5.7.3.3	A.5.3.7
Diaphragms			
(C) NC N/A U	DIAPHRAGM CONTINUITY: The diaphragms are not composed of split-level floors and do not have expansion joints.	5.6.1.1	A.4.1.1
(C) NC N/A U	ROOF CHORD CONTINUITY: All chord elements are continuous, regardless of changes in roof elevation.	5.6.1.1	A.4.1.3
C NC (N/A) U	DIAPHRAGM REINFORCEMENT AT OPENINGS: There is reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension.	5.6.1.5	A.4.1.8
C NC (N/A) U	STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered.	5.6.2	A.4.2.1
(C) NC N/A U	SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing.	5.6.2	A.4.2.2

continues

Table 17-6 *(Continued)*. Collapse Prevention Structural Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
C NC N/A U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and have aspect ratios less than or equal to 4-to-1.	5.6.2	A.4.2.3
C NC N/A U	OTHER DIAPHRAGMS: The diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing.	5.6.5	A.4.7.1

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

Table 17-7. Immediate Occupancy Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Very Low Seismicity			
Seismic-Force-Resisting System			
C NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
C NC N/A U	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing 1,000 lb/ft (14.6 kN/m) Diagonal sheathing 700 lb/ft (10.2 kN/m) Straight sheathing 100 lb/ft (1.5 kN/m) All other conditions 100 lb/ft (1.5 kN/m)	5.5.3.1.1	A.3.2.7.1
C NC N/A U	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system.	5.5.3.6.1	A.3.2.7.2
C NC N/A U	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building.	5.5.3.6.1	A.3.2.7.3
C NC N/A U	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces.	5.5.3.6.1	A.3.2.7.4
C NC N/A U	WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor.	5.5.3.6.2	A.3.2.7.5
C NC N/A U	HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-2.	5.5.3.6.3	A.3.2.7.6
C NC N/A U	CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels.	5.5.3.6.4	A.3.2.7.7
C NC N/A U	OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces.	5.5.3.6.5	A.3.2.7.8
C NC N/A U	HOLD-DOWN ANCHORS: All shear walls have hold-down anchors attached to the end studs constructed in accordance with acceptable construction practices.	5.5.3.6.6	A.3.2.7.9
Connections			
C NC N/A U	WOOD POSTS: There is a positive connection of wood posts to the foundation.	5.7.3.3	A.5.3.3
C NC N/A U	WOOD SILLS: All wood sills are bolted to the foundation.	5.7.3.3	A.5.3.4
C NC N/A U	GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support.	5.7.4.1	A.5.4.1

continues

Table 17-6 *(Continued)*. Collapse Prevention Structural Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
C NC N/A U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and have aspect ratios less than or equal to 4-to-1.	5.6.2	A.4.2.3
C NC N/A U	OTHER DIAPHRAGMS: The diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing.	5.6.5	A.4.7.1

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

Table 17-7. Immediate Occupancy Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Very Low Seismicity			
Seismic-Force-Resisting System			
(C) NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
C (NC) N/A U	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than the following values: Structural panel sheathing 1,000 lb/ft (14.6 kN/m) Diagonal sheathing 700 lb/ft (10.2 kN/m) Straight sheathing 100 lb/ft (1.5 kN/m) All other conditions 100 lb/ft (1.5 kN/m)	5.5.3.1.1	A.3.2.7.1
C NC (N/A) U	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings do not rely on exterior stucco walls as the primary seismic-force-resisting system.	5.5.3.6.1	A.3.2.7.2
C NC (N/A) U	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard is not used for shear walls on buildings more than one story high with the exception of the uppermost level of a multi-story building.	5.5.3.6.1	A.3.2.7.3
C NC (N/A) U	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 are not used to resist seismic forces.	5.5.3.6.1	A.3.2.7.4
(C) NC N/A U	WALLS CONNECTED THROUGH FLOORS: Shear walls have an interconnection between stories to transfer overturning and shear forces through the floor.	5.5.3.6.2	A.3.2.7.5
C NC (N/A) U	HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story because of a sloping site, all shear walls on the downhill slope have an aspect ratio less than 1-to-2.	5.5.3.6.3	A.3.2.7.6
C NC (N/A) U	CRIPPLE WALLS: Cripple walls below first-floor-level shear walls are braced to the foundation with wood structural panels.	5.5.3.6.4	A.3.2.7.7
C NC (N/A) U	OPENINGS: Walls with openings greater than 80% of the length are braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or are supported by adjacent construction through positive ties capable of transferring the seismic forces.	5.5.3.6.5	A.3.2.7.8
C (NC) N/A U	HOLD-DOWN ANCHORS: All shear walls have hold-down anchors attached to the end studs constructed in accordance with acceptable construction practices.	5.5.3.6.6	A.3.2.7.9
Connections			
(C) NC N/A U	WOOD POSTS: There is a positive connection of wood posts to the foundation.	5.7.3.3	A.5.3.3
(C) NC N/A U	WOOD SILLS: All wood sills are bolted to the foundation.	5.7.3.3	A.5.3.4
(C) NC N/A U	GIRDER–COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support.	5.7.4.1	A.5.4.1

continues

Table 17-7 *(Continued)*. Immediate Occupancy Checklist for Building Type W2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Foundation System			
C NC N/A U	DEEP FOUNDATIONS: Piles and piers are capable of transferring the lateral forces between the structure and the soil.		A.6.2.3
C NC N/A U	SLOPING SITES: The difference in foundation embedment depth from one side of the building to another does not exceed one story high.		A.6.2.4
Low, Moderate, and High Seismicity (Complete the Following Items in Addition to the Items for Very Low Seismicity)			
Seismic-Force-Resisting System			
C NC N/A U	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 1.5-to-1 are not used to resist seismic forces.	5.5.3.6.1	A.3.2.7.4
Diaphragms			
C NC N/A U	DIAPHRAGM CONTINUITY: The diaphragms are not composed of split-level floors and do not have expansion joints.	5.6.1.1	A.4.1.1
C NC N/A U	ROOF CHORD CONTINUITY: All chord elements are continuous, regardless of changes in roof elevation.	5.6.1.1	A.4.1.3
C NC N/A U	DIAPHRAGM REINFORCEMENT AT OPENINGS: There is reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension.	5.6.1.5	A.4.1.8
C NC N/A U	STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 1-to-1 in the direction being considered.	5.6.2	A.4.2.1
C NC N/A U	SPANS: All wood diaphragms with spans greater than 12 ft (3.6 m) consist of wood structural panels or diagonal sheathing.	5.6.2	A.4.2.2
C NC N/A U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 30 ft (9.2 m) and have aspect ratios less than or equal to 3-to-1.	5.6.2	A.4.2.3
C NC N/A U	OTHER DIAPHRAGMS: The diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing.	5.6.5	A.4.7.1
Connections			
C NC N/A U	WOOD SILL BOLTS: Sill bolts are spaced at 4 ft or less with acceptable edge and end distance provided for wood and concrete.	5.7.3.3	A.5.3.7

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

professional to require further investigation shall be categorized as Noncompliant or Unknown. For evaluation statements classified as Noncompliant or Unknown, the design professional is permitted to choose to conduct further investigation using the corresponding Tier 2 evaluation procedure listed next to each evaluation statement.

17.4 STRUCTURAL CHECKLISTS FOR BUILDING TYPES S1: STEEL MOMENT FRAMES WITH STIFF DIAPHRAGMS AND S1A: STEEL MOMENT FRAMES WITH FLEXIBLE DIAPHRAGMS

For building systems and configurations that comply with the S1 or S1a building type description in Table 3-1, the Collapse Prevention Structural Checklist in Table 17-8 shall be completed where required by Table 4-6 for Collapse Prevention Structural Performance, and the Immediate Occupancy Structural Checklist in Table 17-9 shall be completed where required by Table 4-6 for Immediate Occupancy Structural Performance. Tier 1 screening shall include on-site investigation and condition assessment as required by Section 4.2.1.

Where applicable, each of the evaluation statements listed in this checklist shall be marked Compliant (C), Noncompliant (NC), Not Applicable (N/A), or Unknown (U) for a Tier 1 screening. Items that are deemed acceptable to the design professional in accordance with the evaluation statement shall be categorized as Compliant, whereas items that are determined by the design professional to require further investigation shall be categorized as Noncompliant or Unknown. For evaluation statements classified as Noncompliant or Unknown, the design professional is permitted to choose to conduct further investigation using the corresponding Tier 2 evaluation procedure listed next to each evaluation statement.

17.5 STRUCTURAL CHECKLIST FOR BUILDING TYPES S2: STEEL BRACED FRAMES WITH STIFF DIAPHRAGMS AND S2A: STEEL BRACED FRAMES WITH FLEXIBLE DIAPHRAGMS

For building systems and configurations that comply with the S2 or S2a building type description in Table 3-1, the Collapse Prevention Structural Checklist in Table 17-10 shall be completed where required by Table 4-6 for Collapse Prevention Structural Performance, and the Immediate Occupancy Structural Checklist in Table 17-11 shall be completed where required by Table 4-6 for Immediate Occupancy Structural Performance.

Table 17-38. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

continues

Table 17-38 *(Continued)*. Nonstructural Checklist

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

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.
[a] Performance Level: HR = Hazards Reduced, LS = Life Safety, and PR = Position Retention.
[b] Level of Seismicity: L = Low, M = Moderate, and H = High.

Humbolt E.S.

Latitude, Longitude: 44.399, -118.950

Date	11/20/2019, 3:53:45 PM
Design Code Reference Document	ASCE41-17
Custom Probability	
Site Class	D - Stiff Soil

Type	Description	Value
Hazard Level		BSE-2N
S_S	spectral response (0.2 s)	0.309
S_1	spectral response (1.0 s)	0.123
S_{XS}	site-modified spectral response (0.2 s)	0.48
S_{X1}	site-modified spectral response (1.0 s)	0.289
F_a	site amplification factor (0.2 s)	1.552
F_v	site amplification factor (1.0 s)	2.354
ssuh	max direction uniform hazard (0.2 s)	0.34
crs	coefficient of risk (0.2 s)	0.91
ssrt	risk-targeted hazard (0.2 s)	0.309
ssd	deterministic hazard (0.2 s)	1.5
s1uh	max direction uniform hazard (1.0 s)	0.136
cr1	coefficient of risk (1.0 s)	0.9
s1rt	risk-targeted hazard (1.0 s)	0.123
s1d	deterministic hazard (1.0 s)	0.6

Type	Description	Value
Hazard Level		BSE-1N
S_{XS}	site-modified spectral response (0.2 s)	0.32
S_{X1}	site-modified spectral response (1.0 s)	0.193

Type	Description	Value
Hazard Level		BSE-2E
S_S	spectral response (0.2 s)	0.194
S_1	spectral response (1.0 s)	0.084
S_{XS}	site-modified spectral response (0.2 s)	0.31
S_{X1}	site-modified spectral response (1.0 s)	0.202
f_a	site amplification factor (0.2 s)	1.6
f_v	site amplification factor (1.0 s)	2.4

Type	Description	Value
Hazard Level		BSE-1E
S_S	spectral response (0.2 s)	0.072
S_1	spectral response (1.0 s)	0.034
S_{XS}	site-modified spectral response (0.2 s)	0.115
S_{X1}	site-modified spectral response (1.0 s)	0.081
F_a	site amplification factor (0.2 s)	1.6
F_v	site amplification factor (1.0 s)	2.4

Type	Description	Value
Hazard Level		T-Sub-L Data
T-Sub-L	Long-period transition period in seconds	16

Humbolt Elementary Fault and Liquefaction Hazard Map

January 13, 2020

Active Faults

High

Moderate

Low

1:2,400

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.09 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus

Humbolt Elementary Landslides Hazard Map

January 13, 2020

Landslide Hazard

Green: Band_2

Blue: Band_3

Red: Band_1

1:2,400

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.09 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus

Northern, Inc.
Consulting Engineers Environmental Scientists Construction Materials Testing

January 15, 2020

ZCS Engineering & Architecture
524 Main Street, Suite 2
Oregon City, OR 97045

Attn: Kristofer Tonning, PE, SE, Senior Project Manager

Subject: **MEMO: Preliminary Review of Geologic Hazards**
Humbolt Elementary School Seismic Retrofit
329 N. Humbolt Street, Canyon City, Oregon

GNN Project No. 217-895

Dear Mr. Tonning,

At your request, GN Northern (GNN) has prepared this memorandum presenting our preliminary desktop review of geologic hazards at the eastern classroom/cafeteria/office building (constructed in 1956) of the Humbolt Elementary School in Canyon City, Oregon. GNN has previously completed a limited geotechnical site investigation for the project on December 20, 2017. The purpose of this preliminary review is to determine if geologic hazards may be present at the site and/or pose a risk to site for consideration in the school's grant application for the seismic upgrade work. No additional site reconnaissance or subsurface exploration was completed as part of this review.

Geologic Setting

Based on the published geologic map of the area (Schlicker et. al, 1975), the site is mapped with Quaternary alluvium [Qal] along the Canyon Creek valley. These deposits are described as flood-plain and river-channel deposits composed of clay, silt, sand and gravel, with a known abundance of coarse gravel across Canyon Creek valley. The bounding geologic feature along the east and west sides of the canyon is locally mapped as mid-Pliocene to early-Pleistocene age Rattlesnake Formation [Tr/Trt], described as poorly sorted and poorly consolidated fanglomerate and river gravels, including the rhyolitic ash-flow member which grades from densely welded to non-welded. Older bedrock in the region includes Miocene age basalts of the Columbia River Basalt Group [Tcr], as well as the Canyon Mountain Complex [Sp] described as mostly serpentinite.

Geologic Hazards

The Oregon Department of Geology and Mineral Industries (DOGAMI) HazVu website maps the following geologic hazards at/near the subject site:

- The entire Canyon Creek valley, including the project site, is mapped with a 'strong' expected shaking under a magnitude 9.0 Cascadia Subduction Zone (CSZ) earthquake, as well as other local earthquakes.
- The entire Canyon Creek valley, including the project site, is mapped with a 'moderate' liquefaction (soft soil) hazard.
- An area across the western portion of the school property includes an ascending slope, with the lower portion (toe) mapped with 'moderate' landslide hazard (landsliding possible), and the majority of the upper portion mapped with 'high' landslide hazard (landsliding likely).
- No existing landslides are mapped across the school property. The nearest mapped landslide is located ~560 feet east of the subject building near the toe of the eastern canyon slope.

A discussion of the pertinent geologic hazards is included in the following paragraphs:

Surface Fault Rupture Potential: Due to the lack of any known active fault traces in the immediate site vicinity (nearest active faults located more than 18 miles to the southeast), surface fault rupture is unlikely to occur at the subject site. While future fault rupture could occur at other locations, rupture would most likely occur along previously established fault traces.

Soil Liquefaction & Lateral Spread: Soils that are most susceptible to liquefaction are loose sands with little fines content below groundwater. In general, saturated soils with less than 15% fines and with standard penetration test (SPT) blow counts less than 20 to 30 are potentially susceptible to liquefaction, depending on the severity of seismic loading. Based on relatively shallow subsurface exploration completed during the limited geotechnical investigation, we typically encountered gravels with cobbles in the upper 8 feet, with groundwater believed to become as shallow as 2 to 4 feet. Based on our understanding of the soil/groundwater conditions in the upper 8 feet, data from the site-specific Refraction Microtremor (ReMi) survey and review of available well logs, the risk of liquefaction at the project site appears to be low to moderate, and therefore the risk of liquefaction-induced settlement is also considered low to moderate. Due to site topography, the risk of lateral spreading is considered low.

To determine the extent and magnitude of liquefaction-induced settlement, site-specific geotechnical investigation using 50-foot boring(s) would be required.

Landslide / Slope Failure Potential: The nearby ascending slope is located ~100 west of the subject school building. The natural slope is believed to be comprised of relatively competent geologic materials and generally appears to be globally stable. However, the mine-tailings historically side-casted over the slope face will be prone to shallow surficial instability such as sloughing and raveling. Therefore, risk from significant slope failure at the subject school building site is considered relatively low. However, in order to fully analyze the stability of the existing slope(s) and determine associated factors of safety, site-specific geotechnical investigation using boring(s) would be required.

Duration of Strong Ground Shaking: Based on a review of selected available earthquake epicenters and associated magnitudes, the bracketed duration for strong ground motion at the site is estimated to be less than 10 seconds (based on published correlations by Chang & Krinitzsky, 1977).

References

Chang, F. K. & Krinitzsky, E. L., 1977. Duration, Spectral Content, and Predominant Period of Strong Motion Earthquake Records from Western United States, Miscellaneous Paper 5-73-1, U.S. Army Corps of Engineers Waterways Experiment Station.

GN Northern, Inc, December 20, 2017. Geotechnical Site Investigation Report, Humbolt Elementary School, 329 N. Humbolt Street, Canyon City, Oregon, GNN Project No. 217-895.

Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: Statewide Geohazards Viewer, https://gis.dogami.oregon.gov/maps/hazvu/, accessed January 2020.

Schlicker, H.G., and Brooks, H.C., 1975, Engineering Geology of the John Day Area, Grant County, Oregon, DOGAMI Open-File Report O-76-6, scale 1:24,000.

Limitations

This memorandum is based on our review the referenced information and our geotechnical/geological knowledge/experience of the area. No additional site reconnaissance or site-specific subsurface exploration was completed as part of this review. Soil & groundwater conditions can differ from those identified in the sources we reviewed. GNN has provided geological/geotechnical services in accordance with generally accepted geotechnical engineering practices in this locality at this time. GNN expressly disclaims all warranties and guarantees, express or implied.

If you have any questions regarding this report, please contact us at 541-564-0991.

Respectfully submitted,

GN Northern, Inc.

Digitally signed by Karl A. Harmon
Date: 2020.01.15 13:28:28 -08'00'

Karl A. Harmon, CEG, PE
Senior Geologist/Engineer

Appendix C: Construction Cost Estimate Worksheets

ENGINEER'S OPINION OF PROBABLE COST - HUMBOLT E.S. SEISMIC REHABILITATION

Summary

Description	Deficiencies (Ref. Seismic Evaluation Report Sec. 4.0)	Quantity	Units	Unit Price	Total Price for Construction Item
GENERAL CONDITIONS					
General Conditions		10%	%		$ 78,875.00
Preconstruction Services		2%	%		$ 15,775.00
Escalation		7%	%		$ 61,838.00
Bonding & Insurance		3%	%		$ 26,502.00
Contractor Profit & Overhead		6%	%		$ 53,004.00
				General Conditions Subtotal	$ 235,994.00
Non-Structural Elements					
Misc MEP	N2, N3, N4	1	Lump Sum	$ 51,300.00	$ 51,300.00
Misc Non-Structural	N1, N5	1	Lump Sum	$ 20,500.00	$ 20,500.00
				Non-Structural Subtotal	$ 71,800.00
Construction Cost Per Building Part					
				Building Part 'Activity Bldg.' Subtotal	$ 240,000.00
				Building Part 'Classroom Bldg.' Subtotal	$ 476,950.00
				Sub-Total Construction Cost	$ 1,024,700.00
				Contingency 15%	$ 153,705.00
				Total Construction Cost	$ 1,178,405.00

Cost Estimate Summary

Engineering		$ 174,700.00
Architectural Consulting	$ 17,700.00	
Structural / Rehabilitation Engineering	$ 129,600.00	
Geotechnical Consulting	$ 17,100.00	
Materials Testing for Design	$ 10,300.00	
Construction Management		$ 35,400.00
Construction		$ 1,066,000.00
Sub-Total Construction Cost	$ 1,024,700.00	
Special Inspection Services for Construction	$ 5,900.00	
Permitting Fees	$ 35,400.00	
Relocation of FF&E		$ 15,400.00
Contingency		$ 153,705.00
Total Project Funding Requirement		$ 1,445,205.00

ENGINEER'S OPINION OF PROBABLE COST - HUMBOLT E.S. SEISMIC REHABILITATION

Building Part - 'Activity Bldg.'

Description	Deficiencies (Ref. Seismic Evaluation Report Sec. 4.0)	Quantity	Units	Unit Price	Total Price for Construction Item
Demolition & Asbestos Abatement					
TPO / Comp / Metal Roof Demo	S1,S3,S5	7900	Square Foot	$ 2.00	$ 15,800.00
Soft Demolition	S2,S5,A5	2000	Square Foot	$ 4.00	$ 8,000.00
				Demolition & Asbestos Subtotal	$ 23,800.00
Foundation / Floor Strengthening Construction					
Bolting of Extg Walls to footings	S2,S8	100	Linear Foot	$ 50.00	$ 5,000.00
Flooring Protection	S2,S8,A5	6500	Square Foot	$ 3.00	$ 19,500.00
				Foundation Level Subtotal	$ 24,500.00
Wall Strengthening Construction					
Sheathing of Existing Walls	S2	2000	Square Foot	$ 5.00	$ 10,000.00
Interior Wall Finish Repair	S2	2000	Square Foot	$ 2.00	$ 4,000.00
Painting of Wall	S2	6800	Square Foot	$ 3.00	$ 20,400.00
				Wall Strengthening Subtotal	$ 34,400.00
Roof Strengthening Construction					
Diaphragm Attachments - In-Plane Shear	S1	350	Linear Foot	$ 20.00	$ 7,000.00
Blocking & Strapping	S3	1800	Linear Foot	$ 20.00	$ 36,000.00
Ceiling Repair	A5	6500	Square Foot	$ 3.00	$ 19,500.00
New Metal Roof	S1,S3,S5	7900	Square Foot	$ 12.00	$ 94,800.00
				Roof Strengthening Subtotal	$ 157,300.00
			Building Part 'Activity Bldg.' - Total Construction Cost		$ 240,000.00

ENGINEER'S OPINION OF PROBABLE COST - HUMBOLT E.S. SEISMIC REHABILITATION

Building Part - 'Classroom Bldg.'

Description	Deficiencies (Ref. Seismic Evaluation Report Sec. 4.0)	Quantity	Units	Unit Price	Total Price for Construction Item
Demolition & Asbestos Abatement					
TPO / Comp / Metal Roof Demo	S1,S4,S5,S6,S7	21000	Square Foot	$ 2.00	$ 42,000.00
Abatement	S4,S5,S6	2500	Square Foot	$ 10.00	$ 25,000.00
Hard Demolition	S6	1300	Square Foot	$ 4.00	$ 5,200.00
			Demolition & Asbestos Subtotal		$ 72,200.00
Foundation / Floor Strengthening Construction					
Shear Wall Footings - Wood Walls	S4	60	Linear Foot	$ 300.00	$ 18,000.00
Bolting of Extg Walls to footings	S6	300	Linear Foot	$ 50.00	$ 15,000.00
Spread Footings for Columns / Holdown	S6	8	Each	$ 3,000.00	$ 24,000.00
Concrete Repair & Patching	S9	350	Square Foot	$ 15.00	$ 5,250.00
			Foundation Level Subtotal		$ 62,250.00
Wall Strengthening Construction					
Sheathing of Existing Walls	S6	1200	Square Foot	$ 5.00	$ 6,000.00
New 2x Framed Shear Walls	S6	500	Square Foot	$ 10.00	$ 5,000.00
Interior Wall Finish Repair	S4,S6	2500	Square Foot	$ 2.00	$ 5,000.00
Exterior Finish Repair / Installation	S6	480	Square Foot	$ 25.00	$ 12,000.00
Light Steel Columns	S9	4	EA	$ 1,500.00	$ 6,000.00
			Wall Strengthening Subtotal		$ 34,000.00
Roof Strengthening Construction					
New Metal Roof	S1,S4,S5,S6,S7	21000	Square Foot	$ 12.00	$ 252,000.00
New Roof Sheathing	S4	9600	Square Foot	$ 4.00	$ 38,400.00
Diaphragm Attachments - In-Plane Shear	S1,S4,S6	650	Linear Foot	$ 20.00	$ 13,000.00
Ceiling Repair	S4,S6	1700	Square Foot	$ 3.00	$ 5,100.00
			Roof Strengthening Subtotal		$ 308,500.00
		Building Part 'Classroom Bldg.' - Total Construction Cost			$ 476,950.00

Appendix D: Benefit Cost Analysis Worksheets

Oregon Seismic Rehabilitation Grant Application: Benefit-Cost Analysis

Entity:	**Grant School District**		
Point of Contact	**Bret Uptmor**		
Telephone:	**(541)575-1208**		
E-Mail:	uptmorb@grantesd.k12.or.us		
BCA File Name:	**BCA-Humbolt Elementary**	**BCA Date:**	**12/9/2019**

Building Name:	**Humbolt Elementary School**
Site ID:	**Gran_sch06**
Facility Use:	**School**

Is the Building in the Oregon BCA Tool Database: Yes or No? **Yes**

How Many Structurally Different Building Parts Are There?

User-Defined	Database
	3

Unique Building ID Number	Building Part Square Footage	Percent of Total SF	Percent of Occupancy	Percent of Operating Budget	Building Part Being Retrofitted?
Gran_sch06A	22,400	44.80%	45.00%	45.00%	**No**
Gran_sch06B	7,600	15.20%	15.00%	15.00%	**Yes**
Gran_sch06C	20,000	40.00%	40.00%	40.00%	**Yes**
Totals:	**50,000**	**100.00%**	**100.00%**	**100.00%**	

Seismic Retrofit Cost Estimate per SRGP Application: **$1,445,205**

Benefit-Cost Analysis: Summary Results
Humbolt Elementary School

Building Part	Benefits
Gran_sch06A	
Gran_sch06B	$60,124
Gran_sch06C	$54,569
Total Benefits	**$114,693**
Total Cost	**$1,445,205**
Benefit-Cost Ratio	**0.079**

Benefits by Category Avoided Damages and Losses	
Building Damage	$33,688
Contents Damage	$8,422
Displacement Costs	$4,950
Loss of Function Costs	$1,707
Casualties	$65,925
Total	**$114,693**

Occupancy Data

For benefit-cost analysis, the average occupancy on a 24/7/365 basis is used for casualty calculations.
Enter data below ONLY for the occupancy categories applicable to this building - all other green cell entries should be left blank.
There are entries below for: employees, visitors, students, meetings or special events and patients.

NOTE: for buildings with similar occupancies each month, complete the tables on the left side only.

NOTE: For buildings with different summer occupancies, complete the tables both on the left and right sides. If this does not apply, enter "0" for number of summer months

Employees: 12 Months per Year or Academic Year for Schools				
Day of Week	Time of Day	Hours per Day	Average Employees in Building	Calculated 24/7/365 Occupancy
Monday - Friday	Day	8	30	5.639
Monday - Friday	Evening	6	1	0.141
Monday - Friday	Night			
Saturday	Day			
Saturday	Evening			
Saturday	Night			
Sunday	Day			
Sunday	Evening			
Sunday	Night			
			Subtotal:	5.780

Employees: Summer Months			Number of Months:	2.5
Day of Week	Time of Day	Hours per Day	Average Employees in Building	Calculated 24/7/365 Occupancy
Monday - Friday	Day	8	6	0.297
Monday - Friday	Evening			
Monday - Friday	Night			
Saturday	Day			
Saturday	Evening			
Saturday	Night			
Sunday	Day			
Sunday	Evening			
Sunday	Night			
			Subtotal:	0.297

Visitors: 12 Months per Year or Academic Year for Schools			
Day of Week	Average Number of Visitors Per Day	Average Time in Building (Minutes)	Calculated 24/7/365 Occupancy
Monday - Friday	20	15	0.117
Saturday	200	120	1.880
Sunday	10	120	0.094
		Subtotal:	2.091

Visitors: Summer Months		Number of Months:	2.5
Day of Week	Average Number of Visitors Per Day	Average Time in Building (Minutes)	Calculated 24/7/365 Occupancy
Monday - Friday	2	5	0.001
Saturday			
Sunday			
		Subtotal:	0.001

K-12 Students: Academic Year	
Average Daily Number of Students:	294
Hours per Day:	8
Days per Year:	149
Calculated 24/7/365 Occupancy:	40.005

K-12 Students: Summer School	
Average Daily Number of Students:	60
Hours per Day:	6
Days per Year:	15
Calculated 24/7/365 Occupancy:	0.616

College Students: Academic Year				
Number of Weeks per Year of Classes:				24
Course	Class Duration (hours)	Number of Class Periods per Week	Average Number of Students per Class	Calculated 24/7/365 Occupancy
1 Hr. Courses	1			
1.5 Hr. Courses	1.5			
2 Hr. Courses	2			
3 Hr. Courses	3			
Other	N/A			
Other	N/A			
			Subtotal:	

College Students: Summer School				
Number of Weeks per Year of Classes:				
Course	Class Duration (hours)	Number of Class Periods per Week	Average Number of Students per Class	Calculated 24/7/365 Occupancy
1 Hr. Courses	1			
1.5 Hr. Courses	1.5			
2 Hr. Courses	2			
3 Hr. Courses	3			
Other	N/A			
Other	N/A			
			Subtotal:	

Occupancy Data

Meetings, Sports Events etc.

Event	Events per Year	People per Event	Average Duration per Event (hours)	Calculated 24/7/365 Occupancy
Little League Registr	2	200	8	0.365
Parks and Recreatio	60	100	4	2.740
Summer Lunch Prog	30	60	1	0.205
Music Programs	6	100	2	0.137
Open House	1	800	3	0.274
Back to School Nigh	1	800	3	0.274
Winter Carnival	1	500	2	0.114
PTA Meetings	12	25	2	0.068
Kindergarten Move U	1	75	4	0.034
Community Input	2	50	2	0.023
Early Intervention	50	20	4	0.457
Open Campus	6	100	2	0.137
OSU Extension	12	100	4	0.548
Holiday Programs	3	200	2	0.137
Grant County Assem	6	200	2	0.274
			Subtotal:	**5.788**

Patients

Total Number of In-Patient Beds:	
Average Daily Number of In-Patients	
Average Percentage Occupancy	

Day of Week	Average Number of Out-Patients per Day	Average Time in Building (Hours)	Calculated 24/7/365 Occupancy
Monday - Friday			
Saturday			
Sunday			

Out-Patients:	
In-Patients:	
Total Patients:	

Occupancy Data

SUMMARY OCCUPANCY DATA:
Average 24/7/365 Occupancy

Occupancy Category	12 Months or Academic Year	Summer
Employees	5.780	0.297
Visitors	2.091	0.001
Students: K-12	40.005	0.616
Students: College		
Meetings & Special Events	5.788	N/A
Patients		N/A
Subtotals:	53.665	0.914
Avg 24/7/365 Occupancy:	54.579	

DATA DOCUMENTATION: OCCUPANCY	
Provide brief documentation below and/or references to other documents included with your application (with page number), for the sources of the occupancy data and estimates.	
Employees: Numbers	40.5
Employees: Hours Per Day	8
Visitors: Number Per Day	60
Visitors: Average Time in Building	30
K-12 Students: Number	294
K-12 Students: Hours Per Day	8
K-12 Students: Days Per Year	149
Additional Comments Re: above Occupancy Data	
College Student Occupancy Data	

Meetings, Sports Events and Other Special Events	
NOTES:	It is NOT necessary to provide separate documentation for every special event listed. Rather, provide an Overview Statement of the sources of special event occupancy estimates.
	Provide specific documentation for high occupancy events or very frequent events with high Calculated 24/7/365 Occupancy, especially for occupancies that appear "unusual" or potentially "out of bounds."
Overview Statement Re: Sources of Special Events Occupancy Estimates	

Hospital Patient Data	
Number of Patient Beds	
Average Daily Number of In-Patients	
Average Daily Number of Out-Patients	
Average Time in Building for Out-Patients	

Annual Operating Budget for this Facility

Employees:

	Classification	Number of FTEs[1]	Average Annual Salary per Employee	Total Benefits as Percent of Salary	Annual Salary and Benefits
1	Teachers	19.5	$57,450	27.77%	**$1,431,375**
2	Administration	1	$92,000	29.00%	**$118,680**
3	Other	20	$17,968	27.77%	**$459,154**
4					**$0**
5					**$0**
6					**$0**
7					**$0**
8					**$0**
9					**$0**
10					**$0**
	Total Number of FTEs:	**40.50**		**Subtotal:**	**$2,009,210**

[1] FTEs: Full time equivalents

Other Building Expenses

Category		Annual Cost
Supplies		$78,000
Building Maintenance		$31,047
Utilities		$90,033
Insurance		$0
Rent		
Average Annual Capital Goods		
OTHER: specify below		
Percent of District Office/Headquarters Annual Operating Budget Attributed to This Building:	22.00%	**$219,765**
If rent is zero (building owned), a proxy rent is calculated automatically, based on the value of the building:		**$1,260,000**
	Subtotal:	**$1,678,845**

Total Building Annual Operating Budget:	**$3,688,054**

Annual Operating Budget for this Facility

For entities with multiple facilities, a fraction of the operating budget for a District Office of Headquarters building may be attributed to the building being retrofitted. That is, the annual operating budget for the building above may include part of the operating budget for the District Office or Headquarters Building. If so, complete the following tables:

District Office/Headquarters Building Employees

	Classification	Number of FTEs[1]	Average Annual Salary per Employee	Total Benefits as Percent of Salary	Annual Salary and Benefits
1	Superintendent	1	$112,000	34.00%	**$150,080**
2	Business Manager	1	$74,000	34.00%	**$99,160**
3	Transportation Manager	1	$48,000	34.00%	**$64,320**
4	Office Manager	1	$43,299	34.00%	**$58,021**
5					**$0**
6					**$0**
7					**$0**
8					**$0**
9					**$0**
10					**$0**
	Total Number of FTEs:	**4.00**		**Subtotal:**	**$371,581**

District Office/Headquarters Building Expenses

Category		Annual Cost
Supplies		$1,779
Building maintenance		$7,195
Utilities		$3,002
Insurance		
Rent		
Average Annual Capital Goods		$0
OTHER: specify below		
Enter replacement value of building:	$8,791,057	
If rent is zero (building owned), a proxy rent is calculated		**$615,374**
	Subtotal:	**$627,350**

Total Annual Operating Budget for District Office/Headquarters Building:	**$998,931**

DOCUMENTATION: ANNUAL OPERATING BUDGET	
NOTE:	**The Annual Operating Budget is used as a "proxy" for the value of services provided from a building and is used to count the benefits of avoiding loss of service in future earthquake events.**
Operating Budget by Categories	
Percent of District Office or Headquarters Annual Operating Budget Attributed to the Facility	

Building Part A: Data for Benefit-Cost Analysis

Building Name:	**Humbolt Elementary School**
Building ID:	**Gran_sch06A**
Building Part Name / Description:	**Original Classroom and Cafeteria Building**

Evaluation for Building Part A

Seismic Hazard Data		
Region of Seismicity	Moderate	
PGA Ground Motion (g)	2% in 50 year	0.212
	5% in 50 year	0.131
	10% in 50 year	0.083
	20% in 50 year	0.051
Spectral Accelerations (g)	S_{xs}, 2% in 50 year	0.480
	S_{x1}, 2% in 50 year	0.250
	S_{xs}, 10% in 50 year	0.177
	S_{x1}, 10% in 50 year	0.102

Data Entry Item	User Entered Values	Default Values	Used for BCA
Site Data			
County		Grant	Grant
Decimal Latitude		44.39911	44.39911
Decimal Longitude		118.94914	118.94914
Soil Type		D	D
Construction Data			
Primary Structure Type (FEMA 154)		W2	W2
Number of Stories		1	1
Year Built		1956	1956
Rapid Visual Screening Data			
Severe Vertical Irregularity		No	No
Moderate Vertical Irregularity		Yes	Yes
Plan Irregularity		Yes	Yes
Pre-Code	Yes	No	Yes
Post-Benchmark	No	No	No
Building Data			
Historic Importance	None	None	None
Historic Adjustment Modifier	N/A	N/A	1.00
Building Square Footage - SF	22,400	N/A	22,400
Building Replacement - $/SF		$360.00	$360.00
Building Replacement Value - $	N/A	N/A	$8,064,000
Historic Building Replacement - $/SF	N/A	N/A	$360.00
Historic Building Replacement Value - $	N/A	N/A	$8,064,000
Contents Value - % of Building Value		25%	25%
Displacement Costs - $/SF/month		$2.50	$2.50
Displacement Costs - One Time		$3.00	$3.00
Average Annual Occupancy	24.56	24.45	24.56
Annual Operating Budget	$1,659,624	$1,652,248	$1,659,624
Seismic Fragility Curves			
Before Mitigation			
Slight Damage State		0.10	0.10
Moderate Damage State		0.16	0.16
Extensive Damage State		0.31	0.31
Complete Damage State		0.50	0.50
Beta		0.66	0.66
After Mitigation			
Retrofit Building Type		W2	W2
Retrofit Performance Objective		LS	LS
Slight Damage State		0.10	0.10
Moderate Damage State		0.16	0.16
Extensive Damage State		0.31	0.31
Complete Damage State		0.50	0.50
Beta		0.66	0.66

Data Documentation: Building Part A	
Provide brief documentation below and/or references to other documents included with your application (with page number), but ONLY for data entries in Column C, which replace the default values in Column D.	
Soil Type	
Primary Structure Type	
Number of Stories	
Year Built	
Severe Vertical Irregularity	
Moderate Vertical Irregularity	
Plan Irregularity	
Pre-Code	Incorrect per exisiting building drawings.
Post-Benchmark	
Historic Importance (if not none)	
Building Square Footage	
Building Replacement Value $/SF	
Contents Value % of Building Value	
Displacement Costs One Time	
Displacement Costs $/SF/month	
Fragility Curve Parameters Before Mitigation	
Fragility Curve Parameters After Mitigation	
Other Comments	

Building Part B: Data for Benefit-Cost Analysis

Building Name:	**Humbolt Elementary School**
Building ID:	**Gran_sch06B**
Building Part Name / Description:	**Activity Building**

Evaluation for Building Part B

Seismic Hazard Data		
Region of Seismicity	Moderate	
PGA Ground Motion (g)	2% in 50 year	0.212
	5% in 50 year	0.131
	10% in 50 year	0.083
	20% in 50 year	0.051
Spectral Accelerations (g)	S_{xs}, 2% in 50 year	0.480
	S_{x1}, 2% in 50 year	0.250
	S_{xs}, 10% in 50 year	0.177
	S_{x1}, 10% in 50 year	0.102

Data Entry Item	User Entered Values	Default Values	Used for BCA
Site Data			
County		Grant	Grant
Decimal Latitude		44.39857	44.39857
Decimal Longitude		118.94915	118.94915
Soil Type		D	D
Construction Data			
Primary Structure Type (FEMA 154)		W2	W2
Number of Stories		1	1
Year Built	1990	1956	1990
Rapid Visual Screening Data			
Severe Vertical Irregularity		No	No
Moderate Vertical Irregularity		No	No
Plan Irregularity		No	No
Pre-Code	Yes	No	Yes
Post-Benchmark		No	No
Building Data			
Historic Importance	None	None	None
Historic Adjustment Modifier	N/A	N/A	1.00
Building Square Footage - SF	7,600	N/A	7,600
Building Replacement - $/SF		$360.00	$360.00
Building Replacement Value - $	N/A	N/A	$2,736,000
Historic Building Replacement - $/SF	N/A	N/A	$360.00
Historic Building Replacement Value - $	N/A	N/A	$2,736,000
Contents Value - % of Building Value		25%	25%
Displacement Costs - $/SF/month		$2.50	$2.50
Displacement Costs - One Time		$3.00	$3.00
Average Annual Occupancy	8.19	8.30	8.19
Annual Operating Budget	$553,208	$560,584	$553,208
Seismic Fragility Curves			
Before Mitigation			
Slight Damage State		0.14	0.14
Moderate Damage State		0.23	0.23
Extensive Damage State		0.48	0.48
Complete Damage State		0.75	0.75
Beta		0.66	0.66
After Mitigation			
Retrofit Building Type		W2	W2
Retrofit Performance Objective	**IO**	LS	IO
Slight Damage State		0.27	0.27
Moderate Damage State		0.48	0.48
Extensive Damage State		0.95	0.95
Complete Damage State		1.74	1.74
Beta		0.62	0.62

Data Documentation: Building Part B	
Provide brief documentation below and/or references to other documents included with your application (with page number), but ONLY for data entries in Column C, which replace the default values in Column D.	
Soil Type	
Primary Structure Type	
Number of Stories	
Year Built	Incorrect per existing building drawings.
Severe Vertical Irregularity	
Moderate Vertical Irregularity	
Plan Irregularity	
Pre-Code	Incorrect per existing building drawings.
Post-Benchmark	
Historic Importance (if not none)	
Building Square Footage	
Building Replacement Value $/SF	
Contents Value % of Building Value	
Displacement Costs One Time	
Displacement Costs $/SF/month	
Fragility Curve Parameters Before Mitigation	
Fragility Curve Parameters After Mitigation	
Other Comments	

Building Part C: Data for Benefit-Cost Analysis

Building Name:	**Humbolt Elementary School**
Building ID:	**Gran_sch06C**
Building Part Name / Description:	**Classroom Building**

Evaluation for Building Part C

Seismic Hazard Data		
Region of Seismicity	Moderate	
PGA Ground Motion (g)	2% in 50 year	0.212
	5% in 50 year	0.131
	10% in 50 year	0.083
	20% in 50 year	0.051
Spectral Accelerations (g)	S_{xs}, 2% in 50 year	0.480
	S_{x1}, 2% in 50 year	0.250
	S_{xs}, 10% in 50 year	0.177
	S_{x1}, 10% in 50 year	0.102

Data Entry Item	User Entered Values	Default Values	Used for BCA
Site Data			
County		Grant	Grant
Decimal Latitude		44.39926	44.39926
Decimal Longitude		118.94966	118.94966
Soil Type		D	D
Construction Data			
Primary Structure Type (FEMA 154)		W1	W1
Number of Stories		1	1
Year Built		1956	1956
Rapid Visual Screening Data			
Severe Vertical Irregularity		No	No
Moderate Vertical Irregularity		No	No
Plan Irregularity		No	No
Pre-Code	Yes	No	Yes
Post-Benchmark		No	No
Building Data			
Historic Importance	None	None	None
Historic Adjustment Modifier	N/A	N/A	1.00
Building Square Footage - SF	20,000	N/A	20,000
Building Replacement - $/SF		$360.00	$360.00
Building Replacement Value - $	N/A	N/A	$7,200,000
Historic Building Replacement - $/SF	N/A	N/A	$360.00
Historic Building Replacement Value - $	N/A	N/A	$7,200,000
Contents Value - % of Building Value		25%	25%
Displacement Costs - $/SF/month		$2.50	$2.50
Displacement Costs - One Time		$3.00	$3.00
Average Annual Occupancy	21.83	21.83	21.83
Annual Operating Budget	$1,475,222	$1,475,222	$1,475,222
Seismic Fragility Curves			
Before Mitigation			
Slight Damage State		0.20	0.20
Moderate Damage State		0.34	0.34
Extensive Damage State		0.61	0.61
Complete Damage State		0.95	0.95
Beta		0.66	0.66
After Mitigation			
Retrofit Building Type		W1	W1
Retrofit Performance Objective		LS	LS
Slight Damage State		0.23	0.23
Moderate Damage State		0.41	0.41
Extensive Damage State		0.86	0.86
Complete Damage State		1.27	1.27
Beta		0.62	0.62

Data Documentation: Building Part C	
Provide brief documentation below and/or references to other documents included with your application (with page number), but ONLY for data entries in Column C, which replace the default values in Column D.	
Soil Type	
Primary Structure Type	
Number of Stories	
Year Built	
Severe Vertical Irregularity	
Moderate Vertical Irregularity	
Plan Irregularity	
Pre-Code	Incorrect per existing building drawings.
Post-Benchmark	
Historic Importance (if not none)	
Building Square Footage	
Building Replacement Value $/SF	
Contents Value % of Building Value	
Displacement Costs One Time	
Displacement Costs $/SF/month	
Fragility Curve Parameters Before Mitigation	
Fragility Curve Parameters After Mitigation	
Other Comments	

Appendix E: Schematic Seismic Retrofit Drawings

HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

GRANT SCHOOL DISTRICT
329 N. HUMBOLT STREET
CANYON CITY, OREGON 97820

ABBREVIATIONS

ABBREVIATIONS

(E)	EXISTING	L.P.	LOW POINT
(N)	NEW	M.C.	MEDICINE CABINET
(R)	REMOVE	M.D.F.	MEDIUM DENSITY FIBERBOARD
A.C.	ASPHALT CONCRETE	M.D.O.	MEDIUM DENSITY OVERLAY
A.C.B.	ACOUSTICAL BOARD	MEMB.	MEMBRANE
A.C.P.	ACOUSTICAL PANEL	MH.	MANHOLE
A.C.T.	ACOUSTICAL CEILING TILE	MIR.	MIRROR
A.D.	AREA DRAIN	M.O.	MASONRY OPENING
ADJ.	ADJUSTABLE	M.P.	MIDPOINT
A.F.	ACCESS FLOORING	M.S.	MACHINE SCREW
AGGR.	AGGREGATE	MTD.	MOUNTED
A.F.	ABOVE FINISHED FLOOR	MUL.	MULLION
BD.	BOARD	NOM.	NOMINAL
BITUM.	BITUMINOUS	N.T.S.	NOT TO SCALE
BKP.	BACKING PLATE	OBS.	OBSCURE
BM.	BEAM	O.C.	ON CENTER
BOT./B.O.	BOTTOM/BOTTOM OF	O.C.D.	OVERHEAD COILING DOOR
C.B.	CATCH BASIN	O.C.G.	OVERHEAD COILING GRILLE
CEM.	CEMENT	O.D.	OUTSIDE DIAMETER
CER.	CERAMIC	O.F.C.I.	OWNER FURNISHED CONTRACTOR INSTALLED
C.G.	CORNER GUARD	O.F.D.	OVERFLOW DRAIN
C.I.	CAST IRON	O.F.O.I.	OWNER FURNISHED OWNER INSTALLED
C.J	CONTROL JOINT		
CLG.	CEILING	OH.	OPPOSITE HAND
CLKG.	CAULKING	PL.	PLATE
CLO.	CLOSET	P.LAM.	PLASTIC LAMINATE
CLR.	CLEAR	PLAS.	PLASTER
CMU	CONCRETE MASONRY UNIT	P.C.P.	PORTLAND CEMENT PLASTER
C.O.	CASED OPENING		
CONN.	CONNECTION	PR.	PAIR
CORR.	CORRIDOR	PTN.	PARTITION
CPT.	CARPET	RC.P.	REFLECTED CEILING PLAN
CTSK.	COUNTERSUNK	R.D.	ROOF DRAIN
C.T.	CERAMIC TILE	RL.	RELOCATE
CTR.	CENTER	R.O.	ROUGH OPENING
D.F.	DRINKING FOUNTAIN	RWD.	REDWOOD
DET.	DETAIL	R.W.L.	RAIN WALL LEADER
DISP.	DISPENSER	REV.	REVERSED
DR.	DOOR	S.C.	SOLID CORE
DWR.	DRAWER	S.C.D.	SEE CIVIL DRAWINGS
D.S.	DOWNSPOUT	SHR.	SHOWER
D.S.A.	DRY STANDPIPE	S.J.	SCORE JOINT
E.J.	EXPANSION JOINT	S.L.D.	SEE LANDSCAPING DRAWINGS
EL.	ELEVATION		
EXPO.	EXPOSED	S.M.	SHEET METAL
EXP.	EXPANSION	S.M.D	SEE MECHANICAL DRAWINGS
F.A.	FIRE ALARM		
FB.	FLAT BAR	S.O.G.	SLAB ON GRADE
F.D.	FLOOR DRAIN	S.S.D.	SEE STRUCTURAL DRAWINGS
FDN.	FOUNDATION		
FE	FIRE EXTINGUISHER	S.S.	STAINLESS STEEL
F.H.	FLAT HEAD	STR.	STRUCTURAL
F.O.C	FACE OF CONCRETE	S.T.S.	SELF TAPPING SCREW
F.O.F	FACE OF FINISH	SUSP.	SUSPENDED
F.O.S.	FACE OF STUDS	TRD.	TREAD
F.S.	FULL SIZE	T.B.	TOWEL BAR
FTG.	FOOTING	T.C.	TOP OF CURB
FUT.	FUTURE	T&G.	TONGUE AND GROOVE
G.A.	GAUGE	THK.	THICK
G.L.	GRID LINE	T.P.	TOP OF PAVEMENT
GLB.	GLULAM BEAM	T.W.	TOP OF WALL
G.B.	GRAB BAR	V.I.F.	VERIFY IN FIELD
GND.	GROUND	V.T.R.	VENT THROUGH ROOF
GYP.	GYPSUM	W.C.	WATER CLOSET
G.W.B.	GYPSUM WALL BOARD	W.O.	WINDOW OPENING
H.B.	HOSE BIBB		
H.C.	HOLLOW CORE		
H.M.	HOLLOW METAL		
J.B.	JUNCTION BOX		
J.O.H.	JAMB OPENING HEIGHT		
J.O.W.	JAMB WIDTH		
JT.	JOINT		
LAM.	LAMINATE		

PROJECT INFORMATION

PROJECT NARRATIVE

INTENT OF THESE DRAWINGS IS TO ILLUSTRATE THE LEVEL OF UNDERSTANDING THE APPLICANT HAS WITH REGARDS TO THE EFFORT THAT WILL BE REQUIRED TO SEISMICALLY REHABILITATE THE BUILDING. THESE SCHEMATIC DRAWINGS HAVE BEEN PREPARED USING THE CURRENT OREGON STRUCTURAL SPECIALITY CODE (OSSC) AND THE ASCE 41 (SEISMIC REHABILITATION OF EXISTING BUILDINGS) AS THE REFERENCES FOR PRESCRIBED LOADING AND BUILDING PERFORMANCE LEVEL RATINGS.

THE DRAWING ILLUSTRATES BOTH EXISTING CONDITIONS AND GENERAL REPAIRS THAT WOULD NEED TO BE ACCOMPLISHED TO REACH AN ACCEPTABLE LEVEL OF PERFORMANCE (IMMEDIATE OCCUPANCY) ACCORDING TO CURRENT CODE.

"STRUCTURAL PERFORMANCE LEVEL, LIMITED SAFETY, MEANS POST-EARTHQUAKE DAMAGE STATE IN WHICH SIGNIFICANT DAMAGE TO THE STRUCTURE HAS OCCURRED BUT SOME MARGIN AGAINST EITHER PARTIAL OR TOTAL STRUCTURAL COLLAPSE REMAINS. SOME STRUCTURAL ELEMENTS AND COMPONENTS ARE SEVERELY DAMAGED BUT THIS HAS NOT RESULTED IN LARGE FALLING DEBRIS HAZARDS, EITHER INSIDE OR OUTSIDE THE BUILDING. INJURIES MAY OCCUR DURING THE EARTHQUAKE; HOWEVER, THE OVERALL RISK OF LIFE-THREATENING INJURY AS A RESULT OF STRUCTURAL DAMAGE IS EXPECTED TO BE LOW. IT SHOULD BE POSSIBLE TO REPAIR THE STRUCTURE; HOWEVER, FOR ECONOMIC REASONS THIS MAY NOT BE PRACTICAL, ALTHOUGH THE DAMAGED STRUCTURE IS NOT AN IMMINENT COLLAPSE RISK, IT WOULD BE PRUDENT TO IMPLEMENT STRUCTURAL REPAIRS OR INSTALL TEMPORARY BRACING PRIOR TO REOCCUPANCY"

"STRUCTURAL PERFORMANCE LEVEL IMMEDIATE OCCUPANCY MEANS THE POST-EARTHQUAKE DAMAGE STATE IN WHICH ONLY VERY LIMITED STRUCTURAL DAMAGE HAS OCCURRED. THE BASIC VERTICAL- AND LATERAL-FORCE RESISTING SYSTEMS OF THE BUILDING RETAIN NEARLY ALL OF THEIR PRE-EARTHQUAKE STRENGTH AND STIFFNESS. THE RISK OF LIFE THREATENING INJURY AS A RESULT OF STRUCTURAL DAMAGE IS VERY LOW AND ALTHOUGH SOME MINOR STRUCTURAL REPAIRS MAY BE APPROPRIATE, THESE WOULD GENERALLY NOT BE REQUIRED PRIOR TO REOCCUPANCY."

STRUCTURAL DEFICIENCIES

S1. THE ROOF DIAPHRAGMS ARE NOT PROPERLY ATTACHED TO THE PERIMETER WALLS FOR IN-PLANE FORCES.

S2. THE TRANSVERSE WALLS OF THE ACTIVITY BUILDING DO NOT HAVE ADEQUATE IN-PLANE SHEAR CAPACITY TO SUPPORT THE PRESCRIBED SEISMIC LOADS.

S3. THE UNBLOCKED ROOF DIAPHRAGM DOES NOT MEET THE PRESCRIBED ASPECT RATIO. THE CODE LIMITS THE ASPECT RATIOS (LENGTH TO DEPTH) TO MINIMIZE THE SHEAR DEMANDS AND DEFLECTIONS.

S4. THE STRAIGHT SHEATHED ROOF DIAPHRAGMS OF THE CLASSROOM BUILDING DO NOT MEET THE PRESCRIBED ASPECT RATIO. THE CODE LIMITS THE ASPECT RATIOS (LENGTH TO DEPTH) TO MINIMIZE THE SHEAR DEMANDS AND DEFLECTIONS.

S5. THE NAILING AND/OR ANCHORAGE BETWEEN THE ROOF DIAPHRAGM AND SUPPORTING SHEAR WALLS AND SHEAR WALLS TO FOUNDATION ARE UNKNOWN.

S6. LONG WALL SEGMENTS FILLED WITH WINDOW OPENINGS ARE NOT BRACED WITH STRUCTURAL PANEL SHEAR WALLS WITH ASPECT RATIOS OF EQUAL OR LESS THAN 1.5 TO 1.

S7. THE LONGITUDINAL ROOF CHORDS OF THE CLASSROOM BUILDING ARE NOT CONTINUOUS ACROSS THE ROOF BEAMS.

S8. WOOD SHEAR WALLS OF THE ACTIVITY BUILDING LACK HOLD-DOWN ANCHORS AT THE END STUDS.

S9. THE FREE STANDING CANOPY AT THE CLASSROOM BUILDING MAIN ENTRANCE DOES NOT HAVE ADEQUATE LATERAL CAPACITY FOR THE PRESCRIBED SEISMIC LOADS.

NON STRUCTURAL COMPONENTS

N1: PROPER ATTACHMENT AND BRACING OF STORAGE RACKS/CABINETS OVER 4' OR 3:1 (HEIGHT:WIDTH) RATIO

N2: ATTACHMENT OF ALL EMERGENCY LIGHTING, POWER EQUIPMENT AND ASSOCIATED WIRING.

N3: VERIFICATION/INSTALLATION OF BRACING FOR OVERHEAD PIPING. HVAC UNIT SHOULD BE EVALUATED FOR STABILITY UNDER SEISMIC CONDITIONS.

N4: VERIFICATION OF HAZARDOUS MATERIAL STORAGE AND DISTRIBUTION PIPING STABILITY UNDER SEISMIC CONDITIONS.

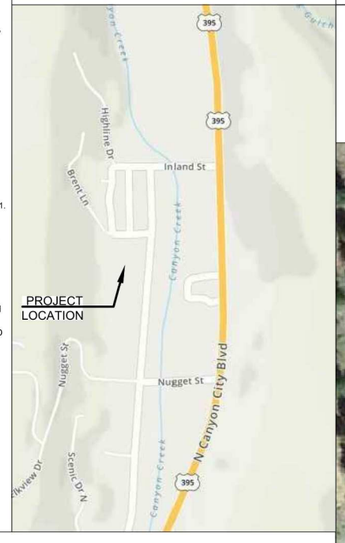
N5. THE CEILING TILE GRID OF THE GYMNASIUM BUILDING LACKS EXPANSION JOINTS.

EXTERIOR PHOTO: ACTIVITY BUILDING

EXTERIOR PHOTO: CLASSROOM BUILDING

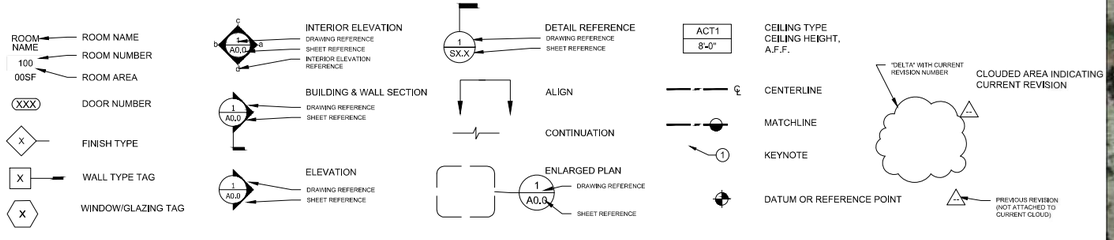
INDEX SHEET:

VICINITY MAP



SITE LAYOUT

SYMBOLS



ONE INCH EQUALS FULL SCALE

ZCS ENGINEERING ARCHITECTURE

524 Main Street, Suite 2, Oregon City, Oregon 97045 | 503-659-2205

GRANT SCHOOL DISTRICT
329 N. HUMBOLT ST.
CANYON CITY, OREGON
97820

HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER OREGON 08. 2014 DREW R. SMITH EXPIRES: 06-30-20

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COVER SHEET

G0.0

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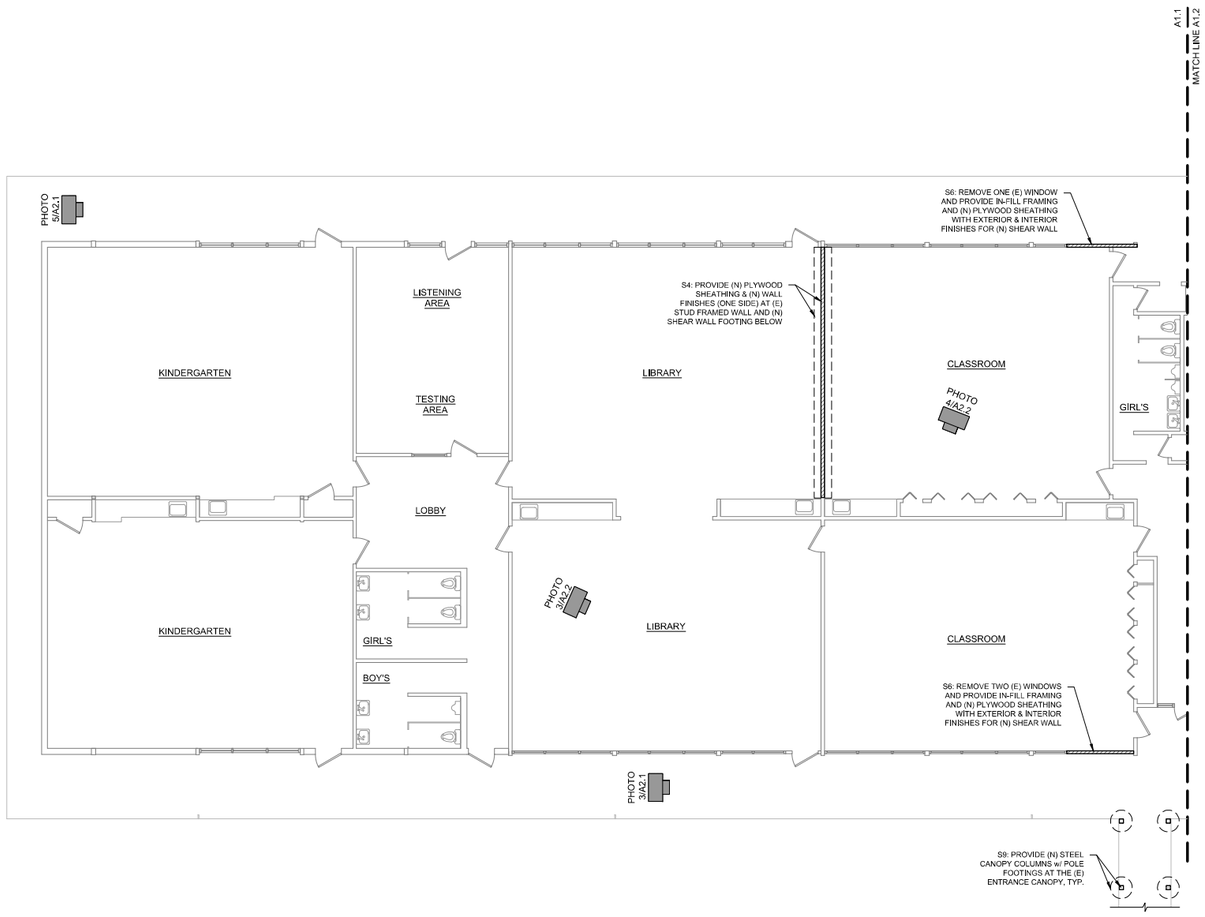
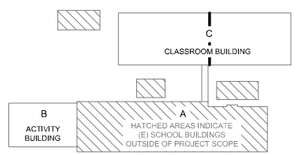


ONE INCH EQUALS FULL SCALE

1 A1.1 **CLASSROOM BLDG. FLOOR PLAN AREA 'A'**

1/8" = 1'-0"



2 A1.1 **BUILDING KEY**

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EXPIRES: 06-30-20

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CLASSROOM BLDG.
FLOOR PLAN AREA 'A'

A1.1

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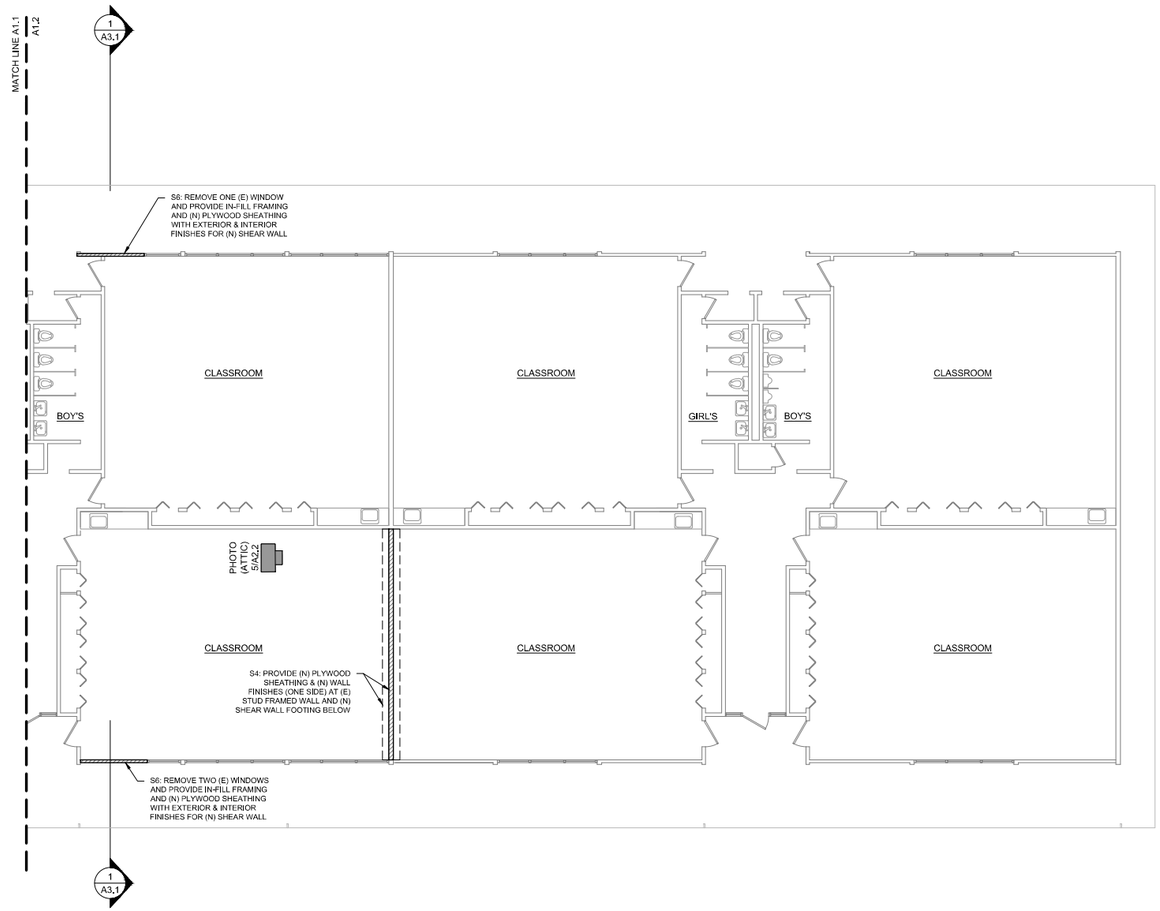
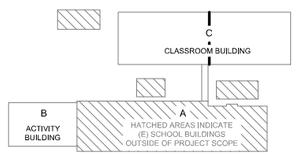


ONE INCH EQUALS FULL SCALE

1 A1.2 **CLASSROOM BLDG. FLOOR PLAN AREA 'B'**

1/8" = 1'-0"



2 2 **BUILDING KEY**

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HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

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CLASSROOM BLDG. FLOOR PLAN AREA 'B'

A1.2

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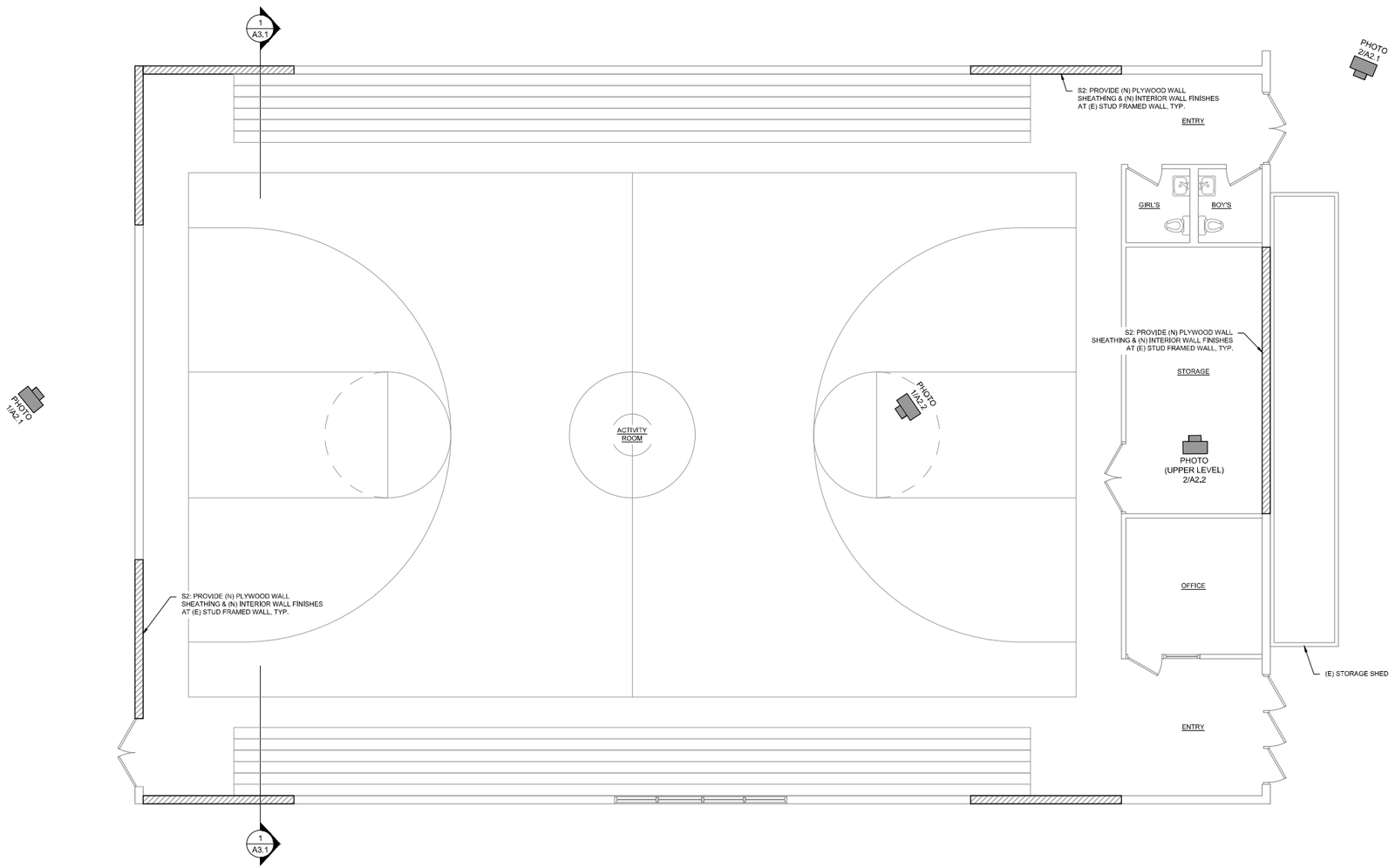
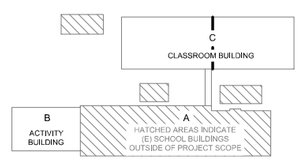


ONE INCH EQUALS FULL SCALE

1 / A1.3 **ACTIVITY BLDG. FLOOR PLAN**

3/16" = 1'-0"



2 / A1.3 **BUILDING KEY**

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MATTHEW R. SMITH
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ACTIVITY BLDG.
FLOOR PLAN

A1.3

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1 A2.1 **PHOTO**

N.T.S.

3 A2.1 **PHOTO**

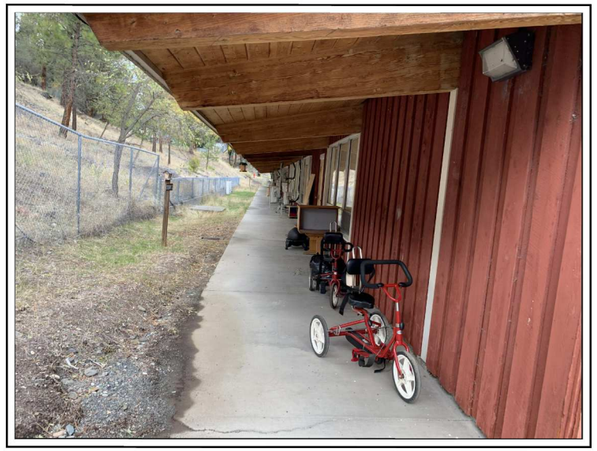
N.T.S.

2 A2.1 **PHOTO**

N.T.S.

4 A2.1 **PHOTO**

N.T.S.



5 A2.1 **PHOTO**

N.T.S.

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EXTERIOR PHOTOS

A2.1

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1 A2.2 **PHOTO**

N.T.S.

3 A2.2 **PHOTO**

N.T.S.

2 A2.2 **PHOTO**

N.T.S.

4 A2.2 **PHOTO**

N.T.S.

5 A2.2 **PHOTO**

N.T.S.

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STRUCTURAL
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OREGON
JULY 08, 2014
MATTHEW R. SMITH
EXPIRES: 06-30-20

PRELIMINARY NOT FOR CONSTRUCTION

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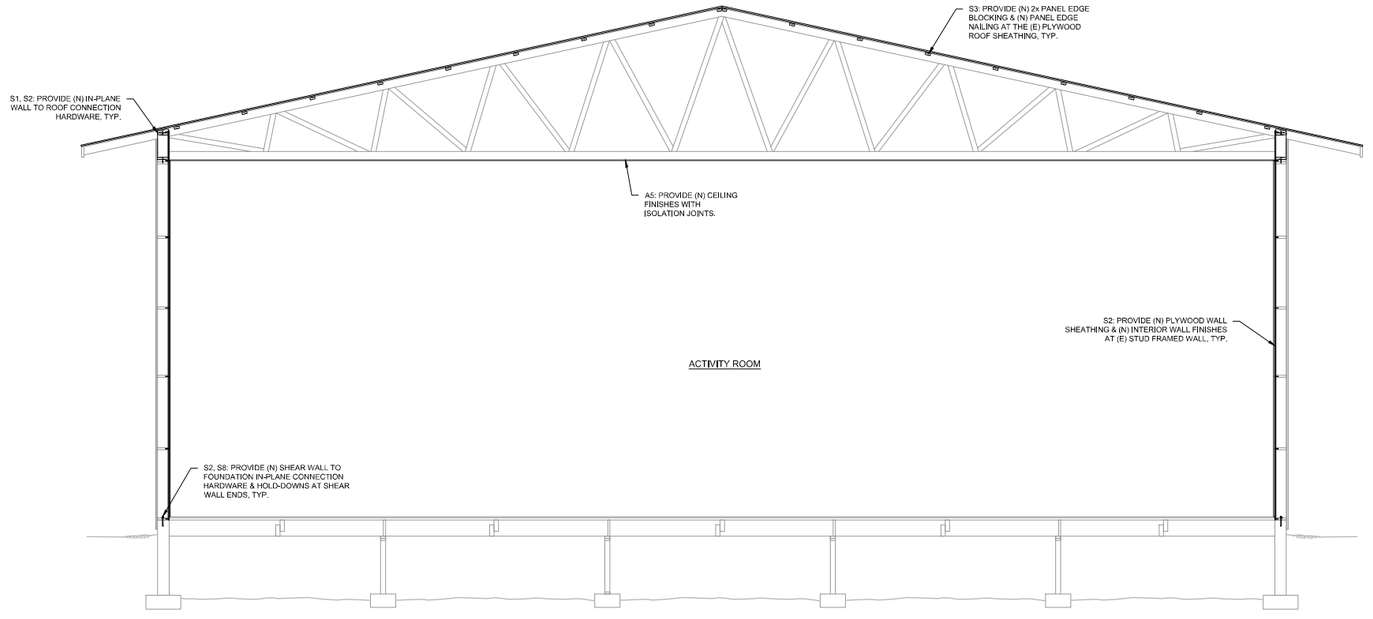
DATE:	12-18-19

INTERIOR PHOTOS

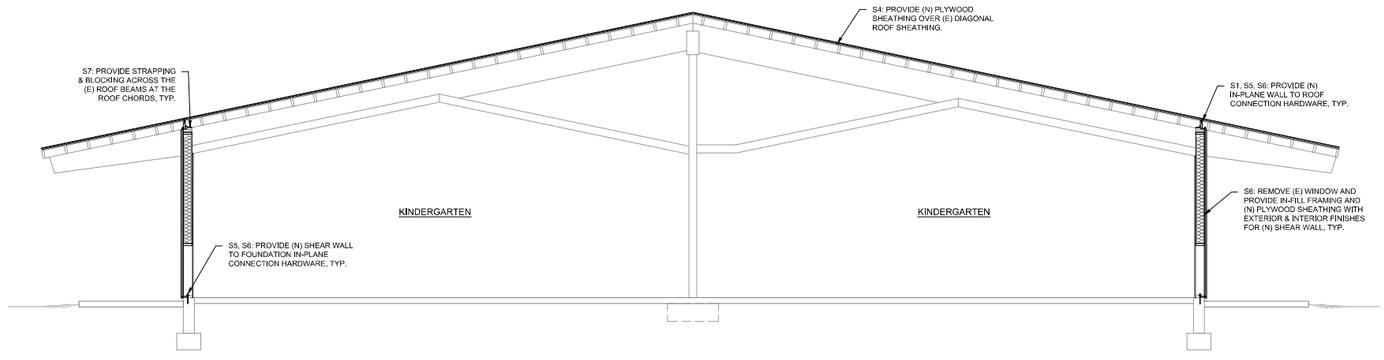
A2.2

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION



1 A3.1 **ACTIVITY BUILDING SECTION**

1/4"= 1'-0"



2 A3.1 **CLASSROOM BUILDING SECTION**

1/4"= 1'-0"

ONE INCH EQUALS FULL SCALE

ZCS ENGINEERING ARCHITECTURE
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GRANT SCHOOL DISTRICT
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HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER OREGON DREW R. SMITH
PRELIMINARY - NOT FOR CONSTRUCTION
EXPIRES: 06-30-20

REVISION ID:	DATE:

PROJECT NO:	P-2460-19
DRAWN:	SDW
CHECKED:	
DATE:	12-18-19

BUILDING SECTIONS

A3.1

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

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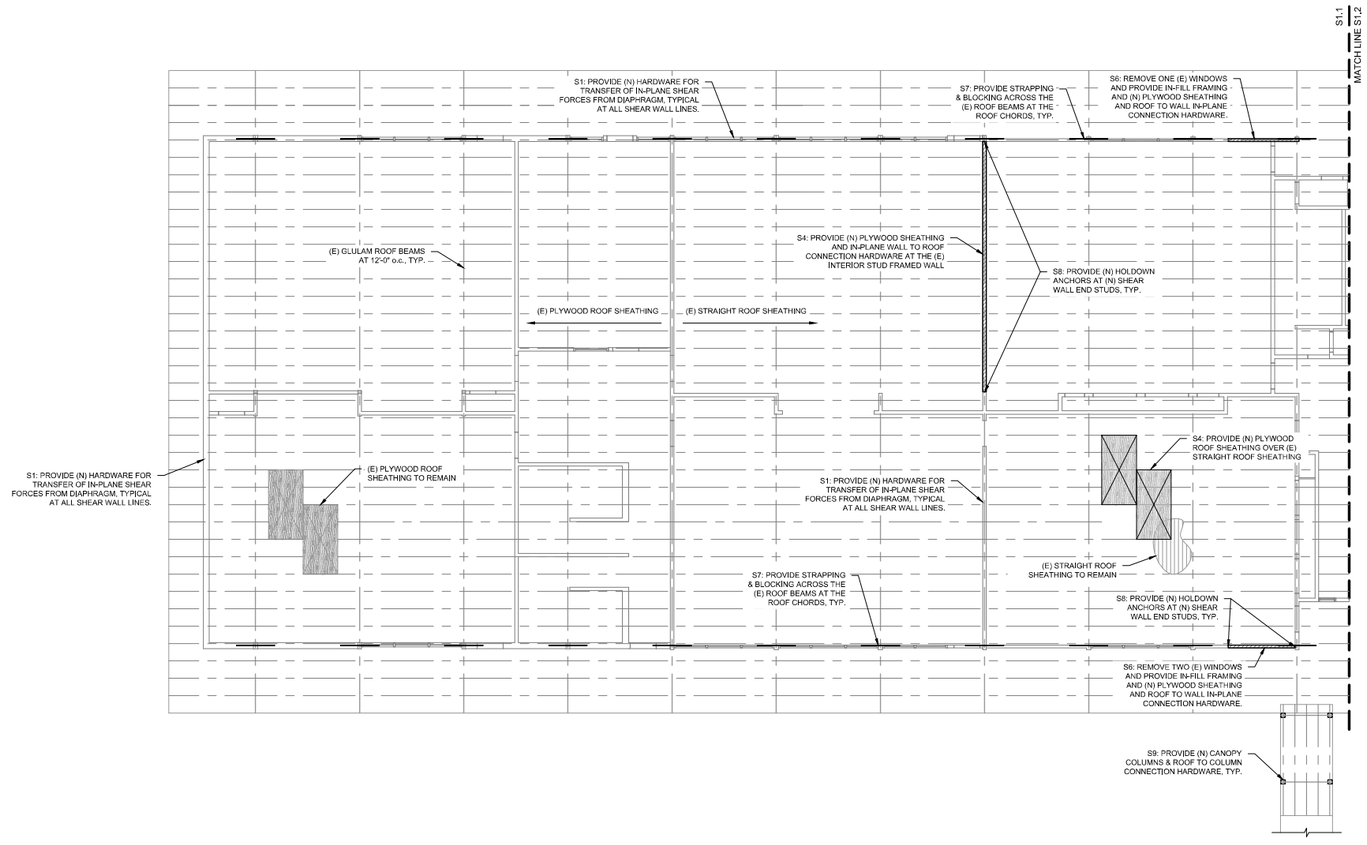
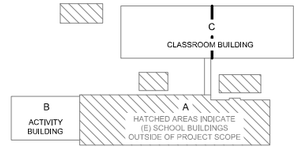


ONE INCH EQUALS FULL SCALE

1 / S1.1 **CLASSROOM BLDG. ROOF FRAMING PLAN AREA 'A'**

1/8" = 1'-0"



2 / S1.1 **BUILDING KEY**

NTS

STRUCTURAL
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 08, 2014
ANDREW R. SMITH
EXPIRES: 06-30-20

PRELIMINARY - NOT FOR CONSTRUCTION

REVISION ID:	DATE:

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CHECKED:	
DATE:	12-18-19

CLASSROOM BLDG.
ROOF FRAMING PLAN
AREA 'A'

S1.1

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

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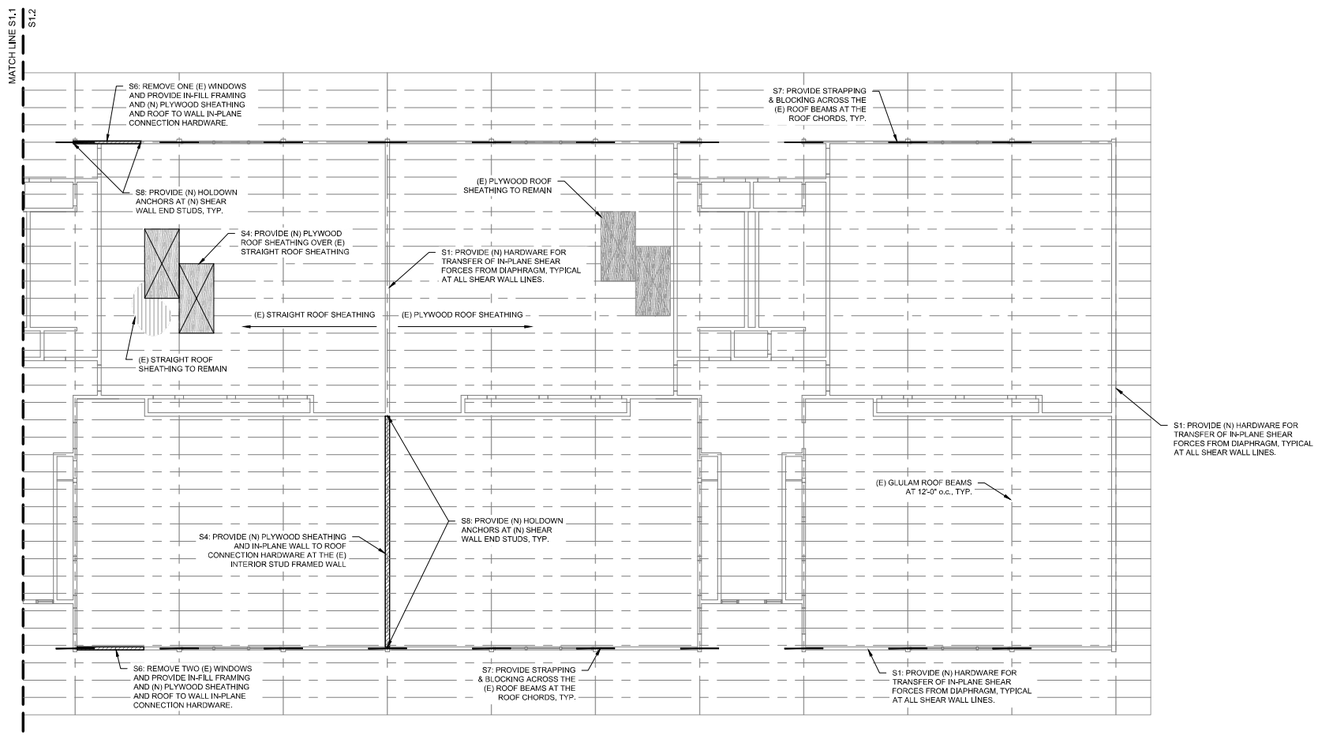
ENGINEERING
ARCHITECTURE

524 Main Street, Suite 2, Oregon City, Oregon 97045 | 503-659-2205

GRANT SCHOOL DISTRICT
329 N. HUMBOLT ST.
CANYON CITY, OREGON
97820

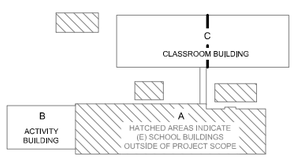
HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT



ONE INCH EQUALS FULL SCALE

1 S1.2 **CLASSROOM BLDG. ROOF FRAMING PLAN AREA 'B'**

1/8" = 1'-0"



2 S1.2 **BUILDING KEY**

NTS

STRUCTURAL ENGINEER
REGISTERED PROFESSIONAL ENGINEER
OREGON
JANUARY 08, 2014
MATTHEW R. SMITH
EXPIRES: 06-30-20

PRELIMINARY - NOT FOR CONSTRUCTION

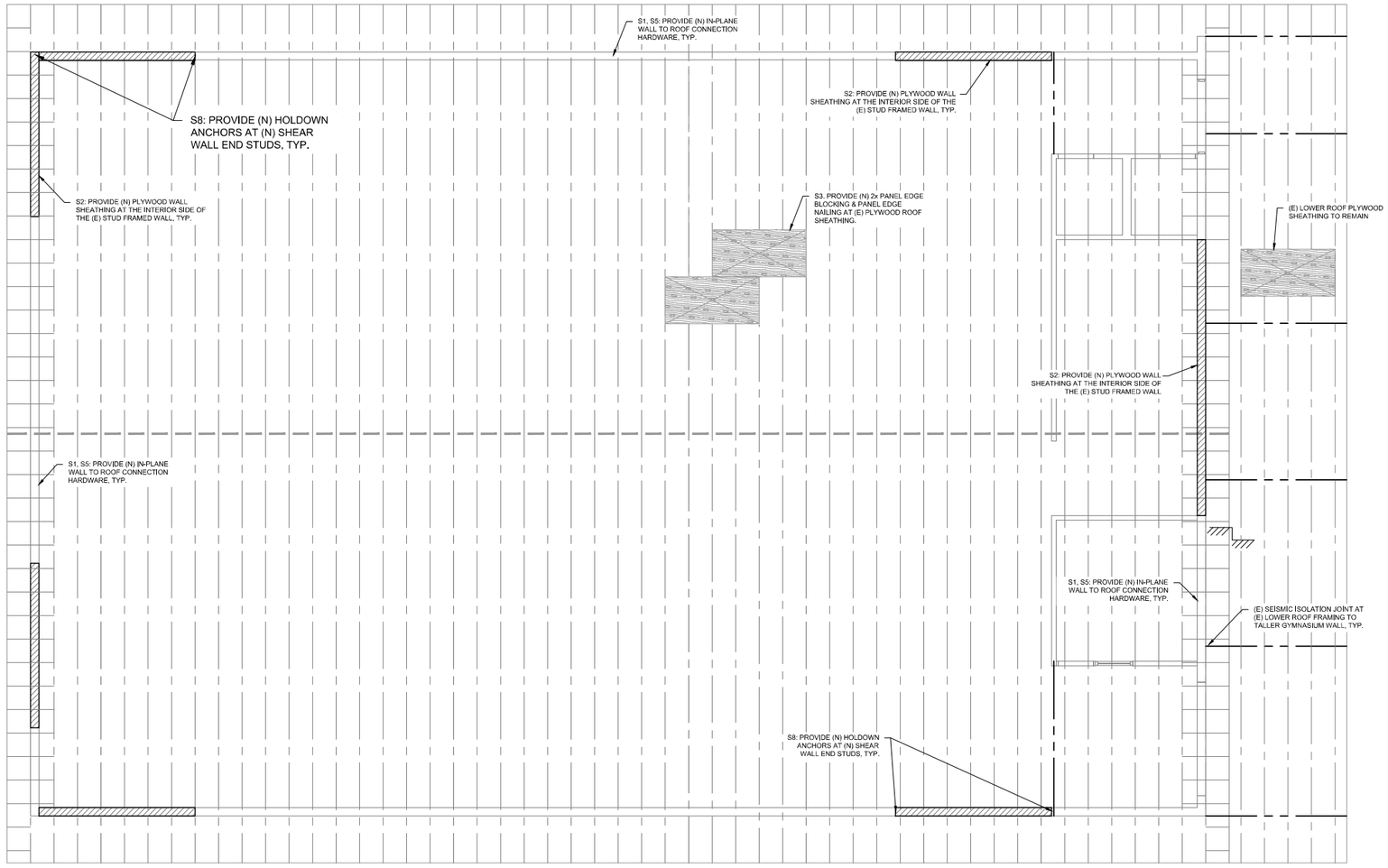
REVISION ID:	DATE:

PROJECT NO:	P-2460-19
DRAWN:	SDW
CHECKED:	
DATE:	12-18-19

CLASSROOM BLDG. ROOF FRAMING PLAN AREA 'B'

S1.2

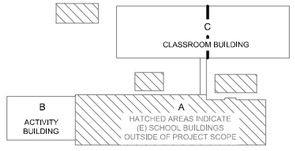
FOR AGENCY REVIEW - NOT FOR CONSTRUCTION



ONE INCH EQUALS FULL SCALE

1 S1.3 **ACTIVITY BLDG. ROOF FRAMING PLAN**

3/16" = 1'-0"



2 S1.3 **BUILDING KEY**

NTS

ZCS ENGINEERING ARCHITECTURE
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HUMBOLT ELEMENTARY SCHOOL PHASE 2 SEISMIC RETROFIT

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER OREGON 08, 2014 MATTHEW R. SMITH EXPIRES: 06-30-20

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ACTIVITY BLDG. ROOF FRAMING PLAN

S1.3

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION