

RESIDENTIAL DEMOLITION

Overview and
Discussion

Joint DBI & Planning Commission Hearing
April 12, 2018



San Francisco
Planning

Presentation Overview



AGENDA

1. Overview of Demo Regulations
2. Field Inspection Process & Issues
3. Unauthorized Demolition Process: Penalties & Fees
4. Key Takeaways

The City has multiple demolition controls.

Understanding Demolition



DBI Definition of Demolition

103A.3.2 Definitions

- **Demolition** - the total tearing down or destruction of a building containing one or more residential units, or any alteration which destroys or removes, as those terms are defined by the Building Official of the Department of Building Inspection, principal portions of an existing structure containing one or more residential units.
- **Principal Portion** – construction which determines the shape and size of the building envelope (such as the exterior walls, roof and interior bearing elements), or that construction which alters two-thirds or more of the interior elements.

Planning Definition of Demolition (aka "317")

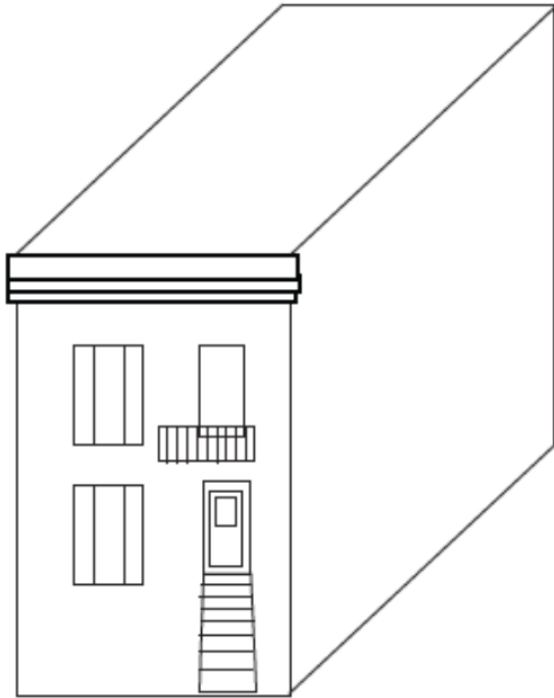
1. **Demolition Permit:** DBI Determines project to be a demo
 2. **Alteration Permit:** Tamount to Demolition
 - ❖ **Lineal Feet @ Foundation Level** – removal of more than 50% of the sum of the Front Facade and Rear Facade and removal of more than 65% of the sum of all exterior walls
- OR**
- ❖ **Square Feet** - removal of more than 50% of the Vertical Envelope Elements and more than 50% of the Horizontal Elements of the existing building.

What is Removal?

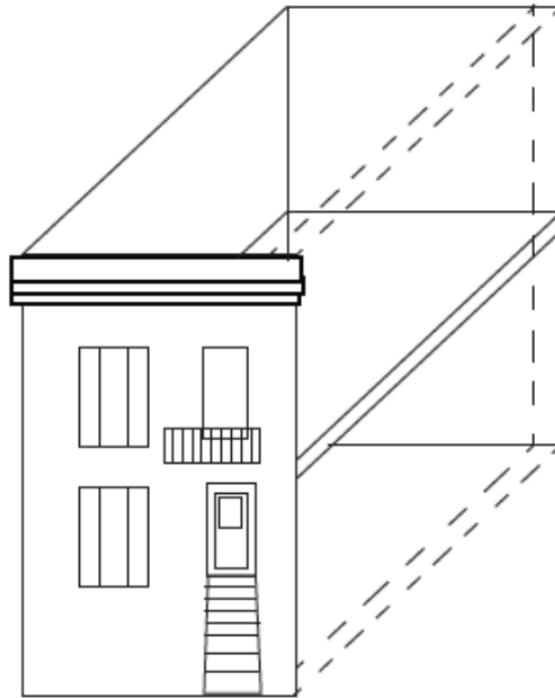
Tantamount to Demolition

- ▶ With reference to a wall, roof or floor structure:
 - the dismantling,
 - relocation, or
 - alteration of the exterior function by construction of a new building element exterior to it

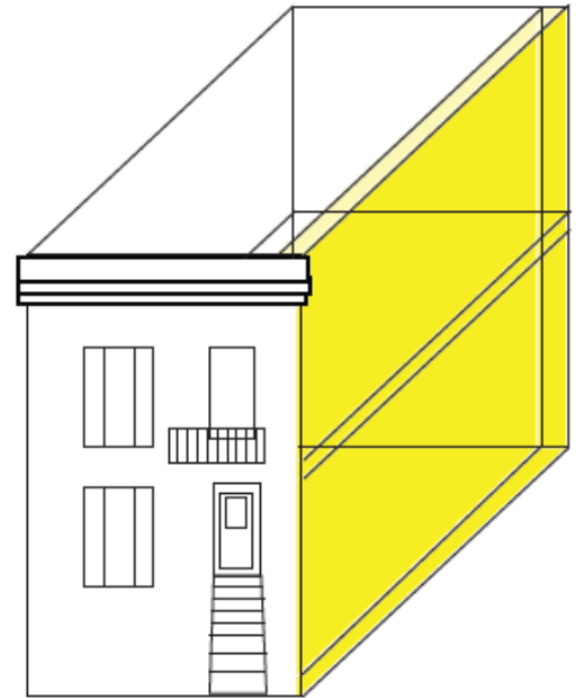
Dismantling or Relocation



EXISTING

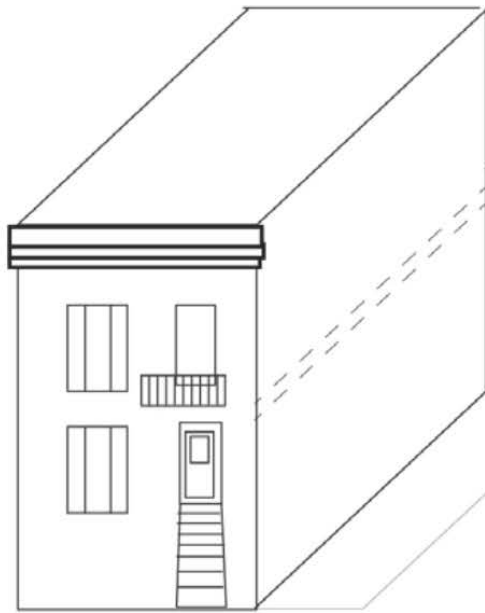


PROPOSED DEMO

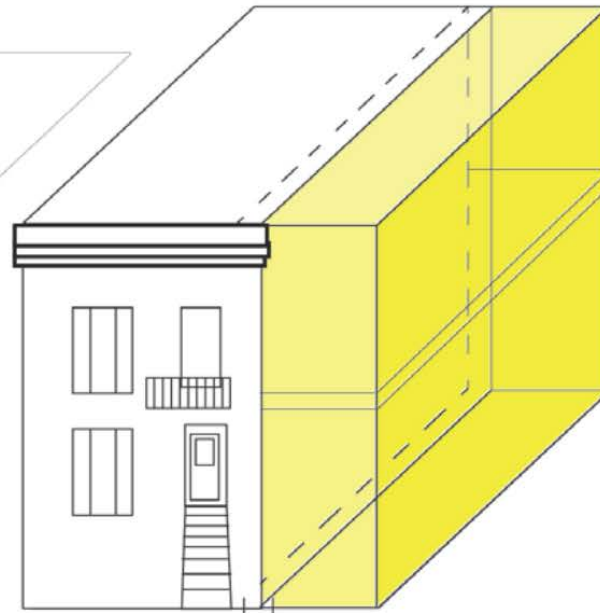


PROPOSED

New Building Element Exterior to Existing Wall



EXISTING



PROPOSED

- proposed wall
- existing wall

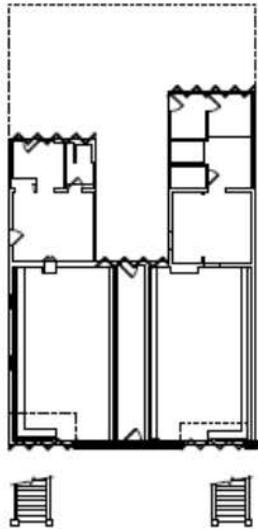
What is not Removal?

Tantamount to Demolition

- ▶ When exterior elements of the building are removed and replaced for repairs or maintenance, in like materials, with no increase in the extent of the element or volume of the building.

Tantamount to Demolition Calculation

FRONT AND REAR FACADE REQUIREMENT



FRONT AND REAR FACADE MEASURED IN LINEAR FEET
AT FOUNDATION LEVEL

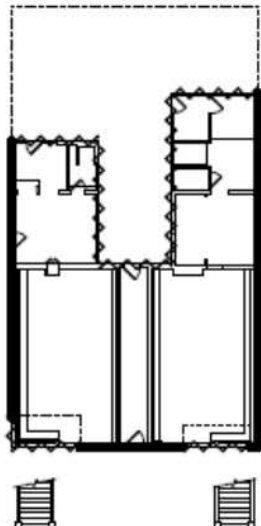
	TO REMAIN	DEMOLISH	TOTAL
WEST ELEVATION	17.7	22.0	39.7
EAST ELEVATION	-	39.7	39.7
TOTAL	17.7	61.7	79.4
	22.3%	77.7%	100%
	(MAX. 50%)		

— EXTERIOR WALLS TO REMAIN
 ~ EXTERIOR WALLS TO BE DEMOLISHED

SUMMARY TABLE NON-DEMOLITION DEMONSTRATION

SEC.317 - LOSS OF DWELLING UNITS THROUGH MERGER, CONVERSION, AND DEMOLITION				
CODE REQTS.	(E) BUILDING	REMAINING IN PROPOSED	OUTCOME/(CODE)	COMPLIANCE
FRONT + REAR FACADE (LINEAR FT AT FOUNDATION)	FRONT = 39.7' REAR = 39.7' TOTAL = 79.4'	FRONT = 17.7' REAR = 0' TOTAL = 0'	22.3% REMAINING OR 77.7% DEMO > 50% (CODE)	X
ALL EXTERIOR WALLS (LINEAR FT AT FOUNDATION)	WEST = 39.7' SOUTH = 56.9' EAST = 87.1' NORTH = 49.2' TOTAL = 232.9'	WEST = 17.7' SOUTH = 56.9' EAST = 0' NORTH = 44.2' TOTAL = 118.8'	51.0% REMAINING OR 49.0% DEMO < 65% (CODE)	✓
VERTICAL ENVELOPE (SF OF SURFACE AREA)	WEST = 1,426 SF SOUTH = 1,856 SF EAST = 1,219 SF NORTH = 1,874 SF TOTAL = 6,375 SF	WEST = 874 SF SOUTH = 1,333 SF EAST = 0 SF NORTH = 1,127 SF TOTAL = 3,334 SF	52.3% REMAINING OR 47.7% DEMO < 50% (CODE)	✓
HORIZONTAL ELEMENTS (SF OF SURFACE AREA)	1ST = 0 SF 2ND = 1,827 SF 3RD = 1,828 SF ROOF = 1,408 SF TOTAL = 5,063 SF	1ST = 0 SF 2ND = 1,593 SF 3RD = 1,165 SF ROOF = 0 SF TOTAL = 2,758 SF	54.5% REMAINING OR 45.5% DEMO < 50% (CODE)	✓

EXTERIOR WALL REQUIREMENT



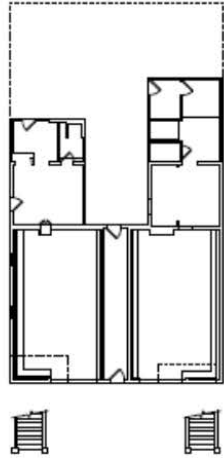
EXTERIOR WALLS MEASURED IN LINEAR FEET AT
FOUNDATION LEVEL

	TO REMAIN	DEMOLISH	TOTAL
WEST ELEVATION	17.7	22.0	39.7
SOUTH ELEVATION	56.9	-	56.9
EAST ELEVATION	-	87.1	87.1
NORTH ELEVATION	44.2	5.0	49.2
TOTAL	118.8	114.1	232.9
	51.0%	49.0%	100%
	(MAX. 65%)		

— EXTERIOR WALLS TO REMAIN
 ~ EXTERIOR WALLS TO BE DEMOLISHED

Tantamount to Demolition Calculation

HORIZONTAL ELEMENTS REQUIREMENT





PLAN FIRST FLOOR LEVEL

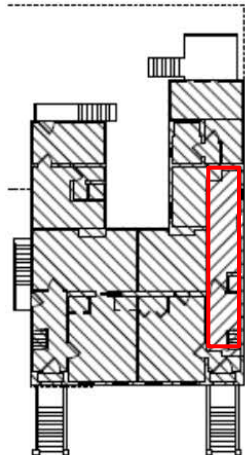
SUM OF HORIZONTAL ELEMENTS IN SQ FT

	TO REMAIN	DEMOLISH	TOTAL
1ST FLOOR LEVEL	-	-	-
2ND FLOOR LEVEL	1,593	234	1,827
3RD FLOOR LEVEL	1,165	663	1,828
ROOF AREA	-	1,408	1,408
TOTAL	2,758	2,305	5,063
	54.5%	45.5%	100%

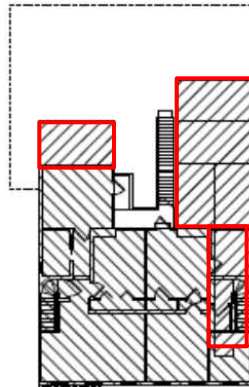
(MAX. 50%)

-  HORIZONTAL ELEMENT TO REMAIN (R)
-  HORIZONTAL ELEMENT TO BE DEMOLISHED (D)

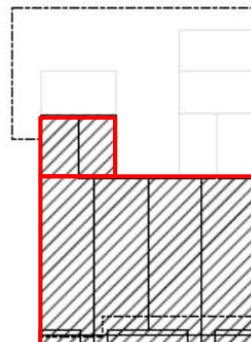
(SEC.317 (b) (5), FLOOR PLATE AT OR BELOW GRADE NOT TO BE INCLUDED)



PLAN SECOND FLOOR LEVEL
(R = 1,593 SQ FT, D = 234 SQ FT)

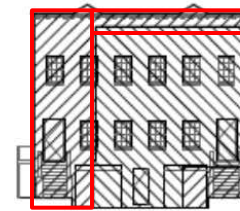


PLAN THIRD FLOOR LEVEL
(R = 1,165 SQ FT, D = 663 SQ FT)



ROOF AREA
(D = 1,408 SQ FT)

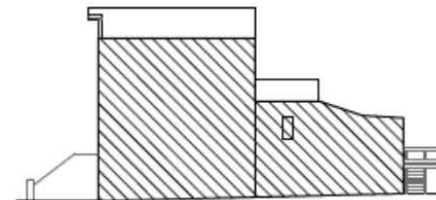
VERTICAL ENVELOPE ELEMENTS REQUIREMENT



WEST ELEVATION
(R = 874 SQ FT, D = 552 SQ FT)



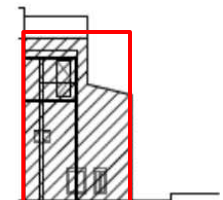
EAST ELEVATION
(D = 1,219 SQ FT)



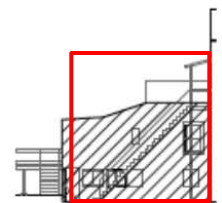
SOUTH ELEVATION ALONG PROPERTY LINE
(R = 1,333 SQ FT)



NORTH ELEVATION ALONG PROPERTY LINE
(R = 1,127 SQ FT, D = 270 SQ FT)



SOUTH ELEVATION IN REAR YARD
(D = 523 SQ FT)





NORTH ELEVATION IN REAR YARD
(D = 477 SQ FT)

SUM OF VERTICAL ENVELOPE ELEMENTS IN SQ FT

	TO REMAIN	DEMOLISH
WEST ELEVATION	874	552
SOUTH ELEVATION	1,333	-
EAST ELEVATION	-	523
NORTH ELEVATION	1,127	270
TOTAL	3,334	3,041
	52.3%	47.7%

(MAX. 50%)

-  VERTICAL ENVELOPE ELEMENT TO REMAIN (R)
-  VERTICAL ENVELOPE ELEMENT TO BE DEMOLISHED (D)

The current controls are ineffective;
they are not achieving any policy objectives.

Implementation Challenges



Planning Perspective



Challenges

- **Market Incentive to be Alteration:**
 - Significant process difference
 - +6 months, CU Hearing, uncertainty
- **Regulations Not Effective:**
 - Typically, if side walls maintained ≠ demo.
 - When only retaining side walls, looks like a demolition to the public
- **Misalignment of Roles/Responsibilities:**
 - Demolition review responsibility on planners
 - Planners not experts regarding construction methods or Bldg. Code requirements
 - Disconnect between what's on plans vs. what needs to happen in the field.

DBI Inspection Perspective

Challenges



- Side walls often deficient in weatherization, fire resistance, structural and seismic. Must be upgraded throughout per Code.
- Electrical, plumbing and HVAC to be installed
- Shoring to preserve walls, floors and roofs to comply with demolition calculations can lead to unsafe conditions in the field for the workers.
- Demolition calculations determined by architect and approved by Planning.
- Site Permit often approved without Building Code issues being completely vetted.
- Disconnect between Architecture and Engineering plan sets.
- Normal to have unexpected field conditions (e.g. dryrot) that require additional demolition. May trigger CU at Planning.

DBI Inspection Perspective



Vertical Additions

- Building permits for vertical additions are the most common source of unauthorized demolition.
- Estimated four or five instances of exceeding the approved demolition are substantiated annually.
- Substantial structural upgrade of building's bearing elements is needed to support additional story.
- Means and methods to add upgraded structural components.
- Unanticipated conditions such as dry-rot found at initial approved demolition.
- Roof or partial roof removed to facilitate adding a story.

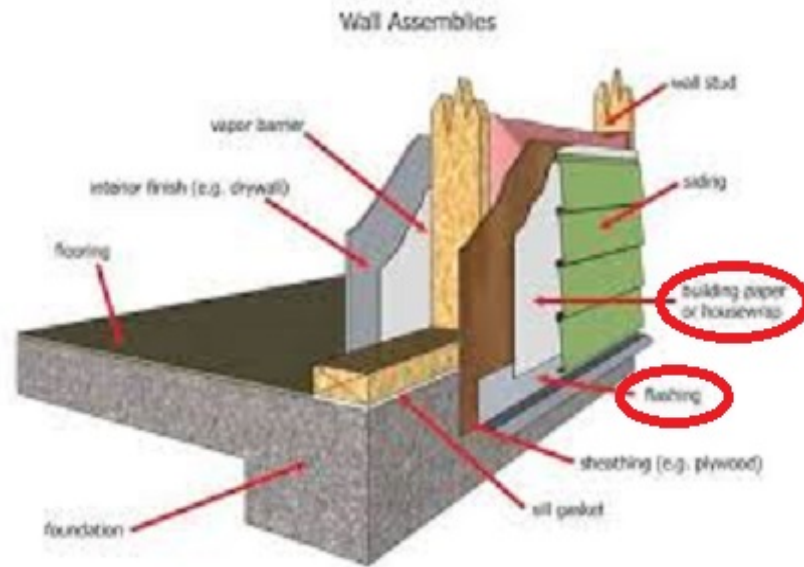
Construction Challenges



Substantial Alterations & Vertical Additions

- Majority of residential remodels and alterations are open concept floor plans
- Restrictions and limitations from SF Planning on alterations existing walls / exterior walls
- \$\$\$ on remodel and addition for non-code compliant building
- Building component affected:
 - Waterproofing
 - Fire Protection
 - Structural Integrity

Weather Protection



Weather Protection

- SFBC Chapter 14 – Exterior Walls
- Section 1403.2: Performance Requirements for Weather Protection
- Exterior walls shall provide building with a weather-resistant exterior wall envelope...The exterior wall envelope shall be designed and constructed within the wall assembly by providing a water-resistive barrier behind the exterior veneer...
- Minimum performance based weather protection per current SFBC cannot be achieved if existing wall left unaltered

Fire Protection

TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE^{a,d,g}

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H ^a , I	OCCUPANCY GROUP F-1, M, S-1 ^f	OCCUPANCY GROUP A, B, E, F-2, I, R ^b , S-2, U ^b
X < 5 ^b	All	3	2	1
5 ≤ X < 10	IA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB	2	1	1 ^c
	IIB, VB	1	0	0
	Others	1	1	1 ^c
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.

b. See Section 706.1.1 for party walls.

c. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.

d. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.

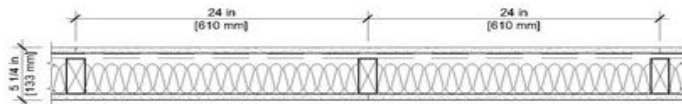
e. For special requirements for Group H occupancies, see Section 415.6.

f. For special requirements for Group S aircraft hangars, see Section 412.4.1.

g. Where Table 705.8 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.

h. Group R-3 and Group U occupancies when used as accessory to Group R-3 occupancies, shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet or more; or when equipped throughout with an automatic residential fire sprinkler system installed in accordance with Section 903.3 the fire-resistance rating shall not be required where the fire separation distance is 3 feet or more.

Fire Test UL U327 Wood Stud (Load-bearing) Exterior Walls	Fire Rating 1 hr.	STC N/A	Thickness (in.) 5-1/4"
---------------------------------------------------------------------------	-----------------------------	-------------------	----------------------------------



CAD · REVIT · VIEW ASSEMBLY

- **Gypsum Board** - 5/8 in. thick gypsum board applied vertically
- **Resilient Channel** - 25 ga. furring channels installed horizontally spaced 24 in. OC
- **Wood Studs** - 2 in. x 4 in. wood studs spaced max. 24 in. OC
- **Batts and Blankets** - Min. 3-1/2 in. thick mineral wool batt insulation or 3 in. thick fiberglass insulation
- **Gypsum Board** - 5/8 in. thick gypsum board applied vertically

Fire Protection

- SFBC Chapter 6 – Types of Construction
- Section 602: Fire-Resistance Rating Requirements for Exterior Wall based on Fire Separation Distance
- Example:
Use: 2-Family Dwelling
Construction Type: 5B
Number of Stories: 3 + 0 Basement
FSD: Zero Lot Line
- Minimum fire protection per current SFBC at exterior wall assembly cannot be achieved if existing wall left unaltered

Fire Protection



Fire Protection

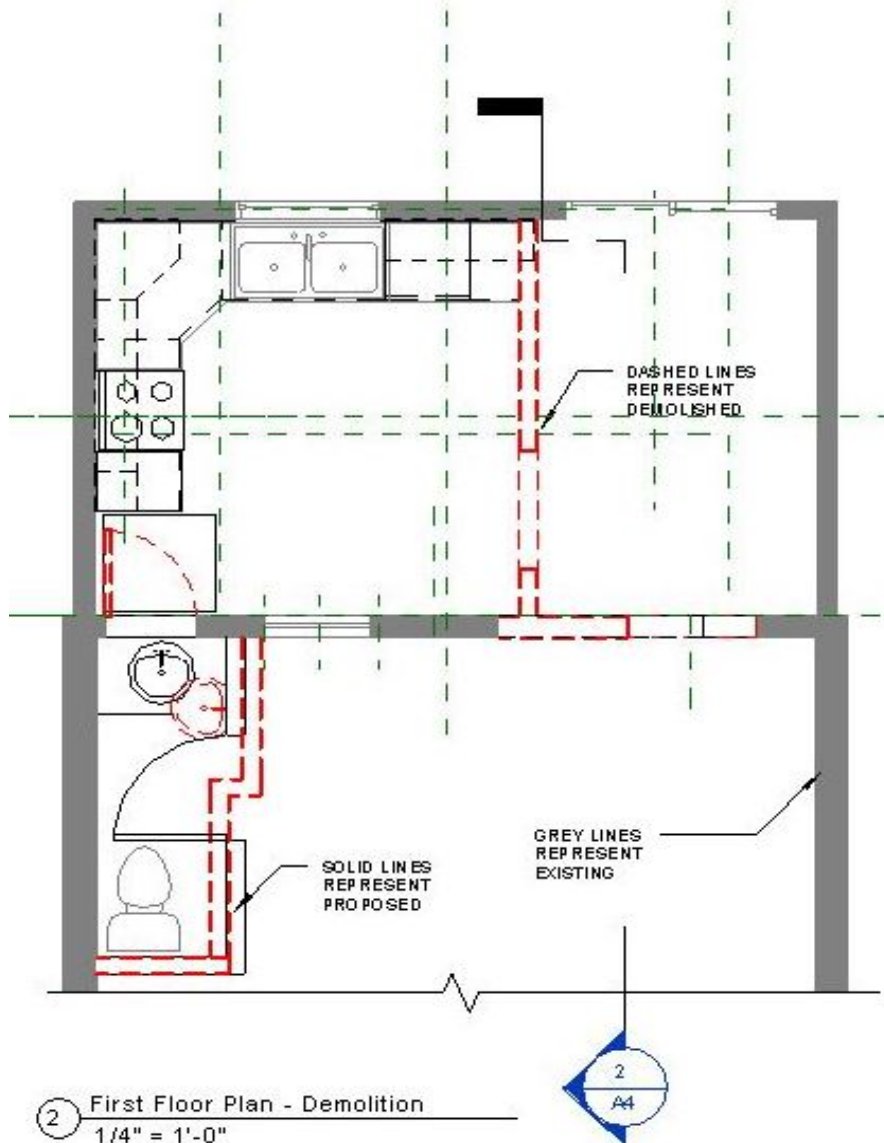
- Typical existing exterior wall assembly
- Impossible for addition of gypsum board at exterior face of stud wall without alteration of existing wall
- Impossible for addition of continuous or overlapping building paper at exterior face of stud wall without alteration of existing wall

Structural Integrity

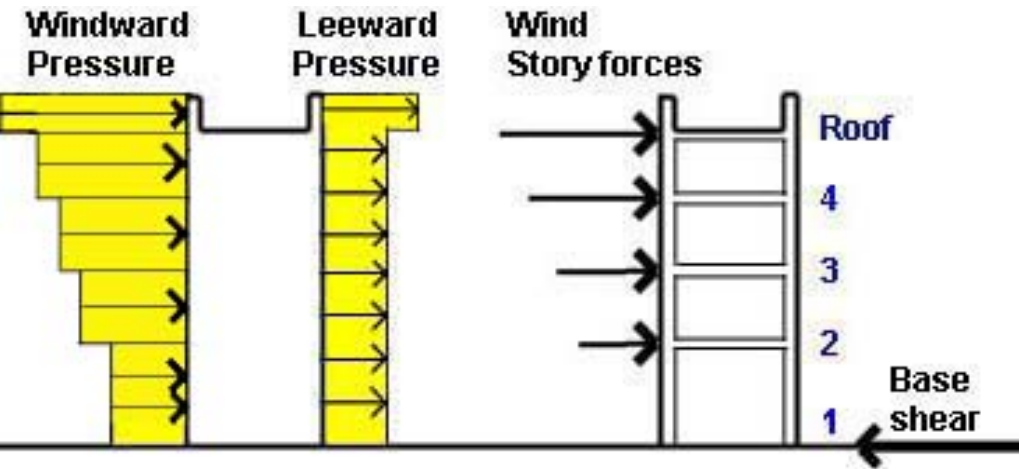
Substantial Alteration – Code Requirements

- SFBC Chapter 34 – Existing Structures
- Section 3404.7.2: Structural Alterations

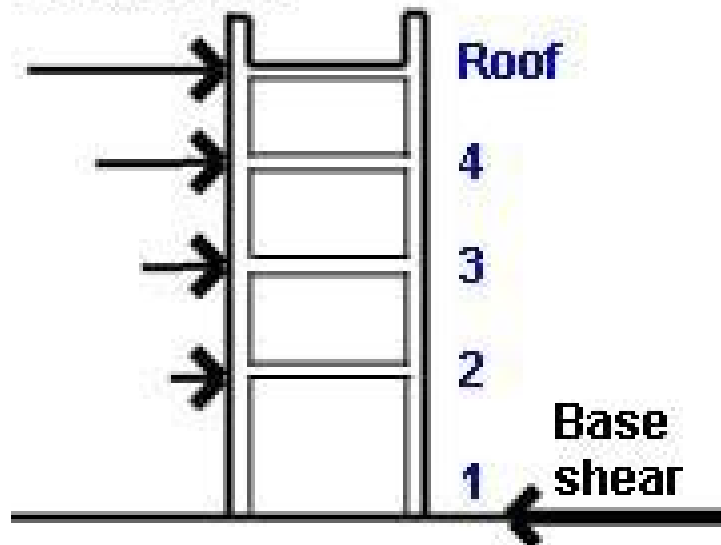
When more than **30%**...of the floor or roof areas of the building or structure have been or are proposed to be involved in substantial structural alteration, the building or structure shall comply with Section **3401.10**. The areas to be counted towards the 30% shall be those area tributary to the vertical load carrying components (joist, beams, columns, walls and other structural components) that have been or will be removed, added or altered...



Structural Integrity



Seismic Story forces



Substantial Alteration – Code Requirements

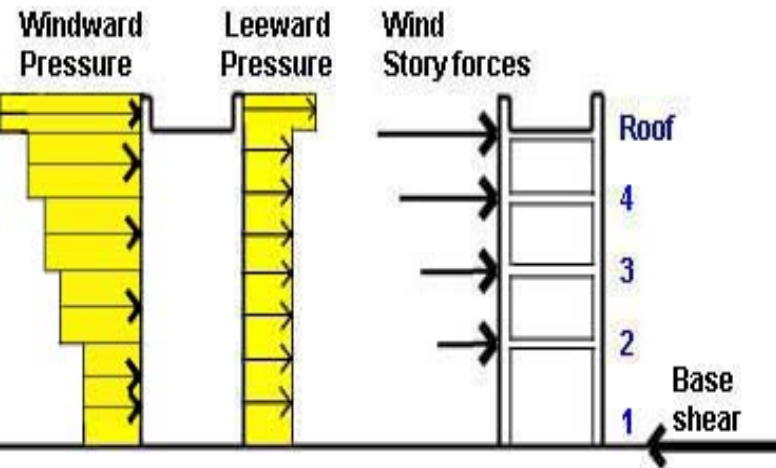
- Section 3401.10: Lateral Force Design Requirements for Existing Buildings.

Whenever other provisions of this code require compliance with this section, the lateral force provision of Section **1604.10** shall apply to the entire building or structure except as otherwise provided therein.

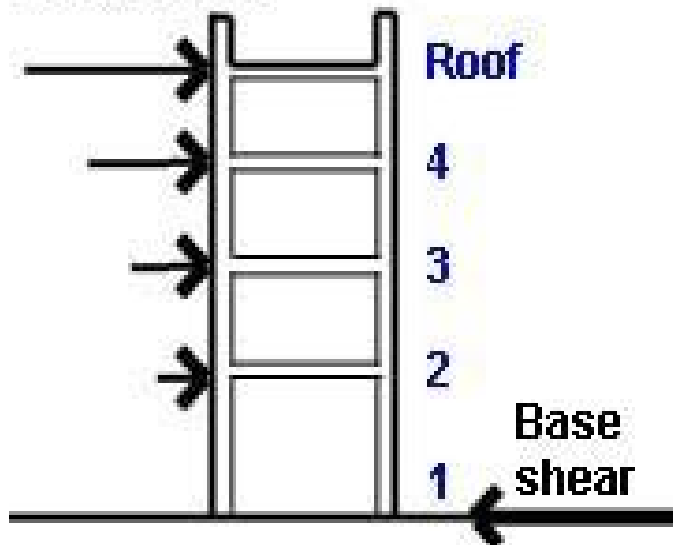
- Section 1604.10: Wind and Seismic Detailing

Lateral force-resisting systems shall meet seismic detailing requirements and limitations prescribed in this code and ASCE 7...even when wind load effects are greater than seismic load effects.

Structural Integrity



Seismic Story forces

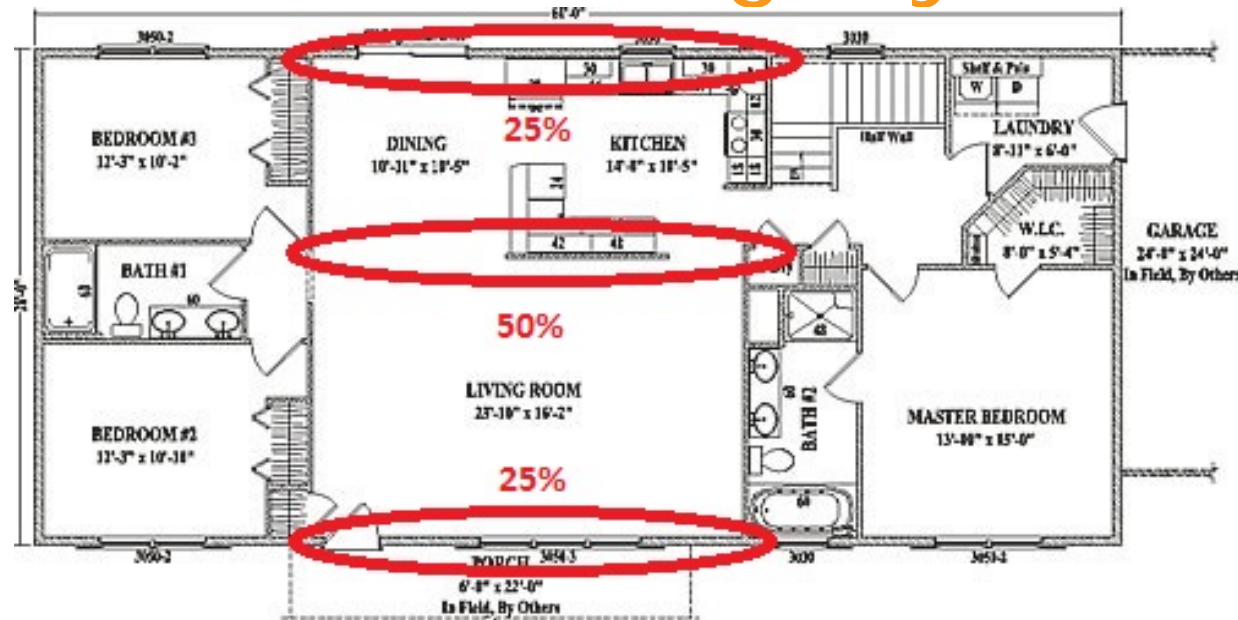


Substantial Alteration - Seismic

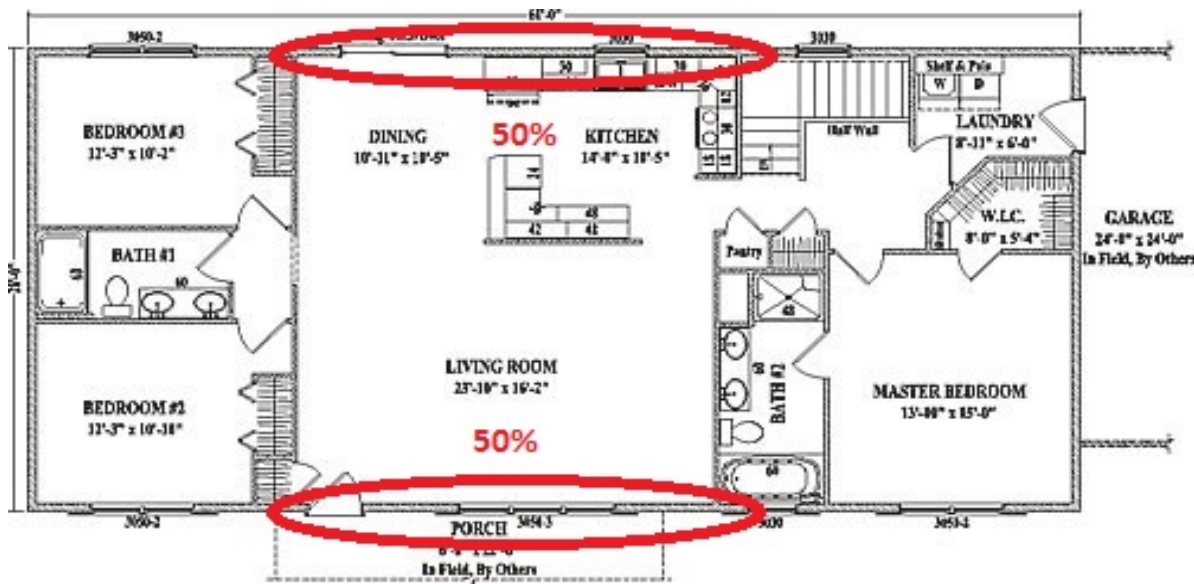
- Section 1604.10 by DEFINITION:
- Full lateral (wind and seismic) strengthening of the entire building to current code compliance.
- Example 1: Simple Kitchen Remodel
Substantial Alteration
Use: 2-Family Dwelling
Construction Type: 5B
Number of Stories: 3 + 0 Basement
Scope of Work: Kitchen Remodel 3rd Floor
- Load increase from 25% to 50% at exterior bearing walls
- 100% increase in load at exterior bearing walls
- >30%. Full lateral strengthening of ENTIRE building.

Structural Integrity

Substantial Alteration – Seismic



- Increased load demand on exterior wall by 100%.



Structural Integrity

Substantial Alteration: Structural Strengthening



- Sister new 2x to existing stud walls to 1st floor
- Expose existing stud wall to running electrical and plumbing
- Both considered “Unlawful demolition” defined by Planning Department.
- Structural integrity of existing wall unable to be achieved if existing wall left unaltered.

Structural Integrity

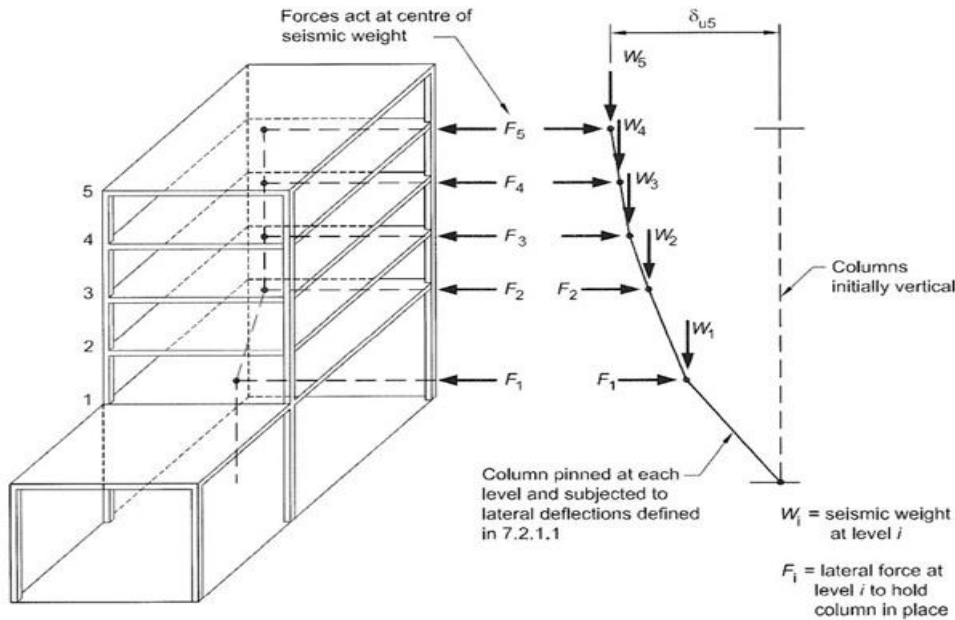


Vertical Addition

Example 2: 1-Story Vertical Addition

- Basic Physics: $F = m \times a$
- Force = mass x acceleration
- Acceleration based on site location, proximity to fault line and soil type; cannot control
- Increase in mass of the building (the addition) = increase in “Force” your building must withstand
- Linear relationship between mass and force

Structural Integrity



Vertical Addition

- Vertical addition involves structural Strengthening ENTIRE BLDG
 - Vertical Component
 - Lateral Component
- Involves exposing majority of building to strengthening “skeleton” framing of building.
- Practically unachievable without alteration of existing structure below.
- Again, “Unlawful Demolition” defined by planning.



Concluding Thoughts



Conclusion

- Practically UNACHIEVEABLE to NOT alter existing walls in a “substantial alteration” or “vertical addition” to obtain:
- FULL code compliance = MINIMUM STANDARDS
- \$\$\$ on remodel and addition for non-code compliant building:
 - Insufficient Weather protection
 - Insufficient Fire Protection
 - Insufficient Structural Integrity

DBI Definition of Demolition

103A.3.2 Definitions

- **Demolition** - the total tearing down or destruction of a building containing one or more residential units, or any alteration which destroys or removes, as those terms are defined by the Building Official of the Department of Building Inspection, principal portions of an existing structure containing one or more residential units.
- **Principal Portion** – construction which determines the shape and size of the building envelope (such as the exterior walls, roof and interior bearing elements), or that construction which alters two-thirds or more of the interior elements.

Building Code 103A.3.2

Example of when demolition was exceeded in 2006.



DBI and Planning work together to
resolve complaints of unpermitted work.

Penalties are one part of this process.

Unauthorized Demolition



Unauthorized Work & Work Beyond Permitted Scope



Current Process

1. DBI Site Inspection confirms work beyond scope/without permit.
2. Notice of Violation issued and Stop Work posted.
3. Site secured and weatherized.
4. Design team usually visits DBI for direction.
5. Permit holder advised to contact Planning Department for next steps typically, new permit application with plans.

Penalties and Fees

DBI

1. A Stop Work on the project and routed to Planning for next steps.
2. Exceeding Scope of Work: Table 110A, 1A-K, 5. **2x** the valuation of the work.
3. Work w/o Permit: **9x** the valuation of the work.
4. Monetary penalties typically small, based on demolition work valuations.
5. Code enforcement fees and Orders of Abatement lead to greater penalties (usually in the thousands of dollars).
6. Referral to City Attorney's Office for litigation and possible penalty.
7. Unlawful Demolition Order prohibits the project to proceed for five years.



Planning

1. Penalties are not intended to be punitive
 - Goal is to secure compliance and compensate the City for its costs.
2. Correction permit routed from DBI; Planning reviews and determines next steps.
3. If additional demo results in Tantamount to Demolition, Commission hearing scheduled.
 - Typically 4-6 month delay.
 - May no longer support project (rent control).
4. If correction permit not sought in a timely manner, Plng can open separate enforcement.
 - Must exhaust all administrative due process
5. Then penalties can be assessed (up to \$250/day); appealable to Bd of Appeals.
6. Failure to abate can be referred to the City Attorney.

Possible Action Steps

- Require a dedicated demolition page on the drawings that defines the full scope of demolition.
- Refer structural addenda to Planning for review.
- Evaluate addenda with site permit to ensure consistency and feasibility.
- Require site inspections by DBI at start of work to review permit and site conditions for vertical additions with a valuation of more than \$150K.

Concluding Thoughts

1. Difficult topic with no easy solution; needs a thoughtful legislative fix.
2. Establish transparent policy objectives that can be implemented prior to and through construction.
 - Neighborhood Character (historic vs. old/charming vs. new/contextual)
 - Affordability (existing structure vs. density vs. rent control)
 - Upgraded Housing Stock (seismic, fire, weatherization, modern amenities)
3. Create a shared definition of demolition that all stakeholders can understand.

THANK YOU



San Francisco
Planning



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