



Unreinforced Masonry (URM) Building Retrofit Project

OCTOBER 4, 2017 POLICY COMMITTEE MEETING

October 4, 2017 Agenda

- 3:00** Welcome & introductions (*Margaret Mahoney, Chair*)
- 3:05** Public comment period
- 3:35** Review remaining recommendations and reach consensus on final Policy Committee recommendations
 - Mandatory requirements for Class 3 URM buildings (options 1 thru 5)
 - Building placarding and tenant notification
 - Houses of worship
 - Enforcement

Consensus Items

- URM buildings Class 1 and 2, including schools, shall be retrofitted to the standards and time frames established by the Retrofit Standards Committee.
- Revise Title 24.85 to close existing loopholes and lower some passive trigger thresholds for URM buildings.

Title 24.85

Seismic Regulations for URM Buildings

First Trigger

Roof replacement – removal of greater than 50% of total roof area within a ~~5~~ 15 year period requires conformance to ASCE-41 standards for:

- Wall anchorage for both in plane and out of plane forces
- Parapet bracing

Title 24.85

Seismic Regulations for URM Buildings

Second Trigger

When costs associated with building alterations or repair in a ~~two~~ **five** year time period **or fifteen year time period** exceeds costs listed in table below, entire building shall be improved to resist seismic forces to meet ASCE ~~31~~ **41** criteria

| Building Description | Cost of Alteration / Repair in a Five year time period | Cost of Alteration / Repair in a Fifteen year time period |
|---|--|---|
| Single Story | \$40 per sq.ft. | 2x Five year costs |
| Building two stories or greater | \$30 per sq.ft. | 2x Five year costs |
| Special building hazard: Buildings in relative hazard categories 5 or with vertical or plan irregularities | \$30 per sq.ft. | 2x Five year costs |

Consensus Items

- Create positions at BDS and PDC to assist URM building owners to navigate the retrofit process, including design, permitting and financing.
- Develop a public education campaign about earthquake risks in general and URM buildings in particular.
- Voluntary placarding by a URM building owner when the building has been upgraded to meet City standards.

Incentives

- Waiver of permit fees and additional upgrade triggers beyond seismic.
- Seismic Commercial Property Assessed Clean Energy – Multnomah County PropertyFit Program.
- Central City FAR bonus and transfer for historic and contributing structures.
- Tax exemption for seismic retrofits.
- \$5M Old Town/Chinatown Urban Renewal Area.
- Seismic Rehabilitation Grant Program (schools).
- Federal Rehabilitation Tax Credits: 20% historic structures/10% commercial buildings constructed before 1936.

Outstanding Items

Extent of seismic upgrades that should be mandated for **URM Class 3** buildings and what aspects of the seismic upgrades should trigger financial incentives that become available under SB 311.

Mandatory Requirements for URM Class 3 Buildings

Option 1: Strengthen Title 24.85

- Amend triggers for roof repair or replacement and/or costs of alterations or repair.
- No other mandatory seismic upgrades would be recommended under this option.

Life Safety Implications for Option 1

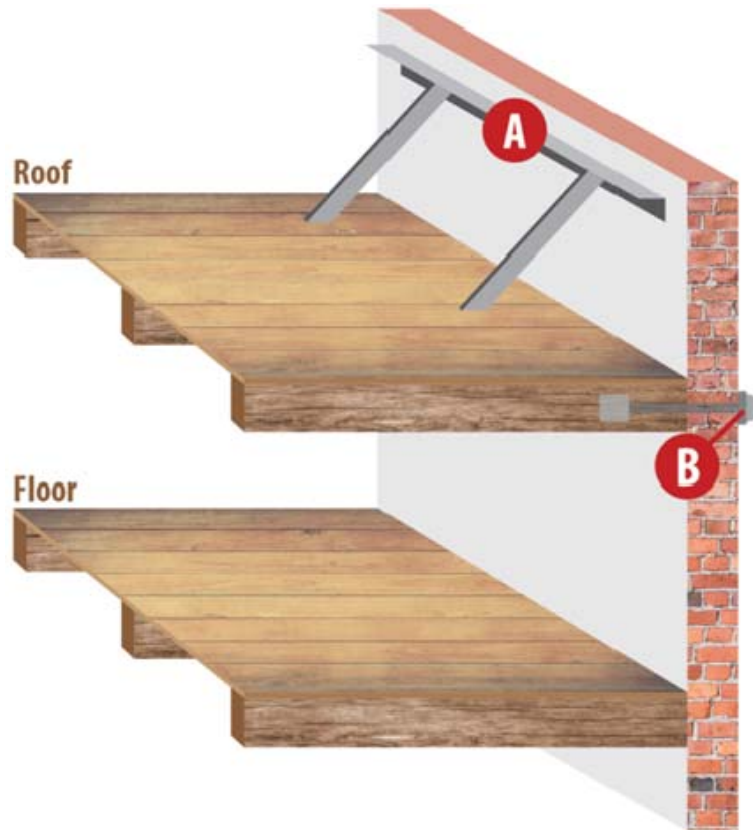
Maintains the status quo with the possible improvement in compliance with existing regulations.

Existing regulations have not seen much progress in the reduction of hazards posed by URM buildings to occupants, the public or to the resilience of the city.

Mandatory Requirements for Class 3 URM Buildings

Option 2: Lowering Risk to Passers-by via Parapet Bracing and Roof Attachment

Time Frame: ASCE-41 – Evaluation to be completed by end of year 5
– Items A & B to be completed by end of year 10



A – Brace parapets

B – Attach wall to roof

Mandatory Requirements for Class 3 URM Buildings

Option 2: Lowering Risk to Passers-by via Parapet Bracing and Roof Attachment

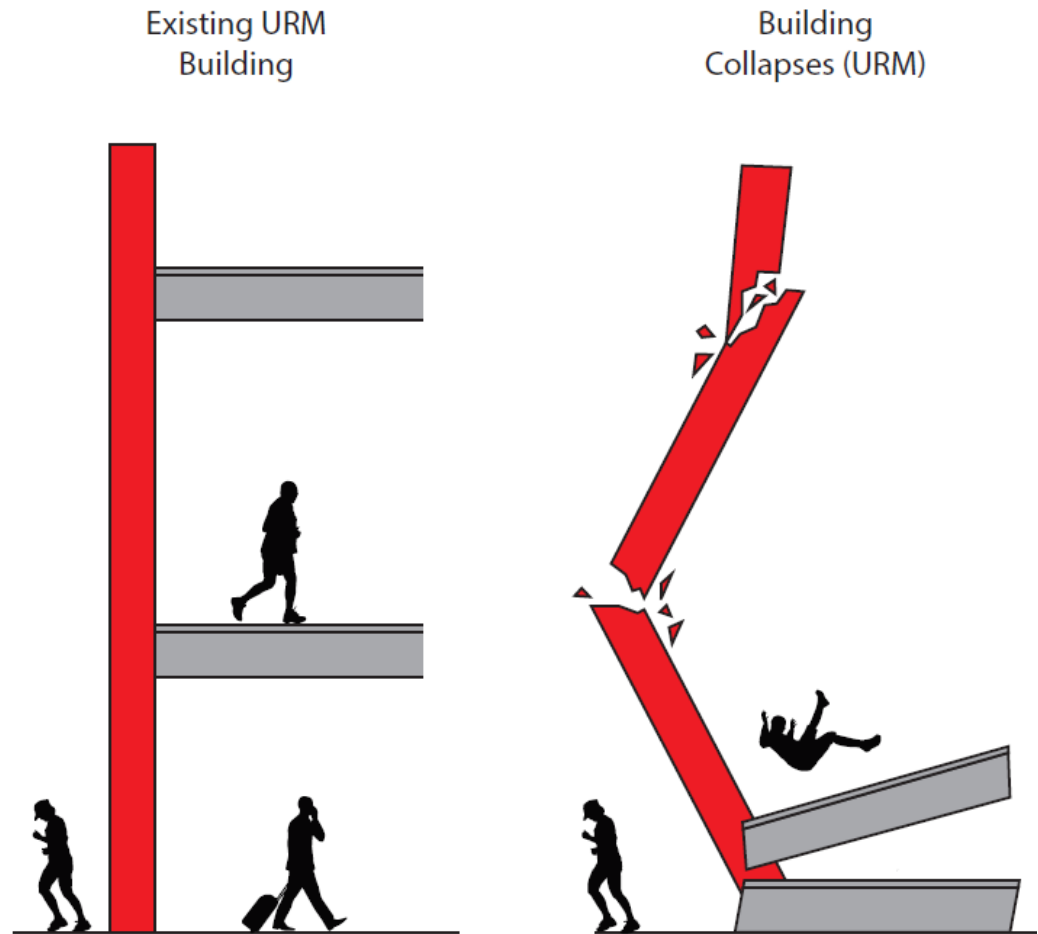
- Allow SB 311 financing if work is expedited in five years.

Life Safety Implications for Option 2

- Maintains the status quo and does little to enhance safety and reduce the hazards posed by the URM buildings beyond what is currently required by Title 24.85 without any subsidy.
- Less stringent than what is required by Title 24.85.
- For buildings two or more stories, these steps do not achieve even the minimum safety level of collapse prevention.

Existing Un-Retrofitted URM Building

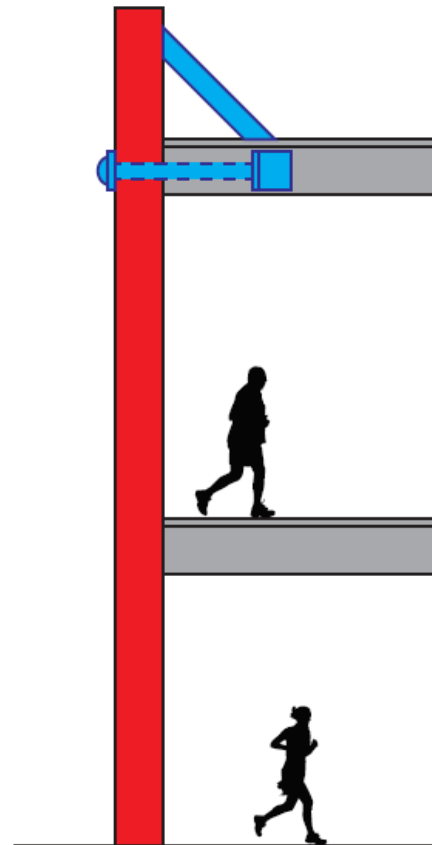
Life Safety Implications



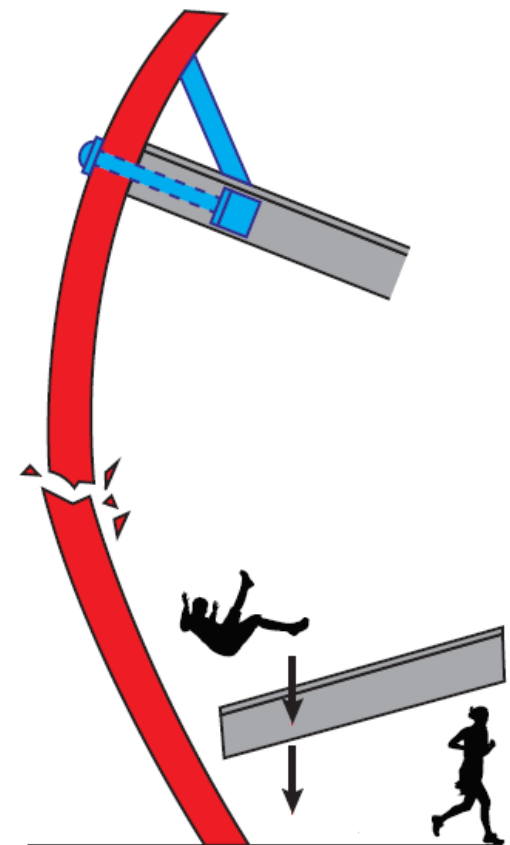
Option 2: Lowering Risk to Passers-by via Parapet Bracing and Roof Attachment

Life Safety Implications for Option 2

Step 2 Retrofit



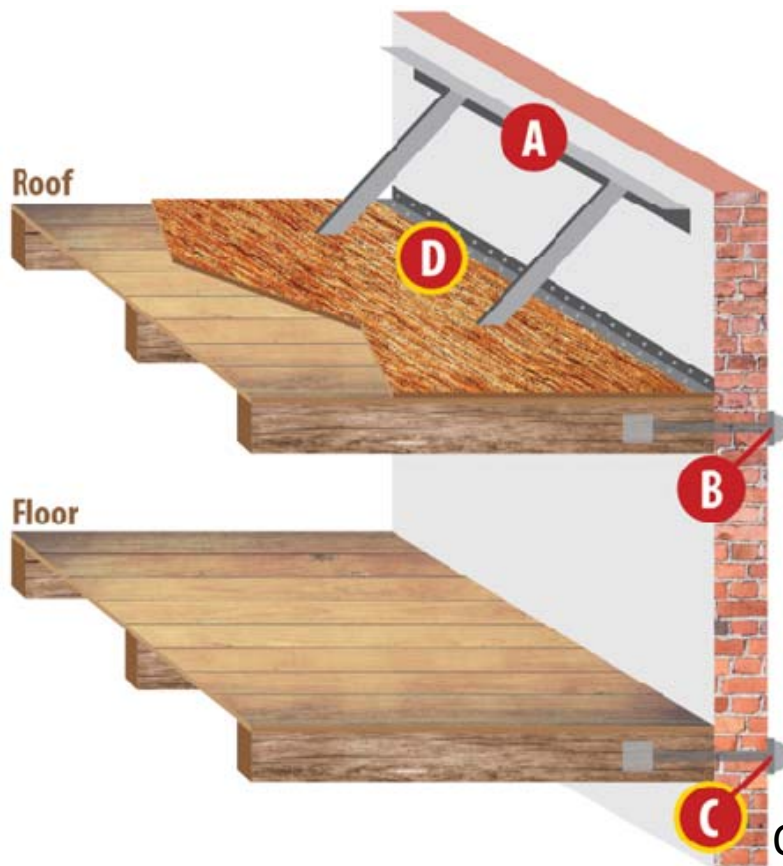
Building Collapse with Step 2 Retrofit



Mandatory Requirements for Class 3 URM Buildings

Option 3(a): Collapse Risk Reduction through Incentives

Time Frame: ASCE-41 – Evaluation to be completed by end of year 5
– Items A & B completed by end of year 10
– Items C & D completed by end of year 15



A – Brace parapets

B – Attach wall to roof

C – Attach wall to floor (optional)

D – In plane shear attachments
and roof sheathing, ties, cross ties

Mandatory Requirements for Class 3 URM Buildings

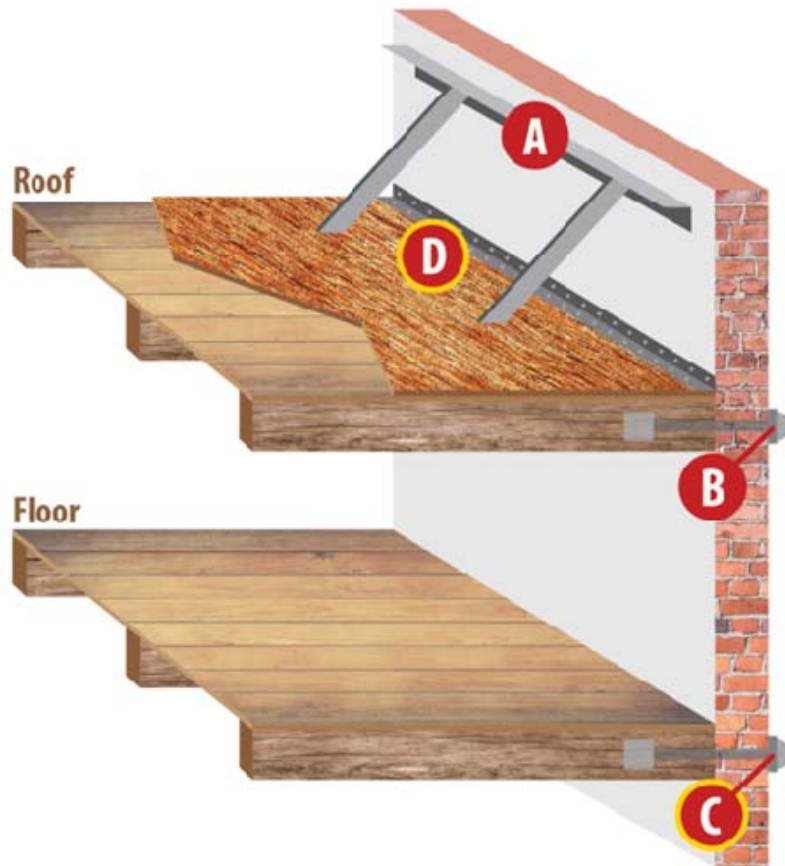
Option 3(a): Collapse Risk Reduction through Incentives

- Encourage building owners to go beyond the basic mandate by making available public funds through implementation of the program authorized under SB 311.
- SB 311 incentives could be used to fund work included in the scope of Step 3 requirements or to incentivize early implementation of Steps 1 and 2. Steps 1 and 2 work to be completed in five years and Step 3 work completed within 15 years.
- The URM building owner can voluntarily do a full seismic upgrade (Step 4) and apply funds through SB 311 program.

Mandatory Requirements for Class 3 URM Buildings

Option 3(b): Collapse Risk Reduction through Mandate

Time Frame: ASCE-41 – Evaluation to be completed by end of year 5
– Items A & B completed by end of year 10
– Items C & D completed by end of year 15



A – Brace parapets

B – Attach wall to roof

C – Attach wall to floor

**D – In plane shear attachments
and roof sheathing, ties, cross ties**

Mandatory Requirements for Class 3 URM Buildings

Option 3(b): Collapse Risk Reduction through Mandate

Same as Option 3(a) except

- Step 3 (wall to floor attachment, new sheathing, cross ties) is part of **mandate**.
- Public funding be made available to all URM building owners for all work covered by Steps 1, 2, and 3.

Mandatory Requirements for Class 3 URM Buildings

Option 3(a) & 3(b): Collapse Risk Reduction

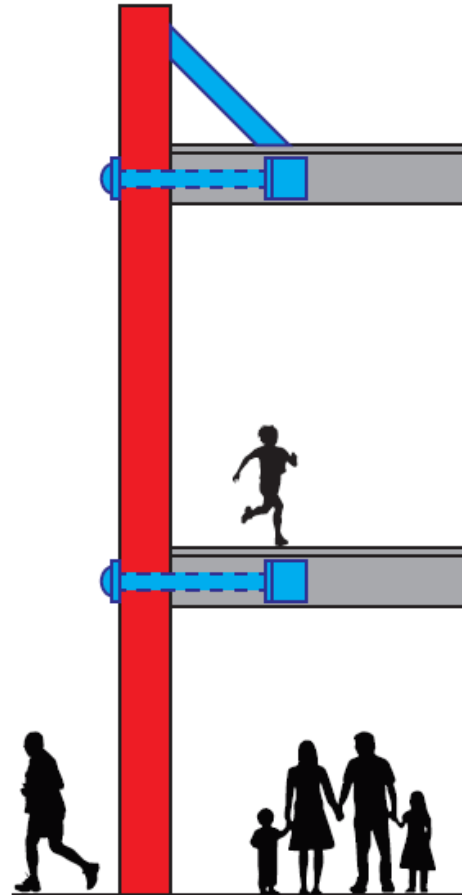
Life Safety Implications

- Unbraced walls would not meet the minimum standard of collapse prevention or the minimum *Bolts Plus* standard adopted by other jurisdictions.
- Option 3(a) does not accomplish much more than the status quo where building owners choose not to attach walls to the floors to take advantage of the incentives.

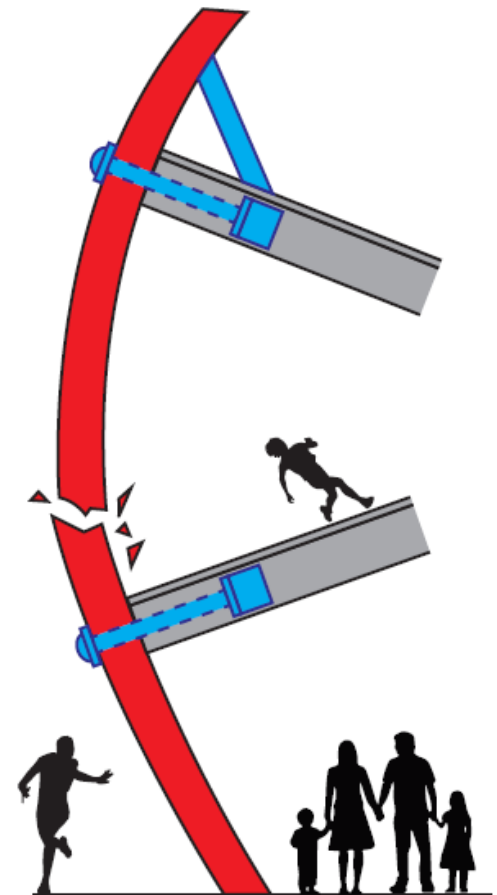
Option 3(a) & 3(b): Collapse Risk Reduction

Life Safety Implications

Step 3 Retrofit



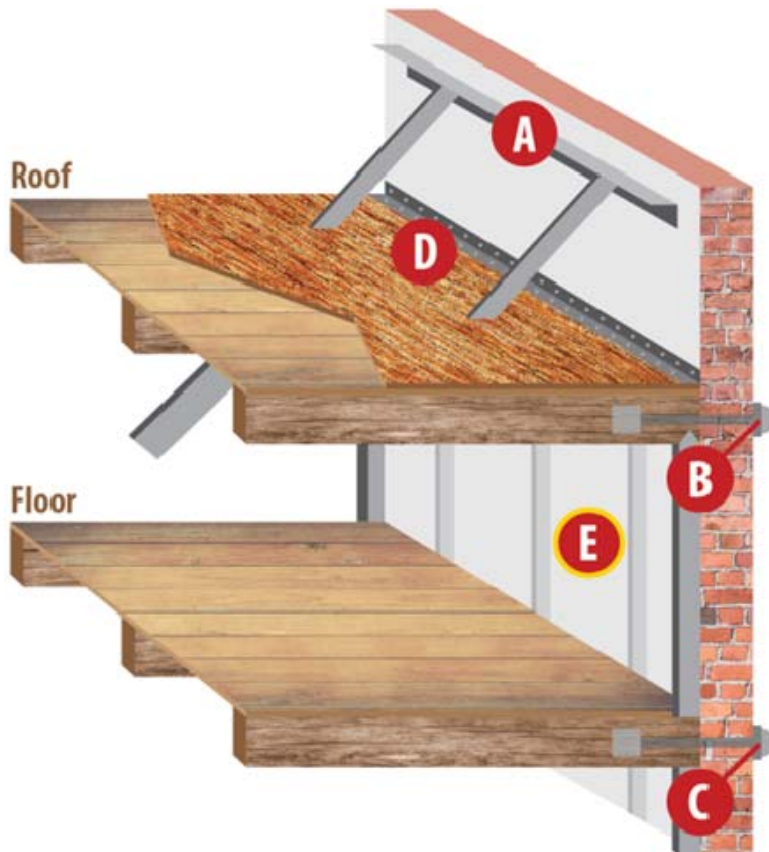
Building collapse with Step 3 retrofit



Mandatory Requirements for Class 3 URM Buildings

Option (4): Collapse Prevention – Bolts Plus Upgrade

Time Frame: ASCE-41 – Evaluation to be completed by end of year 5
– Items A, B & D completed by year 10
– Items C & E completed by year 20



- A – Brace parapets
- B – Attach wall to roof
- C – Attach wall to floor
- D – In plane shear attachments and roof sheathing, ties, cross ties
- E – Out of plane wall bracing**

Mandatory Requirements for Class 3 URM Buildings

Option (4): Collapse Prevention – Bolts Plus Upgrade

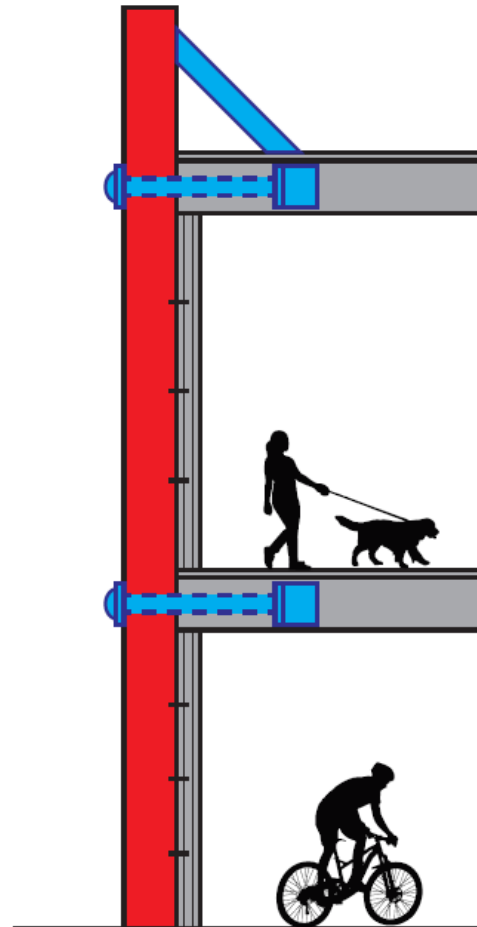
Life Safety Implications

- Mandatory requirements under this option would only achieve the Bolts Plus standard used by other cities in California.
- Bolts Plus is less than the Life Safety performance objective and is closer to the Collapse Prevention standard.

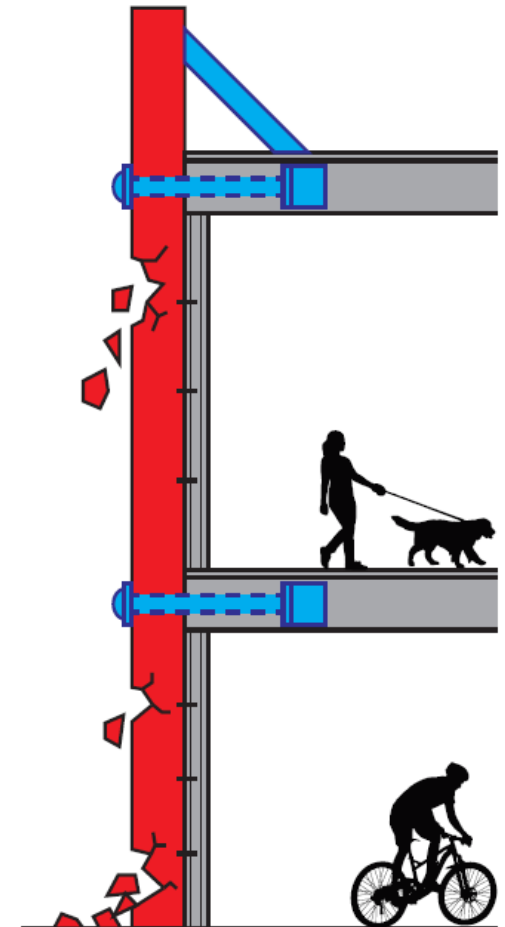
**Option (4):
Collapse
Prevention – Bolts
Plus Upgrade**

**Life Safety
Implications**

Step 4
Bolts Plus Retrofit



**Building
Stays Intact**



Mandatory Requirements for Class 3 URM Buildings

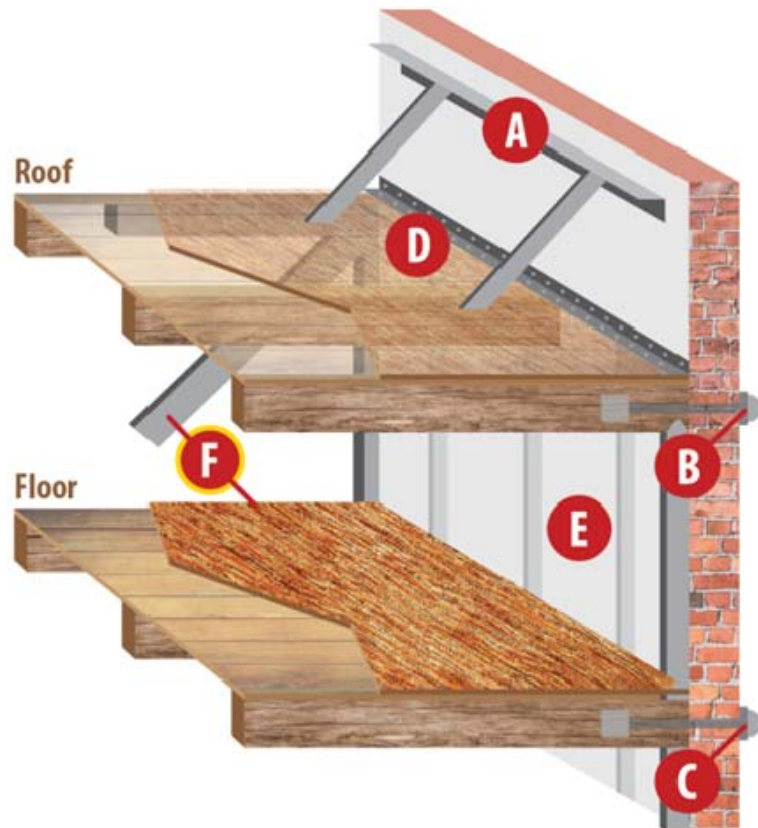
Option (5): Life Safety Upgrade

Time Frame: ASCE-41 – Evaluation to be completed by end of year 5

– Items A, B & D completed by year 10

– Items C & E completed by year 20

– F to be completed 10 years after additional incentives are available
or year 25 whichever is later



A – Brace parapets

B – Attach wall to roof

C – Attach wall to floor

D – In plane shear attachments and roof sheathing, ties cross ties

E – Out of plane wall bracing

F – **Other upgrades as required (vertical bracing, floor sheathing, etc.)**

Mandatory Requirements for Class 3 URM Buildings

Option (5): Life Safety Upgrade

Life Safety Implications

From a life safety and community resilience standpoint this is the most desired option but it is also the most costly and disruptive option from an owners' standpoint. It would require substantial funding to offset costs that the owners are expected to bear.

Mandatory Requirements for Class 3 URM Buildings

Further Considerations:

Options 1, 2, and 3

- Notify tenants and place placard on URM buildings that have not been fully upgraded informing the public of potential poor performance of the building in the event of a moderate or strong earthquake.

Class 3 URM Building Discussion

*Note: Class 4 URM building upgrade requirements should match Class 3 URM retrofit standards, with the exception of the ASCE-41 evaluation.

Outstanding Items

Class 2 Houses of Worship

Should URM Class 2 houses of worship be exempt from complete seismic upgrades as required for other URM Class 2 buildings?

- Policy sub-committee recommended seismic retrofits only through Step 2 should be required and a placard be placed on the buildings to inform the public of the potential of poor performance of the URM structure in the event of a moderate or strong earthquake.

Outstanding Items

Enforcement

The draft report of the Policy Committee includes a tiered system of penalties including fines, placarding of buildings, and revocation of occupancy certificates.