

**URM - AMENDMENTS ONLY**

37364

IF YOU WISH TO SPEAK TO CITY COUNCIL, PRINT YOUR NAME, ADDRESS, AND EMAIL.

NAME (PRINT)

ADDRESS AND ZIP CODE *(Optional)*

Email *(Optional)*

✓ Ezell Watson		
✓ Pastor Mandaine		
✓ Dr. L Haines		
✓ Bishop Irving		
✓ Pastor Tate		
✓ Dr. Hennessee		
✓ Alonzo Chadwick		
✓ Tim Even		
✓ Vik savara <del>XXXXXXXXXX</del>		
✓ <del>Vik</del> Kathy Rogers		
Paul Dingle		

Agenda Item 480

TESTIMONY

2:00 PM TIME CERTAIN

**OPPOSE  
APPEAL**

**APPEAL OF TMT DEVELOPMENT COMPANY**

**901-919 SW TAYLOR ST, LU 16-265061**

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Lyndsay Levy	2530 NW Westover PDX 97210	dennylyndsey@msn.com
Robert Hunter	910 SE STARK ST PORTLAND, OR 97214	rhunter@robeshunter.com
<del>Jeffrey Johnson</del>	2083 NW Johnson St #66	piano.jeffrey@comcast.net
✓ John Hollister		
✓ Angie Even		
✓ Roger Jones	2936 St Taylor St 97214	AvrJayPDX@gmail.com

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90

UNREINFORCED MASONRY BUILDINGS (URM)

37364

IF YOU WISH TO SPEAK TO CITY COUNCIL, PRINT YOUR NAME.

Number	Name (please print)	Address & Zip Code (optional)	Email (optional)
✓ 1	DAVID G. Gwyther	929 SW Salmon St #300	DAVIDGGwyther@yahoo.com
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left ✓ 9	Kevin Myers	5827 SE 43rd 97202	
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✓ 11	Tom Dyke	2827 NE 20th Ave Portland	tomdyke1@gmail.com
12	<sup>Dana</sup> Dana Atwood	33 SW 3rd Portland, OR 97204	
13	Chloe Atwood	33 SW 3rd Portland, OR 97204	
14	ASTER ATWOOD	33 SW 3rd Portland, OR 97204	
✓ 15	Jim Atwood	33 SW 3rd Portland, OR 97204	
✓ 16	Gregg Harris - <small>Roger Jones spoke for him</small>	1510 SE 44th Ave #101 Portland, OR 97215	RooseveltsPPX@gmail.com
✓ 17	Alex Roth	Northeast Portland	
✓ 18	TERI JOLY	NW Portland 97229	TERI1229@gmail.com
✓ 19	Bill EASTMAN	SE FOSTER RD 97206	wm.a.eastman@gmail.com
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Number	Name (please print)	Address & Zip Code (optional)	Email (optional)
✓ 21	Tricia Saunders	(97210) 209 NW 23rd Ave.	tricia.flora.saunders@gmail.com
✓ 22	John Fricke	1831 SE Hawthorne	
✓ 23	Kathy Rogers	3815 SE Ankeny St. Portland, OR 97214	
✓ 24	MARK ROGERS	3815 SE ANKENY ST	
25	Will Prouty	2325 SE Taggart Portland Or 97202	
✓ 26	MARK STROMME	2300 SW BROADWAY DR	MSTROMME@AOL-
✓ 27	Jay Raskin	2418 SW Troy Street	jay@jayraskinarchitecture.com
✓ 28	Kayla Anchell	1509 NE 10th Ave	Kaylaanchell@gmail.com
✓ 29	Anne Kilkenny	903 NW Davis	
✓ 30	Jeremy Kleyla <span style="color: blue;">Kleyla</span>	97030	Jeremy.kleyla.Dynamics@gmail.com



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Number	Name (please print)	Address & Zip Code (optional)	Email (optional)
✓31	Lee Fehrenbacher	<del>18445</del> 2424 SE 11 <sup>th</sup> Ave	lee@hfore.com
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✓34	Andrew Bohl	PDX 97210	
✓35	Chris Tufts	↓	
left 36	Brian Faherty		
37	LEON DRENNAN	127 SW BROADWAY	
✓38	Tim Holmes	217 WE 8 <sup>th</sup> Plz	
39	Peggy Moretti	Restore Oregon (URM Committee)	
✓40	Pippa Arend	209 NW 23 <sup>rd</sup>	



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Number	Name (please print)	Address & Zip Code (optional)	Email (optional)
✓ 41	Sanela Ruznić	209 NW 23rd Ave # 301	
42	Elaine McArdle	209 NW 23rd 97210	
✓ 43	Susann Rice	1599 SE Hawthorne Blvd	
44	Jim Wilson	P.O. Box 28562 <del>843 N Kn.</del> PDX 97228	
left 45	Stephanie Pollan	843 N Knott # 304 PDX	
✓ 46	LISA WARD	2527 SE 80TH AVENUE PORTLAND, OR, 97206	
✓ 47	Lynn Hanrahan	2718 SE Brooklyn St. PDX 97202	
? 48	MARCUS IRVING	2149 N. WILLAMETTE BLD. 97217	
✓ 49	Robert Hunter	910 S = STARK ST PDX 97214	
✓ 50	Michael Feves	2284 NW Thurston	

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Number	Name (please print)	Address & Zip Code (optional)	Email (optional)
✓ 51	Richard Larson		
✓ 52	PAUL MEDICA	3354 SE BELMONT ST PORTLAND OR 97214	p_medica@hotmail.com
53	Meghan McGuire	1831 NE Broadway	
54	Lew Longmire		
55	Susan Emmons	97209	
✓ 56	Steve Rocz	97209	
57	Amanda Robichaux	626 SE Alder St Portland OR 97232	amandajohnson@schneiderlaw.com
58	Summer Jensen	629 SE Morrison Portland OR 97214	
59	Chandler Hicks	" "	
✓ 60	BEN KAISER	3530 N. VANCOUVER STE 330	ben@kaisergroupinc.com

please call us by 5:00pm

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Number	Name (please print)	Address & Zip Code (optional)	Email (optional)
61	RUDY MVNZEL		
✓ 62	Fred Leeson	2226 NE Hancock St.	
63	Maya Foty		m.foty@arg-pnw.com
✓ 64	<del>Diana</del> Hwang	1133 NE 37th Ave.	
65	Denise Pratt x Bill Pratt	12423 SE Knapp St.	denisegigi3@gmail.com
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✓ 67	Roseanne Romaine	2811 NE Glisan St	roseanne@pamkiche.com
✓ 68	Dorothy Cotfield	11 The Grandview 1001 SW 5th Ave S-1100	cotfield@hevanet.com
69	Lyndsay Levy	2530 NW Westover 97210	dennilyndsay@msu.com
✓ 70	Shea Gilligan		shea@brettschulz.com



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71	Ray Johnson		Sambellamer@gmail.com
✓72	James Bela	3412 SE 160TH AVE PORTLAND OR 97236	sasquak@gmail.com
73	MARK Mizrahi	4408 SE 27 <sup>th</sup> Portland OR 97202	
74	Malia Jensen	1217 NE Failing St Portland OR 97212	malia@maliajensen.com
75	Linda Jo Devlee mnck	8911 N Leonard Portland, OR 97203	lindaJo@community ofhopepdx.org
✓76	Vik Savara	772 SW Broadway Dr. PDX 97201	viksavara@gmail.com
spoke 77	WALT MONONIES	601 SW Second Avenue	—
✓78	MIRIAM PORTNEY	3433 SE Belmont St. apt 16 Portland OR 97214	mimiportney@yahoo.com
79	KEITH MILLER	3384 SE MILWAUKIE 97202	mskin@chantiques.com
80	Dave Boh	1811 NW Couch St Apt/01 97209	



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81	Patrick Hilton	97209	
82	<del>Gabrielle Sampson</del>	<del>97210</del>	<del>gab.sampson@gmail.com</del>
83	left Matt Reich	97209	matt@reichpa.com
84	Virginia Hankins	97227	
85	EMILY STATZMAN	97211	
86	Richard Young	97232	<del>rich@young.com</del>
87	Stewart MacUey	97210	
88 33 <sup>rd</sup>	Robert Butler	503 222 4949	butler brokers
89	↓ ↓ ↓		@ BWEST OFFICE NET
90	↓ ↓ ↓		

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Paul Medica  
3354 SE Belmont St.  
Portland, OR 97214  
p\_medica@hotmail.com

In preparing for this testimony, I took the time to examine other URM improvement programs around the county. Actually, made a trip to San Francisco and Charleston South Carolina. I am sure most of you do not realize that the City of Charleston suffered an estimated magnitude 7.7 seismic event in the 1890's and another minor event in 1921. I also searched the web, somewhat extensively as I wanted to find a case where a municipality or county successful instituted an URM seismic upgrade program in an area where there had been no seismic events. I came across FEMA's P-774 document, which is very interesting, and I submit to this council, they should at least brose it.

It was written for use by a non-technical audience, including government officials, building owners, and the general public. It also contains relevant information for building officials, consulting structural engineers and building contractors.

Titled: Unreinforced Masonry Buildings and Earthquakes; Developing a Successful Risk Reduction Program.

What constitutes success? That's an interesting question however I am not going there.

In the casework that FEMA references in this study, successful seismic Improvement Programs have two common characteristics

- 1) State or Local Funding with support of local financial institutions.
- 2) Program inception after a recent seismic event – "recent" carries the distinction of "within 4 years" based on the case studies they examined.

Which this program has neither.

It's noteworthy how the report outlines the State of Oregon attempted to Promote Earthquake Safety in Public Schools and Emergency Facilities with its's "GO Bond Task Force" reference no. 24, however they are yet unsuccessful in bring to voters a bond that has been approved.

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“A retrofit project in an apartment building that displaces residents for weeks or months presents the problem of where those residents will find temporary housing. Are apartment building’s providing low-rent housing, if so, will the retrofit costs to tenants in the form of higher rents be a major economic burden.”

I believe so.

I performed a bit of “beat” walking and spoke with tenants in the apartments identified on the cities EMS map that are designated Class 3, these are near a building I manage. I also, surfed Zillow for vacancy’s and more importantly, the rent rates. I found that tenants in those URM buildings are paying on average 18% less than what Zillow identifies as the going rate (the average is from a sample size of 12). Then it came to me - was it not on the 12<sup>th</sup> of April that Mayor Wheeler reference affordable housing as being his number one priority in this city? I have to say that approval of this resolution will have unanticipated effects on those that this city most definitely wants to support – low or medium income earners who want to make their residence in an established neighborhood with stable businesses and where they can build some level of friendship with their neighbor.

“The study goes on to urge local planners to examine and focus their attention first on areas of redevelopment or urban renewal. The area’s where there is already in place some level of financial incentive or civic interest in area renovation.”

This plan has does not - it treats everyone equally!

Voting to approve this “resolution” which will set in motion the long-range planning for implementation would in effect: set a precedence. In that, it would be the first case where a municipality or local government mandates URM owners to bear the brunt of the costs for upgrades, lacks a recent significant seismic event and most importantly, is contrary to the city’s no. 1 priority that being affordable housing.



Testimony of Michael Feves, Ph.D.  
Portland City Council  
May 9, 2018

RE: Seismic Retrofit Policy

Mayor Wheeler and members of the Council. My name is Michael Feves. My family has owned and operated apartments in Portland for over eighty years. I am also a consulting geophysicist with a PhD from MIT.

Over 200 of our apartment units are in URMs. The average rent for these apartments is \$981, with some units renting for less than \$500.

I am here to support Mayor Wheeler's amendments to the proposed resolution. In particular, I support removing the requirement that all floors be bolted to exterior walls. All cost benefit studies, including the one commissioned by the City of Portland, indicate that retrofitting of parapets, chimneys and cornices produce the greatest benefit for the least cost. These retrofits will not displace residents and can be made affordable with some financial assistance.

Bolting of floors to walls requires relocation of residents, but more importantly, it is too expensive. If I am forced to bolt floors to walls there are two likely scenarios: 1) since I am spending the money for the retrofit, I might as well do extensive other renovations and either convert the buildings to condominiums or raise rents significantly; or 2) I will sell my properties to developers who will demolish the buildings. In either case the city will lose more than 200 affordable units.

Mayor Wheeler's amendment to extend the retrofit time frame to 20 years is realistic. However, in order to accelerate completion of retrofits, the City should provide financial incentives to owners who complete the retrofits in a shorter period, say within 10 years.

The formation of a committee to work out the details is also a good idea; provided that tenants, commercial building owners and apartment owners have representation on the committee.

Thank you and the City staff for the hundreds of hours that have gone into this project so far. I hope and believe that with your YES vote for Mayor Wheeler's amendments we are close to the finish line.

# TSG Services

37364



Nancy R. Chapin • Owner

PO Box 6762, Portland, OR 97228-6762; Phone/Text: 503-313-1665; e-mail: [nchapin@tsgpdx.com](mailto:nchapin@tsgpdx.com)

**Date:** May 9, 2018

**To:** Mayor Wheeler, Portland City Commissioners, et al

**Regarding:** Unreinforced Masonry Recommendations (URM) Process

Portland is my City. I was born here. I completed my MPA degree here and I've been involved with the Business Districts of Portland since 1988 – 30 years.

I get a kick out of driving through the different Districts – some so modern and “up-to-date”; others almost entirely reminiscent of the beginnings of the last Century: 1909, 1922, 1936 and in between. Either way, my City makes me smile at its built out similarities and differences.

I want my City to be safe, too; however, I want the places where the children are – our future – to be made our current version of safe first. Let's not continue redlining nearly 2000 buildings, destroying livelihood and affordable living space in a period where we desperately need affordable living space.

I ask you to slow this process down, acknowledge that most of these buildings meet current code or don't because of a system error and ease the minds, hearts and threat to livelihood of the owners of our unique and interesting 1-3 story brick buildings.

*P S:* And I ask that you consider my next recommendation of an even more urgent and **current** safety need: Lighting devices on both sides of commercial streets that light up both the streets and the sidewalks. That is the double meaning, to me, of Vision Zero – create streets that allow drivers, walkers and bicyclists to **see** each other so they are safer to walk, bicycle and drive at night.

Thank you for this opportunity to speak and thank you for the time and consideration that you are all giving to this issue.

Sincerely,

Nancy Chapin

Brentwood-Darlington Nbrhd. Assn.; Woodstock Community Business Assn.  
PDX Bridge Festival Board Chair; 82<sup>nd</sup> Ave. of Roses Business Assn. Secretary  
APNBA Executive Director 1991-2005 (AKA Venture Portland)

37364 5/9/18

## URM CODE Changes 5/9/18

The proposed URM codes changes should have a statement or clause are that encourages the use of "Life Safety" standards in designing and approving all City own buildings including parking structures. Currently the lowest standards are used and if there is little "change in occupancy" the code used to determine seismic sufficiency is 40 years old. If the code is enacted current building owners will see a serious drop in their building's value and hence the ability to finance changes needed to comply. The City of Portland needs to use its bonding power to set-up a fund to assist owners in complying with the code. Many of the owners are small businesses or own only one of two small buildings that are their total net worth.

The City of Portland needs to set a good example and use the best practices in ALL of their buildings.

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1 of 13

# Big One could hit sooner than thought

61902

### Chances of huge quake in next 50 years bumped higher

Tribune staff

A new analysis by Oregon, Spain and British Columbia researchers suggests massive earthquakes along the Cascadia Subduction Zone occur more frequently than was believed in the past.

The newest data changed the stakes for the northern sections of the zone, which could have major implications for Portland, Tacoma, Seattle and Vancouver, British Columbia.

A section of the zone from Newport to Astoria was previously believed to rupture, on average, about every 400 to 500 years, and that average has been reduced to 350 years, according to a summary of the findings provided by Oregon State University. The chance of an earthquake occurring within the next 50 years is also slightly higher than previous estimates.

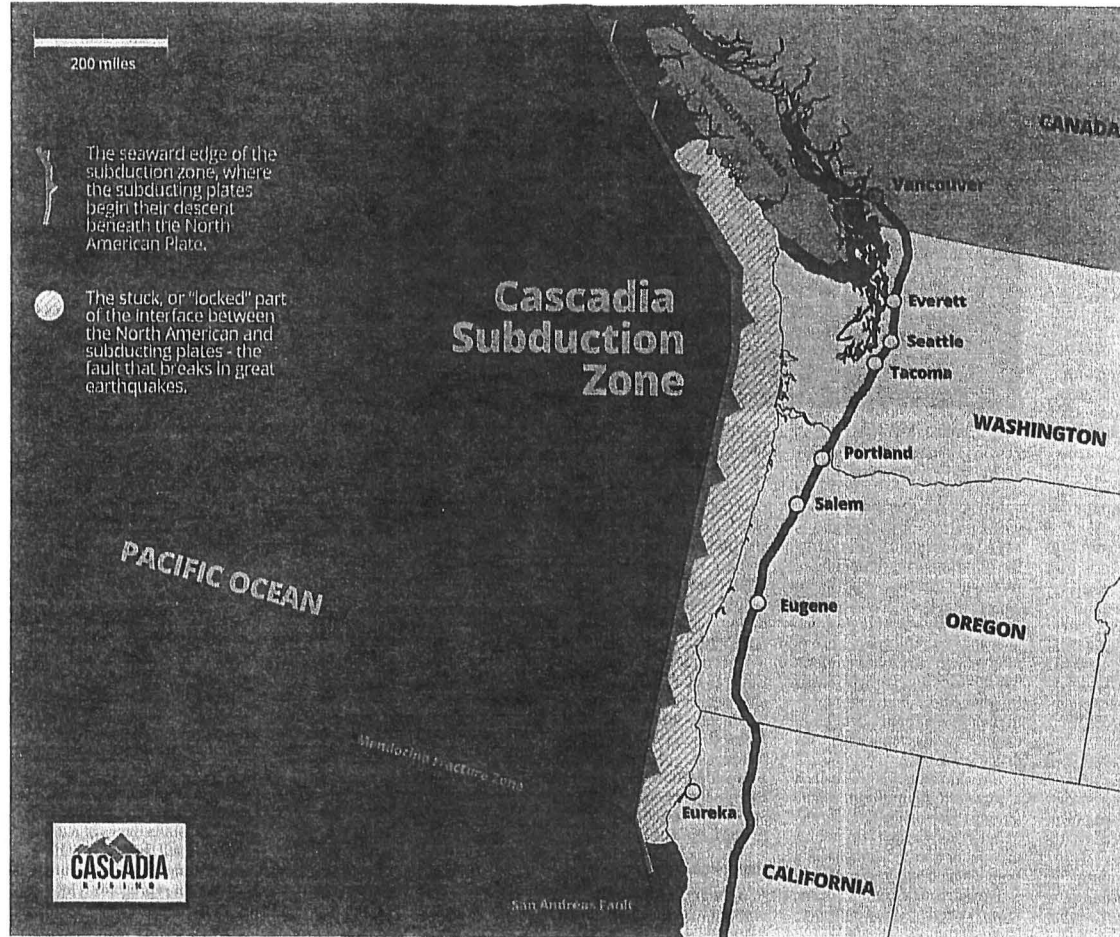


GOLDFINGER

The findings, published last week in the journal *Marine Geology*, are based on measurements from 195 core samples containing submarine landslide deposits caused by subduction zone earthquakes. In the past, researchers had only about a dozen such samples for their research.

The work was done by researchers from OSU, Camosun College in British Columbia and Instituto Andaluz de Ciencias de la Tierra in Spain, supported by the National Science Foundation and the U.S. Geological Survey.

The new results "reinforce our confidence in findings regarding the potential for major earthquakes on the Cascadia Subduction Zone," stated Chris Goldfinger, a professor at OSU's College of Earth, Ocean and Atmospheric Sci-



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A map shows the Cascadia Subduction Zone off the coasts of Oregon, Washington and Northern California. An earthquake there is expected to rock the cities on land as well as cause a huge tsunami. COURTESY ILLUSTRATION

ences, in a news release. He's one of the world's authorities on tectonic activity in this subduction zone.

"With more detailed data," Goldfinger stated, "we have also changed somewhat our projections for the average recurrence interval of earthquakes on the subduction zone, especially the northern parts. The frequency, although not the intensity, of earthquakes there appears to be somewhat higher than we previously estimated."

#### Last one was 316 years ago

The Cascadia Subduction Zone runs from Northern Cal-

ifornia to British Columbia, and scientists say it can be roughly divided into four segments. There have been 43 major earthquakes in the past 10,000 years on this subduction zone, sometimes on the entire zone at once and sometimes only on parts of it. When the entire zone is involved, geologists believe it's capable of producing a magnitude 9.1 earthquake.

It's been known for some time that the subduction zone south of Newport tends to rupture more frequently — an average of about every 300 to 380 years from Newport to Coos Bay, and every 220 to 240

years from Coos Bay to Eureka, California.

The new data shows ruptures are likely to be more frequent off the northern Oregon coast — every 350 years — than off the Washington coast. The section from Astoria to Vancouver Island was previously believed to rupture about every 500 to 530 years, and that average has now been reduced to 430 years.

The last major earthquake on the Cascadia Subduction Zone — pinpointed in time because it caused a tsunami that raced all the way across the Pacific Ocean to Japan —

occurred in January 1700, almost 316 years ago.

#### More certainty now

Based on these findings, the chances of an earthquake in the next 50 years also have been slightly revised upward. For the zone off central and northern Oregon, the chance of an event during that period has been changed to 15 to 20 percent instead of 14 to 17 percent. For the zone off Washington and British Columbia, the chance of an event in the next 50 years has increased to 10 to 17 percent from 8 to 14 percent.

Authors of the study also

increased their expected frequency of the most massive earthquakes, where the entire subduction zone ruptures at once.

"We believed these earthquakes were possible when the hypothesis was first developed in the late 1980s," Goldfinger stated. "Now we have a great deal more certainty that the general concern about earthquakes caused by the Cascadia Subduction Zone is scientifically valid, and we also have more precise information about the earthquake frequency and behavior of the subduction zone."



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Executive Summary

The project site is a seven story parking garage with ground floor located at SW 10th and Yamhill in the retail core and River District Urban Renewal Area of downtown Portland, Oregon. It is a part of the Smart Park garage system, owned by the Portland Bureau of Transportation (PBOT). The building was constructed in 1978, and two more parking levels were added in 1984. It has a total of 799 parking stalls used primarily for short term parking. The ground floor holds 27,594 square feet of retail space and maintains five existing tenants. Currently, the garage generates over \$2.5 million in revenue, with net revenue of approximately \$1.2 million. The average weekday peak-time occupancy is between 85-90%.

In addition, the site is the epicenter for multi-modal transit including:

- MAX stations located on Morrison Street (westbound) and Yamhill Street (eastbound);
- Portland streetcar to Portland State University and NW Portland running on 10<sup>th</sup> and 11<sup>th</sup> Avenues (with a station located on the north side of the Galleria Building)
- 5 electric vehicle charging stations located on the second floors; and
- Secure bike parking on each level.

The structure is now over 30 years old and requires a series of improvements. It poses a number of design and operational challenges as its wide overhangs, dark corners and opaque stair landings attract loitering and crime. The elevators are particularly slow, the stairs regularly smell foul and the mechanical system serving the retail spaces has been plagued by mold. Its construction in the late 1970's raised doubts concerning its seismic performance; and the pronounced grade change across the block has made compliance with accessibility requirements difficult.

FFA was retained by the Portland Development Commission (PDC) and PBOT to develop a set of recommendations for improvements that will:

- Preserve the building while bringing it into compliance;
- Support the downtown retail presence and multimodal transit goals; and
- Improve the environment at the ground level retail and stairways.

The final recommendations will be used to draft of a Request for Proposal to secure a design and construction team for the renovation of the building.

The site has been subject of several redevelopment schemes over the past 12 years. Scenarios have ranged from large renovation projects to full redevelopment with new construction. As a result of the various contemplations, the building has fallen into disrepair and there are aspects that need to be addressed. However, there have been several analyses conducted on the site spanning the building's design, operational systems, seismic fitness, and elevator and stairways.

One of FFA's initial tasks was to assemble a consultant team and review the previous reports to confirm findings and update with current needs as necessary. FFA then translated the improvements into a design and operations and maintenance scope. The key areas requiring immediate attention are:

- Parking;
- Deferred maintenance;
- Interior and exterior in ground floor retail; and
- ADA compliance

October 30, 2015

PDC and PBOT  
10<sup>th</sup> and Yamhill Parking Garage Study  
2

The initial project budget was \$8.5 million. The design strategy that targets areas with significant operational and visual impact surrounding storefronts, and building systems.

The greatest impact of these modifications is the consolidation of stairs and elevators at the NE and SW corners rather than retaining a single stair and elevator at each of the four corners. As benefits of making this change,

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Seismic Retrofit Cost Estimate for Garage Building at  
730 SW 10<sup>th</sup> Ave, Portland, Oregon

By:

Franz Rad, PhD, PE

June 22, 2016

Scope of Work

Briefly evaluate the garage building located at 730 SW 10th Ave, Portland, Oregon, and produce an estimate of seismic retrofit cost for the building. The scope of work and report are not to include structural analysis with computation, materials testing, or recommendations for specific seismic retrofit design and process. A brief report to be submitted to Mr. Doug Peterson.

Executive Summary

- The structure contains about 240,000 ft<sup>2</sup> area.
- Seismic retrofit cost estimate is in the range of about 22 to 36 dollars per ft<sup>2</sup>, depending on the level of retrofit desired.
- Total cost of retrofit is estimated in the range of 5 to 9 million dollars.
- The range of cost estimation may be considered as “Life Safety” at the lower end to “Rapid Occupancy” at the upper end.
- Structural analysis to determine the potential level of seismic damage and to develop a plan for seismic retrofit is recommended.
- It is expected that other seismic retrofit estimates may vary from the stated values in this report.
- There is no implied judgment regarding the quality of the original structural design and construction in this report.

Evaluation Steps

The evaluation steps taken included the following:

- A brief review the structural documents available in the City of Portland, Bureau of Development Services.
- A brief site visit and conversation with Peterson's store manager.

### General Description of the Garage Building

The 730 SW 10<sup>th</sup> Garage Building (GB) is a 7-story building. City of Portland documents indicate construction of the foundation system taking place during 1977. In this building (GB), the first five floors include concrete beams and the top two floors include steel beams and a combination of steel and concrete columns, with composite steel-concrete floors.

The Garage Building (GB) structure is essentially similar to a Precast Concrete Frame (PCF). PCF construction has been widely used in the past several decades. PCFs are similar to post and beam systems where concrete columns, beams and/or slabs are prefabricated and assembled on site. This Garage Building (GB) may also be considered as mixed construction, in that the beams and/or columns are precast, but the floors and shear walls are cast-in-place concrete. Moreover, the top two floors the Garage Building (GB) include steel framing, composite floors and concrete shear walls.

The first five stories of Garage Building (GB), the vertical-load-carrying members are precast-prestressed beams of rectangular cross-sections. The beams are seated on brackets (corbels) that protrude from columns. As such, the beams are “simply supported” and their function is to carry gravity loads. They do not contribute to the lateral load carrying capacity of the building.

As for the quality, generally speaking, precast concrete elements are of higher quality as compared to cast-in-place concrete members.

### Potential Earthquake Damages

The earthquake performance of this type of structural system, as in most other systems, depends on factors such as intensity of the quake, site geology, foundation system, the code of practice used in design, detailing used to connect the structural elements together to produce sufficient strength and ductility, and construction quality.

Structures of this type often employ cast-in-place concrete shear walls for lateral-load resistance, as it is in the case of the subject building. They can experience damage similar to other shear wall buildings, including excessive cracking in the shear walls and excessive cracking and weakening of columns. Generally speaking, potential damage areas in precast frames are due to poorly designed connections between prefabricated elements, or insufficient connection between floor elements and columns.

### Recommendation for Further Study

The subject building was designed based on “older codes” (in this case the 1976 Uniform Building Code) that did not include modern provisions for the expected magnitude of the earthquake force and rules for seismic design of reinforced concrete buildings. As such, structures similar to the subject building are more prone to non-ductile types of failure when subjected to earthquakes.

The seismic force requirements of more recent codes are significantly larger than those prescribed in the 1976 UBC. Moreover, the quality and accuracy of structural analysis methodology today are significantly higher than those of the late 70s. For these reasons, it is recommended that further study be conducted to determine the potential level of seismic damage and to develop a plan for seismic retrofit to lead to a more accurate and realistic cost estimate.

### Seismic Retrofit Techniques

If seismic retrofit is deemed required and feasible, a few retrofit techniques can be considered depending on which elements need to be strengthened, as summarized below.

#### Main Lateral Load Resisting Elements

In this Garage Building (GB), it evident that more reliance is placed on the shear walls to carry the seismic forces. The shear walls in this building were not designed based on the modern “seismic detailing” requirements of recent codes, hence will not have strength and ductility comparable to shear walls in a new structure.

If a future “Seismic Structural Analysis” for this building finds that the shear walls may be overstressed, then a structural retrofit technique such as the following may be considered.

- Add new shear walls to reduce the seismic shear forces in the existing shear walls and in the floor diaphragms.
- Add new boundary elements to existing shear walls to increase strength and ductility.
- Use CFRP overlay (wrap) to increase the shear capacity of the existing shear walls.

### Columns

In this structure, more reliance is placed on the shear walls to carry the seismic forces. However, a portion of the seismic forces will be transferred to the columns. The columns in this building were not designed based on the modern “seismic detailing” requirements of the recent ACI codes, hence will not have ductility comparable to columns in a new structure.

If a future “Seismic Structural Analysis” for this building finds that the columns may be overstressed, then a structural retrofit technique such as CFRP wrap may be considered to increase the strength and ductility of the columns.

### Beam to Column Seats (Corbels)

If a future “Seismic Structural Analysis” for this building finds that the corbels may be overstressed, a structural retrofit technique such as the following may be considered.

- Add epoxied shear dowels through the corbel to increase vertical shear and/or bending strength.
- Add structural steel bolster under the corbels.
- Add new steel column or reinforced concrete column.
- CFRP wrap.

### Floors

If a future “Seismic Structural Analysis” for this building finds that the floors may be overstressed, a structural retrofit technique such as the following may be considered.

- Add reinforced concrete topping to increase shear capacity of floor diaphragms.

### Photographs

Photographs of the various sections of the garage building are shown on the following pages (pages 5 through 11).



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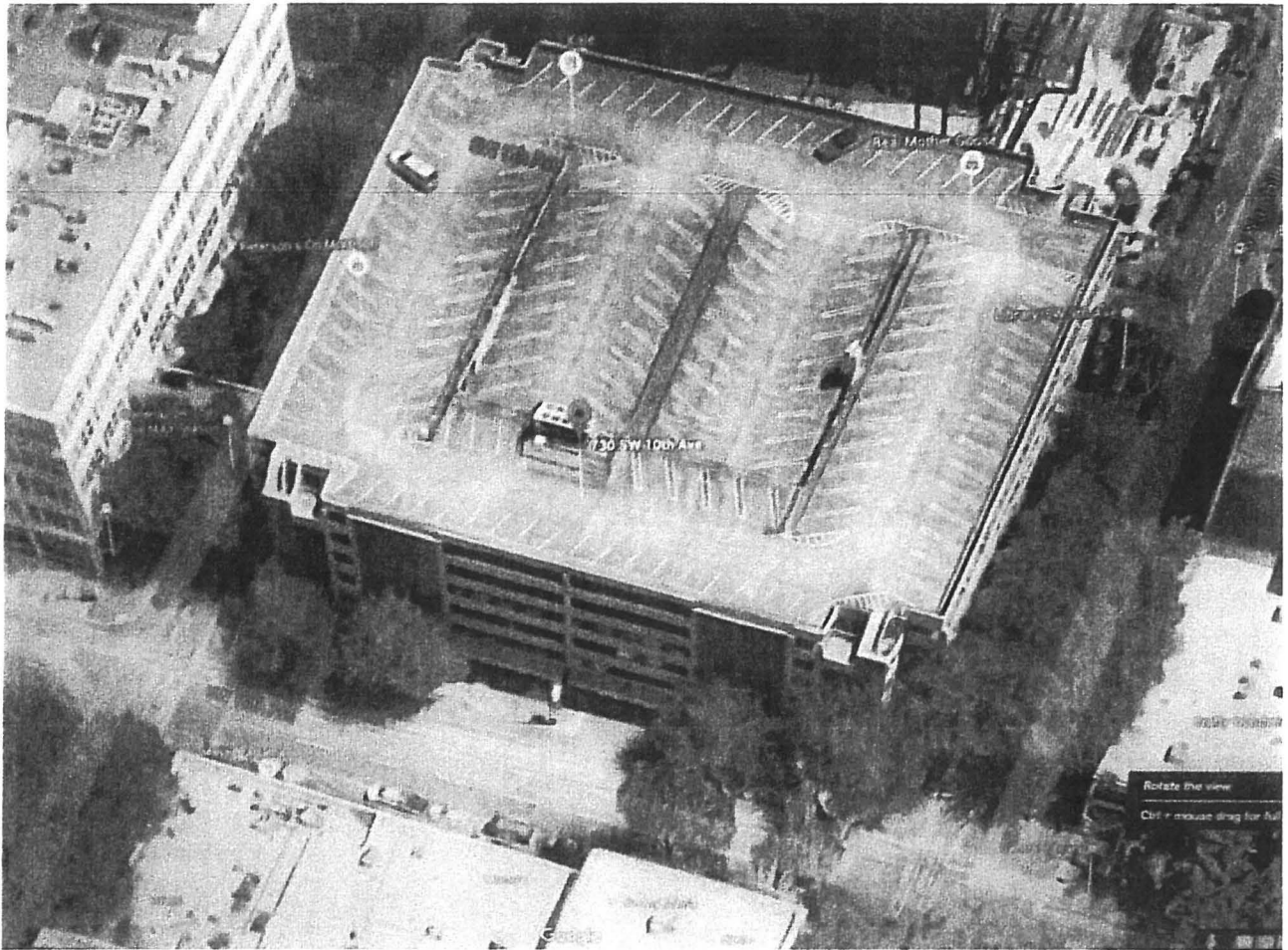


Figure 1, Overview of the Garage Building (Source: Google)

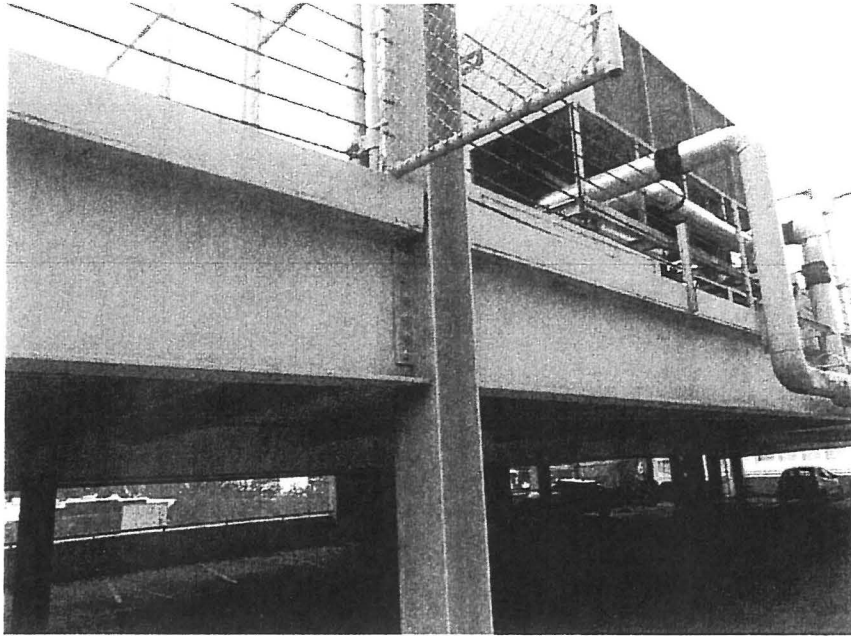


Figure 2, Steel framing in the upper floors

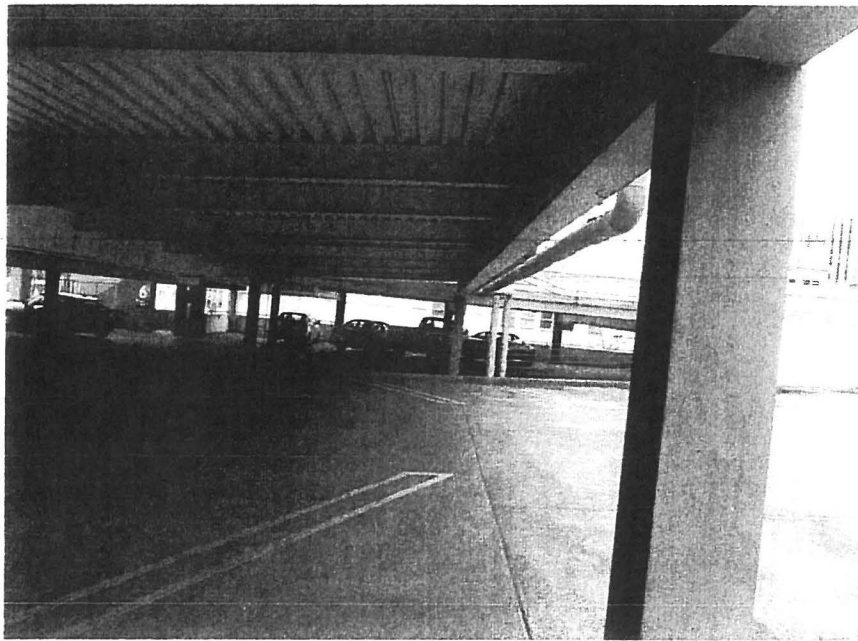


Figure 3, Composite floor construction, upper floors

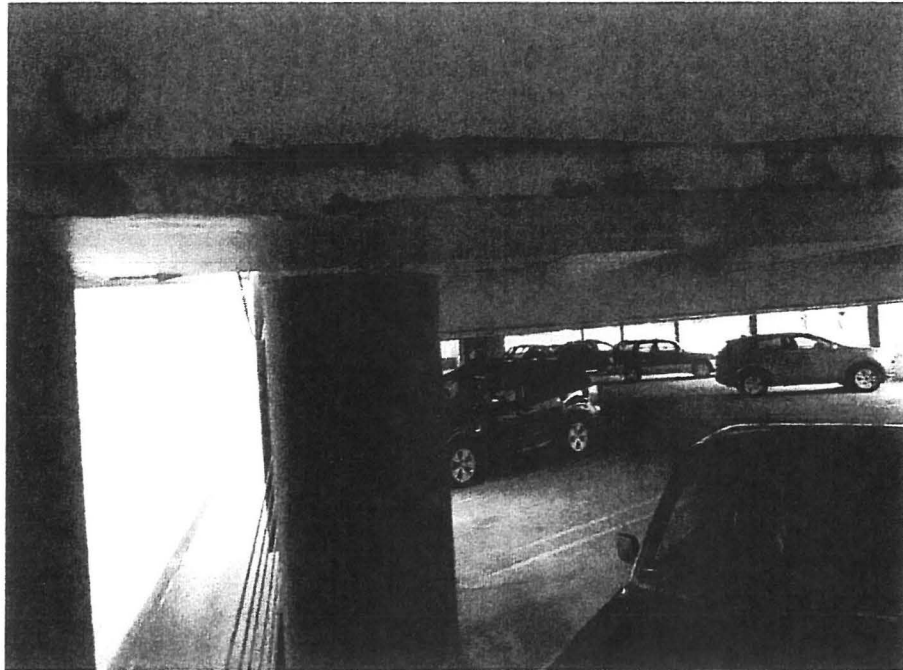


Figure 4, Evidence of rust in some steel sections

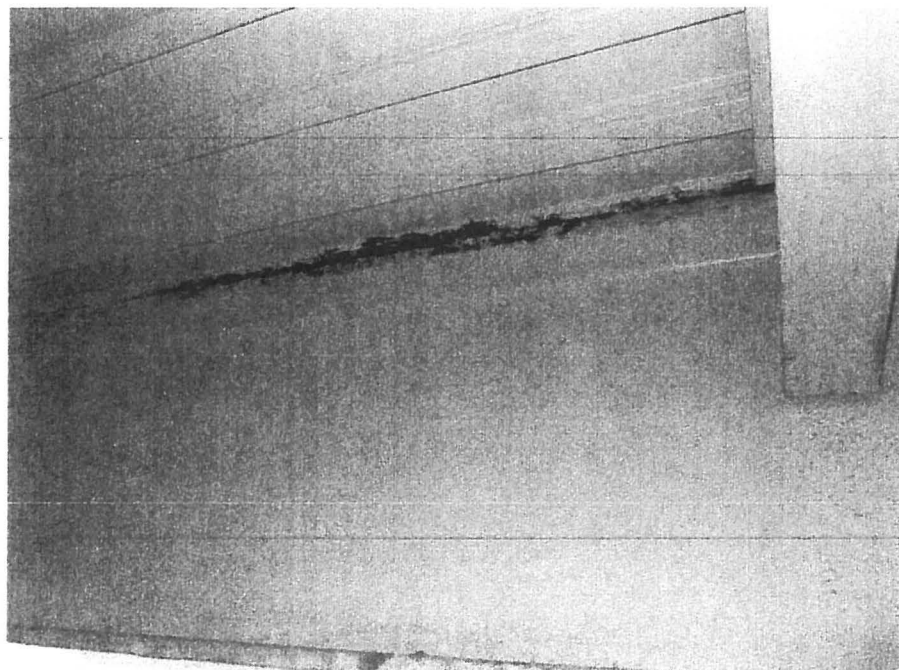


Figure 5, Evidence of rust in some steel sections

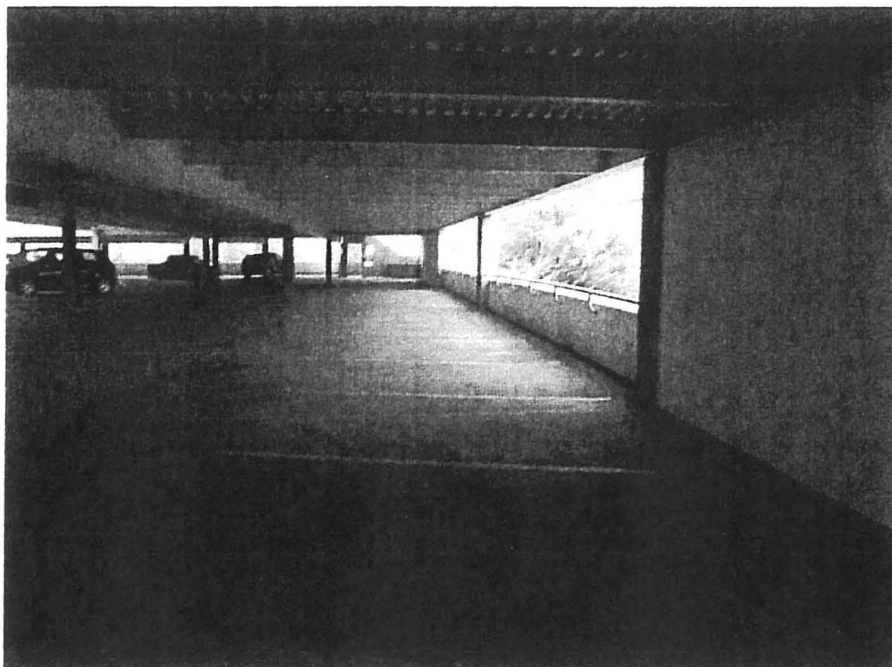


Figure 6, Shear walls in the N-S direction

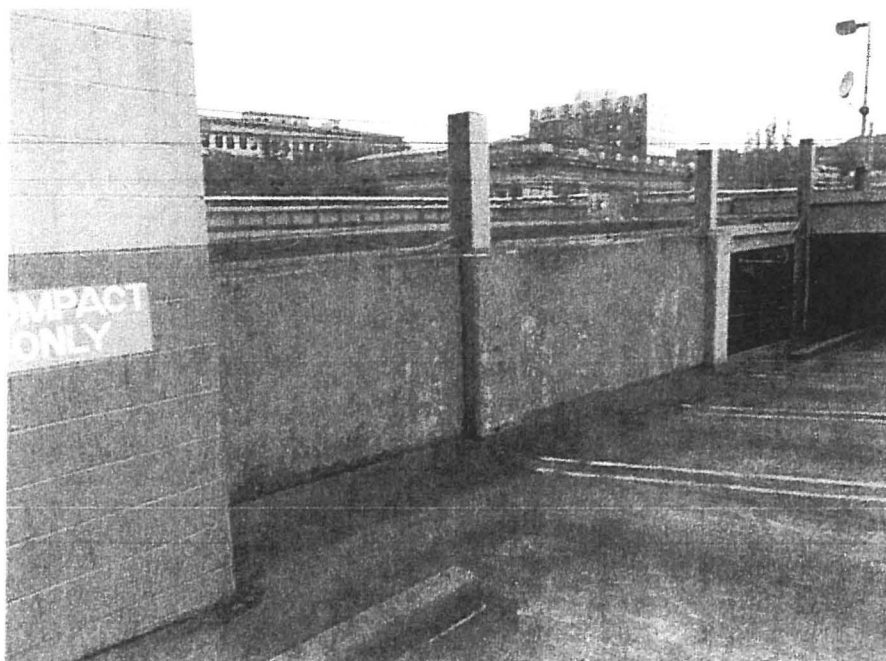


Figure 7, Shear walls in the E-W direction





Figure 8, Framing system in the 5<sup>th</sup> floor

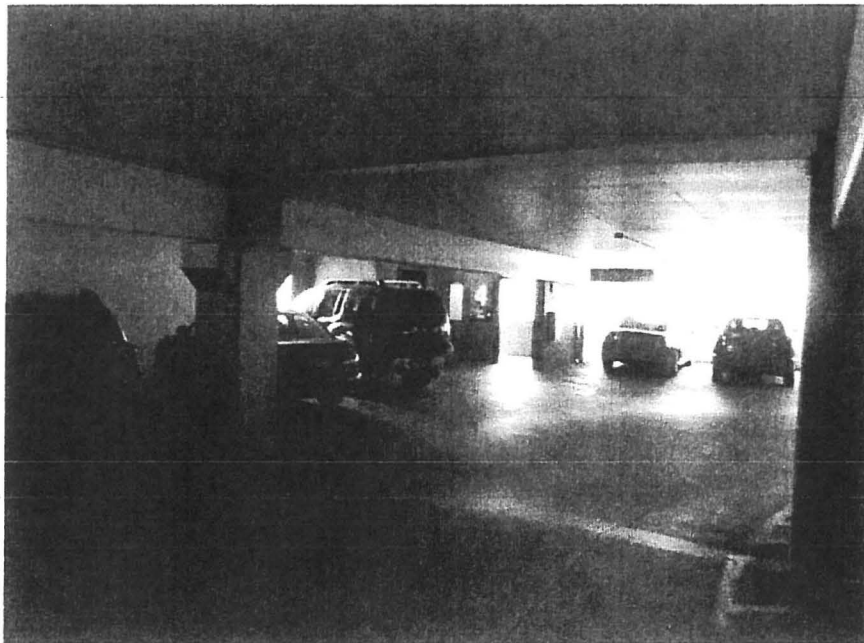


Figure 9, Concrete framing system in the 4<sup>th</sup> floor



Figure 10, Concrete framing system in the 3<sup>rd</sup> floor

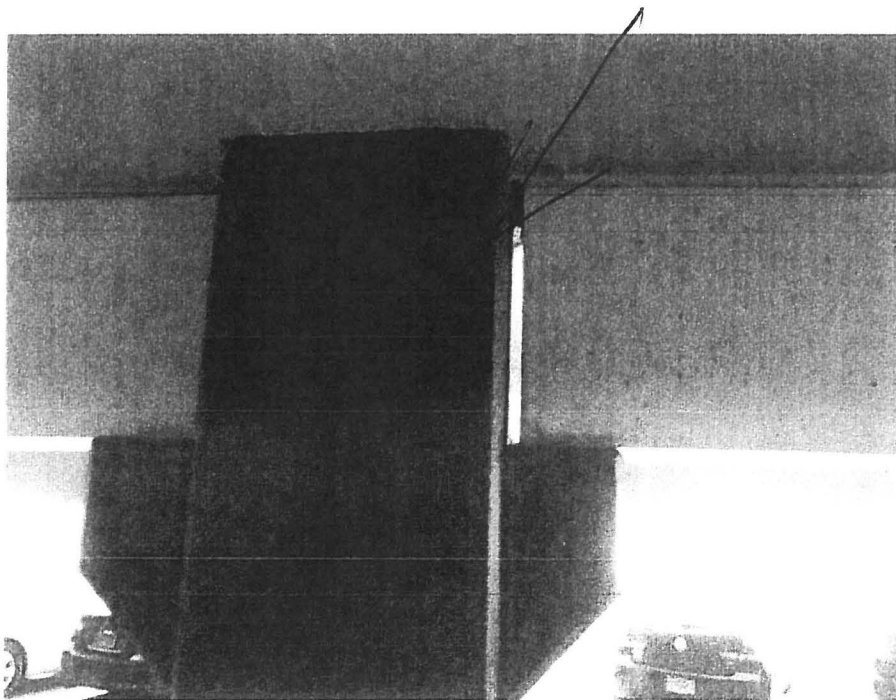


Figure 11, Beams on corbels

**From:** Aaron Kirk Douglas <Aaron@hfore.com>  
**Sent:** Wednesday, May 9, 2018 2:25 PM  
**To:** Council Clerk – Testimony  
**Subject:** Testimony for May 9th, 3pm hearing

May 9, 2018

Good afternoon,

My name is Lee Fehrenbacher and I am an apartment broker for HFO Investment Real Estate. Our company is the largest apartment brokerage firm in the Pacific Northwest focusing exclusively on multifamily sales.

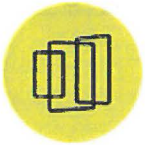
Many of our clients own unreinforced masonry buildings, and as such my colleagues and I have been paying close attention to the URM Policy Advisory Committee's work. While I don't think anyone would question the importance of preserving these buildings and ensuring their safety, we are concerned that implementing mandatory upgrade requirements – even on a 20-year horizon – will have immediate negative consequences without first identifying adequate financial resources.

Many of our clients who own URM buildings lack the equity, funds and experience necessary to complete a seismic retrofit. There is a glaring deficiency of financial incentives proposed by the URM Policy Advisory Committee. Few financial resources are available by private banks. Our company is concerned that – rather than preserving the fabric of our city – the proposed mandates will instead hasten the obsolescence and demolition of URM buildings. I have already spoken with at least one owner who has resigned themselves to redeveloping their beautiful brick building in Northwest Portland should these requirements pass.

I just wanted to provide third-party verification of what our office expects to see in the market should the council implement these requirements without additional financial resources.

Thank you.

Lee Fehrenbacher, Licensed Commercial Real Estate Broker  
HFO Investment Real Estate  
2424 SE 11<sup>th</sup> Avenue  
Portland, OR 97214  
(503) 241-5541



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