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# Continuing Education For the Fire Fighter



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# ***Building Construction***

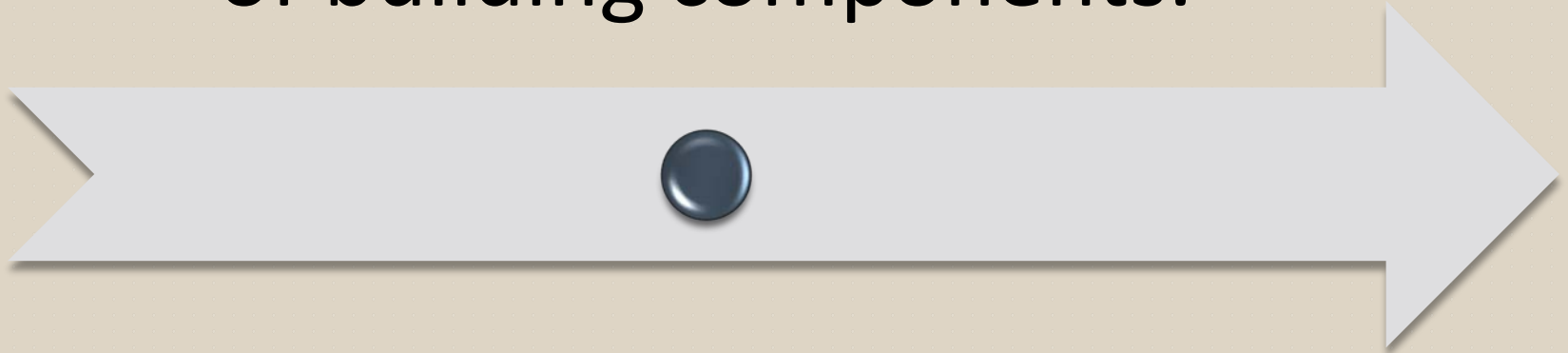
## ***Module 2***

### ***Chapter 4***



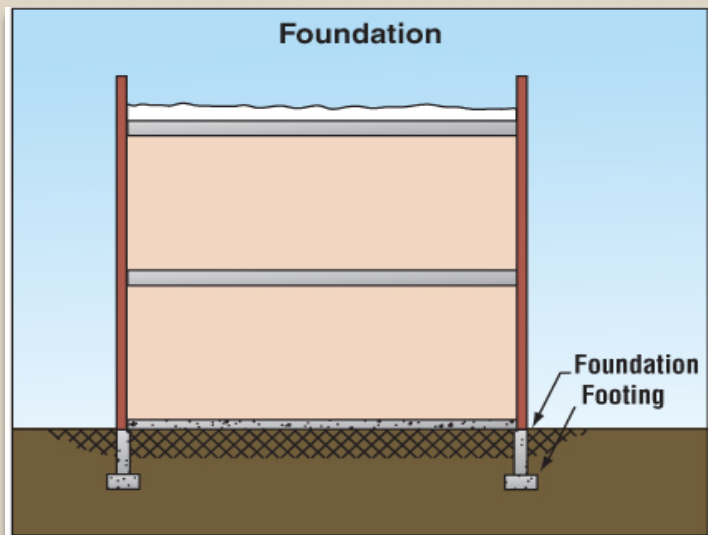
# LEARNING OBJECTIVES

Describe the basic construction of building components.

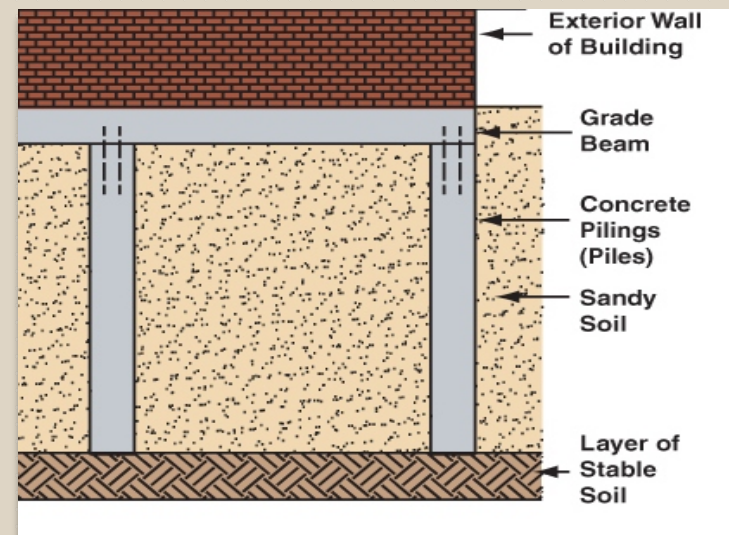


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# FOUNDATIONS ARE DESIGNED TO SUPPORT THE WEIGHT OF THE BUILDING AND ITS CONTENTS.



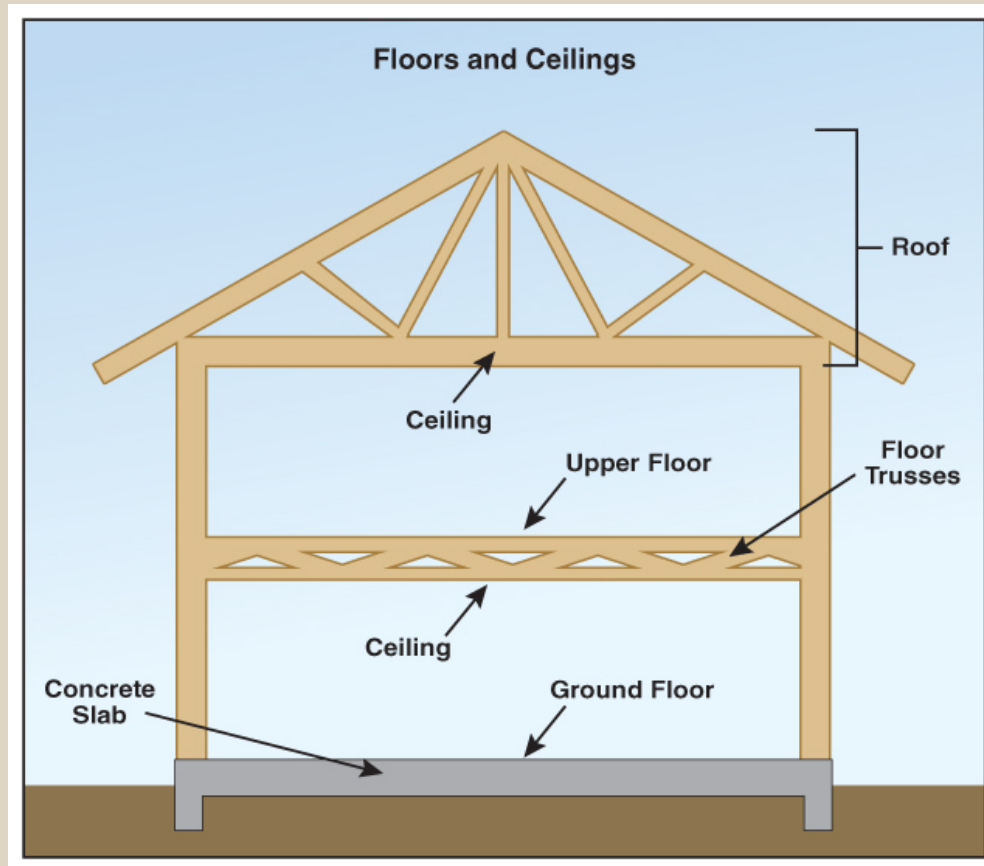
Shallow



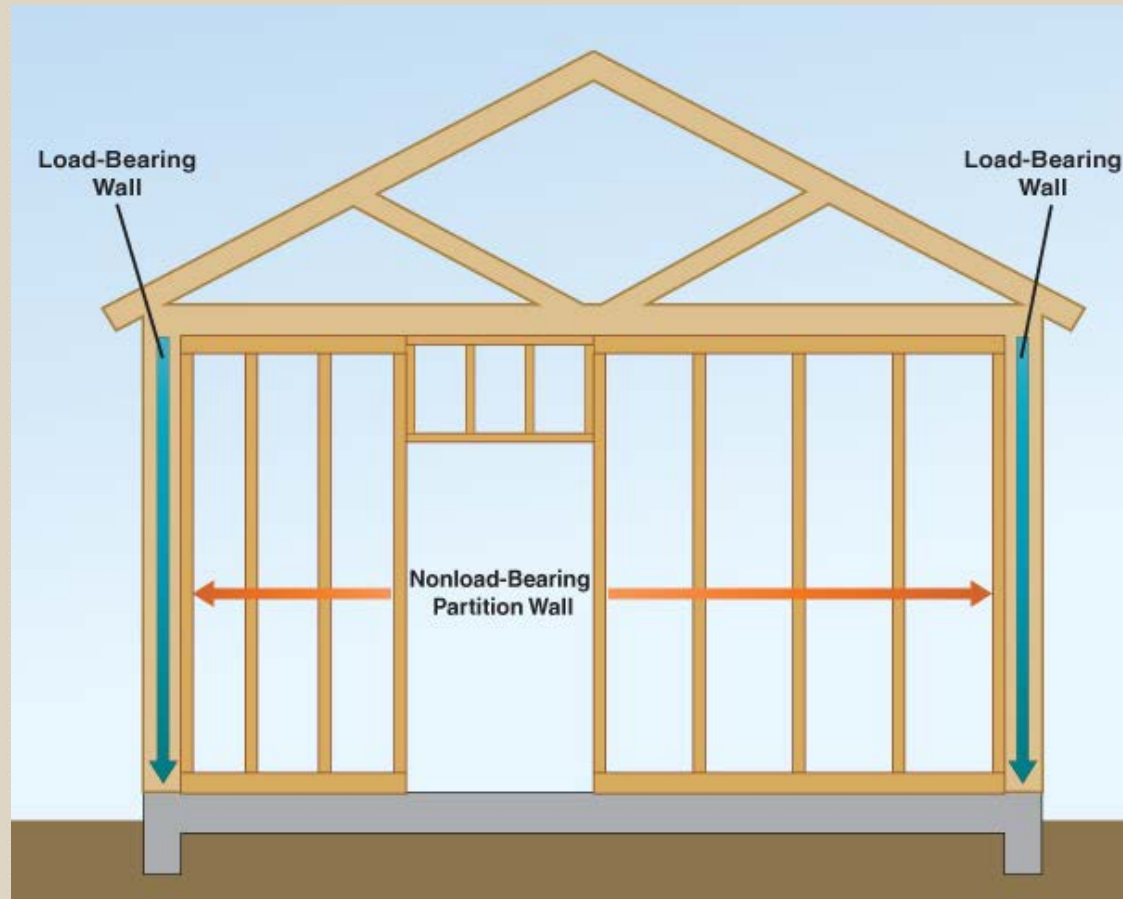
Deep



# FLOORS AND CEILINGS FORM THE TOP AND BOTTOM OF THE COMPARTMENT.



# WALLS DEFINE THE PERIMETER OF A BUILDING AND DIVIDE IT INTO COMPARTMENTS.



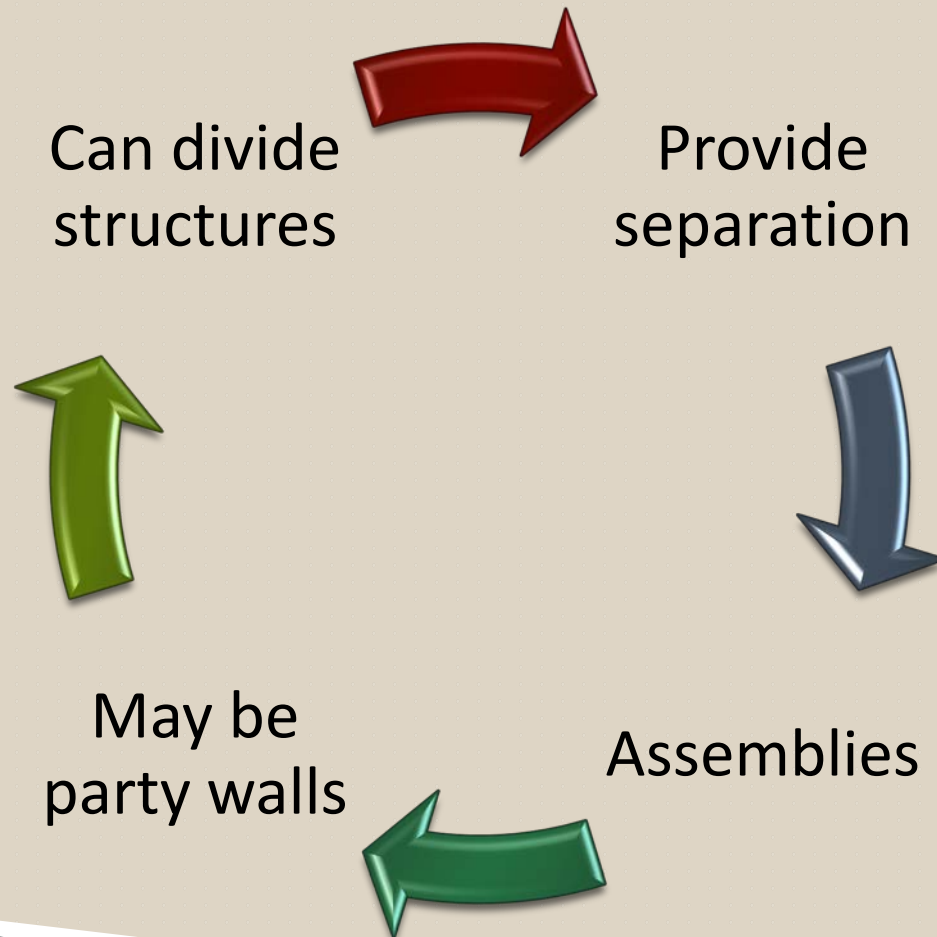
# WALL TYPES AND RATINGS VARY DEPENDING ON SEVERAL FACTORS.



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# FIRE WALLS ARE CONSTRUCTED OF A VARIETY OF MASONRY MATERIALS.



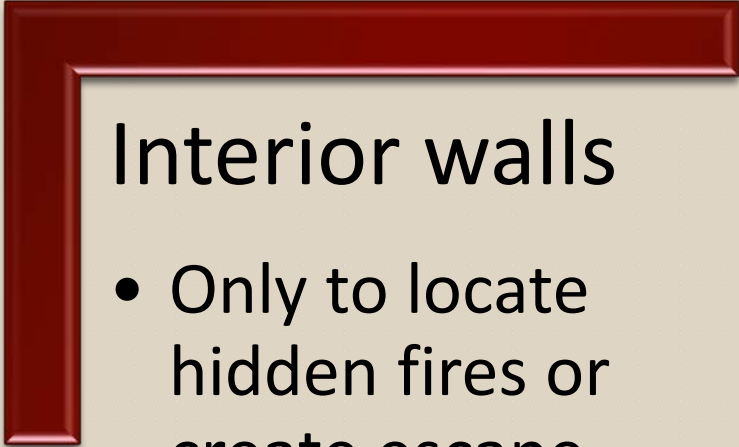


# PENETRATING WALLS SHOULD ONLY BE PERFORMED WHEN NEEDED.



## Exterior and fire walls

- Most difficult
- Forcing entry into or escaping



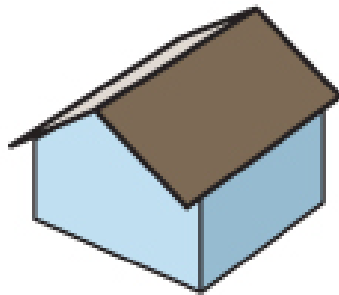
## Interior walls

- Only to locate hidden fires or create escape path

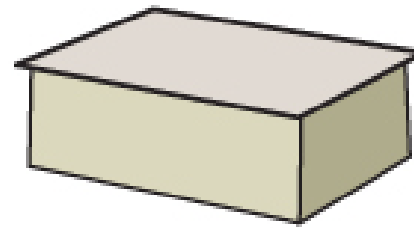


ROOFS PRIMARILY PROTECT A STRUCTURE AND ITS CONTENTS FROM THE EFFECTS OF WEATHER.

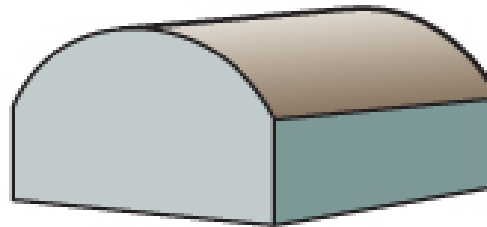
### Common Roof Types



Pitched



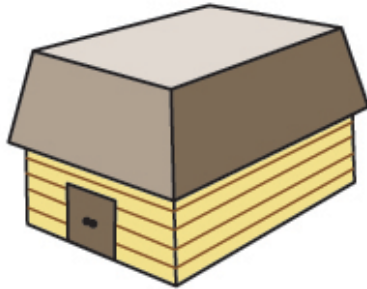
Flat



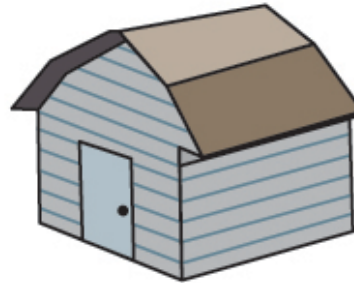
Arched



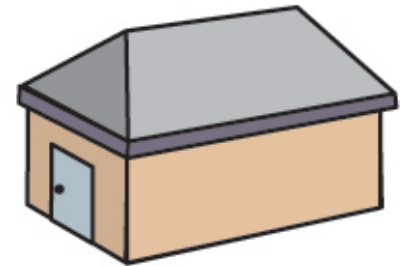
# ROOFS PRIMARILY PROTECT A STRUCTURE AND ITS CONTENTS FROM THE EFFECTS OF WEATHER.



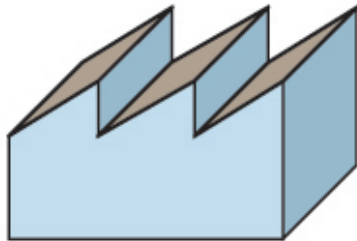
Mansard



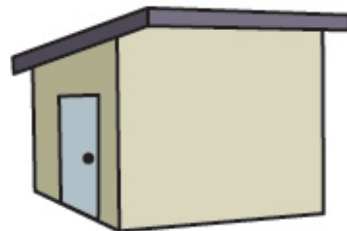
Gambrel



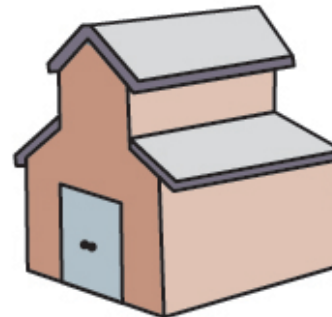
Hip



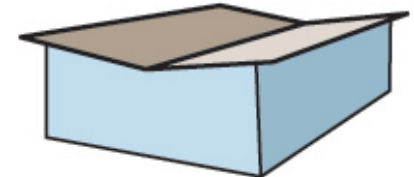
Sawtooth



Shed



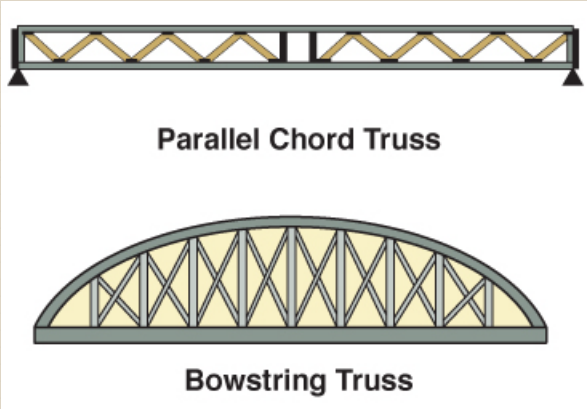
Lantern



Butterfly



# ROOF CONSTRUCTION IS BASED ON THREE MAIN COMPONENTS; ONE IS ROOF SUPPORTS.

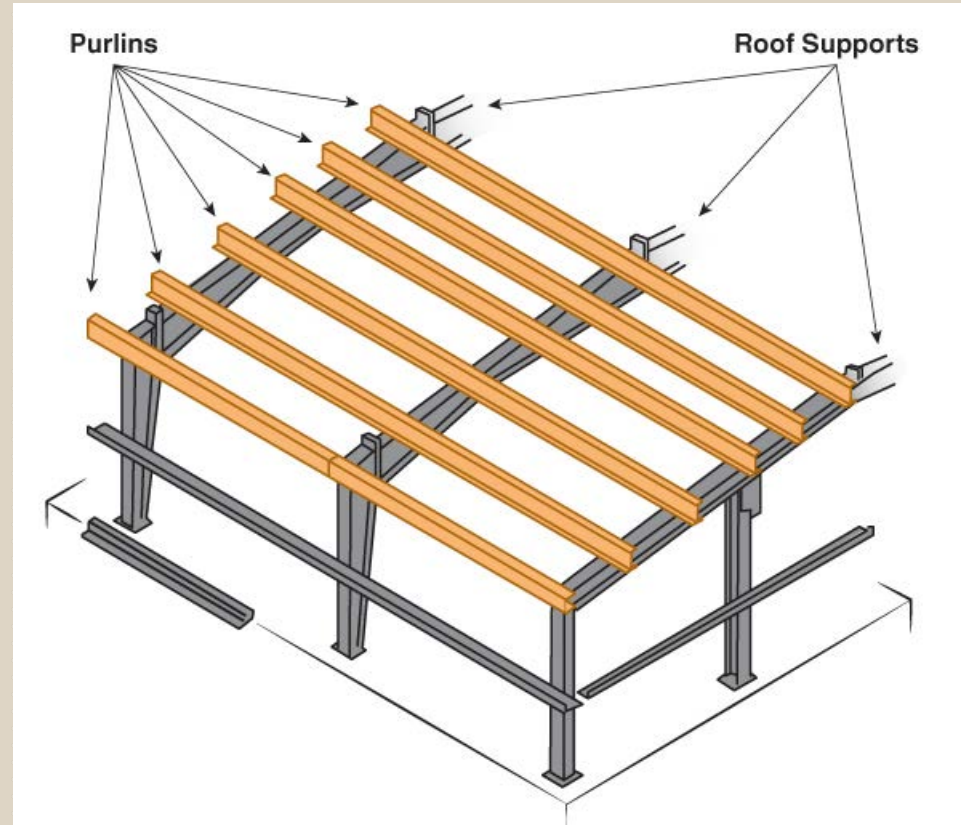
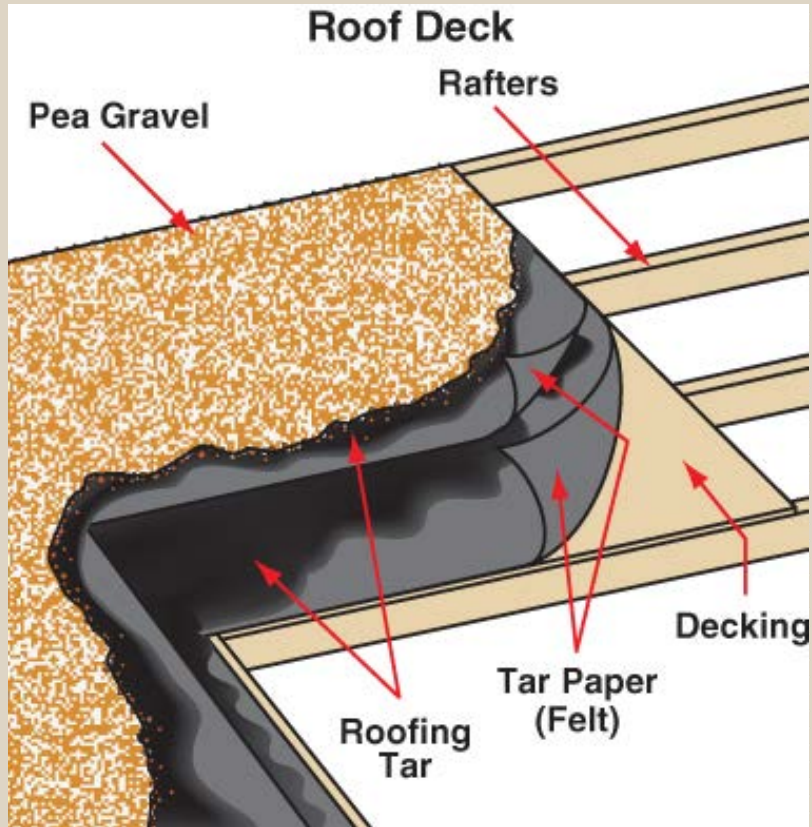


Courtesy of Ron Moore and McKinney (TX) FD



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# ROOF DECKS ARE ANOTHER COMPONENT IN ROOF CONSTRUCTION.



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# ROOF COVERINGS, THE FINAL MAIN COMPONENT, COME IN A VARIETY OF STYLES.

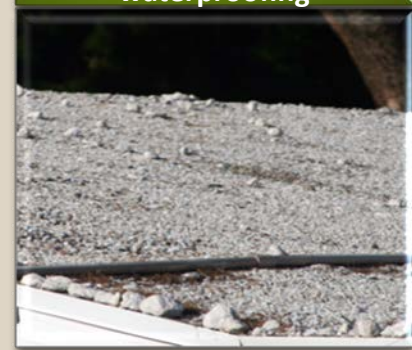
Wood shingles



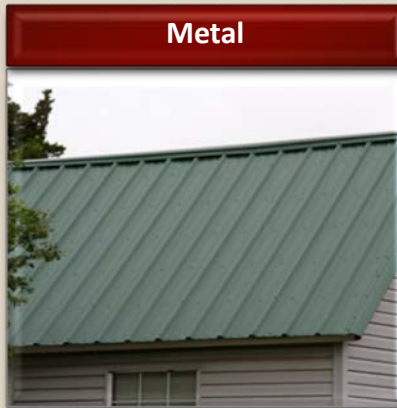
Terracotta



Tar and gravel  
waterproofing



Metal



# ROOF PENETRATIONS AND OPENINGS MAY INDICATE THE LOCATIONS OF SOME ROOMS.



Examples



# OBSERVING THE PRESENCE OF ROOF OBSTRUCTIONS CAN HELP WHEN VENTILATING.



Green roof

Cold roof

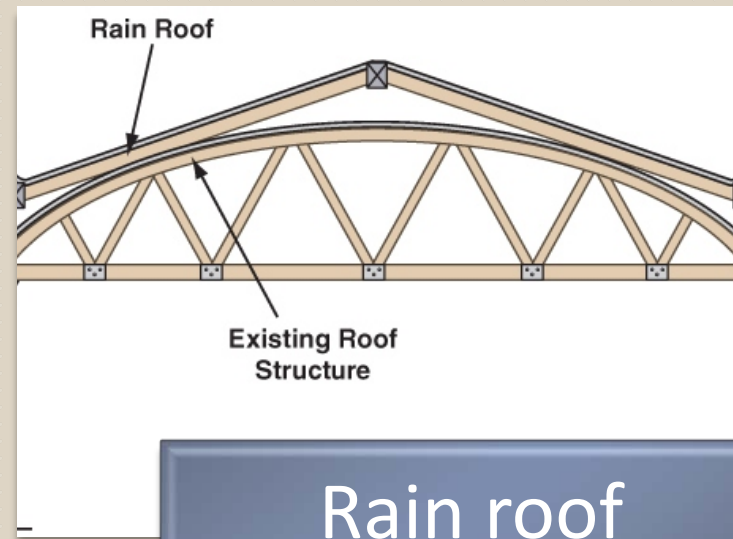




# OBSERVING THE PRESENCE OF ROOF OBSTRUCTIONS CAN HELP WHEN VENTILATING.



Photovoltaic roof



Rain roof



# SECURITY MEASURES ON ROOFS AND OTHER AREAS CAN CAUSE OBSTRUCTIONS AS WELL.



# WARNING

Unauthorized  
security  
modifications  
create extreme  
life safety hazards  
for firefighters.



# STRUCTURAL MODIFICATIONS SHOULD, BUT DO NOT ALWAYS, MEET LOCAL BUILDING CODES.



## Permitted modifications

- Stay aware of those in your response area

## Nonpermitted modifications

- Can inhibit effective ventilation and increase risk of collapse



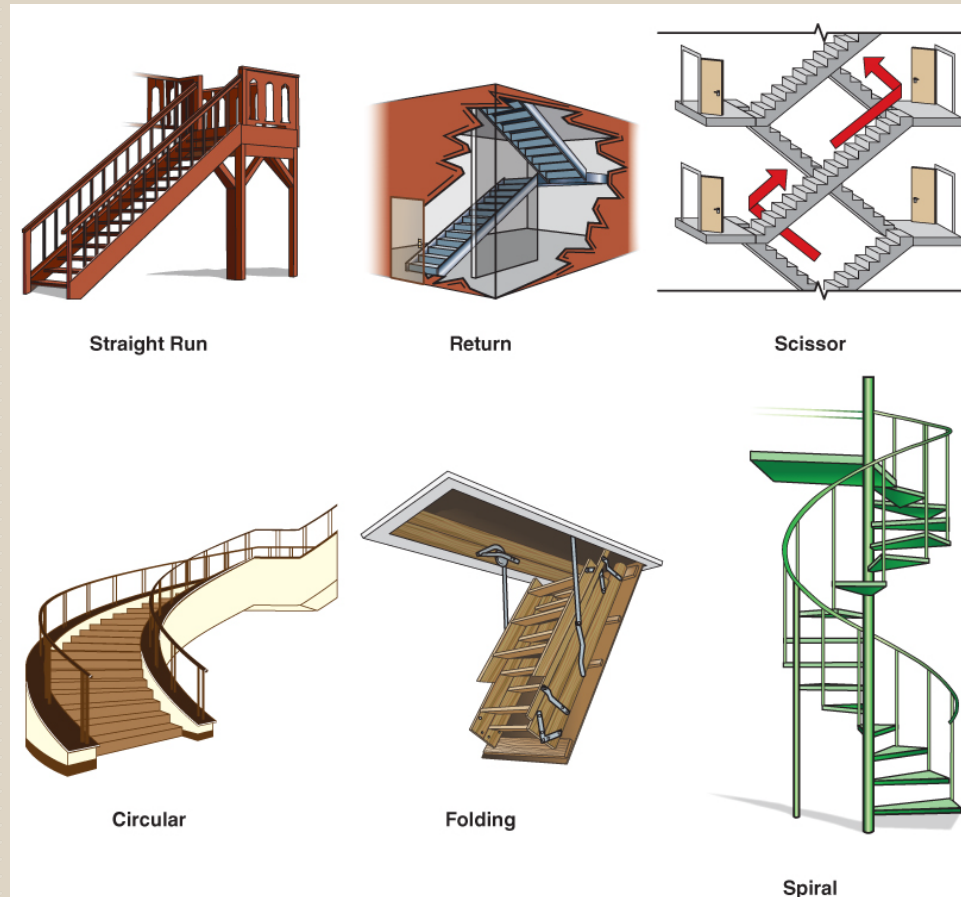
# ROOF-MOUNTED EQUIPMENT CAN ADD A LIVE LOAD TO THE DEAD LOAD ON A ROOF.



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# STAIRS PROVIDE ACCESS TO OR EGRESS FROM DIFFERENT LEVELS OF A STRUCTURE.



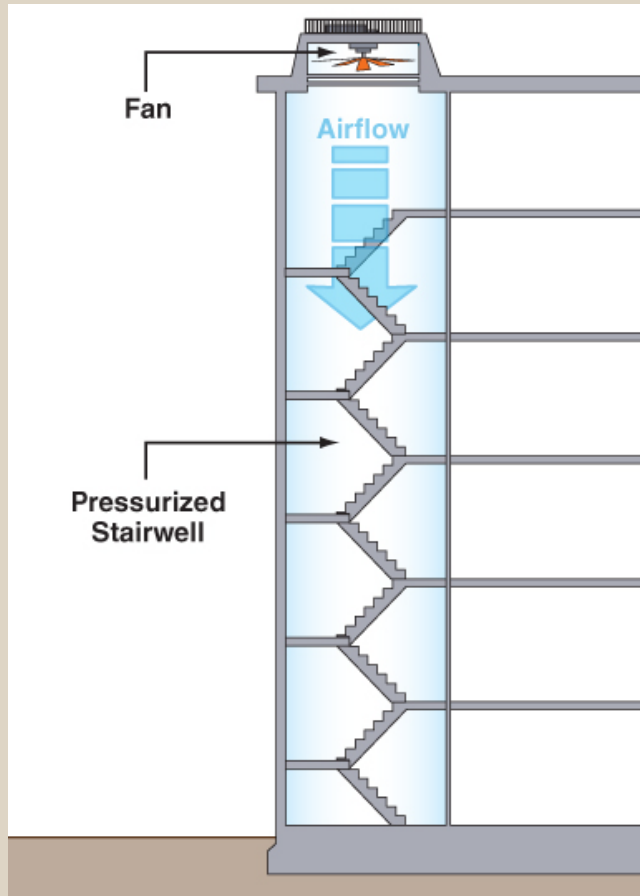


# EXTERIOR STAIRS AND FIRE ESCAPES PROVIDE ACCESS AND EGRESS IN DIFFERENT WAYS.



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# SMOKEPROOF AND UNPROTECTED STAIRS PROVIDE DIFFERENT LEVELS OF PROTECTION.

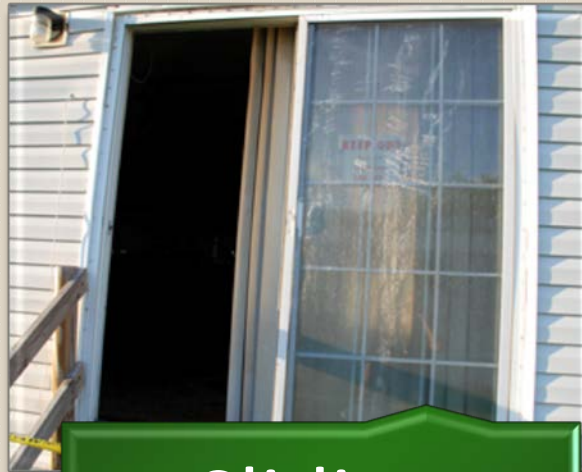




# DOORS VARY WIDELY IN OPERATION, STYLE, DESIGN, AND CONSTRUCTION.



Swinging



Sliding



Folding



DOORS VARY WIDELY IN OPERATION,  
STYLE, DESIGN, AND CONSTRUCTION.



Vertical

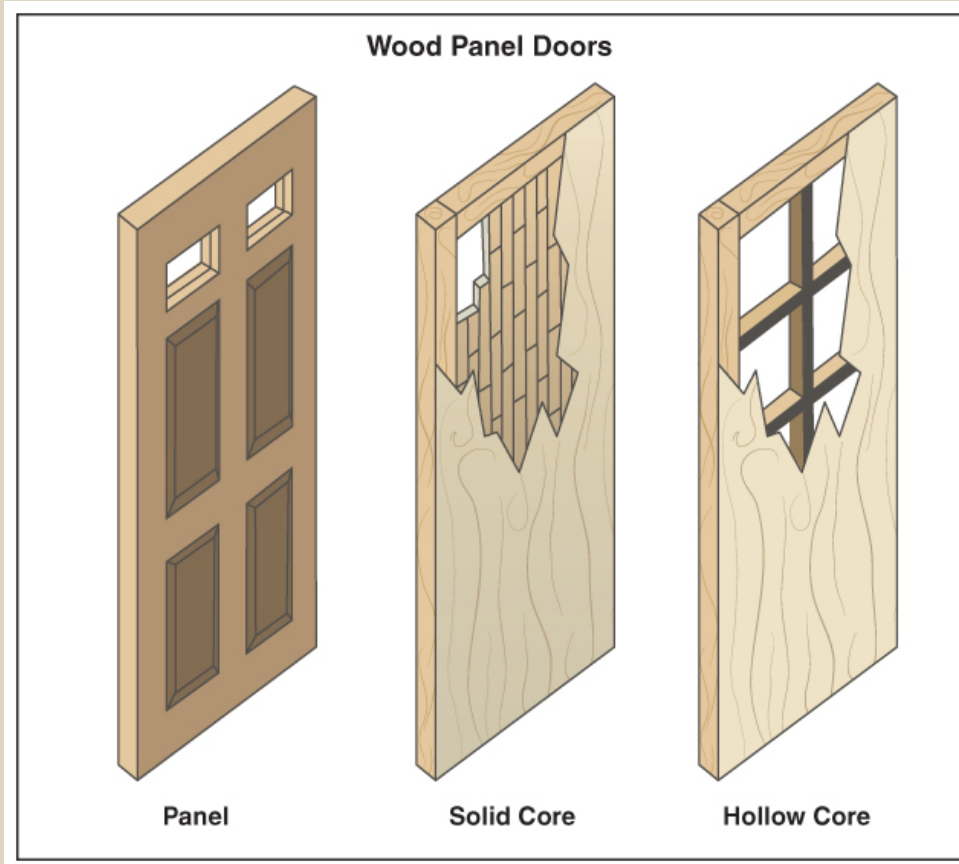


Revolving



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# WOOD PANEL AND FLUSH DOORS ARE CONSTRUCTED USING SIMILAR COMPONENTS.



# GLASS AND METAL DOORS CAN BE CONSTRUCTED IN A VARIETY OF WAYS.



# FIRE DOORS CAN BE EFFECTIVE AT LIMITING FIRE SPREAD WHEN PROPERLY MAINTAINED.

*Courtesy of Ron Moore and  
McKinney (TX) FD*



Fire door



Rolling fire door



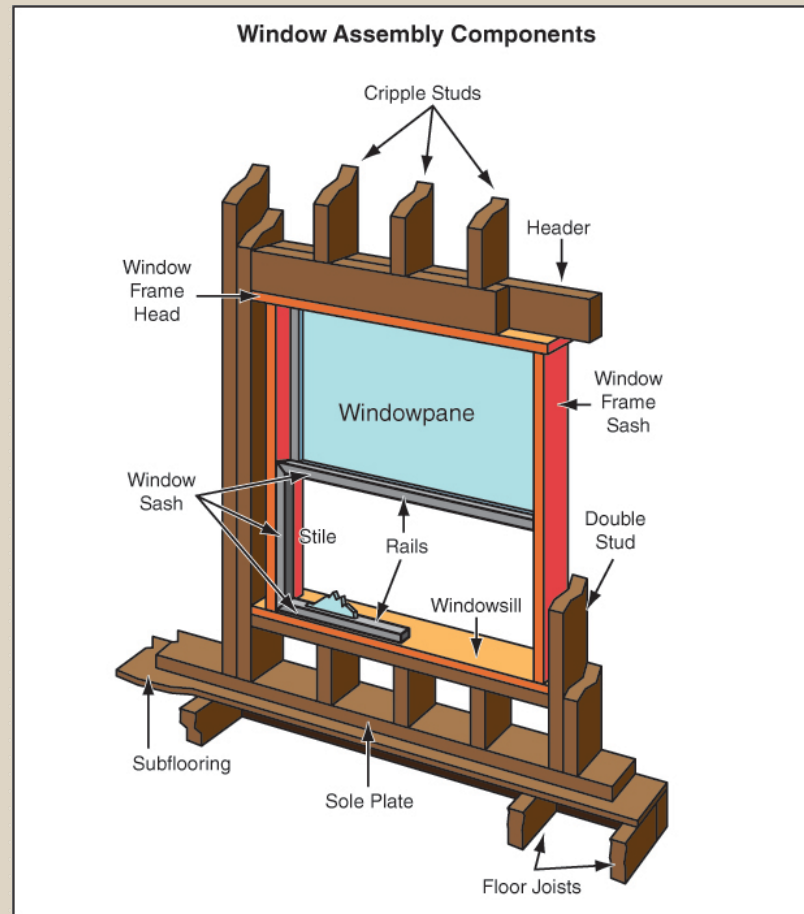
Sliding fire door



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# WINDOW CONSTRUCTION USES THE SAME COMPONENTS FOR MANY STYLES.

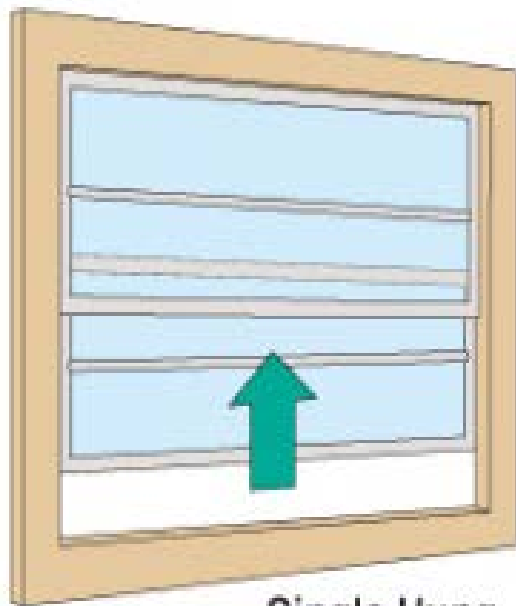


FIXED WINDOWS ARE NONOPERABLE, THESE  
MAY BE CALLED DISPLAY WINDOWS.

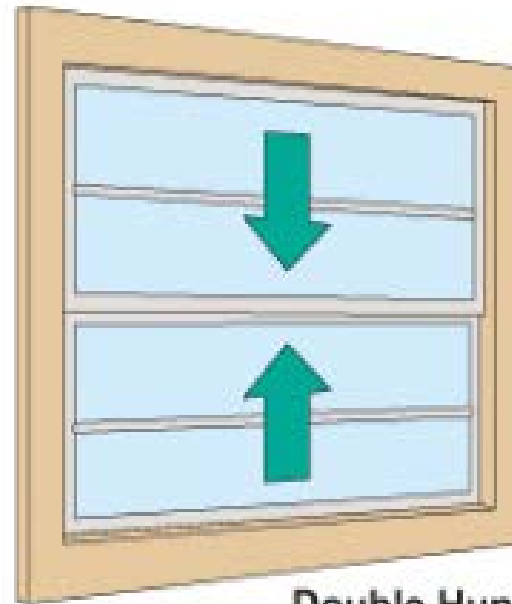


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MOVABLE WINDOWS COME IN A VARIETY OF STYLES,  
DEPENDING ON THE STRUCTURE'S REQUIREMENTS.



Single Hung



Double Hung

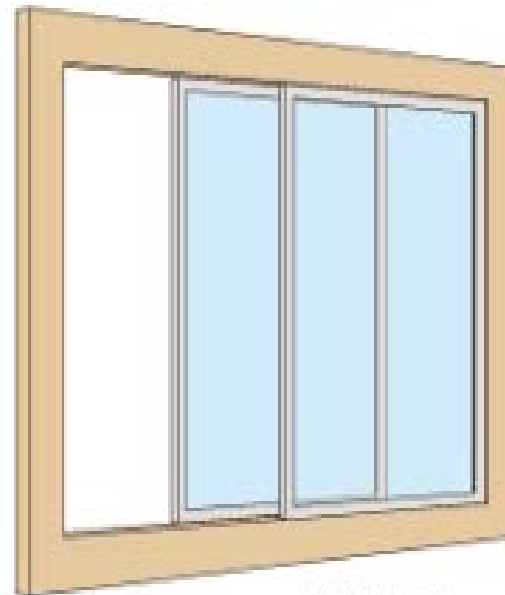




MOVABLE WINDOWS COME IN A VARIETY OF STYLES,  
DEPENDING ON THE STRUCTURE'S REQUIREMENTS.



Casement



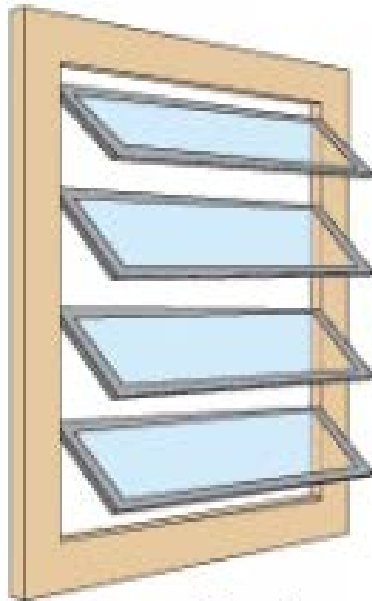
Sliding



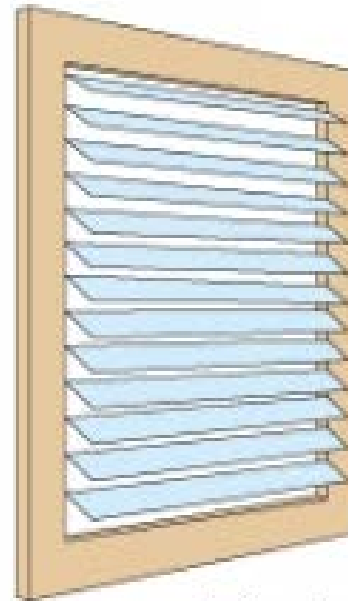
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MOVABLE WINDOWS COME IN A VARIETY OF STYLES,  
DEPENDING ON THE STRUCTURE'S REQUIREMENTS.



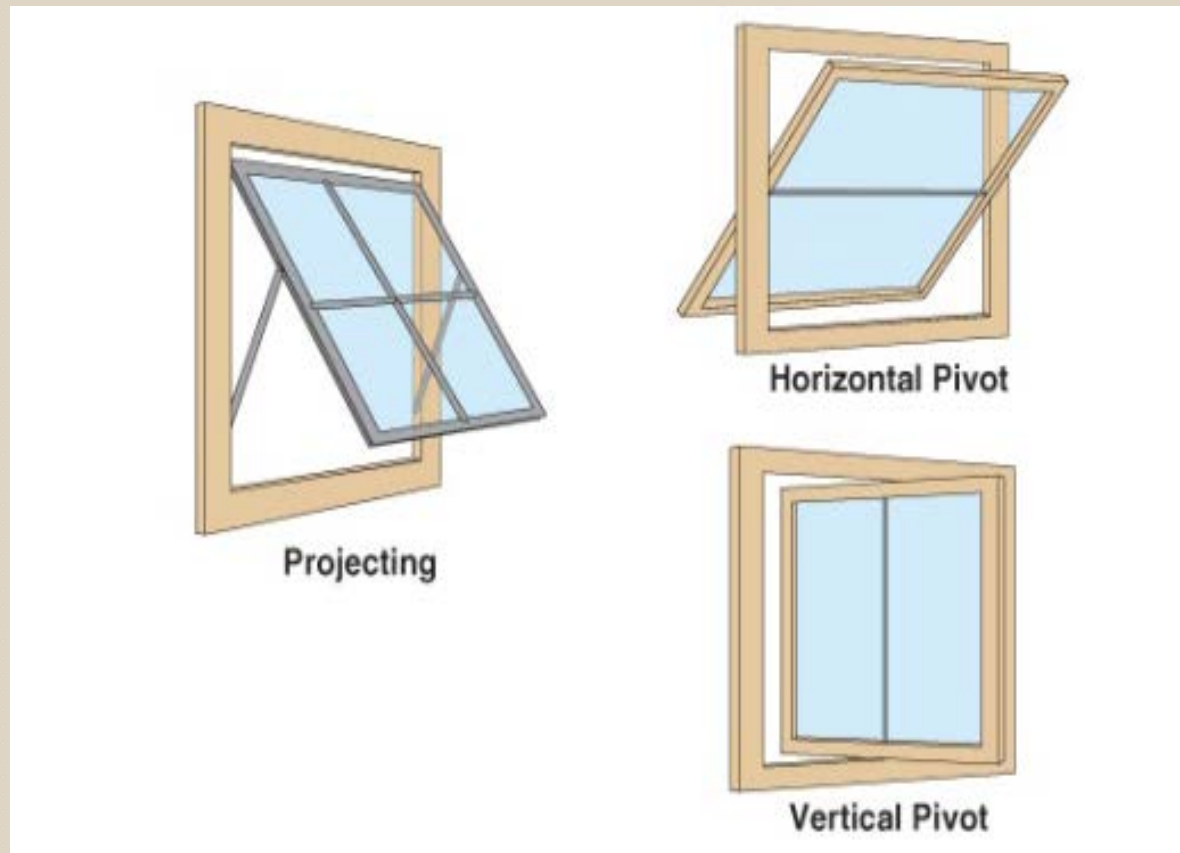
**Awning**



**Jalousie**



MOVABLE WINDOWS COME IN A VARIETY OF STYLES,  
DEPENDING ON THE STRUCTURE'S REQUIREMENTS.



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# SECURITY WINDOWS ALSO COME IN DIFFERENT CONFIGURATIONS.



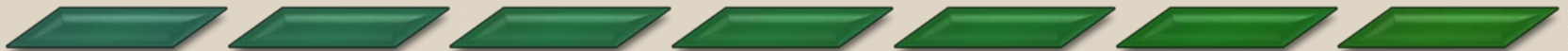
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# SUMMARY

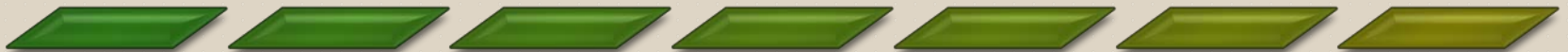
**Your safety when fighting fire depends on your ability to know how the building will contribute to and even control the spread of fire.**



**You must also understand the effect fire and heat have on structural components and materials to be able to anticipate results.**



**Knowing and understanding building construction is as vital as your knowledge and understanding of fire behavior.**



**You must be familiar with the types of construction in your community or response area, be aware of changes to existing structures, and follow trends in building construction.**

