

Utah Seismic Safety Commission

Meeting
October 21, 2010

On October 21, 2010, a regularly scheduled quarterly meeting of the Utah Seismic Safety Commission (USSC) was held in the Kletting Room of the State Capitol Building, Salt Lake City, Utah. Chair Roger Evans called the meeting to order at 9:05 a.m.

Members Present:

Roger Evans, Chair	Utah League of Cities and Towns
Rick Allis	Utah Geological Survey
M. Leon Berrett	American Public Works Association
Evan Curtis	Governor's Office of Planning and Budget
Keith Koper	University of Utah Seismograph Stations
Meldee Love	Proxy for Brad Tippitts, Utah Insurance Department
Greg McCombs	Structural Engineers Association of Utah
Peter McDonough	American Society of Civil Engineers
Michael Morley	Utah House of Representatives
Chris Siavrakas	Proxy for Fred Doehring, Utah Department of Transportation

Members Not Present:

Kurt Baxter	Utah Division of Facilities, Construction and Management
Michelle Jones	Association of Contingency Planners
Senator Knudson	Utah State Senate
Keith Squires	Utah Division of Homeland Security

USSC Staff Present:

Bob Carey	Utah Division of Homeland Security
Chris DuRoss	Utah Geological Survey

Guests Present:

Larry Wiley	Utah House of Representatives
Walter Arabasz	University of Utah Seismograph Stations
Steve Bowman	Utah Geological Survey
Rachel Dunn	Brigham Young University – In Harm's Way
Emily Esplin	In Harm's Way
Mark Walton	State Farm Insurance
Judy Watanabe	Utah Division of Homeland Security
Barry Welliver	Structural Engineers Association of Utah

Welcome/Overview

USSC Chair Roger Evans welcomed and thanked everyone for attending the meeting and asked for introductions.

Commissioners reviewed the minutes of the July 15, 2010 meeting.

Motion: Approve the minutes from the July 15, 2010 meeting.

Moved by: Rick Allis

Seconded by: Pete McDonough

Motion was approved by a quorum of the Commission

Legislative Update:

- Rep. Wiley reported that a Seismic Requirements for Condominium Conversion Projects bill will be drafted for the upcoming session.
 - Rep. Wiley will draft the bill with help from the Commission.
 - The bill will remain mostly unchanged from last year (2010 House Bill 77), with the exception of a mandatory structural review for two-story conversions.
 - Walter Arabasz suggested that talking points be developed to get critical information in the bill for the Condominium Conversion.
 - The Utah School Seismic Hazard Inventory bill (2010 House Bill 72) will be pushed through again for a 5th year.
 - Rep. Willey will forward information to Barry on school seismic safety from other parts of the country.
- Rick asked about Senate representation on the Commission.
 - Rep. Wiley said the Speaker and the President of the Senate decide who holds the positions. The Commission would need to send a letter to the President and the Speaker to address concerns of having Senate representation on the Commission.
 - Rep. Morley suggested that possibly of Senator Steward Adams because of his building background.
 - Rep. Morley suggested that a request to be sent Senator Waddups asking for an appointment of a Senator to be on this Commission.
 - Roger Evans said he would write the request.

Existing Buildings Committee:

1. Inventory of State Unreinforced Masonry (URM) Buildings

House Joint Resolution 7 (HJR7), which passed in the 2008 session, specifically urged the USSC to inventory URMs in the state. The Resolution recommended that an interim report include a provisional inventory of state-owned URM buildings.

- The Structural Engineers Association of Utah (SEAU) Existing Buildings Committee (EBC) used the state's ISIS database to categorize state owned buildings:
 - 234 state-owned URM buildings
 - 386 K-12 URM buildings
 - Total 620 URMs identified.
- The SEAU EBC hopes to complete their study prior to the January session and present their findings to the legislature.
- HJR7 stated that the USSC should survey URM buildings. The SEAU EBC completed this survey, which shows a significant quantity of URMs and reinforces the need to mitigate risk. The following are recommendations from this survey for what needs to be done:

1. Adopt a statewide risk reduction program aimed at URMs; A FEMA publication, P774, exists to help communities address URMs.
2. Task DFCM with a Rapid Visual Screening (RVS) of URMs. There needs to be a field added on DFCM building form regarding construction type. DFCM should also be responsible for schools building quality and construction.
3. Prioritize buildings in the survey according to occupancy and systematically work on mitigating these structures.
4. Require that the highest occupancy schools and hospitals have more detailed studies completed within 5 years.
5. Mandate a program to ensure that these prioritized (highest risk) buildings are retrofitted within 10 years.
 - a. California left mitigation to the cities; some were retrofitted, some were not.
 - b. Recommend that the DFCM Building Board have some of this information for their consideration when prioritizing building repair and retrofit. The Commission should voice their findings that URM buildings are important for consideration of rehabilitation because of the seismic hazard and risk to public safety.
 - c. Rep. Morley asked what the cost would be to retrofit these buildings.
 - i. Barry said this report is not detailed enough to provide cost. Cost varies so widely that the estimate would be a guess.
 - ii. Rep. Wiley said that if we identify a problem, we are responsible to fix it. He recommended an incremental approach to fixing the problem.
 - iii. Rep. Wiley hopes that the Governor's office will get involved.
 - iv. There needs to be communication between DFCM, the Governor's office, and the legislature.
 - v. Rep. Morley said that the report shows total replacement cost, which is overwhelming. Need to approach this issue as incremental retrofit, not complete replacement.
 - vi. Rep. Wiley said we would eventually need assessment of all buildings in state.
 - vii. The Governor's office needs to support the mission of this Commission to assess these buildings and provide direction.
 - viii. Barry suggested that the focus be on cost for incremental rehabilitation, not replacement.
 - b. Barry wants to finish the report, bring it back to the Commission in January, and then present it to the Legislature this upcoming session.
 - c. There is currently no central point of collection to have all information on school building maintenance and upgrades.

2. RVS Pilot Project/ROVER Project

Barry Welliver presented results from the SEAU EBC's survey of school seismic safety. The survey was conducted using the FEMA 154 Rapid Visual Screening (RVS) form that was on hand-held (mobile) devices.

- The intent of the survey was to focus on a small sample of 80 school buildings using volunteer engineers.
 - The State Office of Education provided a list of schools and year of construction.
 - 1592 structures in data base
 - Inventoried buildings:
 - 50% constructed prior to 1975.
 - 30% constructed 1975-1996
 - 20% constructed 1997-2010
 - The survey divided the state into areas, sampled schools from each region, and looked at older versus newer buildings.
 - Schools were rated using a point system.
 - 139 schools were surveyed, of which, 66 needed more study.
- An organized approach is needed as we discuss the safety of our schools.
 - If a building has not had any maintenance completed to the structure, this would signal that the building may have a higher risk.
 - Pick the key battles and not let the list take away from the mission.

3. SEAU/FEMA Catastrophic Plan/URM update in HAZUS

- a. SEAU was awarded a FEMA grant of \$133,750, starting Oct. 1, 2010, to do a RVS of URMs and update the HAZUS model. The project is to evaluate current data and prioritize buildings according to occupancy. The project will look at post-earthquake recovery buildings (hospitals, shelters) and perform a RVS to provide an accurate survey of the safety of these buildings for Utah's joint Catastrophic Plan with FEMA.
- b. There are approximately 65,000 of URMs in Salt Lake County and 185,000 in the statewide. This study will sample 2500 URM structures and will provide FEMA an idea of what response will be needed from them and focus the response need.

Update from University of Utah Seismograph Stations

Keith Koper presented an update from the USSS.

A. 3 categories of new instrumentation:

1. ARRA upgrade – Award \$460,000, 2 year project.
 - a. Upgrade 10 broadband seismographs primarily with new sensors and dataloggers.
 - b. Upgrade 18 analog short period seismographs, from 1 channel to 4 channels. Put in strong motion instruments.
2. NetQuakes
 - a. <http://earthquake.usgs.gov/monitoring/netquakes/data>
 - b. USSS has received 12 NetQuakes from USGS.
 - c. Three sites have been installed.
 - d. Remaining sites have yet to be determined, need approval from strong motion committee.

3. QuakeCatcher
 - a. Is a collaborative initiative for developing the world's largest, low cost strong-motion seismic network by utilizing sensors in and attached to internet-connected computers.
 - b. USB MEMS accelerometers, 50-100 per unit, free to schools.
 - c. <http://qcn.stanford.edu> - free software. Plug in to be part of seismic network.
 - d. Potentially to acquire seismically usable data.
- B. Recent Seismicity
 1. 3rd Quarter Seismicity
 - a. There were 302 earthquakes
 - i. Largest was M3.8 that occurred on 8/18 in Cedar City
 - ii. Three with M>3
 - iii. Another 30 with 2<M<3
 - b. Recorded the New Zealand 7.0 Earthquake
 - i. No fatalities, due to building codes. Strike Slip fault. Different than Utah's normal fault or dip slip fault.
 - ii. Evidence of liquefaction from the Sand volcano or sand blows

UGS Trenching Update

Chris DuRoss of the Utah Geological Survey (UGS) presented preliminary results from fault trenching in Salt Lake Valley. The UGS looked at two faults, with the intent of exploring their relationship to each other and resolving the timing and displacement of individual surface-faulting earthquakes:

1. Salt Lake Segment, Wasatch Fault - East Bench Fault
 2. West Valley Fault – Granger Fault
1. Penrose Fault Site
 - Two trenches were excavated across a single, ~10-m high fault scarp north of the University of Utah.
 - Sedimentary deposits include alluvial fan gravels that pre-date Lake Bonneville, Lake Bonneville sediments, and fault-scarp-related colluvium.
 - Six surface-faulting earthquakes occurred after 17–14 thousand years ago (timing of Provo stage of Lake Bonneville).
 - 1 earthquake occurred between the highstand of Lake Bonneville (~22–17 thousand years ago) and the Provo stage (~14–17 thousand years ago).
 - Simple, very steeply dipping faults were exposed and may indicate a component of strike-slip motion (Wasatch fault has chiefly normal or dip-slip motion).
 - Displacement per event is roughly 1–2 meters based on colluvial-wedge thickness.
 - Radiocarbon and luminescence ages are pending and should help constrain the timing of individual events.
 2. Baileys Lake site
 - Three trenches were excavated west of the Salt Lake International Airport.
 - The trenches exposed sediments related to Lake Bonneville.
 - Total scarp offset is about 2 meters.
 - Four surface-faulting earthquakes occurred after Lake Bonneville (~18 thousand years ago)
 - 2 of those events are younger than the Gilbert Highstand (~9 thousand years ago)
 - The oldest event likely occurred during Lake Bonneville.

- Displacement per event is about 0.5 meters.
- Radiocarbon and luminescence ages and Lake Bonneville fossils (ostracods) should help constrain the timing of individual events.

2012 FEMA Earthquake Exercise

Bob Carey provided an update of the 2012 Earthquake Exercise – Utah ShakeOut

- The State is currently writing a joint Catastrophic Earthquake plan with FEMA.
- The Division of Homeland Security met over the summer in Integrated Working Group meetings with federal, state, and local agencies to determine resource shortfalls and to develop operational objectives.
- DHLS and FEMA are jointly developing a full-scale exercise. As part of the development, a Table-Top exercise will take place on November 9
- A full-scale exercise will be conducted April 17-19, 2012. Resources will be deployed during a full-scale. The exercise is in real time.
- A recovery exercise will be done 30-60 days following the full scale exercise.
- Bob encouraged the Commission to participate in the exercise.
- A functional scale exercise will be held in July of 2011.

School Media Projects:

Bob Carey reported that FEMA was funding the development of a public preparedness awareness program for the 2012 Utah ShakeOut. The media package will likely be developed in early 2011.

Earthquake Education outreach in Provo Schools:

Rachel Dunn, in coordination with BYU and In Harms Way, has been working with an elementary school in Provo to increase earthquake awareness. The program shows students about Utah's numerous earthquakes and how to protect themselves like the turtle, duck in your shell, and how to drop, cover and hold. She has received positive feedback. Students are thinking about more about their environment and earthquakes. Information sent home with kids discussing preparedness.

News items:

- a. UGS Awards – Rick Allis reported two people received awards:
 - Gary Christensen was presented the Lehi Hintze Award for Outstanding Contribution by UGS.
 - Bill Lund received two awards, the Clair P. Holdredge Award from the National Association of Environmental and Engineering Geologists (AEG) and the John Frye Award from the Geological Society of America, for his publication of Portfolio of Hazards in St. George. This report and Bill's work has been highly recognized.

- b. Steve Bowman reported that the AEG talk will be on November 11 and will be on the Christchurch Earthquake in New Zealand. Dinner is at 5:30 at Rocky Mountain Pizza, the presentation at 6:30.

c. Avenues Street Fair –Barry Welliver reported the USSC and SEAU were represented at the Avenues Street Fair. The event was successful.

d. 2010 Great California Shakeout was discussed

e. Peter McDonough discussed the ANSI Shut Off Valve, an automatic shut off valve. The valve exists on some schools and churches. A publication on the shut off valves is available. Pete mentioned there is a need to develop standards for a higher trigger-point for the valve to reduce the sensitivity. The ANSI standard is currently being revised. There is a need to find where these products will be of value.

f. Budget Report- Bob Carey reported that the Commission has not expended anything yet. Budget will be renewed in January.

Other Items:

- Walter Arabasz recommended that community participation should be a part of the upcoming Utah ShakeOut.
- Greg McCombs noted a need for more awareness of building officials on seismic safety and construction.

Next meeting January 20, 2010 – Bob Carey to check the schedule of the Legislature to make sure this isn't the starting of the Legislative session.

Meeting adjourned 11:34