Utah Schools RVS Advocacy

Utah Seismic Safety Commission
Structural Engineers Association of Utah

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BHW Engineers, L.L.C.
Topics

1. Overview
2. History of Utah Schools RVS Legislation
3. FEMA Pilot Study proposal
4. Lessons Learned (or not)
1 Overview

Why Do a School Building Survey?

According to FEMA/Homeland Security:

- “Policy makers need regular reports on the status capabilities for which they have responsibility to help them make better resource and investment decisions and to establish priorities”

State’s will need to be accountable for school seismic safety in light of mandatory requirements for attendance.
2 Utah Schools RVS Legislation

Past Legislative Efforts by Rep. Larry Wiley:

- 2007 HB 431 – open bill file
- 2008 HB 162 – first request $500k appropriations
- 2008 HB 162 – House Government Operations amended added immunity, pass 6-1-5, stopped on floor
- 2009 HB 330 – House Education 6-4-5,
- 2010 HB 072 – House Education substitute recommendation to return to rules and study during interim.
- 2010 HB 072 – placed on Master Study Resolution – never studied in interim committee
Utah Schools RVS Legislation

Utah School Pilot Study Proposal used to support 2011 Legislation by Rep. Larry Wiley:
Two bills - HB 367 and HB 423

- HB 367 Utah Schools Seismic Hazards Inventory
  - Enacts the School Seismic Safety Act
    - Requires schools to perform RVS
  - Creates Public Schools Seismic Safety committee
    - 4 School District members
    - 3 Structural Engineers
  - Directs State Board to adopt certain rules
  - Provides immunity for suit relating to evaluation
  - repeals School Seismic Safety Act 2021
  - Makes technical changes
  - Appropriates $500,000 for RVS and further study
② Utah Schools RVS Legislation

2011 Legislation by Rep. Larry Wiley:

- HB 423 Public School Seismic Safety Committee
  - Creates Public Schools Seismic Safety committee
    - 4 School District members
    - 3 Structural Engineers
  - Makes recommendations to:
    - Legislature
    - Governor
    - State Superintendent
    - State Board of Education
  - Appropriations $000,000.00
② Utah Schools RVS Legislation

2012 Legislative bills by Rep. Larry Wiley:

- HB 271 Public School Seismic Safety Committee
- HB 270 Public School Seismic Hazard Inventory
- Utah Parent Teacher Association Resolution SAF 2012-1 Utah Students at Risk – Need for Rapid Visual Screening Seismic Inventory
2 Utah Schools RVS Legislation

2013 Legislative Session:

• HB 278 Public School Seismic Studies – Rep. Gage Froerer
  • When bonding – districts required to submit RVS reports on pre-1975 school buildings
  • Cost of RVS paid out of general obligation bonds
  • RVS reports already completed w/in 25 yrs. OK
  • Submit RVS reports to Utah Seismic Safety Commission

• School Building Earthquake Inspection Program
  • One-time non-relapsing fund $150,000 to perform RVS on schools
  • RVS Authority:
    • Utah State Office of Education (small, medium, & large district + superintendent)
    • Utah Seismic Safety Commission
    • Structural Engineers Association
    • Utah Division of Emergency Management
2 Utah Schools RVS Legislation

2013 Legislative Session:

• School Building Earthquake Inspection Program
  • Progress to date:
    • Convened several meetings with school districts
    • Appear to have consensus regarding the extent of the survey and the purposes for which it will be used
    • Agreed to use ROVER on state server to collect all data
    • USOE Superintendent provided list which reports status
      • Some districts have prior RVS reports available
      • Some districts have ASCE 31 tier 1 reports
      • Some districts have statements about vulnerability
    • Data entry into ROVER to begin June 2014
    • Meeting of RVS authority to “re-energize” effort before end of year
3 FEMA Pilot Study Proposal

• Work Plan Proposal
  • Description of Need:
    • Unsuccessful attempts to pass legislation in 2008, 2009
    • Separation of Schools and State
    • Informal survey results (2006) suggest 43% schools constructed before 1975
    • Most schools lie close to Wasatch fault (80%+ population)
    • Construction practices influenced by lack of damaging EQ
    • Communities perceive schools as shelters
  • Proposed Pilot Project
    • Sample inventory 10% (84 schools) by RVS methods
      • Mix: 121 Urban, 388 Suburban, 265 Rural
      • Distribute throughout the state according to density and age
      • Distribute according to kind (K-12; Junior (middle); High; Charters)
FEMA Pilot Study Proposal

- Work Plan Proposal
  - Scope of Work
    1. Establish steering committee
    2. Create written program defining needs, scope, product
    3. Select program consultants (RVS surveyors)
    4. Oversee and provide interim reports
    5. Compile final report
    6. Present report to state legislature and public

- Project team
  - Lead organization – Utah Seismic Safety Commission
  - Management team – Roger Evans, USSC; Glen Palmer, SEAU; Larry Newton, USOE; Representative Larry Wiley
  - “Watch Dogs” – Bob Carey, Utah DHS; Barry Welliver, SEAU
3 FEMA Pilot Study Proposal

Earthquake State Assistance Program (Cooperative Agreements)

1. Pilot Project Funding Request
   - Administrative $8,000
   - Engineering Consultants $42,000
     (84 bldgs. x $500/bldg.)
   Total (Year 2009-10) $50,000

2. Supplemental Funding (Year 2010-11)
   - Equipment $19,000

Total Available Funds for Project $69,000
Utah Schools RVS Committee

Management Committee represents four interests:
- Utah Seismic Safety Commission (lead organization)
- Structural Engineers Association of Utah (oversight)
- Utah State Office of Education
- Utah State Legislature

Critical Issues for success:
- Open dialogue about need to have pilot study (buy-in)
- Agree early on selection of buildings/schools for accurate sampling
- Discuss and decide how final results will unfold (anticipate issues)
- Committee should be conversant with methods used (ROVER)
- Attain consensus agreement on final report
Utah RVS Pilot Study

FEMA 154 recommendations:
- Budget
- Pre-plan
- Select data forms (ROVER)
- Choose screeners
- Review pre-field data
- Review construction documents
- Screen buildings
- If available, observe interiors
- Photograph/sketch building(s)
- Check quality of field data

Figure 2-1 Rapid visual screening implementation sequence.
3 Utah RVS Pilot Study

Utah Schools RVS method:

- Budget ✔
- Pre-plan ✔
- Select data forms (ROVER) ✔
- Choose screeners ✔
- Review pre-field data
- Review construction documents
- Screen buildings ✔
- If available, observe interiors ✔
- Photograph/sketch building(s) ✔
- Check quality of field data ✔

8 of 10 ..... 80% !!!
Use of ROVER in Pilot Study:

- Demonstration project for FEMA 154 Seismic Mobile Technology
- Utah purchase 20 Verizon phones + 10 FEMA phones
- ATC/FEMA provides instruction on use of ROVER
- Field data manually loaded in phones
  - Data provided to surveyors included:
    - Name and address of school
    - Latitude and longitude
    - Letter of introduction to school officials
    - “School” can include multiple buildings and additions
③ Utah RVS Pilot Study

Development of “statistical” survey

Schools by Type:

- K-6th: 483 (60%)
- 7-9th: 139 (17%)
- 10-12th: 116 (15%)
- Charter: 64 (8%)

Total: 802 (100%)

Legend:
- 1997-2010
- 1975-1996
- Pre-1974
Development of “statistical” survey

Schools by Age:

Utah Schools August 26, 2010

<table>
<thead>
<tr>
<th>School Year</th>
<th>Charter</th>
<th>10-12th</th>
<th>7-9th</th>
<th>6th-8th</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-1974</td>
<td>320</td>
<td>802</td>
<td>100</td>
<td>40</td>
<td>(40%)</td>
</tr>
<tr>
<td>1975-1996</td>
<td>212</td>
<td>139</td>
<td>238</td>
<td>35</td>
<td>(30%)</td>
</tr>
<tr>
<td>1997-2010</td>
<td>132</td>
<td>35</td>
<td>56</td>
<td>49</td>
<td>(30%)</td>
</tr>
<tr>
<td>Total</td>
<td>212</td>
<td>139</td>
<td>238</td>
<td>49</td>
<td>802</td>
</tr>
</tbody>
</table>
3. Utah RVS Pilot Study

Statewide distribution:

<table>
<thead>
<tr>
<th>County</th>
<th>Population</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaver county</td>
<td>6,576</td>
<td>0.23%</td>
</tr>
<tr>
<td>Box elder county</td>
<td>49,421</td>
<td>1.76%</td>
</tr>
<tr>
<td>Cache county</td>
<td>114,275</td>
<td>4.08%</td>
</tr>
<tr>
<td>Carbon county</td>
<td>19,768</td>
<td>0.71%</td>
</tr>
<tr>
<td>Daggett county</td>
<td>988</td>
<td>0.04%</td>
</tr>
<tr>
<td>Davis county</td>
<td>307,656</td>
<td>10.99%</td>
</tr>
<tr>
<td>Duchesne county</td>
<td>17,368</td>
<td>0.62%</td>
</tr>
<tr>
<td>Emery county</td>
<td>10,948</td>
<td>0.39%</td>
</tr>
<tr>
<td>Garfield county</td>
<td>5,149</td>
<td>0.18%</td>
</tr>
<tr>
<td>Grand county</td>
<td>9,493</td>
<td>0.34%</td>
</tr>
<tr>
<td>Iron county</td>
<td>46,025</td>
<td>1.67%</td>
</tr>
<tr>
<td>Juab county</td>
<td>10,191</td>
<td>0.36%</td>
</tr>
<tr>
<td>Kane county</td>
<td>6,740</td>
<td>0.24%</td>
</tr>
<tr>
<td>Millard county</td>
<td>13,702</td>
<td>0.49%</td>
</tr>
<tr>
<td>Morgan county</td>
<td>9,947</td>
<td>0.36%</td>
</tr>
<tr>
<td>Piute county</td>
<td>1,479</td>
<td>0.05%</td>
</tr>
<tr>
<td>Rich county</td>
<td>2,329</td>
<td>0.08%</td>
</tr>
<tr>
<td>Salt lake county</td>
<td>1,042,125</td>
<td>37.22%</td>
</tr>
<tr>
<td>San juan county</td>
<td>15,643</td>
<td>0.56%</td>
</tr>
<tr>
<td>Sevier county</td>
<td>20,773</td>
<td>0.74%</td>
</tr>
<tr>
<td>Summit county</td>
<td>40,451</td>
<td>1.44%</td>
</tr>
<tr>
<td>Tooele county</td>
<td>59,117</td>
<td>2.11%</td>
</tr>
<tr>
<td>Utah county</td>
<td>31,291</td>
<td>1.12%</td>
</tr>
<tr>
<td>Utah county</td>
<td>531,442</td>
<td>18.98%</td>
</tr>
<tr>
<td>Wasatch county</td>
<td>23,428</td>
<td>0.84%</td>
</tr>
<tr>
<td>Washington county</td>
<td>145,466</td>
<td>5.2%</td>
</tr>
<tr>
<td>Wayne county</td>
<td>2,092</td>
<td>0.1%</td>
</tr>
<tr>
<td>Weber county</td>
<td>227,259</td>
<td>8.12%</td>
</tr>
</tbody>
</table>

North – 40%

Middle – 50% Wasatch Front

South – 10%
Development of “statistical” survey

Schools Surveyed: Utah Schools August 26, 2010

<table>
<thead>
<tr>
<th>Period</th>
<th>Pre-code</th>
<th>Mid-code</th>
<th>High-code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-1974</td>
<td>212</td>
<td>139</td>
<td>244</td>
</tr>
<tr>
<td>1975-1996</td>
<td>30</td>
<td>56</td>
<td>132</td>
</tr>
<tr>
<td>1997-2010</td>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>320</td>
<td>238</td>
<td>244</td>
</tr>
</tbody>
</table>

No. Schools Surveyed:
- Pre-1974: 45
- 1975-1996: 20
- 1997-2010: 15
- Total: 80

Utah RVS Pilot Study

EERI Webinar #2 June 12, 2014
Development of “statistical” survey

Statewide Distribution:

<table>
<thead>
<tr>
<th>Region</th>
<th>Pre-1974</th>
<th>1975-1996</th>
<th>1997-2010</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>18</td>
<td>8</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>Wasatch</td>
<td>23</td>
<td>10</td>
<td>7</td>
<td>40</td>
</tr>
<tr>
<td>South</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Pilot</td>
<td>45</td>
<td>20</td>
<td>15</td>
<td>80</td>
</tr>
</tbody>
</table>

Pilot Study not exactly distributed uniformly.....but

Other factors:

- Multiple buildings at each site with varying construction dates
- Sample quantity increased during survey from 80 to 128 buildings (+60%)
- Large number of elementary schools built before 1975
③ Utah Students at Risk

<table>
<thead>
<tr>
<th>Percentage Total Sites</th>
<th>40%</th>
<th>60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Acceptable Risk: 51
Require Add'l Study: 77
Total No. Sites = 128
3. **Utah Students at Risk**

- Presentation to Utah Seismic Safety Commission
  - Report timed to be available for legislative session
    - Preliminary draft review by USSC and SEAU
    - Authorized to finalize report for use in session
  - Availability of RVS forms (backup data)
    - Instant GRAMA request (Government Access Records Management Act)
  - USSC legislators input

- Plan for Roll out:
  - Media interest
  - Presentation to legislators
④ Lessons Learned

- Seismic advocacy takes patience when you don’t have an earthquake handy
- Legislators/administrators will ask the same questions year after year
- Seismic ownership (responsibility) is hard to pin point
- Be fully educated about the process (RVS)
- Engage the media (newspaper/tv/social media) all along the way and prepare for the attention
- Create a “partnership” attitude
- Expect results - even if they are small (all publicity is good)
- Strong, committed management committee
- Follow through after the spotlight fades
That’s All Folks!