

MAIN STREET RENOVATION 101

Who is Kronberg Wall?

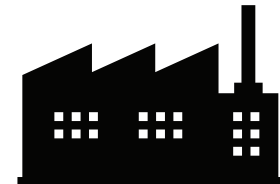
WE ARE CONSCIOUS URBAN PLACEMAKERS



NEIGHBORHOOD ACTIVATORS



URBAN INFILL



ADAPTIVE REUSE

Why Main Street redevelopment?

Because too often we see places like this...



...surrounded by places like this.

We believe walkable areas with existing infrastructure are the easiest targets for quick and cost-effective antidotes to sprawl.

Most often these are places like a
Main Street.

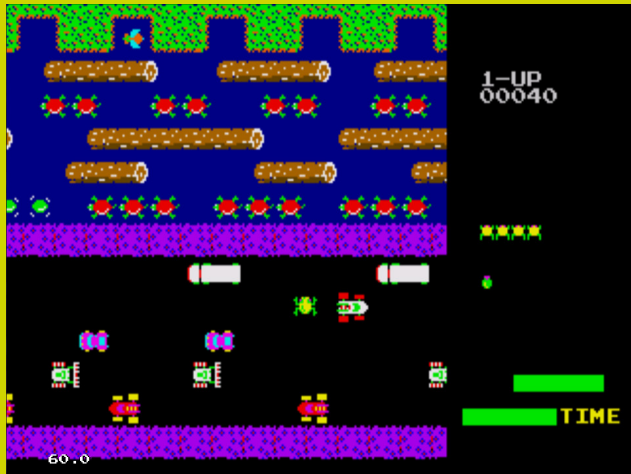


So you want to redevelop a small scale existing building...

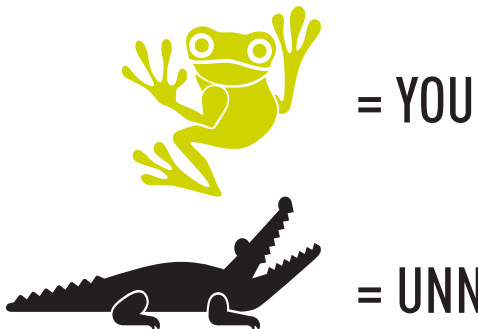


Seems simple enough, but...

Small scale redevelopment is like a game of frogger.



IT SHOULDN'T HAVE
TO BE SO HARD...



Why is redevelopment so hard?

- 1 Existing buildings often don't meet new code requirements
- 2 Retrofitting buildings (especially small buildings) to meet new requirements is often more expensive than constructing a new building
- 3 It's just not worth the added time or cost to bring the building up to current codes

So buildings that have been standing and functioning for over 100 years are technically **NON-COMPLIANT** with current building codes.

What requirements are standing in my way?

The current International Building code (since the 2009 version), has required fire sprinklers for all multifamily buildings. This means anything from a triplex on up, or anything in a mixed use building counts as multifamily. For multifamily, there is the option to provide a NFPA 13R sprinkler system instead of a full 13 system. This is a big deal.

NFPA 13 Sprinkler System:

A full 13 system requires a dedicated water line from the street with new tap and fee, new sprinkler riser, and all the valves and gauges before you even start running galvanized sprinkler pipe and heads.



In Atlanta, the tap, fee, line to the building, and riser often price out at \$60,000-\$70,000 before you even start running sprinkler heads.

\$\$\$\$\$\$\$\$\$\$

NFPA 13R Sprinkler System:

A 13R system is usually allowed to tap into the existing domestic water system without requiring all the separate infrastructure described above. It can also be run with PVC instead of hard pipe, further reducing cost.



No additional cost for tap - you only pay to run the sprinkler heads.

\$\$

So if I have to install a NFPA 13 sprinkler...

GAME OVER!

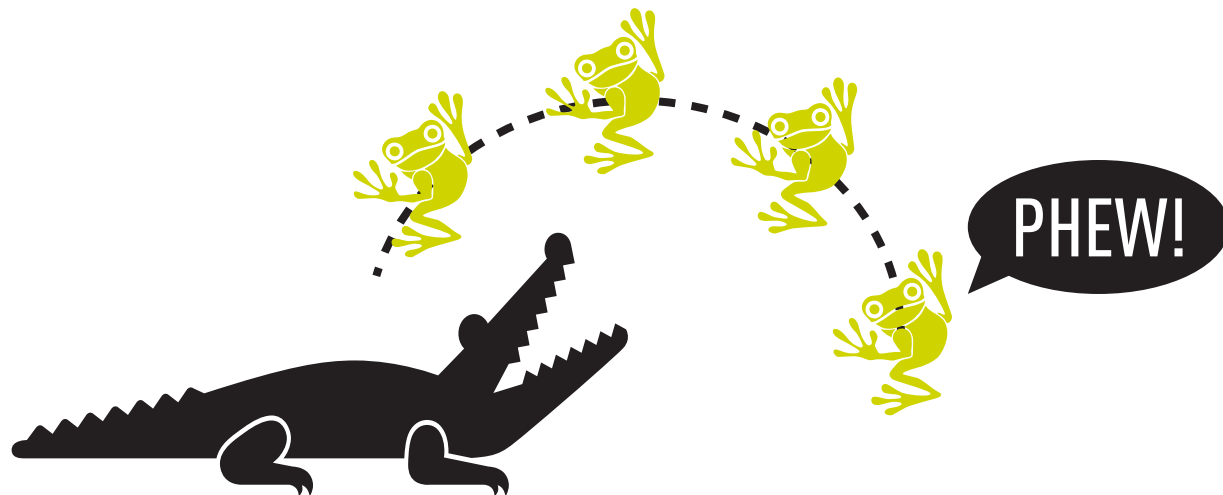
The requirement to install a NFPA 13 sprinkler system for a small building is the equivalent of being eaten by an alligator in Frogger... the costs outweigh the benefits.



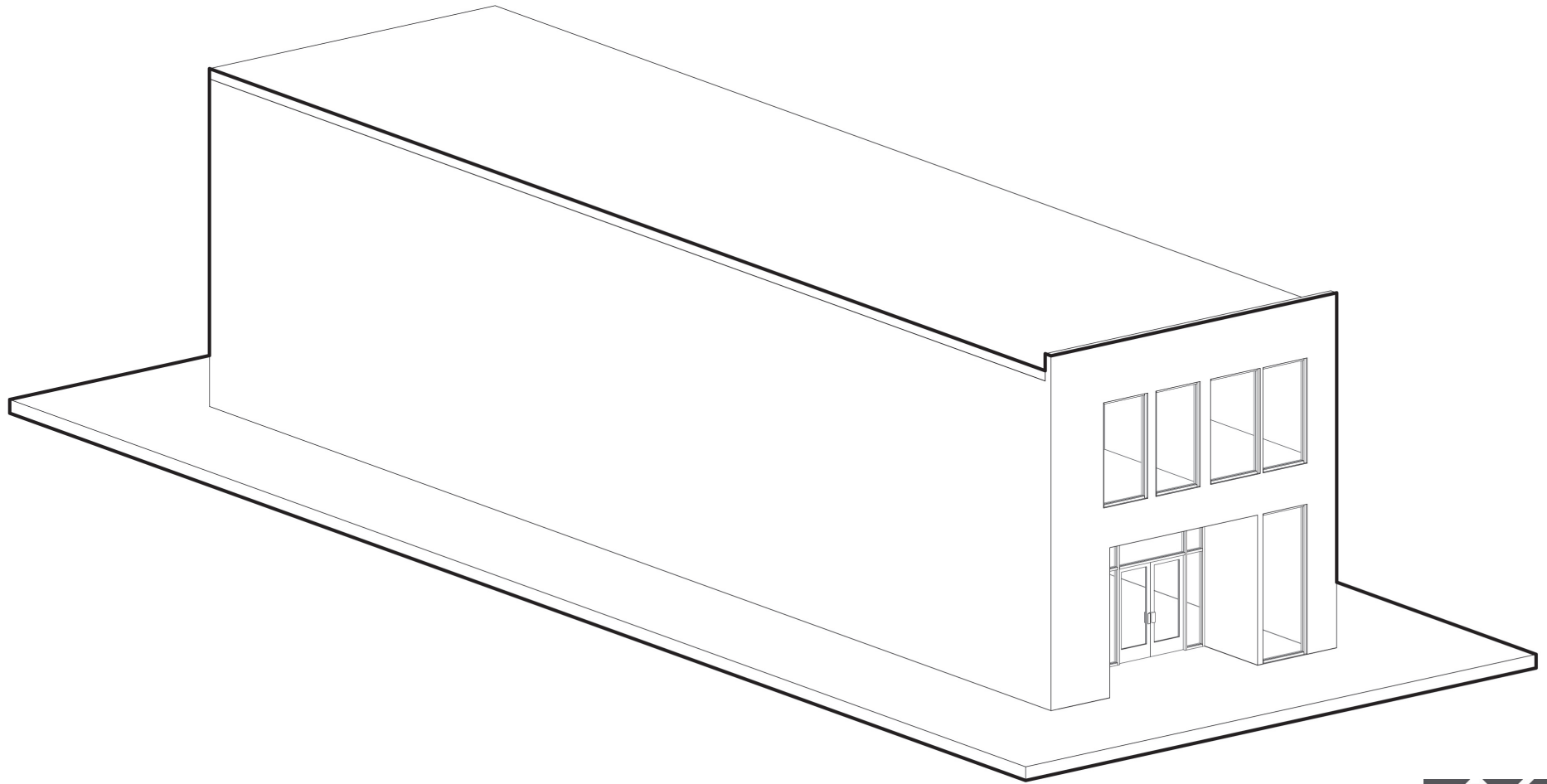
Is it possible to redevelop a building without needing to
install a commercial sprinkler?

YES!

We've discovered a few ways to leap over that alligator.



Let's use a "typical" main street building as our baseline.



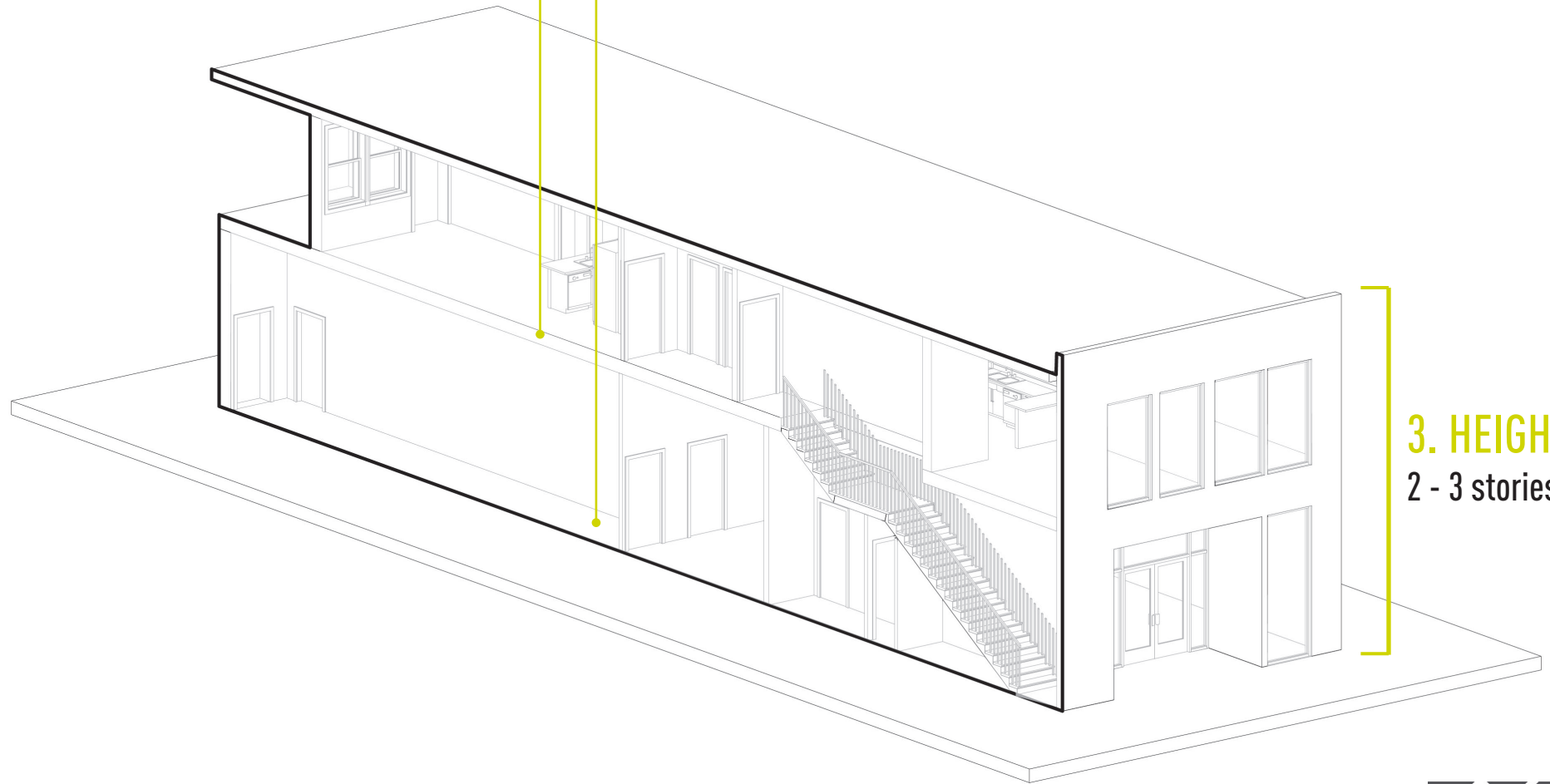
We can start out with some **physical** assumptions.

1. CONSTRUCTION TYPE:

- a) masonry walls, wood floors (type III)
- b) all wood (type V)

2. AREA:

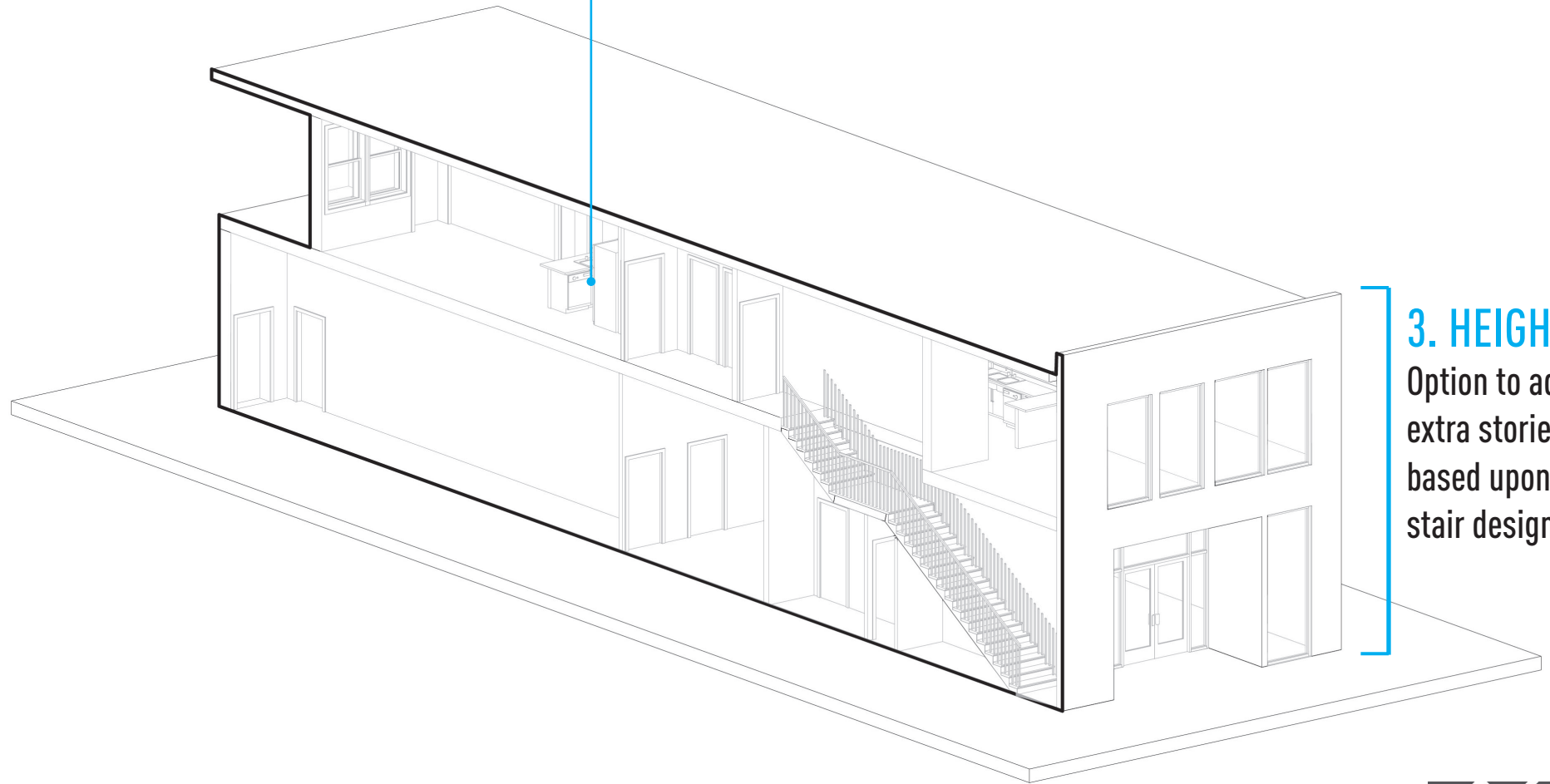
- a) type III: 19,000 SF max. floor plate
- b) type V: 9,000 SF max. floor plate



3. HEIGHT:
2 - 3 stories

And some **physical** goals.

1. MINIMAL ALTERATIONS TO CONSTRUCTION TYPE & AREA



3. HEIGHT:

Option to add
extra stories
based upon
stair design

We can begin with some **egress** assumptions.

SECTION 3404 ALTERATIONS

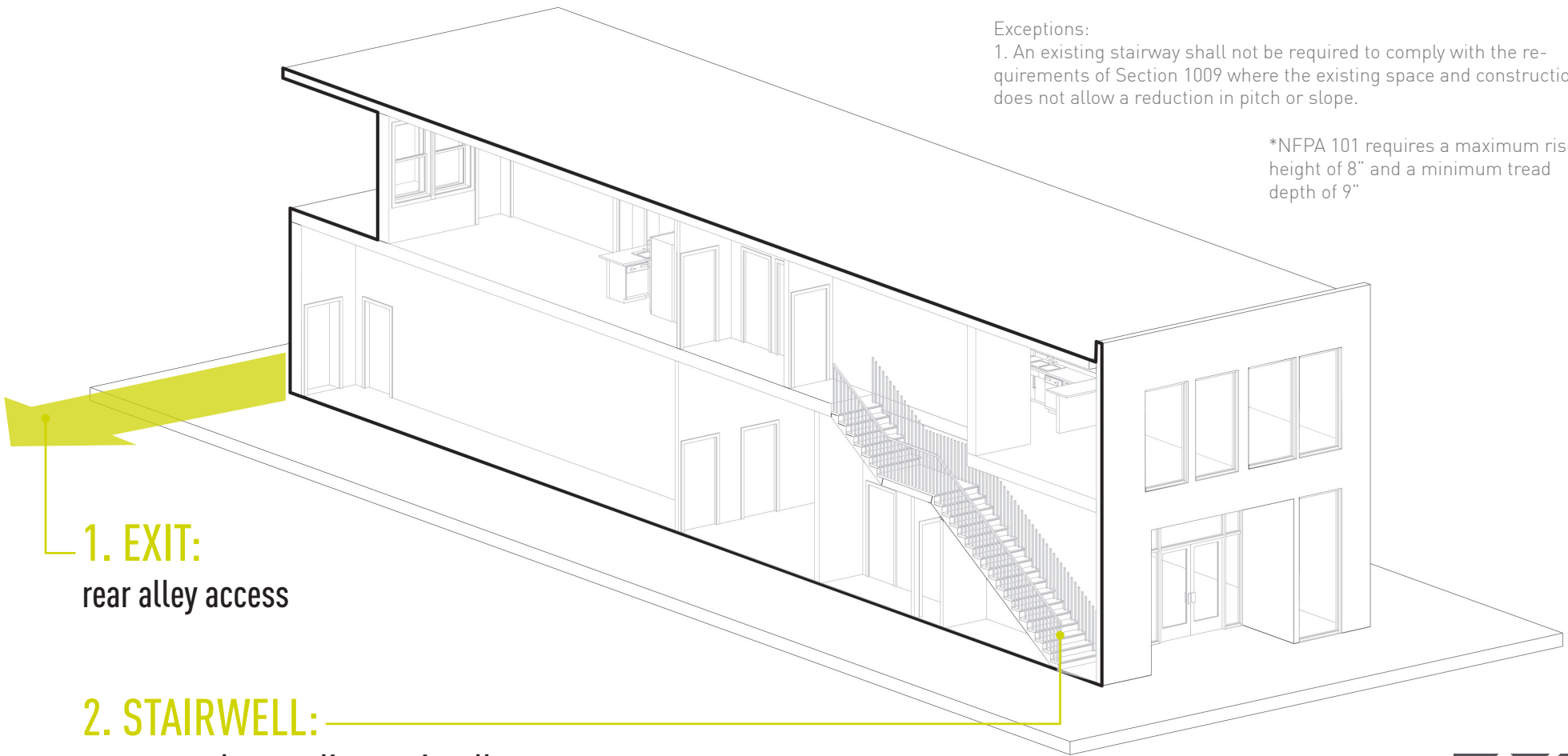
3404.1 General.

Except as provided by Section 3401.4 or this section, alterations to any building or structure shall comply with the requirements of the code for new construction. Alterations shall be such that the existing building or structure is no less complying with the provisions of this code 570 than the existing building or structure was prior to the alteration

Exceptions:

1. An existing stairway shall not be required to comply with the requirements of Section 1009 where the existing space and construction does not allow a reduction in pitch or slope.

*NFPA 101 requires a maximum riser height of 8" and a minimum tread depth of 9"



1. EXIT:
rear alley access

2. STAIRWELL:
one non code-compliant stairwell

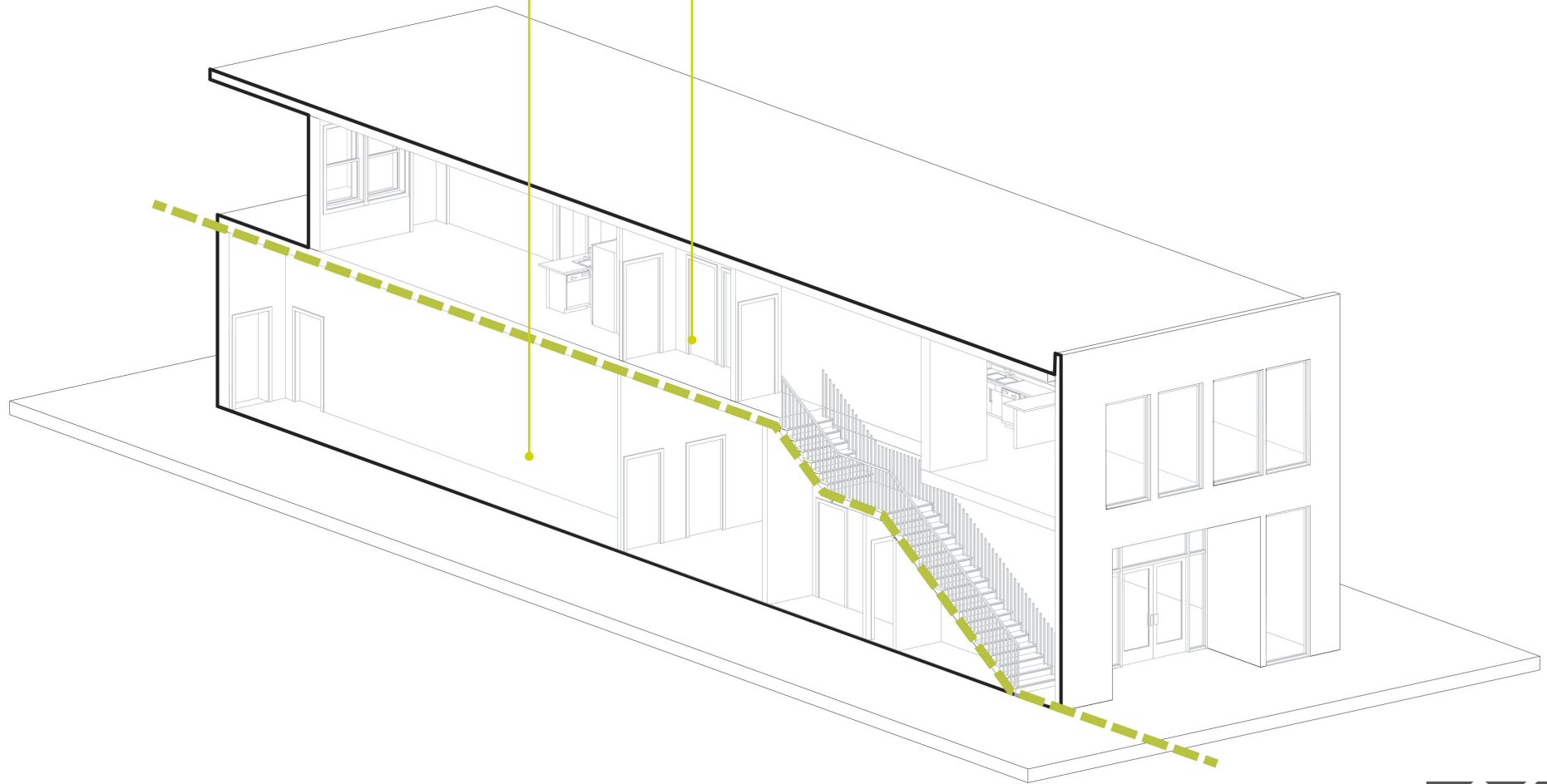
We can make some **occupancy** assumptions.

1. FIRST FLOOR:

- a) mercantile (M)
- b) business (B)

2. SECOND FLOOR:

- business (B)



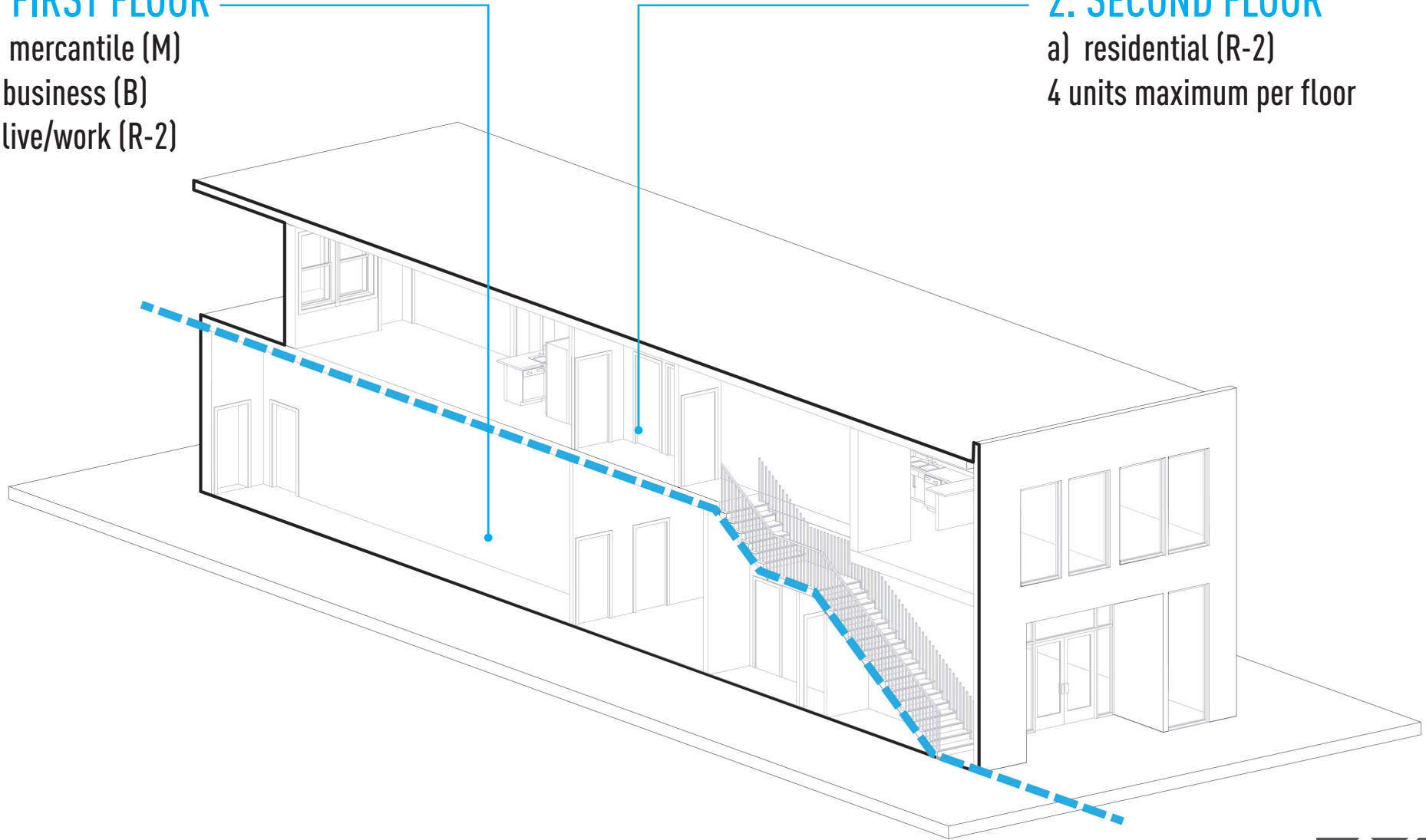
And establish some **occupancy** goals.

1. FIRST FLOOR

- a) mercantile (M)
- b) business (B)
- c) live/work (R-2)

2. SECOND FLOOR

- a) residential (R-2)
- 4 units maximum per floor



It is absolutely essential to know your building's existing occupancies. Check with your local code official to confirm.

KNOW YOUR EXISTING OCCUPANCIES

Ok, I've confirmed my existing occupancies. So is a change of occupancy allowed? What about mixed-occupancy?

Let's find out!

First, check which codes your municipality uses.

International Building Code (IBC)

Most municipalities in the U.S. have adopted the IBC as their primary model building code. As mentioned, most existing buildings do not comply with current IBC requirements for new construction.



Most jurisdictions currently use.

Int. Existing Building Code (IEBC)

The IEBC is another model code intended to provide alternative approaches for existing buildings to meet code compliance. Not many jurisdictions have adopted the IEBC.



Encourage your jurisdiction to adopt!

Now, check the International Building Code (IBC).

IBC says:

YES, change of occupancy is allowed, but...only if the new occupancy is less hazardous than the existing occupancy OR you separate occupancies (if mixed use).

SECTION 3408

CHANGE OF OCCUPANCY

3408.1 Conformance

No change shall be made in the use or occupancy of any building that would place the building in a different division of the same group of occupancies, unless such building is made to comply with the requirements of this code for such division or group of occupancies. Subject to the approval of the building official, the use or occupancy of existing buildings shall be permitted to be changed and the building is allowed to be occupied for purposes in other groups without conforming to all the requirements of this code for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use.

But how do I know what is less hazardous?

International Existing Building Code (IEBC) says:

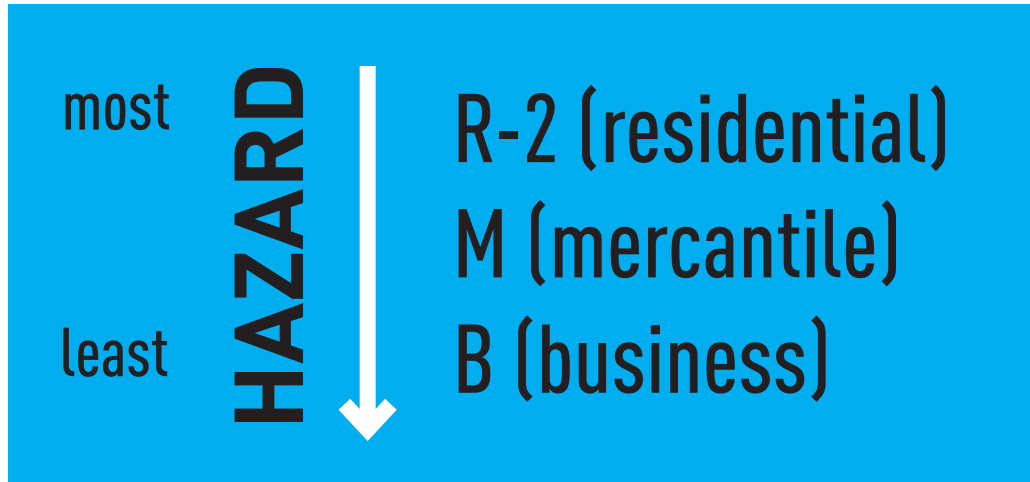


TABLE 1012.5
HEIGHTS AND AREAS HAZARD CATEGORIES

RELATIVE HAZARD	OCCUPANCY CLASSIFICATION
1 (HIGHEST HAZARD)	H
2	A-1, A-2, A-3, A-4, I, R-1, R-2, R-4
3	E, F-1, S-1, M
4 (LOWEST HAZARD)	B, F-2, S-2, A-5, R-3, U

And what does occupancy separation involve?

IBC says:

When residential is above, partial occupancy change in a non-sprinklered building requires **2-hour** separation between the occupancies.

SECTION 3412.2 APPLICABILITY

3412.2.2 Partial Change in Occupancy

Where a portion of the building is changed to a new occupancy classification, and that portion is separated from the remainder of the building with fire barriers or horizontal assemblies having a fire-resistance rating as required by Table 508.4 for the separate occupancies, or with approved compliance alternatives, the portion changed shall be made to comply with the provisions of this section.

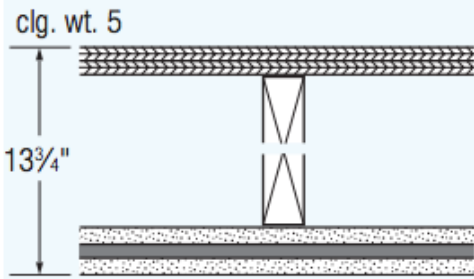
Where a portion of the building is changed to a new occupancy classification, and that portion is not separated from the remainder of the building with fire barriers or horizontal assemblies having a fire-resistance rating as required by Table 508.4 for the separate occupancies, or with approved compliance alternatives, the provisions of this section which apply to each occupancy shall apply to the entire building. Where there are conflicting provisions, those requirements which secure the greater public safety shall apply to the entire building or structure.

**TABLE 508.4
REQUIRED SEPARATION OF OCCUPANCIES (HOURS)**

OCCUPANCY	Ad, E		I-1, I-3, I-4		I-2		R		F-2, S-2b, U		B, F-1, M, S-1		H-1		H-2		H-3, H-4, H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
Ad, E	N	N	1	2	2	NP	1	2	N	1	1	2	NP	NP	3	4	2	3a
I-1, I-3, I-4	-	-	N	N	2	NP	1	NP	1	2	1	2	NP	NP	3	NP	2	NP
I-2	-	-	-	-	N	N	2	NP	2	NP	2	NP	NP	NP	3	NP	2	NP
R	-	-	-	-	-	-	N	N	1c	2c	1	2	NP	NP	3	NP	2	NP
F-2, S-2b, U	-	-	-	-	-	-	-	-	N	N	1	2	NP	NP	3	4	2	3a
B, F-1, M, S-1	-	-	-	-	-	-	-	-	-	-	N	N	NP	NP	2	3	1	2a
H-1	-	-	-	-	-	-	-	-	-	-	-	-	N	NP	NP	NP	NP	NP
H-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N	NP	1	NP

What is required for a 2-hour separation?

UL says:

2 Hour Fire-Rated Construction		Dimensional Lumber		Acoustical Performance		
Construction Detail	Description	Test Number	STC	IIC	Test Number	
 clg. wt. 5 13¾"	- Two layers 5/8" SHEETROCK FIRECODE C Core gypsum panels – 1" nominal wood sub and finished floor – 2 x 10 wood joist 16" o.c. – RC-1 channel or equivalent – joints finished	UL Des L511			Assembly not recommended when sound control is a major consideration	

Is there a way to avoid occupancy separation?

IBC says:

**Live/work units are classified as R-2 occupancy;
separation requirements do not apply.**

SECTION 419

LIVE/WORK UNITS

419.2 Occupancies

Live/work units shall be classified as a Group R-2 occupancy. Separation requirements found in Sections 420 and 508 shall not apply within the live/work unit when the live/work unit is in compliance with Section 419. High-hazard and storage occupancies shall not be permitted in a live/work unit. The aggregate area of storage in the nonresidential portion of the live/work unit shall be limited to 10 percent of the space dedicated to nonresidential activities.

Are there any limitations to a live/work occupancy?

419.1.1 Limitations. The following shall apply to all live/work areas:

1. Area

The live/work unit is permitted to be not greater than 3,000 square feet in area

2. Nonresidential Area

The nonresidential area is permitted to be not more than 50% of the area of each live/work unit

3. Nonresidential Location

The nonresidential area function shall be limited to the first or main floor only of the live/work unit

4. Occupancy Count

Not more than five nonresidential workers or employees are allowed to occupy the nonresidential area at any one time.

Does a historic designation from IEBC help?

IEBC says:

If a sprinkler system is added to the building (including 13R), a historic designation can make code conformance much easier.

SECTION 1203

FIRE SAFETY

1203.1 Scope

This section recognizes the unique aspects associated with older historical structures. It reinforces the importance of the means of egress pathway while granting the code official some latitude in accepting some degree of variance in the egress components.

1203.2 General

Every historic building that does not conform to the construction requirements specified in this code for the occupancy or use and that constitutes a distinct fire hazard as defined herein shall be provided with an approved automatic fire-extinguishing system as determined appropriate by the code official. However, an automatic fire-extinguishing system shall not be used to substitute for, or act as an alternative to, the required number of exits from any facility.

Some helpful IEBC historic designation examples include:

1203.7: One-hour fire resistant assemblies

Where 1-hour fire-resistance-rated construction is required by these provisions, it need not be provided, regardless of construction or occupancy, where the existing wall and ceiling finish is wood or metal lath and plaster.

1203.8: Glazing in fire-resistance-rated systems

Historic glazing materials are permitted in interior walls required to have a 1-hour fire-resistance rating where the opening is provided with approved smoke seals and the area affected is provided with an automatic sprinkler system.

1203.9 & 1203.10: Stairway railings & Guards

Grand stairways shall be accepted without complying with the handrail and guard requirements. Existing handrails and guards at all stairs shall be permitted to remain, provided they are not structurally dangerous.

1205.4: Occupancy Separation

Required occupancy separations of 1 hour may be omitted when the building is provided with an approved automatic sprinkler system throughout.

What have we learned so far?

- 1 New residential ALWAYS requires a NFPA 13R sprinkler.
- 2 If you don't change your occupancy OR you move to a lower hazard occupancy, you don't have to supply a NFPA 13 sprinkler.
- 3 Once you have mixed occupancies with residential, you MUST separate occupancies with a 2-hour separation UNLESS you are live/work (which is considered R-2).
- 4 A historic designation does little to help you avoid sprinklering, but if you sprinkler it provides a lot of flexibility.

Not following?

LET'S BREAK IT DOWN!

Refer to the following color codes from here on out.



= Business



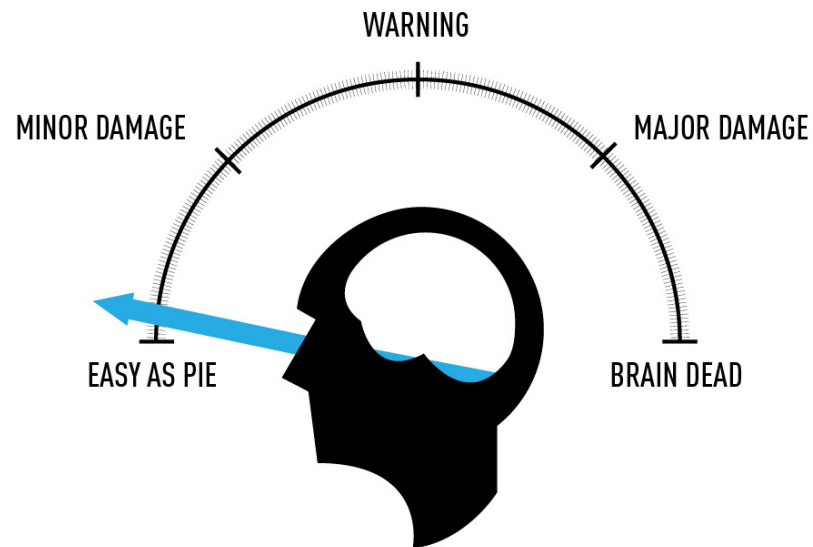
= Mercantile



= Residential (R-2)

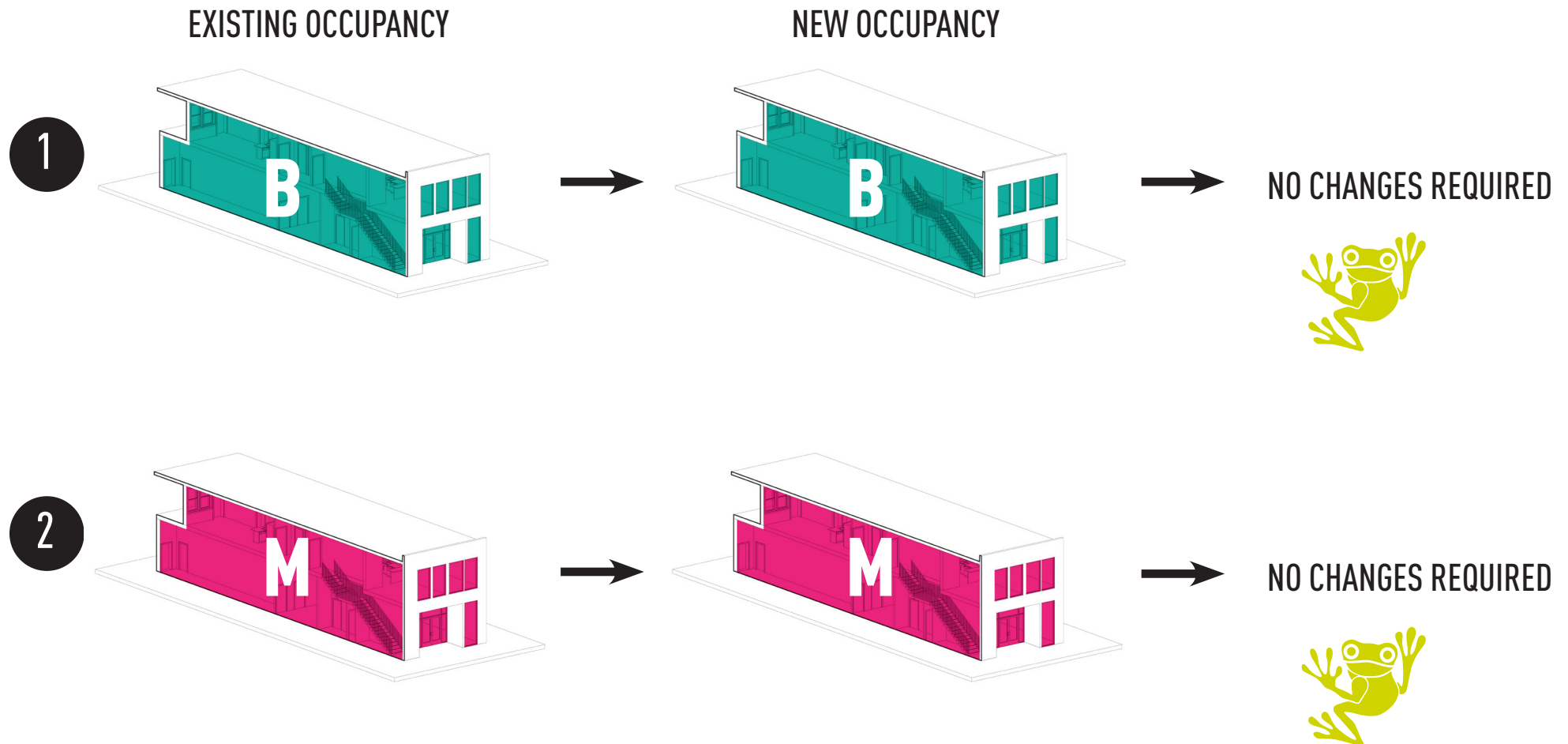
OPTION 1

NO RESIDENTIAL? NO SPRINKLERS!



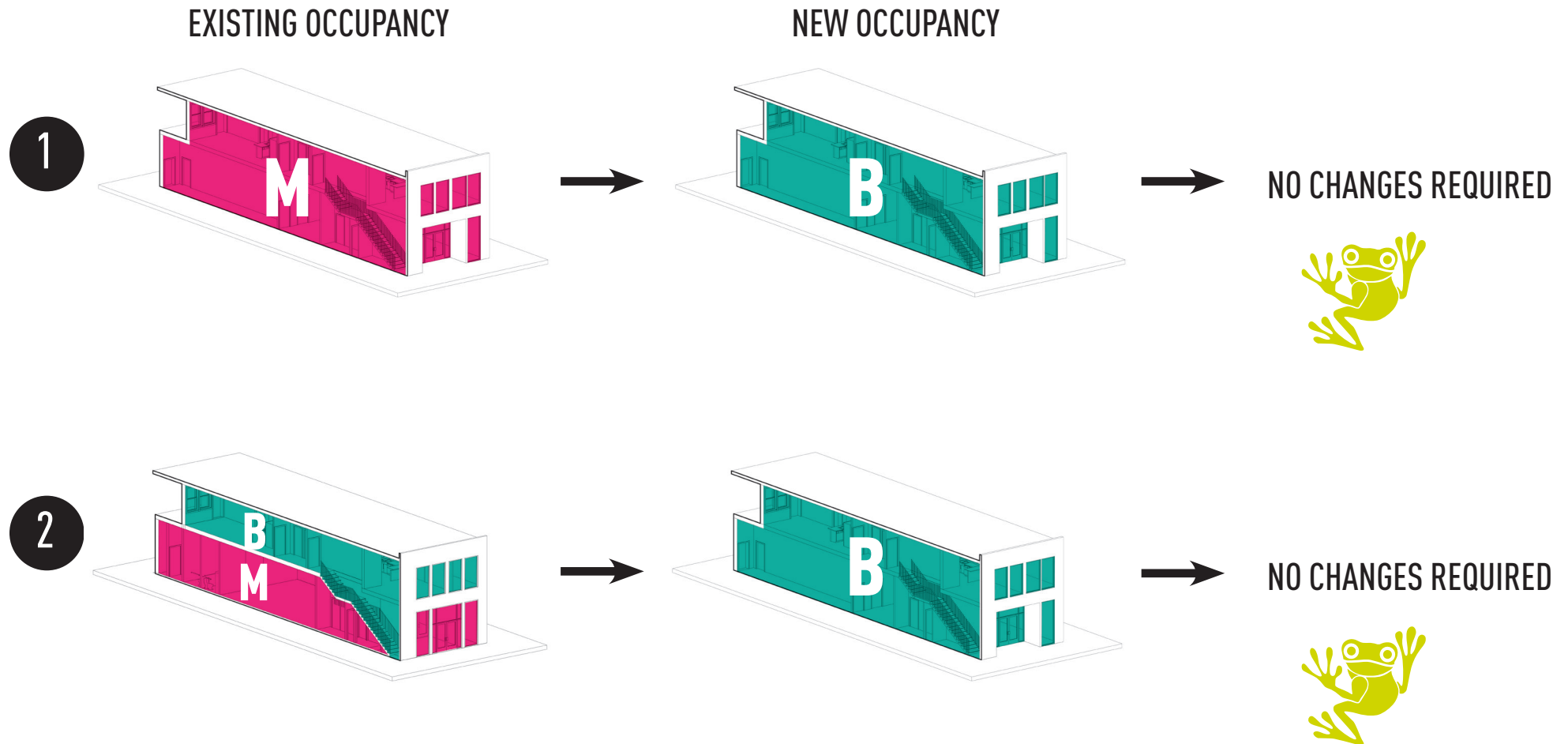
OPTION 1

NO CHANGE OF OCCUPANCY:



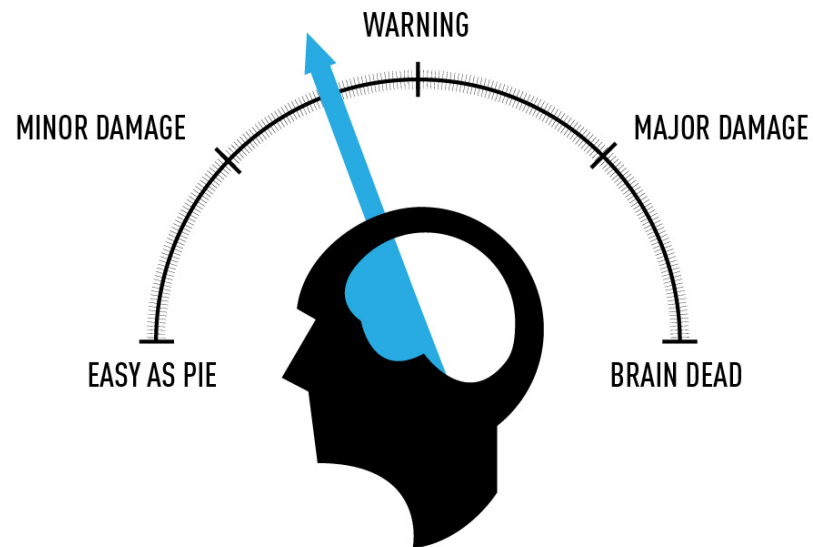
OPTION 1

CHANGE TO A LESS HAZARDOUS OCCUPANCY:



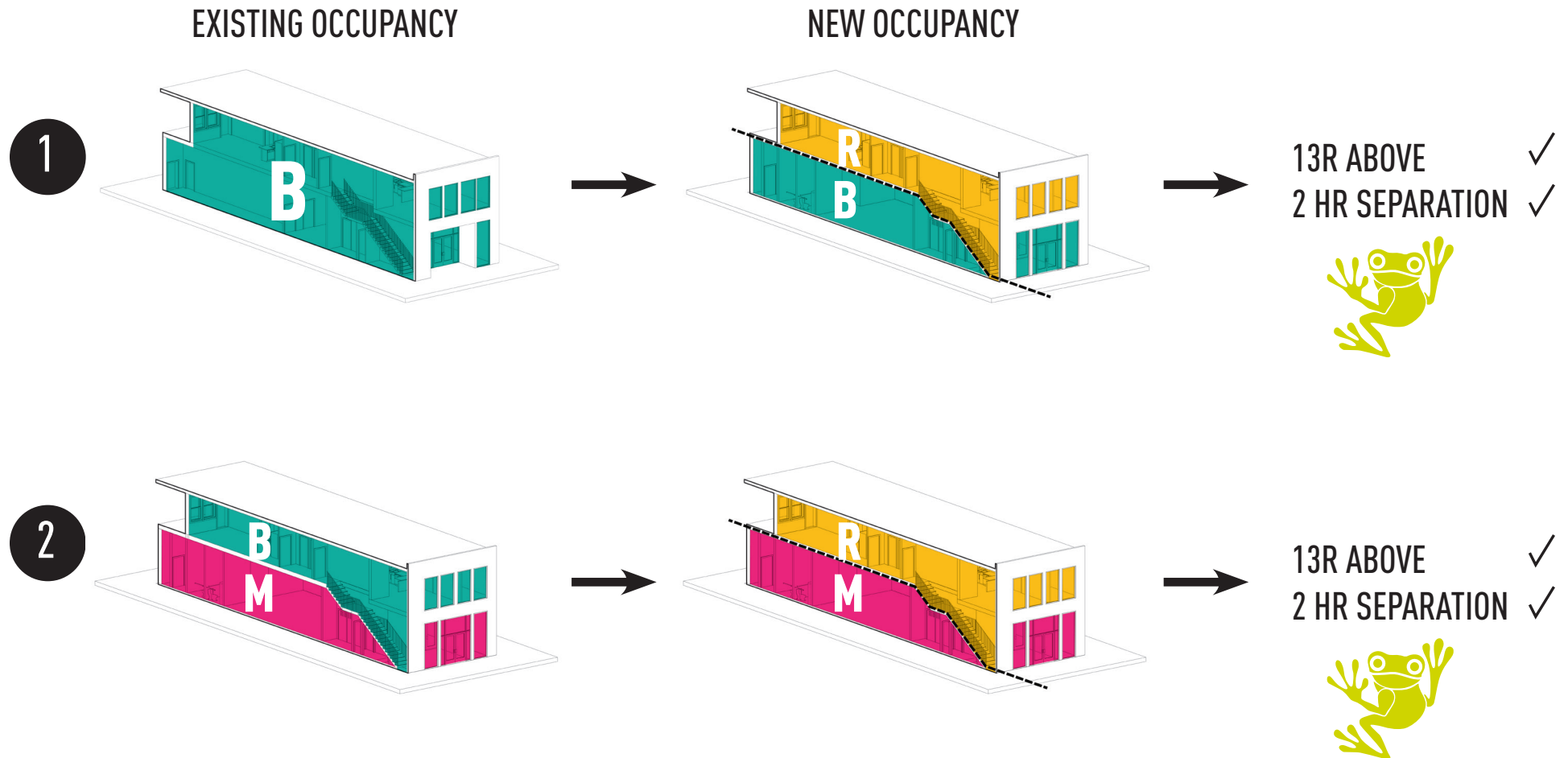
OPTION 2

RESIDENTIAL ABOVE? 13R + SEPARATION!



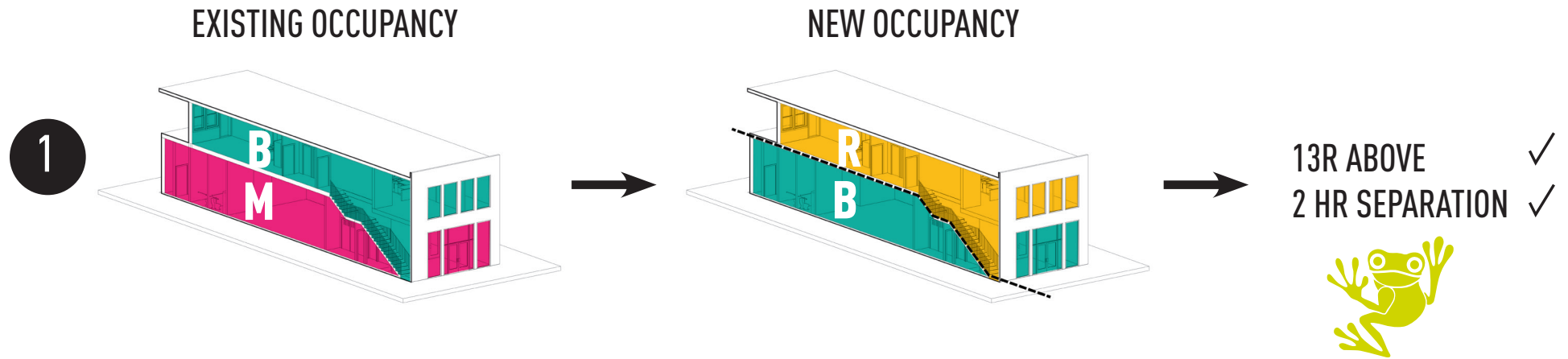
OPTION 2

RESIDENTIAL ABOVE, NO CHANGE OF OCCUPANCY BELOW:



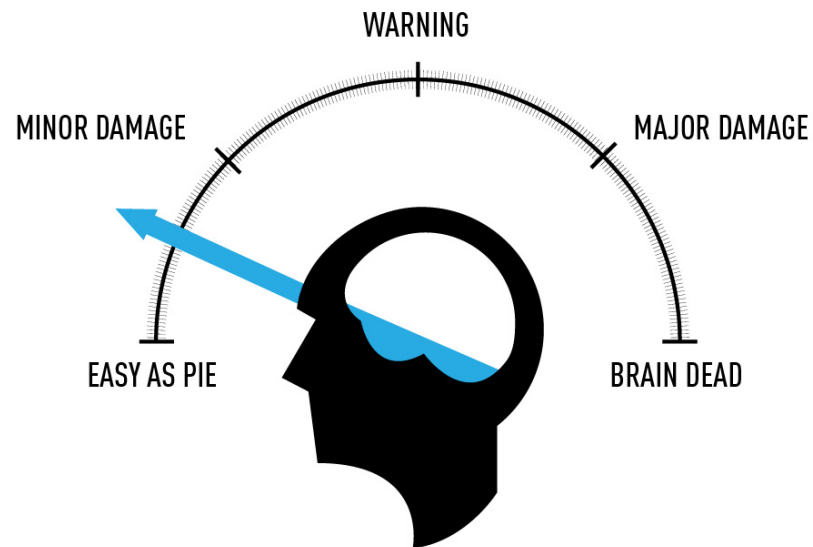
OPTION 2

RESIDENTIAL ABOVE, CHANGE TO A LESS HAZARDOUS OCCUPANCY BELOW:



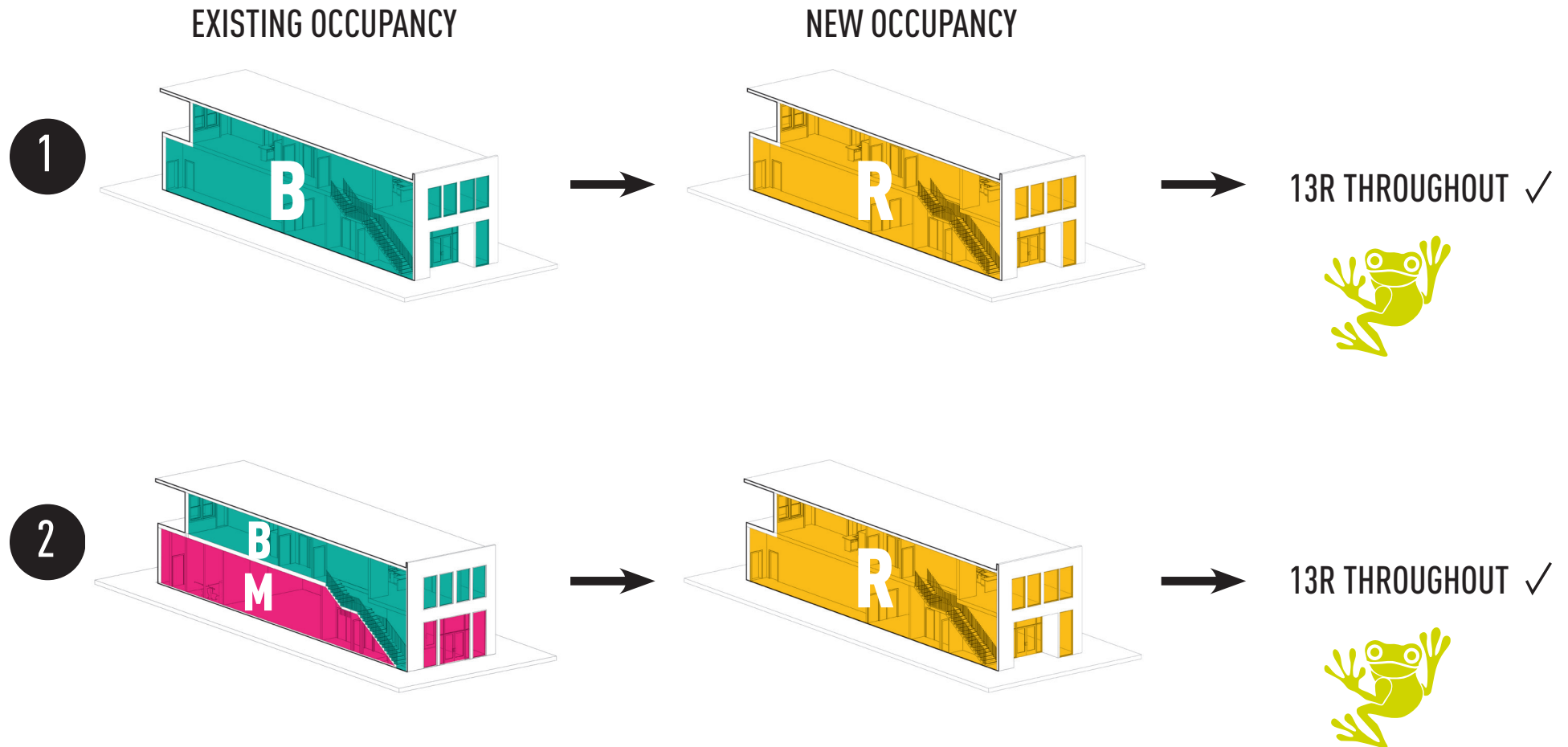
OPTION 3

LIVE/WORK? 13R ONLY!



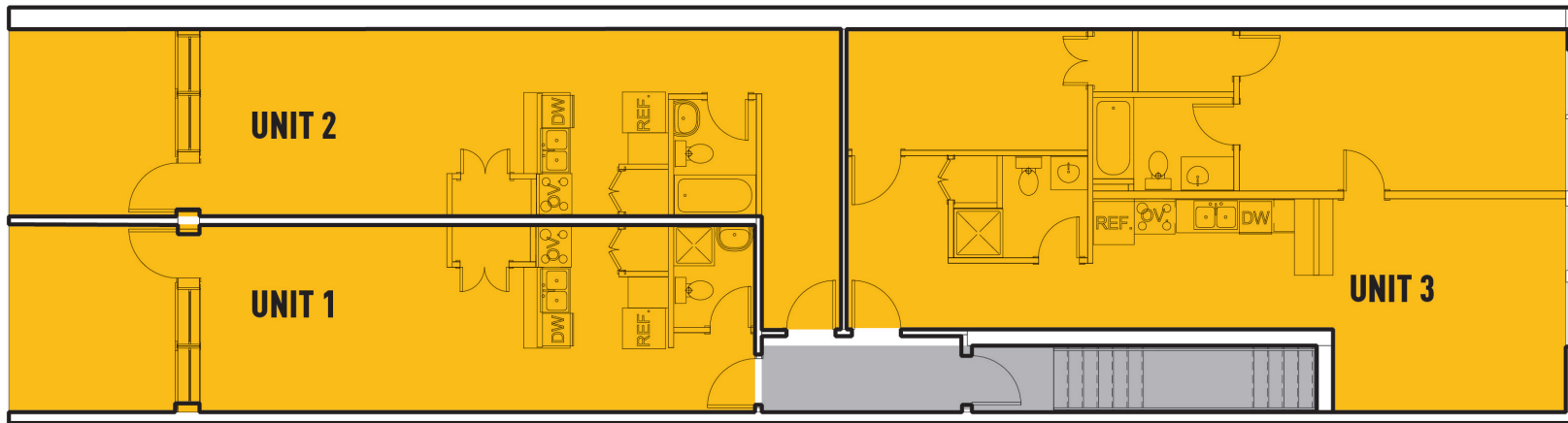
OPTION 3

RESIDENTIAL ABOVE, LIVE/WORK BELOW:



OPTION 3

SECOND FLOOR:

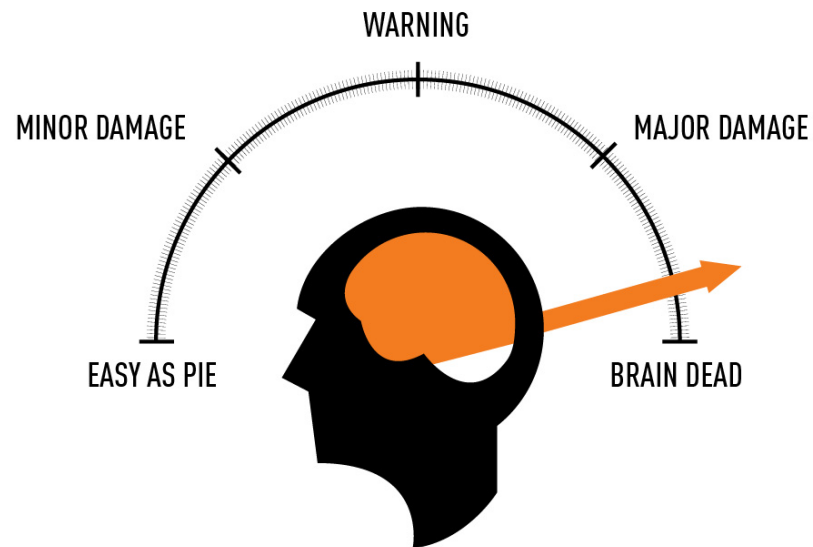


FIRST FLOOR:



ALMOST ANY OTHER OPTION

BRAIN DEAD OR TOO MUCH MONEY



The best option, in our opinion, is...

LIVE/WORK!

This option requires a 13R sprinkler throughout, which helps you leverage the best of the IEBC historic designation. It requires minimal brain damage and allows for residential and commercial uses without breaking the bank.

Now you're ready to get going.

THANK YOU!



KRONBERG WALL
ARCHITECTURE • DESIGN • DEVELOPMENT

887 Wylie St, Atlanta, GA 30316 • 404-653-0553

www.kronbergwall.com



@kronbergwall