



Seattle URM Retrofit Program Update

Photo by John Skelton



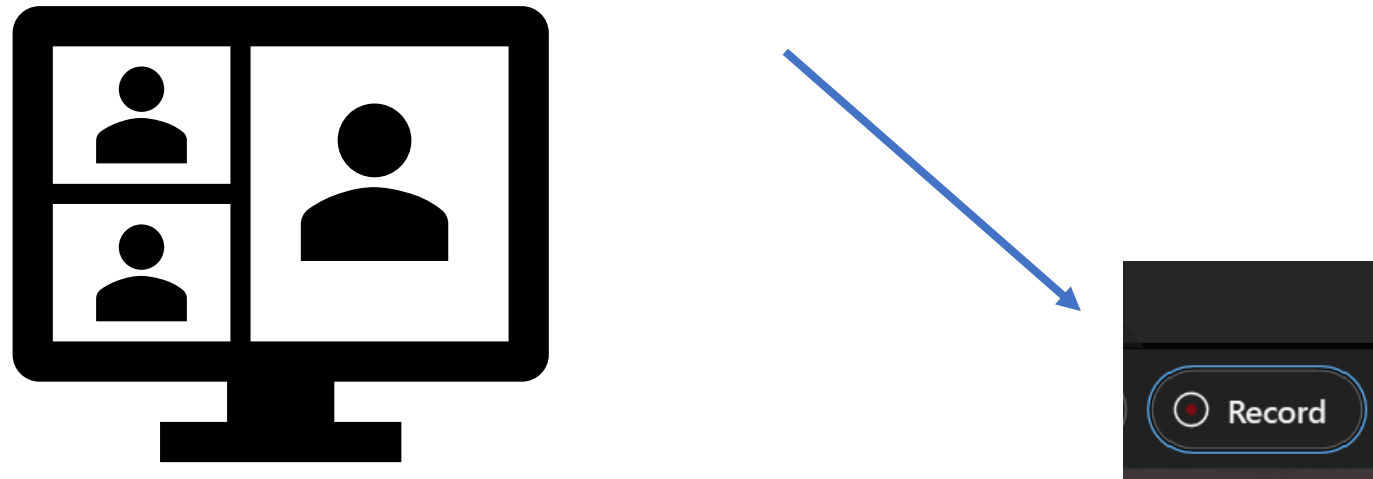
Seattle Department of
Construction and Inspections

-Amanda Hertzfeld, URM Program Manager
-Derek Ohlgren, PE, URM Program Lead Engineer

October 16, 2024

Presentation Recording

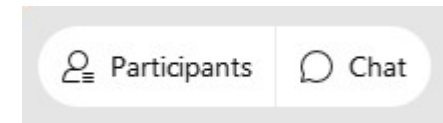
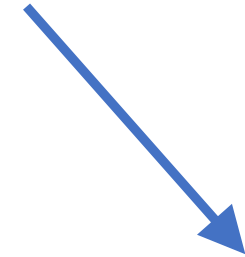
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Questions for Presenters



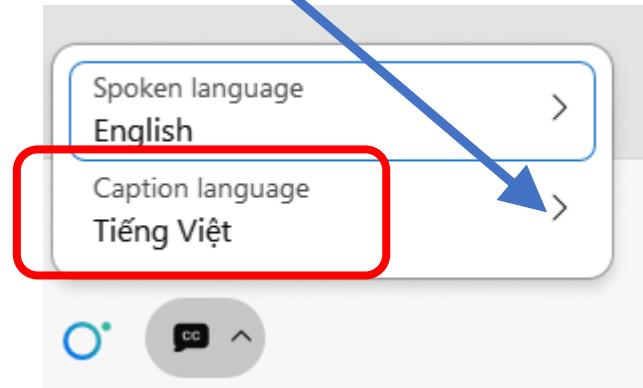
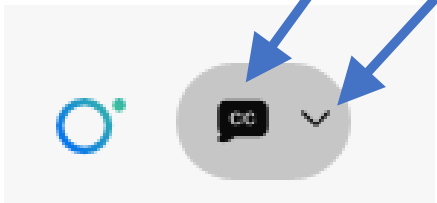
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Use the pull-down arrow to select your preferred language



Introductions

Seattle Department of Construction & Inspections:

- Amanda Hertzfeld, URM Program Manager
- Derek Ohlgren, PE, URM Technical Lead



Today's Agenda

Meeting Goal:

- Provide update on URM Retrofit Program and provide opportunity for questions.
- Presentation intended for a non-technical audience

Topics for Discussion:

- Seattle's earthquake vulnerability
- Upcoming changes to city codes for URM retrofit standards
- Funding incentives in development
- Questions and Answers

Upcoming URM Technical Briefing

Date: October 17, 2024; 2:30-4PM

Goal:

- Review 2021 Seattle Existing Building Code Adoption of URM Retrofit Recognition codes.

Topics for Discussion:

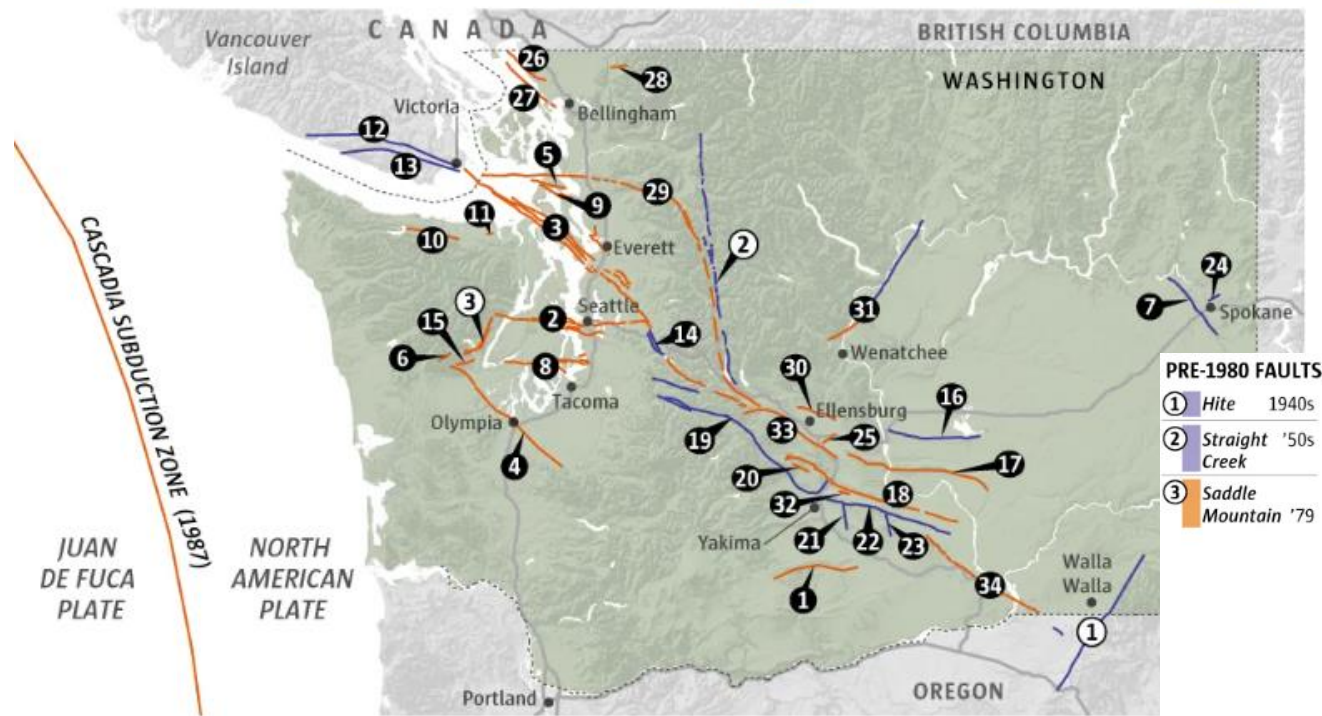
- Changes to 2021 Seattle Existing Building Code (SEBC)
 - URM retrofit definitions, minimum standard and methodology
 - Modification to Substantial Alteration Triggers
- Updates to the City of Seattle URM Database
- Procedure to demonstrate retrofit status of URM building
- Procedure to appeal URM determination of non-URM building

Earthquake Hazards

Earthquake faults of the region

Since the late 1980s, geologists have discovered evidence of active quake threats on more than two dozen faults across Washington.

ACTIVE FAULT — POTENTIALLY ACTIVE FAULT —



In the next 50 years:

Seattle has an 86% chance of experiencing a M6.8 earthquake

and

33% of experiencing a M8 Earthquake.

Source: U.S. Geological Survey

Reporting by SANDI DOUGHTON, Map by MARK NOWLIN / THE SEATTLE TIMES





Unreinforced Masonry (URM) Retrofits



Nisqually Earthquake
Seattle, 2001



Canterbury Earthquake
Christchurch, NZ 2011

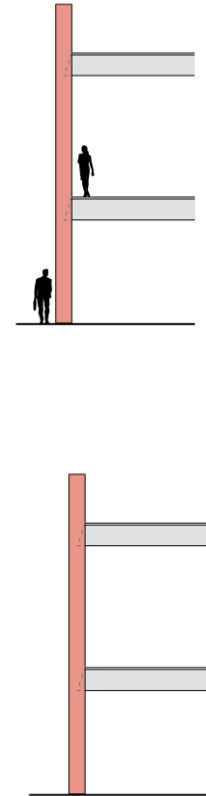
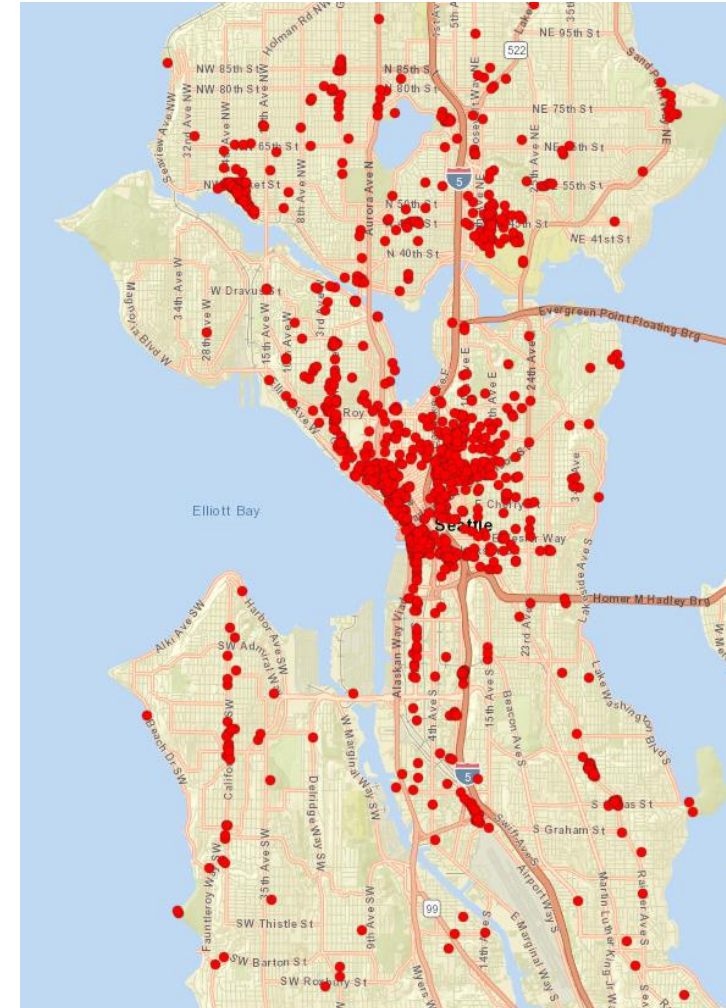


Image Courtesy Seattle Times

Seattle's URMS

Vulnerability Classification	Number of URMs
Critical vulnerability: emergency service facilities and schools	75
High vulnerability : buildings over three stories in poor soil areas (i.e., liquefaction and slide areas); and buildings containing public assembly spaces with occupancies of more than 100 people	184
Medium vulnerability: all other buildings	883
Total Confirmed URMs	1,142

Number of URMs by classification, September 2021



Proposed Compliance Timelines (When Mandatory)

Vulnerability Classification	Number of URM
Critical vulnerability: emergency service facilities and schools	75
High vulnerability : buildings over three stories in poor soil areas (i.e., liquefaction and slide areas); and buildings containing public assembly spaces with occupancies of more than 100 people	184
Medium vulnerability: all other buildings	883
Total Confirmed URM	1,142

- **Critical vulnerability** will have 7 years from the adoption of the mandatory URM retrofit ordinance to comply.
- **High vulnerability** will have 10 years from the adoption of the mandatory URM retrofit ordinance to comply.
- **Medium vulnerability** URM will have 13 years from the adoption of the mandatory URM retrofit ordinance to comply.

History of Seattle's URM work

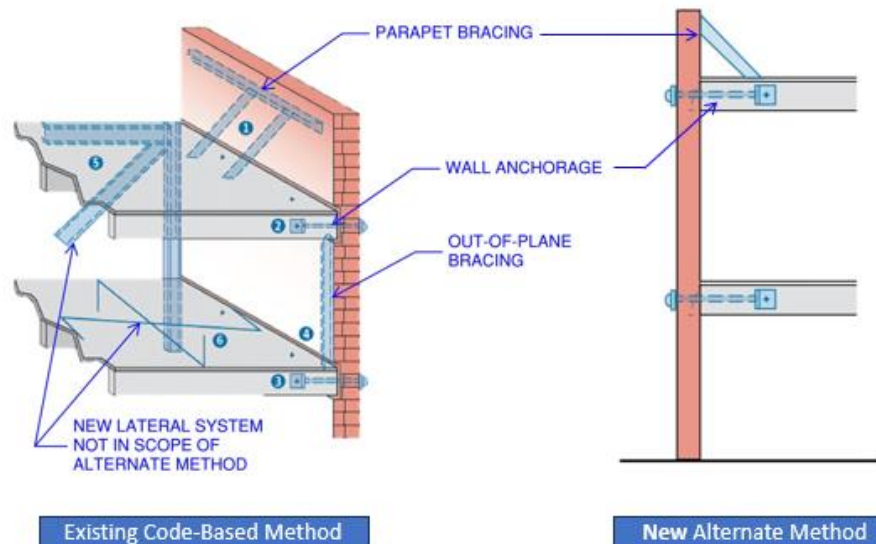


Image Courtesy Seattle Times

Contributors

- University of Washington
- Geologists
- Seismologists
- Structural and Geotechnical Engineers
- Office of Emergency Management
- Structural Engineers Association of WA (SEAW)
- URM Technical Team- Public Private Partnership



Summary of Resolution 32033 (2021)

URM Program is anticipated to include:

1. Definition of URMs
2. Identification of the type of seismic retrofit standard required to bring URMs into compliance, depending on type of building
3. Categorization system for building types and/or uses that prioritizes key buildings and services
4. Timeline for compliance
5. Enforcement strategy
6. Variety of potential funding opportunities and financial incentives for building owners to alleviate the financial burden of required seismic retrofits for URMs

URM Program Goals (Resolution 32033)

Establish Goals of a phased mandatory URM retrofit program

- Primary Goal:

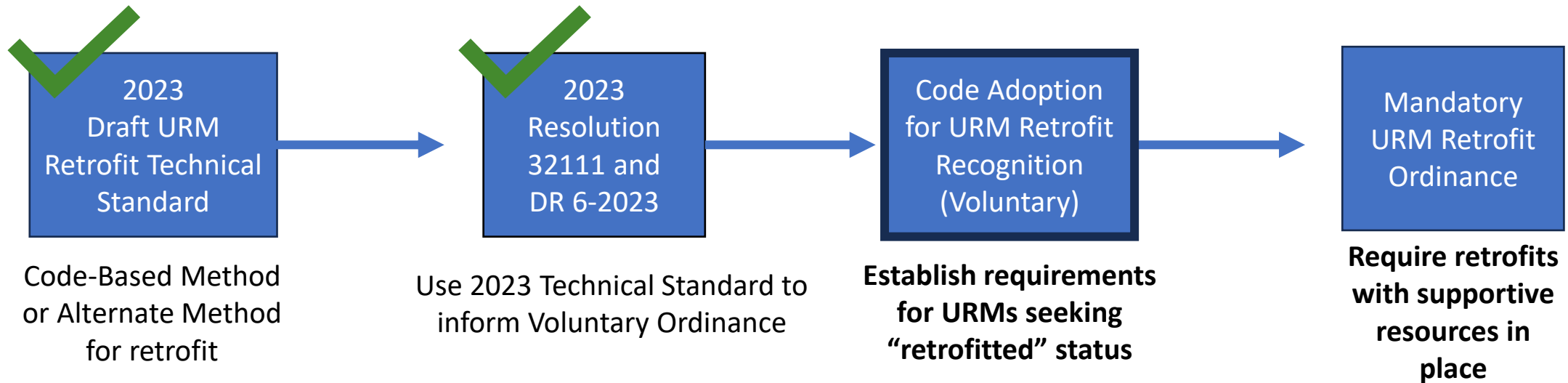
- Protect life safety by reducing the risk of injury from collapse of URMs in the event of an earthquake

- Additional Goals:

- Preserve Seattle's historic and culturally significant landmarks and structures that contribute to neighborhood character
- Improve the City's resiliency to earthquake events
- Minimize the impact of a URM retrofit program on vulnerable populations to the extent financially feasible

Pathway to Required URM Retrofits

- Short-term goal: Code Adoption for URM Retrofit Recognition (2024)
- Long-term goal: Implement a Mandatory URM Retrofit Ordinance.



2021 Code Adoption for URM Retrofit Recognition

1. Defines minimum seismic safety requirements for a “retrofitted” URM building.
(Section 202, 2021 Seattle Existing Building Code)

Code Adoption
for URM Retrofit
Recognition
(Voluntary)

Establish requirements
for URM seeking
“retrofitted” status

UNREINFORCED MASONRY (URM). Includes burned clay, concrete or sand-lime brick, hollow clay block, or hollow clay tile.

UNREINFORCED MASONRY (URM) BUILDING. A building where one or more *URM* walls provide the primary support for vertical loads from floors or roofs and the *URM* walls rely on the tensile strength of masonry units, mortar and grout in resisting design loads.

NOTE: URM buildings were generally constructed prior to 1945 and unlawful after adoption of the 1973 Uniform Building Code on May 7, 1977.

RETROFITTED UNREINFORCED MASONRY (URM) BUILDING. A *URM building* that meets a minimally acceptable level of life safety risk from earthquakes by demonstrating compliance with Section 304.5.1.

NOTE: Retrofitted URM buildings are eligible for a status change in the City of Seattle URM database.

2021 Code Adoption for URM Retrofit Recognition

2. Establish pathways for retrofits to be eligible for retrofitted status. (Section 304.5, 2021 Seattle Existing Building Code)

Code Adoption
for URM Retrofit
Recognition
(Voluntary)

Establish requirements
for URM's seeking
“retrofitted” status

304.5 Seismic regulations for Unreinforced Masonry Buildings. *URM buildings* meeting any of the following criteria shall comply with 304.5.1:

1. Where there is a significant increase in the occupant load of a *URM building*, as determined by the code official.
2. *URM Buildings* voluntarily seeking to be defined as a *Retrofitted URM Building*.

304.5.1 URM Seismic regulations. *URM buildings* shall comply or be altered to comply with one of the following:

1. Section 304.4.2;
2. Appendix Chapter A6 Alternate Method for the Seismic Improvement of *Unreinforced Masonry (URM) Buildings*;
3. Previously permitted and completed retrofits that comply with one of the following:
 - a. *URM Buildings* that have undergone a seismic retrofit due to a substantial alteration determination, permitted between September 16, 1996 and April 24, 2009 using the 1994 or later edition of the Seattle Building Code. A report confirming the retrofit work was completed shall be prepared by a licensed structural engineer and submitted to the code official.
 - b. *URM Buildings* that have undergone a seismic retrofit due to a substantial alteration determination, permitted after April 24, 2009 using the 2006 or later edition of the Seattle Building Code.
 - c. Other seismic retrofits approved by the code official.



2021 Code Adoption for URM Retrofit Recognition

3. Establish the Alternate Method for URM retrofits, minimizing cost and collapse hazard. (Appendix 6)

Code Adoption
for URM Retrofit
Recognition
(Voluntary)

Establish requirements
for URM seeking
“retrofitted” status

CHAPTER A6

ALTERNATE METHOD FOR THE SEISMIC IMPROVEMENT OF UNREINFORCED MASONRY (URM) BUILDINGS

SECTION A601 GENERAL

A601.1 Purpose.

The purpose of this Appendix is to establish an alternate method for the seismic retrofit of URM buildings with the goal of improving seismic life safety. This alternate method provides a minimally acceptable level of life safety risk from earthquakes that is a lesser level than the substantial alteration seismic regulations established in section 311.1.2.



Key Updates

- 2021 Seattle Existing Building Code (SEBC)
 - Codifies URM retrofit recognition pathways and minimum standards
 - Anticipated effective date: November 15th, 2024
- Website Updates:
 - Organized Project Documents, Background Page
 - NEW: FAQ Page
 - NEW: Construction Pre-Submittal Conference Seismic Retrofit Questionnaire (*Project Documents Page*)
 - UPDATED: Procedure to appeal URM determination of non-URM building
 - Now reflects code definitions
 - COMING SOON: Procedure to demonstrate retrofit status of URM building
 - Anticipated November 15, 2024
 - Will clarify reporting requirements and submittal process
 - COMING SOON: Updates to the City of Seattle URM Database
 - Anticipated January, 2025

Unreinforced Masonry Buildings - Frequently Asked Questions



Frequently Asked Questions

[Expand all](#)


- + What is an Unreinforced Masonry Building (URM)?
- + What is the city doing to reduce the risk of collapse of URM buildings in an earthquake?
- + How do I know if the building I own, rent, or do business in is a potential URM?
- + If I own a URM, what should I do?
- + Will performing a URM retrofit require me to conduct additional upgrades of my building?
- + My building has URM parapets but it is not on the URM list. Am I required to brace the parapets?
- + Why require earthquake strengthening (seismic retrofits) of URM?
- + When will seismic retrofits be required?

SDCI URM Database Updates

Address	Year Built	No. Story	Neighborhood	Report Occupancy	Occupant Load	Liquefaction Hazard	Landslide Hazard	Steep Slope	Vulnerability Classification	Confirmed Compliant Retrofit	Retrofit Method: SEBC 304.5.1 Item ____
1234 URM Street	1910	3		Residential Commercial Public Assembly	1- 100	Y/N	Y/N	Y/N	Critical High Medium	Y/N	1, 2, 3a, 3b, 3c

We're here to help

- Free 15- Minute Coaching Sessions are available by request.
 - To schedule, send an email to: SCI_URM@seattle.gov.
- Qualifying for the Alternate Method?
 - Complete the URM Pre-Submittal Conference Seismic Retrofit Questionnaire (*Project Documents Page, Get Involved Page*).
 - Schedule a Construction Pre-Submittal Conference
 - Application Type: Select both:
 - Unreinforced Masonry (URM) building
 - Construction only Pre-Submittal Conference
- Permit coaching and expedited services for small businesses
 - Send email to: Maria.Peterson@seattle.gov with the Office of Economic Development (OED)

 Seattle Department of Construction & Inspections

URM Pre-Submittal Conference - Seismic Retrofit Questionnaire

For Unreinforced Masonry (URM) building projects that intend to comply with a future City of Seattle URM Building Retrofit Ordinance, the Draft URM Retrofit Technical Standard provides a pathway for a code-based seismic retrofit. Alternatively, for building owners who desire a lesser level of seismic retrofit, the Draft Technical Standard also contains an Alternate Method that is allowed only for buildings that meet certain qualification criteria.

If this pre-submittal conference is for a project that intends to use the Alternate Method, please come to the meeting with the following qualification criteria already verified. The outcome of the conference will be the confirmation of whether the seismic retrofit qualifies for the Alternate Method.

The seven qualification criteria can be found in Section 3 of [Director's Rule DR 6-2023](#) or Section 5 of the [Draft URM Retrofit Technical Standard](#). Please answer the following questions:

- (1) The building is no more than 6 stories above the seismic base of the structure.
☐ True
☐ False
- (2) The building shall not be classified as Risk Category IV.
☐ True
☐ False
- (3) The building does not have a Weak Story vertical irregularity as defined by ASCE 7-16 as referenced by the SBC.
☐ True
☐ False
☐ Unknown
- (4) The building has a mortar shear strength, v_{ms} , as determined by Section 4.2, of 30 psi or more for all masonry classes.
☐ True
☐ False - explain how this will be mitigated: _____
☐ Unknown
- (5) The building has wood or plywood diaphragms at all levels above the base of the building.
☐ True
☐ False
☐ Unknown
- (6) The building does not have straight-sheathed floor or roof diaphragms.
☐ True
☐ False (see exceptions below)
☐ Unknown

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Supportive Resources in Development- Technical

- Code Commentary
 - Companion document to the 2021 SEBC additions which will provide additional context to the code language
- Technical Trainings
 - Input sought for detailed trainings needed & preferred method for receiving

Supportive Resources in Development- Funding

- Expedited Permit Reviews for URM Retrofits
 - Exploring opportunities for priority permit reviews and reductions in fees.
- Tax Incentives
 - WA Seismic Safety Subcommittee is recommending a statewide study on tax incentives, including but not limited to: Modifications to Special Valuation tax, Current Use tax, Sales tax exemptions, etc. Seattle is requesting a Governor's budget proviso.
- Transfer of Development Rights
 - Goals:
 - By year end: publish report documenting stakeholder input
 - Early next year: Release a Request for Proposals to conduct Feasibility Study

List of Supporters for Tax Incentive Study

1. WA Association of Cities
2. WA Association of Counties
3. WA Association of County Officials
4. Building Owners and Managers Association (BOMA)- Greater Seattle
5. WA Association of Building Officials (WABO)
6. City of Seattle
7. City of Tacoma
8. Downtown Tacoma Partnership
9. City of Olympia Emergency Management
10. Downtown Everett Association
11. Ellensburg Downtown Association
12. Kittitas Valley Fire and Rescue
13. Spokane Preservation Associates
14. WA Trust for Historic Preservation
15. Association for Preservation Technology- PNW Chapter
16. Historic Seattle
17. 4Culture
18. Masonry Institute of WA
19. Bricklayers and Allied Craftworkers Local 1 WA/AK
20. American Institute of Architects (AIA)- WA Chapter
21. Structural Engineers Association of WA (SEAW)
22. WA State Seismic Safety Subcommittee of the Emergency Management Council
23. WA State Emergency management Association (WSEMA)

Supportive Resources in Development- Funding

- Reimbursement Program for Underserved Populations
 - Phase 1: Small FEMA Grant to conduct Benefit-Cost Analysis to retrofit “prototype” buildings (CID/Pioneer Square Focus)
 - Anticipated award by December 2024
 - Phase 2: Apply for large FEMA grant to partially reimburse prototype buildings
- Financing
 - C-PACER Liens in partnership with King County (currently available)
 - Grant application currently in development to develop lender, insurer, and financing solutions for URM owners

Reminders:

- A URM owner can undergo a retrofit at any time; a voluntary URM retrofit on its own does not trigger a substantial alteration.
- The Alternate Method is a minimum life safety improvement and does not bring the building up to current code; building owners are encouraged to consult a structural engineer to retrofit to higher performance standards and to consider additional resiliency factors, such as energy efficiency and emission reduction upgrades.
- Though not currently mandated by the city, building owners should consider potential risks and liability associated with the public safety risk posed by their URM building in an earthquake. There have been lawsuits in California where building owners were held liable for URM failures despite retrofit compliance timelines for the local jurisdiction.
- In an earthquake, Drop, Cover, and Hold On. The ShakeOut annual earthquake drill is tomorrow at 10:17 AM!

Comments/ Questions/Input?

Comments to Technical Standard:

Derek Ohlgren, P.E.

URM Program Lead Engineer

Derek.Ohlgren@Seattle.gov

URM Program Questions:

Amanda Hertzfeld

URM Program Manager

Amanda.Hertzfeld@seattle.gov

Not sure who?

SCI_URM@Seattle.gov

- What aspects of today's presentation need more detailed trainings?
- What is your preferred method for receiving education and trainings on these topics?
- Where are you currently experiencing issues with permitting of URM retrofits?