

Vulnerability of Some Juneau School District Schools to Earthquake Damage Based on Rapid Visual Screening

June 15, 2018

Prepared for: Juneau School District and
Alaska Seismic Hazards Safety Commission
Administered by: The Earthquake Engineering Research Institute
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FEMA

The Federal Emergency
Management Agency
(FEMA)



The Department of
Homeland Security
(DHS)



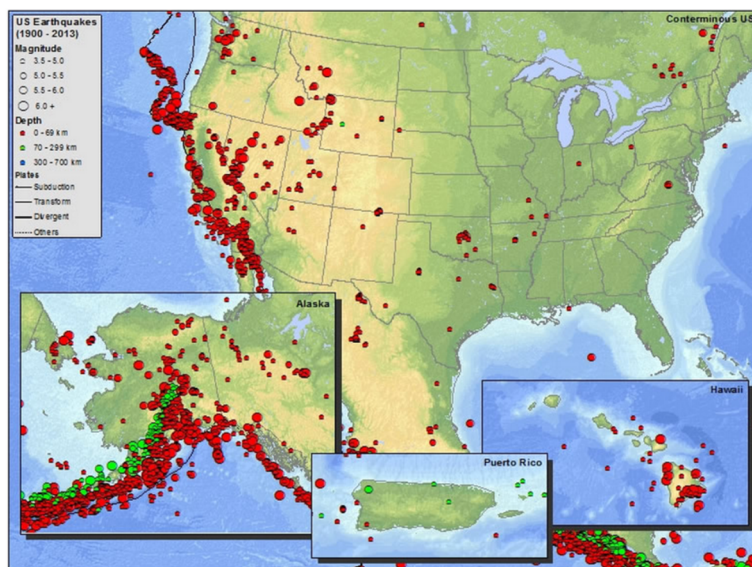
The Earthquake
Engineering Research
Institute (EERI)

ASHSC Alaska Seismic Hazards
Safety Commission

The Alaska Seismic
Hazards Safety
Commission (ASHSC)

Executive Summary:

BBFM Engineers was contracted by EERI and ASHSC to perform a rapid visual screening of several schools in the Juneau School District. A rapid visual screening is defined by FEMA P-154, which describes it as a "sidewalk survey." The screening process ranks the buildings by approximate level of safety, based on generalizations such as construction type, age of building, detailing practices common at the time, local seismicity, building structural irregularities, and the like.



Sites of major earthquakes in the US (USGS)

increase in research in plate tectonics and seismology. The Alaska Dispatch News chronicled many of these changes in a March 23, 2014 article on the subject: “‘The 1964 event changed the way we thought about earthquakes,’ said Mike West, state seismologist with the [Alaska Earthquake Center] at the University of Alaska Fairbanks. ‘It literally helped prove plate tectonics.’”

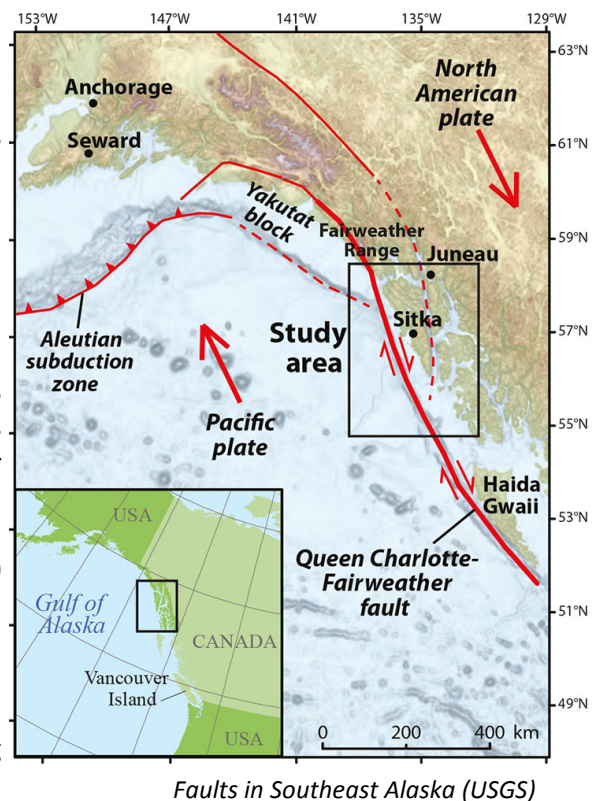
The dominant seismic fault in Southeast Alaska is the Queen Charlotte-Fairweather fault, which has generated six earthquakes of magnitude 7 or greater, including a magnitude 8.1 event off the coast of British Columbia in 1949. Near Juneau, this fault is a strike-slip fault moving some 50 millimeters per year.

Building Codes:

As noted above, the 1964 Great Alaska Earthquake changed the geological understanding of earthquakes. It also substantially changed the way building structures are designed. In 1973, the Uniform Building Code was modified to add many new, specific requirements. For example, descriptions of seismic force collectors within floors and roofs were added, as were new detailing requirements for seismic safety in regions of high seismicity. Design seismic forces for braced frames effectively doubled; unreinforced masonry and concrete were now prohibited for all structural elements in regions of high seismicity; gravity-only columns now needed to be designed to have sufficient strength when swaying dramatically during a seismic event.

Since then, building codes have continued to be modernized. In response to observations after other earthquakes and informed by extensive testing, building code committees have continued to increase design seismic forces, establish more robust detailing requirements, and intensify inspection mandates. Schools in particular are now designed for an increased factor of safety because of their importance to their communities. Further, in some cases schools are designed to an even higher level of safety so they can be used as shelters following a major earthquake. Because of these changes and many others, buildings constructed today are much more earthquake-resistant than older buildings.

The fact that older buildings are less earthquake-resistant is significant to Alaska’s schools because many of them were constructed before building code modernization began to improve the safety of building construction. As a result, older school buildings are typically less earthquake-safe than newer ones. How much less safe depends on many factors, including age and type of structural system, structural irregularities, building location, and quality of construction. School districts and managers of facilities would benefit greatly from having good information readily available regarding the safety of their facilities. This would enable them to make informed decisions regarding timing and urgency of any further structural reviews and upgrades.



Rapid Evaluation of Facilities:

To that end, FEMA developed a rapid evaluation procedure outlined in their publication P-154, "Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook." This contains a method for evaluating structures' seismic performance very quickly and without great expense, referring to it as a "sidewalk survey." It takes into account the age and type of structure, building height, irregularities in the structure that decrease reliability, and whether it was constructed before the enforcement of design codes and the implementation of construction inspection. FEMA developed this method to provide a tool to give building owners and managers good, actionable information with minimal up-front cost.

The method used by FEMA P-154 to evaluate a building is quite straightforward. It establishes an initial score for each type of structural system (wood shear walls, steel braced frame, and so forth), with a higher score indicating greater reliability. A given building's initial score is then modified (up or down) based on other factors, including the number of stories, vertical structural irregularities, plan structural irregularities, probable soil type, whether it was designed and constructed before codes were generally enforced, and whether it was designed and constructed under substantially modern codes. The evaluator enters the building information, adding and subtracting from the initial score to obtain the final score. FEMA carefully selected the scores and modifications so the final score could carry some readily understandable information. The Third Edition of FEMA 154 notes, in section 5.2:

Fundamentally, the final S score is an estimate of the probability (as described in Chapter 1) if an earthquake occurs with ground motions called the risk-targeted maximum considered earthquake, MCE_R , as described in Chapter 2...

A final score, S, of 3 implies there is a chance of 1 in 10^3 , or 1 in 1,000, that the building will collapse if such ground motions occur. A final score, S, of 2 implies there is a chance of 1 in 10^2 , or 1 in 100, that the building will collapse if such ground motions occur.

BBFM Engineers makes no statement about these probabilities except to note FEMA's intent in developing the scoring process. Typically a final score below 2.0 is taken as indication that a more detailed investigation is warranted, although that value can be adjusted at the outset of an evaluation project as desired by the owner of the facilities.

Importantly, these scores and risks do not take into account actual member strengths or actual connection reliability, only what is common for similar structural types of similar age. Therefore, the actual building safety may be substantially different from what the scores may indicate. Accordingly, buildings with low scores are noted as requiring further structural investigation to determine whether structural upgrade is warranted. These scores can be used appropriately to identify and rank buildings for their vulnerability to earthquake damage.

Alaska School Safety:

As stated in 2010 by the Western States Seismic Policy Council (WSSPC), "Every community is required to educate children, and it is the responsibility of governmental agencies to design and construct safe buildings to house them. While current building codes and construction practices have recognized the effects of earthquakes and provide state-of-the-art design considerations, many older school buildings were built before these principles were understood... These older

buildings have not been properly graded or passed the test of seismic safety. Consequently, many students face significant seismic risk.” The WSSPC is a non-profit consortium of eighteen member states and territories including Alaska.

After all, since children are required to attend school and parents lack specific information about the seismic safety of different structures, it is the responsibility of the government to ensure the schools provide a safe learning environment for Alaska’s children. Again, schools may be used as emergency shelters after major earthquakes, further raising the importance of the building’s successful performance during an earthquake.

According to the Alaska Department of Education, the total enrollment in public school districts in Alaska as of October 1, 2017, was 133,381, which represents a 0.1% increase over the previous year. Of these, 4,778 students are in the Juneau School District, or about 3.6% of the state’s total. School districts statewide accept as part of their mission to protect the safety of children as well as facilities whose replacement cost is many billions of dollars.

This Study:

In the interest of student safety and community resilience to earthquakes, BBFM Engineers was asked to perform a rapid visual screening of several aging schools in the Juneau School District to determine which schools warrant an in-depth seismic review, and which structures are expected to perform acceptably during a major earthquake. The screening program follows the criteria established by FEMA Publication 154, Third Edition. FEMA refers to this screening program as a “sidewalk survey” because it is intended to be a very quick review of structure type, structure age, structural discontinuities, local seismicity, and the like. These quick reviews are often based on assumptions about the building code in use at the time, the soil type, and more. They do not consider the particular member sizes and connection details used, as would a more in-depth analysis. Rather, FEMA describes the purpose of P-154 this way: “to provide a methodology to evaluate the seismic safety of a large inventory of buildings quickly and inexpensively, with minimum access to the buildings, and determine those buildings that require a more detailed examination.” Therefore, rapid visual screening is general by nature. Where the risk of collapse or partial collapse during the Maximum Considered Earthquake appears to exceed 1%, the screening program recommends a detailed structural evaluation specific to the structure.

In this study, BBFM Engineers completed the screening of six schools, half of which have additions. In total, we reviewed ten structures, including original construction and additions. Nine of the ten warrant a more detailed evaluation.

In addition to further review of the ten structures, we also recommend that similar studies be undertaken in all regions of high seismicity throughout the state, especially in light of the cost-effectiveness of the FEMA 154 process, which can be performed for just \$700 to \$1,200 per structure. Studies examining many structures in readily-accessible areas may find economies allowing them to be performed for fees near the lower end of this range, while remote or smaller-scale studies may require a higher fee.

Objectives of this Study:

This study was funded by FEMA and managed by the Earthquake Engineering Research Institute

(EERI) and the Alaska Seismic Hazards Safety Commission (ASHSC). It is the goal of FEMA and of EERI to improve earthquake safety throughout the country, and to that end they are sponsoring projects in various states to showcase the ease and value of rapid visual observation of schools.

Two goals reside at the core of this study: to show planners how quickly and cost effectively an initial assessment can be performed for schools using FEMA's rapid visual screening program, and to rate a sampling of existing schools to provide the Juneau School District information crucial to their planning purposes. Any buildings of concern can then be prioritized for further study and/or upgrade, as appropriate.

ASHSC looked for a school district with older schools constructed with a variety of structural system types and found a willing participant in the Juneau School District, home of some 3.6% of Alaska's pre-kindergarten through 12th grade students. BBFM reviewed the following six schools:

- 1) Dzantik'I Heeni Middle School (1992 original)
- 2) Floyd Dryden Middle School (1972 original and 1984 addition)
- 3) Gastineau Elementary School (1956 original and 1965 and 1991 additions)
- 4) Yakoosge Alternative High School (1966 original and 1982 addition)
- 5) Mendenhall River Community School (1983 original)
- 6) Riverbend Elementary School (1996 original)

BBFM Engineers visited the school district's plans room and copied all available structural drawings. Before we visited the schools themselves, we began a FEMA P-154 data collection form for each structure, inputting all available information: location in relation to known seismic faults, structural system type, year of construction, and more.

BBFM Engineers then visited the schools, photographing their current condition and noting any conditions not shown on the drawings and materials that, during an earthquake, could become pounding or falling hazards. In this manner, the information necessary for the Rapid Visual Screening was obtained.

Upon approval by the Juneau School District, ASHSC can provide a link to the plans, photos, and other supporting information in electronic format, which may prove invaluable for further building assessment or post-earthquake response. Requests for supporting information should be made to the Alaska Seismic Hazards Safety Commission or BBFM Engineers.

Cost of this Study:

After administrative overhead, BBFM's combined fee for this study and a parallel study in Sitka (of four structures) was \$24,999 plus up to \$2,000 for travel-related reimbursables. Rapid Visual Screening can be performed at a very minimal cost, even as low as \$700 per structure, depending on availability of drawings, ease of access to schools, and number of schools included in the study.

We uploaded the available structural drawings for all the schools, along with photographs and FEMA P-154 Data Forms onto the cloud, as these could be very useful after a major earthquake. The drawings are in multi-page .pdf format, the standard format for the industry, while the drawings are in .jpg format. ASHSC is able to distribute the URL link when necessary.

Results of the Study:

Of the ten structures reviewed, the final scores range from 0.6 to 2.0. According to FEMA's guidelines, these represent estimated probabilities of partial or complete collapse of 25% and 1.0%, respectively. These probabilities are dramatically impacted by building design and construction practices common at the time, which may differ significantly from the practices used on these particular structures.

Again, nine of the ten structures exhibited scores below 2.0, which indicates a need for a more detailed investigation of the structure. Further, some of the schools have potential hazards from falling chimneys or pounding from adjacent structures that should be investigated in greater detail. Following are the results for each school, sorted in alphabetical order. Following these results, we have also sorted the schools by final score, which may assist in prioritization of further work.

- 1) Dzantik'i Heeni Middle School: 1992 Original Construction
 - Steel braced frame construction
 - Final score = 0.7; FEMA estimate of collapse risk: 20% *
 - [Detailed investigation is indicated for structural design and detailing.](#)
- 2) Floyd Dryden Middle School: 1972 Original Construction
 - Possibly steel braced frame construction or wood shear wall construction
 - Final score = 0.7 or 1.2; FEMA estimate of collapse risk: 6.3% or 20%
 - [Detailed investigation is indicated for structural design and detailing](#)
 - [Detailed investigation is indicated for potential pounding at main entry canopy](#)
- 3) Floyd Dryden Middle School: 1984 Addition
 - Wood shear wall construction
 - Final score = 1.9; FEMA estimate of collapse risk: 1.3%
 - [Detailed investigation is indicated for structural design and detailing](#)
- 4) Gastineau Elementary School: 1956 Original Construction
 - Wood shear wall and reinforced concrete shear wall construction
 - Final scores = 1.2 and 0.6; estimate of collapse risk: 6.3% and 25%
 - [Detailed investigation is indicated for structural design and detailing](#)
 - [Detailed investigation is indicated for potential pounding at front \(east\) canopy](#)
- 5) Gastineau Elementary School: 1965 Addition
 - Reinforced concrete shear wall construction
 - Final score = 1.2; FEMA estimate of collapse risk: 6.3%
 - [Detailed investigation is indicated for structural design and detailing](#)
- 6) Gastineau Elementary School: 1991 Addition
 - Steel braced frame construction
 - Final score = 0.7; estimate of collapse risk: 20%
 - [Detailed investigation is indicated for structural design and detailing](#)
- 7) Riverbend Elementary School: 1996 Addition
 - Steel braced frame construction
 - Final score = 0.7; FEMA estimate of collapse risk: 20% *
 - Detailed investigation is indicated for structural design and detailing.

- 8) Mendenhall River Community School: 1983 Original Construction
 - Wood shear wall construction
 - Final score = 1.2; FEMA estimate of collapse risk: 6.3%
 - Detailed investigation is indicated for structural design and detailing.
 - Detailed investigation is indicated: falling and pounding hazard from the main entry canopy
- 9) Yakoosge Alternative High School : 1966 Original Construction
 - Reinforced concrete shear wall construction
 - Final score = 0.6; estimate of collapse risk: 25%
 - Detailed investigation is indicated for structural design and detailing
 - Detailed investigation is indicated for the load path at the canopy's diaphragm
- 10) Yakoosge Alternative High School : 1982 Addition
 - Reinforced concrete shear wall construction
 - Final score = 2.0; estimate of collapse risk: 1%
 - Detailed investigation is not indicated

* Note that even structures like Dzantik'i Heeni and Riverbend, which were constructed in the 1990s, can see high levels of risk resulting from rapid visual screening. This is because building codes modernized a great deal in the years following the 1994 Northridge Earthquake in California. For example, FEMA P-154 does not consider steel braced frames like those used in Dzantik'i Heeni and Riverbend to be "modern" unless they were constructed under the 1997 Uniform Building Code or more recent codes, which have more stringent requirements for design and detailing of braced frame members and connections.

For the sake of prioritization, it may be convenient for the school district to see the six different schools sorted by the highest FEMA estimate of the risk of collapse or partial collapse. That information is provided below.

Gastineau Elementary School	25% FEMA Risk
Yakoosge Alternative High School	25% FEMA Risk
Dzantik'i Heeni Middle School	20% FEMA Risk
Riverbend Elementary School	20% FEMA Risk
Floyd Dryden Middle School	6.3% FEMA Risk
Mendenhall River Community School	6.3% FEMA Risk

With relatively little time or expense, this study has identified many structures that may perform poorly during a major earthquake. The schools appear to pose a significant risk to students in the Juneau School District and to the communities they serve. Nine of the ten original buildings and additions were flagged as requiring further structural attention. In other words, they may pose an unacceptable risk of at least partial collapse during a major earthquake. Following FEMA Publication 154, the four largest contributors to a building's seismic risk are: a) common industry practices when the structure was built, b) type of structural system, c) the presence of and type of structural irregularities, and d) the seismicity of the region.

The study of these schools in the Juneau School District indicates there would be great value in conducting similar studies statewide, where more than 500 public schools serve kindergarten through twelfth grade. It is the responsibility of school districts and school boards, as well as local

and statewide governing bodies, to reduce the risk earthquakes currently pose to students and facilities alike, and this rapid evaluation method would quickly and economically identify those structures requiring further attention.

In a December 17, 2014, interview aired by the Alaska Public Radio Network, Alaska Governor Bill Walker pointed out that the tightness of today's Alaskan economy requires policymakers to be particularly focused on our state's priorities, and that education is a high priority. Fortunately, structural review and upgrade is truly one area where "a stitch in time saves nine." Over time, the cost of not upgrading a deficient structure typically exceeds the cost of improving the structure before a major earthquake hits, and even more so when lives and disruption to society are factored in.

Effectiveness of Seismic Retrofit:

Various earthquakes have shown that seismic retrofits to a building can substantially improve its performance during a major earthquake. For example, the 2001 Nisqually Earthquake near Olympia, Washington, produced peak ground accelerations 10% to 30% as strong as the acceleration due to gravity. Reviewing the aftermath, the California Seismic Safety Commission determined that "One hundred and one schools and buildings had been retrofitted for structural components and seven had been retrofitted for non-structural components in the Seattle Public Schools District when the Nisqually earthquake occurred. None of the districts schools suffered significant structural damage. Non-structural damage to colleges and universities included toppling of bookcases and the localized flooding due to a ruptured water line. Some primary and secondary schools in Olympia and Seattle suffered limited structural (damaged beams and columns) and non-structural damage from strong ground shaking."

A second example is the magnitude 6 earthquake that struck Napa, California, in 2014, producing peak ground accelerations of 60% to 100% as strong as the acceleration due to gravity. The earthquake and its aftershocks injured 90 people and caused approximately \$1 billion of damage. Engineering News-Record reported on September 3, 2014:

The epicenter of the American Canyon quake was at the heart of the Napa school district's 30 campuses. Subsequently, three architectural and engineering teams assessed "every room in every school" and observed no structural damage following the quake, says Mark Quattrocchi, principal of Kwok Quattrocchi Architects and one of the survey team members... The schools performed so well because they are built or retrofitted according to much stricter seismic codes than commercial and residential buildings.

"There was no structural damage to any school in the district, even the ones built to older codes in the 1940s, 1950s and 1960s," says Quattrocchi. "Part of this is because seismic upgrades at the schools are treated the same as building an entirely new facility," he adds.

Schools fared well for three reasons: seismic building codes that are more stringent than those for commercial buildings, methodical reviews by the Division of the State Architect and "full-time" state inspection on school construction sites, Quattrocchi says."

For buildings shown to be vulnerable to collapse during earthquakes, seismic retrofit can substantially improve the buildings' performance during a major earthquake.

Further, grants may be available from FEMA and other groups to facilitate seismic upgrades to school buildings.

Recommendations:

We urge planners and policymakers to implement a program to assess rapidly and inexpensively the vulnerability of schools to earthquakes, both for the safety of the students and to protect financial investments across the state. The cost would be approximately about \$700 to \$1,200 per original structure or addition, depending on availability of drawings, ease of access to the schools, and number of schools being included in the study.

We also encourage further structural review for the nine structures identified in this report as posing unacceptable seismic risk. That review should be performed by a qualified structural engineering firm and should include a careful review of the specific loads, members, and connection details specific to these structures. Where appropriate, this additional analysis should include preliminary recommendations for structural upgrade, which can be fleshed out under a separate contract for preparation of construction documents.

For the safety of the students and to protect financial investments across the state, we urge planners and policymakers to implement a program to assess rapidly the vulnerability of schools to earthquakes. This program can be surprisingly inexpensive, costing as little as \$700 to \$1200 per structure, while effectively indicating which structures would or would not warrant further review. An added benefit of this process is that we have developed a database of photographs, structural plans, and other critical information and placed it on the cloud, where it will be readily available after a major earthquake. We also encourage further structural review and possible seismic retrofit for the nine structures identified in this report as requiring a more detailed investigation.

BBFM Engineers



Scott Gruhn, Principal and Project Manager

Rapid Visual Screening of Juneau Schools for Seismic Risk

Appendix A

FEMA P-154 Third Edition Data Collection Forms

Level 1 HIGH Seismicity

PHOTOGRAPH

Address:	1600 Renninger St		
	Juneau, AK	Zip:	99801
Other Identifiers:			
Building Name:	Dzantik'i Heeni Middle School, 1992 Original school		
Use:	school		
Latitude:	58.3631099,	Longitude:	-134.5146487
Ss:		Sr:	
Screeener(s):	Scott Gruhn	Date/Time:	March 21, 2018
No. Stories:	Above Grade: 2	Below Grade: 0	Year Built: 1992 <input type="checkbox"/> EST
Total Floor Area (sq. ft.):	22,000		Code Year: 1988
Additions:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Yes, Year(s) Built: _____		
Occupancy:	Assembly Industrial Utility	Commercial Office Warehouse	Emer. Services <input checked="" type="checkbox"/> School Residential, # Units: _____ <input type="checkbox"/> Historic <input type="checkbox"/> Shelter <input type="checkbox"/> Government
Soil Type:	<input type="checkbox"/> A Hard Rock	<input type="checkbox"/> B Avg Rock	<input type="checkbox"/> C Dense Soil
	<input checked="" type="checkbox"/> D Stiff Soil	<input type="checkbox"/> E Soft Soil	<input type="checkbox"/> F Poor Soil
	DNK If DNK, assume Type D.		
Geologic Hazards:	Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK		
Agency:	<input type="checkbox"/> Pounding <input type="checkbox"/> Falling Hazards from Taller Adjacent Building		
Irregularities:	<input checked="" type="checkbox"/> Vertical (type/severity) Moderate: sloping site <input checked="" type="checkbox"/> Plan (type) Reentrant corners		
Exterior Falling Hazards:	<input type="checkbox"/> Unbraced Chimneys <input type="checkbox"/> Heavy Cladding or Heavy Veneer <input type="checkbox"/> Parapets <input type="checkbox"/> Appendages <input type="checkbox"/> Other: _____		

COMMENTS:

☐ Additional sketches or comments on separate page

SKETCH

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}																		
FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$.

0.7

EXTENT OF REVIEW Exterior: <input type="checkbox"/> Partial <input checked="" type="checkbox"/> All Sides <input type="checkbox"/> Aerial Interior: <input checked="" type="checkbox"/> None <input type="checkbox"/> Visible <input type="checkbox"/> Entered Drawings Reviewed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Type Source: _____ Geologic Hazards Source: _____ Contact Person: _____	OTHER HAZARDS Are There Hazards That Trigger A Detailed Structural Evaluation? <input type="checkbox"/> Pounding potential (unless S_{L2} > cut-off, if known) <input type="checkbox"/> Falling hazards from taller adjacent building <input type="checkbox"/> Geologic hazards or Soil Type F <input type="checkbox"/> Significant damage/deterioration to the structural system	ACTION REQUIRED Detailed Structural Evaluation Required? <input type="checkbox"/> Yes, unknown FEMA building type or other building <input checked="" type="checkbox"/> Yes, score less than cut-off <input type="checkbox"/> Yes, other hazards present <input type="checkbox"/> No Detailed Nonstructural Evaluation Recommended? (check one) <input type="checkbox"/> Yes, nonstructural hazards identified that should be evaluated <input type="checkbox"/> No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary <input type="checkbox"/> No, no nonstructural hazards identified <input type="checkbox"/> DNK
LEVEL 2 SCREENING PERFORMED? <input type="checkbox"/> Yes, Final Level 2 Score, S_{L2} _____ <input checked="" type="checkbox"/> No Nonstructural hazards? <input type="checkbox"/> Yes <input type="checkbox"/> No		

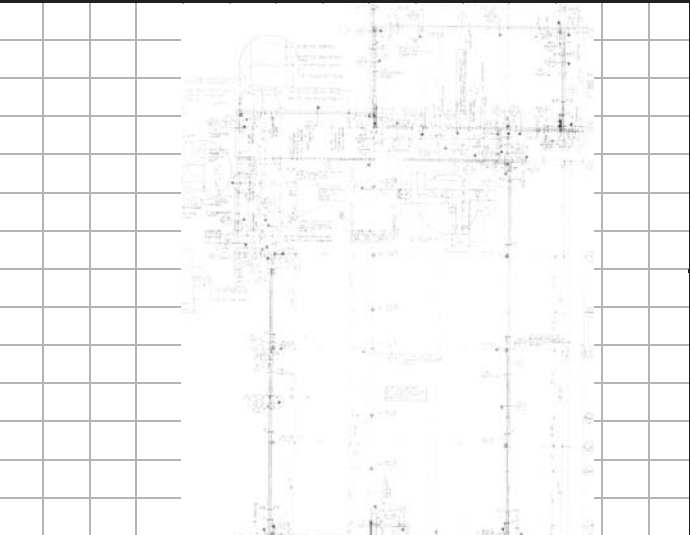
Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}																		
FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm

Level 1 HIGH Seismicity

PHOTOGRAPH	Address: 3800 Mendenhall Loop Rd Juneau, AK Zip: 99801	
	Other Identifiers:	
	Building Name: Floyd Dryden Middle School, 1984 Addition	
	Use: school	
	Latitude: 58.3880015,	Longitude: -134.5681669
	Ss:	Sr:
	Screener(s): Scott Gruhn Date/Time: March 21, 2018	
	No. Stories: Above Grade: 1 Below Grade: 0	Year Built: 1984 <input type="checkbox"/> EST
	Total Floor Area (sq. ft.): 22,000 Code Year: 1982	
	Additions: <input type="checkbox"/> None <input checked="" type="checkbox"/> Yes, Year(s) Built: 1982	
	Occupancy: Assembly Commercial Emer. Services <input type="checkbox"/> Historic <input type="checkbox"/> Shelter Industrial Office <input checked="" type="checkbox"/> School <input type="checkbox"/> Government Utility Warehouse Residential, # Units:	
	Soil Type: <input type="checkbox"/> A Hard Rock <input type="checkbox"/> B Avg Rock <input type="checkbox"/> C Dense Soil <input checked="" type="checkbox"/> D Stiff Soil <input type="checkbox"/> E Soft Soil <input type="checkbox"/> F Poor Soil <input type="checkbox"/> DNK If DNK, assume Type D.	
	Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK	
	Adjacency: <input checked="" type="checkbox"/> Pounding <input type="checkbox"/> Falling Hazards from Taller Adjacent Building	
	Irregularities: <input checked="" type="checkbox"/> Vertical (type/severity) Moderate: split level <input checked="" type="checkbox"/> Plan (type) Reentrant corners	
	Exterior Falling Hazards: <input type="checkbox"/> Unbraced Chimneys <input type="checkbox"/> Heavy Cladding or Heavy Veneer <input type="checkbox"/> Parapets <input type="checkbox"/> Appendages <input type="checkbox"/> Other:	
	COMMENTS: Entry canopy appears to be an addition placed tight against existing construction yet with no seismic connection. This would allow pounding to occur between the two structures during a major earthquake.	
	<input type="checkbox"/> Additional sketches or comments on separate page	
	SKETCH	

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$.

1.2

EXTENT OF REVIEW Exterior: <input type="checkbox"/> Partial <input checked="" type="checkbox"/> All Sides <input type="checkbox"/> Aerial Interior: <input checked="" type="checkbox"/> None <input type="checkbox"/> Visible <input type="checkbox"/> Entered Drawings Reviewed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil Type Source: _____ Geologic Hazards Source: _____ Contact Person: _____	OTHER HAZARDS Are There Hazards That Trigger A Detailed Structural Evaluation? <input checked="" type="checkbox"/> Pounding potential (unless $S_{L2} >$ cut-off, if known) <input type="checkbox"/> Falling hazards from taller adjacent building <input type="checkbox"/> Geologic hazards or Soil Type F <input type="checkbox"/> Significant damage/deterioration to the structural system	ACTION REQUIRED Detailed Structural Evaluation Required? <input type="checkbox"/> Yes, unknown FEMA building type or other building <input checked="" type="checkbox"/> Yes, score less than cut-off <input type="checkbox"/> Yes, other hazards present <input type="checkbox"/> No Detailed Nonstructural Evaluation Recommended? <i>(check one)</i> <input type="checkbox"/> Yes, nonstructural hazards identified that should be evaluated <input type="checkbox"/> No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary <input type="checkbox"/> No, no nonstructural hazards identified <input type="checkbox"/> DNK
LEVEL 2 SCREENING PERFORMED? <input type="checkbox"/> Yes, Final Level 2 Score, S_{L2} _____ <input checked="" type="checkbox"/> No Nonstructural hazards? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA P-154 Data Collection Form

Level 1
HIGH Seismicity



Address: **1507 3rd St**
Douglas, AK Zip: **99824**

Other Identifiers: _____

Building Name: **Gastineau Elementary School, 1956 Original**
Use: **school**

Latitude: **58.2792133** Longitude: **-134.4008306**

Ss: _____ Sr: _____

Screener(s): **Scott Gruhn** Date/Time: **March 21, 2018**

No. Stories: Above Grade: **1** Below Grade: **0** Year Built: **1956** ☐ EST
Total Floor Area (sq. ft.): **22,000** Code Year: **1952**

Additions: ☐ None ☒ Yes, Year(s) Built: **1965, 1991**

Occupancy: Assembly ☐ Commercial ☐ Emer. Services ☐ Historic ☐ Shelter
Industrial ☐ Office ☒ **School** ☐ Government
Utility ☐ Warehouse Residential, # Units: _____

Soil Type: ☐ A Hard Rock ☐ B Avg Rock ☐ C Dense Soil ☒ **D Stiff Soil** ☐ E Soft Soil ☐ F Poor Soil ☐ DNK If DNK, assume Type D.

Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK

Adjacency: ☒ Pounding ☐ Falling Hazards from Taller Adjacent Building

Irregularities: ☒ Vertical (type/severity) **Moderate: split level**
☒ Plan (type) **Reentrant corners**

Exterior Falling Hazards: ☒ Unbraced Chimneys ☐ Heavy Cladding or Heavy Veneer
☐ Parapets ☐ Appendages
☐ Other: _____

COMMENTS: **Pounding potential at front canopy:**



☐ Additional sketches or comments on separate page

SKETCH

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$

1.2

0.6

EXTENT OF REVIEW

Exterior: ☐ Partial ☒ All Sides ☐ Aerial
Interior: ☒ None ☐ Visible ☐ Entered
Drawings Reviewed: ☒ Yes ☐ No
Soil Type Source: _____
Geologic Hazards Source: _____
Contact Person: _____

LEVEL 2 SCREENING PERFORMED?

☐ Yes, Final Level 2 Score, S_{L2} _____ ☒ No
Nonstructural hazards? ☐ Yes ☐ No

OTHER HAZARDS

Are There Hazards That Trigger A Detailed Structural Evaluation?
☒ Pounding potential (unless $S_{L2} >$ cut-off, if known)
☒ Falling hazards from taller adjacent building chimney
☐ Geologic hazards or Soil Type F
☐ Significant damage/deterioration to the structural system

ACTION REQUIRED

Detailed Structural Evaluation Required?

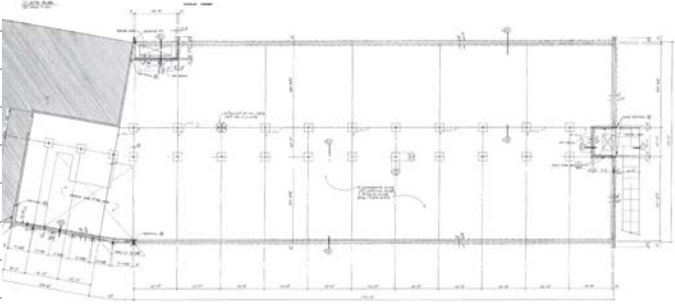
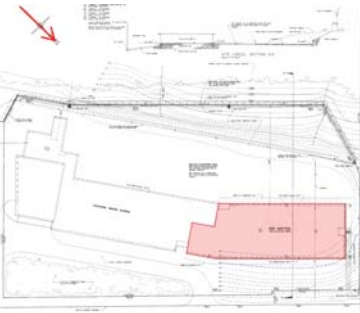
☐ Yes, unknown FEMA building type or other building
☒ Yes, score less than cut-off
☒ Yes, other hazards present
☐ No

Detailed Nonstructural Evaluation Recommended? (check one)

☐ Yes, nonstructural hazards identified that should be evaluated
☐ No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary
☐ No, no nonstructural hazards identified ☐ DNK

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm



SKETCH

Address: 1507 3rd St
Douglas, AK Zip: 99824

Other Identifiers: _____

Building Name: Gastineau Elementary School, 1965 Addition

Use: school

Latitude: 58.2792133 Longitude: -134.4008306

Ss: _____ Sr: _____

Screener(s): Scott Gruhn Date/Time: March 21, 2018

No. Stories: Above Grade: 1 Below Grade: 0 Year Built: 1965 ☐ EST

Total Floor Area (sq. ft.): 13,000 Code Year: 1961

Additions: ☐ None ☒ Yes, Year(s) Built: 1965, 1991

Occupancy: Assembly ☐ Commercial ☐ Emer. Services ☐ Historic ☐ Shelter
Industrial ☐ Office ☒ School ☐ Government
Utility ☐ Warehouse Residential, # Units: _____

Soil Type: ☐ A Hard Rock ☐ B Avg Rock ☐ C Dense Soil ☒ D Stiff Soil ☐ E Soft Soil ☐ F Poor Soil ☐ DNK If DNK, assume Type D.

Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK

Adjacency: ☐ Pounding ☐ Falling Hazards from Taller Adjacent Building

Irregularities: ☐ Vertical (type/severity) ☒ Plan (type) Reentrant corners, nonparallel systems

Exterior Falling Hazards: ☐ Unbraced Chimneys ☐ Heavy Cladding or Heavy Veneer
☐ Parapets ☐ Appendages
☐ Other: _____

COMMENTS:

The length of shear wall is pretty small for the size of the building.

☐ Additional sketches or comments on separate page

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$

1.2

EXTENT OF REVIEW

Exterior: ☐ Partial ☒ All Sides ☐ Aerial
Interior: ☒ None ☐ Visible ☐ Entered
Drawings Reviewed: ☒ Yes ☐ No
Soil Type Source: _____
Geologic Hazards Source: _____
Contact Person: _____

LEVEL 2 SCREENING PERFORMED?

☐ Yes, Final Level 2 Score, S_{L2} _____ ☒ No
Nonstructural hazards? ☐ Yes ☐ No

OTHER HAZARDS

Are There Hazards That Trigger A Detailed Structural Evaluation?

☐ Pounding potential (unless $S_{L2} >$ cut-off, if known)

☐ Falling hazards from taller adjacent building

☐ Geologic hazards or Soil Type F

☐ Significant damage/deterioration to the structural system

ACTION REQUIRED

Detailed Structural Evaluation Required?

☐ Yes, unknown FEMA building type or other building
☒ Yes, score less than cut-off
☐ Yes, other hazards present
☐ No

Detailed Nonstructural Evaluation Recommended? (check one)

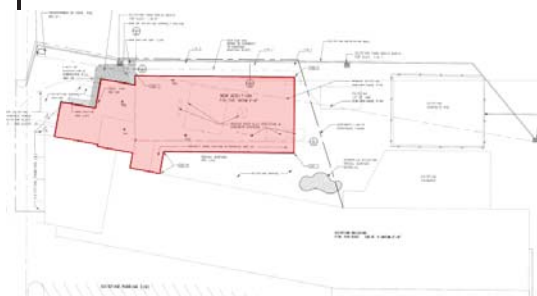
☐ Yes, nonstructural hazards identified that should be evaluated
☐ No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary
☐ No, no nonstructural hazards identified ☐ DNK

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm

FEMA P-154 Data Collection Form

HIGH Seismicity



SKETCH

Address: 1507 3rd St
Douglas, AK Zip: 99824

Other Identifiers: _____

Building Name: Gastineau Elementary School, 1991 Addition
Use: school

Latitude: 58.2792133, Longitude: -134.4008306

Ss: _____ S: _____

Screener(s): Scott Gruhn Date/Time: March 21, 2018

No. Stories: Above Grade: 1 Below Grade: 0 Year Built: 1991 ☐ EST
Total Floor Area (sq. ft.): 12,000 Code Year: 1988

Additions: ☐ None ☒ Yes, Year(s) Built: 1965, 1991

Occupancy: Assembly ☐ Commercial ☐ Emer. Services ☐ Historic ☐ Shelter
Industrial ☐ Office ☒ School ☐ Government
Utility ☐ Warehouse Residential, # Units: _____

Soil Type: ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F DNK
Hard Avg Dense Stiff Soft Poor
Rock Rock Soil Soil Soil Soil
If DNK, assume Type D.

Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK

Adjacency: ☐ Pounding ☐ Falling Hazards from Taller Adjacent Building

Irregularities: ☒ Vertical (type/severity) Moderate: Split Level
☒ Plan (type) Reentrant corners, nonparallel systems

Exterior Falling Hazards: ☒ Unbraced Chimneys ☐ Heavy Cladding or Heavy Veneer
☐ Parapets ☐ Appendages
☐ Other: _____

COMMENTS:

☐ Additional sketches or comments on separate page

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$.

0.7

EXTENT OF REVIEW

Exterior: ☐ Partial ☒ All Sides ☐ Aerial
 Interior: ☒ None ☐ Visible ☐ Entered
 Drawings Reviewed: ☒ Yes ☐ No
 Soil Type Source: _____
 Geologic Hazards Source: _____
 Contact Person: _____

LEVEL 2 SCREENING PERFORMED?

☐ Yes, Final Level 2 Score, S_{L2} _____ ☒ No
Nonstructural hazards? ☐ Yes ☐ No

OTHER HAZARDS

Are There Hazards That Trigger A Detailed Structural Evaluation?

- ☐ Pounding potential (unless $S_{L2} >$ cut-off, if known)
- ☐ Falling hazards from taller adjacent building
- ☐ Geologic hazards or Soil Type F
- ☐ Significant damage/deterioration to the structural system

ACTION REQUIRED

Detailed Structural Evaluation Required?

☐ Yes, unknown FEMA building type or other building
☒ Yes, score less than cut-off
☐ Yes, other hazards present
☐ No

Detailed Nonstructural Evaluation Recommended? (check one)

☐ Yes, nonstructural hazards identified that should be evaluated
☐ No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary
☐ No, no nonstructural hazards identified

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA P-154 Data Collection Form

Level 1
HIGH Seismicity



Address: **9001 Mendenhall Loop Rd**
Juneau, AK Zip: **99801**

Other Identifiers: _____

Building Name: **Mendenhall River Community School**

Use: **school**

Latitude: **58.401606,** Longitude: **-134.5836604**

Ss: _____ Sr: _____

Screener(s): **Scott Gruhn** Date/Time: **March 21, 2018**

No. Stories: Above Grade: **1** Below Grade: **0** Year Built: **1983** ☐ EST

Total Floor Area (sq. ft.): **60,000** Code Year: **1979**

Additions: ☐ None ☒ Yes, Year(s) Built: **1983**

Occupancy: Assembly ☐ Commercial ☐ Emer. Services ☐ Historic ☐ Shelter
Industrial ☐ Office ☒ **School** ☐ Government
Utility ☐ Warehouse Residential, # Units: _____

Soil Type: ☐ A Hard Rock ☐ B Avg Rock ☐ C Dense Soil ☒ **D Stiff Soil** ☐ E Soft Soil ☐ F Poor Soil ☐ **DNK** If DNK, assume Type D.

Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK

Adjacency: ☒ Pounding ☐ Falling Hazards from Taller Adjacent Building

Irregularities: ☒ **Vertical** (type/severity) **Moderate: split level**
☒ **Plan** (type) **Reentrant corners**

Exterior Falling Hazards: ☐ Unbraced Chimneys ☐ Heavy Cladding or Heavy Veneer
☐ Parapets ☐ Appendages
☐ Other: _____

COMMENTS:

Covered entry walkway could be both a pounding and a falling hazard. It was set directly against the existing building yet without connection to it, and it utilizes a wood post moment frame that appears to have very limited capacity.



☐ Additional sketches or comments on separate page

SKETCH

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$

1.2

EXTENT OF REVIEW

Exterior: ☐ Partial ☒ All Sides ☐ Aerial
Interior: ☒ None ☐ Visible ☐ Entered
Drawings Reviewed: ☒ Yes ☐ No
Soil Type Source: _____
Geologic Hazards Source: _____
Contact Person: _____

LEVEL 2 SCREENING PERFORMED?

☐ Yes, Final Level 2 Score, S_{L2} _____ ☒ No
Nonstructural hazards? ☐ Yes ☐ No

OTHER HAZARDS

Are There Hazards That Trigger A Detailed Structural Evaluation?

☒ Pounding potential (unless $S_{L2} >$ cut-off, if known)

☒ Falling hazards from taller adjacent building entry canopy

☐ Geologic hazards or Soil Type F

☐ Significant damage/deterioration to the structural system

ACTION REQUIRED

Detailed Structural Evaluation Required?

☐ Yes, unknown FEMA building type or other building
☒ Yes, score less than cut-off
☒ Yes, other hazards present
☐ No

Detailed Nonstructural Evaluation Recommended? (check one)

☐ Yes, nonstructural hazards identified that should be evaluated
☐ No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary
☐ No, no nonstructural hazards identified ☐ DNK

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm

Rapid Visual Screening of Buildings for Potential Seismic Hazards
FEMA P-154 Data Collection Form

Level 1
HIGH Seismicity



Address: 2901 Riverside Dr
Juneau, AK Zip: 99801

Other Identifiers: _____

Building Name: Riverbend Elementary School

Use: school

Latitude: 58.3751086, Longitude: -134.5917668

Ss: _____ Sr: _____

Screener(s): Scott Gruhn Date/Time: March 21, 2018

No. Stories: Above Grade: 1 Below Grade: 0 Year Built: 1996 ☐ EST

Total Floor Area (sq. ft.): 58,000 Code Year: 1994

Additions: ☒ None ☐ Yes, Year(s) Built: _____

Occupancy: Assembly ☐ Commercial ☐ Emer. Services ☐ Historic ☐ Shelter
Industrial ☐ Office ☒ School ☐ Government
Utility ☐ Warehouse Residential, # Units: _____

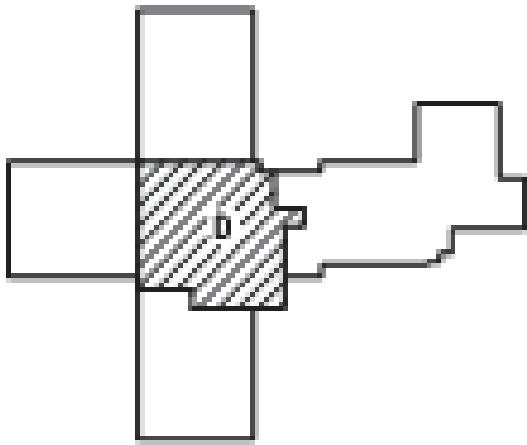
Soil Type: ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F ☐ DNK
Hard Avg Dense Stiff Soft Poor
Rock Rock Soil Soil Soil
If DNK, assume Type D.

Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK

Adjacency: ☐ Pounding ☐ Falling Hazards from Taller Adjacent Building

Irregularities: ☒ Vertical (type/severity) Moderate: split level
☒ Plan (type) Reentrant corners

Exterior Falling Hazards: ☐ Unbraced Chimneys ☐ Heavy Cladding or Heavy Veneer
☐ Parapets ☐ Appendages
☐ Other: _____



SKETCH

COMMENTS:

Stacks / chimneys are braced.

☐ Additional sketches or comments on separate page

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$

0.7

EXTENT OF REVIEW

Exterior: ☐ Partial ☒ All Sides ☐ Aerial
Interior: ☒ None ☐ Visible ☐ Entered
Drawings Reviewed: ☒ Yes ☐ No
Soil Type Source: _____
Geologic Hazards Source: _____
Contact Person: _____

LEVEL 2 SCREENING PERFORMED?

☐ Yes, Final Level 2 Score, S_{L2} _____ ☒ No
Nonstructural hazards? ☐ Yes ☐ No

OTHER HAZARDS

Are There Hazards That Trigger A Detailed Structural Evaluation?

☐ Pounding potential (unless $S_{L2} >$ cut-off, if known)

☐ Falling hazards from taller adjacent building

☐ Geologic hazards or Soil Type F

☐ Significant damage/deterioration to the structural system

ACTION REQUIRED

Detailed Structural Evaluation Required?

☐ Yes, unknown FEMA building type or other building

☒ Yes, score less than cut-off

☐ Yes, other hazards present

☐ No

Detailed Nonstructural Evaluation Recommended? (check one)

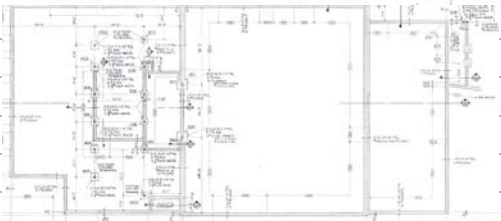
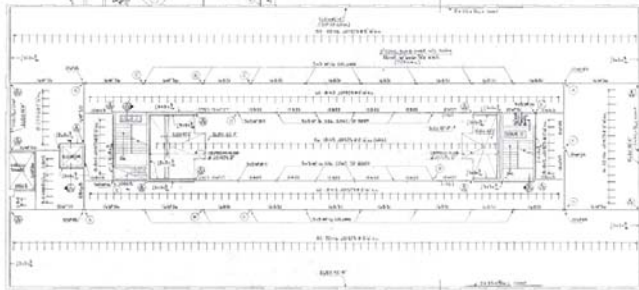
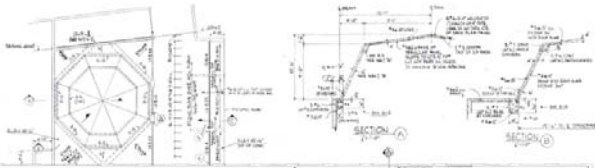
☐ Yes, nonstructural hazards identified that should be evaluated

☐ No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary

☐ No, no nonstructural hazards identified ☐ DNK

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm



SKETCH

Address: **1415 Glacier Ave**
Juneau, AK Zip: **99801**

Other Identifiers: _____

Building Name: **Yakoosge Alternative High School, 1966 Orig.**
Use: **school**

Latitude: **58.3037297**, Longitude: **-134.4259865**

Ss: _____ Sr: _____

Screener(s): **Scott Gruhn** Date/Time: **March 21, 2018**

No. Stories: Above Grade: **2** Below Grade: **1** Year Built: **1966** ☐ EST
Total Floor Area (sq. ft.): **76,000** Code Year: **1961**

Additions: ☐ None ☒ Yes, Year(s) Built: **1982**

Occupancy: Assembly ☐ Commercial ☐ Emer. Services ☐ Historic ☐ Shelter
Industrial ☐ Office ☒ **School** ☐ Government
Utility ☐ Warehouse Residential, # Units: _____

Soil Type: ☐ A Hard Rock ☐ B Avg Rock ☐ C Dense Soil ☒ **D Stiff Soil** ☐ E Soft Soil ☐ F Poor Soil ☐ DNK If DNK, assume Type D.

Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK

Adjacency: ☐ Pounding ☐ Falling Hazards from Taller Adjacent Building

Irregularities: ☒ **Vertical** (type/severity) **Moderate: Split Level**
☒ **Plan** (type) **Reentrant corners**

Exterior Falling Hazards: ☐ Unbraced Chimneys ☐ Heavy Cladding or Heavy Veneer
☐ Parapets ☐ Appendages
☒ Other: **See comments section below**

COMMENTS:

The rear ramp for handicap access and its canopy fasten to the building, but the fasteners making up the lateral load path aren't visible, nor do they appear in the available drawings. Stability of the ramp and canopy should be confirmed.



☐ Additional sketches or comments on separate page

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$

0.6

EXTENT OF REVIEW

Exterior: ☐ Partial ☒ All Sides ☐ Aerial
Interior: ☒ None ☐ Visible ☐ Entered
Drawings Reviewed: ☒ Yes ☐ No
Soil Type Source: _____
Geologic Hazards Source: _____
Contact Person: _____

LEVEL 2 SCREENING PERFORMED?

☐ Yes, Final Level 2 Score, S_{L2} _____ ☒ No
Nonstructural hazards? ☐ Yes ☐ No

OTHER HAZARDS

Are There Hazards That Trigger A Detailed Structural Evaluation?

☐ Pounding potential (unless $S_{L2} >$ cut-off, if known)
☐ Falling hazards from taller adjacent building
☐ Geologic hazards or Soil Type F
☐ Significant damage/deterioration to the structural system

ACTION REQUIRED

Detailed Structural Evaluation Required?

☐ Yes, unknown FEMA building type or other building
☒ Yes, score less than cut-off
☒ Yes, other hazards present
☐ No

Detailed Nonstructural Evaluation Recommended? (check one)

☐ Yes, nonstructural hazards identified that should be evaluated
☐ No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary
☐ No, no nonstructural hazards identified ☐ DNK

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA P-154 Data Collection Form

Level 1
HIGH Seismicity



Address: **1415 Glacier Ave**
Juneau, AK Zip: **99801**

Other Identifiers: _____

Building Name: **Yakoosge Alternative High School, 1982 Addn.**

Use: **school**

Latitude: **58.3037297**, Longitude: **-134.4259865**

Ss: _____ Sr: _____

Screener(s): **Scott Gruhn** Date/Time: **March 21, 2018**

No. Stories: Above Grade: **2** Below Grade: **0** Year Built: **1982** ☐ EST

Total Floor Area (sq. ft.): **11,000** Code Year: **1979**

Additions: ☐ None ☒ Yes, Year(s) Built: **1982**

Occupancy: Assembly ☐ Commercial ☐ Emer. Services ☐ Historic ☐ Shelter
Industrial ☐ Office ☒ School ☐ Government
Utility ☐ Warehouse Residential, # Units: _____

Soil Type: ☐ A Hard Rock ☐ B Avg Rock ☐ C Dense Soil ☒ D Stiff Soil ☐ E Soft Soil ☐ F Poor Soil ☐ DNK If DNK, assume Type D.

Geologic Hazards: Liquefaction: Yes/No/DNK Landslide: Yes/No/DNK Surf. Rupt.: Yes/No/DNK

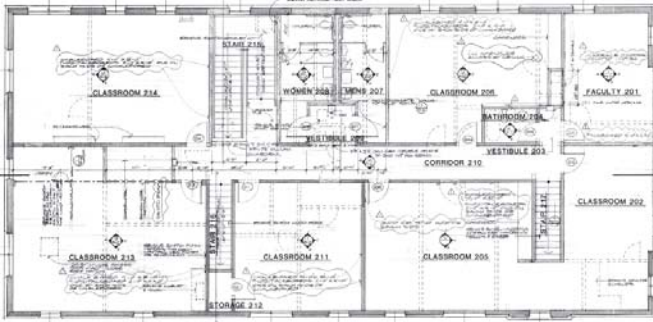
Adjacency: ☐ Pounding ☐ Falling Hazards from Taller Adjacent Building

Irregularities: ☐ Vertical (type/severity) _____
☐ Plan (type) _____

Exterior Falling Hazards: ☐ Unbraced Chimneys ☐ Heavy Cladding or Heavy Veneer
☐ Parapets ☐ Appendages
☐ Other: _____

COMMENTS:

☐ Additional sketches or comments on separate page



SKETCH

BASIC SCORE, MODIFIERS, AND FINAL LEVEL 1 SCORE, S_{L1}

FEMA BUILDING TYPE	Do Not Know	W1	W1A	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM	MH
Basic Score		3.6	3.2	2.9	2.1	2.0	2.6	2.0	1.7	1.5	2.0	1.2	1.6	1.4	1.7	1.7	1.0	1.5
Severe Vertical Irregularity, V_{L1}		-1.2	-1.2	-1.2	-1.0	-1.0	-1.1	-1.0	-0.8	-0.9	-1.0	-0.7	-1.0	-0.9	-0.9	-0.9	-0.7	NA
Moderate Vertical Irregularity, V_{L1}		-0.7	-0.7	-0.7	-0.6	-0.6	-0.7	-0.6	-0.5	-0.5	-0.6	-0.4	-0.6	-0.5	-0.5	-0.5	-0.4	NA
Plan Irregularity, P_{L1}		-1.1	-1.0	-1.0	-0.8	-0.7	-0.9	-0.7	-0.6	-0.6	-0.8	-0.5	-0.7	-0.6	-0.7	-0.7	-0.4	NA
Pre-Code		-1.1	-1.0	-0.9	-0.6	-0.6	-0.8	-0.6	-0.2	-0.4	-0.7	-0.1	-0.5	-0.3	-0.5	-0.5	0.0	-0.1
Post-Benchmark		1.6	1.9	2.2	1.4	1.4	1.1	1.9	NA	1.9	2.1	NA	2.0	2.4	2.1	2.1	NA	1.2
Soil Type A or B		0.1	0.3	0.5	0.4	0.6	0.1	0.6	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.5	0.3	0.3
Soil Type E (1-3 stories)		0.2	0.2	0.1	-0.2	-0.4	0.2	-0.1	-0.4	0.0	0.0	-0.2	-0.3	-0.1	-0.1	-0.1	-0.2	-0.4
Soil Type E (> 3 stories)		-0.3	-0.6	-0.9	-0.6	-0.6	NA	-0.6	-0.4	-0.5	-0.7	-0.3	NA	-0.4	-0.5	-0.6	-0.2	NA
Minimum Score, S_{MIN}		1.1	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	1.0

FINAL LEVEL 1 SCORE, $S_{L1} \geq S_{MIN}$

2.0

EXTENT OF REVIEW

Exterior: ☐ Partial ☒ All Sides ☐ Aerial
Interior: ☒ None ☐ Visible ☐ Entered
Drawings Reviewed: ☒ Yes ☐ No
Soil Type Source: _____
Geologic Hazards Source: _____
Contact Person: _____

LEVEL 2 SCREENING PERFORMED?

☐ Yes, Final Level 2 Score, S_{L2} _____ ☒ No
Nonstructural hazards? ☐ Yes ☐ No

OTHER HAZARDS

Are There Hazards That Trigger A Detailed Structural Evaluation?

☐ Pounding potential (unless $S_{L2} >$ cut-off, if known)

☐ Falling hazards from taller adjacent building

☐ Geologic hazards or Soil Type F

☐ Significant damage/deterioration to the structural system

ACTION REQUIRED

Detailed Structural Evaluation Required?

☐ Yes, unknown FEMA building type or other building
☐ Yes, score less than cut-off
☐ Yes, other hazards present
☐ No

Detailed Nonstructural Evaluation Recommended? (check one)

☐ Yes, nonstructural hazards identified that should be evaluated
☐ No, nonstructural hazards exist that may require mitigation, but a detailed evaluation is not necessary
☐ No, no nonstructural hazards identified ☐ DNK

Where information cannot be verified, screener shall note the following: EST = Estimated or unreliable data OR DNK = Do Not Know

Legend: MRF = Moment-resisting frame RC = Reinforced concrete URM INF = Unreinforced masonry infill MH = Manufactured Housing FD = Flexible diaphragm
BR = Braced frame SW = Shear wall TU = Tilt up LM = Light metal RD = Rigid diaphragm