

# START and Damage Assessment

7 January 2016

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# Excerpts from CERT Training

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- **Treatment for life-threatening conditions**
  - Airway obstruction, bleeding, shock
- **Treatment for other, less urgent conditions**

**Providing the greatest good for the greatest number  
by conducting simple triage  
and rapid treatment**



# Triage

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**Triage is a system used by medical or emergency personnel to ration care when the number of casualties needing care exceeds the resources available to perform care.**



# START

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## STart = Simple Triage

- Victims are sorted based on priority of treatment

## stART = And Rapid Treatment

- Rapid treatment of injuries assessed and prioritized in the first phase



# What is Triage

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## The Process for managing a mass casualty event

1. Victims are evaluated
2. Victims are sorted by urgency of treatment needed
3. Victims are set up for immediate or delayed treatment



# Categories

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- **Minor(M) – walking wounded or generally ambulatory.**
- **Delayed (D) – Injuries do not jeopardize victims life, treatment can be delayed**
- **Immediate (I) – Victim has life-threatening injuries (airway, bleeding, shock)**
- **Presumed Dead – No respiration after two attempts to open airway**

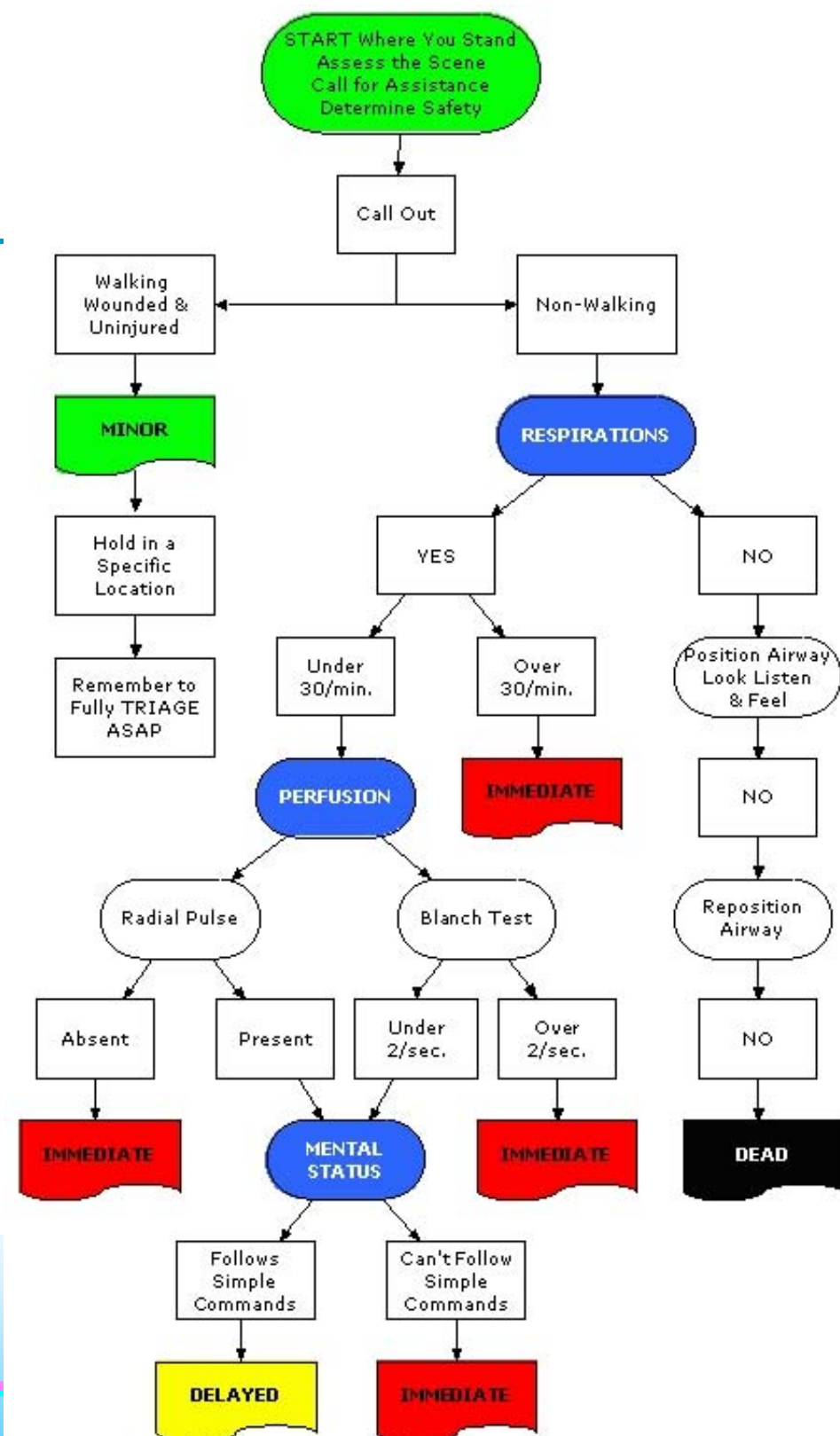
# RPM

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- **Respirations**
- **Perfusion**
- **Mental Status**



# START Flow Chart





# Damage Assessment

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# Types of Construction in the Bay Area

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- **Wood Frame**
  - (From 1 to 4 stories high)
- **Steel Frame**
- **Tilt-up**
- **Poured Concrete**
- **Unreinforced Masonry (UMB)**
  - No longer permitted



# Wood Frame Construction

Multi-family, commercial

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# Wood Frame Construction

## Single Family

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# Wood Frame Construction

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# Steel Frame Construction

## Multi-story fire resistive frame



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# Steel Frame Construction

## Pre-engineered light frame



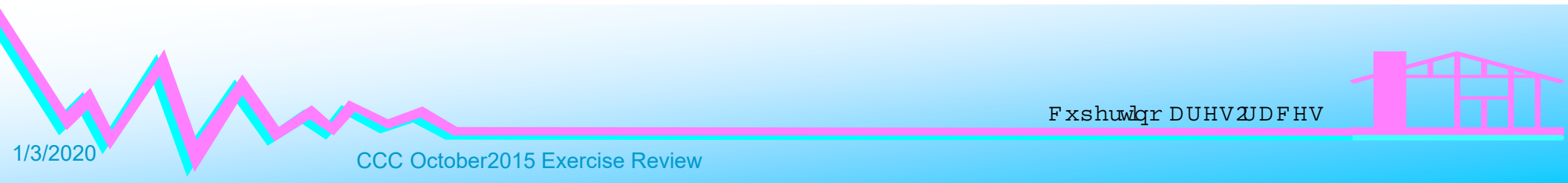
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# Steel Frame Construction

## Pre-engineered light frame

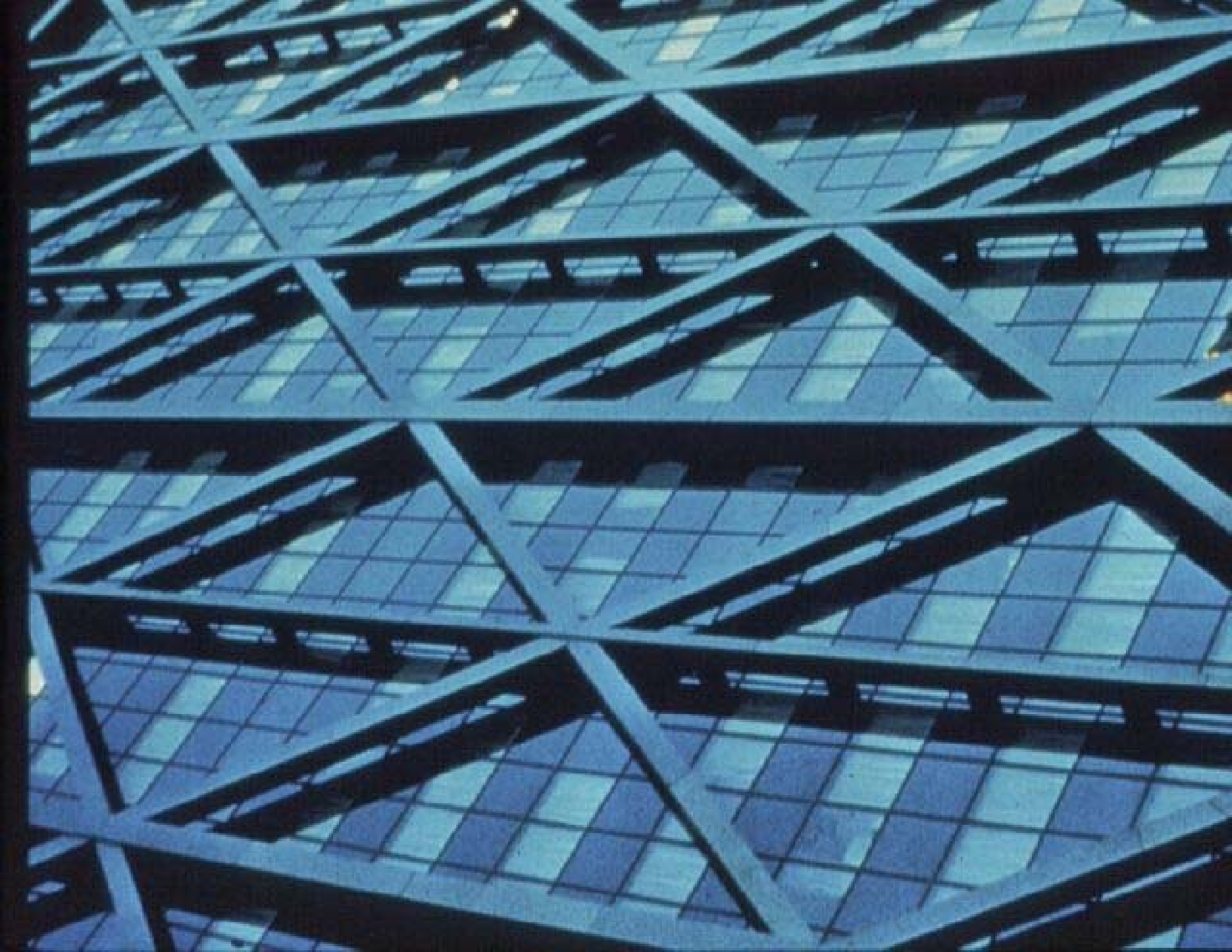
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# **EFFECTS OF CYCLIC REVERSALS OF GROUND ACCELERATION**



**AT THE SAME TIME THAT THE UPPER PART OF THE STRUCTURE BEGINS TO MOVE TO CATCH UP WITH THE INITIAL DISPLACEMENT, THE GROUND MOTION REVERSES ITSELF.**

# Tilt-up Buildings



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**The walls are poured in frames,**

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# ... and when dry, raised into position



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# Tilt-ups decrease the cost of ownership



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1/3/2020

CCC October2015 Exercise Review

# Unreinforced Masonry Buildings



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# Unreinforced Masonry Buildings

Wall ties hold the building together

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# Building Parapets

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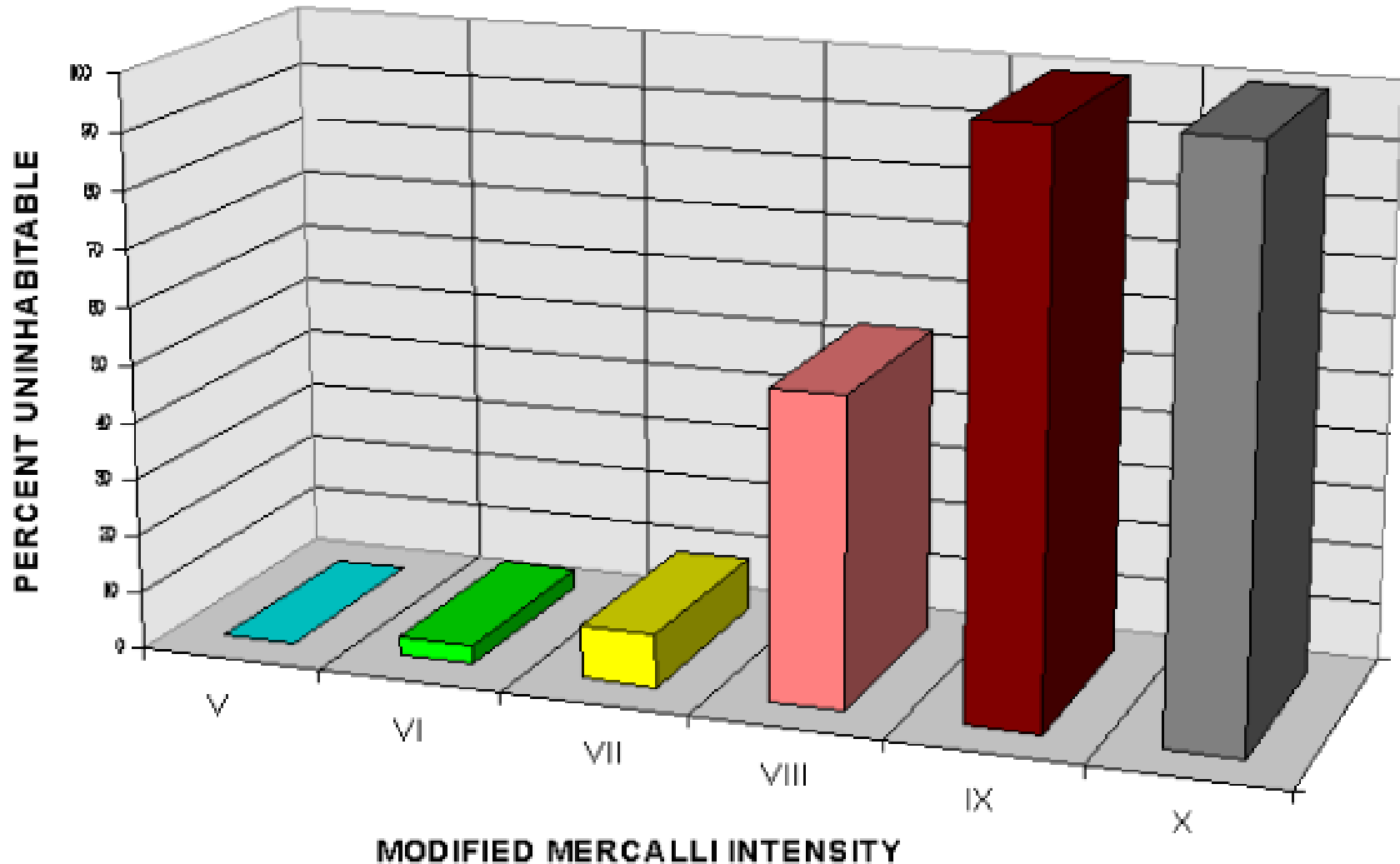


# Building Parapets



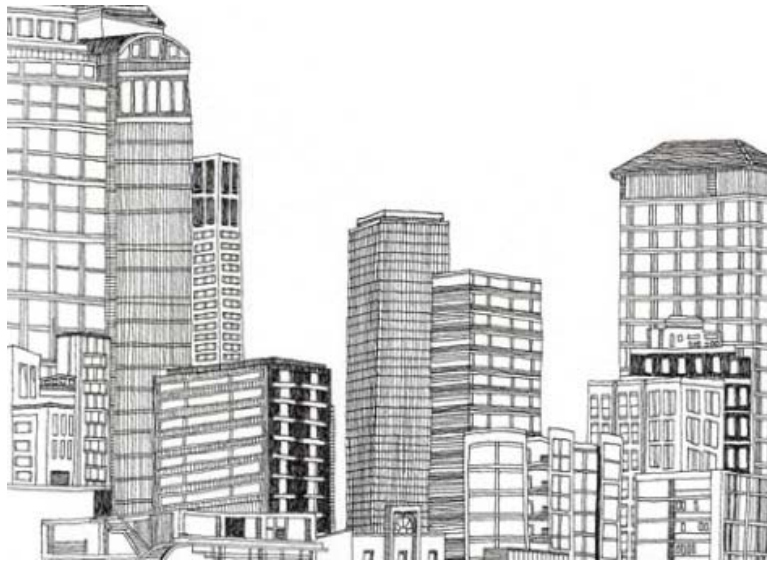
# Unreinforced Masonry

**UNREINFORCED MASONRY  
PERCENT UNINHABITABLE BY MMI INTENSITY LEVEL**



# Signs of possible structural damage

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# Paint Lines

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# Large cracks around windows

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- Large cracks from the corner of windows at a 45 degree angle





# Large cracks around doors, foundations

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- Cracks above front door and garage door
- Cracks about one foot above sidewalk foundation line

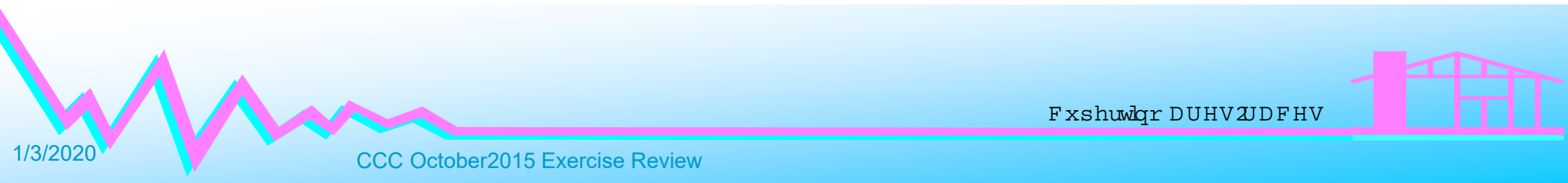


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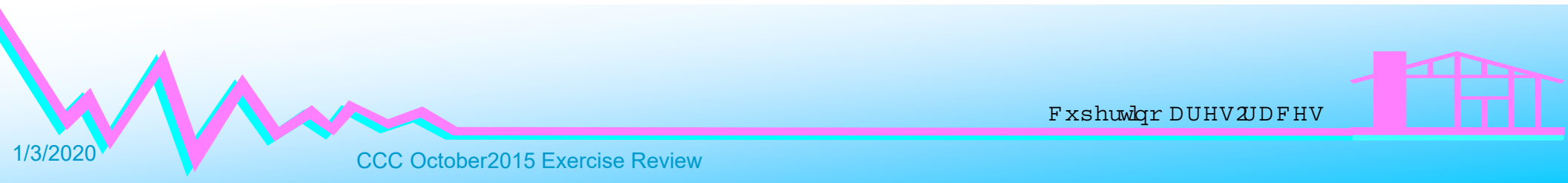
**LINES**



# Building Damage Classification

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- Light Damage
- Medium Damage
- Heavy Damage



# Assess Damage

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- Look at all four sides of the structure
- Overhead hazards
- Ground level hazards
- Below grade hazards
- Special hazards
- Bystander reports



# Light Damage

- Superficial Damage
- Broken windows
- Cracked or fallen plaster
- Principal damage is to the contents of the structure



# Moderate Damage

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1. Large amount of cracking on exterior
2. Small cracks around doors and foundations
3. No outward signs of structural damage



# Heavy Damage

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- Partial or Full collapse
- Building is off, or leaning off of foundation
- Structural Damage to Building





















T. H. H. H.











# Assess Damage

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# Assess Damage

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# Assess Damage

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# Assess Damage

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# Assess Damage





# Assess Damage

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# Assess Damage

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# Assess Damage

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# Assess Damage

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# Thank you

*Any Questions?*

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