URM Buildings- What's happening in Seattle?

Photo by John Skelton

Seattle Department of
Construction and Inspections

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

January 28, 2025

Introductions

Seattle Department of Construction & Inspections:

- Amanda Hertzfeld, URM Program Manager
- Derek Ohlgren, P.E., URM Lead Engineer

Today's Agenda

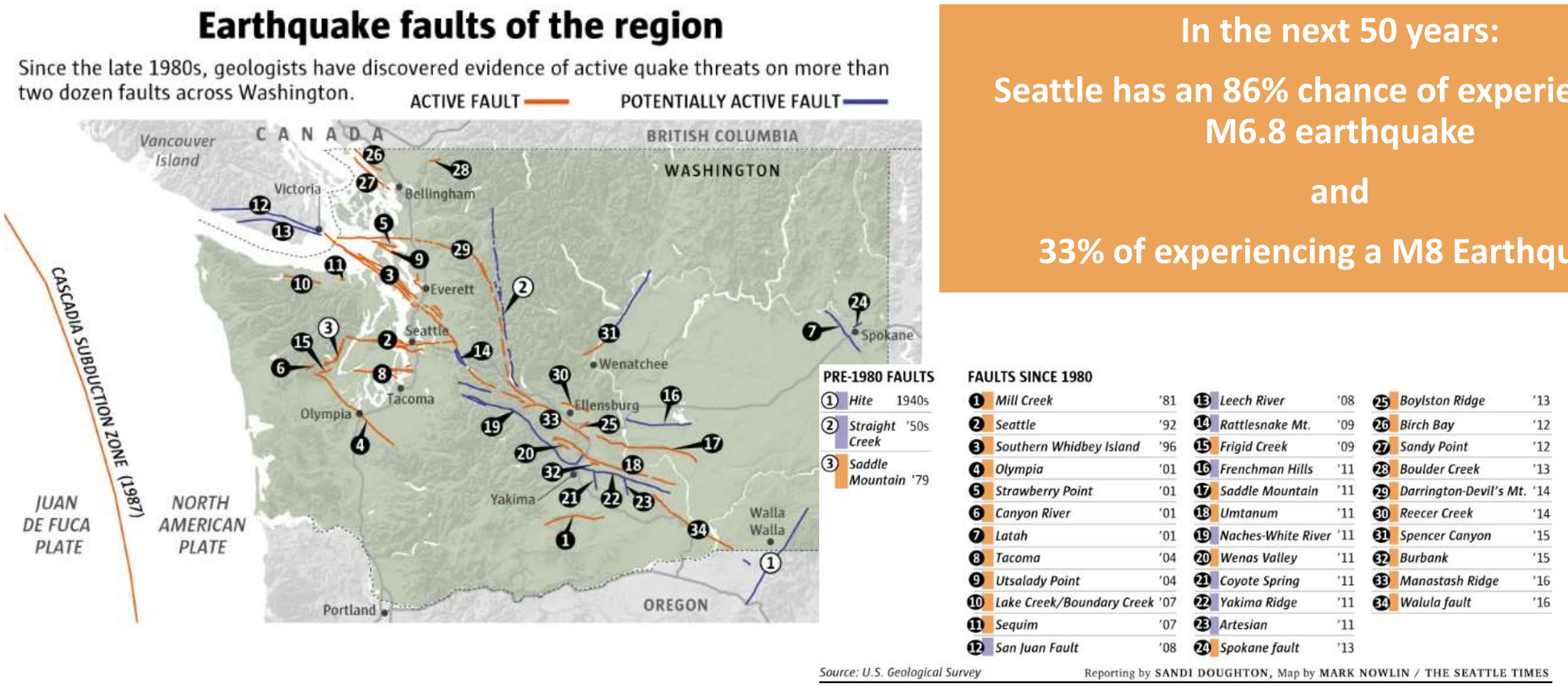
Meeting Goal:

- Provide update on URM Retrofit Program and provide opportunity for questions.
- Presentation intended for a technical audience or architects, engineers, specification writers and contractors.

Topics for Discussion:

- Seattle's earthquake vulnerability
- Recent code adoption for URM retrofit recognition
  - Retrofit documentation materials and submittal process
- URM Database Updates
- Funding incentives in development
- Questions and Answers

Earthquake Hazards



In the next 50 years:

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

and

33% of experiencing a M8 Earthquake.

Unreinforced Masonry (URM) Buildings

Nisqually Earthquake
Seattle, 2001

Canterbury Earthquake
Christchurch, NZ 2011

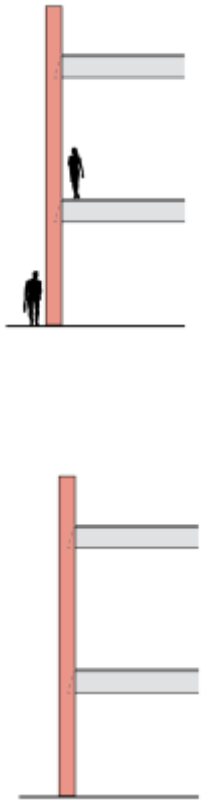


Image Courtesy Seattle Times

Seattle's URMS

Vulnerability Classification	Number of URMs	Proposed Compliance Timeline*
Critical vulnerability: emergency service facilities and schools	78	7 years
High vulnerability : • buildings over three stories in poor soil areas (e.g., liquefaction and slide areas) • buildings containing public assembly spaces with occupancies greater than 100 people	208	10 years
Medium vulnerability: all other buildings	828	13 years
Total Confirmed URMs	**1114**	

Number of URMs by classification, January 2025

*Compliance timeline is measured from the adoption of the mandatory URM retrofit

History of Seattle's URM work

1970s
- Adopt & Repeal URM Structural Standard
- URM construction banned

2001
Nisqually Earthquake

2012
- URM Inventory
- **Proposed Retrofit Standard**

2016
- URM Notification Letters

2017
- URM Policy Committee Recommendations

2021
- **Resolution 32033** established URM program goals

2022
- **Updating of Technical Standard**

2023
- **Published Draft Technical Standard**
- **Resolution 32111 & Director's Rule 6-2023**

2024
- **Adoption of Retrofit Recognition Codes** (2021 SEBC)

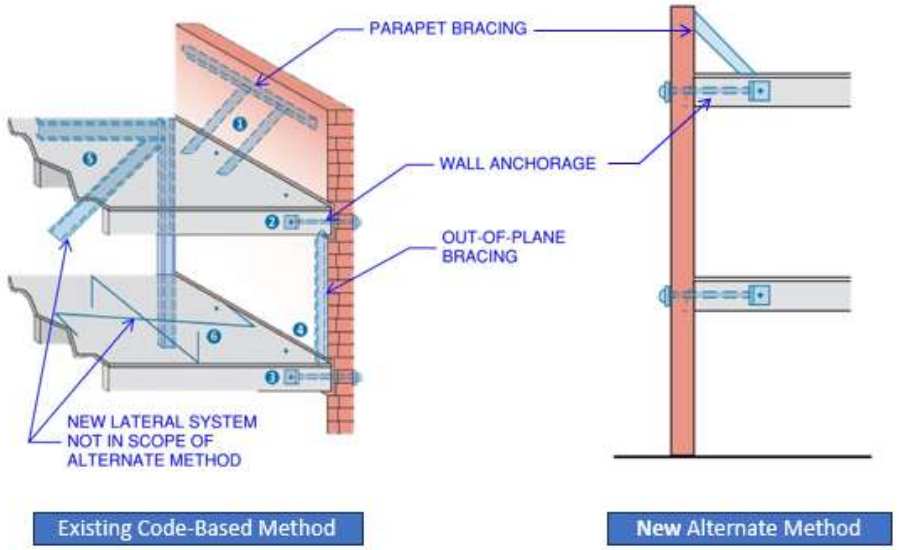


Image Courtesy Seattle Times

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

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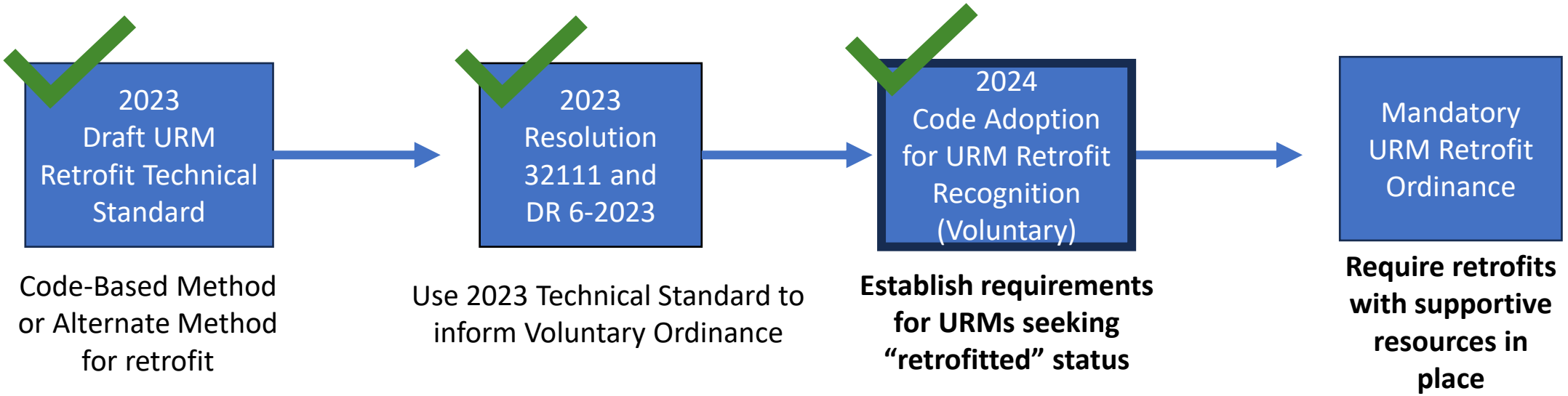
URM Program Goals (Resolution 32033)

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.



Questions?

2021 SEBC Seismic Regulations for URMs

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 URMs 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 SEBC Seismic Regulations for URMs

Code Adoption for URM Retrofit Recognition (Voluntary)

Establish requirements for URMs seeking "retrofitted" status

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

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 SEBC Seismic Regulations for URMs

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 URMs 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.

Alternate Method: Qualification Criteria

- 6 stories or less
- Risk category IV not permitted
- No weak story irregularity
- Mortar shear strength > 30psi (testing required)
- Wood diaphragms all levels above grade, no straight-sheathed diaphragms
- Two lines of resistance in each direction, open store front buildings may add a brace to qualify
- Wall piers h:w < 2:1 and at least **40 percent** of the total wall length
  - …or demonstrate the wall pier **DCR < 2.5** for in-plane forces

Procedure to Apply for Retrofitted Status

Unreinforced Masonry Buildings - Project Documents

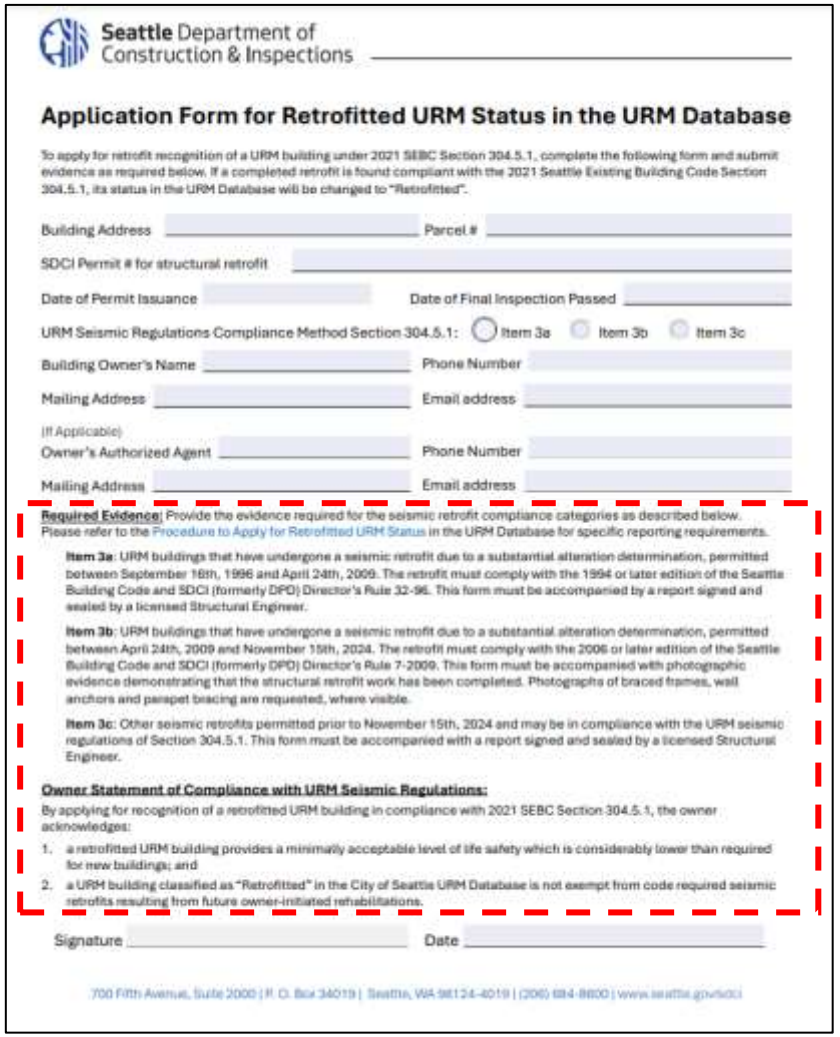
Project Documents

List of Unreinforced Masonry Buildings

- Updated Confirmed URM List (September 2024)
  - Data.Seattle.Gov Updated Confirmed URM List (September 2024). To view as a map, select the globe icon on the top of the page.
- Procedure to Appeal URM Building Designation
- Procedure to Apply for Retrofitted URM Status in the URM Database
  - Application Form for Retrofitted URM Status in the URM Database

1. Owner hires licensed structural engineer
2. Engineer evaluates building to determine URM
3. Engineer writes report
4. Report submitted to SDCI
5. SDCI reviews for compliance
6. SDCI notifies owner, updates database

Application Form for Retrofitted Status in URM Database



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Application Form for Retrofitted URM Status in the URM Database

To apply for retrofit recognition of a URM building under 2021 SEBC Section 304.5.1, complete the following form and submit evidence as required below. If a completed retrofit is found compliant with the 2021 Seattle Existing Building Code Section 304.5.1, its status in the URM Database will be changed to "Retrofitted".

Building Address _____ Parcel # _____

SDCI Permit # for structural retrofit _____

Date of Permit Issuance _____ Date of Final Inspection Passed _____

URM Seismic Regulations Compliance Method Section 304.5.1: ◯ Item 3a ◯ Item 3b ◯ Item 3c

Building Owner's Name _____ Phone Number _____

Mailing Address _____ Email address _____

(If Applicable)
Owner's Authorized Agent _____ Phone Number _____

Mailing Address _____ Email address _____

Required Evidence: Provide the evidence required for the seismic retrofit compliance categories as described below. Please refer to the Procedure to Apply for Retrofitted URM Status in the URM Database for specific reporting requirements.

Item 3a: URM buildings that have undergone a seismic retrofit due to a substantial alteration determination, permitted between September 16th, 1996 and April 24th, 2009. The retrofit must comply with the 1994 or later edition of the Seattle Building Code and SDCI (formerly DPD) Director's Rule 32-96. This form must be accompanied by a report signed and sealed by a licensed Structural Engineer.

Item 3b: URM buildings that have undergone a seismic retrofit due to a substantial alteration determination, permitted between April 24th, 2009 and November 15th, 2024. The retrofit must comply with the 2006 or later edition of the Seattle Building Code and SDCI (formerly DPD) Director's Rule 7-2009. This form must be accompanied with photographic evidence demonstrating that the structural retrofit work has been completed. Photographs of braced frames, wall anchors and parapet bracing are requested, where visible.

Item 3c: Other seismic retrofits permitted prior to November 15th, 2024 and may be in compliance with the URM seismic regulations of Section 304.5.1. This form must be accompanied with a report signed and sealed by a licensed Structural Engineer.

Owner Statement of Compliance with URM Seismic Regulations:

By applying for recognition of a retrofitted URM building in compliance with 2021 SEBC Section 304.5.1, the owner acknowledges:

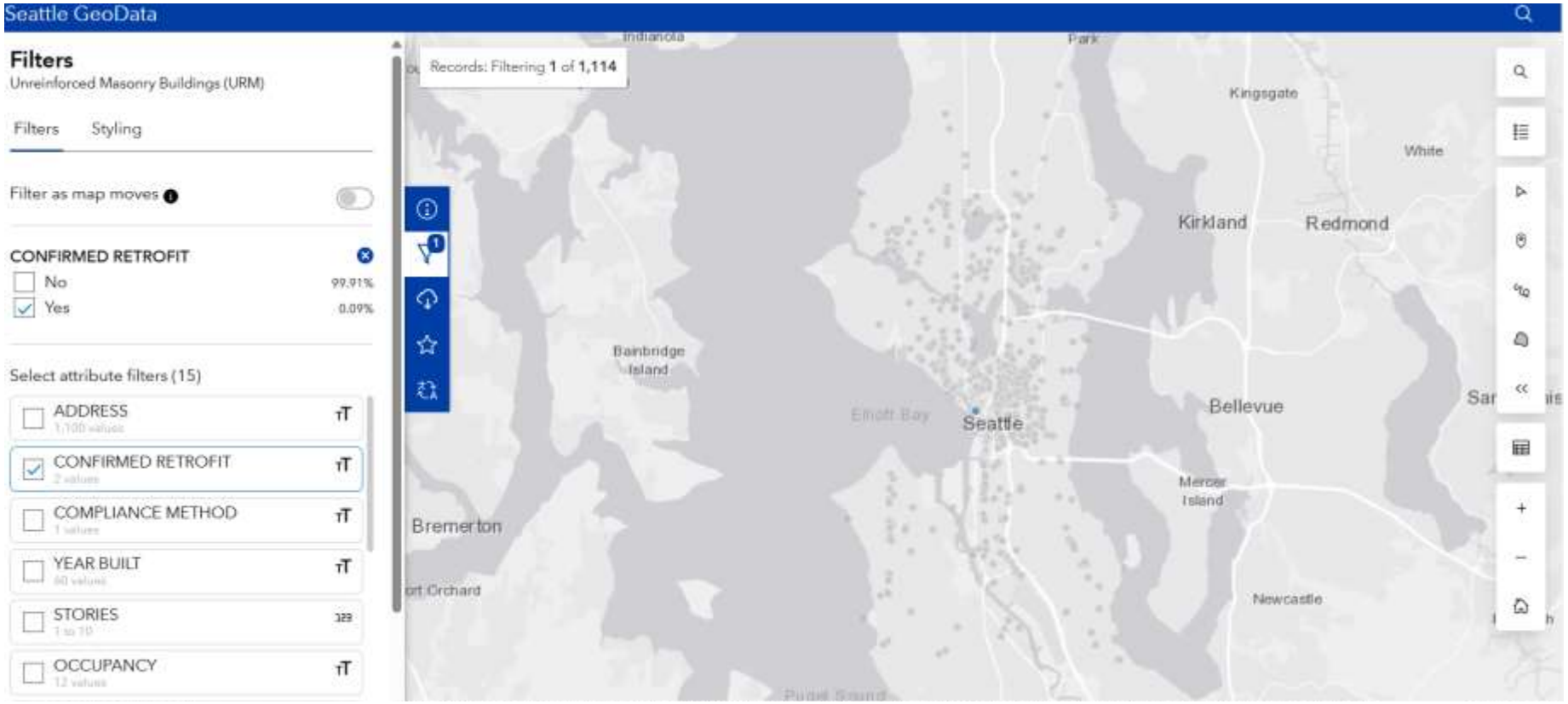
1. a retrofitted URM building provides a minimally acceptable level of life safety which is considerably lower than required for new buildings; and
2. a URM building classified as "Retrofitted" in the City of Seattle URM Database is not exempt from code required seismic retrofits resulting from future owner-initiated rehabilitations.

Signature _____ Date _____

700 Fifth Avenue, Suite 2000 | P. O. Box 34019 | Seattle, WA 98124-4019 | (206) 684-8600 | www.seattle.gov/sdci

- Required Evidence:
  - 1 or 2: Form only
  - 3a: Form & Report
  - 3b: Form & Photographic Evidence
  - 3c: Form & Report
- Owner acknowledgement:
  - A retrofitted URM provides a minimally acceptable level of life safety which is considerably lower than required for new buildings.
  - A URM building classified as "Retrofitted" in the database is not exempt from code required seismic retrofits resulting from future owner-initiated rehabilitations.

Database Updates



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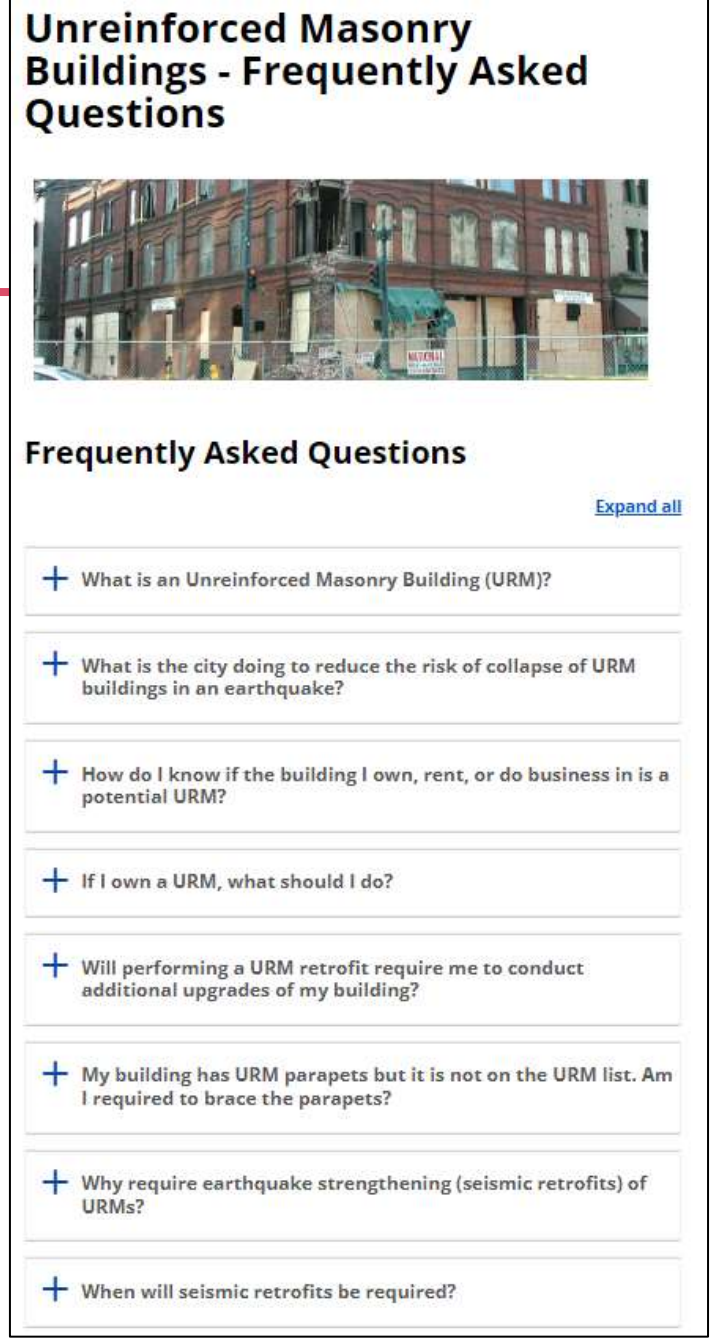
Close Table

ADDRESS	CONFIRMED RETROFIT	COMPLIANCE METHOD	YEAR BUILT	STORIES	OCCUPANCY	OCCUPANT LOAD	STEEP SLOPE	LIQUEFACTION PRONE	POTENTIAL SLIDE AREA	VULNERABILITY CLASSIFICATION	COUNCIL DISTRICT	NEIGHBORHOOD	OVERLAY DISTRICT	LANDMARK STATUS
110 UNION ST	Yes	3c	1910	5	Commercial/Office	101+	No	No	No	Medium	7	Downtown Commercial Core		

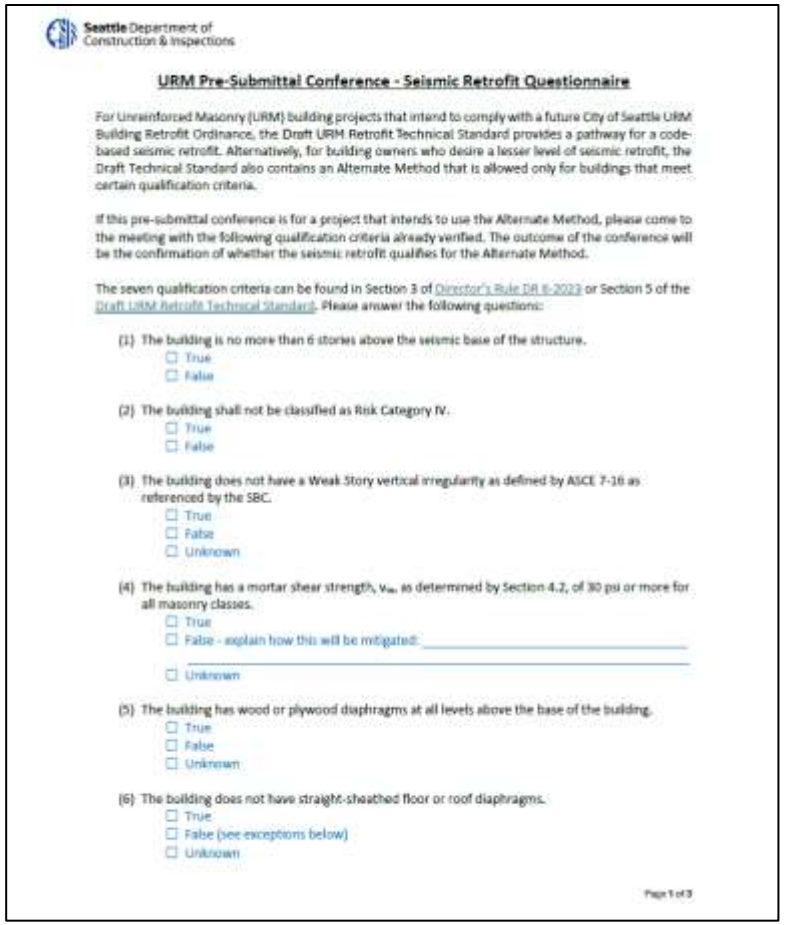
Key Updates

- 2021 Seattle Existing Building Code (SEBC)
  - Codifies URM retrofit recognition pathways and minimum standards
- Website Updates:
  - Organized Project Documents, Background Page
  - UPDATED: Procedure to appeal URM determination of non-URM building
    - Now reflects code definitions
  - NEW: FAQ Page
  - NEW: Procedure and Application to demonstrate retrofit status of URM building (Status change in URM Database)
  - NEW: Construction Pre-Submittal Conference Seismic Retrofit Questionnaire (*Project Documents Page*)
  - NEW: Updates to the City of Seattle URM Database



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)



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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_m, 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

Page 1 of 3

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
  - Pursuing a House Bill to fund a study on tax incentives for retrofits.
    - Jan. 15, 2025 Working Session with House Legislative Committee on Technology, Economic Development, and Veterans (TEDV).
- Transfer of Development Rights
  - Pursuing 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. Masons of Washington
19. Masonry Institute of WA
20. Bricklayers and Allied Craftworkers Local 1 WA/AK
21. American Institute of Architects (AIA)- WA Chapter
22. Structural Engineers Association of WA (SEAW)
23. WA State Seismic Safety Subcommittee of the Emergency Management Council
24. WA State Emergency management Association (WSEMA)
25. WA Association of Education Service Districts (AESD)

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)
    - Awarded 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)
  - FEMA Grant application submitted for development of financial incentives- working with National Institute of Building Sciences (NIBS) to develop business cases and financial tools, with support of lenders, insurers, real estate experts, and impact investors.

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.

Comments/ Questions/Input?

Comments to Technical Standard:

Derek Ohlgren, P.E.

URM Program Lead Engineer

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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?
- How can CSI help connect building owners with qualified retrofit experts?