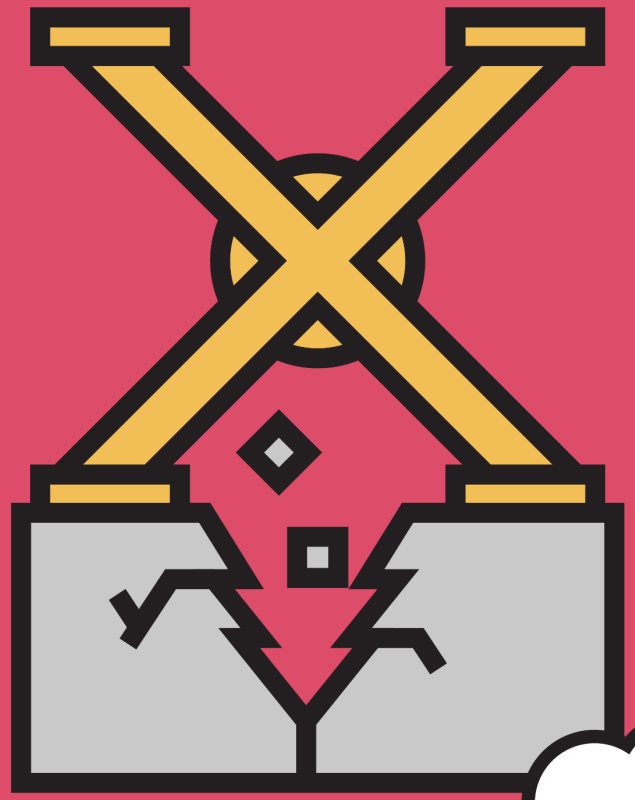


11AM - 1PM

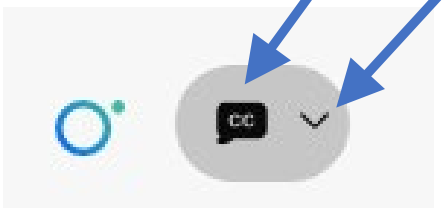
EARTHQUAKE HOME RETROFITS

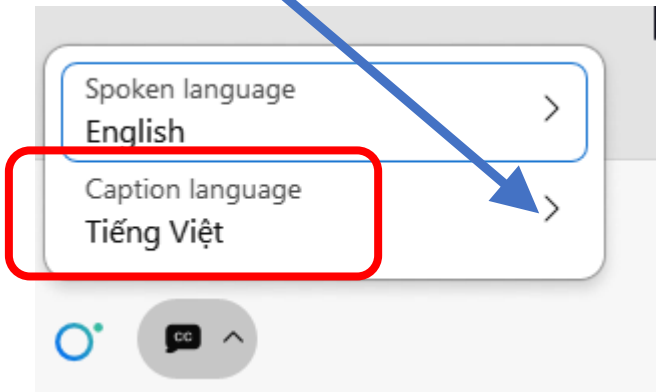
SEATTLE HOME FAIR

CLOSED CAPTIONING & TRANSLATIONS

To enable the closed captioning and translations, locate and click the Closed Caption logo in the lower left of the screen.

Use the pull-down arrow to select your preferred language





Earthquake Home Retrofit

Prescriptive Plan Set

SDCI PURPOSE AND VALUES

Seattle Department of Construction and Inspections' Purpose

Helping people build a safe, livable, and inclusive Seattle.

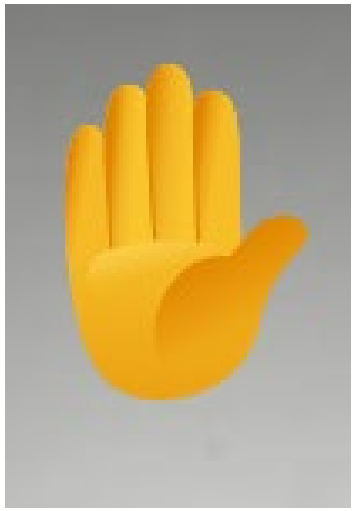
Our Values

- Equity
- Respect
- Service
- Quality
- Integrity

EHR PLAN SET – OBJECTIVES / AGENDA

To help you understand more about Prescriptive Earthquake Home Retrofit (EHR) Plan Set

- Earthquake – Building Safety - Be Prepared!
- Purpose of EHR Program
- History of EHR
- What homes qualify for EHR
- Anchor, Brace and Connect – Project Impact ABC's
- Prescriptive Home Earthquake Plan Set – Key Pages
- How To Apply
- Resources



Raise Hand

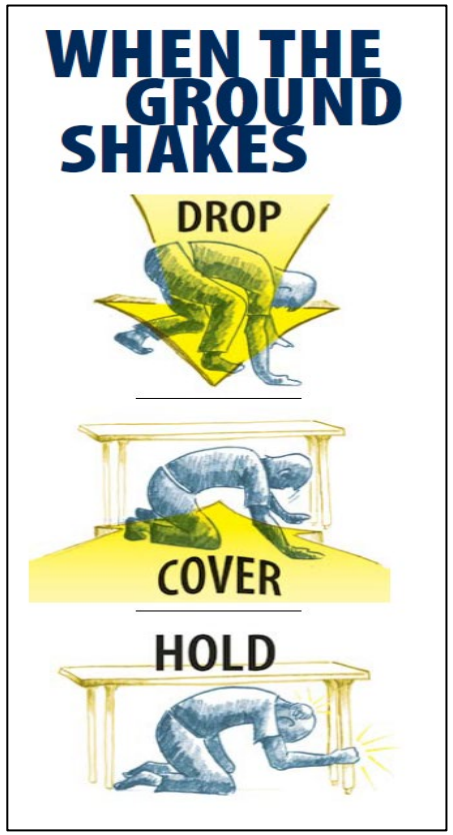
Please feel free to type your question in the presentation chat or to raise your hand if you have a question or comment on what you see.

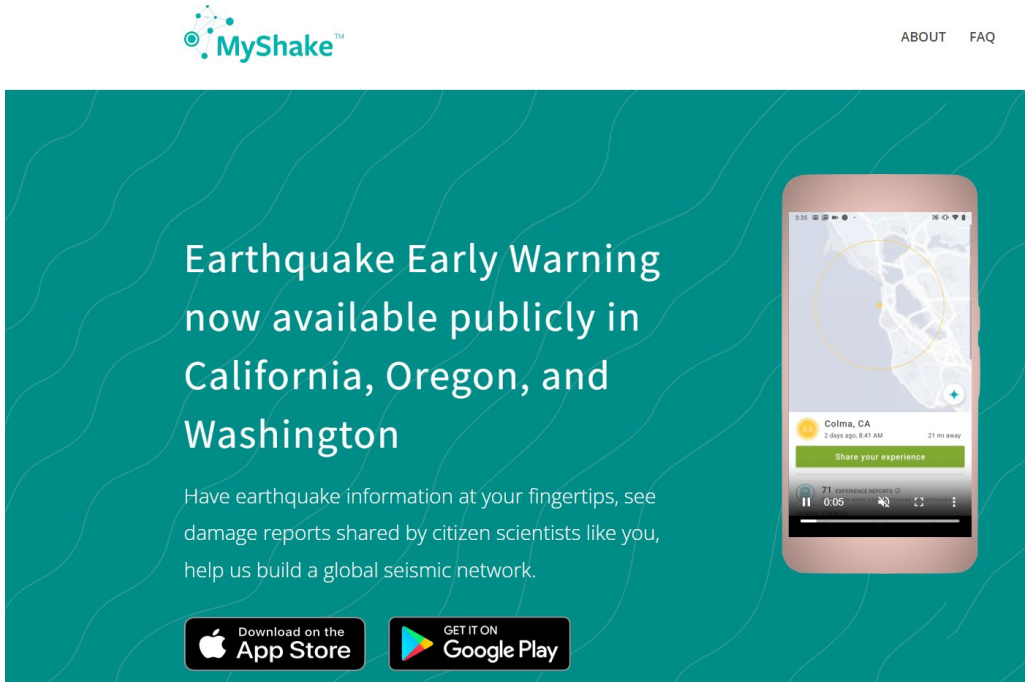
- For Example, Please raise your hands if you were in Seattle when the Nisqually Earthquake hit, 10:54 on February 28th, 2001? Please let me know where you were in the chat.

PUBLIC SAFETY IN AN EARTHQUAKE

Seattle Office of Emergency Management

http://www.seattle.gov/sdci/about-us/who-we-are





PERSONAL PREPAREDNESS FOR EMERGENCY

Supplies / Tools

Communication -
have a non-local contact

EARTHQUAKE HOME RETROFIT - PURPOSE

- Promote public safety by making older homes safer and reducing earthquake-induced damage
- Improve earthquake resistance:
  - Anchor home to foundation
  - Brace walls
- Simplify the permit process for “retrofitting” existing homes
- This program is designed to work for a typical 2-story, wood framed residence.

This program will not “earthquake proof” your home.

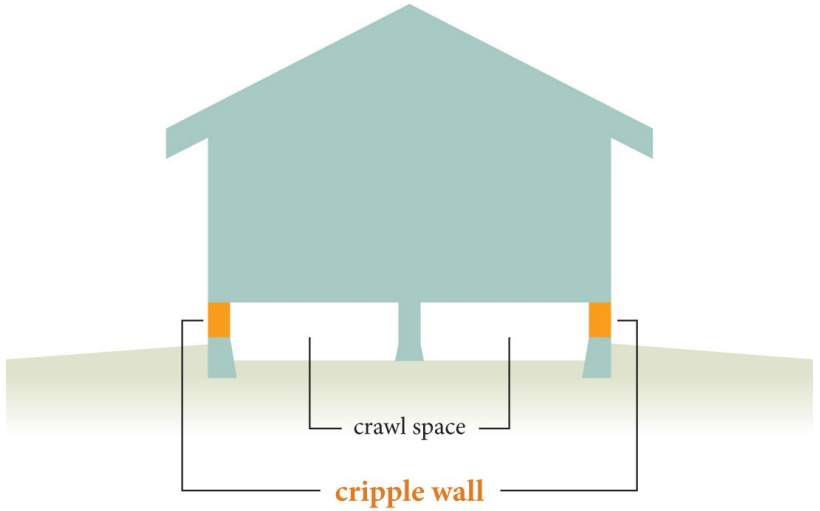


Image courtesy of California Department of Insurance

Photo – 1989 Loma Prieta Earthquake

EARTHQUAKE HOME RETROFIT - PURPOSE

These are examples of the type of damage to a home that this program is designed to reduce.

Photo – Washington Association of Building Officials

Photo – 1994 California Earthquake

EARTHQUAKE HOME RETROFIT - PURPOSE

What is NOT addressed by the Earthquake Home Retrofit plan set?

- Chimneys
- Framing above the first floor
- Interior crawl space walls or columns

EHR – HISTORY

- The Project Impact prescriptive retrofit program started in California after the 1994 Northridge Earthquake
- FEMA P-1100 was developed in the 2010's which is intended to be applicable nationwide.
- Washington Association of Building Officials (WABO) revised the FEMA drawings to apply to a broad group of existing homes in Washington.

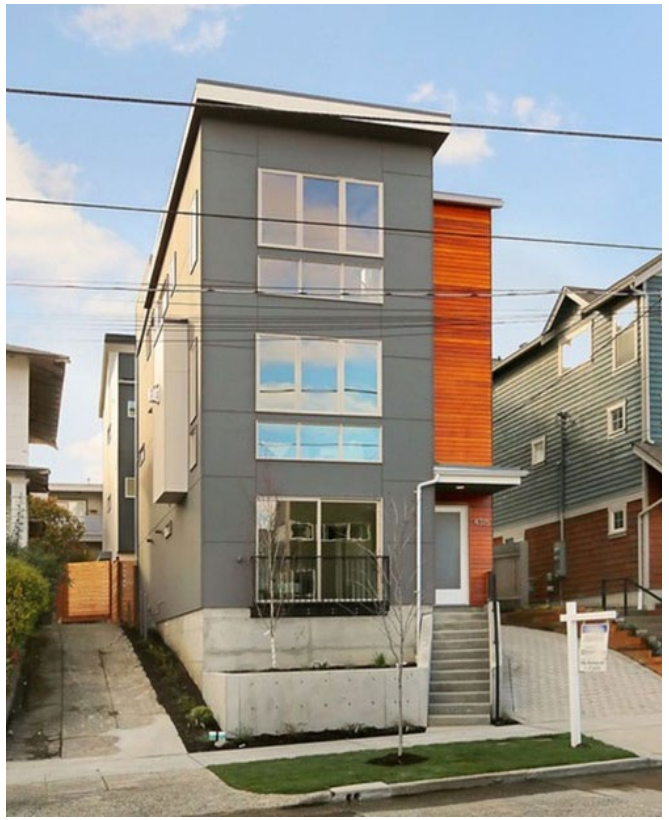
EHR PLAN SET– WHEN IS IT NEEDED?

- If the house was built after the early 1980's, it may already have required **anchors**, **bracing**, and framing **connections**.
- If your home could be considered "craftsman" or "mid-century modern", you may need to retrofit.
- Visit us online or consult with a contractor or architect.

"INADEQUATE"

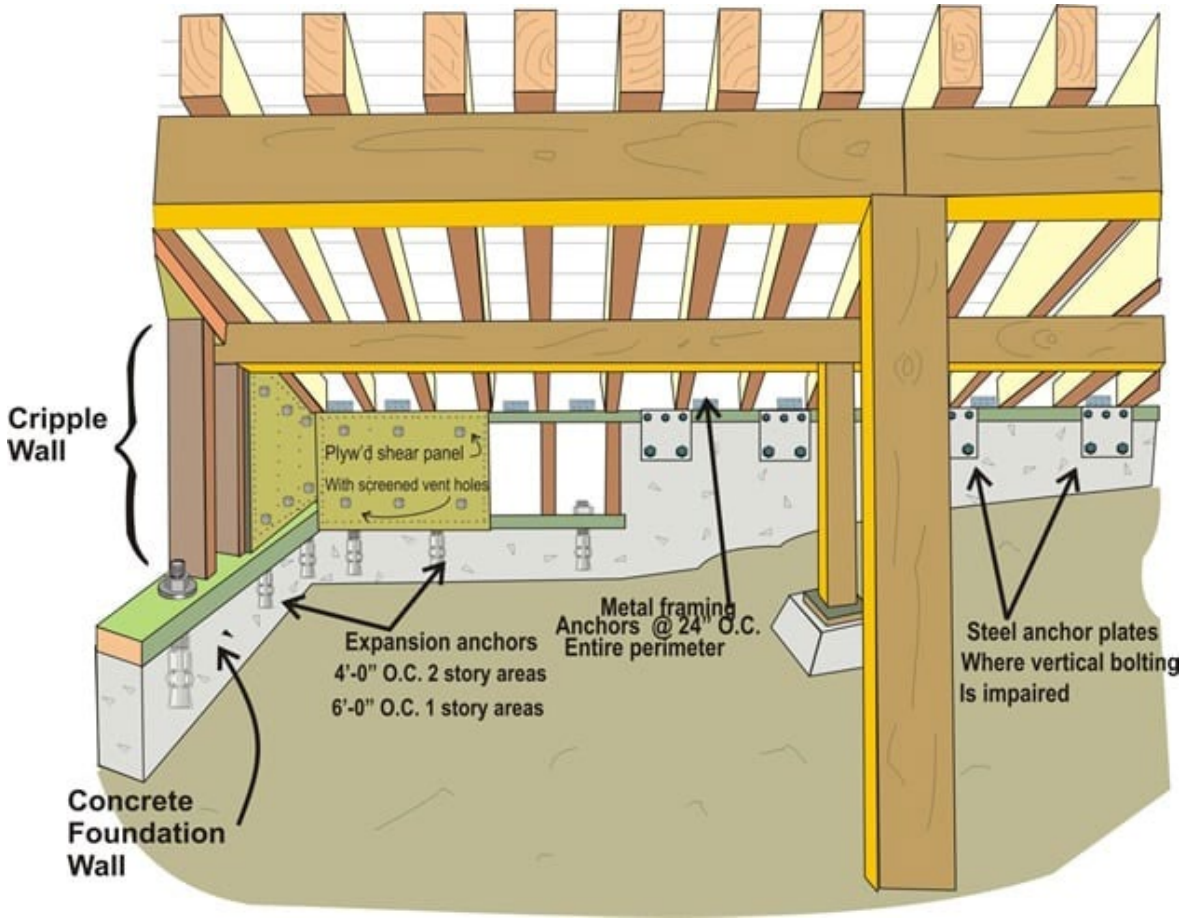
Seattle Times – Hiram Burnett Home built in 1865

"ADEQUATE"



Sustainable Connections – modern infill housing

EHR PLAN SET– WHERE WORK IS DONE

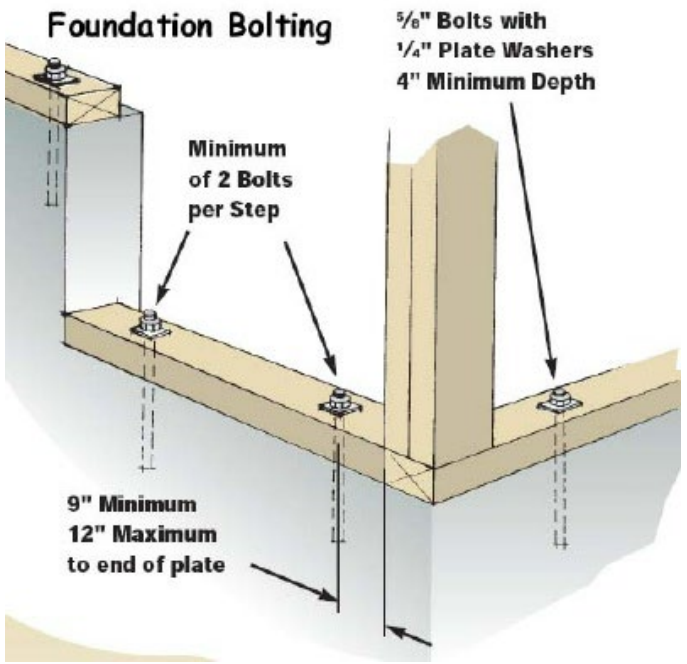


Crawl space illustration from Seismic Safety, Inc.

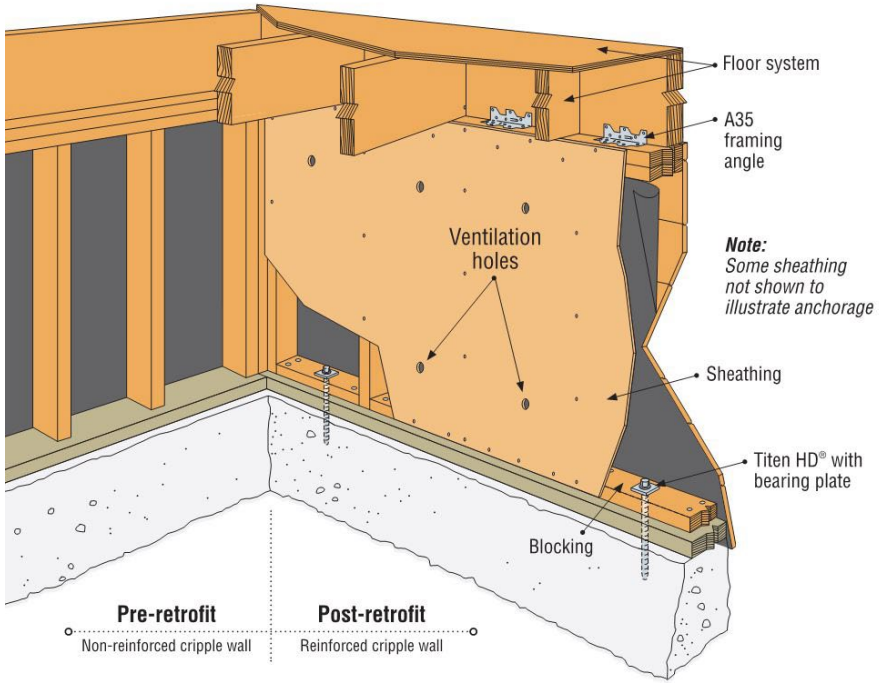
EHR prescriptive retrofit plan set focuses on the basement or crawlspace below the first-floor framing.

EHR PLAN SET - A B C's

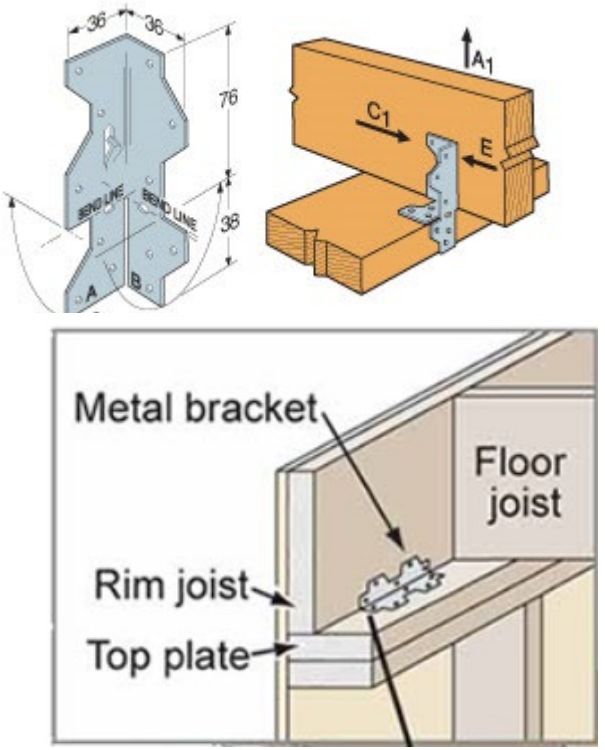
Anchor to Foundation



Brace Walls Below 1st Floor



Connect Framing



Images courtesy of Walnut creek Construction, Hipspro.com and Simpson Strong tie Catalog.

EHR - PLAN SET OVERVIEW

SHEET LIST

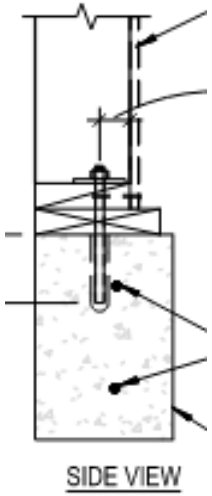
01*	Instructions for Use
S0	Cover Sheet
S1	General Notes
S2	Supplemental Technical Notes
S3	Seismic Design Category, Weight Classification, and Connectors
S3.1**	Earthquake Retrofit Schedule - S_{DS} 1.0, One-Story / Two-Story
S4	Foundation and Retrofit Layout Plan
D1	Foundation Sill to Concrete Foundation Connection Details
D2	Floor Framing to Foundation Sill Connection Details
D3	Floor Framing to Cripple Wall Connection Details
D3.1	Floor Framing to Cripple Wall Connection / Foundation Replacement Details
D3.2	Floor Framing to Cripple Wall Connection Details
D4	Wood Structural Panel Installation without Tie-Downs
D5	Wood Structural Panel Installation with Tie-Downs
D6	Vent Openings and Top Plate Details
X1*	Example of Foundation and Retrofit Layout Plan
X2*	Example - Foundation Plan (Dwelling without Tie-Downs)
X3*	Example - Foundation Plan (Dwelling with Tie-Downs)
X4*	Illustration - Cripple Wall Retrofit
X5*	Illustration - Retrofit - No Cripple Wall

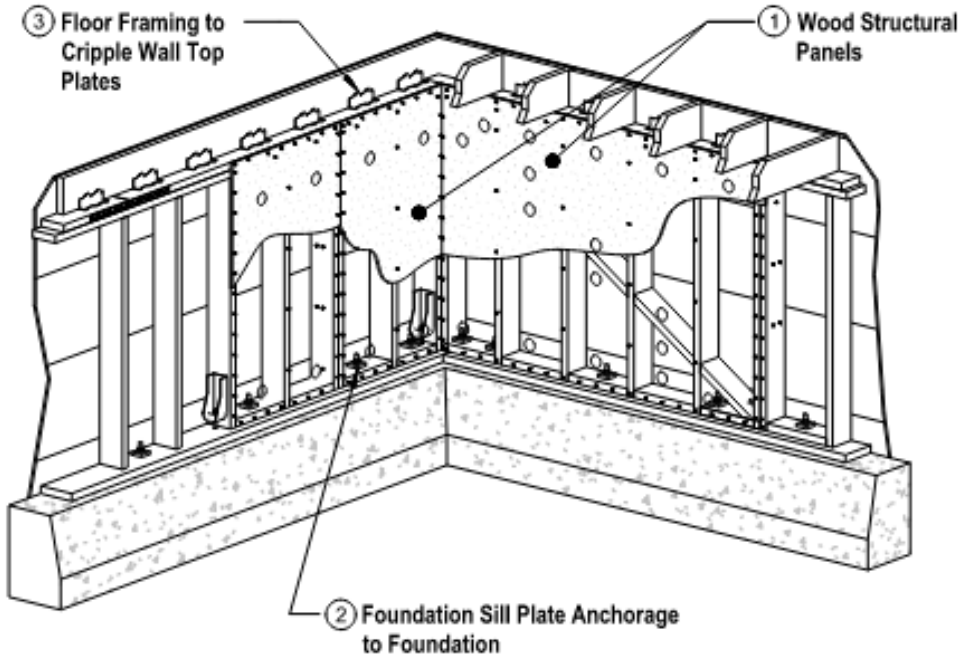
* Sheet for reference only. Do not submit to the Building Official.
** Only one "S3.1" sheet will be submitted to the Building Official.

EHR PLAN SET KEY PAGES

The prescriptive plan set is a complete package, with instructions on how to fill it out, details and descriptions of each connection and example of the retrofit layout.

- These are the Key Pages in the prescriptive 21 page plan set:
  - Coversheet: Sheet S0
  - Weight Classification: S3
  - Earthquake retrofit schedule: Sheet S3.1
  - Foundation and retrofit layout plan: Sheet S4





SHEET S0 - ELIGIBILITY FOR USE

How to determine if a home is eligible for EHR:

- Cover Sheet: S0 – Table 1
- If the answer to any of these questions is NO or “Non-compliant,” the home is not eligible.
- If you are not sure about your answer, **please ask!** We can chat online or through Q&A.

Table 1: ELIGIBILITY FOR USE

To determine if a home qualifies, answer the following:	Compliant	Non-compliant
1. The dwelling is a one- or two-family detached structure or townhouse. The dwelling unit is a townhouse and assessment and retrofit will occur for all attached townhouse dwelling units at the same time.		
2. The dwelling is a wood light-frame dwelling that is two stories or less (basement OK).		
3. The dwelling is a crawlspace/basement and the perimeter (not including porches or other appurtenances) is supported on: a. Cripple walls, or b. Foundation stem walls, or c. Post and pier systems to be retrofitted with cripple walls, or d. Cripple walls or foundation stem walls in combination with a slab on grade foundation.		
4. The dwelling has a continuous perimeter foundation (not including porches or other appurtenances), concrete stem walls, or will be retrofitted to have a continuous perimeter foundation.		
5. Cripple walls, where they occur, do not exceed 7'-0" in clear height.		
6. The maximum slope as measured from the top of foundations along one edge of the home to the other end does not exceed 30%.		
7. Weight of roofing material shall not exceed 12 psf., except for one-story crawlspace dwellings with clay tile roofing as described in footnote 1 below.		
8. Weight of exterior wall finish shall not exceed 10 psf (Stucco OK), except that masonry wainscots supported on concrete or masonry foundations are permitted to extend up to four feet above the top of foundation. Brick veneer ok for one story condition per note on sheet S3		
9. The maximum square footage of the dwelling, excluding areas supported on slabs on grade, do not exceed 3,000 square feet for one story dwellings and 4,000 square feet for two-story dwellings.		
10. No part of the foundations is constructed of unreinforced masonry or stone.		
11. There is no indication that an engineered seismic force-resisting system is present in the dwelling (engineered plans, visible tie-down brackets).		

If you answered "Compliant" to each of these questions, proceed to Sheet S3.
If you answered "Non-compliant" to any of these questions the home is not eligible to apply this plan set, unless a Registered Design Professional addresses the non-compliant issues in accordance with P-1100 FEMA Prestandard, Section 4.5, Differing Conditions.

Footnote:

1. One story crawlspace dwellings with clay tile that weigh up to 20 psf or full height brick veneer (with light roof material) shall be permitted to be strengthened in accordance with the provisions for two-story heavy construction as noted in the applicable Earthquake Retrofit Tables.

IS THIS DWELLING ELIGIBLE?

Answers to Questions 1-11 determine if the dwelling qualifies.

- ✓ One or two family? Two Stories?
- ✓ Crawlspace/Basement? Foundation?
- ✓ Cripple Walls Under 7 feet tall?
- ✓ Under 30% slope?
- ✓ Does it have a lightweight roof? Brick exterior?
- ✗ Maximum Square footage of 4,000 Square Feet?

Actual square footage is 7,300 square feet and we do NOT include the basement

The Admiral's House – Formerly Fort Lawton, Magnolia. 2001 W. Garfield Street. Photo courtesy of Cooper Jacobs Real Estate.

SHEET S3 - WEIGHT CLASSIFICATION

Weight Classification

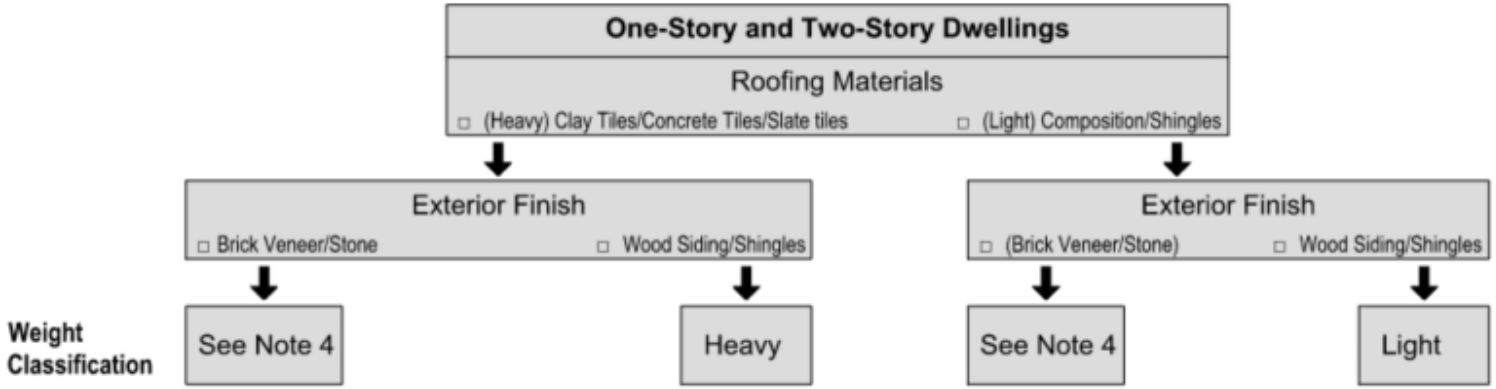
The next factor used to establish the appropriate amount of earthquake strengthening is the dwelling weight. For the purposed of this Plan Set, two weight classifications (Heavy and Light) have been established as described below. Using the flowchart presented:

1. Start with the roofing material then to the the exterior finishes.
2. Note the weight classification result for use in the Earthquake Retrofit Schedule, Sheet S3.1.

Specific notes for exterior, interior and roof coverings:

1. The "wood siding or shingles" exterior finish category also includes finishes of similar weight, including but not limited to fiber-cement and aluminum siding.
2. The "comp or shingles" roofing material category also includes roofing materials of similar weight, including but not limited to roll roofing, built-up felt roofing, single-ply membrane roofing, and metal roofing.
3. The exterior finish, roofing material, and interior finish categories are intended to be identified based on the predominant materials used in construction. Where interior or exterior finishes vary, a heavier type finish shall be assumed where 25% or more of the heavier finish type exists within the dwelling.
4. • Structures with both brick veneer/stone veneer and heavy roof assembly should consult with a registered design professional and are outside the scope of this document.
   • Structures with both brick veneer/stone veneer and light roof assembly are limited to one story above concrete foundation and shall proceed using the two-story tables for determining wall panel length and anchorage/fastener spacing.

HEAVY OR LIGHT?



SHEET S3.1 – BRACED WALL LENGTH

This Table is for One-story

1) Weight Category
2) Total Area
3) Mark the ROW
4) Cripple Wall Height
5) Total Wall
   Section length is twice the length shown here.
6) Number of Sill Anchors
7) Number of Clips/ties to first floor framing

EARTHQUAKE RETROFIT SCHEDULE (S_{DS}= 1.0 Seismic) ONE-STORY

① Weight Category	② Total Area in Square Feet	③ Mark row that applies ☒	⑤ Length Each of Two Braced Wall Sections Required Along Each Perimeter Wall Line — Wood Structural Panels — ④ Cripple Wall Height: up to 1' Without Tie-downs	1'-1" to 2' Without Tie-downs	2'-1" to 4'-0" Without Tie-downs	2'-1" to 4'-0" With Tie-downs	4'-1" to 6'-0" Without Tie-downs	4'-1" to 6'-0" With Tie-downs	6'-1" to 7'-0" Without Tie-downs	6'-1" to 7'-0" With Tie-downs	Panel Edge Nailing	Number of Foundation Connectors or Anchors at Each Perimeter Wall Line, Assume Distributed Along Length — ⑥ Foundation Sill Anchors: Type "A/B"	1/2"ø Bolt	5/8"ø Bolt	⑦ Floor to Cripple Wall or Floor to Foundation Sill: Type "D"	Type "E" or "F"	Type "G"
1-Story Light Construction	up to 800		5.3'	5.3'	8.0'	5.3'	9.3'	5.3'	9.3'	6.7'	4"	4	7	5	11	10	14
	801 to 1000		6.7'	6.7'	8.0'	6.7'	10.7'	6.7'	10.7'	8.0'	4"	5	8	6	13	12	16
	1001 to 1200		6.7'	6.7'	9.3'	6.7'	10.7'	8.0'	12.0'	8.0'	4"	6	10	7	15	14	19
	1201 to 1500		8.0'	8.0'	10.7'	8.0'	13.3'	9.3'	13.3'	9.3'	4"	7	12	8	18	17	22
	1501 to 2000		9.3'	10.7'	13.3'	10.7'	14.7'	10.7'	16.0'	12.0'	4"	9	15	10	23	22	29
	2001 to 2500		12.0'	12.0'	14.7'	12.0'	17.3'	12.0'	18.7'	13.3'	4"	10	18	12	27	26	35
	2501 to 3000		14.7'	14.7'	16.0'	14.7'	18.7'	14.7'	20.0'	16.0'	4"	12	21	14	32	31	40
1-Story Heavy Construction	up to 800		5.3'	6.7'	8.0'	5.3'	10.7'	6.7'	10.7'	8.0'	2"	6	10	7	15	14	18
	801 to 1000		6.7'	8.0'	9.3'	6.7'	12.0'	8.0'	12.0'	9.3'	2"	7	11	8	17	17	22
	1001 to 1200		6.7'	8.0'	10.7'	8.0'	12.0'	9.3'	13.3'	10.7'	2"	8	13	9	20	19	25
	1201 to 1500		8.0'	9.3'	12.0'	9.3'	14.7'	10.7'	14.7'	12.0'	2"	9	15	11	24	23	30
	1501 to 2000		9.3'	10.7'	14.7'	10.7'	16.0'	12.0'	17.3'	13.3'	2"	11	19	13	30	29	38
	2001 to 2500		10.7'	13.3'	16.0'	12.0'	18.7'	14.7'	20.0'	16.0'	2"	13	23	16	36	34	45
	2501 to 3000		12.0'	14.7'	17.3'	13.3'	20.0'	16.0'	21.3'	17.3'	2"	16	27	18	41	40	53

BRACED WALL PANELS

Strengthening the Cripple Wall Using Braced Wall Panels - Sheet S3.1

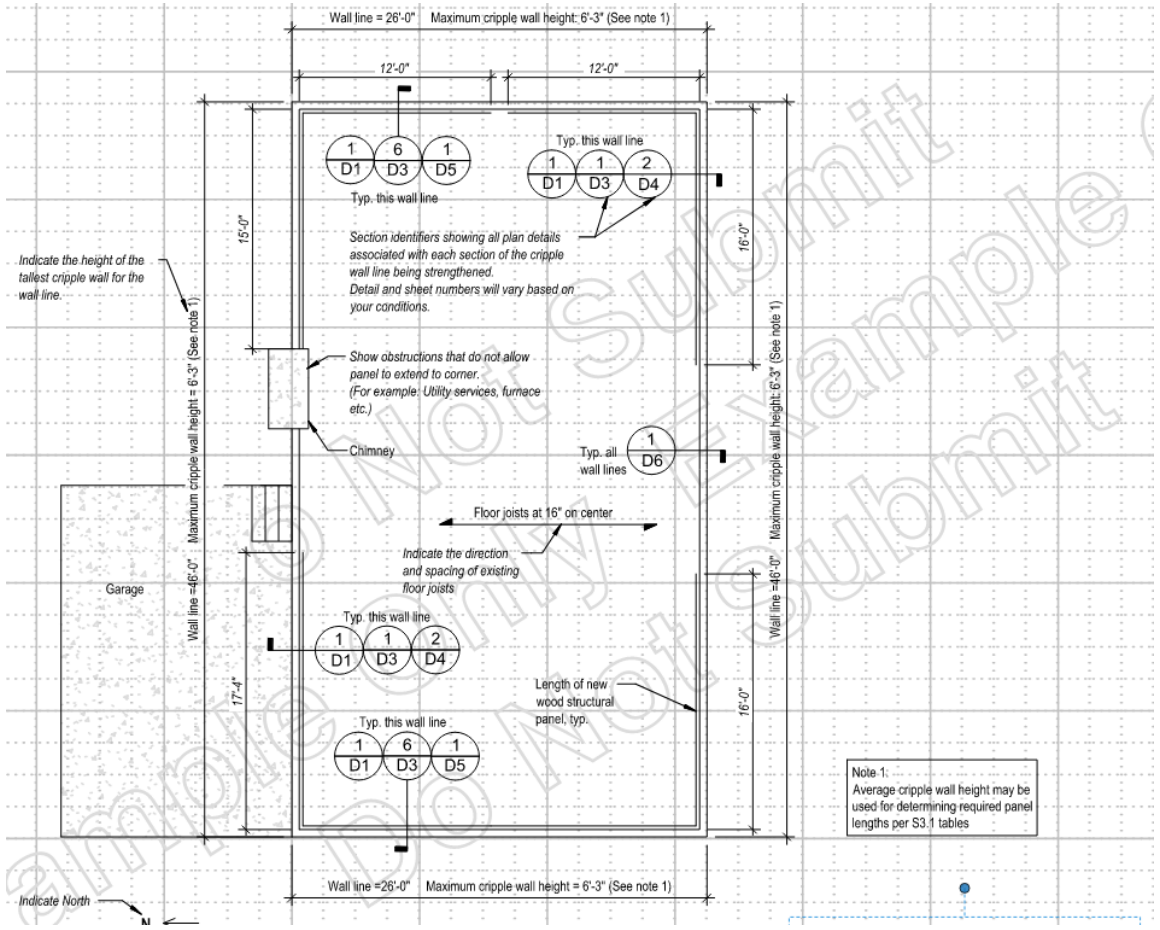
- Creating a “braced wall panel” beneath the first-floor framing at basement wall or cripple wall.
- Cripple Wall Maximum height is 7 feet and minimum length is 2 feet
- All exterior wall lines are required to have a minimum total length of braced wall panels

OSB braced wall panel (with hole) and URFP courtesy of Simpson Strong Tie

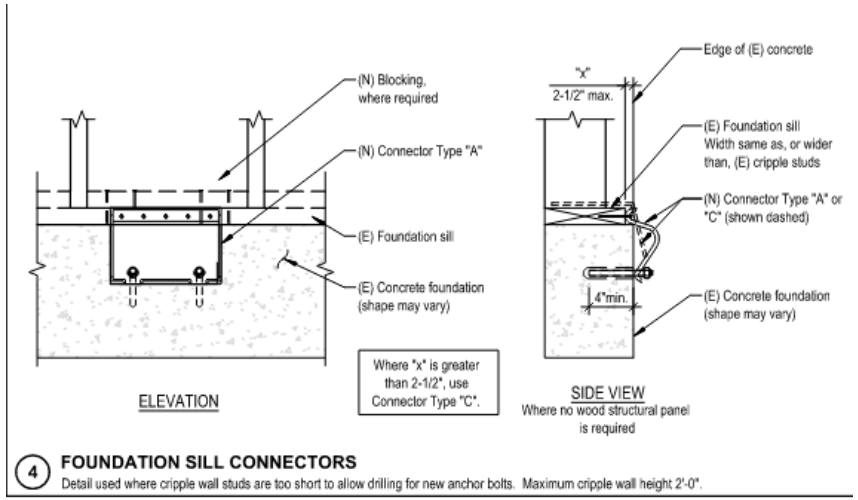
SHEET S4 – FLOOR PLAN

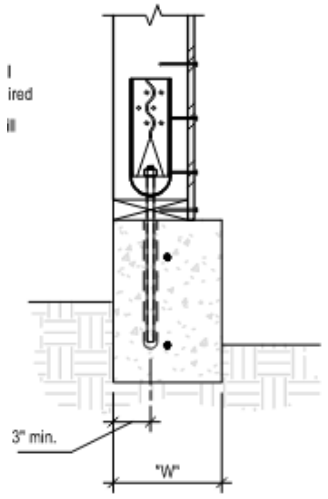
Draw Floor Plan - Sheet S4

- Refer to example floor plans, Sheets 17-21.
- Measure and mark existing conditions.
- Show which of the details provided will be used.
- Mark and note wall bracing for each exterior wall line and show length of braced wall panels.

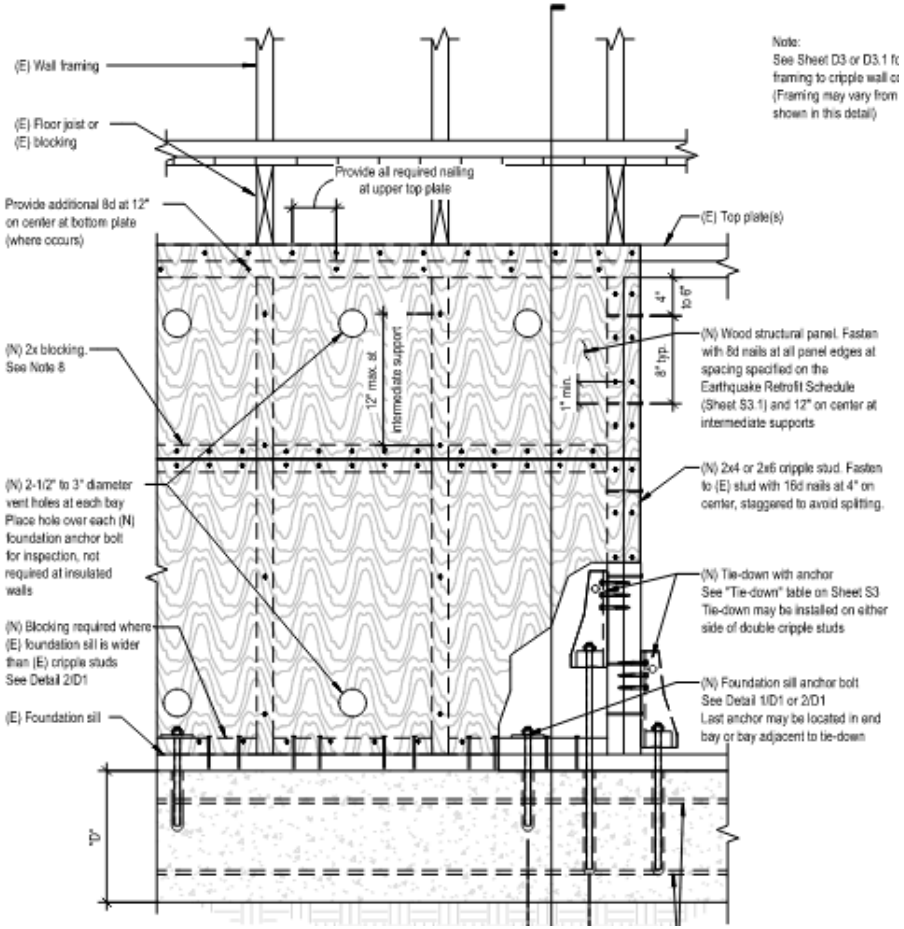


SHEETS D1 through D6 - DETAILS





SECTION
(NO foundation sill BLOCKING REQUIRED)

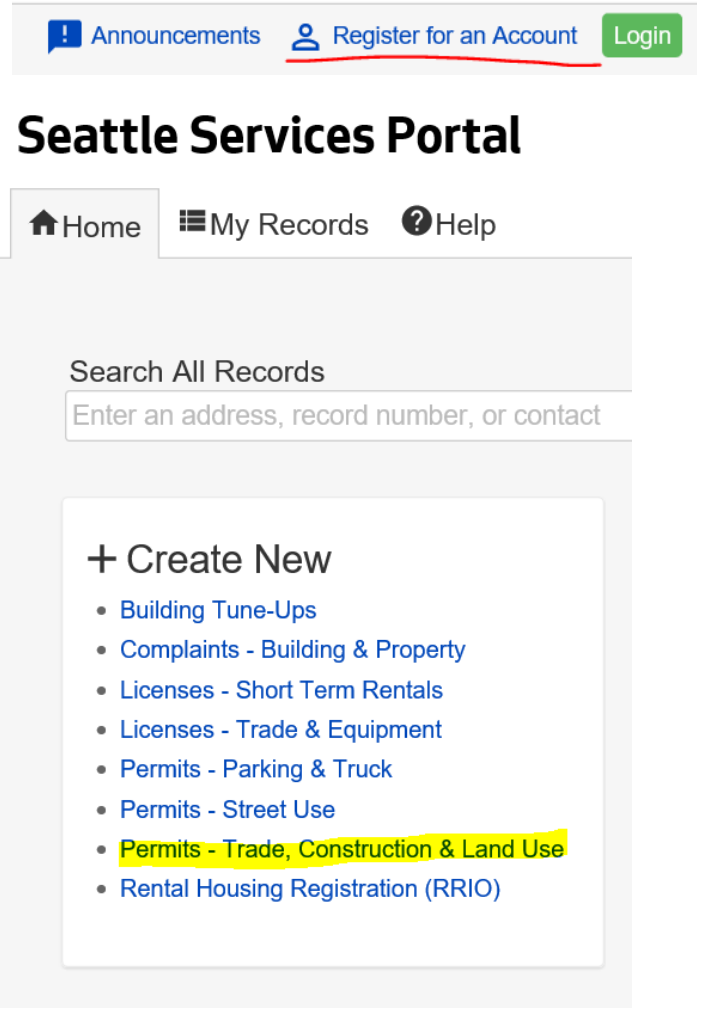


D1	Foundation Sill to Concrete Foundation Connection Details
D2	Floor Framing to Foundation Sill Connection Details
D3	Floor Framing to Cripple Wall Connection Details
D3.1	Floor Framing to Cripple Wall Connection / Foundation Replacement Details
D3.2	Floor Framing to Cripple Wall Connection Details
D4	Wood Structural Panel Installation without Tie-Downs
D5	Wood Structural Panel Installation with Tie-Downs
D6	Vent Openings and Top Plate Details

EHR PLAN SET - APPLICATION PROCESS

All Construction Projects, including the EHR Prescriptive or “Project Impact” start the same way

- EHR PLAN SET– Application Benefits
  - Submit plans for screening; similar to a Subject-to-Field-Inspection (STFI) permit. **You do not need an intake appointment!**
  - Plan review is an expedited permit with shorter plan review times than a full complex plan review.
  - Prescriptive Home Retrofit Plan review fees are different, often cheaper than other permit fees.
- Project review – respond to corrections
- Inspections



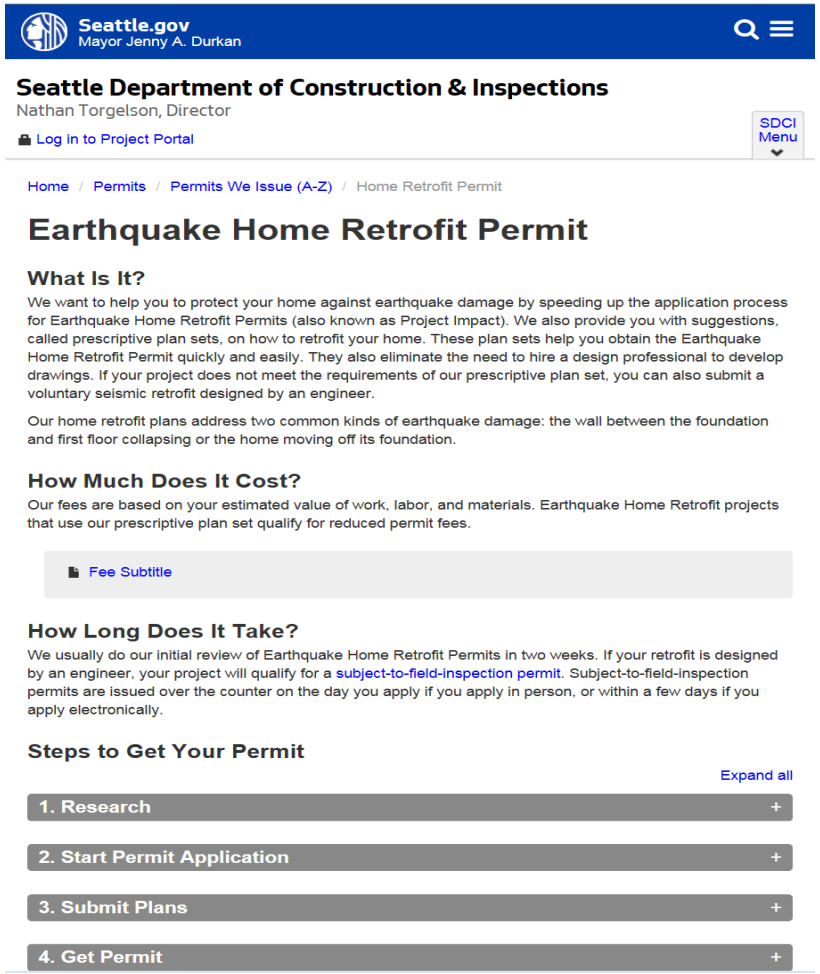
SUMMARY - RECAP

EHR Plan Set offers a prescriptive approach for improvements to existing homes.

- Working to build a more disaster resistant community - Be Prepared.
  - Focus is on Building Safety. This program will not “earthquake proof” your home.
- History – This is a NEW PLAN SET and is different than 'Project Impact'.
- What Types of Homes Can Use This Plan Set?
    - Existing, wood framed homes that are on concrete foundations and are two stories or less in height may qualify.
- Anchor, Brace and Connect
  - **Anchor** to the foundation, **Brace** the walls below the first floor and **connect** these walls to the first-floor framing.
- KEY Pages of EHR Plan set and how to apply.

SDCI – PERMIT RESOURCES

- SDCI Website: http://www.seattle.gov/sdci/permits/permits-we-issue-(a-z)/earthquake-home-retrofit-permit
- WABO Prescriptive PLANSET https://www.wabo.org/index.php?option=com_content&view=article&id=236:earthquake-home-retrofit&catid=20:site-content&Itemid=175
- SDCI – Ask us a question Online: www.seattle.gov/sdci/resources/send-us-a-question
  - NEW! Chat with us online!



QUESTIONS?

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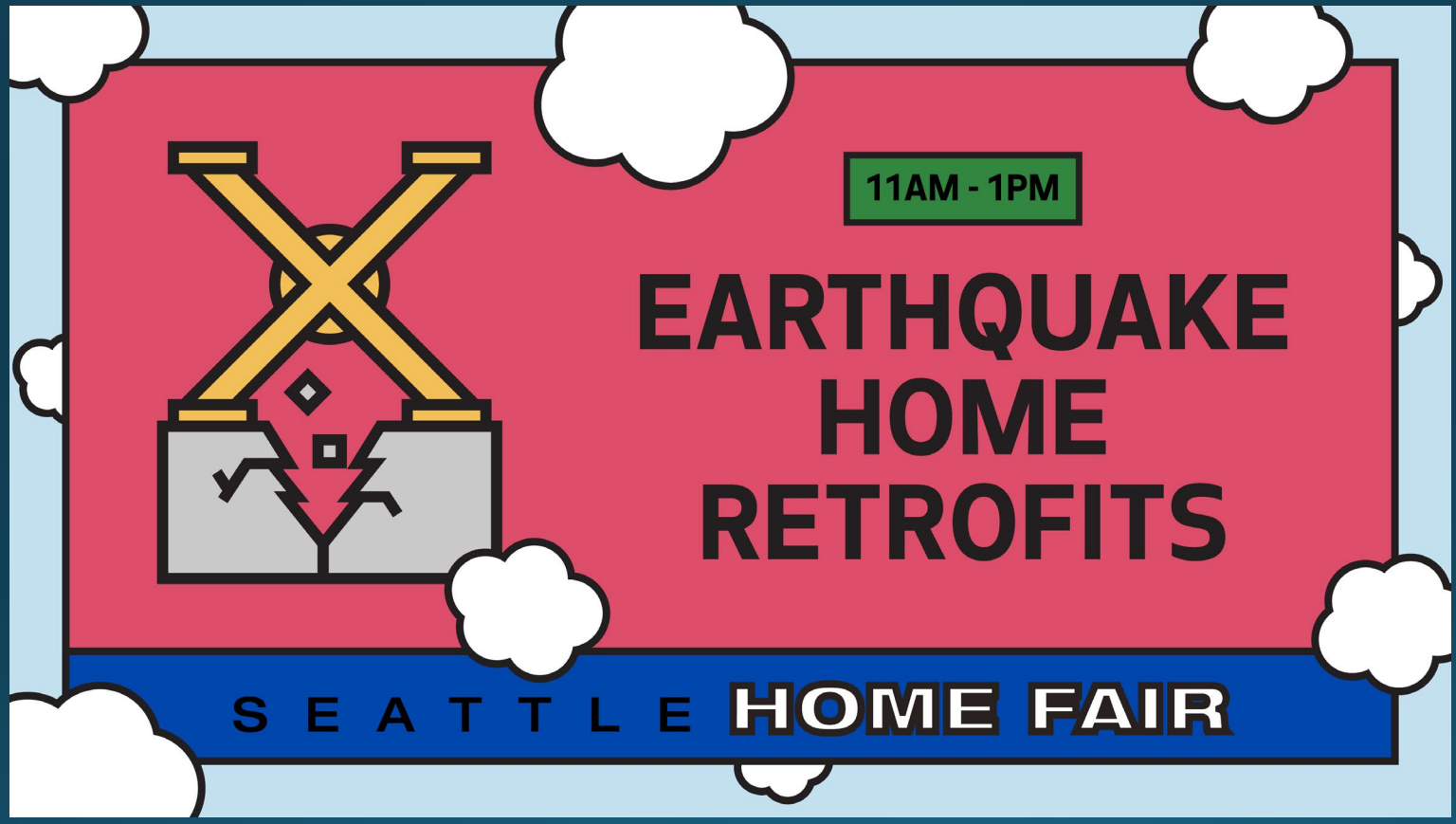
(206) 256-6423

www.seattle.gov/sdci

1901 Stonehenge restoration – from Amazfacts.com

Thank you for joining

Raise your hand or post questions in chat



Our live presentation has ended

The recording will be available on SDCI's website