

# URM Retrofits

IMPROVING SAFETY FOR COMMUNITY AND BUSINESS  
RESILIENCE IN THE UNIVERSITY DISTRICT



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# URM Retrofits

Improving Safety for Community & Business Resilience  
in the University District

## Presenters:

Nancy Devine, P.E., S.E.  
Senior Structural Plans Engineer  
City of Seattle  
Department of Construction  
and Inspections

Greg Coons, P.E., S.E.  
Structural Engineer



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# URMs

WHAT ARE THEY? RISKS? HOW TO PREPARE?



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# What is a URM?

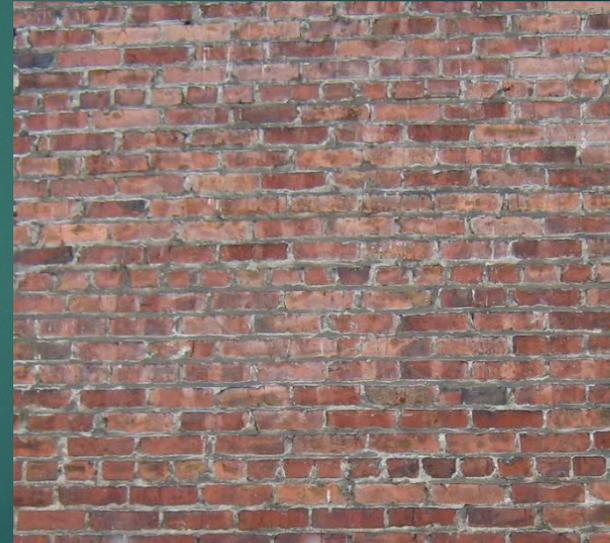
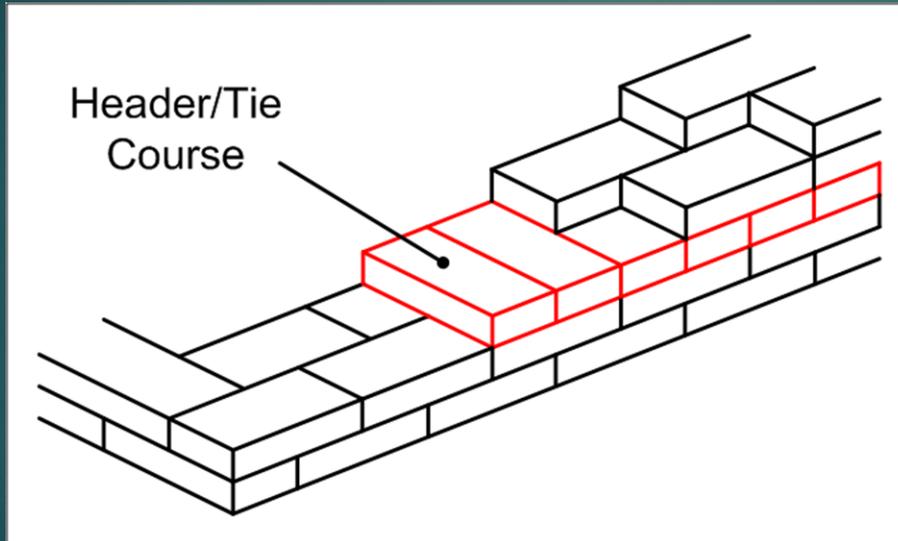


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# What is a URM?

- ▶ “Red brick” buildings from early to mid 1900’s
- ▶ Brick structure carries the loads
- ▶ No steel grid in wall
- ▶ Generally minimal ties between walls and floors or roof



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# URM Impacts



Christchurch 2011

## Dangers of URMs

- ▶ Falling bricks
- ▶ Collapsing walls
- ▶ Injuries and loss of life
- ▶ No building access
- ▶ No access for whole blocks
- ▶ Traffic re-routes
- ▶ Disrupted services
- ▶ Disrupted businesses



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# Retrofits

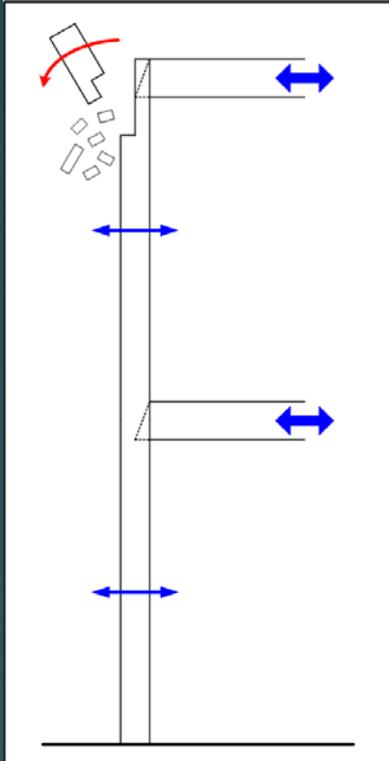
WHAT IS INVOLVED? WHAT ARE THE IMPACTS? WHAT ARE THE BENEFITS?



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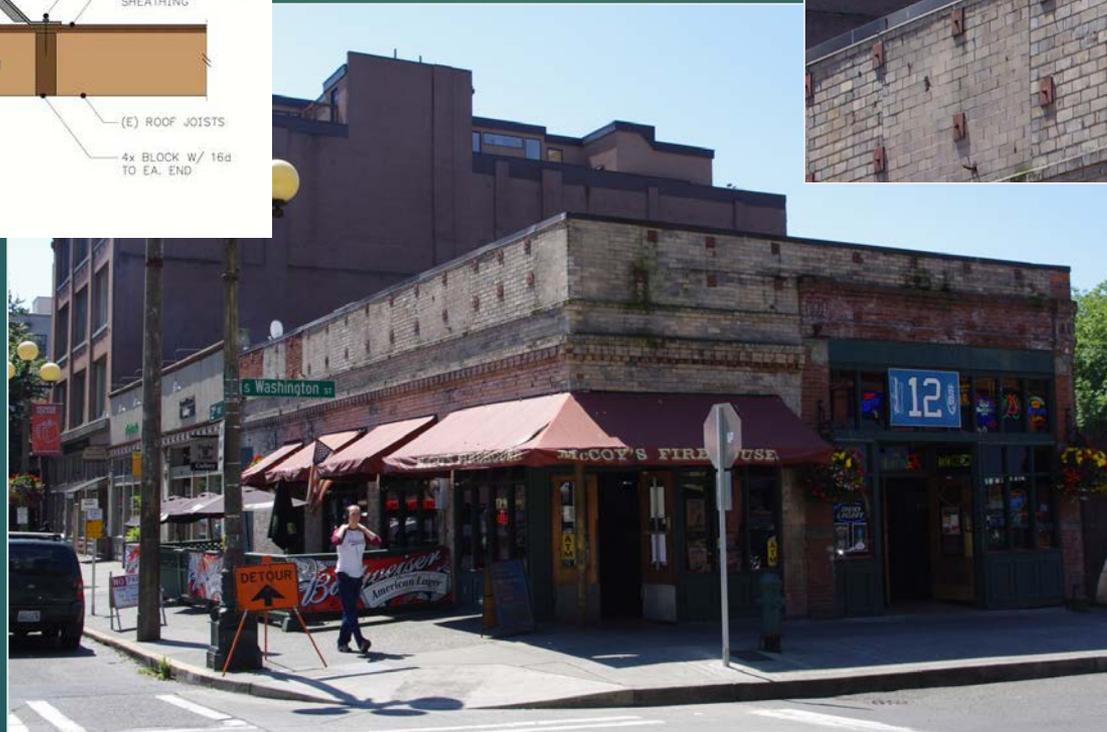
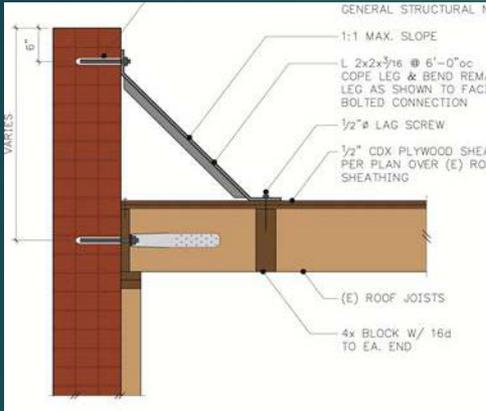
# Earthquake (Mis)Behavior



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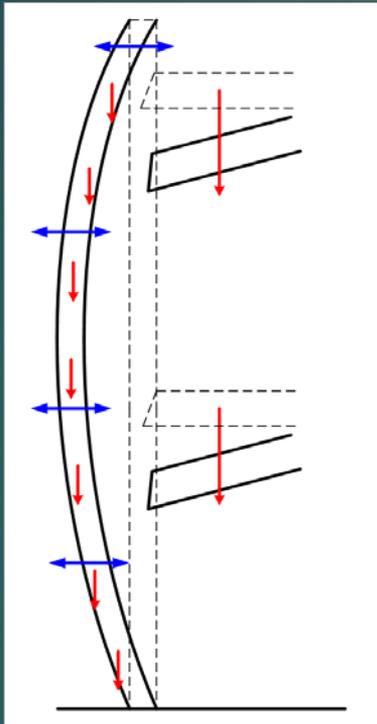
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# Retrofits – Brace Parapets



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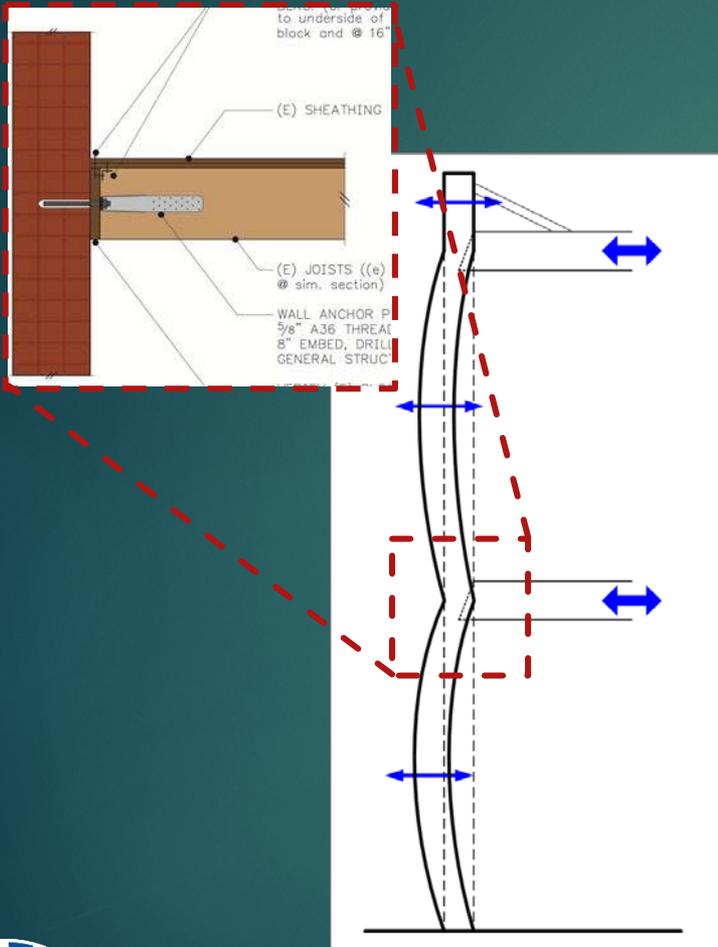
# Earthquake (Mis)Behavior



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# Retrofits – Bolt Wall to Floor/Roof



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# Retrofits – Add Braces/Walls



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# URM Retrofit

*Improve safety and resilience through URM retrofit preparedness.*

## WHAT CAN YOU DO?

- ▶ **OWNERS:** Retrofit your buildings
- ▶ **TENANTS:** Talk to your landlords, backup documents online, off-site storage, personal preparations



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# Retrofit – Owner Benefits

URM building retrofit provide benefits to building owners.

- ▶ Improve potential for business continuance
- ▶ Protect investor value/revenue
- ▶ Improve marketability at sale
- ▶ May lower earthquake insurance/hedge against rising insurance costs
- ▶ Hedge against future retrofit, repair and/or rebuilding costs (construction costs only go up...)
- ▶ Goodwill and community stewardship
- ▶ Maintain good tenant relations



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# Retrofit – Community Benefits

URM retrofits key part of resilient communities and improving safety:

- ▶ Less damage in Nisqually EQ
- ▶ Saved lives, did not always save buildings in Northridge EQ
- ▶ Preserved some buildings in multiple Darfield/Canterbury (Christchurch) EQ's
- ▶ Helps maintain the aesthetic character of a neighborhood
- ▶ Ensure favorite shops, restaurants and other services remain in operation
- ▶ Businesses remaining in operation saves local jobs



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# Impacts of Retrofit

## Owners:

- ▶ Costs of construction
- ▶ Coordinating logistics with tenants

## Tenants:

- ▶ May be disruptive
- ▶ Could require short-term relocation
- ▶ Actual or perceived inconvenience for employees or customers

## General Public:

- ▶ Actual or perceived inconvenience for employees or customers
- ▶ Neighborhood lives through construction phase



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# U District

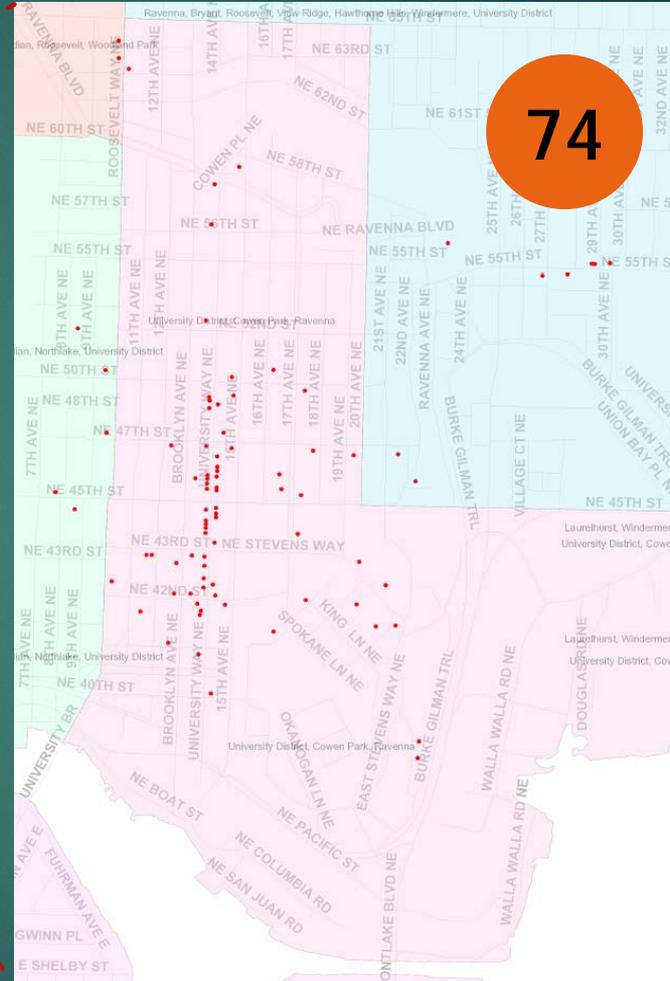
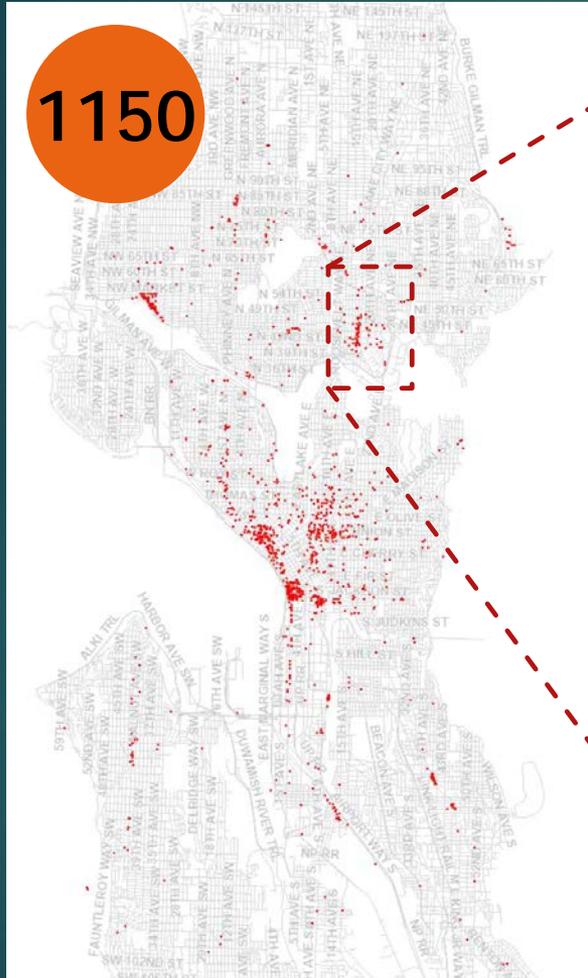
THE AVE. SMALL BUSINESSES. THE UW.



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# URMs in Seattle & U District



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# U District Character

Most URM's are commercial or residential use; some are churches and buildings at the University of Washington.



Note: Not all these buildings are URM. They represent the character of the U District.



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# 2016 Confirmed URM List

**CONFIRMED URM LIST**

Preliminary Risk Category	Neighborhood	Address	Year Built	Stories	Retrofit Level	Occupancy Type	Occupant Load	Confirmation Source
M	Univ Dist	4203 Brooklyn Ave NE	1925	4	No visible	R	2	GSV
M	Univ Dist	4209 University Way NE	1923	2	No visible	C	3	GSV
M	Univ Dist	4214 Roosevelt Way NE	1924	1	No visible	C	3	GSV
C	Univ Dist	4216 Memorial Way NE	1895	3	Sub Alt	S	3	PR
M	Univ Dist	4216 University Way NE	1914	2	No visible	C	3	GSV
M	Univ Dist	4217 University Way NE	1941	1	No visible	C	3	GSV
M	Univ Dist	4235 Brooklyn Ave NE	1928	3	No visible	R	2	Field
M	Univ Dist	4235 University Way NE	1922	1	No visible	C	2	GSV
M	Univ Dist	4247 University Way NE	1921	1	No visible	C	3	GSV
C	Univ Dist	4276 E Stevens Way NE	1926	3	Permit	S	3	PR
M	Univ Dist	4306 University Way NE	1923	1	No visible	C	2	GSV
M	Univ Dist	4315 University Way NE	1900	3	Visible	C	3	GSV
M	Univ Dist	4321 University Way NE	1919	2	No visible	C	3	GSV

- ▶ 1150 identified URM buildings in the survey; average of 2 stories
- ▶ Majority of commercial uses in 1-story buildings; majority of residential uses in 4-story buildings
- ▶ Procedure for working with SDCI engineers to correct any inconsistencies in URM building designations



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# U District URMs

3 most common URM building types in this neighborhood:

- 1 One and Two Story Commercial Buildings with Wood-Framed Roof (21)
- 2 Three and Four Story Residential Buildings with Wood-Framed Floors & Roof (15)
- 3 University of Washington Buildings (13)



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# City Strategies

URM POLICIES. RESOURCES.



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# Why Retrofit URMs?

- ▶ **Public Safety:** *Brick Buildings with URM bearing walls building type most likely to collapse in an earthquake*
- ▶ **Lessen Damage:** *Retrofits help lessen earthquake damage, businesses reopen faster following a smaller earthquake*
- ▶ **Resilience:** *Retrofitting URMs long-standing city interest; part of city's emergency and resilience planning*



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# What have we learned from the past?

**Lesson:** The city responded to life safety issues by requiring regulations that had unintended consequences.

- ▶ In the 1970's the city imposed retrofit standards that were revoked a few years later due to the cost of retrofits

**Response:** This current policy development trying to address life safety and be reasonable and predictable

- ▶ Exploring financial and program incentives for owners
- ▶ Developing tools for owners to understand the program
- ▶ Providing outreach and education on the value of preserving these buildings

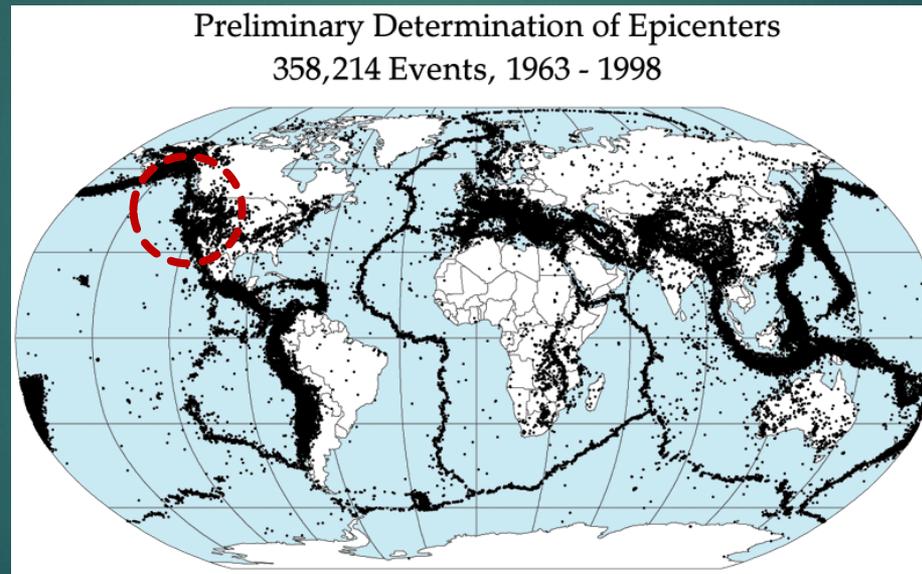


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# URM Policy Context

- ▶ Seattle not alone in URM retrofit planning
  - ▶ CA, OR, WA and UT
  - ▶ San Diego, San Francisco, Berkeley, Los Angeles, San Luis Obispo, Long Beach, Portland



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# Current City Policy

Seismic upgrades triggered when doing work requiring permit:

- ▶ Parapets required to be braced with any permit
- ▶ Seismic report & retrofit required when doing major renovation (“substantial repair/alteration”)
  - ▶ Substantial increase in occupant load in URM
  - ▶ Extending useful/economic life of building
  - ▶ Major damage from event



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# Post-Earthquake Policy

*Code requirements for earthquake damage:*

- ▶ SDCI evaluates building and determines if safe to re-occupy
- ▶ Seismic report required for repairs

***Outcome:*** A damaged URM will be an emergency situation for an owner who will make a choice of repair, or demolition



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# Proactive Policy

**Concept:** URM policy development

- ▶ Reduce risk of damage with modern, proven, engineering solutions
- ▶ Lessen post earthquake repair
- ▶ Proactive retrofit less costly than repair to damaged building
- ▶ Reduce number of vacant or demolished buildings
- ▶ Help owners perform the retrofit.

**Outcome:** Life safety and community benefits realized prior to emergency increasing likelihood of saving lives and supporting economic recovery



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# Policy Development

- ▶ Proposed Technical Seismic Retrofit Standard created
- ▶ URM Retrofit Policy Committee
- ▶ Outreach To Community Groups and benefit-cost analysis
- ▶ SDCI validated inventory removed non-URM buildings added additional buildings
- ▶ Policy Group to reconvene
- ▶ 2017 EARLIEST legislation to council (no firm date)



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# Seattle URM Policy

## KEY POINTS

### ▶ Current:

- ▶ Brace parapet, major renovation triggers seismic assessment and retrofit to existing building standards

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### ▶ Future: (no sooner than 2017)

- ▶ Require retrofit all URMs over 7-13 years, depending on use, size and location of building



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# URM Retrofit Standards

*"Bolts Plus"* proposed standard minimum repairs for URM to improve performance in an earthquake

- ▶ Based on what's been seen to fail in past events
- ▶ Might help building survive, not intended to preserve the building
- ▶ **Intended to improve building performance, save lives and reduce injuries**

Higher levels of retrofit recommended and encouraged.



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# U District URM



**1** **1-2 Story Commercial**  
Bolts Plus applies to about 75%

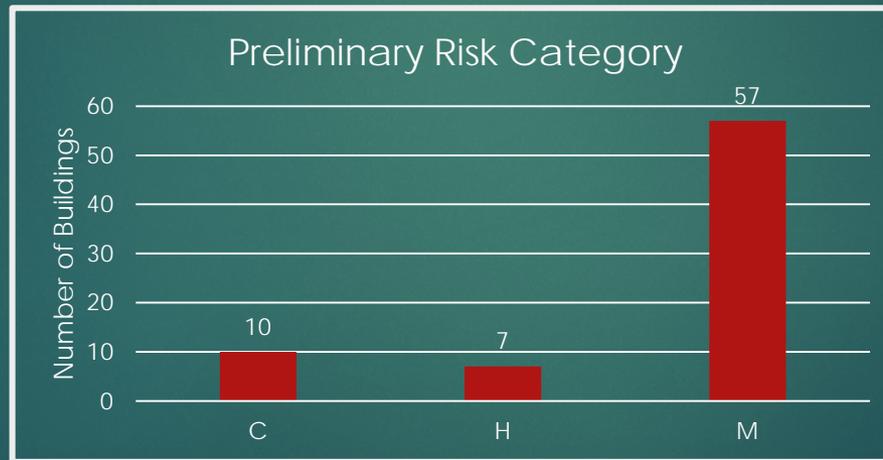
**2** **3-4 Story Residential**  
Bolts Plus applies to about 75%

**3** **UW Buildings**  
Typically a higher level of retrofit required, higher use intensity, greater need to continue operations, more complex structures



# Preliminary Risk Categories / Timelines

- ▶ **Critical-risk (C):** schools and critical facilities (hospitals, fire stations, etc.) – 7 years to comply with a retrofit program
- ▶ **High-risk (H):** buildings greater than 3 stories on poor soil or URMs with more than 100 occupants in assembly – 10 years to comply with a retrofit program
- ▶ **Medium risk (M):** all other URM buildings – 13 years to comply with a retrofit program



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# Process for Compliance

Milestones:

Number of Years to Complete Retrofit			
	Critical Risk	High Risk	Medium Risk
Assessment	1	2	3
Permit Application	1	2	2
Permit Approval	1	1	1
Completion of Retrofit	4	5	7
	7	10	13



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# Future Steps – URM Retrofits

*Don't have to wait for policy, can start now!*

**If you don't have major renovation plans:**

1. Perform assessment with structural engineer
2. Talk with contractor
3. Get cost estimate from contractor
4. Review incentives and financing options
5. Schedule construction and communicate with tenants
6. Make plans for tenant impacts during construction
7. Complete building retrofit

**Considering major renovation? These steps can be part of that planning.**



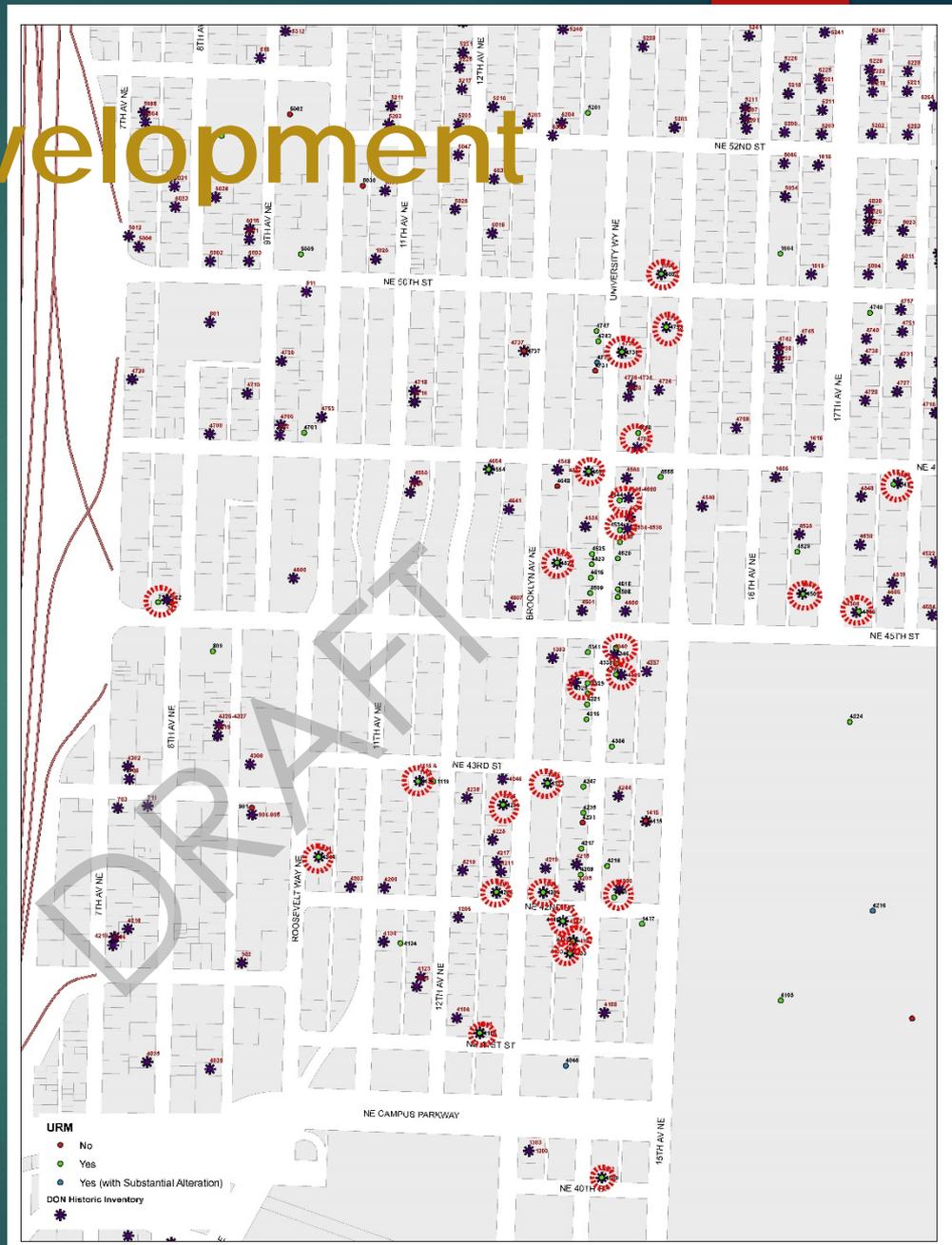
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# Transfer of Development Potential

- ▶ Some URM's sending sites for TDPs
- ▶ Must be URM and on City historic resource inventory
- ▶ For more information: [seattle.gov/dpd/udistrict](http://seattle.gov/dpd/udistrict)

Dennis Meier  
Office of Planning and  
Community Development  
206-684-8270  
[dennis.meier@seattle.gov](mailto:dennis.meier@seattle.gov)

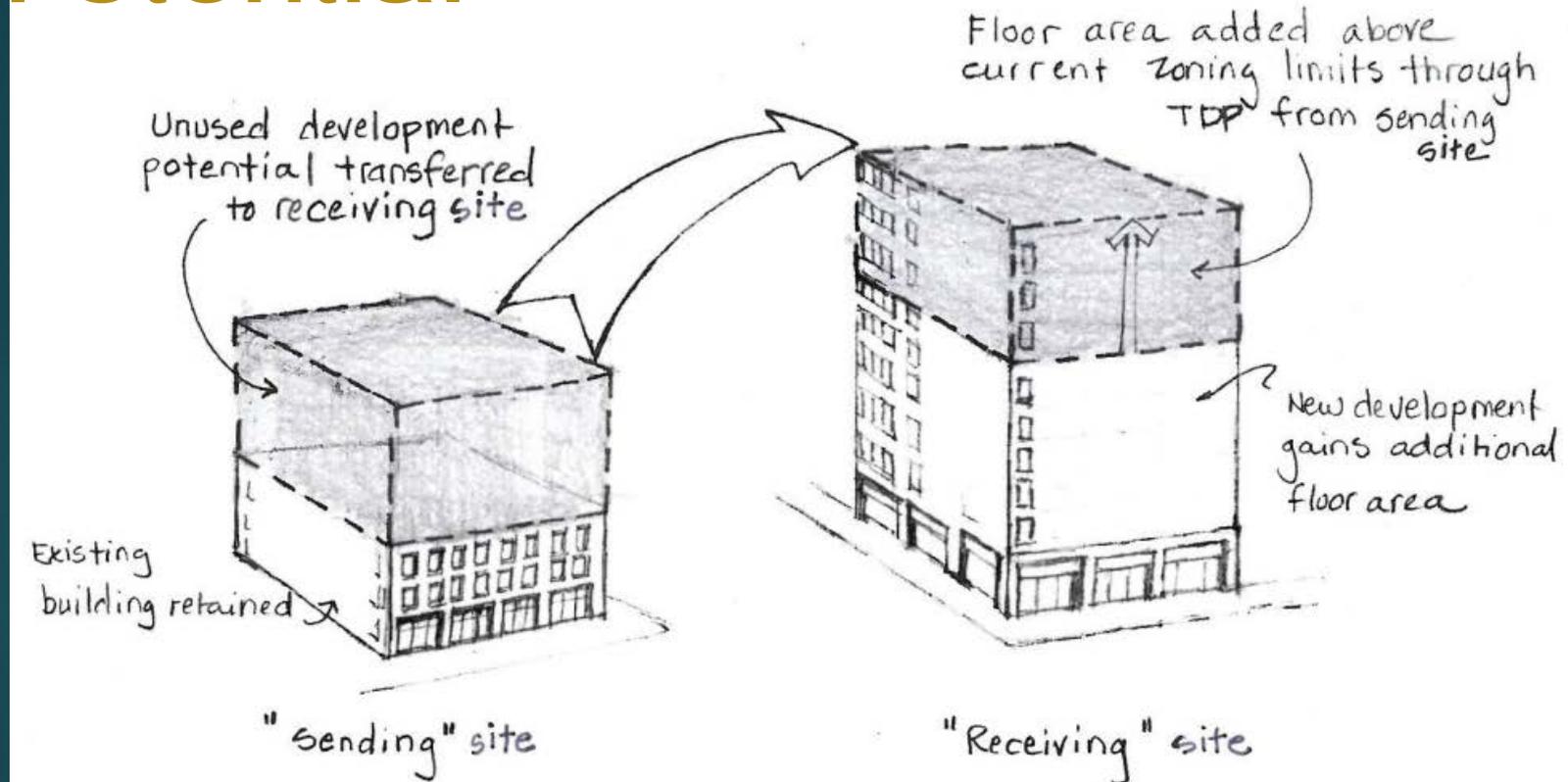


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# Transfer of Development Potential

## Potential



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# Information on URM Policy Development

Seattle Department of Construction and Inspections URM web page

<http://www.seattle.gov/dpd/urm>

SDCI Contact:

Nancy Devine, P.E., S.E.

Senior Structural Plans Engineer

206-684-3406

[nancy.devine@seattle.gov](mailto:nancy.devine@seattle.gov)

The screenshot shows the Seattle Department of Construction & Inspections website. The main heading is "Unreinforced Masonry Buildings". Below the heading is a photo of a brick building. To the right of the photo is a "Sign up for email updates!" form with a text input field and a "Subscribe" button. A red arrow points to the form. The page also includes a "What's Happening Now?" section with text about the validation process and a "What & Why" section with a "Get Involved" button.



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# Questions?



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**Thank You for Your Help**  
Keep Seattle Communities Resilient and Safe



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