

OREGON SCHOOLS: ACCELERATING SEISMIC SCHOOL SAFETY

Yumei Wang, PE
Oregon Dept of Geology and Mineral Industries
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Outline

Oregon Seismic School Safety Highlights

2007 DOGAMI survey results
2009 State Mitigation Grant Program

Current Oregon Efforts (accelerate mitigation)

Parent Advocates, incl. Ted Wolf and OPTA
Oregon Priority Schools Initiative (OPSI)
State Gov't -Senator Peter Courtney SB 1566
-OSSPAC resilience planning
-Governor's in-progress 10 yr plan
Schools in tsunami zones

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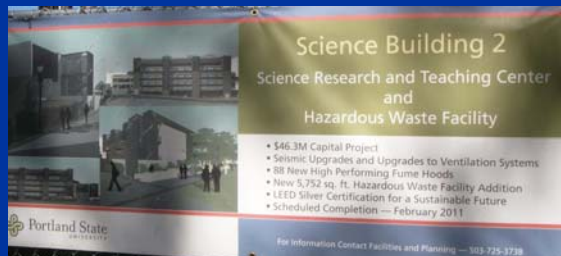
Oregon's Seismic School Safety Highlights

- 2001 Requires seismic "life safety" by 2032
- 2002 Public vote amended Constitution
Allows \$1 B state bonds to fix schools
- 2005 Universities: institutional mitigation
- 2007 Statewide Seismic Ratings (Dogami Report)
- 2009 Oregon seismic rehabilitation grants
- 2012 New Law institutionalizes seismic info

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In 2005, Oregon Public Universities Institutionalized seismic safety FEMA seismic grants were key to implementing change



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Cannon Beach Elementary										Clicat_sch_004		
Resale ID 10												
Building Type		County										
School		Clasmp										
Street												
266 Beaver St												
City		State		Zip								
Cannon Beach		OR		97110								
Latitude		Longitude										
45.90148		123.95918										
Tracking Code		Inspection Date										
RV-5 n 2006		9/10/2006										
Seismicity Zone: Very High												
FEMA 154 Rapid Visual Screening Score Card												
	Type	Basis Score	Vet	Mng	Haz	Mng	Ple	Risk Code	Bench	SSE C	SSE D	SSE E
Primary	W2	3.8	0	0	0	0	0	-4A	0	0	0	3.4
Secondary		0	0	0	0	0	0	0	0	0	0	0
Tertiary		0	0	0	0	0	0	0	0	0	0	0
Cannon Beach Elementary												
Final RVS Score												
Final Type Final Score												
W2 3.4												
FEMA-154 Collapse Potential												
Low (<1%)												

Cannon Beach Elementary

Employment	Year Built (First Verified)	Year Built (AS Source)	Exp. Expires Built
117		1960	1960
Total Area (square ft)	Number of Stories	Basement	Ponding Potential
16472	1	No	Yes

Plan Irregularities	Vertical Irregularities
None	None
None	None
None	None

Falling Hazards	Fear Conditions
Other Block Veneer	None
Unreinforced Chimneys	None
None	None



10 Exterior view



9 Rear view



8 Interior view



6 Exterior view



5 Exterior view



4 Exterior view



3 Exterior view



2 Exterior view



1 Exterior view

10 Exterior view

9 Rear view

8 Interior view

6 Exterior view

5 Exterior view

4 Exterior view

3 Exterior view

2 Exterior view

1 Exterior view

10 Exterior view

9 Rear view

8 Interior view

6 Exterior view

5 Exterior view

4 Exterior view

3 Exterior view

2 Exterior view

1 Exterior view

 OregonGeology

Rapid Visual Screening - Senate Bill #2 - Seismic Needs Assessment

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 OregonGeology

Rapid Visual Screening - Senate Bill #2 - Seismic Needs Assessment

 OregonGeology

(<http://www.oregongeology.org/sub/projects/rvs/default.htm>; 2007)

Schools eg, 94 URMs



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In 2009, Oregon Seismic Rehab. Program

Oregon Emergency Management administers

- 2010 12 schools awarded
- 2011 3 schools awarded
- 2012 8 schools to be awarded



Rogue River ES (URM, Round 3)

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Daly MS (URM, Round 3)



FUNDING GAP EXISTS...

2010 OSSPAC proposal to Legislature: a funding schedule for schools & emergency facilities

- Recommended \$200 million in 2011-13
 - Mitigate 110 schools
 - ~3,300 jobs (2000 direct + 1300 indirect)
 - Continue 55 schools per yr, for 20 yr duration
- Legislature approved \$30 million to date
 - Good start for new grant program
 - Ready to accelerate mitigation

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Oregon Efforts to Accelerate Mitigation

- **Parent Advocate, Ted Wolf**
 - Oregon PTA resolution
 - Parent's e-petition
 - Superintendents, jobs and safety outlook
- **Oregon Priority Schools Initiative OPSI**
 - Jason Thompson, chair
 - SEAO and ASCE **volunteers**
 - Oregon Dept of Education
- **State Government**
 - Sen. President Peter Courtney's 2012 SB 1566 increase transparency
 - OSSPAC resilience planning (due Feb 2013)
 - Kent Yu, chair
 - Governor's in-progress 10 yr plan
 - Sustainable funding (TBD)



Parent Advocate, Ted Wolf

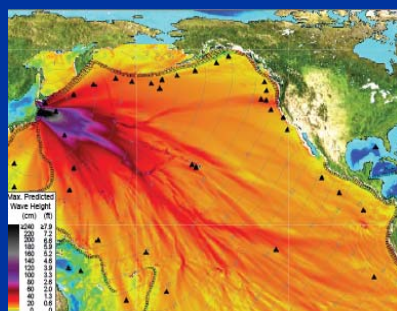


Senate Prez. Peter Courtney

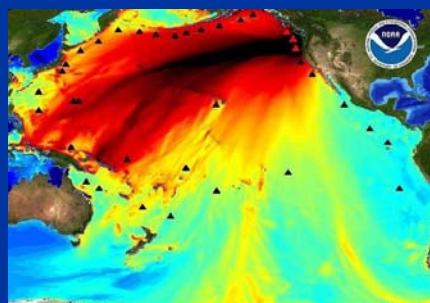


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Tohoku & Cascadia "Mirror Images"



March 11, 2011 Japan Tsunami



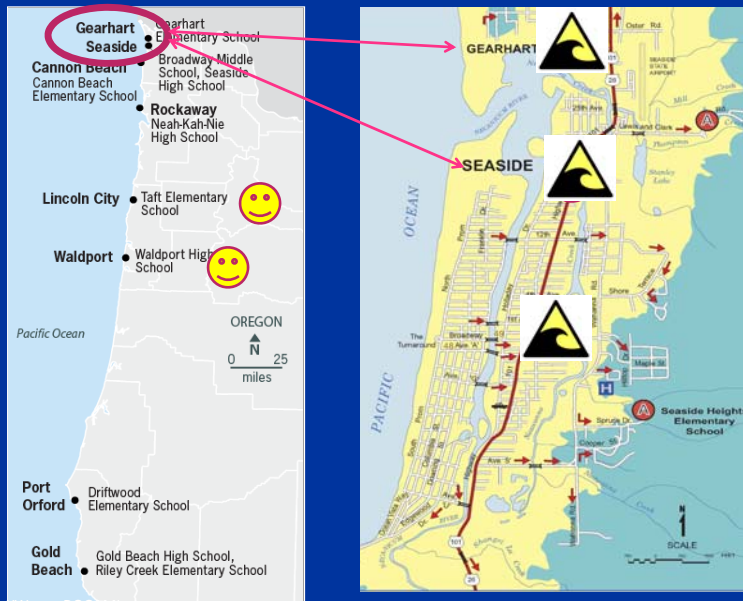
Hypothetical Cascadia Tsunami

(Source NOAA)



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Schools in Tsunami Zone



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Building Performance in Tsunamis

Lower
Resistance

Wood

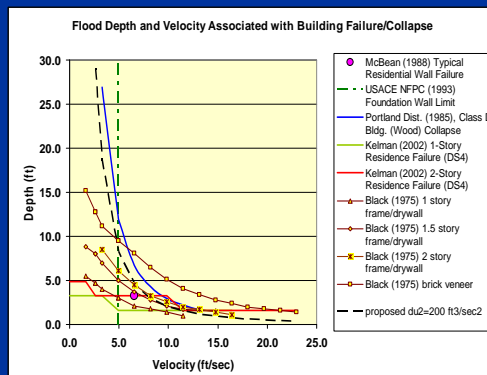
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Steel

-

Higher
Resistance

Reinforced
Concrete



**Flood Depth
versus Velocity
Wood Buildings**

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Reinforced Concrete Building



(Source: K. Miyamoto)

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Steel Building



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Wood Buildings



(Source: K. Miyamoto)

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Japan Tsunami Study Results (MLIT 2011)

1.5 – 2.0 m: 34% buildings destroyed

2.0-2.5 m: 72% destroyed

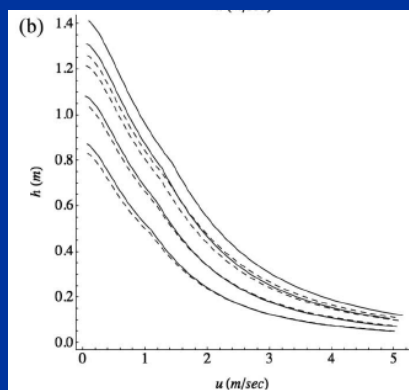
65% of destroyed buildings were
completely washed away

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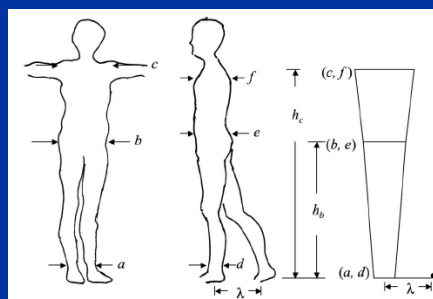


Flood Depth versus Velocity for people



Source: Harry Yeh, 2010, NHR

Male Adult knocked down:
Waist deep (3 ft) at 3 mph
Knee deep (2 ft) at 4 mph
Ankle deep (1 ft) at 7 mph



Source: Yeh, 2010

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Waldport HS relocating above tsunami zone to high ground



**Broke Ground
April 2012**

**Cost:
\$0.21 /\$1000
for 15 years**

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Cannon Beach Elementary in Tsunami zone



Inside Zone –
Serious Risk of
Dying. Viable
Evacuation
Route

Outside (Above)
Tsunami Zone –
Safest Option

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Cannon Beach Elementary School

...to be destroyed in a Cascadia tsunami
Wood buildings located in tsunami zone
Evacuation route 1 mile to high ground
Bad news, anyone hit by tsunami ...



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