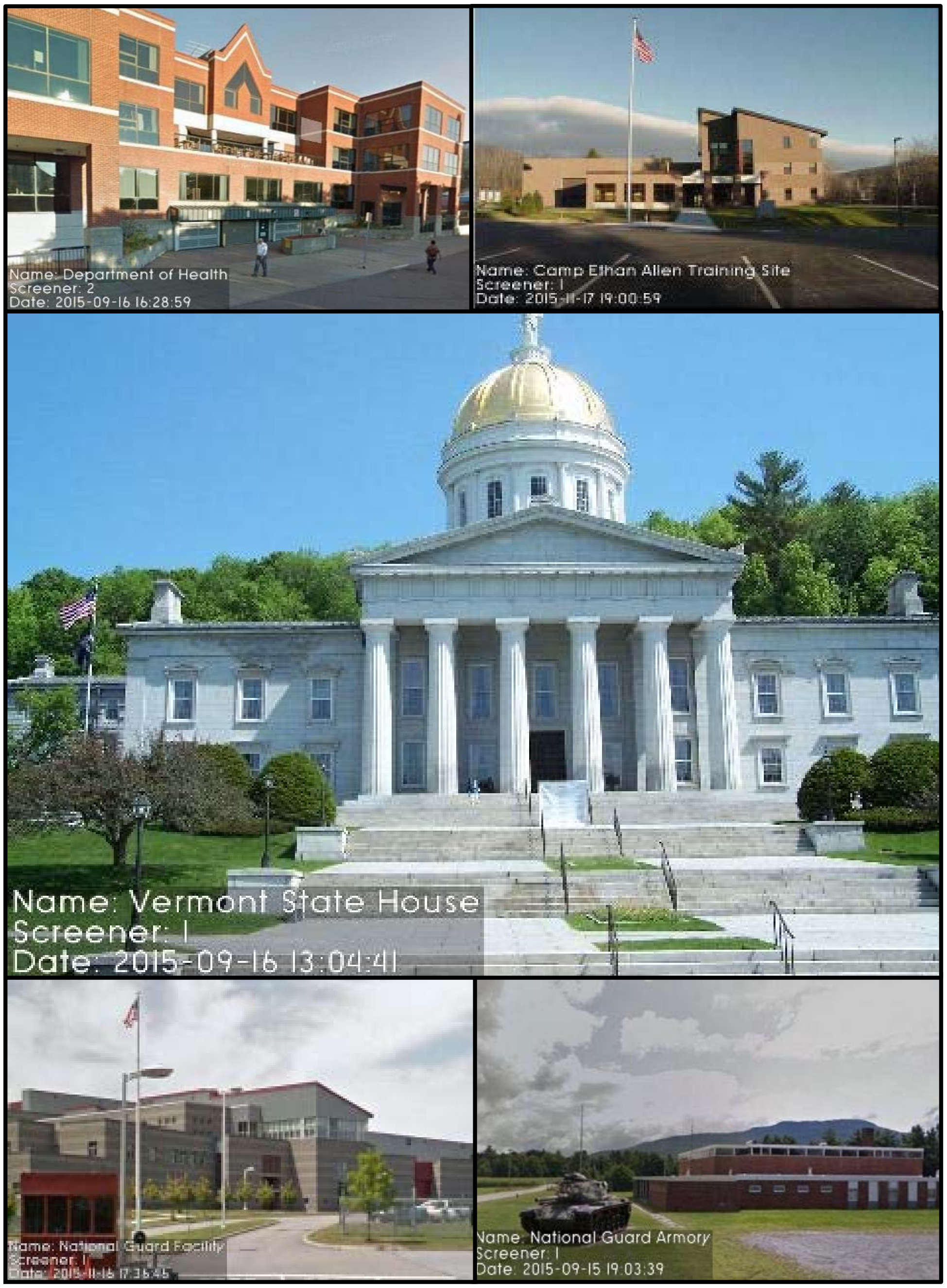
Seismic Screening and Analysis of Selected Critical Facilities in Vermont Utilizing Two FEMA Methodologies (HAZUS & ROVER)

February 2016



NESEC
Northeast States Emergency Consortium

1 West Water Street, Suite 205
Wakefield, MA 01880
781.224.9876
nesec.org

DISCLAIMER

This report was prepared by the Northeast States Emergency Consortium NESEC) in association with the Vermont State Geologist, the Vermont National Guard and the Vermont Division of Emergency Management and Homeland Security.

Conclusions and recommendations contained herein are based upon results of FEMA Rapid Observation of Vulnerability and Estimation of Risk (ROVER), Version 2.2 and FEMA HAZUS (Hazards US) version 2.2 software developed by the Federal Emergency Management Agency (FEMA). Any opinions, findings, conclusions, or recommendations expressed in or derived from the FEMA ROVER and HAZUS software do not necessarily reflect official views or policy and NESEC assumes no liability for its contents or use thereof.

While the estimates contained in this report are based on FEMA software that rely on current scientific and engineering knowledge, there are large uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled ROVER and HAZUS results contained in this report and the actual site-specific losses following an earthquake. Site-specific results can be improved by undertaking detailed seismic evaluations of critical facilities as recommended by ROVER.

Funding for this report was provided by the Department of Homeland Security Federal Emergency Management Agency (FEMA) under the National Earthquake Hazards Reduction Program (NEHRP).

TABLE OF CONTENTS

EXECUTIVE SUMMARY

According to a 2015 Report[1] published by the United States Geological Survey (USGS), more than 143 million Americans living in the 48 contiguous states are exposed to potentially damaging ground shaking from earthquakes. The State of Vermont is included in the Report which estimates that 602,498 people, or approximately 94% of the State's population, is exposed to potentially damaging earthquake ground shaking.

Improved and cost-effective techniques are available from the Federal Emergency Management Agency (FEMA) for undertaking earthquake loss estimations and seismic screening of critical and essential facilities in Vermont. These screenings and loss estimates can provide local and state emergency managers and critical facility operators with more accurate estimates of the potential impact of a seismic event on their facilities. Moreover, they can provide a planning basis for the development of preparedness, response, recovery and mitigation plans and strategies.

This study screened 26 critical facilities in Vermont using two tools (HAZUS and ROVER) developed by FEMA. The goal was to identify pre-earthquake vulnerability and post-earthquake functionality of selected critical facilities based on multiple credible earthquake scenarios. Additionally, the project aimed to identify cost effective measures to collect building and existing soil data for incorporation into both HAZUS and ROVER. Finally, the project evaluated the benefits of improving default soils and building construction type based on how each influenced the ROVER and HAZUS results.

Findings and recommendations include the following:

- Twenty two of twenty six or almost 85% of the facilities screened using ROVER are recommended for a detailed seismic analysis based on their safety ratings.
- Updating default surficial soils had a significant impact on the HAZUS results, while having less of an impact on ROVER results.
- Updating building construction type is necessary and fundamental to undertaking ROVER screening.
- When evaluating individual functionality of critical facilities using HAZUS, it is imperative to have accurate site specific information including location, NEHRP soil classification and building construction type in order to obtain reliable results.
- Similar ROVER screening and HAZUS analysis is recommended for all Vermont critical facilities with consideration given to expanding the analysis to include hurricane and floods.

The methods and findings of this study provide a model that can be replicated to quickly and cost-effectively analyze the earthquake risk to critical facilities anywhere in the country.

---

[1] Kishor S. Jaiswal, Mark D. Petersen, Ken Rukstales, and William S. Leith (2015) Earthquake Shaking Hazard Estimates and Exposure Changes in the Conterminous United States. Earthquake Spectra: December 2015, Vol. 31, No. S1, pp. S201-S220.

1.0 INTRODUCTION

Improved and cost-effective techniques for undertaking Federal Emergency Management Agency (FEMA) HAZUS and ROVER earthquake loss estimations and analyses in Vermont will provide local and state emergency managers and critical facilities operators with more accurate estimates of the potential impact on their facilities. Moreover, they can provide a planning basis for the development of preparedness, response, recovery and mitigation plans and strategies.

The goal of this project was to conduct HAZUS and ROVER earthquake analyses of selected critical facilities in Vermont to identify their pre-earthquake vulnerability and post-earthquake functionality based on multiple credible earthquake scenarios. Additionally, the project aimed to identify cost effective measures to collect building and existing soil data for incorporation into both HAZUS and ROVER. Finally, the project evaluated the benefits of improving default soils and building type based on how each influenced the ROVER and HAZUS results.

This project was completed by the Northeast States Emergency Consortium (NESEC) with Vermont State Support funding from FEMA and with the assistance of the Vermont State Geologist, Vermont National Guard and Vermont Emergency Management and Homeland Security.

2.0 METHODOLOGY

2.1 ANALYTICAL SOFTWARE

The methodology included the use of following two FEMA developed and supported analytical software programs.

ROVER - Rapid Observation of Vulnerability and Estimation of Risk (ROVER) is a FEMA developed mobile software for pre and post-earthquake building safety screening. ROVER's pre-earthquake module is designed to be used by field inspectors to quickly compile an electronic inventory of buildings, record important seismically vulnerable features of a building, and generate an automatic estimate of the need for detailed seismic evaluation. NESEC used a novel approach of remotely undertaking the initial ROVER screening of the Vermont critical facilities using Google maps, Google Earth, Google Street View, assessors' data and other readily available information. Once complete draft results were reviewed by the Army Nation Guard and the Vermont State Building Department, changes were incorporated and the data sheets were finalized. The ROVER Worksheets for each of the critical facilities analyzed are contained as APPENDIX 1.

HAZUS – HAZUS (Hazards US) is a powerful risk assessment methodology developed and supported by the Federal Emergency Management Agency (FEMA). HAZUS is a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes. HAZUS uses Geographic Information Systems (GIS) technology to estimate physical, economic, and social impacts of disasters, as well as estimating potential damage and post-disaster functionality of critical facilities. It graphically illustrates the limits of identified high-risk locations due to earthquake, hurricane and flood events. Users can then visualize the spatial relationships between populations and other more permanently fixed geographic assets or resources for the specific hazard being modeled, which is a crucial function in the pre-disaster planning process. HAZUS Version 2.2 was used in the conduct of this study.

2.2 NEHRP SOIL SITE CLASSIFICATIONS

Two of the most important geologic characteristics that affect levels of ground shaking during an earthquake are the softness of the ground at a site, and the total thickness of sediments above hard bedrock. The softer and thicker the soil, the greater the shaking or amplification of waves produced by an earthquake.

Seismic waves travel faster through hard rock than through softer rock and sediments. As the waves pass from harder to softer rocks, the waves slow down and their amplitude increases. Thus shaking tends to be stronger at sites with softer surface layers, where seismic waves move more slowly. For small seismic events, ground motion above an unconsolidated landfill or soft soils can be more than 10 times stronger than at neighboring sites on bedrock. This effect of the underlying soil on the local ground shaking is called the Site Effect.

Both HAZUS and ROVER incorporate the effects of local surficial geology, the site effect, into their analysis. Both programs classify local site conditions based on NEHRP site classifications A – E as described in Table 1.

NEHRP Site Classification Category	Description
A	Hard Rock
B	Firm to hard rock
C	Dense soil, soft rock
D	Stiff soil
E	Soft clays

Table 1: NEHRP Site Classifications

HAZUS, by default, assumes a single site classification, NEHRP category D, for the entire state of Vermont (See Figure 1). Using a uniform NEHRP Category D soil type is acceptable for emergency preparedness purposes because it tends to overestimate potential losses and impacts. From an emergency management perspective, it is always better to overestimate than underestimate, but the preferred approach is to develop the best possible estimates of damage based on the best available information. With this concept in mind, HAZUS allows the user to update soil classifications manually or by importing a soil site classification map.

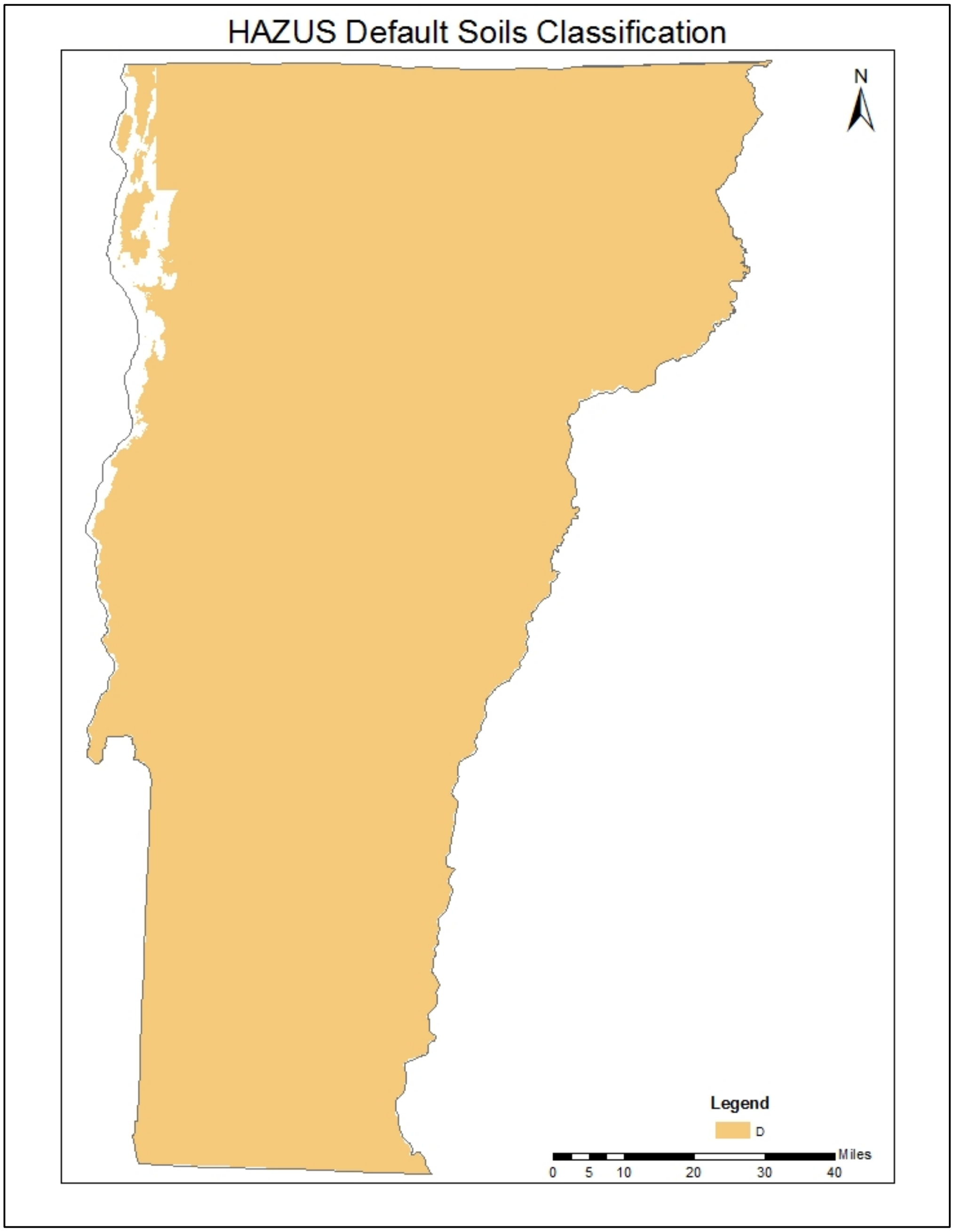


Figure 1. HAZUS Default Soils Vermont

ROVER similarly requires soil site classification and utilizes a USGS methodology that estimates surficial soil type using slope as a proxy.

Both programs also estimate earthquake ground shaking. HAZUS contains historic scenario events, but also allows the user to use an arbitrary event or utilize a probabilistic scenario. ROVER uses USGS National Seismic Maps to estimate the ground-shaking hazard at the building site.

For this project, surficial geology was updated from the default soils included in HAZUS and ROVER with more detailed soils information provided by the Vermont State Geologist.

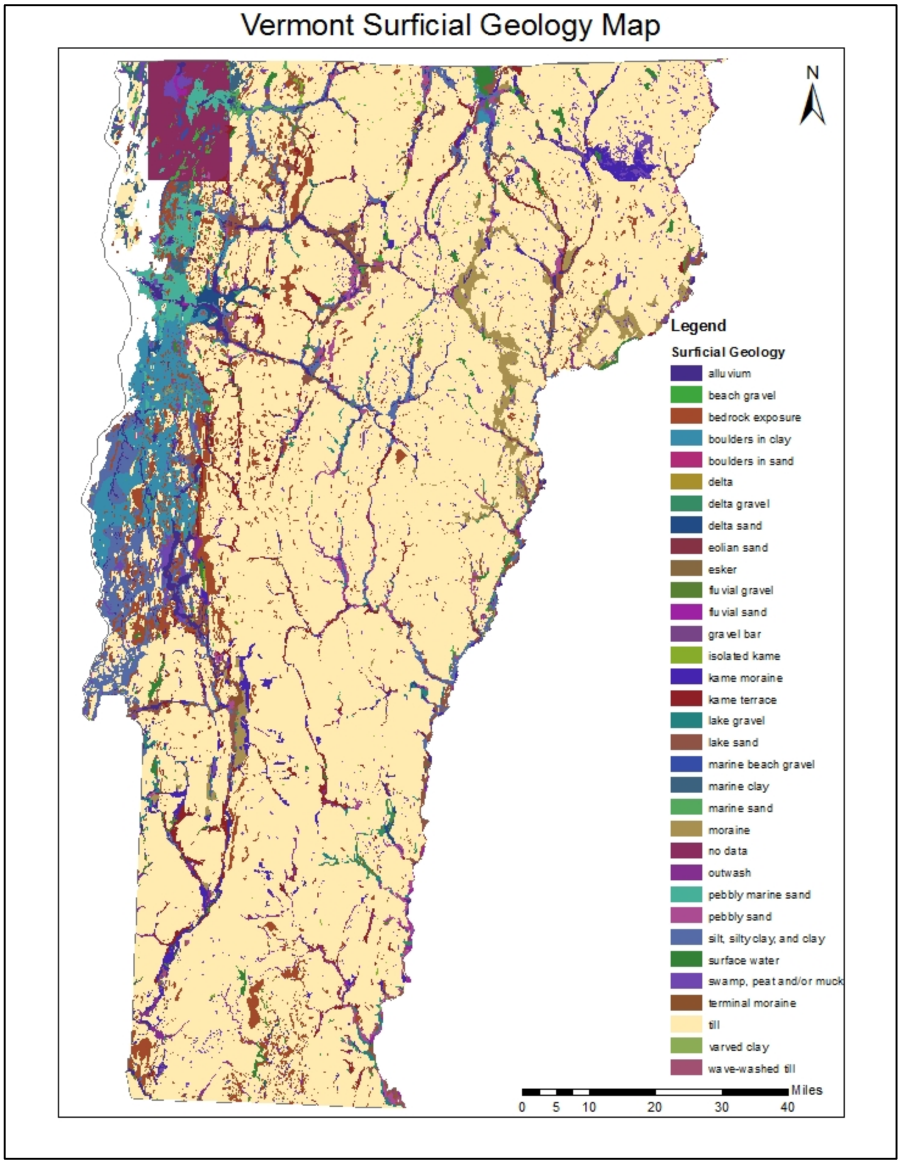


Figure 2. Vermont Surficial Geology Map[2]

The first step in updating the surficial soils in Vermont was to convert the data contained on the Vermont Surficial Geology Map into NEHRP classifications A-E so that it could be imported into the HAZUS and ROVER Programs. These conversions were made using conversion factors provided by the Vermont State Geologist as illustrated in Table 2.

Once these preliminary conversions were made based on the Vermont Surficial Geology Map, the State Geologist identified areas where more detailed surficial materials analyses had been completed and mapped at the 1:24000 scale or better (See Figure 3).

---

[2] Vermont Center for Geographic Information

LITHCODE	FEATURE_TY	LITHNAME	NEHRP Site Class
al	Postglacial fluvial deposit	alluvium	D
bc	Glaciolacustrine deposit	boulders in clay	E
bg	Glaciolacustrine deposit	beach gravel	D
bgm	Champlain Sea deposit	marine beach gravel	D
bs	Glaciolacustrine deposit	boulders in sand	C
d	Glaciolacustrine deposit	delta	C
dg	Glaciolacustrine deposit	delta gravel	C
ds	Glaciolacustrine deposit	delta sand	C
ek	Glaciofluvial	esker	C
es	Eolian deposit	eolian sand	C
fg	Postglacial fluvial deposit	fluvial gravel	C
fs	Postglacial fluvial deposit	fluvial sand	D
gb	Champlain Sea landform	gravel bar	C
k	Glaciofluvial deposit	isolated kame	C
km	Glaciofluvial deposit	kame moraine	C
kt	Glaciofluvial deposit	kame terrace	C
lg	Glaciolacustrine deposit	lake gravel	C
ls	Glaciolacustrine deposit	lake sand	D
m	Glacial deposit	moraine	C
mc	Champlain Sea deposit	marine clay	E
ms	Champlain Sea deposit	marine sand	D
na	No Data	no data	No Data
ow	Glaciofluvial deposit	outwash	D
p	Pluvial deposit	swamp, peat and/or muck	E
ps	Glaciolacustrine deposit	pebbly sand	C
psm	Champlain Sea deposit	pebbly marine sand	D
r	Bedrock exposure	bedrock exposure	A
stc	Glaciolacustrine deposit	silt, silty clay, and clay	E
sw	Surface Water	surface water	N/A
t	Glacial deposit	till	C
tm	Glacial deposit	terminal moraine	C
vc	Glaciolacustrine deposit	varved clay	E
wt	Glaciolacustrine deposit	wave-washed till	B

Table 2. Surficial to NEHRP Soils Conversion Factors

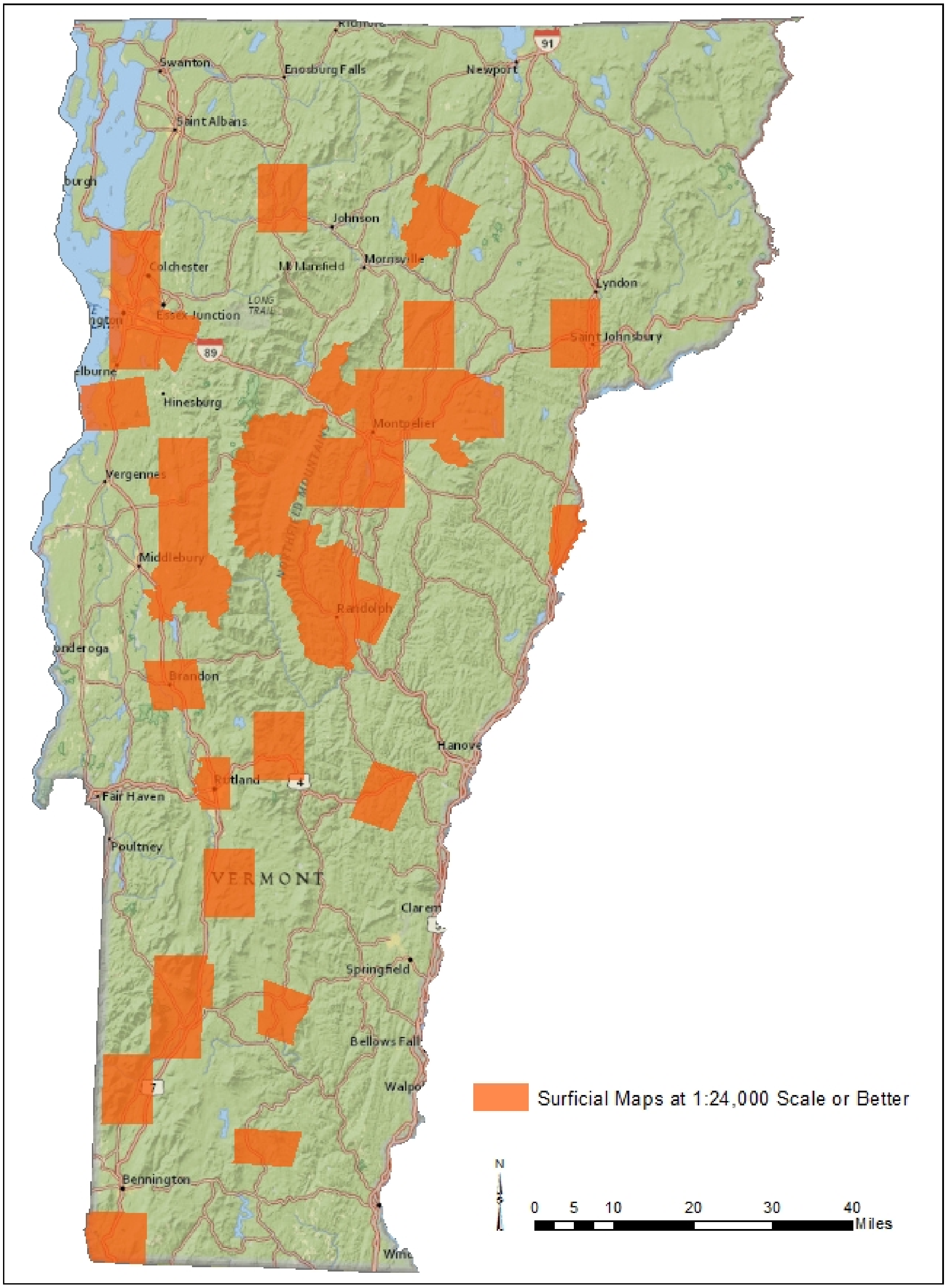


Figure 3. Vermont Areas Where Surficial Geology is Mapped at 1:24,000 Scale or Better

The A - E NEHRP Soil Class conversions for the areas with detailed surficial mapping were consolidated with the Vermont Surficial Geology Map to create a single statewide map (See Figure 4) representing the "best available" surficial materials data for the state of Vermont. The map was then imported into the HAZUS Program to be used in the earthquake analyses, and the site-specific soil classes were updated manually into the ROVER Program.

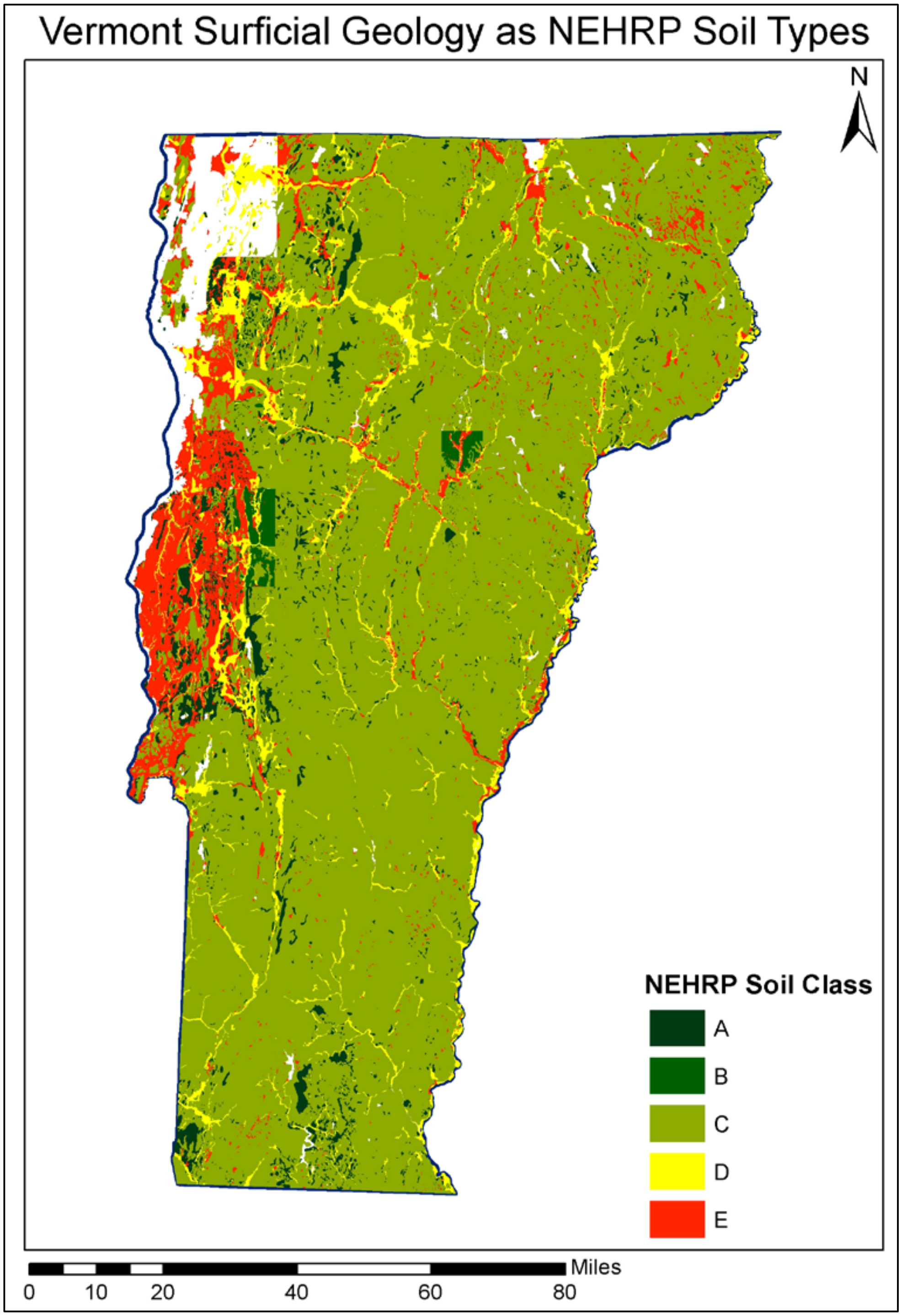


Figure 4. NEHRP Soil Classifications Vermont

2.3 SELECTED CRITICAL FACILITIES

Twenty six (26) critical facilities were selected for analysis in conjunction with the Vermont National Guard, Vermont Division of Emergency Management & Homeland Security and the Vermont State Geologist (See Figure 5). This project had a dual focus to evaluate the functionality of critical facilities and at the same time evaluate the effectiveness of updating soils and building construction type in

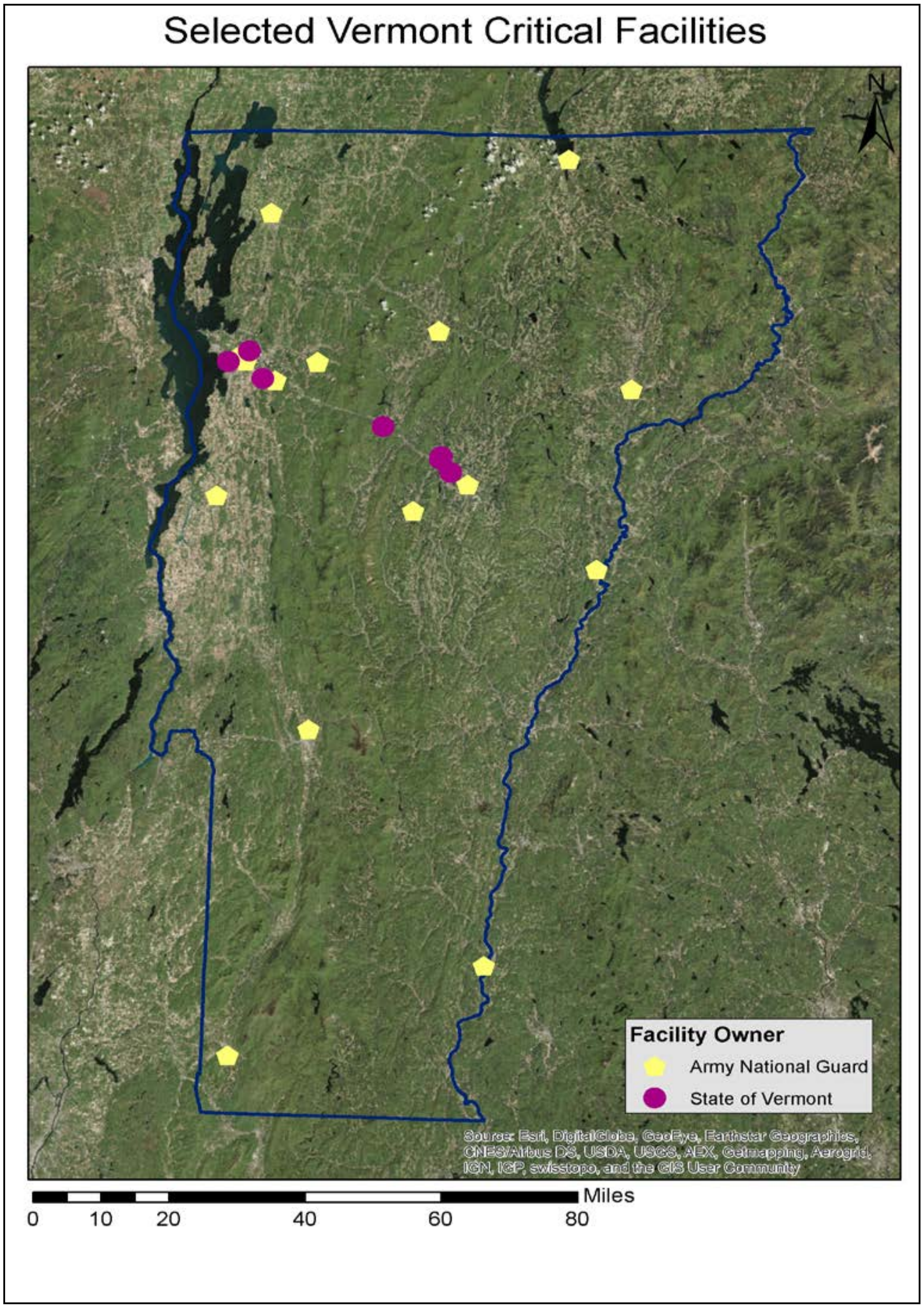


Figure 5. Selected State and National Guard owned Facilities

HAZUS and ROVER. Accordingly, the selection of critical facilities was driven by multiple factors including their critical function following an earthquake or other disaster, geographic location in relation to surficial geology and/or their particular building construction type. A list of the selected facilities is included in Table 6 in Section 4.1.

2.4 SCENARIO EARTHQUAKES

In areas of low to moderate seismicity such as the Northeast US, it is essential to select realistic and credible scenario earthquakes for loss estimation purposes. The selection of events that have occurred historically and are likely to occur again is the preferred option. This is important because the selection of non-credible events can have the unintended result that the loss estimates are ignored because they are perceived as overstated and unrealistic. Multiple earthquake scenarios were reviewed and considered based on an analysis of New England Scenario Earthquakes prepared by Dr. John Ebel, Weston Observatory for a 2012 FEMA Study of the impact of earthquakes in New England [3] (See Figure 6).

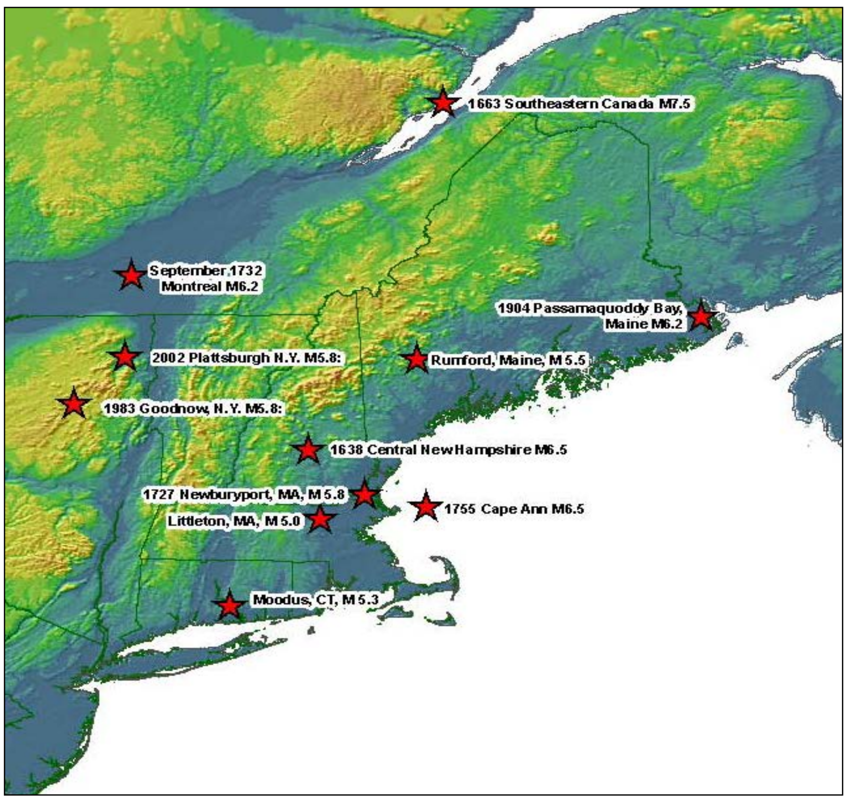


Figure 6. Earthquake Scenarios for New England

In consultation with the Vermont State Geologist, two (2) credible earthquake scenarios for Vermont were identified using Ebel's specific parameters for magnitude, depth and epicentral location: the 1638 Central New Hampshire and the 1732 Montreal events. A third hypothetical 5.0 Magnitude event was added with an epicenter in Middlebury, VT, with parameters provided by the Vermont State Geologist (See Table 3).

[3] HAZUS Analysis of Eleven Scenario Earthquakes in New England, FEMA Region1, September 2012

Middlebury was the center of a 4.1 Magnitude event on April 10, 1962[4] and is considered a potential source zone for a small, but potentially damaging, local event.

No.	Earthquake Scenario	Epicenter		Focal Depth (km)	Magnitude (M)	Notes
		Latitude (N)	Longitude (W)			
1	1638 Central New Hampshire	43.39°	-71.61°	5	6.5	Brown and Ebel (EQ Notes, 1985); Ebel and Bouck (SRL, 1988); Ebel (unpublished)
2	1732 Montreal, Canada	45.5°	-73.6°	10	6.2	Natural Resources Canada
3	Middlebury, VT	44.01	-73.17	5	5.0	Vermont State Geologist

Table 3. Vermont Earthquake Scenario Parameters

3.0 ANALYSIS

3.1 ROVER ANALYSIS

A FEMA ROVER pre-earthquake analysis was conducted for 26 selected critical facilities to estimate their post-earthquake performance and determine the need for a detailed seismic evaluation. ROVER Version 2.2 was utilized for this analysis (See Figure 7).

NESEC used ROVER in conjunction with Google Maps, Google Street View, Google Earth, Bing Maps, Bing Birds Eye View, assessors' data and other readily available means to undertake an initial ROVER screening of the 26 Vermont critical facilities as described in Section 2.3. The ROVER inventory included an electronic inventory of buildings and a record of any important seismically vulnerable features of each building. The program generates an automatic final score estimate, which indicates if a detailed seismic evaluation is necessary. The Final ROVER Scores relate to the probability of building collapse should a low probability but credible earthquake occur. A credible earthquake has ground-shaking levels equivalent to the Maximum Considered Earthquake (MCE) currently used in national design and evaluation standards for the evaluation of existing buildings. Final ROVER Scores typically range from zero to seven, with higher scores corresponding to better than expected seismic performance and a lower potential for collapse. All facilities that score less than 2.0 on the ROVER Scale are recommended for a detailed seismic evaluation.

---

[4] Earthquake Catalog, Weston Observatory, Boston College

The ROVER final scores for the 26 critical facilities were calculated twice for each structure; once using the default USGS ROVER soils and again utilizing the Vermont State Geologists updated and interpolated surficial soils.

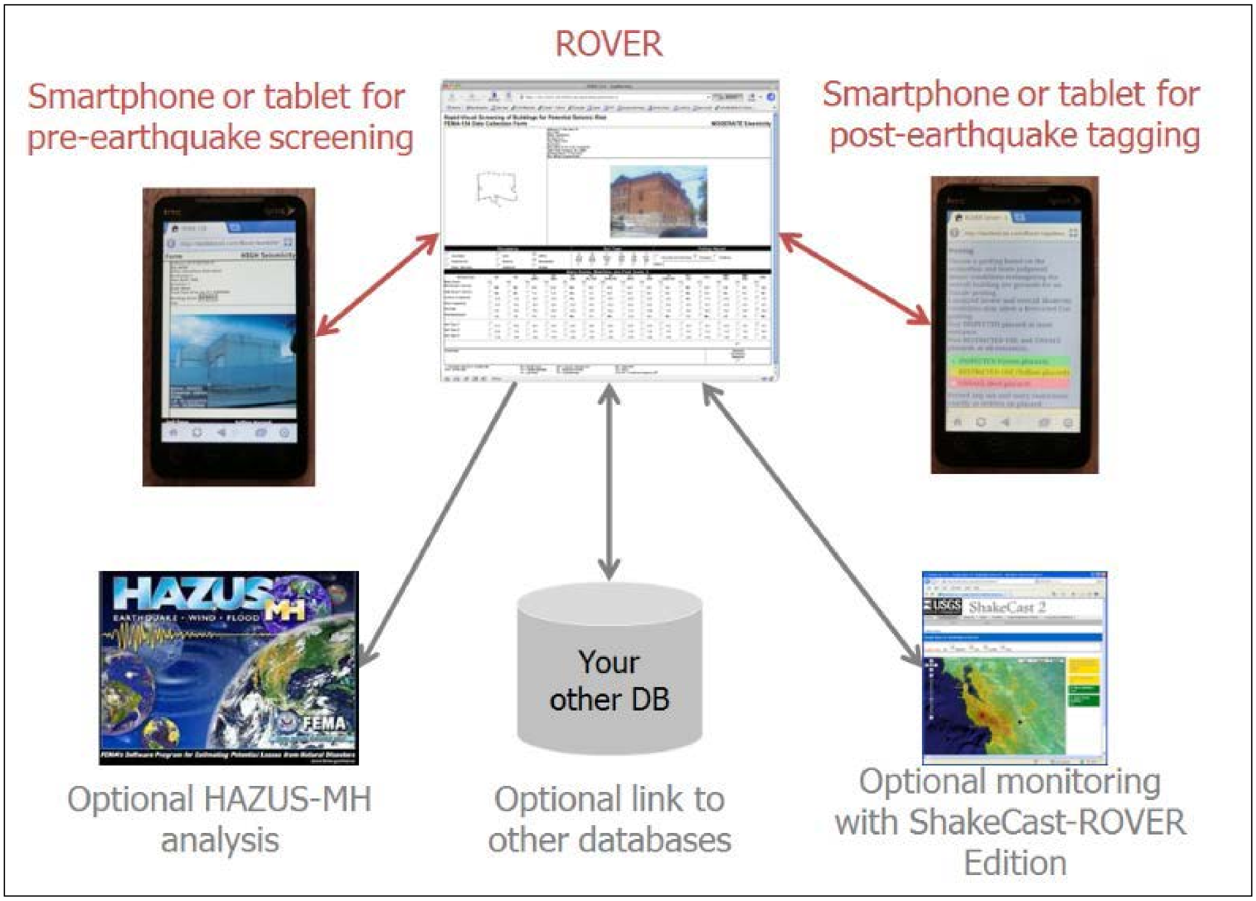


Figure 7. FEMA ROVER Program

3.2 HAZUS ANALYSIS

A FEMA HAZUS (Hazards US) earthquake analysis was conducted for the State of Vermont using the three scenario events. HAZUS analysis was also conducted for the 26 selected critical and facilities to estimate their post scenario earthquake functionality and damage state. An overview of the HAZUS analysis process is illustrated in Figure 8.

The first step was to update the HAZUS Default database of essential facilities to include data collected on the 26 facilities as part of the ROVER Analysis. Once the data was updated, eighteen HAZUS runs were conducted to include six runs for each of the three earthquake scenarios. The six runs used all the possible combinations of default or updated building classifications and soils. This included HAZUS default soils, ROVER soils, State Geologist provided soils, HAZUS default building construction type and updated ROVER building construction type (See Table 4).These multiple analyses were conducted to evaluate the efficacy and cost effectiveness of updating building classification, soils, or both.

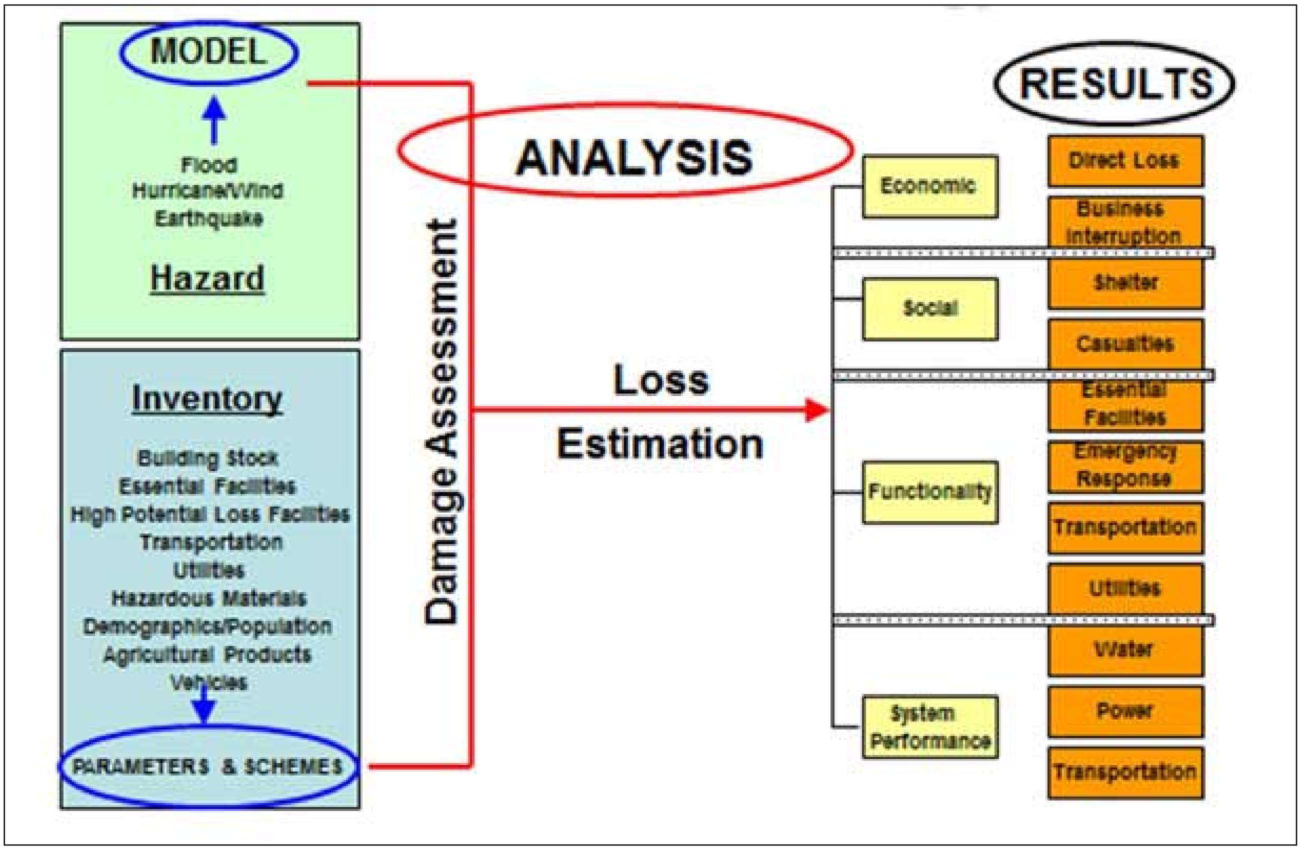


Figure 8. HAZUS Analysis Process

Soil	Default Building Type	Updated Building Type	Scenarios
Default Soils	Yes	Yes	3
ROVER Soils	Yes	Yes	3
State Geologist Soils	Yes	Yes	3

Table 4. Eighteen HAZUS Runs Combinations

4.0 RESULTS

4.1 ROVER

ROVER Analysis was conducted using both default ROVER soils and State Geologist provided soils. The results as illustrated in Table 5 show that updating ROVER default soils data increases the number of facilities ROVER recommends for a detailed seismic evaluation by 3 or approximately 12% of the facilities screened.

Soils	Facilities Requiring Detailed Seismic Evaluation	Facilities NOT Requiring Detailed Seismic Evaluation
ROVER Soils	19	7
State Geologist Soils	22	4

Table 5. Facilities Requiring Detailed seismic evaluation as a Function of Soil

Table 6 compares the raw scores each of the facilities using default ROVER Soils and State Geologist provided soils. The raw scores for the two soil types do not differ significantly. Those facilities ROVER recommends for a detailed seismic evaluation are highlighted in orange and those not requiring further evaluation are highlighted in green.

Table 7 shows the facilities and their ranking from lowest to highest with 2.0 being the ROVER Recommended threshold for facilities requiring a detailed seismic evaluation. ROVER recommends a detailed seismic evaluation for 22 of 26 or 85% of the facilities surveyed. Those facilities ROVER recommends for a detailed seismic evaluation are highlighted in orange and those not requiring further evaluation in green.

Name	Function	Street Address	City	ROVER Default Soils Score	ROVER State Geologist Soils Score	Difference
National Guard	Armory	13 Ferris Street	Swanton	0	0	0
National Guard	Armory	255 Lafountain Street	Winooski	0.1	0	-0.1
National Guard	National Guard HQs	789 Vermont National Guard Road	Colchester	0.4	0	-0.4
Division of Fire Safety	Central Administration	1311 US Route 302	Barre	0.4	0	-0.4
National Guard	Armory	7846 Williston Road	Williston	0.1	0.1	0
National Guard	Armory	45 Farr Ave	Morrisville	0.3	0.1	-0.2
National Guard	Norwich Campus (Training)	161 University Drive	Northfield	0.7	0.1	-0.6
National Guard	Aviation Support Facility	141 Shamrock Road	S. Burlington	1.5	0.1	-1.4
National Guard	Armory	37 Monkton Road	Vergennes	0.3	0.3	0
National Guard	Armory	99 Fairground Road	Bradford	0.3	0.3	0
National Guard	Armory and Maintenance	23 Armory Lane	Westminster	0.3	0.3	0
National Guard	Armory	540 Union Street	Newport	0.3	0.3	0
National Guard	Recruiting	10 Eastern Ave	St Johnsbury	0.9	0.3	-0.6
Emergency Operations Center	Emergency Operations	45 State Drive	Waterbury	1.1	0.3	-0.8
Vermont State House	Seat of Government	115 State Street	Montpelier	0.7	0.7	0
Agency of Transportation	Transportation Department Headquarters	One National Life Drive	Montpelier	0.7	0.7	0
National Guard	Training	113 Ethan Allen Road	Jericho	1.7	0.7	-1
National Guard	Armory	100 Franklin Lane	Bennington	1.5	1.5	0
Agency of Transportation	District 5	189 Troy Avenue	Colchester	1.9	1.8	-0.1
Department of Health	Health Department Headquarters	108 Cherry Street	Burlington	2.3	1.5	-1.2
Department of Motor Vehicles	Motor Vehicles Department Headquarters	120 State Street	Montpelier	2.6	1.8	-0.8
State Police	Barracks	2777 Saint George Road	Williston	2.8	1.8	-1
National Guard	Storage	666 Lower Newton Street	Saint Albans	2.4	2	-0.4
National Guard	Training	90 Ethan Allen Road	Jericho	2.3	2.3	0
Armed Forces Reserve Center	U.S. Army Reserves	2143 Post Road	Rutland	2.6	2.6	0
National Guard	Recruiting	171 North Main Street	Barre	2.6	2.6	0

Table 6. Comparison of ROVER Scores using Default and State Geologist Provided Soil

Name	Function	Street Address	City	ROVER Updated Soils Score	ROVER Updated Soils Rank
National Guard	Armory	13 Ferris Street	Swanton	0	1
National Guard	Armory	255 Lafountain Street	Winooski	0	2
National Guard	National Guard HQs	789 Vermont National Guard Road	Colchester	0	3
Division of Fire Safety	Central Administration	1311 US Route 302	Barre	0	4
National Guard	Armory	7846 Williston Road	Williston	0.1	5
National Guard	Armory	45 Farr Ave	Morrisville	0.1	6
National Guard	Norwich Campus (Training)	161 University Drive	Northfield	0.1	7
National Guard	Aviation Support Facility	141 Shamrock Road	South Burlington	0.1	8
National Guard	Armory	37 Monkton Road	Vergennes	0.3	9
National Guard	Armory	99 Fairground Road	Bradford	0.3	10
National Guard	Armory and Maintenance	23 Armory Lane	Westminster	0.3	11
National Guard	Armory	540 Union Street	Newport	0.3	12
National Guard	Recruiting	10 Eastern Ave	St Johnsbury	0.3	13
Emergency Operations Center	Emergency Operations	45 State Drive	Waterbury	0.3	14
Vermont State House	Seat of Government	115 State Street	Montpelier	0.7	15
Agency of Transportation	Transportation Department Headquarters	One National Life Drive	Montpelier	0.7	16
National Guard	Training	113 Ethan Allen Road	Jericho	0.7	17
National Guard	Armory	100 Franklin Lane	Bennington	1.5	18
Department of Health	Health Department Headquarters	108 Cherry Street	Burlington	1.5	19
Agency of Transportation	District 5	189 Troy Avenue	Colchester	1.8	20
Department of Motor Vehicles	Motor Vehicles Department Headquarters	120 State Street	Montpelier	1.8	21
State Police	Barracks	2777 Saint George Road	Williston	1.8	22
National Guard	Storage	666 Lower Newton Street	Saint Albans	2	23
National Guard	Training	90 Ethan Allen Road	Jericho	2.3	24
Armed Forces Reserve Center	U.S. Army Reserves	2143 Post Road	Rutland	2.6	25
National Guard	Recruiting	171 North Main Street	Barre	2.6	26

Table 7. Vermont Critical Facilities ROVER Ranking Lowest to Highest

4.2 HAZUS

HAZUS was initially run to estimate total direct economic losses for buildings using all three-earthquake scenarios, once using default soils and again using updated State Geologist soils. Comparative results are illustrated in Table 8.

No.	Earthquake Scenario	Magnitude (M)	Direct Economic Losses Buildings Default Soils	Direct Economic Losses Buildings State Geologist Soils	Difference (Percent Change)
1	1638 Central New Hampshire	6.5	$679,689,000	$602,073,000	-$77,616,000 (11.4%)
2	1732 Montreal, Canada	6.2	$232,464,000	$288,754,000	$56,290,000 (24.2%)
3	Middlebury, VT	5.0	$392,665,000	$549,703,000	$157,038,000 (39.9%)

Table 8. Comparison of Direct Economic Losses for Buildings for Three Scenario Earthquakes

As Table 8 illustrates, updating soil in HAZUS from the Default NEHRP classification has a significant impact on estimates of direct economic losses to buildings. The percentage change ranges from approximately 11 to 40 percent. The change can be either positive or negative.

These changes in estimated economic losses to buildings can be explained by noting the geographic location of the three earthquake scenarios in relation to the location of the predominance of NEHRP E soils located in West Central Vermont (See Figure 9). The scenarios that have the highest levels of ground shaking in the area of NEHRP E soils have the greatest increase in direct economic losses to buildings, while those events with the highest levels of ground shaking in areas of NEHRP C soils show a decrease. This decrease is explained because the HAZUS Default NEHRP soils classification is D and the updated classification is C, which is more stable soil where less direct economic impact to buildings would be expected.

Next, HAZUS analysis was conducted for the 26 critical facilities screened using default HAZUS default soils (NEHRP Classification D), ROVER default soils and State Geologist provided soils. Probability of Functionality Day 1 of the earthquake for each of the 26 critical facilities was analyzed across the three scenario events. Figure 10 is a comparison of the average functionality of the facilities for each of the three scenario events. As Figure 10 illustrates, average functionality did not significantly change for any of the events when building construction type or soils were updated.

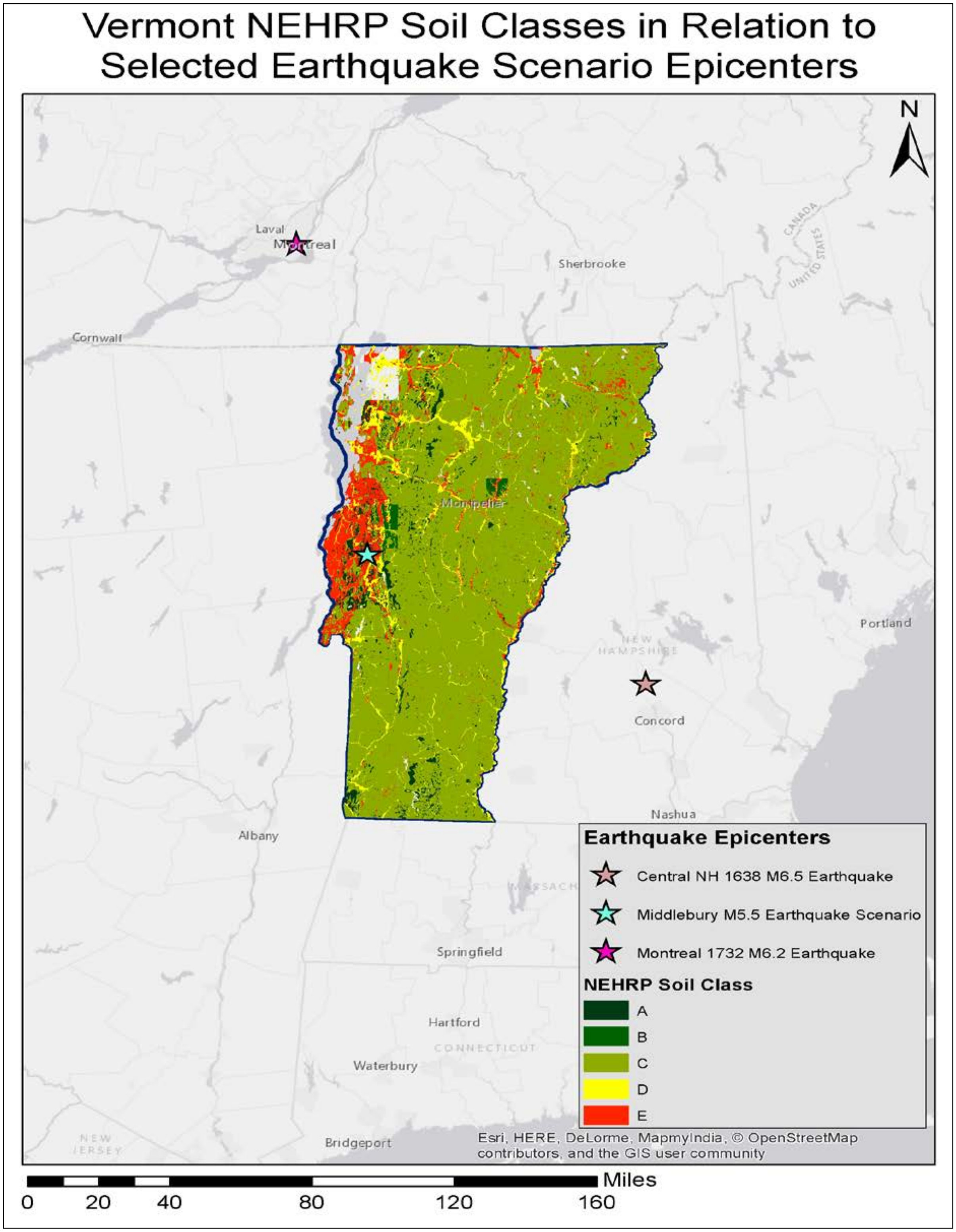


Figure 9. Updated NEHRP Soil Classifications Relative to Scenario Earthquake Epicenters

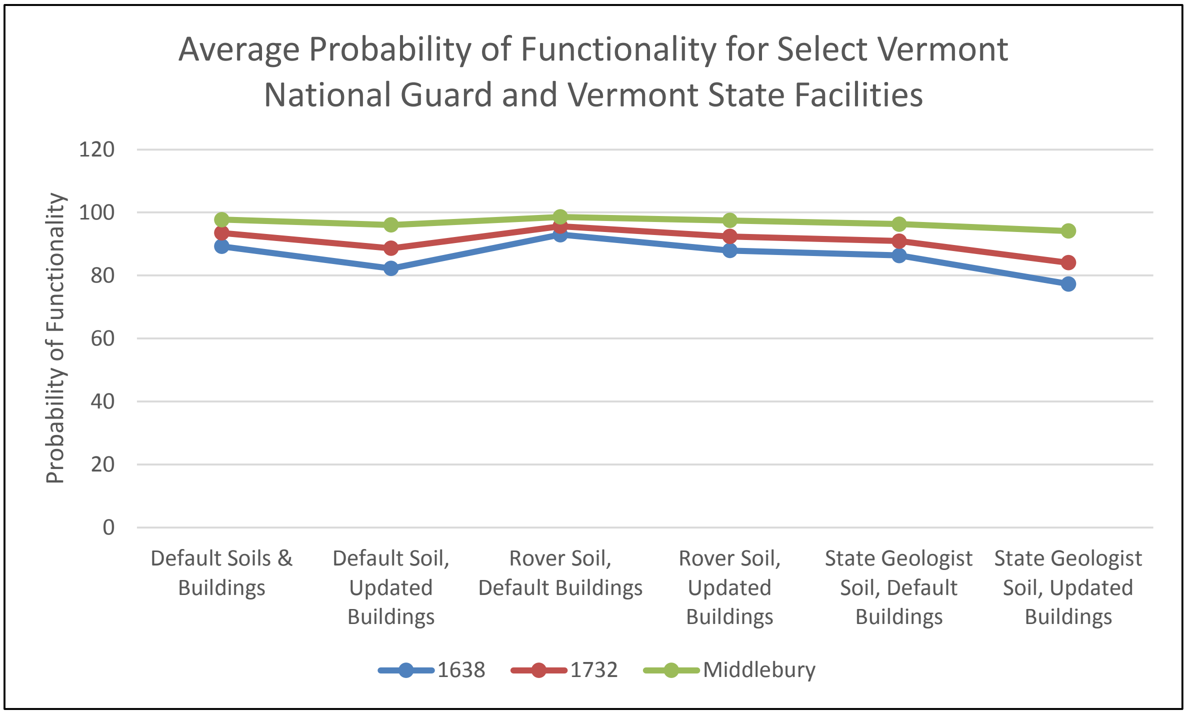


Figure 10. Average Probability of Functionality Day of the Earthquake for Select Vermont National Guard and State Facilities

However, when we look at how updating soil and building construction type affects the probability of functionality of individual facilities, both factors have a significant effect.

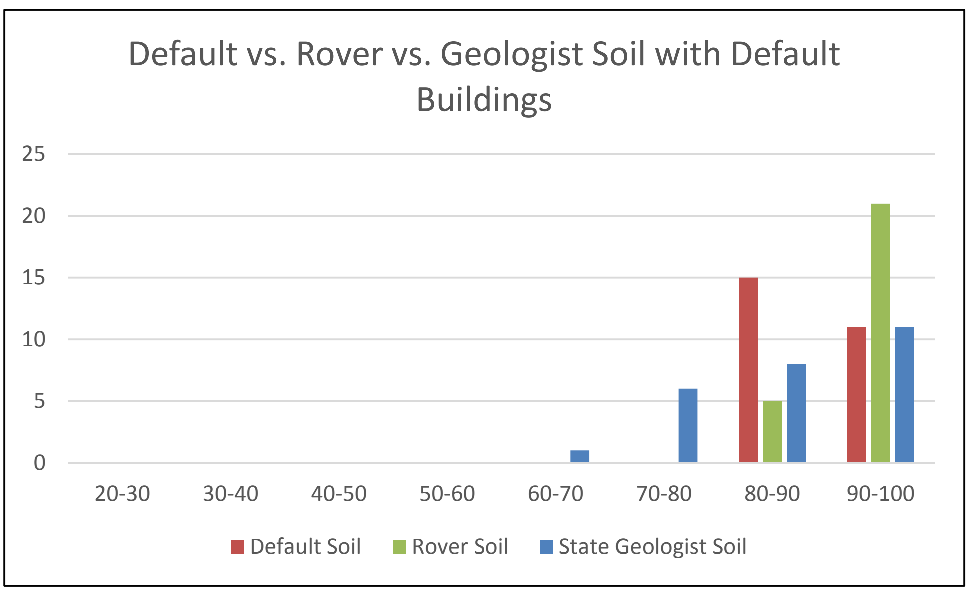


Figure 11. Probability of Functionality for Default Buildings and Varying Soils

As Figure 11 illustrates, updating the soils results in a range of probability of functionality between approximately 60% to 100%.

When we then update the building construction types, Day 1 Functionality decreases for many facilities and the range is between 20% to 100% (See Figure 12). This contrast highlights the importance of updating the building construction type, as critical facilities with the lowest probability of functionality are not identified when soils alone are updated.

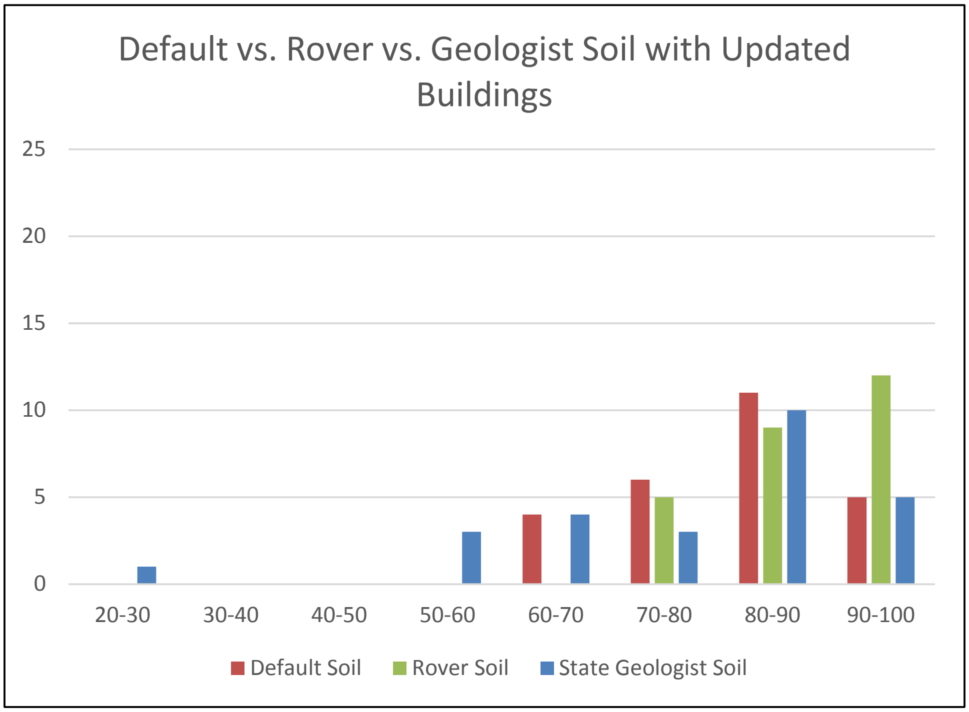


Figure 12. Probability of Functionality for Updated Buildings and Varying Soils

HAZUS assigns different default construction types for various critical and essential facility categories from schools to military facilities. This can impact whether the probability of functionality increases or decreases when building construction type is updated. For example, the HAZUS default building construction type for schools is URM, so Day 1 Functionality for schools that are not URM buildings may increase. This is an extremely important result for emergency managers because of the need to know which critical facilities are likely to fail, as well as which are likely to continue to function in the post-eartquake environment.

HAZUS estimates of probability of functionality of the 26 critical facilities on Day 1 of the earthquake for the three scenario events are shown in Figure 13.

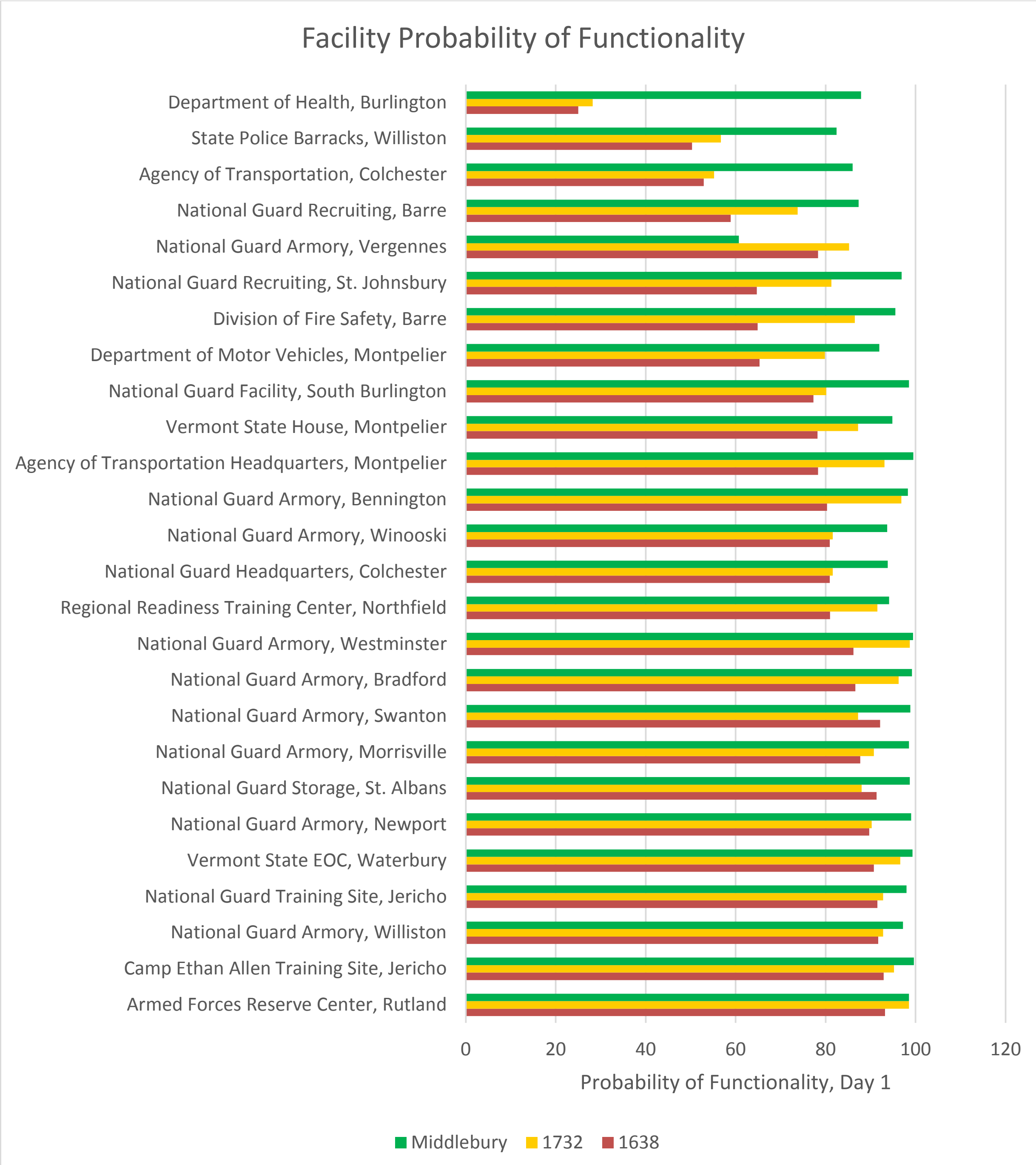


Figure 13. Probability of Functionality Day 1 of the Earthquake for 26 Screened Vermont Critical Facilities with Updated Soil Class and Building Type for Three Scenario Events

The worst-case probability of functionality based on the three scenario earthquakes for each of the 26 critical facilities screened are shown in Figure 14.

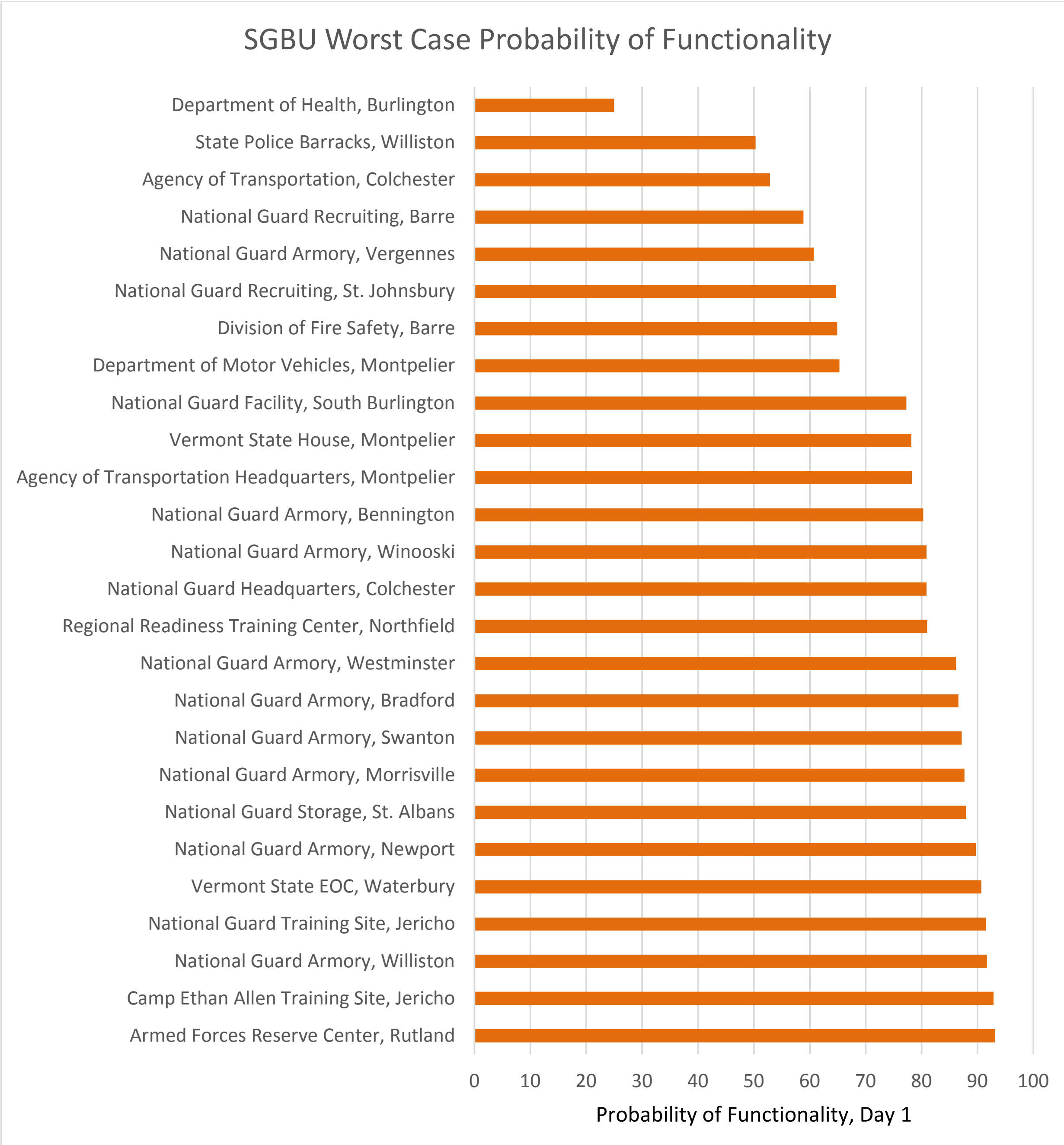


Figure 14. Worst Case Functionality for the 26 Screened Vermont Critical Facilities with Updated Soil Class and Building Type

As Figure 14 illustrates, the worst-case probability of functionality across the three events studied ranges from a low of 25% to a high of 93%. No facilities have a 100% probability of functionality.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 ROVER

A. Updating ROVER Default Soils Did Not Have a Significant Effect on those Facilities ROVER Recommends for a Detailed Seismic Evaluation (TBD)

Updating default soils in ROVER from the USGS NEHRP classifications did not have a significant impact on ROVER final scores and whether a detailed evaluation was required. Updating ROVER default soils data increased the number of facilities ROVER recommends for a detailed seismic evaluation by three, or approximately 12% of the facilities screened. If soils maps are available, ROVER users are strongly encouraged to update USGS Default Soils, but significant changes in those facilities requiring a detailed evaluation are not expected.

5.2 HAZUS

A. Updating HAZUS Default Soils Had a Significant Effect on Building Economic Loss Results

Updating default soils in HAZUS from the Default NEHRP "D" classification had a significant impact on estimates of direct economic losses to buildings. The percentage change in economic losses between analyses with default soils and those with updated soils ranges from approximately 11 to 40 percent. The change can be either positive or negative. When default soils are updated to softer soils, losses often begin to show a steep increase. Softer soils amplify ground shaking, causing more damage, though economic loss values are strongly dependent on population and building stock density. The opposite can be true for stiffer soils; they cause the ground shaking to be weaker, so losses can be significantly less. If soils maps are available, users are strongly encouraged to update Default Soils when using HAZUS to estimate economic losses.

B. Average Functionality of Large Numbers of Critical Facilities is not Significantly Affected by Updating HAZUS Soils or Building Construction Type

Updating default soils or building construction type in HAZUS does not appear to have a significant impact of the average estimated post-earthquake functionality of large numbers of critical facilities across a statewide or regional study region. If soils and building construction type data is readily available for large-scale regional studies, then by all means update it. It is always preferred to have an accurate database, but significant changes in average post-earthquake functionality are not expected.

C. Individual Functionality of Critical Facilities can be Significantly Affected by Updating HAZUS Soils and Building Construction Type

Updating default soils and building construction type in HAZUS does appear to have a significant impact on the estimated post-earthquake functionality of individual critical facilities. There is value in independently updating soils or building construction type, but the greatest benefit is attained when both are updated. Day 1 Functionality values may change significantly for individual facilities where the soils and/or building type are particularly strong or weak. When evaluating individual critical facilites using

HAZUS, it is imperative that you have accurate site specific information including location, NEHRP soil type and building construction type in order to obtain reliable results.

5.3 VERMONT CRITICAL FACILITIES

A. A Detailed Seismic Evaluation is recommended for the Vermont Critical Facilities Identified by ROVER

ROVER is a screening tool that records important seismic features of a building and generates an automatic estimate of the need for a detailed seismic evaluation. Using ROVER's pre-earthquake module we identified 22 critical facilities with automated scores less than 2.0, which is the threshold for which ROVER recommends a critical facility receive a detailed seismic evaluation. It is important to point out that many of the buildings that scored below 2.0 did so because of vertical irregularity, plan irregularity or both. While these certainly contribute to seismic risk, other specific engineering factors need to be considered in order to better estimate the potential risk of a particular facility. Therefore, a detailed seismic evaluation is recommended for the 22 Vermont facilities scoring below 2 on the ROVER evaluation scale.

B. Similar ROVER and HAZUS Multi-Hazard Analysis is Recommended for all Vermont Critical Facilities This ROVER and HAZUS Analysis only evaluated a small sampling of all the critical facilities located in the state of Vermont. Using Google Maps and other remote access technology significantly reduced the cost of undertaking the ROVER Analysis because collection of data in the field was eliminated. In addition, while this analysis focused exclusively on earthquakes, HAZUS has the capability to analyze hurricane and flood events as well. Therefore, the State of Vermont should consider expanding the analysis to include other critical facilities and potential hazards.

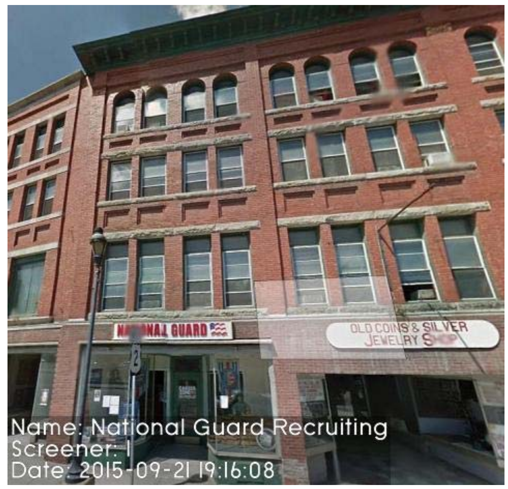
APPENDIX

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 10 Eastern Ave
Zip: 05819
Other Identifiers: St. Johnsbury
No Stories: 4
Year Built: 1910
Screener: 1
Date: None
Total Floor Area (sq. ft.): 60000
Building Name: National Guard Recruiting
Use: None



Occupancy

☐ Assembly	☑ Govt	☐ Office
☐ Commercial	☐ Historic	☐ Residential
☐ Emer. Services	☐ Industrial	☐ School

Number of Persons

☑ 0-10	☐ 11-100
☐ 101-1000	☐ 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☐	☑	☐	☐

Falling Hazard

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	☑ -0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	☑ -1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	☑ -0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	☑ -0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	☑ -0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores															0.3

Comments:

Detailed Evaluation Required ☑

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity

Address: 13 Ferris Street
Zip: 05488
Other Identifiers: Swanton, VT
No Stories: 2
Year Built: 1950
Screener: 1
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

- [ ] A Hard Rock
- [ ] B Avg. Rock
- [ ] C Dense Soil
- [x] D Stiff Soil
- [ ] E Soft Soil
- [ ] F Poor Soil

Falling Hazard

- [x] Unreinforced Chimneys
- [x] Parapets
- [x] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.0	4.6	3.4	3.5	3.7	3.4	3.3	2.9	3.4	2.9	3.1	3.0	3.4	3.3	3.1
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	[x] -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	[x] -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	[x] -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	[x] -1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													0.0		

Comments:

Detailed Evaluation Required
- [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 23 Armory Lane
Zip: 05158
Other Identifiers: Westminster, VT
No Stories: 2
Year Built: 1975
Screener: 2
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory & Maintenance
Use: None

Occupancy

Assembly | ☑ Govt | Office
Commercial | Historic | Residential
Emer. Services | Industrial | School

Number of Persons: 0-10 | 11-100 | ☑ 101-1000 | 1000+

Soil Type

A Hard Rock | B Avg. Rock | ☑ C Dense Soil | D Stiff Soil | E Soft Soil | F Poor Soil

Falling Hazard

☑ Unreinforced Chimneys | ☑ Parapets | ☑ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	☑ -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	☑ -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	☑ -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	☑ -0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													0.3		

Comments:

Detailed Evaluation Required ☑

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 37 Monkton Road
Zip: 05491
Other Identifiers: Vergennes, VT
No Stories: 2
Year Built: 1950
Screener: 1
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[x]	[ ]	[ ]	[ ]

Falling Hazard

- [x] Unreinforced Chimneys
- [x] Parapets
- [x] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	[x] -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	[x] -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	[x] -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	[x] -0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													0.3		

Comments:

Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 45 Farr Ave
Zip: 05661
Other Identifiers: Morrisville, VT
No Stories: 2
Year Built: 1950
Screener: 1
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory
Use: None

Occupancy

[ ] Assembly	[x] Govt	[ ] Office
[ ] Commercial	[ ] Historic	[ ] Residential
[ ] Emer. Services	[ ] Industrial	[ ] School

Number of Persons: [ ] 0-10 [ ] 11-100 [x] 101-1000 [ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[ ]	[x]	[ ]	[ ]

Falling Hazard

[x] Unreinforced Chimneys [x] Parapets [x] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	[x] -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	[x] -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	[x] -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	[x] -1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													0.1		

Comments:

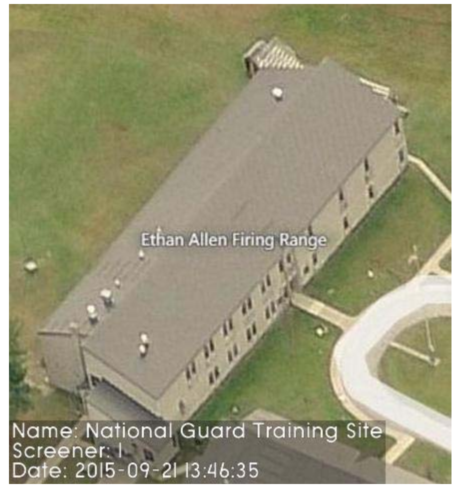
Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity

Address: 90 Ethan Allen Road
Zip: 05465
Other Identifiers: Jericho, VT
No Stories: 2
Year Built: 1986
Screener: 1
Date: None
Total Floor Area (sq. ft.): 38000
Building Name: National Guard Training Site
Use: None



Occupancy

Assembly	☑ Govt	Office
Commercial	Historic	Residential
Emer. Services	Industrial	School

Number of Persons: 0-10 · 11-100 · ☑ 101-1000 · 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
		☑			

Falling Hazard

Unreinforced Chimneys · Parapets · Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	☑ -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	☑ -0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													2.3		

Comments:

Detailed Evaluation Required

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 99 Fairground Road
Zip: 05033
Other Identifiers: Bradford, VT
No Stories: 2
Year Built: 1950
Screener: 1
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[x]	[ ]	[ ]	[ ]

Falling Hazard

- [x] Unreinforced Chimneys
- [x] Parapets
- [x] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	[x] -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	[x] -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	[x] -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	[x] -0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													0.3		

Comments:

Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity

Address: 100 Franklin Lane
Zip: 05201
Other Identifiers: Bennington, VT
No Stories: 3
Year Built: 1960
Screener: 1
Date: None
Total Floor Area (sq. ft.): 24726
Building Name: National Guard Company C2 172d
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[x]	[ ]	[ ]	[ ]

Falling Hazard

- [ ] Unreinforced Chimneys
- [ ] Parapets
- [ ] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	6.4	5.5	4.2	4.3	4.3	4.3	4.4	3.8	4.3	3.9	3.9	4.0	4.3	4.1	4.1
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	[x] -1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	[x] -0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	[x] -0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores															1.8

Comments:

Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 113 Ethan Allen Road
Zip: 05465
Other Identifiers: Jericho, VT
No Stories: 3
Year Built: 2010
Screener: 1
Date: None
Total Floor Area (sq. ft.): 49964
Building Name: Camp Ethan Allen Training Site
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[ ]	[x]	[ ]	[ ]

Falling Hazard

- [ ] Unreinforced Chimneys
- [ ] Parapets
- [ ] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	[x] 0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	[x] -2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	[x] -0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	[x] -1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores			0.7												

Comments:

Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know

BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal

MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm

SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 161 University Drive
Zip: 05663
Other Identifiers: Northfield, VT
No Stories: 3
Year Built: 2002
Screener: 1
Date: None
Total Floor Area (sq. ft.): 89000
Building Name: Regional Readiness Training Center
Use: None

Occupancy

			Number of Persons	
☐ Assembly	☑ Govt	☐ Office	☐ 0-10	☐ 11-100
☐ Commercial	☐ Historic	☐ Residential	☑ 101-1000	☐ 1000+
☐ Emer. Services	☐ Industrial	☐ School		

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☐	☐	☑	☐

Falling Hazard

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	☐ NA	☐ NA	☐ 0.4	☐ 0.4	☐ NA	☐ 0.4	☐ 0.4	☐ 0.2	☐ 0.4	☐ 0.2	☐ NA	☐ 0.4	☐ 0.4	☐ 0.4	☐ -0.4
High Rise(>7 stories)	☐ NA	☐ NA	☐ 1.4	☐ 1.4	☐ NA	☐ 1.4	☐ 0.8	☐ 0.5	☐ 0.8	☐ 0.4	☐ NA	☐ 0.6	☐ NA	☐ 0.6	☐ NA
Vertical Irregularity	☐ -3.5	☐ -3.0	☐ -2.0	☐ -2.0	☐ NA	☐ -2.0	☐ -2.0	☐ -2.0	☐ -2.0	☐ -2.0	☐ NA	☐ -1.5	☑ -2.0	☐ -1.5	☐ -1.5
Plan irregularity	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☑ -0.5	☐ -0.5	☐ -0.5
Pre-Code	☐ 0.0	☐ -0.2	☐ -0.4	☐ -0.4	☐ -0.4	☐ -0.4	☐ -0.2	☐ -1.0	☐ -0.4	☐ -1.0	☐ -0.2	☐ -0.4	☐ -0.4	☐ -0.4	☐ -0.4
Post-Benchmark	☐ 1.6	☐ 1.6	☐ 1.4	☐ 1.4	☐ NA	☐ 1.2	☐ NA	☐ 1.2	☐ 1.6	☐ NA	☐ 1.8	☐ NA	☐ 2.0	☐ 1.8	☐ NA
Soil Type C	☐ -0.2	☐ -0.8	☐ -0.6	☐ -0.8	☐ -0.6	☐ -0.8	☐ -0.8	☐ -0.6	☐ -0.8	☐ -0.6	☐ -0.6	☐ -0.6	☐ -0.8	☐ -0.6	☐ -0.4
Soil Type D	☐ -0.8	☐ -1.2	☐ -1.0	☐ -1.2	☐ -1.0	☐ -1.2	☐ -1.2	☐ -1.0	☐ -1.2	☐ -1.0	☐ -1.0	☐ -1.2	☐ -1.2	☐ -1.2	☐ -0.8
Soil Type E	☐ -1.2	☐ -1.8	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☑ -1.6	☐ -1.6	☐ -1.6
Final Scores													0.1		

Comments:

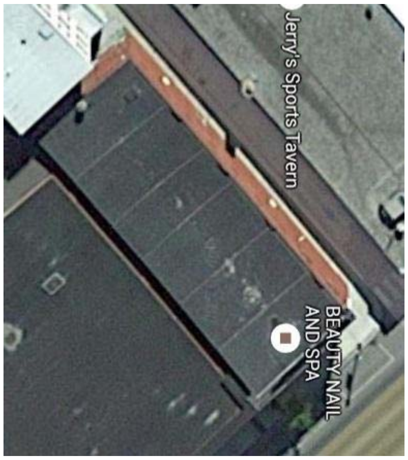
Detailed Evaluation Required ☑

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity



Address: 171 North Main Street
Zip: 05641
Other Identifiers: Barre, VT
No Stories: 2
Year Built: 1930
Screener: 1
Date: None
Total Floor Area (sq. ft.): 8636
Building Name: National Guard Recruiting
Use: None

Occupancy

☐ Assembly ☑ Govt ☐ Office
☐ Commercial ☐ Historic ☐ Residential
☐ Emer. Services ☐ Industrial ☐ School

Number of Persons: ☑ 0-10 ☐ 11-100 ☐ 101-1000 ☐ 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☑	☐	☐	☐

Falling Hazard

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	☑ -0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	☑ -0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores															2.6

Comments:

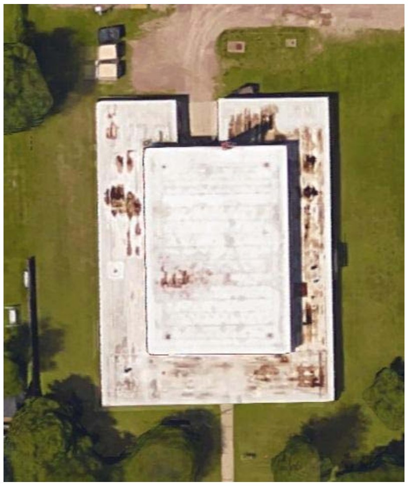
Detailed Evaluation Required ☐

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity



Address: 255 Lafountain Street
Zip: 05404
Other Identifiers: Winooski, VT
No Stories: 2
Year Built: 1950
Screener: 1
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

- [ ] A Hard Rock
- [ ] B Avg. Rock
- [ ] C Dense Soil
- [ ] D Stiff Soil
- [x] E Soft Soil
- [ ] F Poor Soil

Falling Hazard

- [x] Unreinforced Chimneys
- [x] Parapets
- [x] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	[x] -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	[x] -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	[x] -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	[x] -1.6	-1.6	-1.6
Final Scores													0.0		

Comments:

Detailed Evaluation Required
- [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity

Address: 540 Union Street
Zip: 05855
Other Identifiers: Newport, VT
No Stories: 2
Year Built: 1950
Screener: 1
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory
Use: None

Occupancy

☐ Assembly	☑ Govt	☐ Office
☐ Commercial	☐ Historic	☐ Residential
☐ Emer. Services	☐ Industrial	☐ School

Number of Persons

☐ 0-10	☐ 11-100
☑ 101-1000	☐ 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☑	☐	☐	☐

Falling Hazard

☑ Unreinforced Chimneys ☑ Parapets ☑ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	☑ -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	☑ -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	☑ -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	☑ -0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													0.3		

Comments:

Detailed Evaluation Required ☑

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 666 Lower Newton Street
Zip: 05478
Other Identifiers: St. Albans, VT
No Stories: 1
Year Built: 1948
Screener: 1
Date: None
Total Floor Area (sq. ft.): 7000
Building Name: National Guard Storage
Use: None

Occupancy

☐ Assembly ☑ Govt ☐ Office
☐ Commercial ☐ Historic ☐ Residential
☐ Emer. Services ☐ Industrial ☐ School

Number of Persons: ☑ 0-10 ☐ 11-100 ☐ 101-1000 ☐ 1000+

Soil Type

☐ A Hard Rock ☐ B Avg. Rock ☐ C Dense Soil ☑ D Stiff Soil ☐ E Soft Soil ☐ F Poor Soil

Falling Hazard

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	☑ -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	☑ -1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													2.0		

Comments:

Detailed Evaluation Required ☐

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 789 Vermont National Guard Road
Zip: 05466
Other Identifiers: Colchester, VT
No Stories: 2
Year Built: 1989
Screener: 1
Date: None
Total Floor Area (sq. ft.): 72000
Building Name: National Guard Headquarters
Use: None

Name: National Guard Headquarters
Screener: 1
Date: 2015-09-21 16:31:52

Occupancy

☐ Assembly	☑ Govt	☐ Office
☐ Commercial	☐ Historic	☐ Residential
☐ Emer. Services	☐ Industrial	☐ School

Number of Persons

☐ 0-10	☐ 11-100
☑ 101-1000	☐ 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☐	☐	☑	☐

Falling Hazard

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	☐ NA	☐ NA	☐ 0.4	☐ 0.4	☐ NA	☐ 0.4	☐ 0.4	☐ 0.2	☐ 0.4	☐ 0.2	☐ NA	☐ 0.4	☐ 0.4	☐ 0.4	☐ -0.4
High Rise(>7 stories)	☐ NA	☐ NA	☐ 1.4	☐ 1.4	☐ NA	☐ 1.4	☐ 0.8	☐ 0.5	☐ 0.8	☐ 0.4	☐ NA	☐ 0.6	☐ NA	☐ 0.6	☐ NA
Vertical Irregularity	☐ -3.5	☐ -3.0	☐ -2.0	☐ -2.0	☐ NA	☐ -2.0	☐ -2.0	☐ -2.0	☐ -2.0	☐ -2.0	☐ NA	☐ -1.5	☑ -2.0	☐ -1.5	☐ -1.5
Plan irregularity	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☐ -0.5	☑ -0.5	☐ -0.5	☐ -0.5
Pre-Code	☐ 0.0	☐ -0.2	☐ -0.4	☐ -0.4	☐ -0.4	☐ -0.4	☐ -0.2	☐ -1.0	☐ -0.4	☐ -1.0	☐ -0.2	☐ -0.4	☐ -0.4	☐ -0.4	☐ -0.4
Post-Benchmark	☐ 1.6	☐ 1.6	☐ 1.4	☐ 1.4	☐ NA	☐ 1.2	☐ NA	☐ 1.2	☐ 1.6	☐ NA	☐ 1.8	☐ NA	☐ 2.0	☐ 1.8	☐ NA
Soil Type C	☐ -0.2	☐ -0.8	☐ -0.6	☐ -0.8	☐ -0.6	☐ -0.8	☐ -0.8	☐ -0.6	☐ -0.8	☐ -0.6	☐ -0.6	☐ -0.6	☐ -0.8	☐ -0.6	☐ -0.4
Soil Type D	☐ -0.8	☐ -1.2	☐ -1.0	☐ -1.2	☐ -1.0	☐ -1.2	☐ -1.2	☐ -1.0	☐ -1.2	☐ -1.0	☐ -1.0	☐ -1.2	☐ -1.2	☐ -1.2	☐ -0.8
Soil Type E	☐ -1.2	☐ -1.8	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☐ -1.6	☑ -1.6	☐ -1.6	☐ -1.6
Final Scores													0.0		

Comments:

Detailed Evaluation Required ☑

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address:1244 Airprt Parkway
Zip: 05403
Other Identifiers: S. Burlington, VT
No Stories: 1
Year Built: 2007
Screener: 1
Date: None
Total Floor Area (sq. ft.): 180000
Building Name: National Guard Facility
Use: None

Occupancy

[ ] Assembly	[x] Govt	[ ] Office
[ ] Commercial	[ ] Historic	[ ] Residential
[ ] Emer. Services	[ ] Industrial	[ ] School

Number of Persons

[ ] 0-10	[ ] 11-100
[x] 101-1000	[ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[ ]	[ ]	[x]	[ ]

Falling Hazard

[ ] Unreinforced Chimneys [ ] Parapets [ ] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	[x] 0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	[x] -2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	[x] -0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	[x] -1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores			0.1												

Comments:

Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity

Address: 2143 Post Road
Zip: 05701
Other Identifiers: Rutland VT
No Stories: 2
Year Built: 2011
Screener: 1
Date: None
Total Floor Area (sq. ft.): 104000
Building Name: Armed Forces Reserve Center
Use: None

Occupancy

- ☐ Assembly
- ☑ Govt
- ☐ Office
- ☐ Commercial
- ☐ Historic
- ☐ Residential
- ☐ Emer. Services
- ☐ Industrial
- ☐ School

Number of Persons: ☐ 0-10 ☐ 11-100 ☑ 101-1000 ☐ 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☑	☐	☐	☐

Falling Hazard

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	☑ -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	☑ -0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													2.6		

Comments:

Detailed Evaluation Required ☐

* = Estimated, subjective or unreliable data
DNK - Do Not Know

BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal

MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm

SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: 7846 Williston Road
Zip: 05495
Other Identifiers: Williston, VT
No Stories: 2
Year Built: 1950
Screener: 1
Date: None
Total Floor Area (sq. ft.): 21376
Building Name: National Guard Armory
Use: None

Occupancy

Assembly	[x] Govt	Office
Commercial	Historic	Residential
Emer. Services	Industrial	School

Number of Persons: 0-10 | 11-100 | [x] 101-1000 | 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
		[x]			

Falling Hazard

[x] Unreinforced Chimneys | [x] Parapets | [x] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	[x] -2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	[x] -0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	[x] -0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	[x] -0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores													0.1		

Comments:

Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity

Address:45 State Drive
Zip: 05671
Other Identifiers: Waterbury, VT
No Stories: 3
Year Built: 2014
Screener: 1
Date: None
Total Floor Area (sq. ft.): 73000
Building Name: Vermont Emergency Operations Center
Use: None

Occupancy

- [ ] Assembly
- [ ] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [x] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[ ]	[x]	[ ]	[ ]

Falling Hazard

- [ ] Unreinforced Chimneys
- [ ] Parapets
- [ ] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	[x] -2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	[x] -0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	[x] -1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores			0.3												

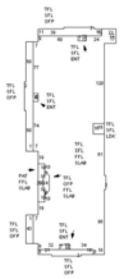
Comments:

Detailed Evaluation Required
- [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity



Address:108 Cherry Street
Zip: 05401
Other Identifiers: Burlington, VT
No Stories: 4
Year Built: 1993
Screener: 2
Date: None
Total Floor Area (sq. ft.): 301386
Building Name: Department of Health
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

- [ ] A Hard Rock
- [ ] B Avg. Rock
- [ ] C Dense Soil
- [ ] D Stiff Soil
- [x] E Soft Soil
- [ ] F Poor Soil

Falling Hazard

- [ ] Unreinforced Chimneys
- [ ] Parapets
- [ ] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	[x] 0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	[x] -0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	[x] -0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	[x] -1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores				1.5											

Comments:

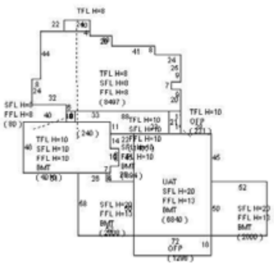
Detailed Evaluation Required
- [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity



Address: 115 State Street
Zip: 05602
Other Identifiers: Montpelier, VT
No Stories: 3
Year Built: 1859
Screener: 1
Date: None
Total Floor Area (sq. ft.): 93126
Building Name: Vermont State House
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [x] 101-1000
- [ ] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[x]	[ ]	[ ]	[ ]

Falling Hazard

- [x] Unreinforced Chimneys
- [x] Parapets
- [x] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	[x] -1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	[x] -0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	[x] -0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	[x] -0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores															0.7

Comments:

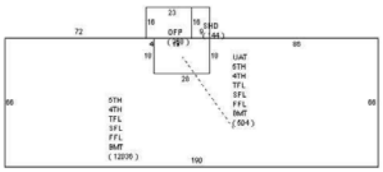
Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity



Address: 120 State Street
Zip: 05602
Other Identifiers: Montpelier, VT
No Stories: 5
Year Built: 1948
Screener: 1
Date: None
Total Floor Area (sq. ft.): 62700
Building Name: Department of Motoe Vehicles
Use: None

Occupancy

- [ ] Assembly
- [x] Govt
- [ ] Office
- [ ] Commercial
- [ ] Historic
- [ ] Residential
- [ ] Emer. Services
- [ ] Industrial
- [ ] School

Number of Persons

- [ ] 0-10
- [ ] 11-100
- [ ] 101-1000
- [x] 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
[ ]	[ ]	[ ]	[x]	[ ]	[ ]

Falling Hazard

- [ ] Unreinforced Chimneys
- [ ] Parapets
- [ ] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	[x] -0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	[x] -0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	[x] -0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores															1.8

Comments:

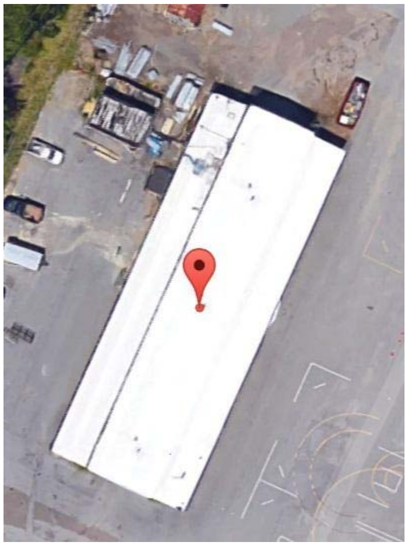
Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity



Address: 189 Troy Avenue
Zip: 05446
Other Identifiers: Colchester, VT
No Stories: 2
Year Built: 1940
Screener: 2
Date: None
Total Floor Area (sq. ft.): 19500
Building Name: Agency of Transportation
Use: None

Occupancy

[ ] Assembly [x] Govt [ ] Office
[ ] Commercial [ ] Historic [ ] Residential
[ ] Emer. Services [ ] Industrial [ ] School

Number of Persons: [x] 0-10 [ ] 11-100 [ ] 101-1000 [ ] 1000+

Soil Type

[ ] A Hard Rock [ ] B Avg. Rock [ ] C Dense Soil [ ] D Stiff Soil [x] E Soft Soil [ ] F Poor Soil

Falling Hazard

[ ] Unreinforced Chimneys [ ] Parapets [ ] Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	[x] NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	[x] -0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	[x] -1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores					1.8										

Comments:
Vertical irregularity not an option. Decreased score to 0. Poor condition.

Detailed Evaluation Required [x]

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity

Address: 1311 US Route 302
Zip: 05641
Other Identifiers: Barre, VT
No Stories: 2
Year Built: 1970
Screener: 1
Date: None
Total Floor Area (sq. ft.): 80000
Building Name: Division of Fire Safety
Use: None

Occupancy

Assembly	✓ Govt	Office
Commercial	Historic	Residential
Emer. Services	Industrial	School

Number of Persons: 0-10 | ✓ 11-100 | 101-1000 | 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
				✓	

Falling Hazard

Unreinforced Chimneys | Parapets | Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	✓ -3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	✓ -0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	✓ -0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	✓ -1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores		0.0													

Comments:

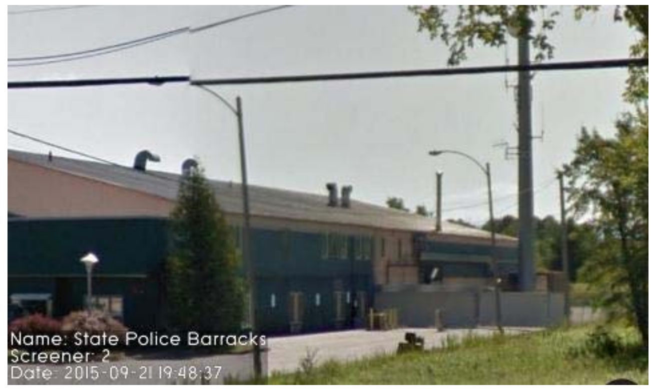
Detailed Evaluation Required ✓

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form — MODERATE Seismicity

Address: 2777 Saint George Road
Zip: 05495
Other Identifiers: Williston, VT
No Stories: 2
Year Built: 1980
Screener: 2
Date: None
Total Floor Area (sq. ft.): 50000
Building Name: State Police Barracks
Use: None



Occupancy

☐ Assembly	☑ Govt	☐ Office
☐ Commercial	☐ Historic	☐ Residential
☐ Emer. Services	☐ Industrial	☐ School

Number of Persons

☑ 0-10	☐ 11-100
☐ 101-1000	☐ 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☐	☐	☑	☐

Falling Hazard

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	-2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	☑ -0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	☑ -1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores					1.8										

Comments:

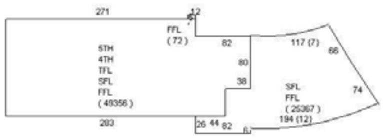
Detailed Evaluation Required ☑

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill

Rapid Visual Screening of Buildings for Potential Seismic Risk

FEMA-154 Data Collection Form

MODERATE Seismicity



Address: One National Life Drive
Zip: 05495
Other Identifiers: Montpelier, VT
No Stories: 5
Year Built: 1960
Screener: 1
Date: None
Total Floor Area (sq. ft.): 299486
Building Name: Agency of Transportation
Use: None

Occupancy

- ☐ Assembly
- ☑ Govt
- ☐ Office
- ☐ Commercial
- ☐ Historic
- ☐ Residential
- ☐ Emer. Services
- ☐ Industrial
- ☐ School

Number of Persons

- ☐ 0-10
- ☐ 11-100
- ☐ 101-1000
- ☑ 1000+

Soil Type

A Hard Rock	B Avg. Rock	C Dense Soil	D Stiff Soil	E Soft Soil	F Poor Soil
☐	☐	☑	☐	☐	☐

Falling Hazard

- ☐ Unreinforced Chimneys
- ☐ Parapets
- ☐ Cladding

Other:

Basic Scores, Modifiers, and Final Score, S

Building Type	W1	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
Basic Score	5.7	5.1	3.8	3.9	4.0	3.9	3.9	3.3	3.9	3.5	3.5	3.5	3.9	3.7	3.7
Mid Rise(4-7 stories)	NA	NA	0.4	0.4	NA	☑ 0.4	0.4	0.2	0.4	0.2	NA	0.4	0.4	0.4	-0.4
High Rise(>7 stories)	NA	NA	1.4	1.4	NA	1.4	0.8	0.5	0.8	0.4	NA	0.6	NA	0.6	NA
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	NA	☑ -2.0	-2.0	-2.0	-2.0	-2.0	NA	-1.5	-2.0	-1.5	-1.5
Plan irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	☑ -0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	☑ -0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	1.6	1.6	1.4	1.4	NA	1.2	NA	1.2	1.6	NA	1.8	NA	2.0	1.8	NA
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	☑ -0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.8	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Final Scores						0.7									

Comments:

Detailed Evaluation Required ☑

* = Estimated, subjective or unreliable data
DNK - Do Not Know
BR = Braced Frame
FD = Flexible Diaphragm
LM = Light Metal
MRF = Moment-resisting frame
RC - Reinforced concrete
RD = Rigid diaphragm
SW = Shear Wall
TU = Tilt Up
URM INF = Unreinforced masaonry infill