INTRODUCTION TO PROPERTY BASICS MANUAL

AFIRM

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INTRODUCTION TO PROPERTY COVERAGE

What is Property?

Generally when referring to Property we are referring to insurance on buildings, furnishings and contents, tools and equipment which are owned by the insured.

You will be inspecting Property for protection from covered Perils.

What is a Peril?

The terms “Hazard “, “Peril,” or “Cause of Loss” are synonymous.

Each can refer to any number of events that could generate damage covered by the policy. While some events are commonly understood, others are not.

Furthermore, the term that appears in an insurance policy may not have the same meaning as it does in the dictionary.

What are the covered Perils?

- Fire
- Lightning
- Explosion
- Windstorm
- Hail
- Riot or Civil Commotion
- Aircraft
- Earthquake and Floods might be covered as an added rider.

Note: As you proceed thru the following training lessons, you will see that we will cover various aspects of conducting a property inspection. This will help you gather the information that an underwriter will need to evaluate the insured's risk of loss due to one of the covered perils.

What about claims from things like slips and fall or faulty products?

Claims arising from such things as slips and falls or from the insured's negligence are covered under a **Liability** policy. Liability will be covered in a separate course.

This course will address what is needed to inspect an insureds location from strictly a **Property** loss standpoint.

Objectives of the property lessons:

Upon completing the following property lessons, you will be able to do the following:

- Properly classify the construction of the insured's building.
- Identify the common hazards and special property hazards.
- Identify the type of fire protection system in place.
- Properly measure the insured's space and prepare a proper insurance diagram.
- Properly identify the insured's nearby exposures.

ISO CONSTRUCTION CLASSIFICATIONS

Lessons objectives:

- To know and understand each ISO classification.
- To understand the impact of misclassification.
- To understand how to make an ISO classification determination.

What happens if a building is misclassified?

- The wrong rate of insurance premium will be applied.
- This means that the insured will either pay too much premium or the carrier will collect too little premium for the building.

- The wrong value of the building will be determined.
- This means that the building could be over-insured (premium is too high) or under-insured meaning not enough insurance was purchased to rebuild after a loss.

Buildings are classified by ISO into 6 construction classifications:

- ISO-1 Frame
- ISO-2 Joisted Masonry
- ISO-3 Non- Combustible
- ISO-4 Masonry Non-Combustible
- ISO-5 Modified Fire Resistive
- ISO-6 Fire Resistive

What classification are the most susceptible to fire loss?

- ISO- 1 Frame buildings are the most susceptible to fire loss.
- ISO-6 Buildings are the least susceptible to fire loss.

There are 3 questions you must answer in order to make a correct ISO classification determination:

1. What is the construction of the roof frame?
2. What is the construction of the load-bearing wall structure holding up the roof?
3. What is the construction of the floors above the ground floor? (Only applies to multi-story buildings.)

Important note: Finish features such as roofing, siding, windows, paint, wall paper, flooring cover, etc., have nothing to do with the making of an ISO classification determination.

Next we will show you examples of each of the six ISO- classification and show you how to make an accurate ISO classification determination.

ISO-1 Frame Construction

Definition of an ISO-1 Frame Construction building: Building with exterior walls, floors and roofs of combustible construction or **wood frame**.

Question 1: What is the Construction of the roof?

Answer: In this dwelling, the roof support structure is **wood frame**.

Remember, the roof decking and roof covering have no bearing on the ISO classification determination.

Question 2- What is the construction of the structure holding up the roof?

Answer: In ISO- frame construction, the roof is supported by the exterior load-bearing walls and certain interior walls. In this case they are all **wood-frame.**

Remember, the siding, brick veneer, etc., and windows have no bearing on the ISO classification.

Question 3- What is the construction of the floors above the ground floor?

Answer: Here you can see that the second floor is **framed with wood** and covered with wood sheeting.

Remember, question 3 only applies to multi-story buildings.

Here is an example of a typical frame structure from the exterior. (The stone veneer is not structural, and has no bearing on the ISO classification.

How can you make a determination on a finished structure?

Look in the attic spaces for the roof framing.

You can also look in unfinished basements for the ground floor

Or look in the crawl space.

You may also look at the framing in an unfinished garage space.

Where might you typically encounter ISO-1 Frame Construction?

- Residential dwellings
- 1 to 3 story apartment & Condos
- 1 to 3 story office buildings
- 1 to 3 story motels
- Fast food restaurants

ISO-2 Joisted Masonry Construction

Definition: Buildings with exterior walls of **masonry or fire resistive construction** and combustible floors and roofs (**wood frame**).

Question 1- What is the construction of the roof?

Answer: In this building the roof structure is **wood frame**.

Remember, the roof decking and cover have no bearing on the ISO-determination.

Question 2- What is the construction of the structure holding up the roof?

Answer: In ISO-2 Joisted Masonry construction, the roof is supported by the exterior walls and certain interior walls.

In this example, the exterior walls are constructed of **concrete blocks.**

Remember, siding and windows have no bearing on the ISO-classification.

This is a one-story building, therefore the floor structure of a multi-story building (Question 3) does not apply. The cement slab floor you see here (with footings that would have been poured under it) is considered the building foundation and is not part of the determination of the ISO classification.

Masonry walls consists of the following materials:

- Solid Brick
- Solid or hollow core concrete block
- Poured concrete
- Pre-cast concrete (tilt up)
- Adobe
- Solid stone

Below are some examples of IS0-2 Joisted Masonry buildings:

Solid brick exterior walls

(Common in commercial buildings of early 1900's)

Solid stone exterior walls

(Deep door frames and window sills are a good clue)

Example of ISO-2 Interior: Concrete block load-bearing walls with wood roof supports.

Precast concrete exterior walls with wood roof supports.

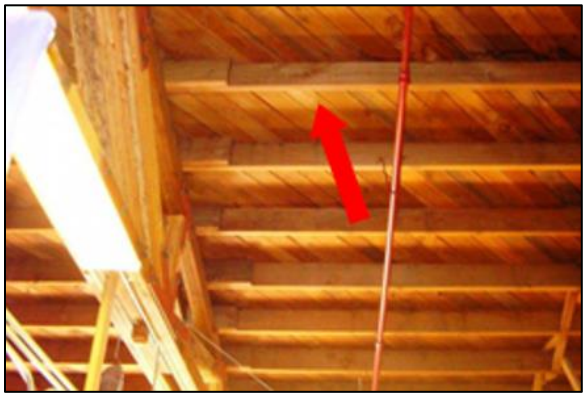
Poured concrete exterior walls.

Question 3- What is the construction of the floors above ground floor?

Answer: Here you can see that the 2nd floor is being framed with wood floor joists and the exterior walls are concrete block.

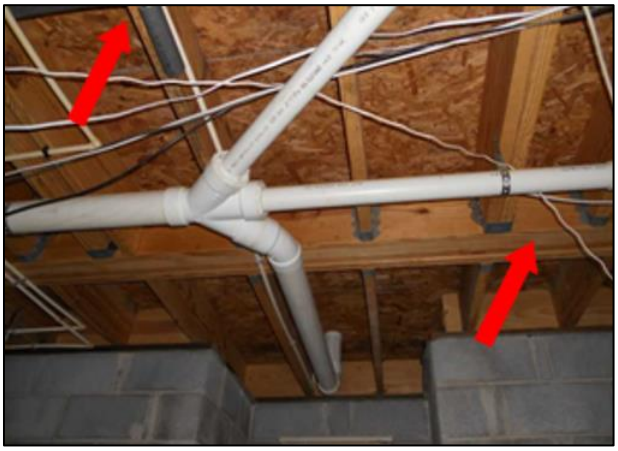
Remember, question 3 only applies to multi-story buildings.

How can you make a determination on a finished structure?



Look in attic spaces for the roof framing.

Look in unfinished basements for the ground floor framing.



Look in any unfinished areas where you can see the exterior wall and roof or floor structures.

Where might you typically encounter ISO-2 Joisted Masonry Construction?

- Residential dwellings
- 1 to 3 story apartment & Condos
- 1 to 5 story office buildings
- 1-5 story motels
- Restaurants
- Manufacturing facilities
- Warehouses
- Auto garages and dealerships

Solid Brick vs. Brick Veneer

Making an ISO-2 classification on a brick structure can be challenging. At times it's difficult to determine the difference between a building that is brick veneer vs. solid brick.

We will show you the telltale signs to make that determination.

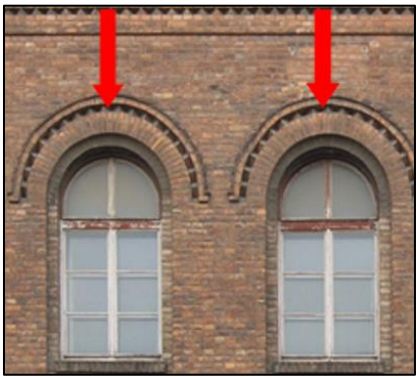
Why is the determination so important?

- A building that is brick veneer is typically classified ISO-1 Frame.
- A solid brick structure would be classified as ISO-2
- An ISO-2 building is less susceptible to fire loss and given better premium rates than an ISO-1 classified building.
- It costs more to replace a sold brick building verses a brick veneer building**.**
- Solid brick exterior walls with a wood roof system would classify the building as ISO-2 Joisted Masonry.
- Brick veneer on the exterior wall with a wood roof system would classify the building as ISO-1 Frame construction.
- Brick veneer is considered an exterior wall cover and is not structural. Remember, exterior wall finishes, siding and windows do not play a factor in determining the ISO-construction class.

Telltale signs of Brick Veneer vs. Solid Brick:

Brick Veneer: Steel lintels above the windows.

This steel plate is holding weight of brick above it.

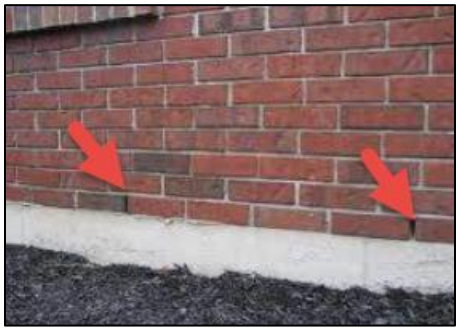


Solid Brick: Arches above windows.

Arches like this are not typical for brick veneer.

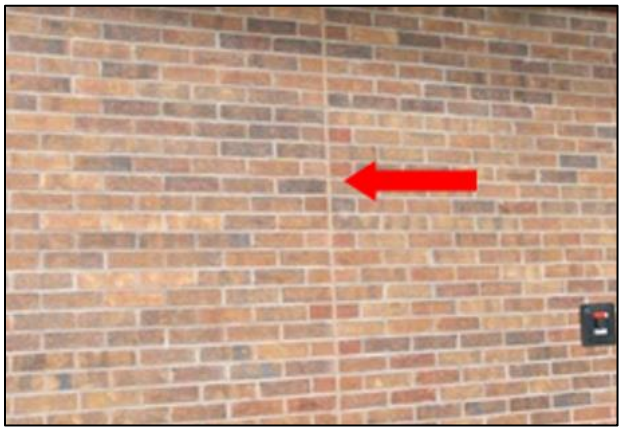
Telltale signs of Brick Veneer vs. Solid Brick (Cont'd)

Brick Veneer-Weep holes present.

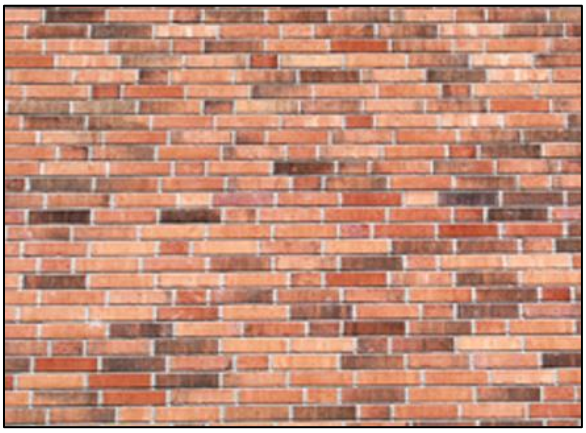


Solid Brick-No weep holes.

Brick Veneer-Breaks in the running bond.



Solid Brick-No breaks in the running bond.



In this photo above of wall damage, we can see that the brick is just a veneer attached to the wood frame of a building.

Brick veneer is often used for decorative effect, as shown above. The brick on this apartment building is not structural.

Brick Veneer – No foundation needed.

Solid Brick-Foundation required

- Solid brick structures typically do not exceed 6 stories
- Solid brick structures have exterior wall thickness if 12 inches to 36 inches thick.
- Due to cost of material and labor, there were not many solid brick buildings constructed past the mid 1950's.

Example of modern strip mall building with brick and stone veneers. If the load bearing walls are wood frame, then it would be ISO-1. Always remember the veneer does not factor in to the ISO classification.

Typical joisted masonry ISO-2 construction. Solid brick walls with wood floor supports and wood roof supports. The architectural style indicates it was built before 1950's.

ISO-3 Non-Combustible Construction

Definition: Buildings with exterior walls, floors, and roofs of **non-combustible** or slow burning materials (typically steel). The load bearing structure of the building is **typically constructed of steel**.

The roof deck and supports are constructed of steel.

These buildings are commonly called Pre-Engineered Metal Buildings.

Question 1 - What is the construction of the roof?

Answer: In this building, the roof structure is steel and is supported by the same steel frame that supports the walls.

Remember, the roof decking and cover have no bearing on the ISO- Determination.

Question 2- What is the construction of the structure holding up the roof?

Answer: The steel frame of the building holds up the roof structure.

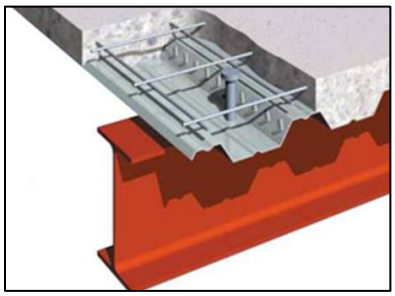
Remember, the siding and windows have no bearing on the ISO-Classification.

Here is a typical ISO-3 building.

Question 3: What is the construction of the floors above the ground floor in a multi-story building?

Answer: Here you can see that the second floor is supported by a steel deck and steel I-beam.

Note: Many times the upper floors of an ISO-3 Building have concrete floors. However, that concrete is poured into a steel floor deck which is characteristic of an ISO-3 Building and <u>not</u> a higher ISO Classification. See picture below.

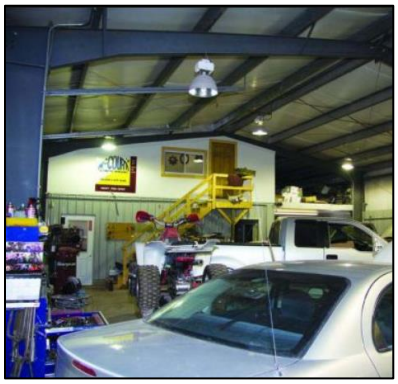


Concrete poured into steel decking, supported by steel beam underneath.

How can you make a determination on a finished structure?

Look for exposed steel roof structure in unfinished areas.

Look above ceiling tiles.



Look in service bays and garages for steel structure.

Where might you typically encounter ISO-3 Non-Combustible Construction?

- Auto Garages and dealerships
- Strip shopping centers/ retail stores
- Office buildings (low and high rise)
- Warehouses
- Mixed use space (office/warehouse)
- Manufacturing facilities
- Airplane hangars

ISO-4 Masonry Non-Combustible Construction

Definition: Buildings with **exterior walls of masonry or fire resistive** construction. And **floors and roof structures of non-combustible material (i.e. steel).**

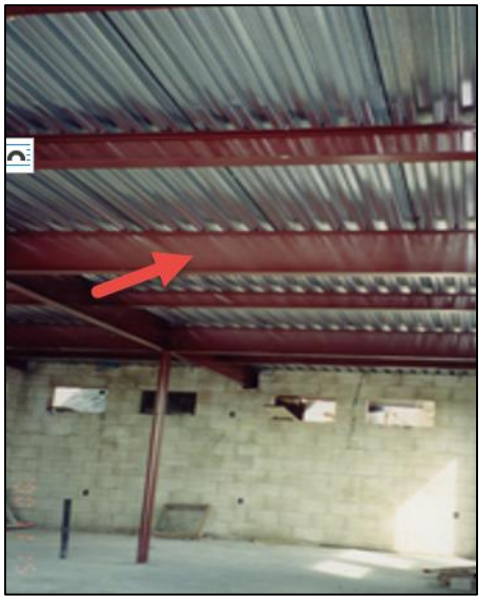
ISO 4 vs. ISO-2:

ISO-4 Buildings have the same exterior wall characteristics as ISO-2 Joisted masonry. The difference here is the construction of the roof and floors. Which in this case, are steel rather than wood.

Question 1: What is the construction of the roof?

Answer: In this building, the roof structure is supported by steel beams.

Remember, the roof decking and cover have no bearing on the ISO-determination. Even though this roof deck is steel, it is the steel beams supporting the roof that determines the classification.



Question 2: What is the construction of the structure holding up the roof?

Answer: In ISO-4 Masonry Non-Combustible construction, the roof is supported by the exterior walls and certain interior walls or columns.

In this example, the exterior walls are constructed of concrete blocks.

Remember, the siding and windows have no bearing on the ISO Classification.

Question 3: What is the construction of the floors above the ground floor?

Answer: Here you can see that the 2nd floor is supported by steel I-beams and the floor decking is steel.

Remember, question 3 only applies to multi-story buildings.

Masonry walls consists of the following material:

- Solid brick
- Solid or hollow core concrete block
- Poured concrete
- Pre-cast concrete (tilt up)
- Adobe
- Solid Stone

Below are some examples of ISO-4 Masonry non-combustible buildings:

Concrete block exterior walls

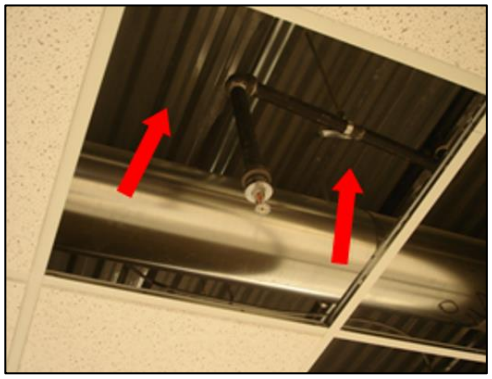
Pre-cast tilt-up concrete exterior walls

How can you make a determination on a finished structure?

Look at the ceiling to view the exposed steel roof deck, open web steel joists and exterior block walls.

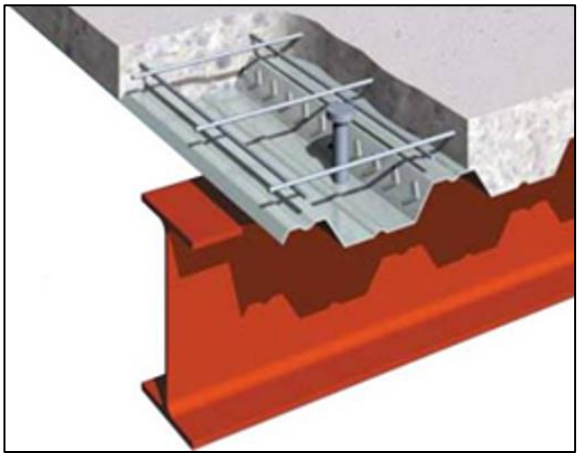
Look above a ceiling tile so that you can see the underside of the floor above or the bottom of the roof deck.

Note the steel here.



Look in an unfinished area where you can see the masonry exterior wall and roof of floor structures adjoin. Here you can see the block exterior wall and the steel roof joists and deck.

Don't be fooled by concrete floors in an ISO-4 building:



It is very common for an ISO-4 building to have concrete poured into steel decking. The concrete does not change the ISO Classification.

Remember, it's the steel floor or roof decking that's important.

Where might you typically encounter ISO-4 Masonry Non-Combustible Construction?

- 1-3 Story apartment & Condos
- 1 to 5 story office buildings
- 1 to 5 story motels
- Restaurants
- Manufacturing facilities
- Warehouses
- Auto garages and dealerships
- Strip shopping centers

ISO-5 Modified Fire Resistive Construction

Definition: These are buildings with exterior **walls, floors, and roofs of masonry** materials not less than four inches thick.

They can also be buildings that have **fire resistive materials (structural steel) that is covered with a fireproofing material, or is encased in concrete.**

ISO-5 Misclassifications

This the **most misclassified** construction classification. Too many times buildings are classified as ISO-5 and it is not correct.

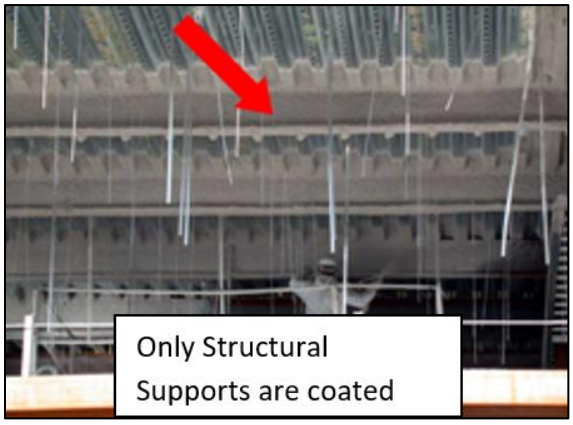
There are several key points that must be present in order to make the ISO-5 classification.

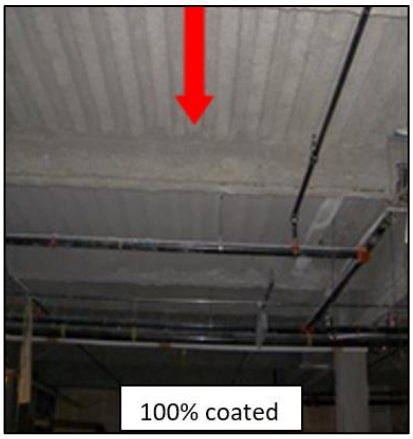
- All structural steel must be insulated with a fireproof insulation, encased in fire rated drywall or encased in concrete. You must see this encasement in order to make the proper classification.
- If you see exposed structural steel, the building cannot be classified as ISO-5.

Question 1: What is the construction of the roof?

Answer: ISO-5 buildings have roof deck and supports of structural steel, but they must be insulated.

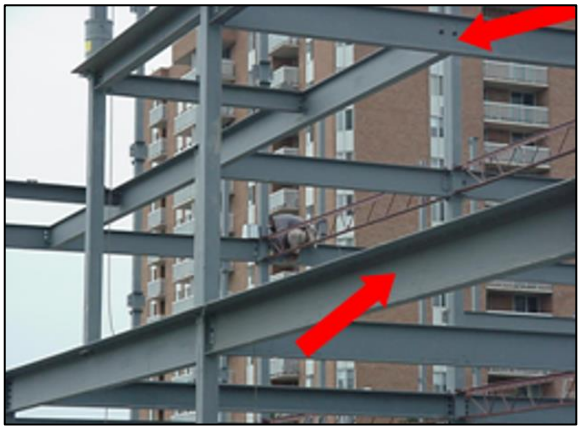
In the photo to the left, you can see fireproofing sprayed on to the structural steel of the building.





In some cases, only the structure supporting steel is coated and in other cases, all steel is coated, as noted in the two above photos. Either method is acceptable.

Question 2- What is the construction holding up the roof?



Answer: In most ISO-5 buildings, the structure holding up the roof is structural steel. A steel frame rather than load supporting walls carry the roof.

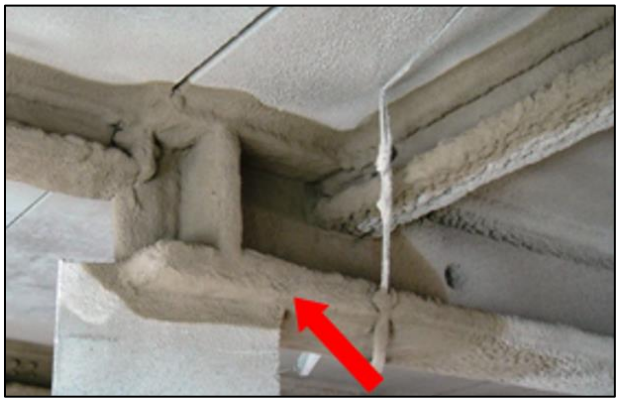
In some limited cases (typically 1 to 4 stories), the roof can be carried by masonry exterior walls. The same as those found in ISO-2 and ISO-4 classes.

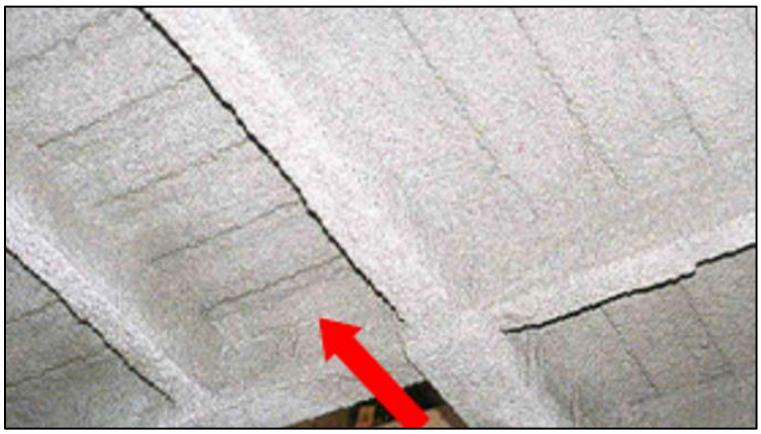
However, any structural steel must be fireproof insulated.

Question 3- What is the construction of the floors above the ground floor?

Answer: The floors must be either solid concrete supported by fireproof insulated steel or structural steel with steel deck that has been fireproof insulated.

This is an example of solid concrete supported by fireproofed structural steel.

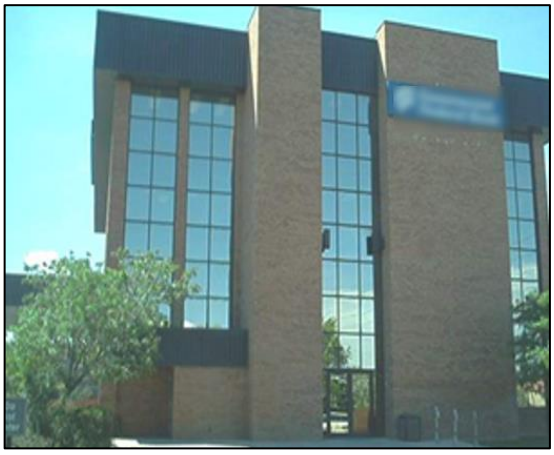




The floors must be either solid concrete, supported by fireproofed insulated steel or structural steel with a steel deck that has been insulated with fireproofing material.

This is an example of a steel floor deck with structural steel beams, which has been entirely coated with fireproofing.

Examples of ISO-5 Modified Fire Resistive Buildings:



You cannot make an ISO-5 determination from outside the building. You must get inside and investigate its construction features to find evidence of the fireproofing.

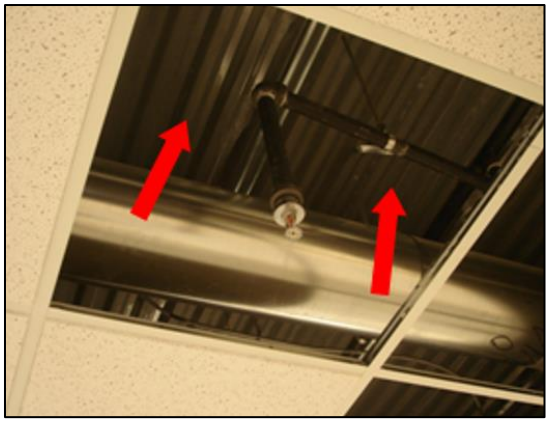
The sears tower in Chicago is an ISO-5 building.

How can you make a determination on a finished structure?

Look at the ceiling to view the exposed steel deck, open web steel joists. Look for the fireproofing that has been applied.

Look above a ceiling tile so that you can see the underside of the floor above or the bottom of the roof deck.

Note the steel here has <u>not</u> been fireproofed, therefore this would <u>not</u> be ISO-5.



Where might you typically encounter ISO-5 modified fire resistive construction?

- Low and high rise office buildings
- Low and high rise condo and/or apartments
- Low and high rise hotels
- Low rise manufacturing facilities
- Low rise warehouses
- Self-storage facilities
- Auto garages and dealerships
- Strip shopping centers

ISO-6 Fire Resistive Construction

Definition: The **exterior walls are solid masonry and load-bearing structures must be masonry. Floors and roof decks are constructed of concrete.**

ISO-6 buildings are basically constructed of concrete exterior walls, floors and roof structures.

The exterior walls and interior load bearing structures must be constructed of masonry material just like we find in ISO-2, ISO-4 or ISO-5 construction classifications.

- Concrete block
- Solid brick
- Precast concrete
- Poured in place concrete
- Adobe

Question 1- What is the construction of the roof?

Answer: The roof deck on ISO-6 buildings is either poured in place concrete or precast concrete panels.

In this example on the left, the roof decks are poured in place concrete.

On the right is an example of pre-case concrete panels that were fabricated off site and then installed on the building. They are commonly referred to as “T” panels because the end of the panel resembles a “T.”

Question 2- What is the construction of the structure holding up the roof?

Answer: Here we see concrete columns and beams holding up the concrete structure.

In some limited cases (typically 1 to 4 stories), the roof can be carried by masonry exterior walls. The same as those found in ISO-2, ISO-4 and ISO-5 classes. However, the roof structure must also be concrete.

Question 3- What is the construction of the floors above the ground floor?

Answer: The floors must be constructed of concrete.

In this example, you can see that each floor is concrete supported by concrete walls.

Below are some examples of ISO-6 buildings

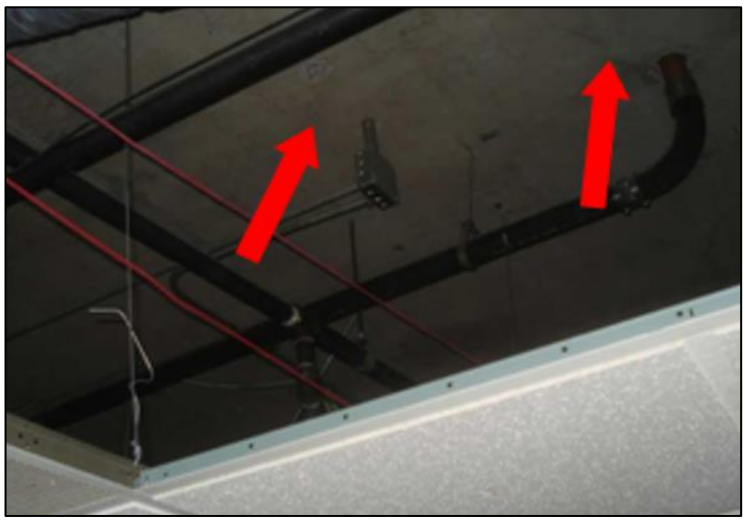
These buildings have concrete roofs, floors and walls making them ISO-6.

In this picture, note the concrete “T” panels on the roof and the solid concrete block exterior walls.

How can you make a determination on a finished structure?

Look above a ceiling tile so that you can see the underside of the floor above or the bottom of the roof deck.

Note that the floor or roof deck shown here is solid poured concrete.



Where might you typically encounter ISO-6 fire resistive construction?

- Low and high rise office buildings
- Low and high rise condos and apartments
- Low and high rise hotels
- Low rise manufacturing facilities
- Low rise warehouses
- Self-storage facilities
- Auto garages and dealerships
- Strip shopping centers

CONSTRUCTION FEATURES

Why do we need to provide building construction information?

- Building construction information is used in helping to determine the insurance value of the building.
- The age of the building, additions or renovations and various construction features impact the cost to rebuild or repair the structure after a loss.
- Building construction information is collected when the insurance company is providing property coverage on the building or contents.

General building information:

Subject building square footage – there typically are two areas of the report where you must report square footage.

Rating Segment

The first is the Rating segment. You must combine all square footage of all the buildings (if more than one building is involved in the inspection) including basement square footage and report it.

Some report forms (depending on the occupancy) may require a breakdown of the square footage.

Here is an example from a Rating segment within a "Retail Store" report form, which requires such a breakdown. The first line is ALL building space, and the lines below that would be the breakdown of that total square footage:

Rating Information

Total Square Footage (Includes All Building Space):	
SF of Finished Habitational Area:	
SF of Finished Commercial Area:	
SF of LRO Office / Retail Area:	
SF of LRO Commercial / Industrial Area:	
Basement Area (Included in Total SF):	
Subterranean & Under Bldg Parking (Included in Ttl SF):	

Construction Segment

The second area is the Construction segment. In the Construction segment, you will report the square footage of the subject building (largest/most valuable building) and separate the basement from the rest of the building. (You do NOT report more than one building in this segment.)

In this example below, let's assume the building (excluding basement) is 4,000 SF and the basement is 1,000 SF. Those are the amounts you would report on the first two lines in the segment shown below.

Never report more than one building in this segment. If there are multiple buildings, you would use another section of the form to report on additional buildings, if required.

Construction & Common Hazards

Square Feet of Subject Building (Exclude Basement):	4000
Square Feet of Subject Building Basement:	1000
SF Verification Method:	☑ Measuring Wheel ☐ Laser Measuring Device ☐ Blueprints or Site Plan ☐ Satelite or Aerial Photo - See Text ☐ Tax Record - See Text ☐ Other - See Text ☐ Insured Satement - See Text

You'll note that in this segment, the method used for verification of the building's square footage is required.

Where do I get the square footage information?

- Your own measurements are the primary, preferred method, using a measuring wheel or laser measuring device.
- You may also use as a secondary source, such as public tax records or Google Earth satellite imagery measurements to confirm measurements or data gaps.

  This method should only be used if there are physical site restrictions such as cliffs, waterfronts, restricted areas, etc., preventing you from getting complete measurements yourself.
- Blueprints or site plans should be used with caution, as the final construction of the building, or later alterations to the building, may differ significantly from the original plans.

Do NOT rely upon information provided by the insured or agent.

It is up to you to independently verify the square footage of the building. This information is critical to the Underwriter, in order to accurately determine building valuations for property coverage.

Note: Square footage covers what is under the roof and enclosed. Items such as covered porches, balconies, car ports, patios, decks or awnings are not included in the gross square footage of the building. Here is a residential example:

General building information: Determining # of stories

When determining stories, you are to count the number of stories that are **above** ground level. Basements do not count as a story.

In this example there are two stories above ground level.

General building information: Determining story height:

Story height might be asked on the report form. If so, it is measured from the floor of each story to the bottom of the floor or roof support directly above it.

In this example, both the 1st and 2nd story heights are the same at 10 feet. Not all multiple story building will have each story the same height.

In this example the correct story height is 10 feet.

You do not measure story height to the roof peak.

General building information: How to handle mixed story reporting:

In this example the hotel building is a mix of 1-story and 4-stories.

1 story section = 3,000 SF

4-story section = 12,000 SF

TOTAL Building = 15,000 SF

3,000/15,000 = .20 = 20% of the building is 1-story.

12,000/15,000 = .80 = 80% of the building is 4-story.

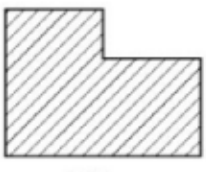
So, you would report on the form that 20% of this building is 1-story and 80% is 4-story.

Building Shapes

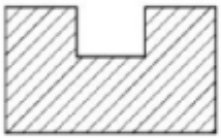
What is the building shape? There are 4 basic shapes:

- Approximately Square
- Slightly Irregular
- Irregular
- Very Irregular

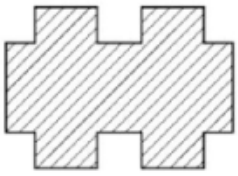
Approximately square



Slightly Irregular



Irregular



Very Irregular

Occupancy Breakdown

What is the occupancy breakdown?

The occupancy breakdown is used to determine the value of the buildings. When re-building a structure after a fire, how the building was being used drives the costs to replace the structure.

For example, it is more costly to replace a restaurant than it is to replace a retail store due to infrastructure requirements needed in a restaurant.

The occupancy breakdown is your opinion of the % of the occupancy use. For example, this strip mall shown below might be reported as 60% retail, 30% restaurant and 10% office.

Note: "Vacant" is not an occupancy. You must state how the building was being used.

Age and construction updates:

Age and updates impact cost and potential loss exposures.

Electrical, heating, plumbing and roofing systems are subject to failure the older they become. So it is very important to note when and if these systems have been updated.

Updates

NOTE: List the YEAR of the Update NOT e basis for ALL es UNKNOWN IS NOT ACCEPTABLE.

Full, Partial or None?

Actual or Estimated?

	Update Type	Date Basis	Year
Roof Update:			
Electrical Update:			
Plumbing Update:			
HVAC Update:			

If the year of construction is UNKNOWN, provided an ESTIMATE. Then explain your basis for the estimate. UNKNOWN is NOT an acceptable response. Explain all estimated years of construction below.

When were the hot water heaters updated:

Your source of information is the insured. Ask the insured about year of construction and if any remodeling or system updates have been made since that time.

Note: The year of an update (if any) must be a date sometime AFTER the original date of construction. What was constructed or installed during the initial build is NOT an update.

Foundations & Basements

Many commercial buildings are constructed on concrete slabs. This is also called slab on grade. A concrete slab is poured over a footer foundation.

Pouring foundation footers

Concrete slab poured over footers

Basements can be fully below grade or partially below grade.

100% below grade

Partially below grade.

Buildings can also be constructed over a crawl space. The support structures for the building are constructed on foundation or short foundation walls. There is no basement.

Crawl space

Crawl space vent

In areas of high moisture/water content or where the soil type will not permit a traditional concrete foundation, buildings can be constructed on either steel or concrete pilings.

Steel pilings

Concrete pilings

Basements

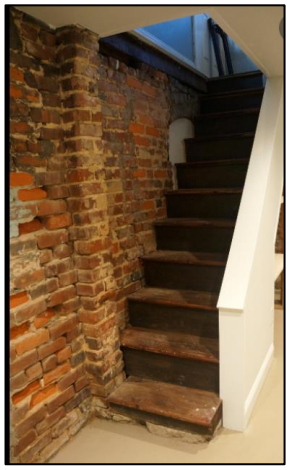
For commercial buildings, make sure to note what % of the basement is finished. This impacts the overall replacement cost of the building.

Unfinished

Finished

Poured concrete basement walls

Concrete block basement walls



Solid brick basement foundation walls.

Solid stone basement foundation walls.

Exterior Load Bearing Walls

As you've already learned from discussion of the ISO building classifications 1-6, the structure load of the building can be carried by different structures and materials.

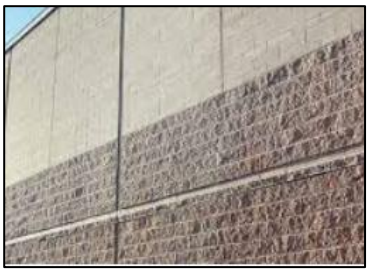
Wood Frame Walls

Steel Frame Walls

Solid Brick Walls

Concrete Block Walls

Some block exterior walls are classified as “Decorative” or “Architectural” block.



This is nothing more than a concrete block with a decorative finish. The reason this should be noted in your report is that this is a higher cost material than standard concrete block, therefore increasing the building valuation.

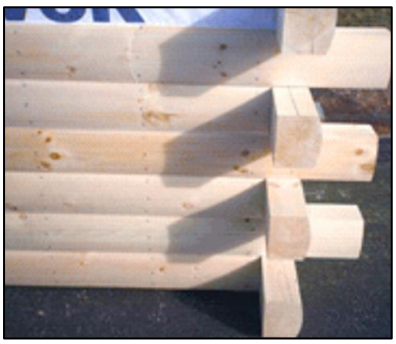
Glass Curtain Walls:

Glass curtain walls do <u>not</u> carry a structural load of the building. **Curtain walls are an exterior wall finish.** The structural load is actually carried by a steel structure.

The glass hangs like a curtain on the exterior frame of the building.

Log Walls:

Solid log exterior walls can be whole logs (left), or they can be milled dimensional logs (right).

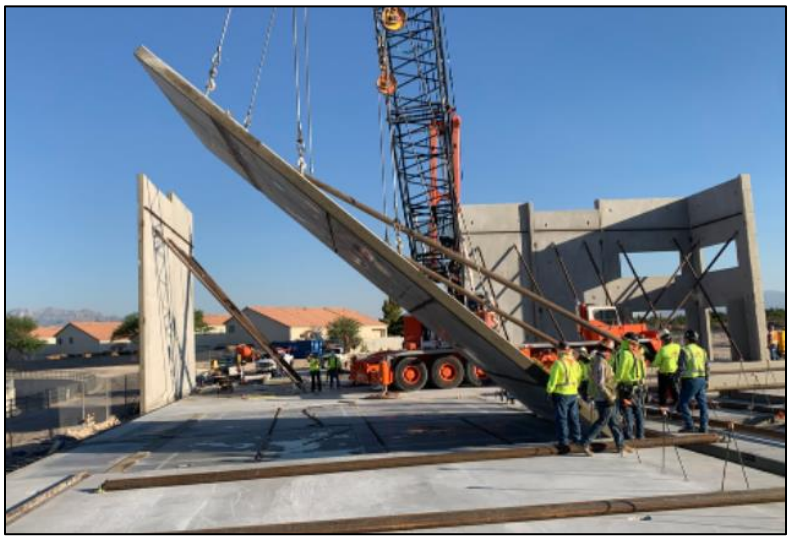


Beams and Columns:

The building structural load can be carried by steel members that have been coated in flame retardant insulation.

The structural load can also be carried by steel beams that have been encased in concrete

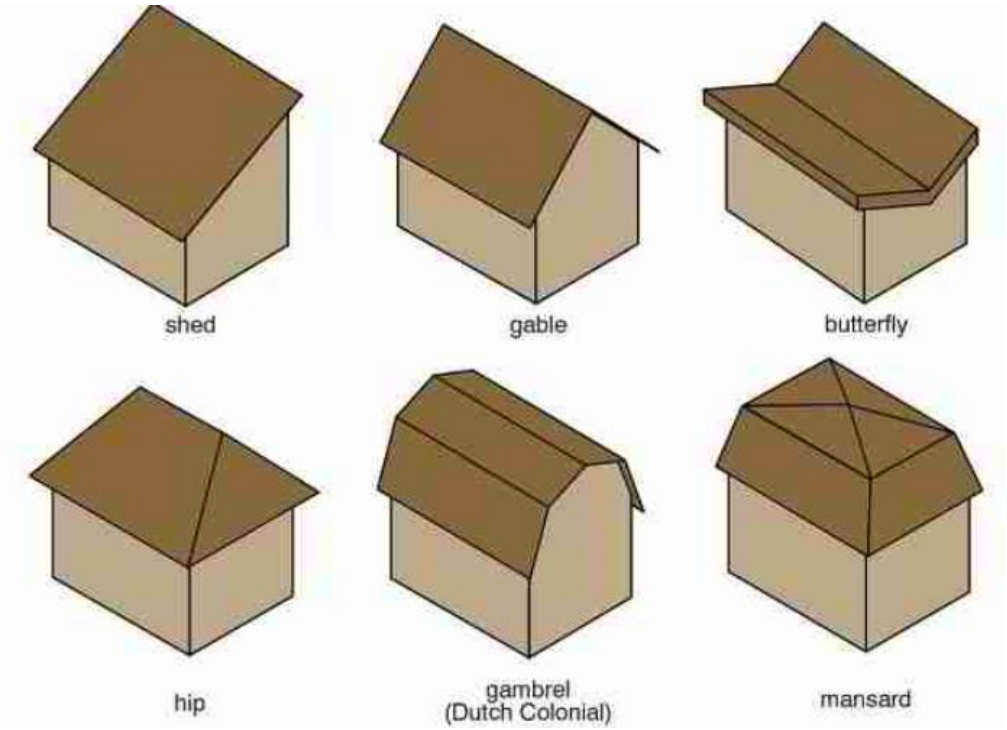
The structural load can be carried by concrete columns. The column on the left is poured-in-place concrete, and the column on the right is pre-cast concrete.



The load can be carried by pre-cast concrete panels. Also known as Tilt-Up concrete panels, they are actually tilted up into place using a crane.

Roof Shapes

Below you will see a few of the most common roof shapes you may encounter. Not shown in this illustration is a flat roof, which is very common in both older and modern large commercial buildings.



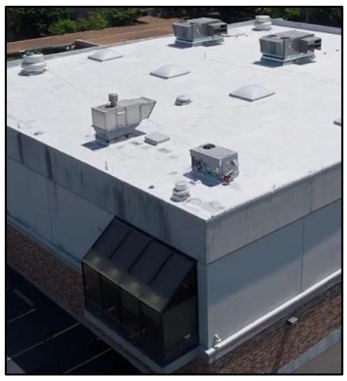
Shed style:

Gable style:

Hip style:

Combination gable/hip (commonly seen):

Flat roof style:

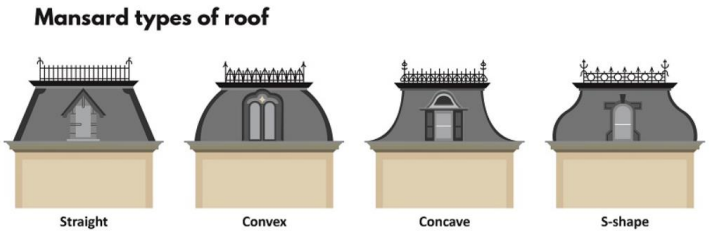


Side Note: Flat roofs are common on older ISO-2 buildings as seen in the photo on the left. Generally there is a very shallow slope to the roof, even though we still refer to them as flat roofs. Definitions vary, but generally a roof is considered a 'flat' roof if it has a low-slope pitch of 2/12 or less.

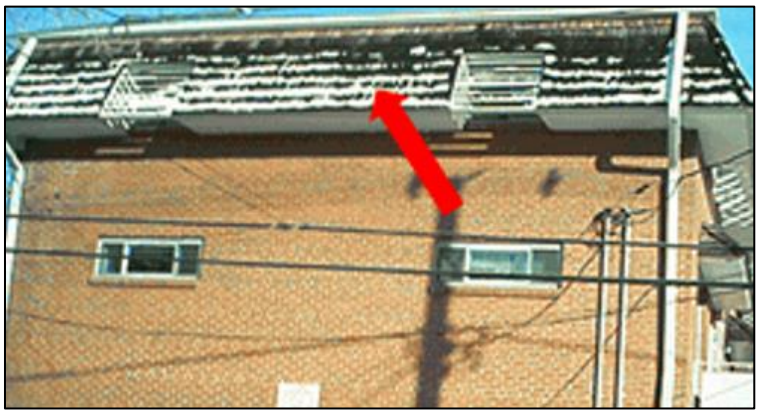
What does that mean? 2/12 = Rise/Run = Roof rises 2" for every 12" of run.

Gambrel style:

Mansard style:

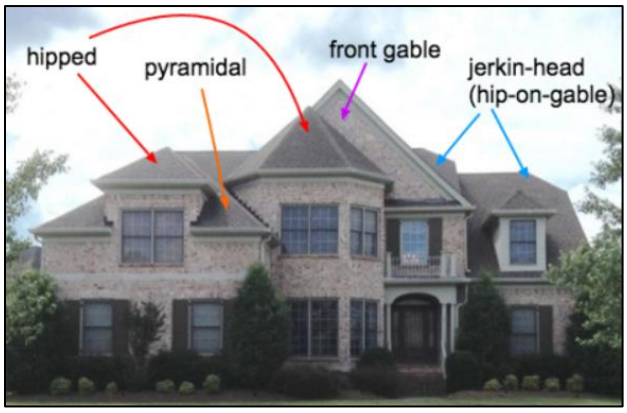


The picture on the right is showing a building with a flat roof and a “decorative” mansard. The mansard shape shown here hangs down from the top of the building like a skirt.



Butterfly style (not common):

Examples of combination roof styles:



Multiple combination roof

Combination Flat & Shed roof

Roof Support Structures

Wood/Timber Roof Trusses



Steel Roof Trusses/Beams



Pre-engineered metal structure

Wood pole frame building

Concrete roof supports



Roof Coverings

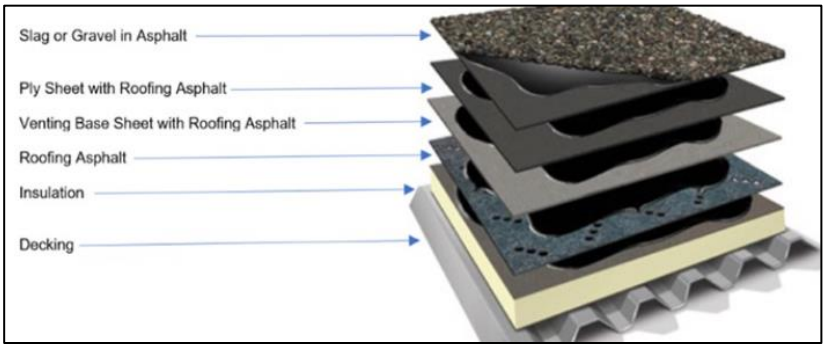
Wood Shingles

Asphalt/Composite Shingles

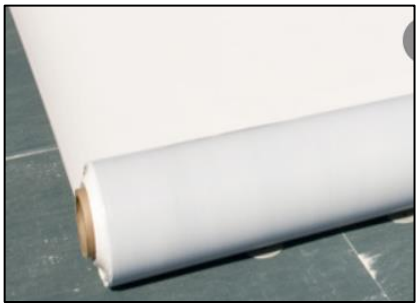
Tar & Gravel

Built-up Roof

(BUR)



Rubber (EPDM) Roofing



Clay Tiles

Metal Roof Panels

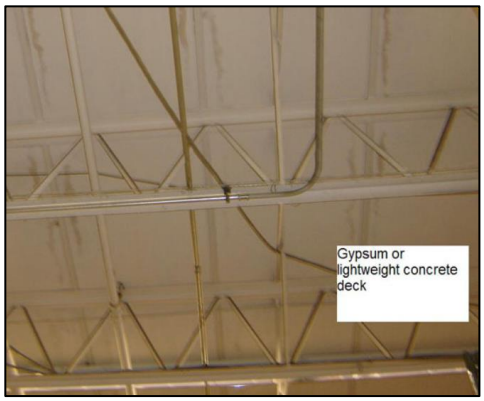
Roof Deck

The Roof Deck is the support structure below the roof covering.

Wood Decking

Metal Roof Deck

Gypsum



Concrete

Roof Condition

Above average: No signs of wear and tear or damage present. All flashing, fascia, soffits, roof penetrations and rakes are free of any damage or wear. No leaks.

Average: Normal wear and tear noted. All flashing, soffits, downspouts, penetrations are in good condition. No leaks. Normal condition for the age of the roof. No missing or damaged roofing.

Below Average: Obvious signs of damaged to the roof, soffits, worn roofing, missing roofing, pooling water, missing/damaged downspouts, damaged fascia, and leaking penetrations. Leaks are present. Clear evidence of water damage.

Besides the roof covering itself, shown below are additional roof issues that would make the condition below average, such as vegetation, soffit and gutter/downspout problems.

Cost and Quality of Construction

In comparison to similar buildings of the same type, you will use your best judgment and observations to determine if the building materials and finishes are above average, average, or below average.

Above average: Premium quality materials and finishes were used in the construction of the building. Real stone used in place of faux stone, granite counters, high end fixtures, marble floors, wood wall finished. High electrical, heating, and plumbing fixtures.

Average: Average standard construction materials and finishes. All middle of the road price and standard grade materials and features.

Brick veneer vs. solid brick, tile floors, mid-grade commercial carpeting, painted drywall, standard fixtures.

Below average: The building was constructed for the lowest price possible. All materials are economy grade and finishes are minimal. The electrical, heating, and plumbing are minimal and only what is required by code.

Building Condition

Average: The building has been maintained and only shows the normal wear and tear for a building of that age.

Some minor repair items. No major repair or maintenance issues noted.



Above average: The building has been maintained in new to near new condition. There are no signs of wear and tear and no signs of any damage or defects in the building or its finishes.



Below average: The building has not been maintained and there are obvious signs of damage or distress that go well beyond normal wear and tear.

You will have numerous recommendations for repair and maintenance issues.



COMMON HAZARDS

What are the Common Hazards?

Common hazards are those property hazards that are common to most every building such as:

- Heating and Cooling Systems
- Hot Water Heating
- Electrical System
- Plumbing
- Smoking on Premises
- Housekeeping Conditions

Common hazards are typically associated with property losses, specifically fire.

One of the main concerns associated with some Common Hazards are Updates. Updates refers only to replacements or additions to those systems **AFTER** the date of original construction or original installation. For example, when were the following updated or replaced?

- Electrical
- Heating & Cooling
- Plumbing

As each of these Common Hazard elements age, they become more susceptible to failure which can result in fire or water damage loss. Therefore it is very important to find out if any of these systems have been updated and when.

Heating

Example of Heating and Cooling Segment in report form:

Common Hazards

Heating: ☐ None ☐ Boiler (Forced Air) ☐ Boiler (Baseboard) ☐ Boiler (Radiators) ☐ Fireplace ☐ Stove
☐ Geothermal ☐ Ventilation Only ☐ Rooftop Unit ☐ Suspended Unit Heater ☐ Thru Wall/Window Unit
☐ Electric Baseboard/Wall Unit ☐ Commercial Heat & A/C (Forced Air) ☐ Commercial Heat (Forced Air)
☐ Forced Warm Air (Residential Grade) ☐ Other

Cooling: ☐ None ☐ Chilled Water (Air Handling Unit) ☐ Chilled Air (Fan Coil Unit) ☐ Evaporative Cooler
☐ Forced Air Cool ☐ Heat Pump ☐ Rooftop Unit ☐ Thru Wall/Window Unit ☐ Unit A/C (Air Cool)
☐ Unit A/C (Water Cool) ☐ Other

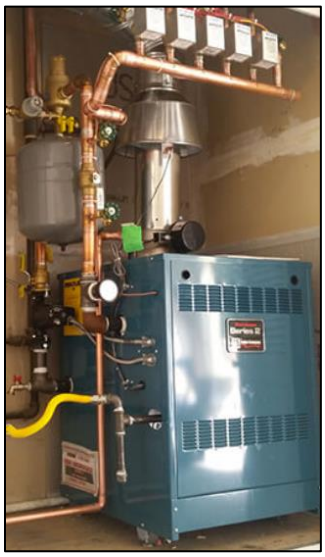
Is Heating & Cooling System inspected & serviced on an annual basis?

Common Hazards-Heating Types:

Forced Air Furnace – Gas

Forced Air Furnace – Electric

Suspended Forced Air Heater - Gas



Hot Water Boiler – Gas-fired

Electric Heat Pump

Solid Fuel Stoves

Fireplaces – Wood or Gas

Electric Baseboard

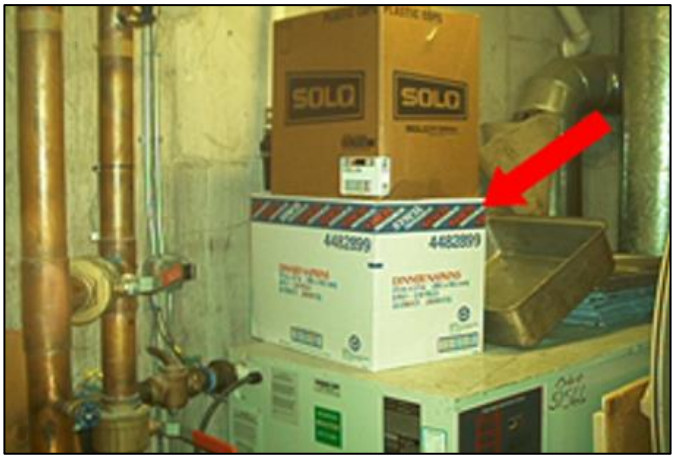
Hot Water/Low Pressure Steam

Forced Air Wall Unit -Gas

Radiant gas heater

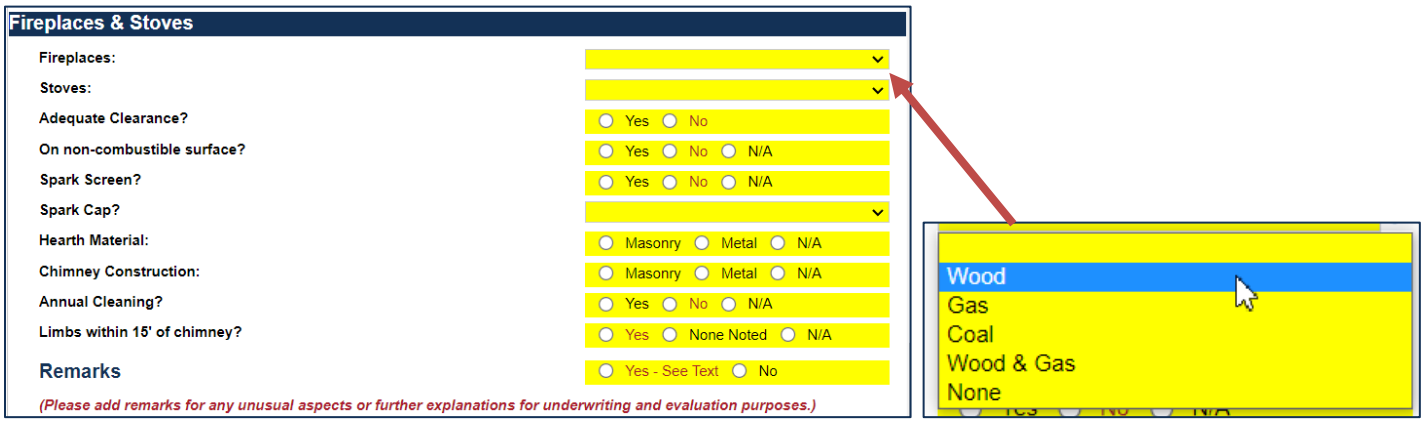
Heating Hazards:

Make sure there is proper clearance. No combustible materials should be within **36 inches** of the furnace, heater or boiler. This would include wood, cloth, paper and cardboard boxes. Combustible materials pose a significant fire hazard. This is a very common problem encountered during inspections.



Fireplace and Heating Stoves

Example of Fireplace/Stove Segment in report form:



These can take many forms, such as masonry fireplaces, gas fireplaces, gas logs, pellet or wood stoves, etc. In all cases, appropriate clearances and non-combustible surfaces are critical.

Fireplace and Stove Hazards:

- Always need 36” clearance from all combustible surfaces and materials.
- Creosote build up in chimney or flue pipes can cause fires, they should be cleaned regularly.
- Spark screens or fireplace doors in place to prevent sparks from falling onto combustible floor surfaces.
- Single wall flue pipe is acceptable in interior up to point it transitions through a wall or ceiling. Require’s 18” clearance from combustible surfaces.
- Flue pipe from stoves must be double or triple wall where they pass through a combustible surface such as where they penetrate walls, ceilings, roof decking, etc.
- Chimney caps with screen to prevent rain, debris and birds or animals from getting inside chimney.
- Tree limbs must be trimmed back a minimum of 15’ from chimney.

Side Note: When you learn about Liability coverage, remember any building with fuel burning fireplaces or heating stoves (i.e., non-electric) must have a carbon monoxide detector.

Cooling

Common Hazards- Cooling Types:

Central Air Conditioning

Evaporative Cooler (Swamp Cooler)

Window Air Unit

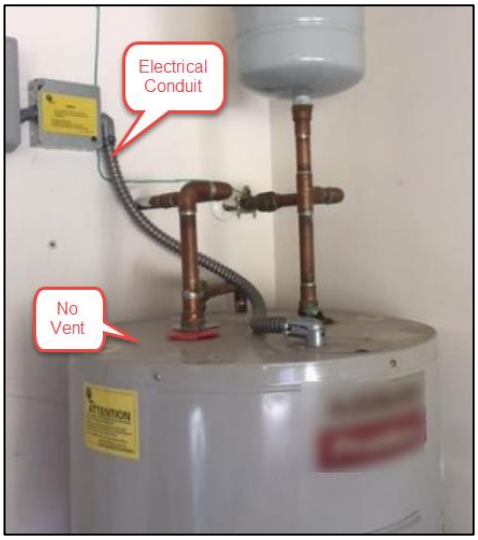
Thru-Wall Air Conditioner

Cooling Hazards:

- Need to adequately drain water/condensation to reduce water damage.
  - Example: On a hot, humid day a window air conditioner can drip up to 2 gallons of water.
- Drain lines can become blocked or clogged.
- Condensate pan may become cracked.
- Portable window air conditioners must be properly supported to prevent falling out of window. They should also have a proper seal in opening to prevent insects and pests from getting inside the structure.
- Watch for debris or vegetation growing too close to the outside unit, which may hinder efficiency.

Hot Water Heaters

Gas Water Heater

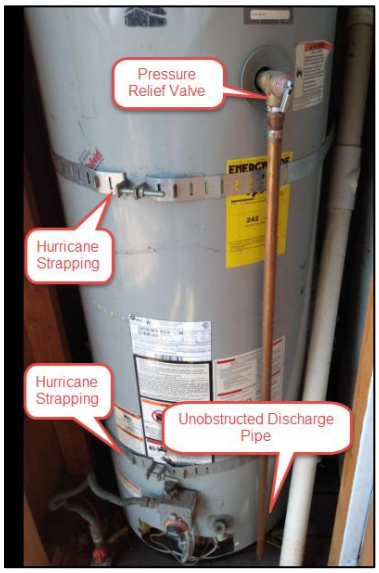


Electric Water Heater

Hot Water Heater Hazards:

Make sure there are no combustible materials within 36 inches of the hot water heater unit. This would include wood, cloth, cardboard boxes and paper, etc. Remember combustible materials pose a fire hazard.

Always check for proper venting of a gas water heater.



Pressure relief valve must be in place, discharge pipe must be unobstructed.

In earthquake prone areas, water heaters must be secured to the wall with hurricane strapping to prevent tip-over.

TEST YOUR KNOWLEDGE:

1. Is this water heater gas or electric?
2. What would prevent tip-over during an earthquake?
3. Is the discharge pipe unobstructed?

(Answers on next page.)

Answers:

1. Is this water heater gas or electric? GAS (note the vent pipe on top)
2. What would prevent tip-over during an earthquake? HURRICANE STRAPPING
3. Is the discharge pipe unobstructed? YES

Heating & Domestic hot water fuels:

These are the most common fuels for heating and domestic hot water:

- Natural gas
- Propane/LPG
- Waste oil
- Fuel oil
- Solid fuel (wood, coal, pellets, corn cob)
- Electric

Heating Fuels:

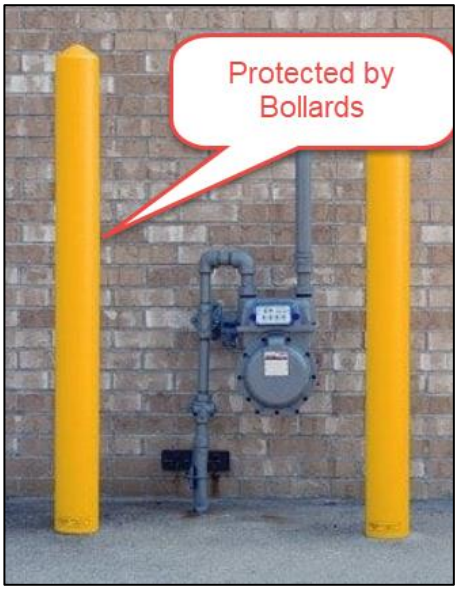
Propane

Heating Oil

HEATING FUEL/TANK HAZARDS:

If there are any fuel tanks on the premises, make sure fuel tanks are away from vehicular traffic or have some type of protective barrier such as bollards, and are away from ignition sources. Ignition sources can include any open flame.

Make sure gas meters are protected from vehicular traffic and away from ignition sources as well.



Car collisions with gas meters

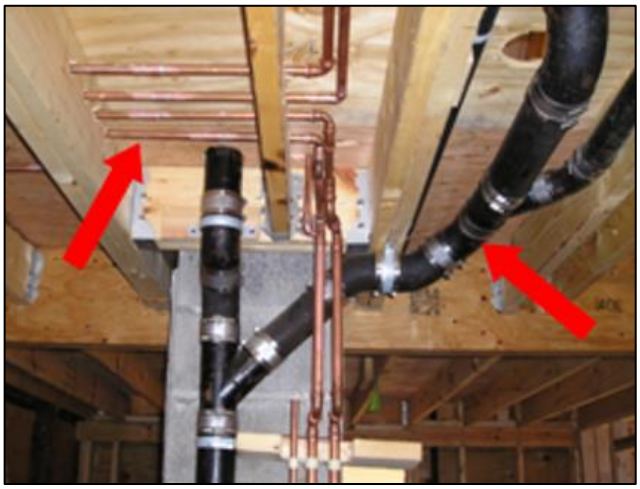
Plumbing

Example of Plumbing Segment in report form:

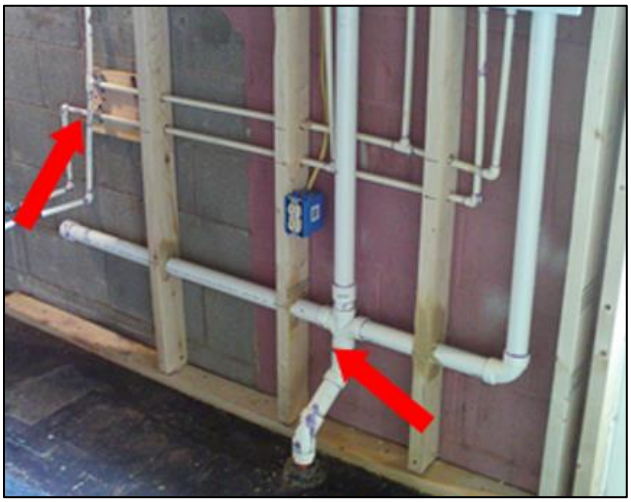
Hot Water:	☐ Gas ☐ Electric ☐ Wood ☐ None ☐ See Remarks
Plumbing:	☐ Copper ☐ Galvanized ☐ PVC / CPVC ☐ Polybutylene ☐ PEX-Cross Linked PE ☐ None ☐ See Remarks

Plumbing types:

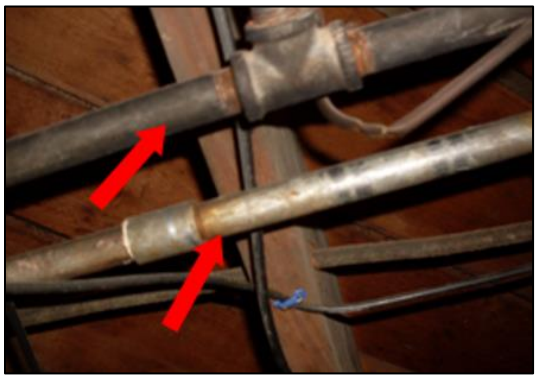
Copper supply lines and iron waste lines



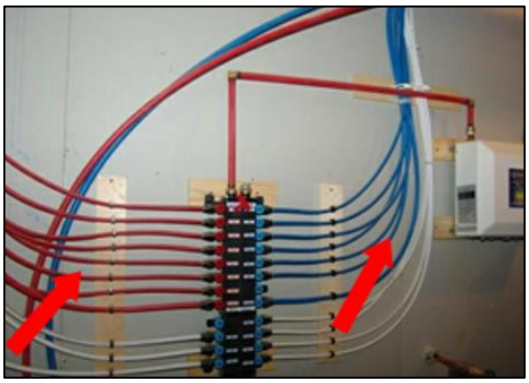
PVC supply lines and PVC waste lines



Galvanized pipe supply lines



PEX tubing supply lines



Polybutylene Pipe is a type of plumbing you need to watch out for, as it is susceptible to leaks.

<u>Underwriters want to know if this type of plumbing is present.</u>

Look for old or new stains indicating possible plumbing leaks on ceilings or walls.

Evidence of pinhole leaks in copper plumbing

Undetected plumbing leaks in ceilings or walls can not only damage the structure, but also lead to dangerous mold conditions over time.

Electrical Wiring

Examples of Electrical Segment in report form:

Wiring:	☐ Conduit ☐ Romex (Non-Metallic Sheath) ☐ Shielded Cable/BX ☐ Aluminum ☐ Knob & Tube ☐ Temporary/Extension Cords ☐ Other ☐ Unknown
Circuit Protection:	☐ Breakers ☐ Fuses ☐ GFCIs ☐ Surge Arrestors
Panel Abuse?	○ Yes ○ None Noted
Extensive / uncontrolled use of extensions cords / temporary wiring?	○ Yes ○ No

Wiring:	☐ Copper Wire ☐ Aluminum Wire ☐ Conduit ☐ Romex ☐ Shield Cable ☐ Knob & Tube ☐ See Remarks
Circuit Protection:	☐ Breakers ☐ Fuses - Plug Type w/ 12 gauge wire ☐ Fuses - Plug Type w/ 14 gauge wire ☐ Fuses - Plug Type Unable to determine wire gauge ☐ Fuses - Cartridge Type w/ 12 gauge wire ☐ Fuses - Cartridge Type w/ 12 gauge wire ☐ Fuses - Cartridge Type Unable to determine wire gauge ☐ Federal Pacific Electric Co / Stab-Loc Circuit Breakers ☐ See Remarks

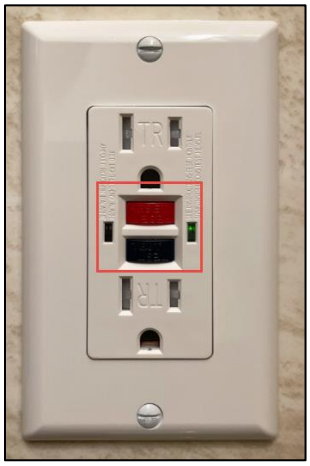
What kind of circuit protection is in place, Circuit Breakers or Fuses?

CIRCUIT BREAKERS:

Circuit Breaker Panel Box

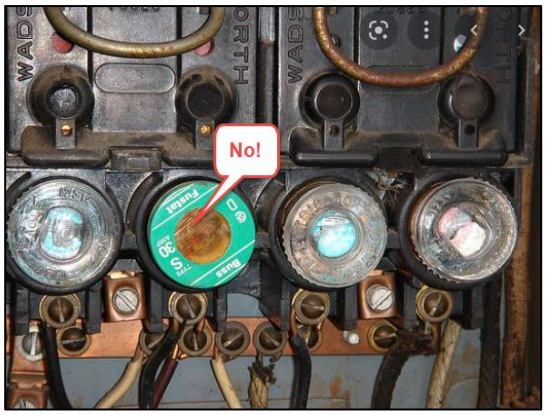
The circuit breaker shown on left is 20 amp, a common size in homes and offices for average use. The circuit breaker on the right is an example of a 'double-pole' breaker, and you can see the two are connected, each breaker is rated at 30 amp. This type of double breaker is used for equipment or appliances requiring more amperage. An example of that would be in a home for appliances like electric stoves, electric clothes dryers, etc.

Indoor outlets near a water source such as sinks, showers and tubs, other areas prone to moisture such as basements, laundry rooms and outdoor areas will all require GFCI (ground fault circuit interruption). You are probably very familiar with a GFCI outlet, such as shown below on the left. It is also becoming more common for electricians to install GFCI circuit breakers, such as shown below on the right. This circuit breaker eliminates the need for a GFCI receptacle on every outlet on that particular circuit. You'll notice the GFCI circuit breaker has a 're-set' button similar to what you normally see on a GFCI outlet.



FUSE BOXES:

Fuse Box

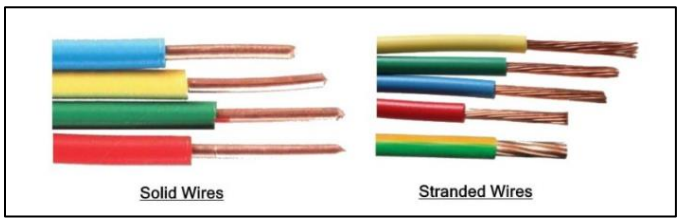


A penny replacing a proper fuse.

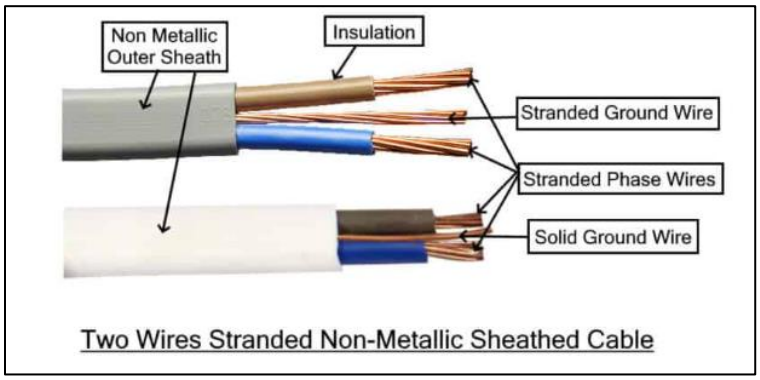
Fuses are not considered adequate circuit protection by insurance carriers. The problem with a fuse is that it must be replaced each time a circuit blows the fuse, and their inherent safety can easily be overridden. If a circuit regularly causes a problem because the wiring is overloaded, the owner will often just insert a higher rated fuse to avoid the problem rather than update their wiring. Or in some cases in the past, an owner might insert a copper penny instead, rather than a proper fuse. In any case, overloaded wiring is a precursor to many building fires.

Wiring Types

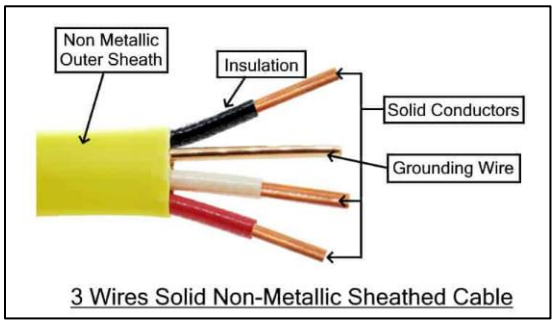
The following are some of the most common types of wiring you may encounter:



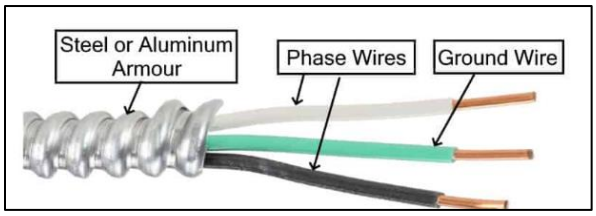
Copper wiring



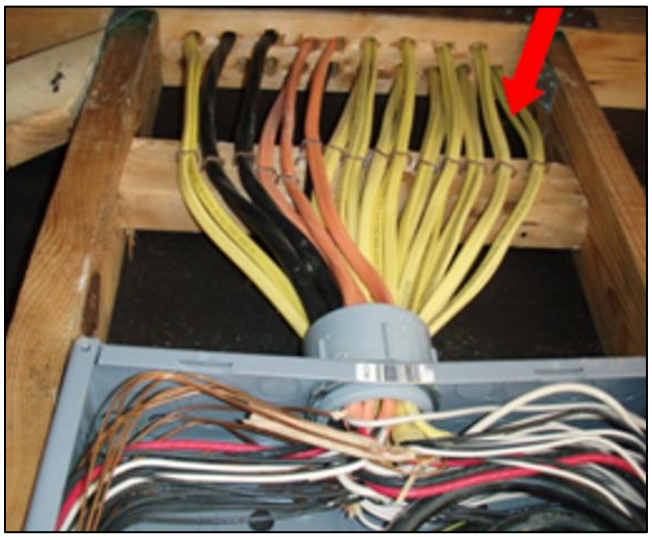
This is common wiring for many normal applications. The wire may be stranded copper, such as shown above, or solid copper wire. Because the outside sheath is non-metallic, it must be installed inside walls. If being used on the surface of walls, it must be installed inside conduit.



Used for heavier load 3-phase applications, note it has 3 wires plus the ground wire.



Metal Clad (MC) Cable. Among other reasons, this may be used in areas where there is concern about accidentally piercing normal non-metallic sheathing with nails or screws, or areas where rodents may try to chew through the wiring.



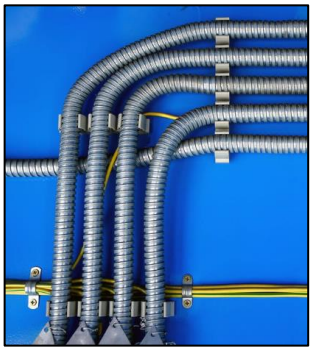
Romex is a brand of nonmetallic sheathed cable. It is the most common type of wiring you will see in residential and commercial applications. This picture is an example of this wiring.

Types of Conduit:

PVC or CPVC Conduit

Will be used in areas exposed to moisture.

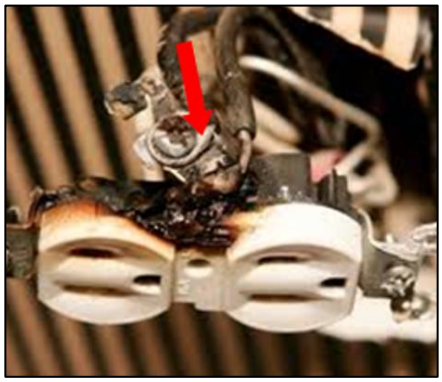
Rigid aluminum conduit



Flexible aluminum conduit

ELECTRICAL WIRING HAZARDS:

Wiring types to watch for - **<u>Aluminum</u>**

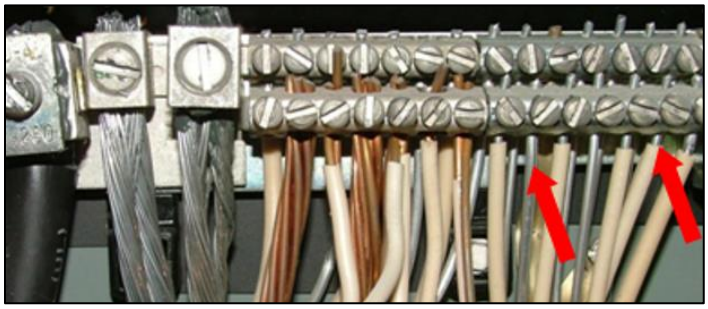


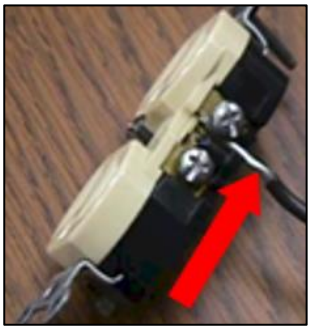
Aluminum wiring was used in the 1960's and 1970's and poses a serious fire hazard.

In outlets, light switches and junction boxes, the wire deteriorates and causes arcing which ignites surrounding combustible materials.

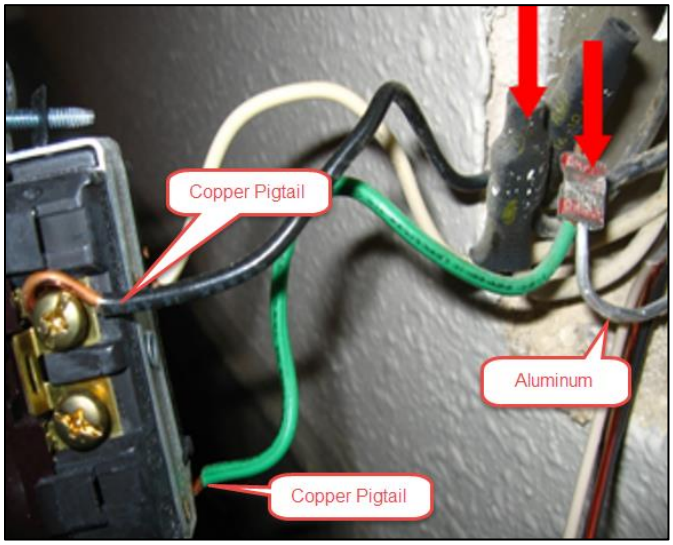
How will I know if Aluminum wiring is present?

- First, ask the insured. But remember it was only used in the 1960's and 1970's.
- Second, if required by customer requirements, look at the electrical panel, light switch or outlet (have insured open-never do it yourself). Aluminum wiring is the dull silver color shown below.

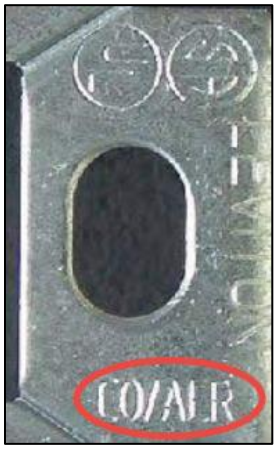




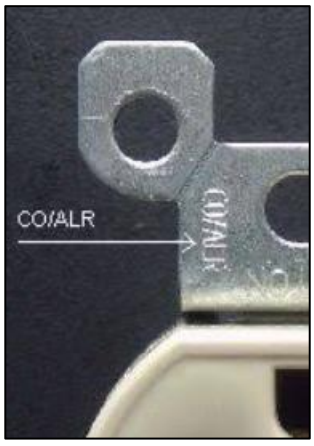
If the insured says the Aluminum wiring was corrected with a retrofit or pigtails. What does that mean?



Answer: This is where the existing Aluminum wires are "Pigtailed" to copper wire attached to the outlet or switch. In the picture to the left, the aluminum wiring is coming out of the wall and goes into a wire connector and is pigtailed to copper which is then attached to the outlet on the left hand side of the picture. This is called pigtails and is an acceptable solution.



A second method of retrofit is called C0/ALR which is the replacement of the outlets, switches and connections with one that is designed for Aluminum wiring. This device will carry the CO/ALR designation. So, in this case no additional wiring is added. Just a new switch which is capable of taking aluminum wiring and will not create an arc hazard. In these two pictures you'll see the letters CO/ALR. If an insured claims they have retrofitted outlets ask them to remove the plate, remove the outlet from the wall and look for the CO/ALR designation.



Wiring Types to Watch For – <u>Knob & Tube</u>

Another type of wiring to watch out for is called Knob and Tube.

Knob and tube wiring is identified by its characteristic black cloth insulation and white ceramic insulators (Knob & Tube is very old pre-1950's wiring type).

This wiring type cannot handle modern current demands and presents a serious fire hazard. If this type of wiring is encountered, determine if it is still active and in use. **If so, it will <u>always</u> require a recommendation to upgrade the wiring.**

Smoking

Make sure to look for areas where smoking is not controlled.

Uncontrolled smoking is a fire hazard. Make sure that in commercial buildings, smoking is either prohibited or designated smoking areas have been identified.

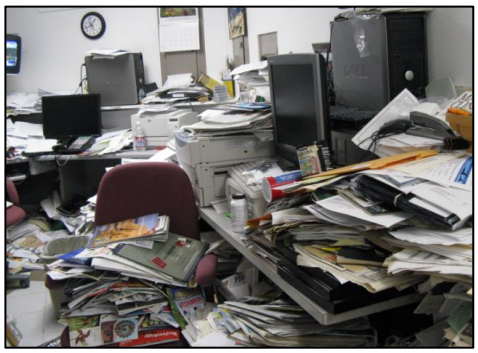
In apartment buildings, all common areas such as hallways, stairways, laundry rooms, exercise rooms, offices, etc., should be smoke-free.

Housekeeping

Example of Housekeeping Segment in report form:

Interior Housekeeping:	○ Good ○ Fair ○ Poor
Exterior Housekeeping:	○ Good ○ Fair ○ Poor
Remarks	○ Yes - See Text ○ No

(Please add remarks for any unusual aspects or further explanations for underwriting and evaluation purposes.)

Poor housekeeping adds to the amount of combustibles that are inside or next to the exterior of a building. This adds to the 'fire load' of the building, meaning there is more fuel to burn in the event of a fire.

Look for poor housekeeping on both the exterior and interior of the building. It is a property coverage concern for fire and also invites infestations such as rodents/pests which can cause structural damage.

Side note: It is also a concern for trip and fall accidents and can also hinder emergency egress, which would be applicable when you learn about Liability and/or Work Comp coverages.

SPECIAL PROPERTY HAZARDS

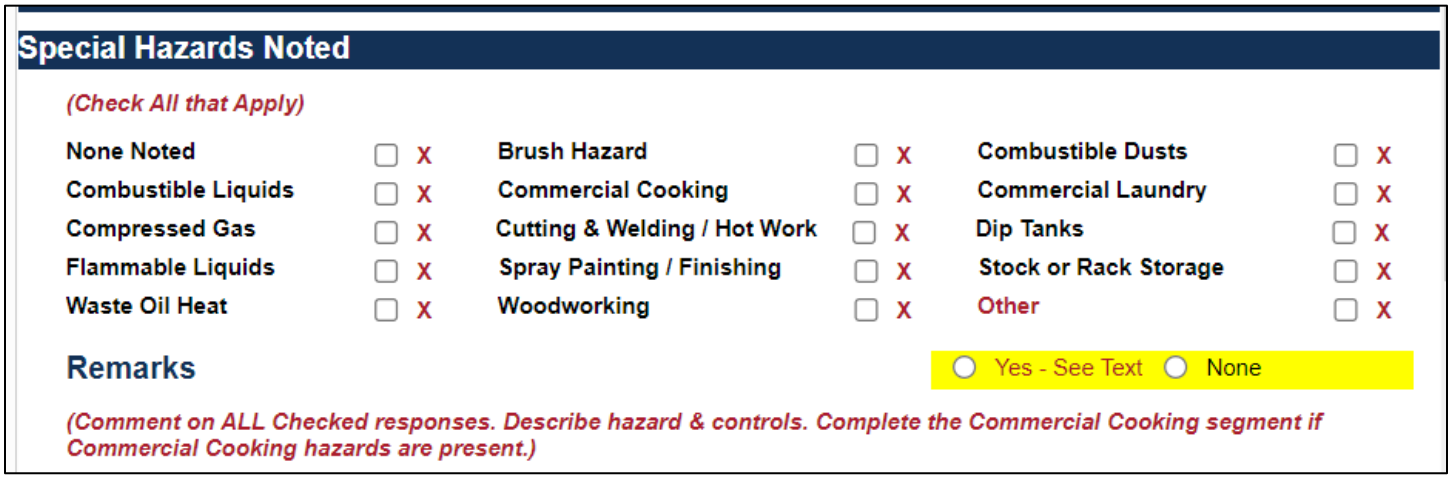
This section will go over the Special Hazards Segment. This is for property coverage only and will not appear when doing a liability inspections.

Types of special hazards:

- Combustible and Flammable Liquids
- Compressed Gas
- Waste Oil Heat
- Brush Hazard
- Commercial Cooking
- Cutting/Welding/Hot Work
- Spray Painting/Finishing
- Woodworking
- Combustible Dusts
- Commercial Laundry
- Dip Tanks
- Stock or Rack Storage
- Other

Examples:

Shown below are a couple of examples of special hazard segments which will be filled out when property coverage is requested. When you come across any of the Special Hazards listed below, it's important that you mark it on the form and then you will need to make notes in the remarks box below describing the extent of the hazard and the controls.



Special Hazards Noted

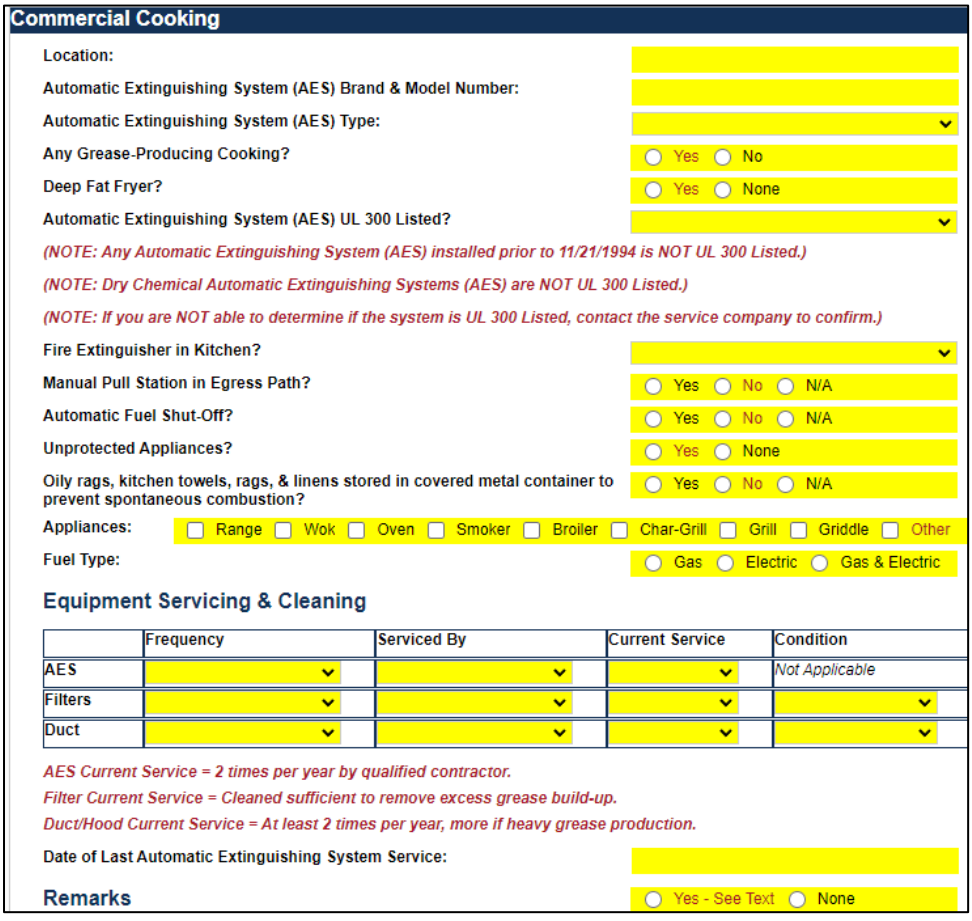
(Check All that Apply)

None Noted	☐ X	Brush Hazard	☐ X	Combustible Dusts	☐ X
Combustible Liquids	☐ X	Commercial Cooking	☐ X	Commercial Laundry	☐ X
Compressed Gas	☐ X	Cutting & Welding / Hot Work	☐ X	Dip Tanks	☐ X
Flammable Liquids	☐ X	Spray Painting / Finishing	☐ X	Stock or Rack Storage	☐ X
Waste Oil Heat	☐ X	Woodworking	☐ X	Other	☐ X

Remarks ○ Yes - See Text ○ None

(Comment on ALL Checked responses. Describe hazard & controls. Complete the Commercial Cooking segment if Commercial Cooking hazards are present.)

Some of these special hazards will have additional segments which will need to be filled out as well such as in the example below on commercial cooking.



Commercial Cooking

Location:

Automatic Extinguishing System (AES) Brand & Model Number:

Automatic Extinguishing System (AES) Type:

Any Grease-Producing Cooking? ○ Yes ○ No

Deep Fat Fryer? ○ Yes ○ None

Automatic Extinguishing System (AES) UL 300 Listed?

(NOTE: Any Automatic Extinguishing System (AES) installed prior to 11/21/1994 is NOT UL 300 Listed.)

(NOTE: Dry Chemical Automatic Extinguishing Systems (AES) are NOT UL 300 Listed.)

(NOTE: If you are NOT able to determine if the system is UL 300 Listed, contact the service company to confirm.)

Fire Extinguisher in Kitchen?

Manual Pull Station in Egress Path? ○ Yes ○ No ○ N/A

Automatic Fuel Shut-Off? ○ Yes ○ No ○ N/A

Unprotected Appliances? ○ Yes ○ None

Oily rags, kitchen towels, rags, & linens stored in covered metal container to prevent spontaneous combustion? ○ Yes ○ No ○ N/A

Appliances: ☐ Range ☐ Wok ☐ Oven ☐ Smoker ☐ Broiler ☐ Char-Grill ☐ Grill ☐ Griddle ☐ Other

Fuel Type: ○ Gas ○ Electric ○ Gas & Electric

Equipment Servicing & Cleaning

	Frequency	Serviced By	Current Service	Condition
AES				*Not Applicable*
Filters				
Duct				

AES Current Service = 2 times per year by qualified contractor.

Filter Current Service = Cleaned sufficient to remove excess grease build-up.

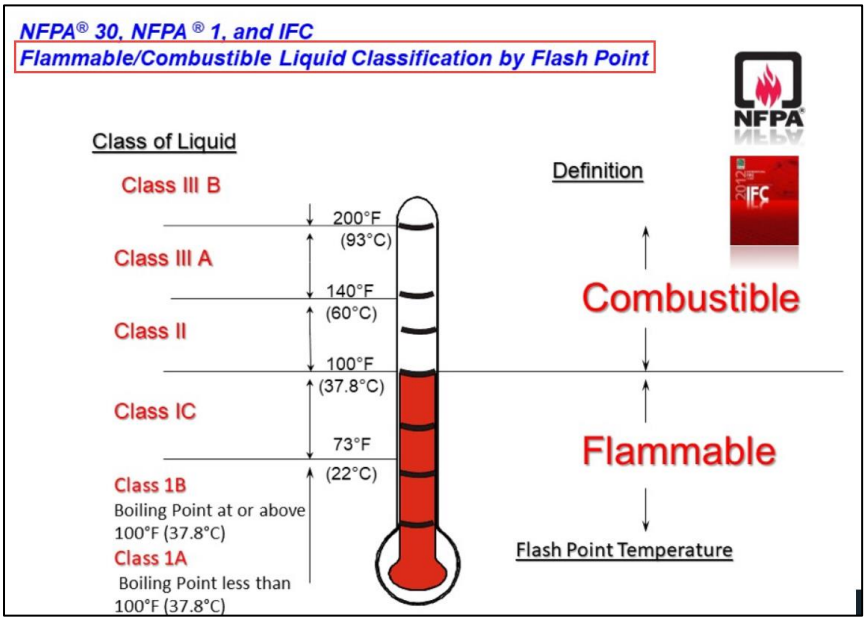
Duct/Hood Current Service = At least 2 times per year, more if heavy grease production.

Date of Last Automatic Extinguishing System Service:

Remarks ○ Yes - See Text ○ None

Flammable and Combustible Liquids

Below is a table of flammable and combustible liquids. All flammables have a flashpoint of less than 100 degrees. (IA, IB and IC). All combustibles have a flash point greater than 100 degrees (II, IIIA and IIIB)



Key Definitions:

Flash point - The temperature at which the liquid will give off sufficient vapors that would ignite if there were a source of ignition.

Boiling point - The temperature at which the liquid will liberate vapors. Vapor pressure exceeds total pressure.

FLAMMABLE LIQUIDS:

Operations that will typically use or have flammable liquids are:

- Printers
- Painters
- Body shops/auto repair and service shops
- Plumbers
- Roofers
- General contractors
- Auto part stores
- Manufacturing
- Woodworking
- Service stations
- Property management operations
- Lawn services
- Grocery stores/Convenience Stores

Class 1A (flash point <73 degrees/boiling point<100 degrees). Flammables under Class 1A would include lab solvents like Petroleum Ether, Ethyl Ether and regular Ether. These liquids would normally be used in a lab environment.

Allowable Quantities:

- No more than 25 gallons outside a flammable cabinet
- No more than 60 gallons inside a flammable cabinet.

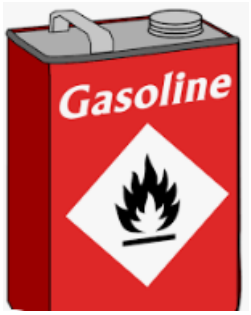
Examples:

Class 1B (Flash point <73 degrees/boiling point>100 degrees). Flammables under Class 1B would include spray paint, acetone, paint thinner, nail polish remover, racing fuel, and gasoline.

Allowable Quantities:

- No more than 120 gallons outside a cabinet
- No more than 60 gallons inside a cabinet.

Examples:



Class 1C (Flash point > 73 degrees/boiling point>100 degrees). Flammables under Class 1C would include turpentine and Isopropyl Alcohol (Rubbing Alcohol).

Allowable Quantities:

- No more than 120 gallons outside a cabinet
- No more than 60 gallons inside a cabinet.

Examples:

COMBUSTIBLE LIQUIDS:

Class II (Flash point >100°/ <140°). Flammables under Class II would include diesel fuel and kerosene.

Class IIIA (Flash point >140°/ <200°). Flammables under Class II would include pine oil, benzaldehyde, butyl cellosolve, nitrobenzene.

Class IIIB (Flash point >200°). Flammables under Class II would include animal and vegetable oils, glycerin, lubricating oils and hydraulic fluids.

Storage and Containers:

You will want to identify and make note of container sizes such as:

- Quart or smaller
- 1 gallon
- 5 Gallon
- 30-55 gallon drums
- Other

Method of storage:

- Manufacturer containers
- UL OR FM listed safety can
- UL or FM listed cabinet or drum cabinet
- Flammable liquids storage room meeting UL and or NFPA requirements
- Non- UL or FM approved containers (recommendation would be issued)
- Non-UL or FM approved cabinet (recommendation would be issued)
- Open storage
- Non UL or NFPA approved storage room (recommendation would be issued)
- Are flammables liquids stored at least 20 feet from source of ignition?
- Is the overall handling and storage of flammable liquids acceptable?

UL/FM Safety Cans:

What makes a safety can a safety can?

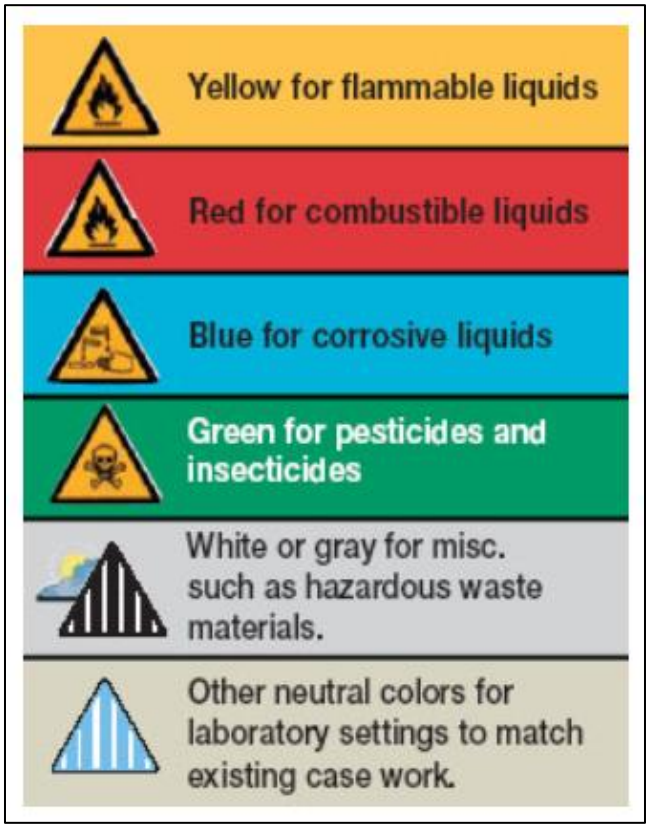
Leaktight, airtight cap closure is fitted with a long life gasket that resists flammable, corrosive, volatile and viscous liquids.

Unique Counterbalance Design – Unlike trigger mechanisms which use finger muscles, Justrite's ergonomic design leverages the weight of liquid against opening mechanism for effortless pouring.

Half-inch raised bottom resists accidental punctures when placed on uneven surfaces and doubles as an easy hand-holding support when pouring. Unique echo patterned rib design offers additional strength and rigidity.

Internal dual-density flame arrester within the fill/pour spout dissipates heat to prevent flashback ignition and guards against the potential for fire and bomb-like explosion. Double mesh construction (a fine mesh screen joined with a coarse mesh screen) protects against fire yet keeps liquids flowing freely for convenient filling and pouring.

UL/FM listed Flammable Liquid Storage Cabinets:



Other useful information:

Motor oil is not a combustible.

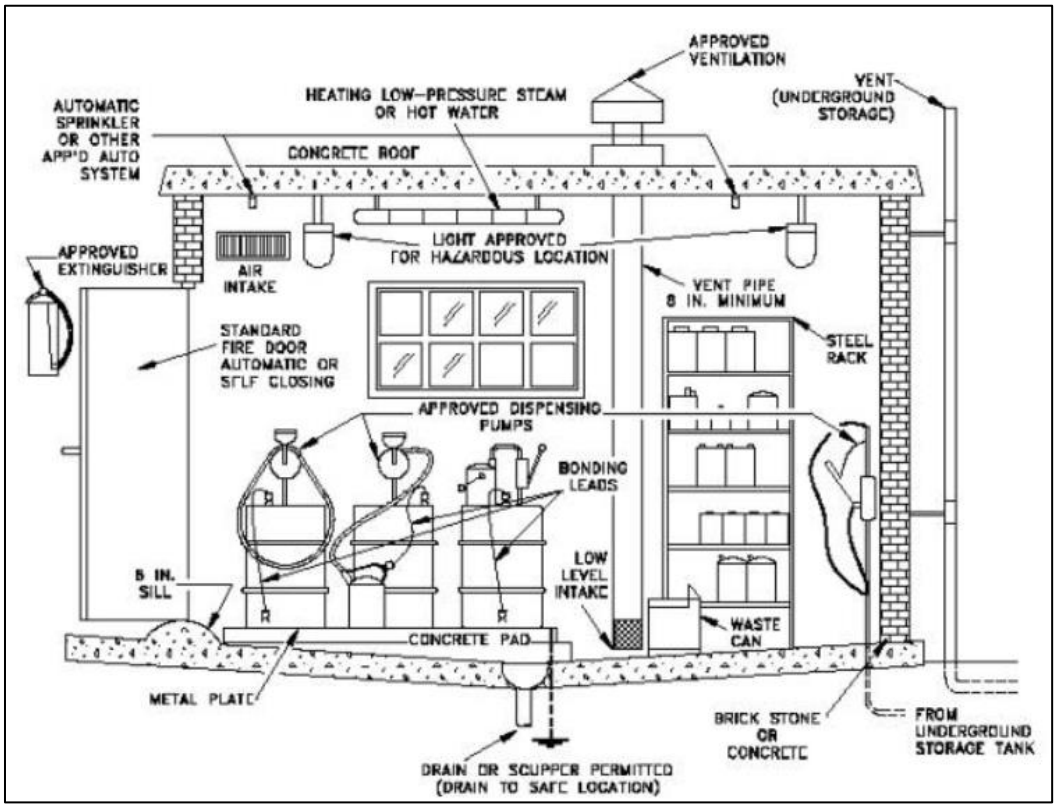
Corrosives are usually non-combustible and non-flammable. They include battery acid.

Oxidizers should always be stored away from flammables or any source of combustion.

Oxidizers are not necessarily combustible, but they can intensify combustion, or allow other chemicals to ignite more readily. Oxidizer liquids include hydrogen peroxide and chlorine, among others.

Flammable Liquid Mixing and Storage Room:

For large quantities, a specially designed storage room should be used, rather than just a UL/FM safety cabinet. The specifications and design of such a flammable liquid storage and mixing room can be covered in more detail in a later presentation on Special Property Hazards. For your information, here is a sketch of the required design elements:



Over quantity and improper storage:

In the pictures below, note the over quantity and improper storage. There is more than 120 gallons of flammable liquids in these pictures and they should be stored in either a flammable cabinet or flammable liquid storage room.

Oily Rag Disposal and Oil Waste Cans

Take special note of any rags that are oily or soaked in flammable liquid as they will need to be stored properly. They are prone to starting a fire by contact with a source of ignition or even by spontaneous combustion.

Make recommendations when encountering excessive quantities, open containers or lack of proper oil waste cans. Also make recommendations if you see ignition sources that are near spray painting operations or where flammable liquids are stored.

Open containers, oily rags.

Sources of ignition

Oil Waste Cans

All oily rags, solvents or flammable liquid soaked rags should be stored in oil waste cans which have:

- Metal construction
- Self-closing lid
- Foot pedal
- UL approved oil rag storage
- Should be found in all auto body, service and repair shops

If insured's are putting oily rags into plastic or cardboard containers, then you would need to make a recommendation that they buy these types of metal oil waste cans. As mentioned previously, spontaneous combustion could occur when not stored in a proper metal oil waste can.

Compressed Gas Cylinders

With compressed gas cylinders, as shown below, full and empty tanks should be stored separately.

Fuels should always be separated from any oxidizers.

All cylinders need to be secure to prevent falling or tipping, which may damage the valve.

If cylinders are not secured, it can be a big problem as they can shoot just like a missile if the valve breaks, endangering life and property.

Tanks/cylinders must always be secured in an upright position inside of a cage or secured to a wall by chains, straps or brackets to keep them from tipping.

What's wrong with this picture?

Answer: In the picture above, the compressed tanks are unsecured. Leaning a pallet against the tanks is not a secure way to store them. Also, wood pallets near the building create excess fire loading, which poses an increased fire hazard.

Be aware that many forklifts used in shops, warehouses, factories, etc. may be powered by propane, such as the photo below. Watch for those propane tanks and make sure they are properly secured.

Waste Oil

Waste oil heaters can be a special hazard and the concern with waste oil is the bulk storage.

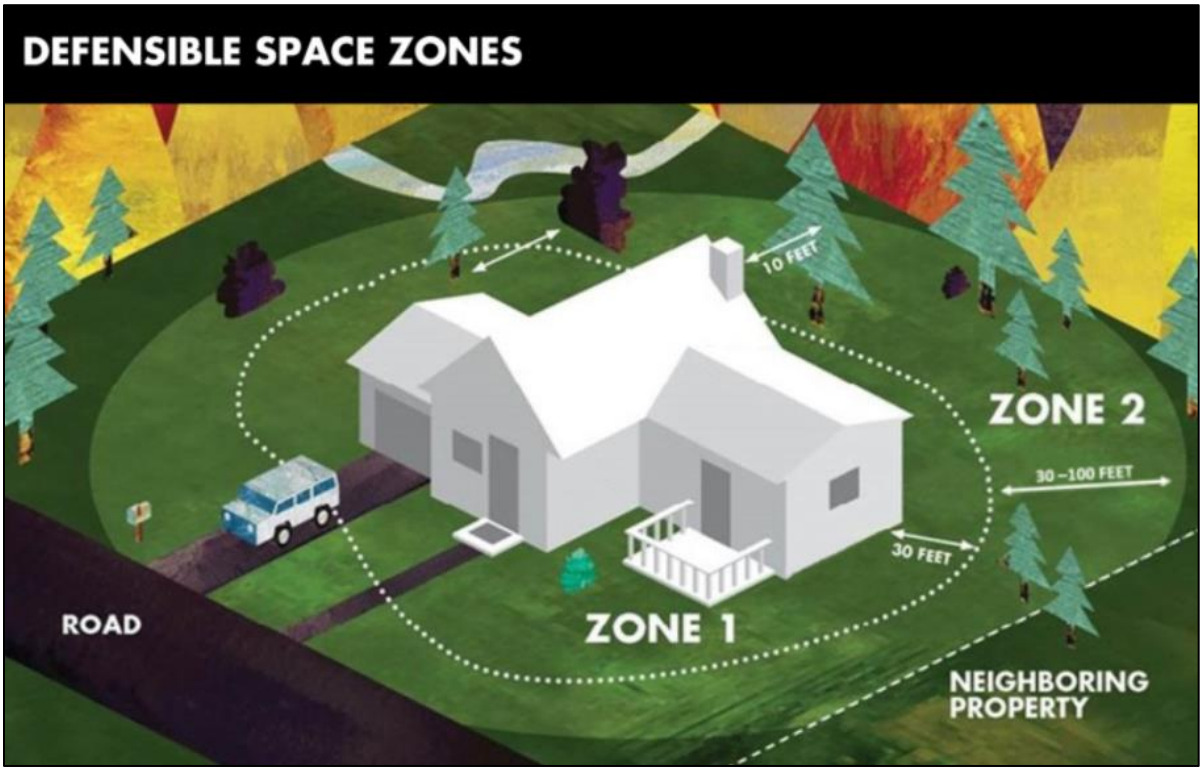
The quantity and method of storage must be noted. All waste oil should be kept inside of a non-combustible container whether it be concrete or steel, and the waste oil should be kept far enough away from the heater so as not to create pre-combustion.

Note the secondary containment

Waste oil heater

Used oil storage -does this look safe?

Brush Hazard



A flat site that is susceptible to brush or forest wild fires needs to have at least 30 feet of defensible space (Zone 1 shown above) between the building and any trees or brush. If the site is on an incline (slope) then the defensible space triples!

Typical brush hazards are non-landscaped forest and wild brush areas. Brush hazard does not refer to landscaped trees and shrubs.

Commercial Cooking

Here is a commercial cooking segment of a common report. A commercial cooking segment will always be required to fill out when commercial cooking is present.

Commercial Cooking

Location:

Automatic Extinguishing System (AES) Brand & Model Number:

Automatic Extinguishing System (AES) Type:

Any Grease-Producing Cooking? ○ Yes ○ No

Deep Fat Fryer? ○ Yes ○ None

Automatic Extinguishing System (AES) UL 300 Listed?

(NOTE: Any Automatic Extinguishing System (AES) installed prior to 11/21/1994 is NOT UL 300 Listed.)

(NOTE: Dry Chemical Automatic Extinguishing Systems (AES) are NOT UL 300 Listed.)

(NOTE: If you are NOT able to determine if the system is UL 300 Listed, contact the service company to confirm.)

Fire Extinguisher in Kitchen?

Manual Pull Station in Egress Path? ○ Yes ○ No ○ N/A

Automatic Fuel Shut-Off? ○ Yes ○ No ○ N/A

Unprotected Appliances? ○ Yes ○ None

Oily rags, kitchen towels, rags, & linens stored in covered metal container to prevent spontaneous combustion? ○ Yes ○ No ○ N/A

Appliances: ☐ Range ☐ Wok ☐ Oven ☐ Smoker ☐ Broiler ☐ Char-Grill ☐ Grill ☐ Griddle ☐ Other

Fuel Type: ○ Gas ○ Electric ○ Gas & Electric

Equipment Servicing & Cleaning

	Frequency	Serviced By	Current Service	Condition
AES				*Not Applicable*
Filters				
Duct				

AES Current Service = 2 times per year by qualified contractor.

Filter Current Service = Cleaned sufficient to remove excess grease build-up.

Duct/Hood Current Service = At least 2 times per year, more if heavy grease production.

Date of Last Automatic Extinguishing System Service:

Remarks ○ Yes - See Text ○ None

What is commercial cooking?

Commercial cooking is preparing food for public consumption, following local health and safety protocols. The cooking processes used will typically generate grease-laden mists and vapors.

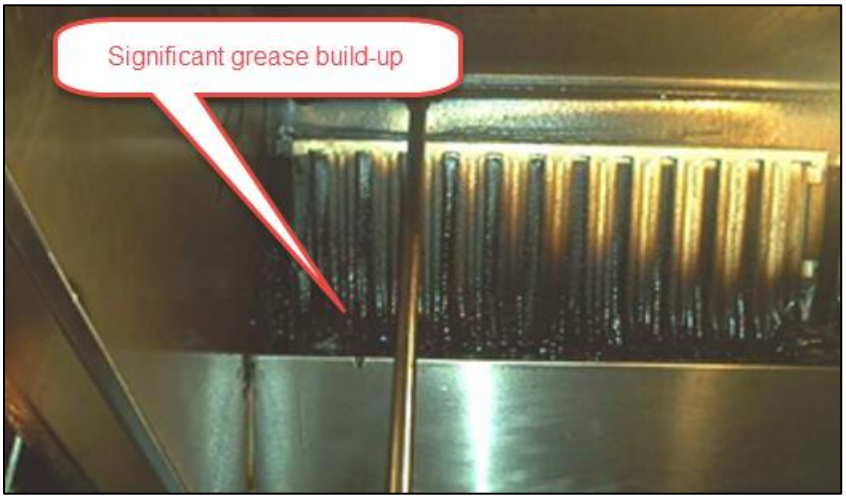
Businesses where commercial cooking operations may be found include:

- Restaurants & Bars
- Hotel & Motels
- Convenience Stores
- Bed & Breakfast Operations
- Schools & Colleges
- Caterers
- Clubs and Fraternal Organizations
- Churches
- Hospitals and Nursing Homes
- Corporate Cafeterias
- Stadiums and Event Centers
- Mobile Food Trucks
- Etc.

Grease Extraction, Cleaning and Clearances

What is the main concern with commercial cooking operations?

Answer: The build-up of grease is the most common concern, which can lead to catastrophic fires.



When looking at commercial cooking operations, always focus on how grease build-up is controlled and what measures are in place in the event of a fire.

What are common cooking appliances that generate grease?

- Broilers
- Deep Fat Fryers

- Grills
- Ranges
- Griddles/Flat Tops
- Woks and Sautee

How do we control the risk of a grease fire?

- Proper Clearance
- Surface Protection
- Grease Extraction
- Fire Extinguishing Capabilities

Proper Clearance – What is required:

- A minimum of 16” of clearance between a deep fat fryer and any open flame appliance (such as a gas range, wok or grill as examples).
- If 16” clearance is not possible, then a metal baffle a minimum of 8” high must be in place.
    - Why? Because the grease-laden mists or vapors from the fryers can be easily ignited by nearby open flame appliances.

- A minimum of 24” of clearance between the cooking surfaces and any combustible materials, including the walls.

- 48” of clearance between the cooking surfaces and the duct filters above it.

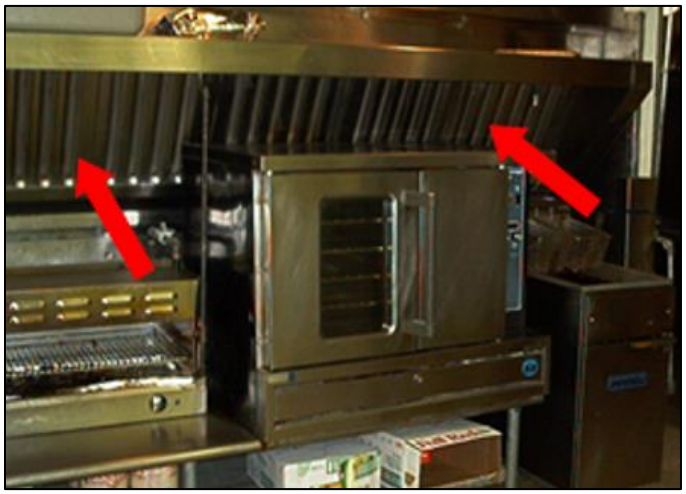
What kind of surface protection is needed?

The surface immediately adjacent to the cooking surface must be non-combustible. This protects combustible surfaces and makes the surface easily cleaned to remove grease build-up.

In the picture below, note the stainless steel backsplash all the way down the wall behind the cooking line.

How is grease extracted from the cooking surface?

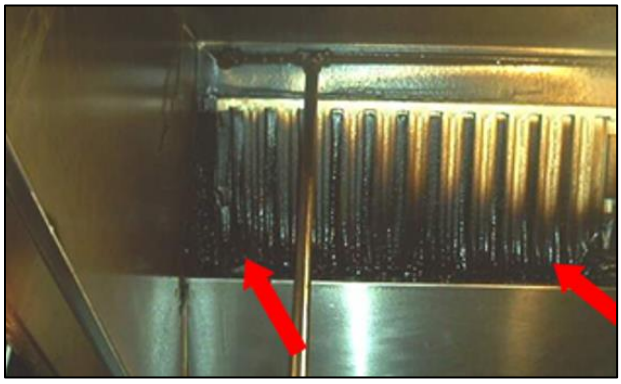
Commercial kitchens are required to have a hood and duct system to remove the grease-laden mists and vapors during cooking operations. Below are a few examples of the hood and filters, which is connected to a duct system



<u>The hood and duct system must be cleaned on a regular basis to prevent grease build-up.</u>

The inside of the hood and the filters should be cleaned anywhere from daily to weekly, depending upon speed of grease build-up.

In the pictures below, we can see very excessive build-up which creates a severe fire hazard.



Here is a photo below of a clean hood and filters:

Inside the hood and behind the filters is a duct that leads outside to an extractor.

Extractors are typically located on the roof, or an outside wall.

The duct and extractor must be cleaned at minimum, at least 2 times per year by a licensed cleaning contractor.

On the building exterior, make sure that no excess grease is present from the cooking operations.

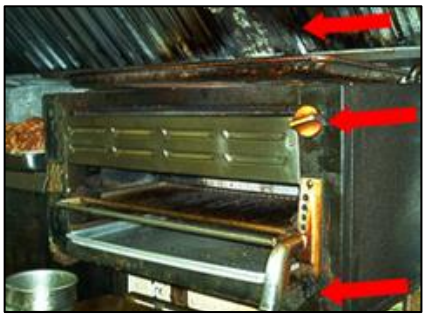
This can also contribute to spreading a flame.

In the picture to the right, you can see grease running down the shingled roof from the extractor.

To determine when the hood and duct was last cleaned, you can look for a label affixed to the hood. If there is none, ask the insured if they have paperwork in their office indicating the last time the cleaning contractor was there. If there is no proof, make a recommendation to have it cleaned.

Overall, grease build-up on the cooking surfaces should also be controlled. **Excess grease= serious fire danger.**

Excess grease on the walls, equipment and floors is fuel for a fire. <u>Grease build up must be controlled.</u>

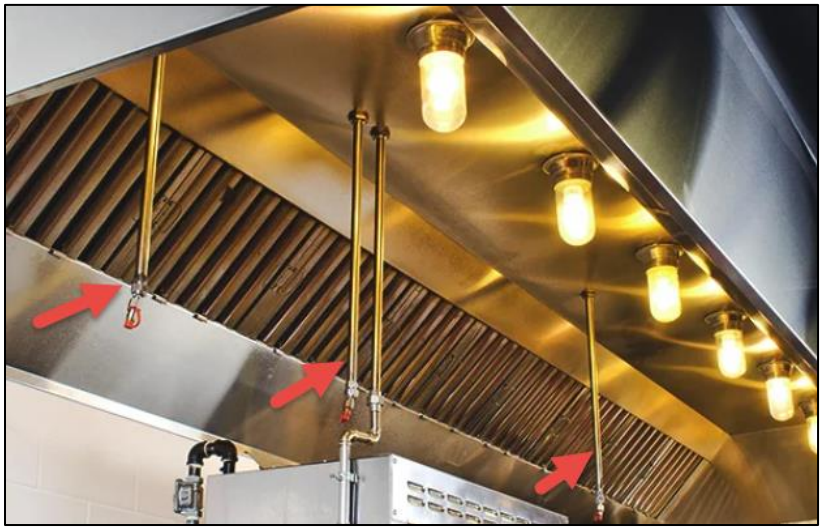


As shown below, equipment, walls and cooking surfaces should be free of grease build-up.

The AES System

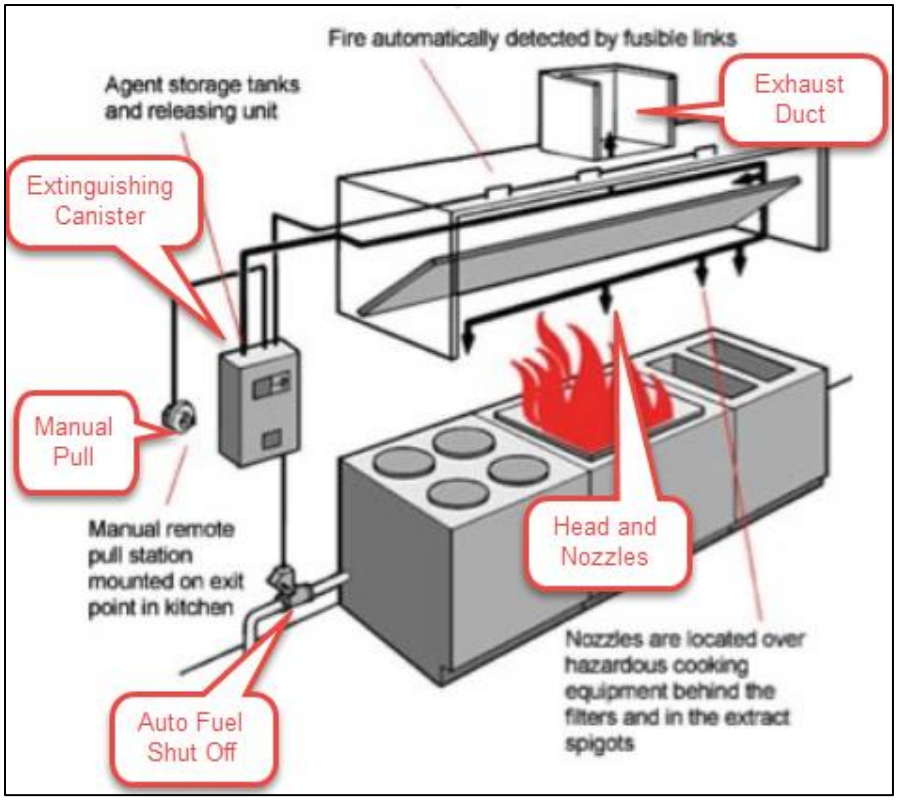
In the event of a fire, the cooking surface must be protected by an Automatic Extinguishing System (AES).

The AES system provides extinguishing for the duct and all the appliances in the cooking line. It is designed to quickly extinguish a grease fire.



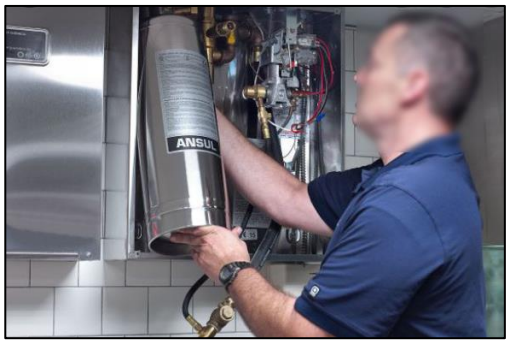
The elements of an AES system are:

- Exhaust Duct
- Extinguisher Head & Nozzles
- Auto Fuel Shut-Off
- Manual Pull Station
- Extinguishing Canister



Elements of the AES system:

EXTINGUISHING CANISTER: The extinguisher canister contains the chemical media that will help to extinguish the fire on the cooking surface. These are typically mounted on the wall next to the exhaust hood. Occasionally they will be mounted above the ceiling and will not be accessible.



EXHAUST HOOD: The exhaust hood is used to remove the vast majority of the grease and vapors from cooking surface.

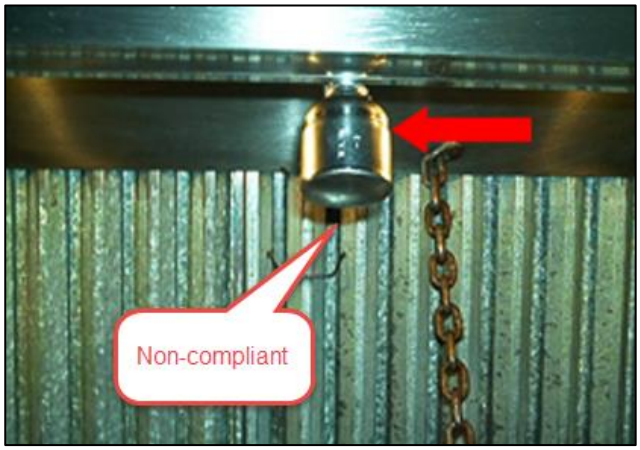
EXTINGUISHER HEADS AND NOZZLES: Within the hood are the nozzles or heads for the actual extinguishing system. The nozzles should always be pointed toward the cooking surface, with one nozzle for each cooking appliance in the line.

The difference between a wet and a dry AES system:

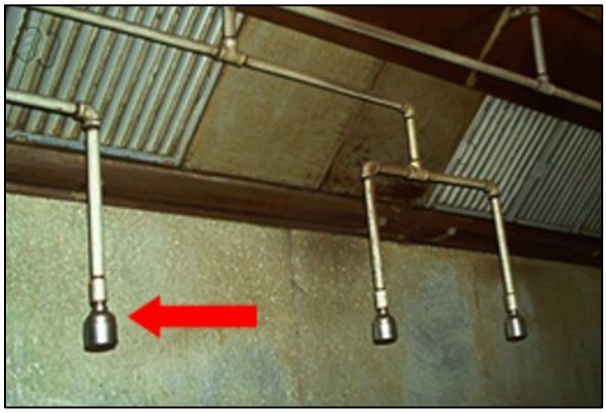
It is important to be able to determine the difference between a wet and a dry AES system.

NOZZLES: Dry systems, as you see below on the left, are unacceptable. A dry system will require a recommendation to upgrade to a "UL 300" compliant wet system.

Dry AES systems have a 2 ½ inch nozzle.



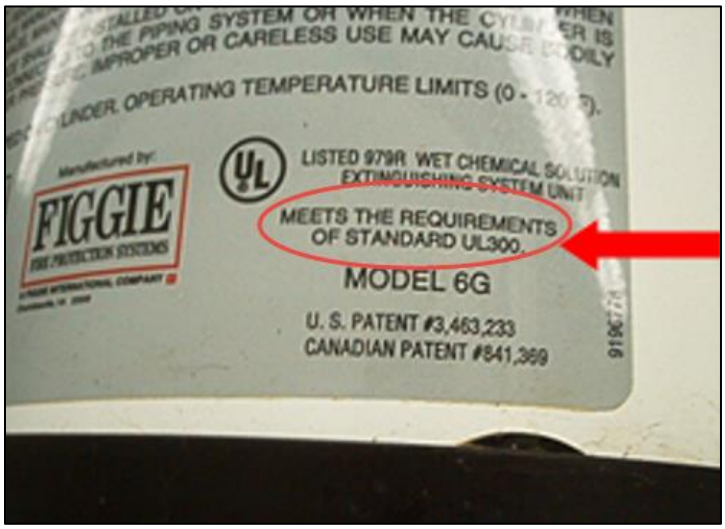
Wet AES systems have much smaller spray nozzle as shown below.



Dry chemical systems (shown above) contain a dry power extinguishing media. Dry chemical systems are least effective and no longer considered an acceptable method.

Wet chemical systems (shown above) contain a liquid extinguishing system and are the most effective.

Label on the canister will indicate if it meets the UL300 requirements.

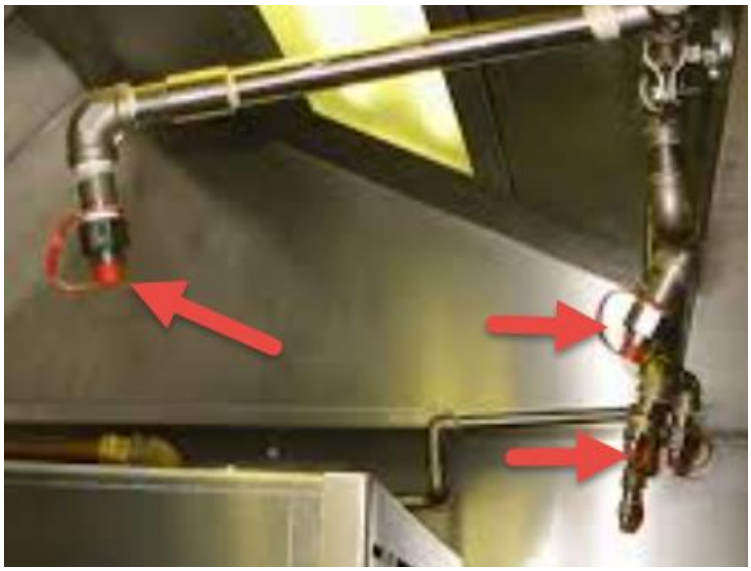


On wet chemical systems, you need to determine if the system is **UL-300** listed. A UL-300 system provides a higher degree of protection. You can determine this by reading the chemical canister.

NOZZLE CAPS: In recent years, it has become more common to see plastic caps on the UL-300 nozzles. This prevents grease build-up from clogging the nozzle ends and potentially interfering with proper operation in a fire emergency.

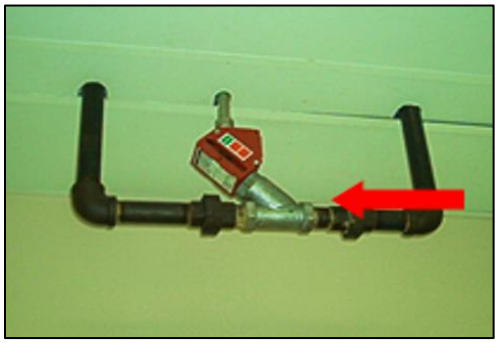
When the AES system is activated, the pressure of the wet media will immediately pop open the caps.

As shown below, look for the nozzle caps to be in place to assure protection from grease build-up over time:



MANUAL PULL STATION: The manual pull station (examples shown below) must be accessible and located on the way out of the kitchen. This allows for manual activation of the AES by an employee in the event the AES doesn't automatically activate from the heat of the fire.

AUTOMATIC FUEL SHUT OFF: The final element of the AES is the automatic fuel shut off. Typically located behind the cooking line, or on the ceiling. This shuts off the gas/electricity to the appliance if the AES is activated. Examples shown below:



Side Note: Many times the AES system in a commercial kitchen might be referred to by the insured as their "Ansul" system. Don't be confused. Ansul is simply a brand name for an AES, and the term is commonly used, similar to how a copy machine in the past was referred to as a Xerox machine. There are many brands of AES systems on the market, other common ones you might encounter are Kitchen Knight, Pyro-Chem and Range Guard.

Kitchen Fire Extinguishers

PORTABLE FIRE EXTINGUISHERS:

Any commercial kitchen that includes an Automatic Extinguishing System (AES) must have a 20 pound K-Class portable fire extinguisher. This is important because the media in a K-Class extinguisher is the same as the media in the AES system itself. A standard ABC fire extinguisher is <u>not</u> compatible with the AES media in the kitchen.

K-Class fire extinguishers are typically silver in color. They must be serviced at minimum annually to assure they are fully charged and in operable condition. You will typically find a hang tag on the extinguisher indicating the last time the contracting company serviced them.

Just like the emergency pull station, the K-Class extinguisher should be mounted on the wall near an exit from the kitchen.

> *Why, you may ask? Employees should be able to use the emergency pull and/or the portable fire extinguisher as they move away toward an exit, rather than moving further back into the kitchen toward the fire, which can easily endanger their life.*

Welding, Cutting and Hot Work

Hot Work: This includes all metal melting operations, such as foundries.

Cutting: This process involves separating or severing a piece of metal through intense heat generated to melt the metal.

Welding: This process involves joining together two pieces of metal that are fused together by heat. Note the type of cutting or welding, such as TIP, MIG, ARC, OXY-Acetylene.

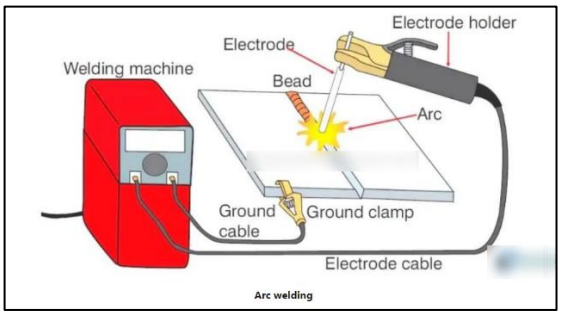
Appropriate Safety Measures:

- In welding and cutting operations involving compressed gas, flammables must be kept separate from any oxidizers.
- Establish a designated hot work area where the welding or cutting takes place.
- Hot work areas should be free of combustible materials such as cardboard, cloth and wood.
- If working off site, then a hot work permit should be obtained.
- Adequate fire extinguishers must be kept on hand and easily accessible.
- Welding should always be done above a non-combustible surface.

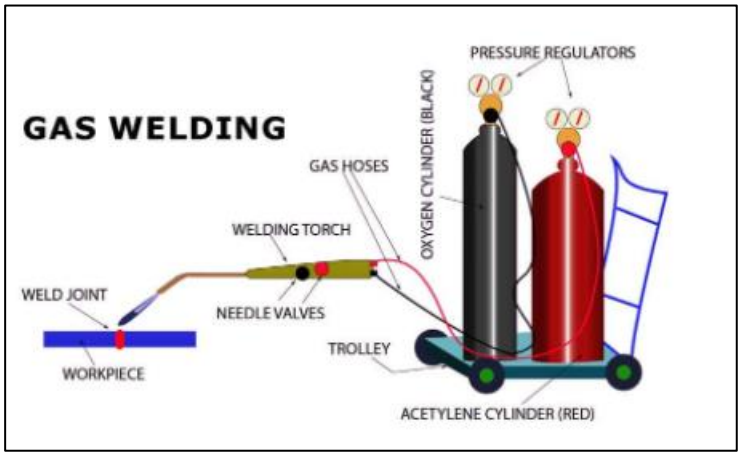
TYPES OF WELDING:

MIG welding: Is a welding process in which an electric arc forms between a consumable wire electrode and the workpiece metal(s), which heats the workpiece metal(s), causing them to melt, and join.

TIG welding: Is an arc welding process that uses a non-consumable tungsten electrode to produce the weld.



ARC welding: Is a welding technique in which metals are welded using heat generated by an electric arc between an electrode and the base material to melt the metals at the welding point. Can use either direct (DC) or alternating (AC) current, and consumable or non-consumable electrodes.



Oxy fuel welding: (commonly called oxy-acetylene welding, oxy welding or gas welding) and oxy fuel cutting are processes that use fuel gases and oxygen to weld and cut metals, respectively.

Oxy fuel welding: A welding torch is used to weld metals. Welding results when two pieces are heated to a temperature that produces a shared pool of molten metal. The molten pool is generally supplied with additional metal called filler. Filler material depends upon the metals to be welded.

Oxy fuel cutting: A torch is used to heat metal to its kindling temperature. A stream of oxygen is then trained on the metal, burning it into a metal oxide that flows out of the kerf or slag.

Spray Paint Booths

When you come across a spray painting booth and the coverage you are inspecting for includes property, there are certain items you will want to note in your report regarding the spray paint booth.

These items include:

- Is the booth UL-Listed?
- Is the booth Non-combustible?
- Are the wiring, light fixtures, electrical fixtures and fan all recessed and explosion proof?
- Is there any source of ignition within 20 feet?
- Does the booth have a sprinkler system or AES? If so, it should have regular annual service.
- Does it have an exhaust system and properly vented to the outside?
- No mixing of paints, stains, sealers, etc. being performed within the booth?
- No flammables or combustibles located inside the booth for storage?
- No smoking allowed in booth?
- Is there overspray build-up inside the booth on the filters and other components?
- No use of portable space heaters?

One example of a Spray paint booth segment of a report:

Body & Repair Shop

Body Shop: (●) Yes - See Below ( ) No - Not Applicable

UL Approved Spray Booth?		Any Exposed Wires or Bulbs in Booth?	
Any Heating Units in Paint Room?		Any Paint Over Spray Present?	
Are Filters Present at Exhaust?		Are Filters Clean?	
Adequate Ventilation?		Vent Fan Motors Exposed?	
Any Welding within 10 Feet?		Any Other Sources of Ignition w/in 10 Feet?	
Dispensing of Flammables into Unapproved Containers?		Improper / Lack of Bonding / Grounding Procedures?	
Any Paint Outside of the Approved Booth?		Is the Room Diked?	

Describe Quantity of Red Label Paints & Thinners Kept and Where they are Stored:

Describe Construction of Paint Storage Area Walls & Doors:

Required Spray Paint Booth construction features:

- Sheet metal (18 gauge) walls or masonry or concrete walls
- Exhaust duct system
- Non-combustible baffles or removable filters
- Non-combustible floor
- Automatic sprinkler heads (165 degree F) or automatic extinguishing system
- Duct clean outs
- Enclosed fan drive/ Non-sparking fan blades
- XP-Explosion proof motor
- Enclosed lighting
- Straight Exhaust duct
- No portable lights unless Class I or II division I approved
- All electrical switches located outside the booth
- Lights 20' horizontal or 10' vertical from booth must be enclosed
- Air Velocity gauge
- Electric Interlock between exhaust fan and spray equipment (this automatically turns on the fan when the sprayer is engaged by a user).

Booth Filters

This is a picture of a man spraying inside a booth and the filters which are located behind him. You can see the sheet metal construction of the walls. It also appears he might be spraying on top of a combustible table? If so, that is not allowed.

Booth Lighting and Spraying

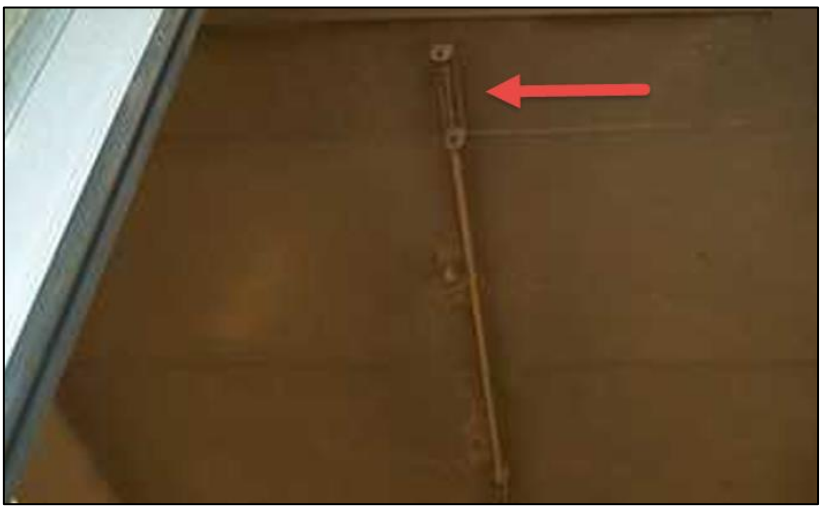
Here is a person spraying a vehicle and you can see the filters above and the explosion proof lighting along the wall of the spray paint booth.

Floor appears to be concrete and the walls of booth are made out of sheet metal.

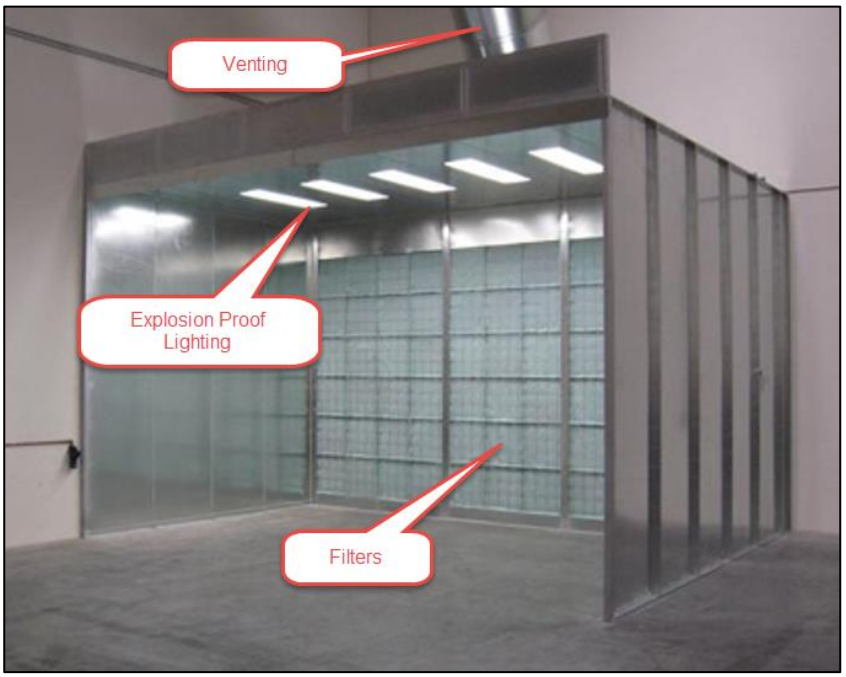
Here is another example of a booth with explosion proof lighting. The filters are above and steel racks are being used to hold items as they are sprayed.

This photo shows a situation of overspray build-up on the AES **fusible link** inside a paint booth, which could hinder efficient operation of the link.

The fusible link is attached to the sprinkler system. If the fusible link detects heat of 160 degrees, it will melt and thus activate the sprinkler system.



Example of a small open spray paint booth. Notice the XP Lighting, the filters and that the booth is vented to outside.



Spray Paint Booths- Automatic Extinguishing Systems (AES)

- To be serviced every 6 months, just like the AES system in a commercial kitchen.

All lighting in a spray paint booth should be **explosion proof** (XP).

The picture below shows a portable work light. It does not meet the required criteria and should not be in a spray paint booth.

Exhaust fans in a spray paint booth must have explosion proof motors/wiring, and non-sparking blades.

The electrical junction box for this motor has a plug missing. The non-sparking explosion proof exhaust fan has been defeated by lack of a simple $0.79 plug.

A recommendation should be made that the plug be inserted back in to the junction box.

Woodworking Shops – Dust Control

Dust Control: For woodworking, dust control is very important. Observe what type of controls are in place to reduce the risk of a dust fire from wood working.

Be aware that many of these operations may also have spray finishing operations or use flammables in other staining or finishing operations.

If they do not have any type of dust control system, you should make a recommendation. Also, they should be sweeping the floors regularly of any combustible dusts.

Do you see any red flags about the spraying operations taking place in this woodworking shop in photo to the right?

Does the exhaust fan appear to be explosion proof with non-sparking blades? No

Does the portable work light appear to be the appropriate type of lighting for a spray booth? No

Metal Machine Shops -Dust Control

Metal Dust Control is also critical in metal machine shops, depending on the types of metal involved.

Many are not aware that certain metals can also create dangerous combustible dusts in the process of milling, grinding, cutting, polishing, etc.

Metal dust fires and explosions can be catastrophic. For example, 1 gram of aluminum dust has about the same explosive energy as 0.7 grams of TNT. Metal dust environments require a Class D fire extinguisher. Water cannot be used as an extinguishing agent because it can actually react with the materials to intensify the metal dust fire.

This is a partial list of some of the most common metal dusts that are combustible and/or explosive:

- Aluminum
- Bronze
- Magnesium
- Silicon
- Zinc
- Lithium
- Titanium
- Zirconium

Commercial Laundries

You may encounter commercial laundry facilities in a number of different occupancies, such as:

- Hotels/Motels
- Apartment Buildings
- Campgrounds and Resorts
- Laundromats, etc.

This is typical information you will want to find out when inspecting a business with laundry facilities.

Laundry Facilities			
Access:	Tenant, Resident, Guest, General Public		
Service:	Owned by insured-provided free of charge Owned by insured- coin operated Commercial Service Owned- coin operated Other-See Remarks		
Room Locked:	Yes No No-See Recs See Remarks	**Maintained by:**	Insured Service Co. Vending Service No regular service See Remarks
# of Washers:		**# of Dryers:**	
Instructions Posted:	Yes No See Remarks	**Signs of Vandalism:**	None noted Yes-See Remarks
Room Condition:	Good, Well maintained, clean and well lit Fair- fair maintenance, normal wear/tear, clean, well-lit Poor- needs improvement-See Recs See Remarks		
Remarks:	None Yes-See Text		

When inspecting a commercial laundry, find out how often the dryer lint is cleaned and removed. Dryer lint can become super-heated and the heating of the lint can cause a fire. This is the most common cause of fire in a laundry!

Dip Tanks and Parts Washers

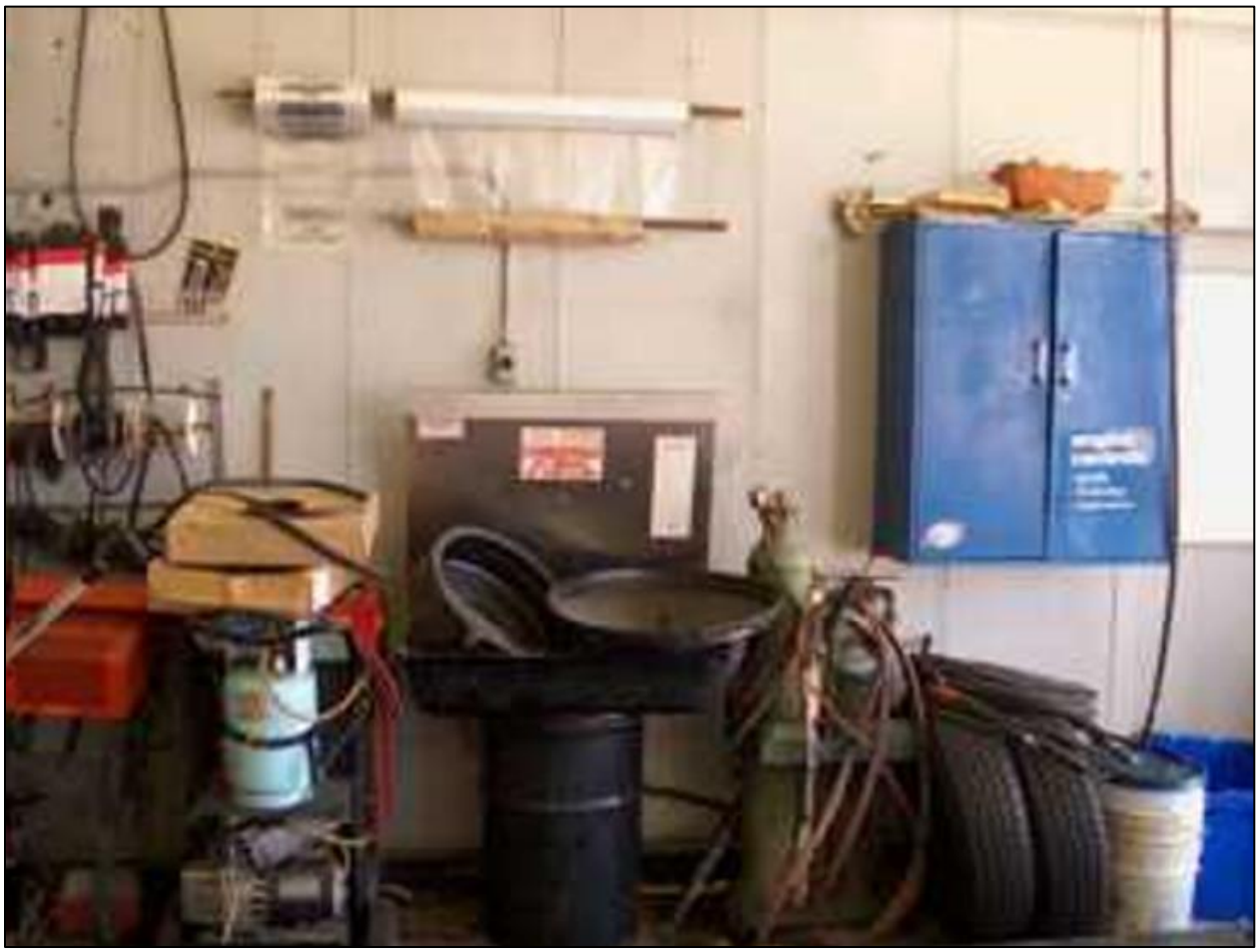
Below are examples of Parts Washers and Dip Tanks, which are a potential fire hazard. Solvents used in parts washers and dip tanks are typically quite flammable. Some owners may even try using kerosene or other fuels to clean items.

The photos below are self-closing parts washers/dip tanks that have a magnesium link that closes the lid if temperature reaches 165 degrees.

If a fire were to develop in the parts washers, it would melt the magnesium link that is tied to the self-closing device on the lid. The lid would close, helping contain and extinguish the fire.

These magnesium links should be installed in all parts washers and dip tanks.

TEST YOUR KNOWLEDGE: What potential problems can you identify in the two photos below?



Answer: In this first photo below, we can see oily rags not being properly stored. There is also a grinder near the parts washer. Sparks from use of the grinder could easily ignite the solvent in the washer. Also, you should verify if the parts washer and drum is stable and secure to prevent tip over, which could spill flammable solvent in the area.

Answer: In this second photo below (typical of auto repair shops) they have started storing miscellaneous items and parts on or in the parts washer/dip tank. That is not safe. Not only could it tip over the tank, spilling solvent, but it also hinders or prevents automatic closing of the self-closing lid in the event of a fire. You may also have noted a compressed gas cylinder next to the parts washer. If this contains an oxidizer (such as oxygen for an oxy-acetylene welder), it must not be stored this closely to a flammable liquid such as the solvent inside that 55 gallon drum under the dip tank. As mentioned above, you should verify if the parts washer and drum is stable and secure to prevent tip over.

You may occasionally encounter homemade dip tanks. These are acceptable as long as it is equipped with a properly operating self-closing lid in the event of a fire. Also check that it has no leaks and is stable and secure, with no other problems as mentioned above.

Stock/Rack/High Piled Storage

Large quantities of paper, cardboard, cloth, furniture, plastic, wood or other combustible materials adds considerable fire load to a building.

"Fire Load" is a term used to describe the potential severity of a fire within a specified space. There is a formula involved to determine the fire load, which helps with hazard assessment. However, you are not required to calculate any such formula, this is just a definition which gives you a perspective when encountering buildings with large quantities of combustible materials.

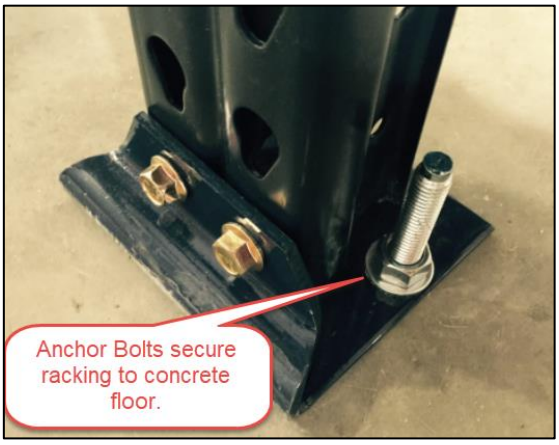
Obviously, you will encounter this type of storage most often in warehouses, but also consider factories or big box stores that display most of their inventory in the store, etc. The following should be noted when inspecting such facilities:

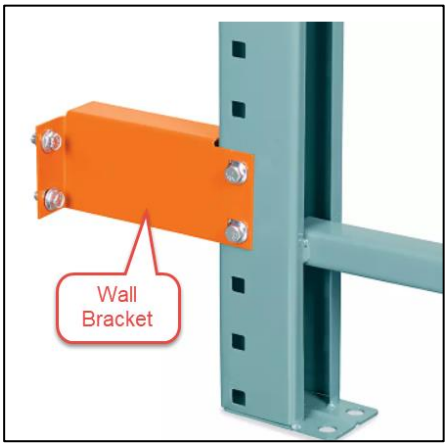
- Report any rack storage.
- What type of materials or products are stored?
- Note the quantity and method of storage.
- Is there a sprinkler system designed for this type of combustible loading?
    - If multiple rows of shelving, do the sprinkler lines run under each level of shelving?
    - Is the sprinkler system designed with greater concentrated coverage and faster response in those areas, as compared to other areas of the building?
- Note the height of storage racks or shelving, or the height of the piled storage not on racks.
- What is the construction of storage racks and how is it secured to the wall or floor?

A general definition of “high-piled storage” is the storage of combustible material either on racks, pallets, shelving or in free-standing piles, where the top of the storage is greater than 12 ft. in height.

For highly flammable materials such as tires or Class A plastics and flammable liquids, high pile storage may be considered any storage greater than 6 ft. in height.

The photo at left shows poor storage and housekeeping, increasing the fire load in that space.





Examples of Special Property Hazard Segments

In the Special Property Hazard segment of our standard forms, you will checkmark any hazards present in the list. When you checkmark them, the individual hazard segments will automatically populate in the form.

Please remember to describe the hazard fully, indicating the extent/quantity/condition of the hazard and also the controls in place.

Special Property Hazards

Special Hazards Noted

(Check All that Apply)

None Noted	☐ X	Brush Hazard	☐ X	Combustible Dusts	☐ X
Combustible Liquids	☐ X	Commercial Cooking	☐ X	Commercial Laundry	☐ X
Compressed Gas	☐ X	Cutting & Welding / Hot Work	☐ X	Dip Tanks	☐ X
Flammable Liquids	☐ X	Spray Painting / Finishing	☐ X	Stock or Rack Storage	☐ X
Waste Oil Heat	☐ X	Woodworking	☐ X	Other - See Remarks	☐ X

Remarks ○ Yes - See Text ○ None

(Complete Any of the Following Special Hazards Segments which Open; and Describe Any Other Special Hazards Present.)

We have just finished discussing the many different types of Special Property Hazards you may encounter. The following are examples of the form segments for each of those individual special property hazards:

Brush Hazard

Describe the Hazard & Basic Controls in Place:

High fuel loading of deciduous trees or other wildfire exposures? ○ Yes ○ No

Remarks ○ Yes - See Text ○ None

Combustible Liquids

Describe the Hazard & Basic Controls in Place:

Are the Liquids Stored in a FM / UL Rated Cabinet? ○ Yes ○ No

Are the Liquids Stored in FM / UL Containers? ○ Yes ○ No

Remarks ○ Yes - See Text ○ None

Commercial Cooking

Location:

Auto Extinguishing System (AES) Brand & Model Number:

Automatic Extinguishing System (AES) Type: ○ Wet ○ Dry ○ Wet & Dry ○ None ○ N/A

Any Grease-Producing Cooking? ○ Yes ○ No

Deep Fat Fryer? ○ Yes ○ None

Automatic Extinguishing System (AES) UL 300 Listed?

(NOTE: Any Automatic Extinguishing System (AES) installed prior to 11/21/1994 is NOT UL 300 Listed.)

(NOTE: Dry Chemical Automatic Extinguishing Systems (AES) are NOT UL 300 Listed.)

(NOTE: If you are NOT able to determine if the system is UL 300 Listed, contact the service company to confirm.)

Fire Extinguisher in Kitchen?

Manual Pull Station in Egress Path? ○ Yes ○ No ○ N/A ○ See Remarks

Automatic Fuel Shut-Off? ○ Yes ○ No ○ N/A ○ See Remarks

Unprotected Appliances? ○ Yes - See Remarks ○ None ○ See Remarks

Oily rags, kitchen towels, rags, & linens stored in covered metal container to prevent spontaneous combustion? ○ Yes ○ No - See Recommendations ○ N/A

Appliances: ☐ Range ☐ Wok ☐ Oven ☐ Smoker ☐ Broiler ☐ Char-Grill ☐ Grill ☐ Griddle ☐ Other - Remarks

Fuel Type: ○ Gas ○ Electric ○ Gas & Electric ○ See Remarks

Equipment Servicing & Cleaning

	Frequency	Serviced By	Current Service	Condition
AES				*Not Applicable*
Filters				
Duct				

AES Current Service = 2 times per year by qualified contractor.

Filter Current Service = Cleaned sufficient to remove excess grease build-up.

Duct/Hood Current Service = At least 2 times per year, more if heavy grease production.

Date of Last Automatic Extinguishing System Service:

Remarks

○ Yes - See Text ○ None

Combustible Dusts

Dusts are either organic, metal, or plastic based substances which are finely ground into very small particles. Several types include: metals, wood, plastics, sugar, grain, flour, starch, paper, coal, textiles, chemicals, and pharmaceuticals. Based on the amount of dust types that are potentially combustible, the hazards from these dusts pose a significant risk across many industry types.

A few technical abbreviations and facts also include the following:

Spark and Infrared detectors –need to be cleaned or they will fail.

Sampling and analysis for combustible dust is not IH and is very expensive.

The analysis will indicate a [Kst] = the German factor for dust. The higher the figure the more combustible / dangerous

Explosion protective measures are either Passive or Active:

Cyclone Device - Control - Use of vent discharge duct to vent explosion hazards. Must be chained for securement and labeled.

Placement of vent(s) are important as well as their design:

Pointed in a safe direction.

Manufactured properly.

Proper ventilation and dust control engineering measures prevent all 3 risks:

Fire hazards / explosion hazards / isolation hazards.

Describe the Hazard & Basic Controls in Place:

Ignition sources in and around dust producing / processing areas / equipment are controlled, including smoking and electrical?	○ Yes ○ No
Effective dust collection system provided for all significant dust producing equipment?	○ Yes ○ No

(Areas free of significant dust accumulations {on lights, fixtures, and overhead structural components} at all times)

Any significant deficiencies? If so, please describe	○ Yes - See Remarks ○ No
Remarks	○ Yes - See Text ○ None

Commercial Laundry

Describe the Hazard & Basic Controls in Place:

Appliance Units Maintained?	○ Yes ○ No
Floor Drains or Other Water Containment Items in Immediate Area to Reduce Water Damage Potential?	○ Yes ○ No
Gas &/or Electrical Service Secured from Damage or Vandalism?	○ Yes ○ No
Dryer Lint Traps &/or Exhaust Vents Cleaned on a Regular & Documented Basis?	○ Yes ○ No
Area on & behind equipment is free of lint?	○ Yes ○ No
Fire Extinguishers mounted in the laundry room?	○ Yes ○ No
Remarks	○ Yes - See Text ○ None

Compressed Gas

Describe the Hazard & Basic Controls in Place:

Cylinders Stored Upright & Secured to Prevent Tipping?	○ Yes ○ No
Flammable Gas Stored & Away from Ignition Sources?	○ Yes ○ No ○ N/A
Any LP or Propane Tanks Stored Inside the Building?	○ Yes ○ No
Remarks	○ Yes - See Text ○ None

Cutting & Welding / Hot Work

(Hot Work = Molten Metal)

Describe the Hazard & Basic Controls in Place:

Hot Work Done in Area Free of Combustible Materials?	○ Yes ○ No ○ N/A
Flammable Gas Cylinders Properly Stored?	○ Yes ○ No ○ N/A
Spark Shields in Place?	○ Yes ○ No ○ N/A
Remarks	○ Yes - See Text ○ None

Dip Tanks

Describe the Hazard & Basic Controls in Place:

Capacity of Dip Tanks & Liquid Contained in Dip Tanks:

Self-Closing, Fusible-Link Actuated Lid?	○ Yes ○ No - See Remarks
Parts Washing Bin(s) with Fusible-Link Actuated, Self-Closing Lid?	○ Yes ○ No ○ N/A
Remarks	○ Yes - See Text ○ None

Flammable Liquids

Are the Liquids Stored in a FM / UL Rated Cabinet? ◯ Yes ◯ No

Are the Liquids Stored in FM / UL Containers? ◯ Yes ◯ No

Type of Flammable Liquids

Paint	☐ X	Aerosol Cans	☐ X	Thinners	☐ X
Acetone / Toluene	☐ X	Alcohols	☐ X	Other - See Remarks	☐ X

Estimated Total quantities of flammable liquids stored onsite:

Quantity of Class IA flammables exceeds 25 gallons? ◯ Yes ◯ No

(If the quantity exceeds 25 gallons, a UL / FM listed cabinet is required for storage.)

(Class IA flammables would include ether, ethyl ether, etc.)

Quantity of Class IA, IB, & IC flammable liquids exceeds 125 gallons? ◯ Yes ◯ No

(If the quantity of Class IA, IB, & IC flammable liquids exceeds 125 gallons, a UL / FM cabinet or storage room is required.)

(Class IB flammables include gasoline, benzene, acetone, toluene, paints, thinners, alcohols, styrene, fuel additives, brake cleaners, starter fluids, and nail polish remover.)

(Class IC flammables include turpentine and isopropyl alcohol.)

Container Sizes & Method of Storage

Quart or Smaller	☐ X	1 Gallon	☐ X	5 Gallon	☐ X
30 to 55 Gallon Drum	☐ X	Other - See Remarks	☐ X		

Method(s) of Storage:

☐ Manufacturers Containers ☐ UL / FM Listed Safety Can
☐ UL / FM Listed Cabinet / Drum Cabinet ☐ UL / NFPA Flammable Liquids Storage Room
☐ Non-UL / FM Listed Containers - See Recs ☐ Non-UL / FM Listed Cabinet - See Recs
☐ Open Storage ☐ Non-UL / NFPA Listed Storage Room - See Recs

Are flammable liquids stored at least 20 feet from sources of ignition? ◯ Yes ◯ No - See Recommendations

Is the overall handling and storage of flammable liquids acceptable? ◯ Yes ◯ No - See Recommendations

Remarks

◯ Yes - See Text ◯ None

Spray Painting / Finishing

Business:

Performed in an FM / UL Rated Spray Booth? ○ Yes ○ No

Booth Equipped with an AES or Sprinkler Heads? ○ Yes ○ No

System is Serviced at Least Twice Per Year? ○ Yes ○ No

Spray Application Operations

What product is applied: ☐ Paint ☐ Primer ☐ Glue ☐ Other - See Remarks

Flashpoint of Product(s):

Sprayed Products Entirely Non-Combustible? ○ Yes ○ No - See Remarks

Where is product applied: ○ In Open ○ Booth ○ Room

How is product applied:

Standard room or pre-manufactured spray booth? ○ Yes ○ No

Custom built spray booth or room? ○ Yes ○ No

Is booth sprinklered & heads protected? ○ Yes ○ No ○ See Remarks

Frequency of use:

Baking or heating after application? ○ Yes - See Remarks ○ No

Sanding or grinding after application? ○ Yes - See Remarks ○ No

Does operation appear standard? ○ Yes ○ No - See Remarks

Ventilation Equipment

Filtering System:

Frequency of Cleaning: ○ Daily ○ Weekly ○ Monthly

Date of Last Service:

Filters well maintained and in good shape? ○ Yes ○ No - See Remarks

Is ventilation adequate? ○ Yes ○ No - See Remarks

Exhaust motor & duct installation standard? ○ Yes ○ No - See Remarks

Electrical Installation

Is electrical equipment inside spraying area standard? ○ Yes ○ No - See Remarks

Electrical equipment outside of spraying area standard? ○ Yes ○ No - See Remarks

Interlocks on lights, exhaust, & spray guns? ○ Yes ○ No - See Remarks

Spray Painting/Finishing – Continued:

Flammable & Combustible Liquids Storage

Quantity in Spray Area:

Stored in: ○ Cabinets ○ Storage Room ○ In the Open

Quantity Outside of Spray Area:

Stored in: ○ Cabinets ○ Storage Room ○ In the Open

Are storage & dispensing containers ULC listed? ○ Yes ○ No - See Remarks

Is proper bonding & grounding in use? ○ Yes ○ No - See Remarks

Is smoking restricted, with proper signage? ○ Yes ○ No - See Remarks

Type of fire detection / suppression system?

Is flammable & combustible liquids storage standard? ○ Yes ○ No - See Remarks

Remarks

○ Yes - See Text ○ No

High Piled Storage / Rack & High Hazard Storage

Briefly Describe the Storage Arrangement:

(i.e. shelves, piles, double row stacks, storage heights, etc.)

Is sprinkler design information available? ○ Yes ○ No

Storage Area Details

Square Footage of Storage Area:

Percentage of Insured's Space Used for Storage (%):

Approximate Square Footage of Storage:

Solid Shelving is Present? ○ Yes ○ No

Any Significant Deficiencies? ○ Yes - See Remarks ○ No

Remarks

○ Yes - See Text ○ None

Waste Oil Heat

Describe the Hazard & Basic Controls in Place:

Capacity of Oil Tanks Used for Used Oil from Oil Burning Device:

Location of Oil Tanks:

Do they Collect Oil Year-Round as "Recycle Location"? ○ Yes ○ No

Remarks

○ Yes - See Text ○ None

Woodworking

Describe the Hazard & Basic Controls in Place:

Dust Collection System in Place? ○ Yes ○ No ○ N/A

Dust Accumulation Noted? ○ Yes ○ No ○ N/A

Remarks

○ Yes - See Text ○ None

Here is another example of Special Property Hazard segments from a client-specific report form:

Special Hazards

Describe associated operations, location, protection, safety interlocks fixed fire suppression and safety management programs associated with:

Commercial Cooking ☐ Yes ☐ N/A
Describe equipment, protection, maintenance (include frequency of hood/duct cleaning and date of last service; and frequency of service to automatic fire suppression system and date of last service): _____
- Fire suppression is UL300 compliant? ☐ Yes ☐ No (Rec) – Must be rated Below Average
- Hood/duct system inspected/cleaned according to NFPA 96 - ☐ Yes ☐ No (Rec) – Must be rated Below Average
- Grease filters are baffle filters, no gaps and cleaned weekly? - ☐ Yes ☐ No (Rec) – Must be rated Below Averag

Are controls adequste? _____

In Process Flammable/Combustible Liquids Handling and Storage ☐ N/A
Quantity: Flammable _____gal Combustible _____gal
Describe type, quantity, arrangement, location, MSDS, flash point, dispensing (bonding/grounding, listed/approved pumps/spigots, safety bungs and drip capture) and handling (UL listed safety cans): _____
One shift supply of flammable/combustible liquids in manufacturing area ☐ Yes ☐ No _____
Flammable liquids storage cabinet in manufacturing area ☐ Yes ☐ No _____
Are controls adequste? _____

Dip Tanks ☐ Yes ☐ NA
Describe contents, location, capacity and protection: _____
- Combustible/Flammable Liquids dip tanks provided with self-closing metal cover? ☐ Yes ☐ No (Rec) – Must be rated Below Average
- Flammable liquids dip tanks provided with self-closing metal cover and approved fixed protection? ☐ Yes ☐ No (Rec) – Must be rated Below Average

Are controls adequste? _____

Flammable Spray Coating ☐ Yes ☐ N/A
Describe material applied, location, separation from other operations, equipment & protection: _____
- Is there explosion proof electrical within 10 feet of spray booth opening: ☐ Yes ☐ No (Rec) – Must be rated Belo Average
- Spray booth provided with fixed automatic fire suppression? ☐ Yes ☐ No (Rec) – Must be rated Below Average
- Adequate ventilation within spray booth? ☐ Yes ☐ No (Rec) – Must be rated Below Average
- Adequate maintenance (changing filters, housekeeping, replacement of sprinkler overspray covers, AES servicing, etc.) ☐ Yes ☐ No (Rec) – Must be rated Below Average
- Spray booth meets requirements of NFPA 33? ☐ Yes ☐ No (Rec) – Must be rated Below Average

Comments: _____

Combustible Dusts ☐ Yes ☐ NA
Describe type, source, controls and observed accumulation: _____
- Dust accumulations on horizontal surfaces, less than 1/32 inches? ☐ Yes ☐ No (Rec) – Must be rated Below Average

Are controls adequste? _____

Dust Collection System ☐ Yes ☐ NA
Describe location, construction, protection: _____
- All dust producing equipment connected to dust collection system? ☐ Yes ☐ No (Rec)
- All unused openings closed with approved method? ☐ Yes ☐ No (Rec)

Are controls adequste? _____

Hydraulically Operated Equipment with reservoirs >100 gallons ☐ Yes ☐ NA
Describe number of machines, combustible/noncombustible fluid, capacity of each, automatic cutoff, remote manual cutoff, protected of hoses: _____
Are controls adequste? _____

Combustible Metals ☐ Yes ☐ NA
Describe type, operations, controls, protection: _____
Are controls adequste? _____

Ovens/Furnaces/Kilns ☐ Yes ☐ NA
Describe use, number, construction, fuel, arrangement, controls: _____
Are controls adequste? _____

Flammable Gases ☐ Yes ☐ NA
Describe type, location, controls, protection: _____
Exterior storage of spare LPG cylinders? ☐ Yes ☐ No (Rec) – Must be rated Below Average
Are controls adequste? _____

Cutting/Welding ☐ Yes ☐ NA
Describe type, frequency, location, controls: _____
Are controls adequste? _____

Chemical Processes ☐ Yes ☐ NA
Describe processes and equipment, endothermic/exothermic, location, separation from other operations, pressure venting, protection: _____
Are controls adequste? _____

Other Special Hazards ☐ Yes ☐ NA
Describe type, controls: _____
Are controls adequste? _____

Special Hazards Comments: _____

FIRE PROTECTION

Fire protection falls into two categories:

Public

Private

Example of Fire Protection segment in report form:

Fire Protection

Building Access:	○ Full ○ Limited
(Full Access = Fire Department has access to All sides of structure with fire fighting equipment.)	
The roads leading to the building are:	○ Paved ○ Unpaved
Is the location inaccessible any part of the year?	○ Yes ○ No
If located outside of the city limits, will the city fire department respond?	○ Yes ○ No ○ N/A
Burning Probability:	○ Full ○ Moderate ○ Light
Miles to Fire Department:	
Fire Department:	
Distance to Hydrant:	
Fire Extinguishers:	
Fire / Smoke Detection:	☐ None ☐ N/A ☐ Smoke (Battery) ☐ Smoke (Battery/Hardwired) ☐ Heat (Battery) ☐ Heat (Battery/Hardwired) ☐ Manual Pull Alarm
Alarm Monitoring:	
Building has a Sprinkler System?	○ Yes ○ No
Remarks	○ Yes - See Text ○ No

Public Fire Protection

Private Fire Protection

Public Fire Protection

Public fire protection covers the following:

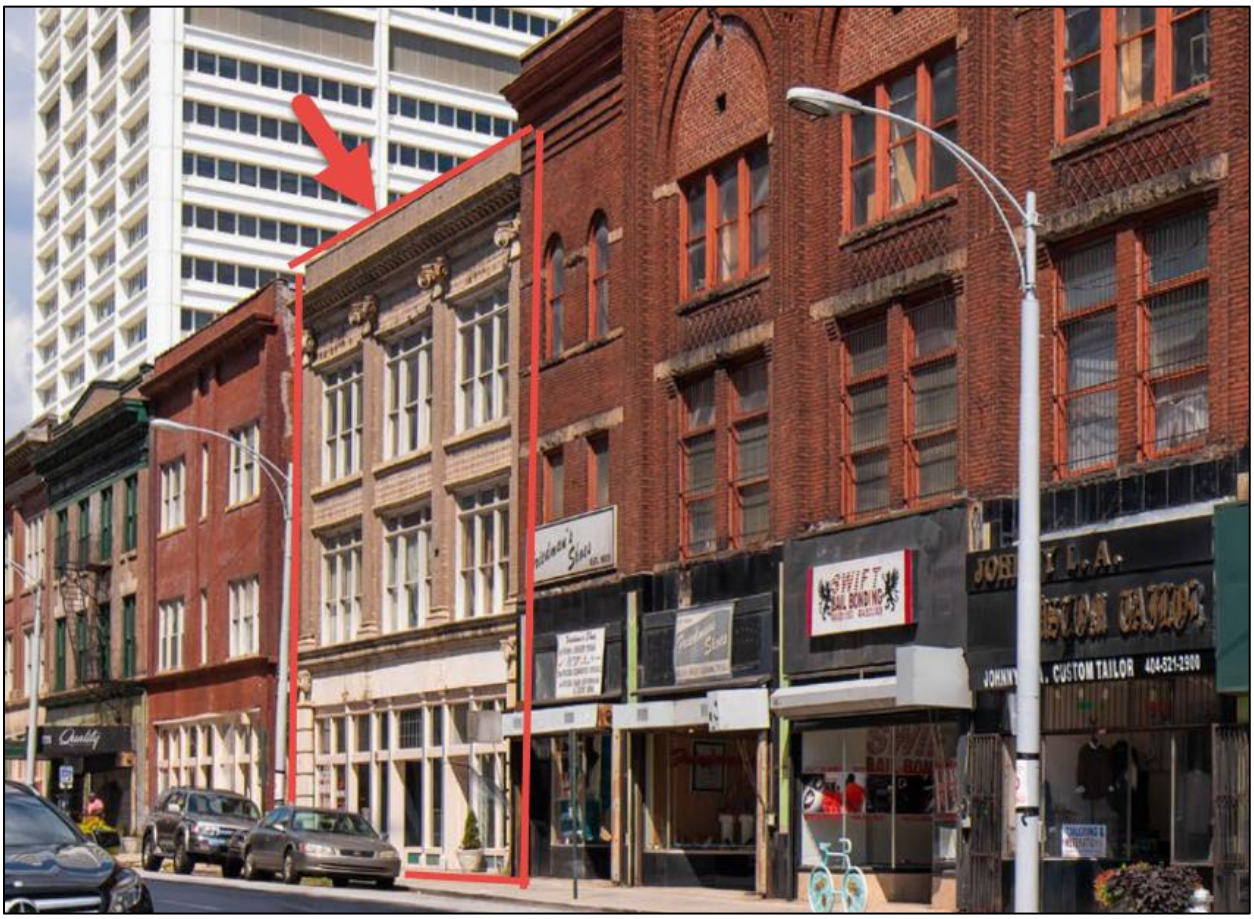
- Local Fire Departments
- Public Water Supply (fire hydrant system)
- ISO-Town Protection Class

Local Fire Department:

- We need to know the closest responding fire department. You can usually determine this in your interview with the insured. You may also find the local fire department on Google Earth.
- Ask if the fire department is full time, part time, volunteers or a combination.
- Occasionally you will be asked for FD response time in minutes.
- Where is the closest fire hydrant? If there are no hydrants, then water must be brought to the fire which limits the amount of water available to fight a fire.
- How many feet away is the hydrant?

- Is the site accessible to firefighting equipment?
- Are the roads straight and wide enough to allow firefighting equipment to gain access to the site?
- Are the roads open year-round or potentially inaccessible in winter weather or other extreme conditions?
- Are there any potential hindrances to access, such as railroad crossings or lift bridges?
- Is the building accessible for firefighters?

Because of other buildings immediately adjoining, the subject building shown below is only accessible to firefighters from the front and from the rear. Also consider buildings at water's edge or near edge of cliffs or embankments that may only be accessible to firefighters from 2 or 3 sides.



ISO-Town Protection Class Number:

The ISO (Insurance Service Organization) assigns a numbered rating to most community's firefighting capabilities. This ISO rating takes into account the available water supply, firefighting equipment, extent of training, and fire station locations.

The ISO Town Protection Classes range from 1 to 10.

- 1 is the most protective (major metro areas with top notch capabilities)
- 10 is the least protective (rural area with volunteer departments and limited resources)

Note: Buildings located in ISO-town protection class areas 8, 9, and 10 will not have hydrants.

You may be able to get this information by calling the local fire department or searching for the information on line.

This number is not your opinion. It is determined by ISO. Do not guess. If you cannot obtain the ISO-Town Protection Class rating, then just state so in your report.

PRIVATE FIRE PROTECTION

Private Protection covers the following:

- Detection & Monitoring
- Extinguishing

Private Fire Protection -Detection & Monitoring

Smoke detectors are designed to detect a fire in the earliest stage possible to allow for prompt evacuation and notification of the fire department.

Smoke detectors are typically installed in the ceiling or on a wall no more than 12-24 inches down from the ceiling.

Smoke detectors, heat detectors or even manual pull fire alarms can activate a signal in several different ways.

- **Local -** Which means the alarm only sounds within the building or on the site. The alarm is not transmitted.
- **Proprietary -** This system typically transmits a signal to the local fire department or police department.
- **Central Station -** This is an offsite service that monitors alarm signals 24/7/365.

LOCAL ALARMS:

Smoke detectors/alarms may be either hard-wired or battery operated. In commercial settings, or depending on local building codes, it is typically preferred that they be hard-wired (and may have battery back-up feature, as well). Smoke detectors are typically mounted on the ceiling, or toward top of side walls.

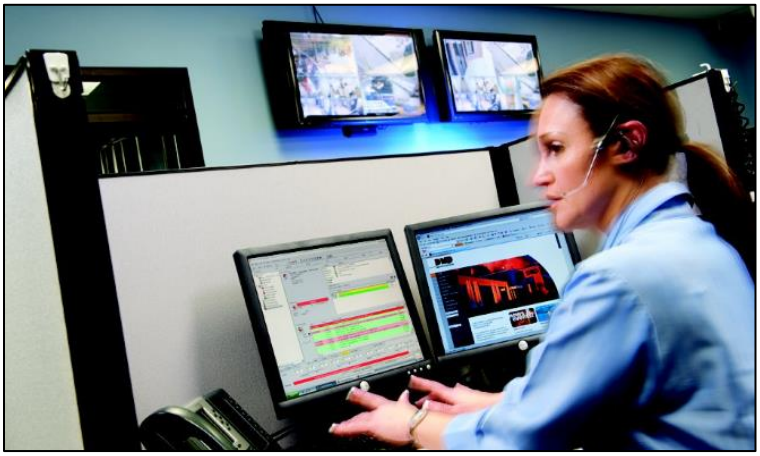
The photo below is a local alarm bell that signals the fire sprinkler system has been activated. In this example, it does not automatically notify the local fire department. It sounds an alarm in or on the building only.

PROPRIETARY ALARMS:

A proprietary alarm sends a signal typically to the local fire department where the signals are monitored 24/7. The alarm may be activated when a sprinkler system is activated, activation of a smoke/heat detector, or by a manual fire alarm pull station as shown below. In some cases, the alarm may also go to the local police department.

CENTRAL STATION ALARM:

A central station is an off-site commercial business whose purpose is to monitor alarm systems (typically both fire and burglar alarms). The activation of a sprinkler system, smoke/heat detectors or use of manual fire alarm pull station will send a signal directly to the central station, which monitors the alarms 24/7/365. They will dispatch firefighters and/or police to the location. The insured's building will have a fire alarm communicator panel such as the example in the photo shown below on the right.



Private Fire Protection -Extinguishing

Portable fire extinguishers are the first line of defense for small fires.

Fire extinguishers must be serviced at least **annually** by a licensed extinguisher service company. Always check the hang tag on extinguishers. They will typically be punched with the year and month of last service. If it is beyond 12 months, make a recommendation.

Extinguishers should be mounted on a wall, a post, or within an extinguisher cabinet. They must be easily **visible** and **accessible.**

Side Note: OSHA has specific requirements as to how far of a distance employees would have to travel to reach a fire extinguisher within the building. Depending on the type of fire, an extinguisher should be within 30-75 feet.

A typical fire extinguisher should be mounted on a wall, post, or within a cabinet so that the handle is between 3 ½ to 5 feet above the floor. (Larger extinguishers, over 40 lbs., may be mounted at 3 to 3 ½ ft. from the floor.)

It is fairly common to see fire extinguishers in commercial businesses that are just sitting on the floor or under a table, or someone hangs their coat over the extinguisher in the back room. Obviously, those would not be easily visible or accessible. Watch for those situations and make a recommendation as needed.

Automatic Extinguishing Systems (AES)

As we have already discussed, Automatic Extinguishing Systems (AES) are typically found in commercial paint booths or covering the cooking surface in a commercial kitchen. They are another method of private fire protection.

Don't forget, they must be serviced by a licensed contractor every 6 months at minimum. Look for a sticker, hang tag or paperwork verifying the last time the licensed service contractor was there.

Automatic Fire Sprinkler Systems

Fire sprinkler systems are designed to automatically contain or extinguish a fire before the fire department arrives. We will cover sprinkler systems in more detail in the next section of this manual.

Manual Pull Fire Alarms:

As a reminder, manual pull fire alarm stations such as this, activates an alarm that may be local, proprietary or communicates directly to a central station monitoring company.

Private Fire Protection -Automatic Sprinkler Systems

This section will cover the following:

- Background & Effectiveness
- Sprinkler System Myths
- Building & Occupancy Considerations
- Types
- System Operation Critical System Issues
- System Costs

Sprinkler System Background, Effectiveness and Myths

Background & Effectiveness:

The very first sprinkler systems were installed between 1880-1890 in textile mills.

Sprinklers typically reduce chances of dying in a fire and reduces the average property loss by one-half to two-thirds in any kind of property where they are used.

NFPA (National Fire Protection Agency) has no record of a fire killing more than two people in a completely sprinklered public assembly, educational, institutional or residential building when the system was working properly.

> (* From NFPA's US Experience with sprinklers and NFPA's Fire loss in the United States, September 2001, Kimberly D Rohr.)

Per the NFPA, property damage claims from fire were 78% lower than in non-sprinklered buildings.

There is high reliability for properly maintained systems. A 96-98% effective result in controlling or containing fires.

There is a 1:16,000,000 chance of accidental activations due to manufacturer's defect.

There is a 1:3,300,000 chance of an accidental activation overall.

Sprinkler System Myths

MYTH: Cigar smoke or burnt toast may cause a sprinkler to activate.

REALITY: Only the high temperature that results from a fire will activate the sprinkler.

MYTH: All the sprinkler heads activate at once.

This scenario makes for a good scene in movies and TV shows, but it just isn't true for fire sprinkler systems (except for Deluge systems, which we will learn about shortly).

REALITY: Only the sprinkler closest to the fire activates. Ninety percent of the time, one sprinkler contains the fire.

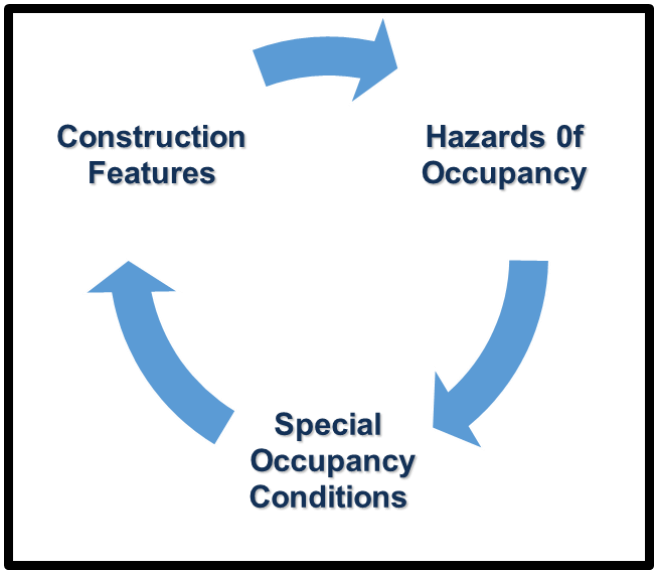
MYTH: There is more water damage to the insured's property caused by sprinkler systems than the actual fire damage.

REALITY: Water damage from a building sprinkler system will be much less severe than the damage caused by water from firefighting hose lines or smoke and fire damage if the fire is allowed to spread.

Quick response sprinkler discharge: 8-24 gallons/minute

Fire hose discharge: 80-125 gallons/minute

What are some of the factors influencing sprinkler system effectiveness?



Building & Occupancy Considerations

Multi-story Buildings: Enclose the vertical openings. Systems are designed to extinguish a fire in any one story within the building, to prevent spread to other levels.

High Ceilings: Large distances between the fire and the sprinklers will allow the fire to build up much more before system activation.

Concealed Spaces: In spaces above the ceiling, such as an attic, a fire stop installation is necessary.

Shielded Fires: Places where wide tables, shelves, partitions, conveyors, ducts, etc., may shield the sprinkler from the fire.

Vertical Openings: Stairways, elevators, utility shafts, etc., should be enclosed or protected.

As mentioned above, in multi-story buildings, the vertical openings should be enclosed and the systems are designed to extinguish a fire in any one story**.** In this picture, we see a stairwell. It is common for stairwells to have sidewall sprinkler heads, so that they are closer to the level of traffic in the stairwell and provides more effective coverage.

High ceilings – In order to shorten the distance between the sprinkler head and the fire below, sprinkler heads may be mounted on down pipes as seen here, or in some cases, sidewall heads are used.

Shielded Fires (high rack storage, wide tables, shelves, conveyers, etc.) can prevent sprinklers from providing adequate coverage. One solution is running sprinkler piping and heads underneath the shielded areas. This photo shows sprinkler lines underneath each shelving level of high rack storage in a warehouse.

Concealed Spaces – Any space above the ceiling tile for example, a sprinkler may not get to, so fire stop insulation is necessary.

Not all buildings or occupancy are built the same way. Below are the different types of hazard classes you might be inspecting.

- **Light Hazard Class**- Apartments, churches, dwellings, hotels, public buildings, office buildings, schools.
- **Ordinary Hazard Class Group 1** - Stock piles less than 8 feet in height. Includes laundries, canneries, electronics manufacturing.
- **Ordinary Hazard Class Group 2** - Stock piles do not exceed 12 feet in height. Includes printing, publishing, cereal processing, textiles.
- **Ordinary Hazard Class Group 3** - High quantity of combustibles and highly combustible materials. Includes flour mills, piers, wharves, processing pants, tire plants, storage warehouses.
- **Extra Hazard Class** - Buildings or portions of buildings with severe fire hazard. Includes oil refineries, flammable liquid dispensing, processing or mixing operations, fiber/dust production operations, explosives.

In each one of these different hazard classes, there are requirements for how much water should be pumped through the system and also the amount of sprinkler heads per square footage.

Special Occupancy Conditions:

- High piled combustibles
- Flammable and combustible liquids
- Combustible dusts
- Chemical and explosives

The more combustibles you have in a building the more sprinklers you may need.

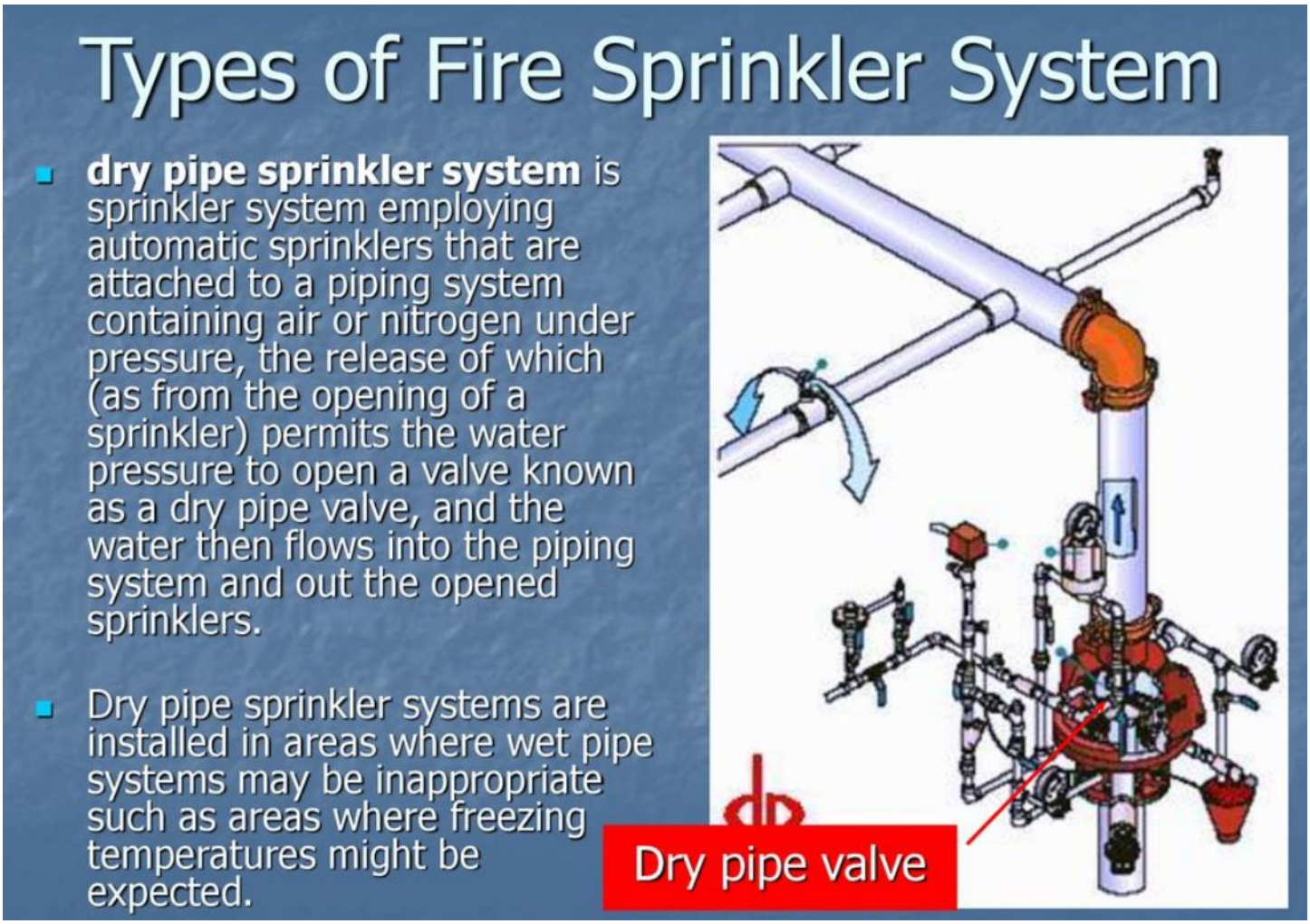
These are the different types of sprinkler systems you may encounter.

Sprinkler Types

- Dry Pipe systems
- Wet pipe systems
- Combination
- Pre-action systems
- Deluge systems

Sprinkler Types -Dry System

A dry system has air inside the pipe. The reason you would want air inside the pipe is because the building, such as a warehouse, may be subject to freezing temperatures and because the water inside the pipe may potentially freeze, air is kept inside the pipe until a sprinkler is released. If a fire builds and a sprinkler is activated, the air will escape out of the head first releasing all the air in the system and then water will be pumped through the system to the sprinkler head to put out the fire.



Here are examples of dry pipe systems:

Close up of dry pipe system, notice the 'belly,' a good indicator it is a dry system.

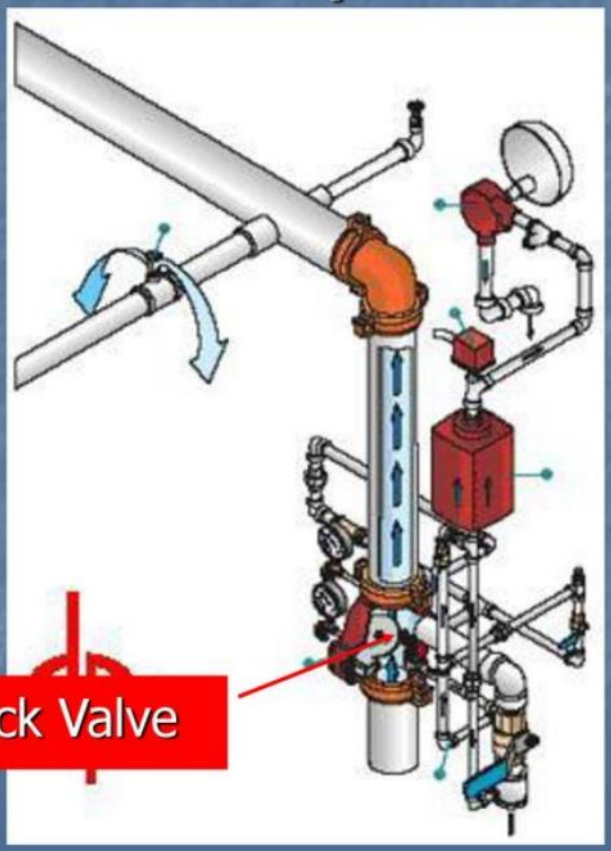
Sprinkler Types -Wet System

Wet systems are installed in buildings where the entire building is heated such as an office building, a church, a retail store, etc. In this case we do not need to have air inside the pipe because the entire pipe system is heated. Therefore it is okay to have water in the pipe at all times. As a fire builds and sprinkler head detects the heat it will burst and water will be immediately released from the sprinkler head.

Types of Fire Sprinkler System

- **wet pipe sprinkler system** is a sprinkler system employing automatic sprinkler heads attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by heat from a fire.

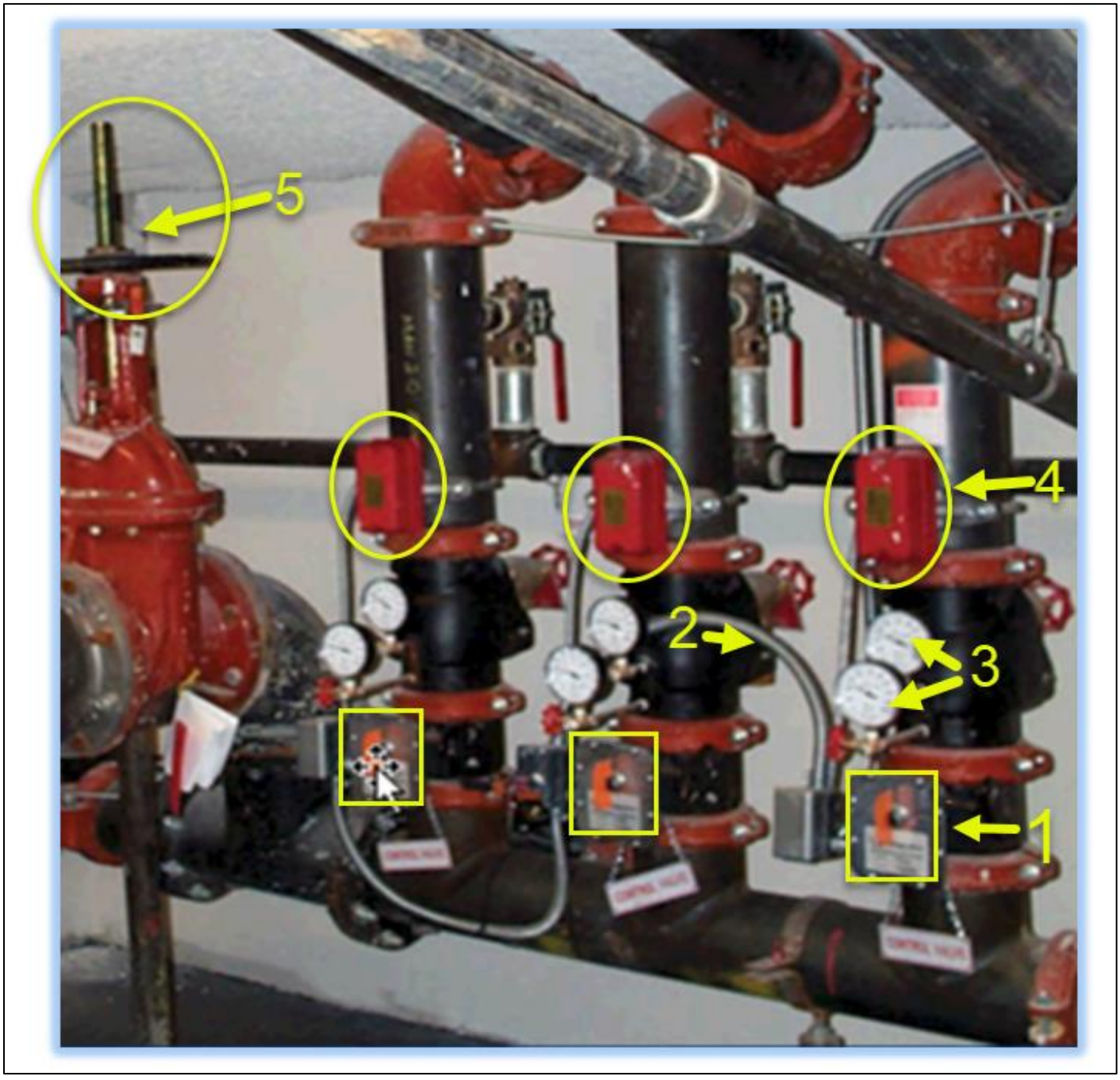
Most common type of system.



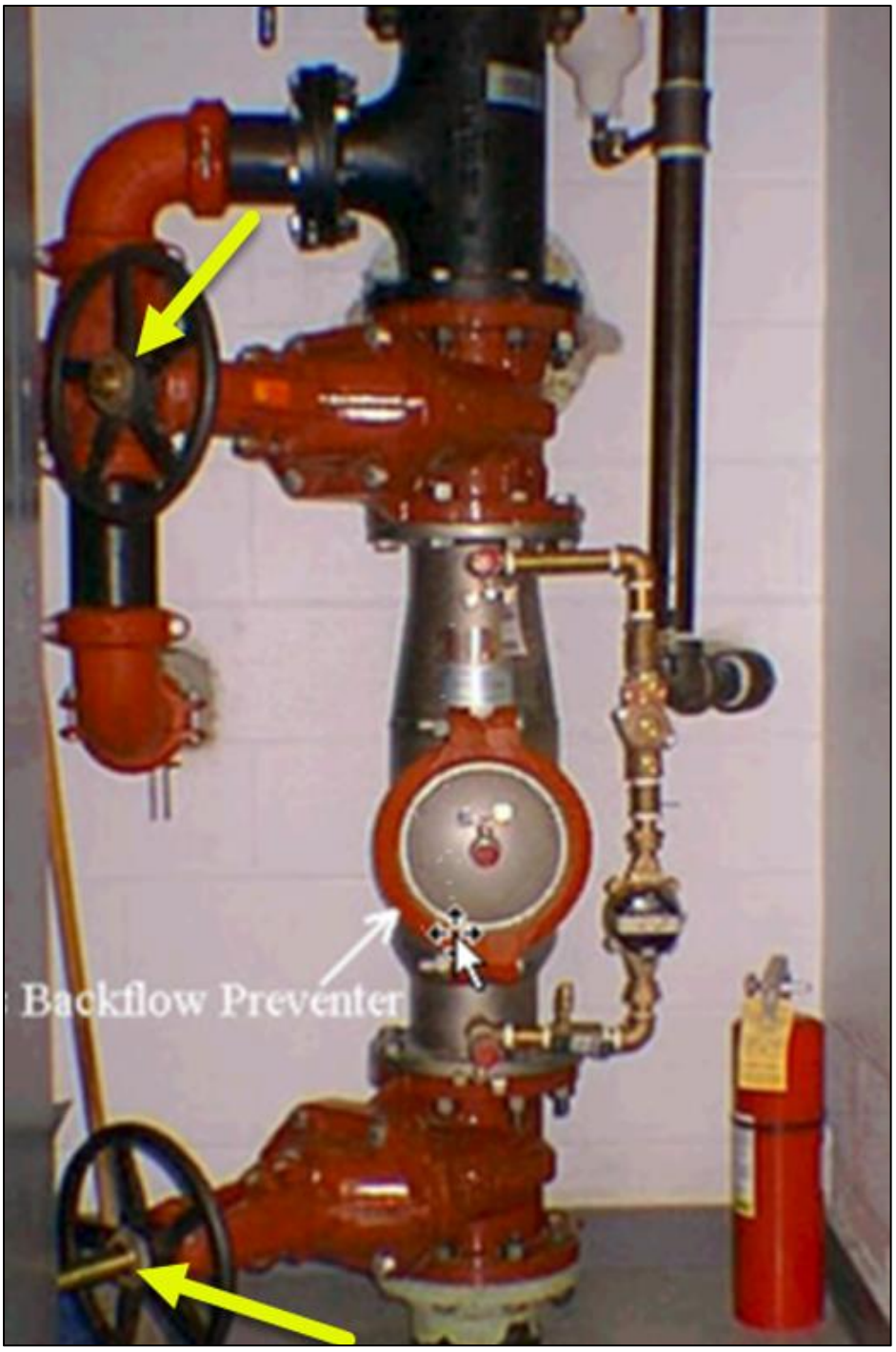
Wet Pipe System Examples:

In this picture below, you can see:

1. The control valves (open/close to keep water out of the system)
2. The tamper alarms (tells fire alarm system whether someone has tried to close the control valves)
3. The upper & lower gauges
4. The flow alarms (detects movement of water in system)
5. The OS&Y (Outside Screw & Yoke) Valve (If the screw is visible it means the valve is open and water is moving through the system. If the screw is not visible then it means that the valve is closed.)



This is another example of a wet pipe which has a backflow preventer. On the upper wheel, you can see the Outside Screw & Yoke (OS&Y) Valve and the screw is pushed in which means it is closed. On the lower wheel you can see the Outside Screw & Yoke (OS&Y) Valve and the screw is poking out which means it's open. So water is flowing through the bottom part of the wet pipe and stopping.



Sprinkler Type - Combo Wet & Dry System

You may see combination systems when part of the building is heated and part of it is not heated, so they will have a wet side and a dry side.

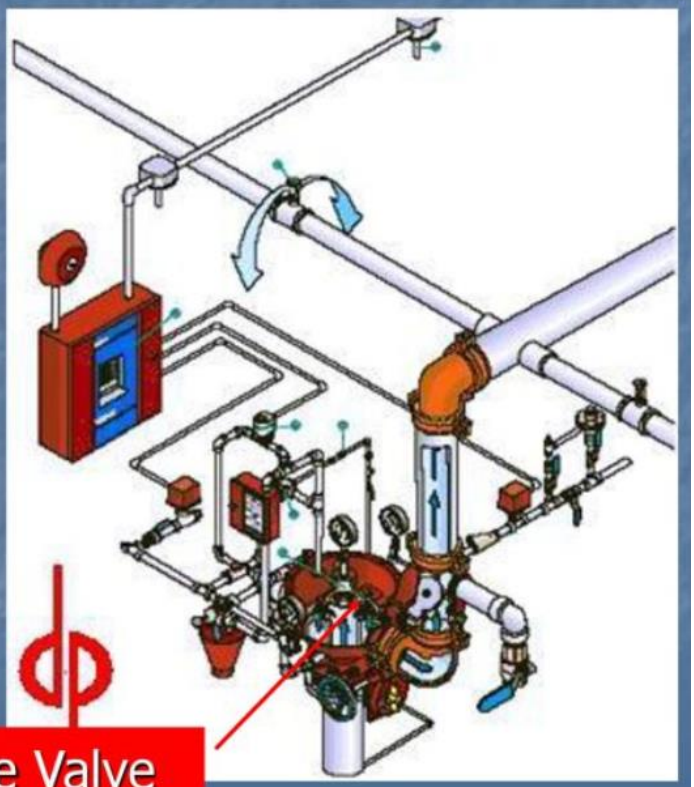
Sprinkler Type -Pre-Action System

A Preaction System is used in very sensitive environments like computer rooms, server rooms, an archive vault, a museum holding precious art – basically places where a lot of water damage would be extremely severe.

In a Preaction System you may have a heat detector in, for example, a computer server room. Let's say the heat detector is set at 120 degrees. If a fire starts in the computer server room, the heat detector would notify the fire alarm and notify everyone in the building that there is a fire in the computer server room. At the same time, the fire alarm would send a signal to the Preaction Valve and would start releasing water in to the pipe. Water would then reach the sprinkler heads inside the computer server room and the sprinkler heads with the higher rating of maybe 150 or 160 degrees would wait for the fire to increase to that temperature level before they would release. A Preaction System basically alerts people in the building to go and put out the fire using something other than water. So you might use a special type of fire extinguisher for example that would not damage the computer room. However, if no one responds to put out the fire, then the sprinkler head with the higher temperature rating will release the water and put out the fire in the computer server room and also potentially destroy the computer servers.

Types of Fire Sprinkler System

- A **pre-action sprinkler system** is similar to a deluge sprinkler system except the sprinklers are closed. This type system is typically used in areas containing high value equipment or contents and spaces which are highly sensitive to the effects of accidental sprinkler water discharge.
- Activation of a fire detector will open the pre-action valve, allowing water to enter the system piping. Water will not flow from the sprinklers until heat activates the operating element in individual sprinklers.

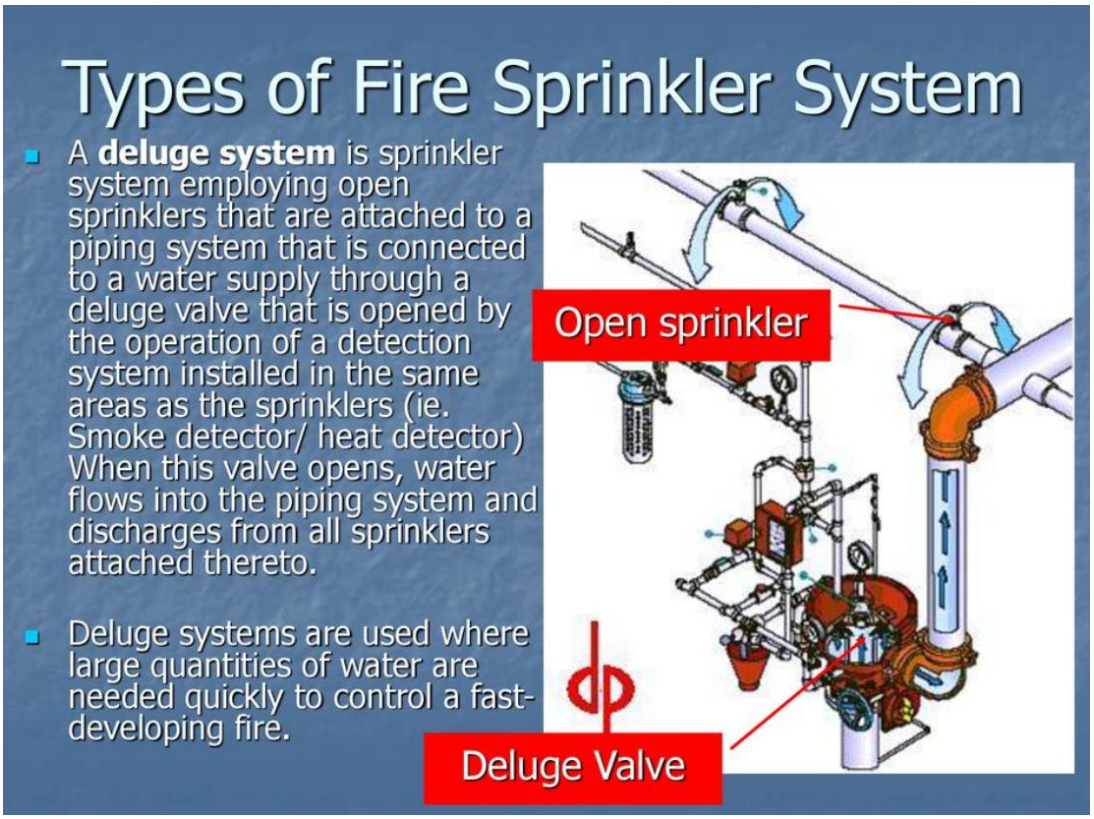


Pre-Action System Examples:

See the fire alarm box in the picture below. The fire alarm box receives the signal from the heat device that opens the electric solenoid valve and releases the water into the system.

Sprinkler Type -Deluge System

A Deluge System is the type of system that is used to put out as much water as possible. In the Deluge System, there is only air inside the pipe and all the sprinkler heads are open and what happens is that a heat detector will detect heat in, for example, a manufacturing plant and will release water in to the entire plant. So, you may use a Deluge System where there are a lot of chemicals, explosives, or flammable liquids. This is so you can put out the entire fire very quickly by opening up all the sprinkler heads. However, you would not see a Deluge System inside an apartment complex, restaurant, church or office building. Deluge Systems are more typically used in industrial settings.



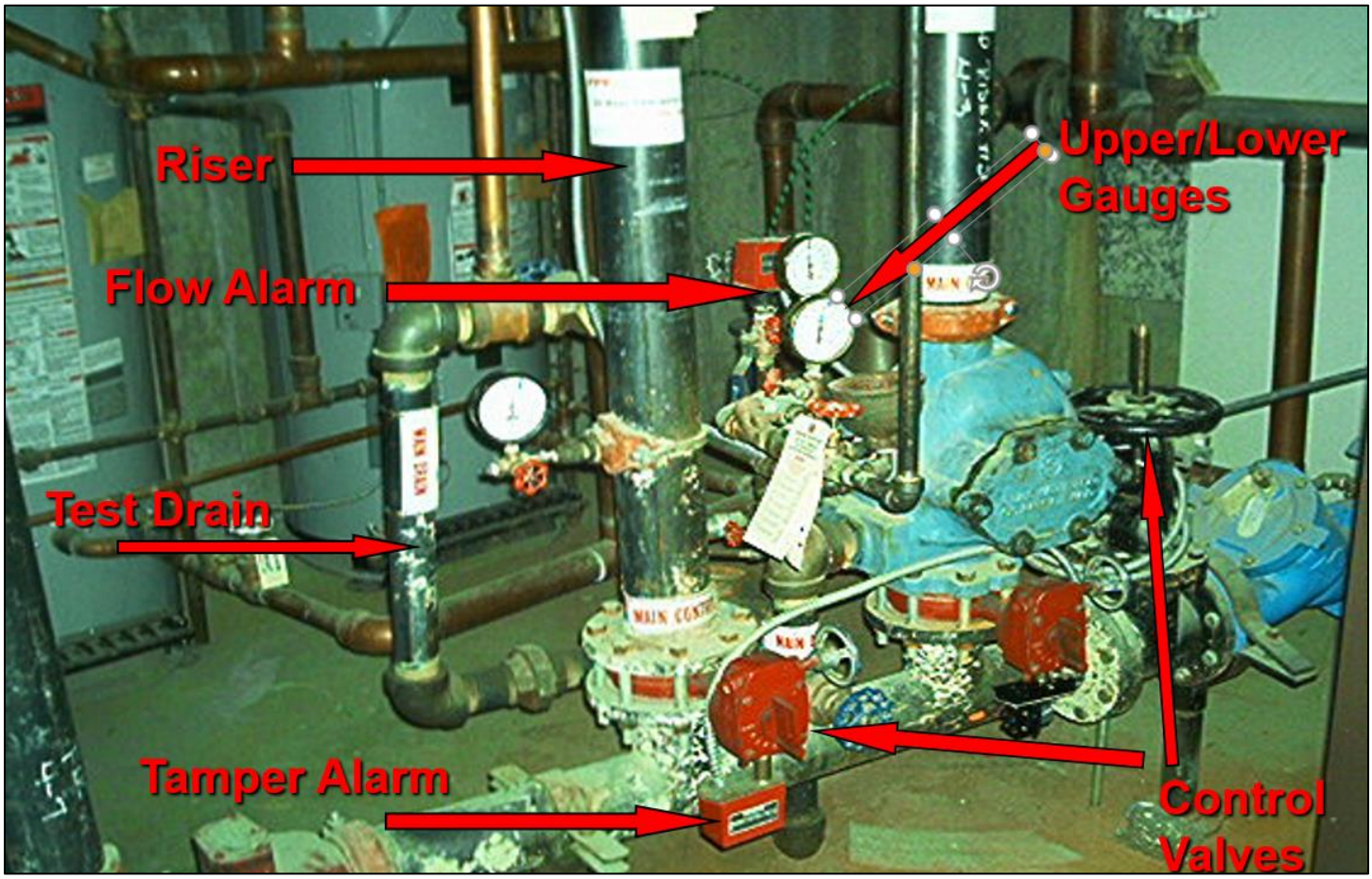
Deluge System Example:

It may look similar to a Dry Pipe or a Preaction System, but you'll need to ask the insured if they know if they have a Deluge System. Also, if you are inspecting an industrial occupancy, or any occupancy with a high volume of flammable liquids, chemicals or explosives, then you'll know that there is a potential that they have a Deluge System to extinguish a fire that could quickly become catastrophic.

Where do you locate the Fire Sprinkler Riser?

In most cases the sprinkler riser will be located in the sprinkler riser room. However in some cases it could be located in the open along a wall inside the building, such as the photo below on the right. Ask the insured where you would find it.

Components and Operations of a Sprinkler System



System Operation:

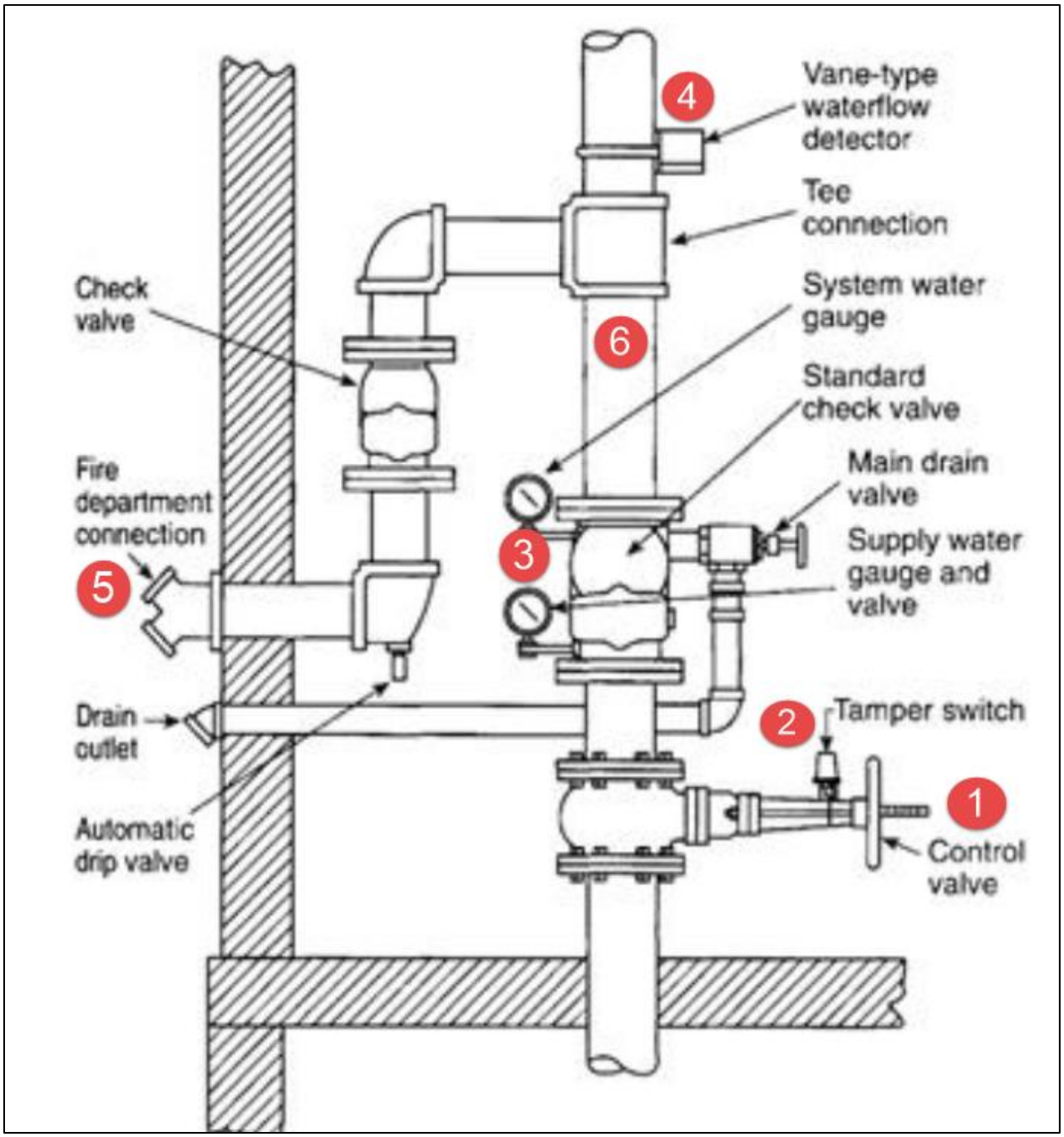
Some basic information you will need to obtain for most reports on sprinkler systems are:

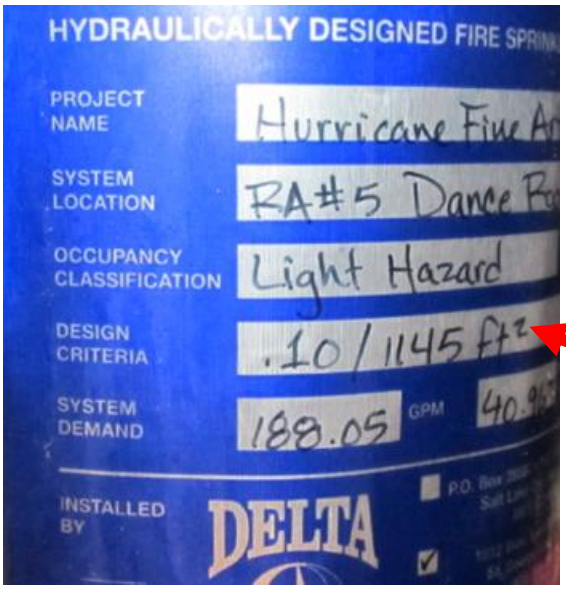
- Note any additional protected areas such as attics, chutes, vertical openings, dumpsters, basement, elevators, parking garages, special hazards, etc.
- Is the system maintenance under the insured's control?
    - Ex: A leasee would typically have no control over the system, it would be the landlord's responsibility.
- Note the system design information and hydraulic data available.
    - Number of zones, Density (gpm/sf), Riser diameter, Upper gauge (psi) and Lower Gauge (psi) readings.
- If no access to riser, or no hydraulic or other information available, then state that.
- When was the last flow test and inspection by a licensed fire sprinkler system contractor?
    - Must have annual testing. Look for hang tag with paperwork. Are any components red-tagged as out of compliance?

<u>Always take picture of the riser for the underwriter.</u>

In the diagram below, you can see the following:

1. OS&Y Valve
2. Tamper alarm
3. Upper & Lower gauges
4. Flow alarm
5. Fire department connection on outside of building.
6. Riser pipe





Hydraulic Data- Check number of sprinklers, check density, check design area of discharge, check water flow rate, GPM (gallons per minute), etc. Note whatever information is provided on the data plate. These are usually located right on the main riser pipe or on a hang tag.

You'll note the design criteria indicates a density of **.10/1145 SF.** This means the system is designed to deliver .10 gallons per minute per square foot over 1,145 SF.

What is Sprinkler Density?

It is Gallons per Minute per Square Foot

Example: 500 gpm/4,000 SF = .125 density

This may vary within the building depending on how different parts of the building are used and what materials or contents may be stored there. For example, a large furniture store may have its own warehouse in the back. The showroom area would have less overall fire load than the high stack storage of inventory in the warehouse area. Therefore a sprinkler system would be designed to account for the difference needed between those two areas. How would that design vary? It may include:

- Higher flow (gpm) from heads in the warehouse vs. showroom
- Higher concentration of heads per SF in warehouse vs. showroom
- Combination of both

Gauges:

Most sprinkler systems will have both an upper and lower gauge. Check them both, they may not have exactly the same reading on both, but should be within 15 psi (or less) of each other. If the difference between the two gauges is more than 15 psi, the system should be checked.

This Lower gauge shown on the left is reading @ 82 psi. The Upper gauge on the right is reading @ 86 psi. They are within just 4 psi of each other, therefore that is acceptable.

Here is a sample of a **Sprinkler System segment** of a report:

Sprinkler System — Optional - Hide

Additional Protected Areas:	Attic Chutes Vertical Openings Trash dumpsters Basement Elevators Parking Garages Special Hazards None noted Other-See Remarks
Is system maintenance under insured's control:	Yes No
System Design Information	
System Design Information:	No Access to Riser No Hydraulic Data Available Information available-See Table Below See Remarks

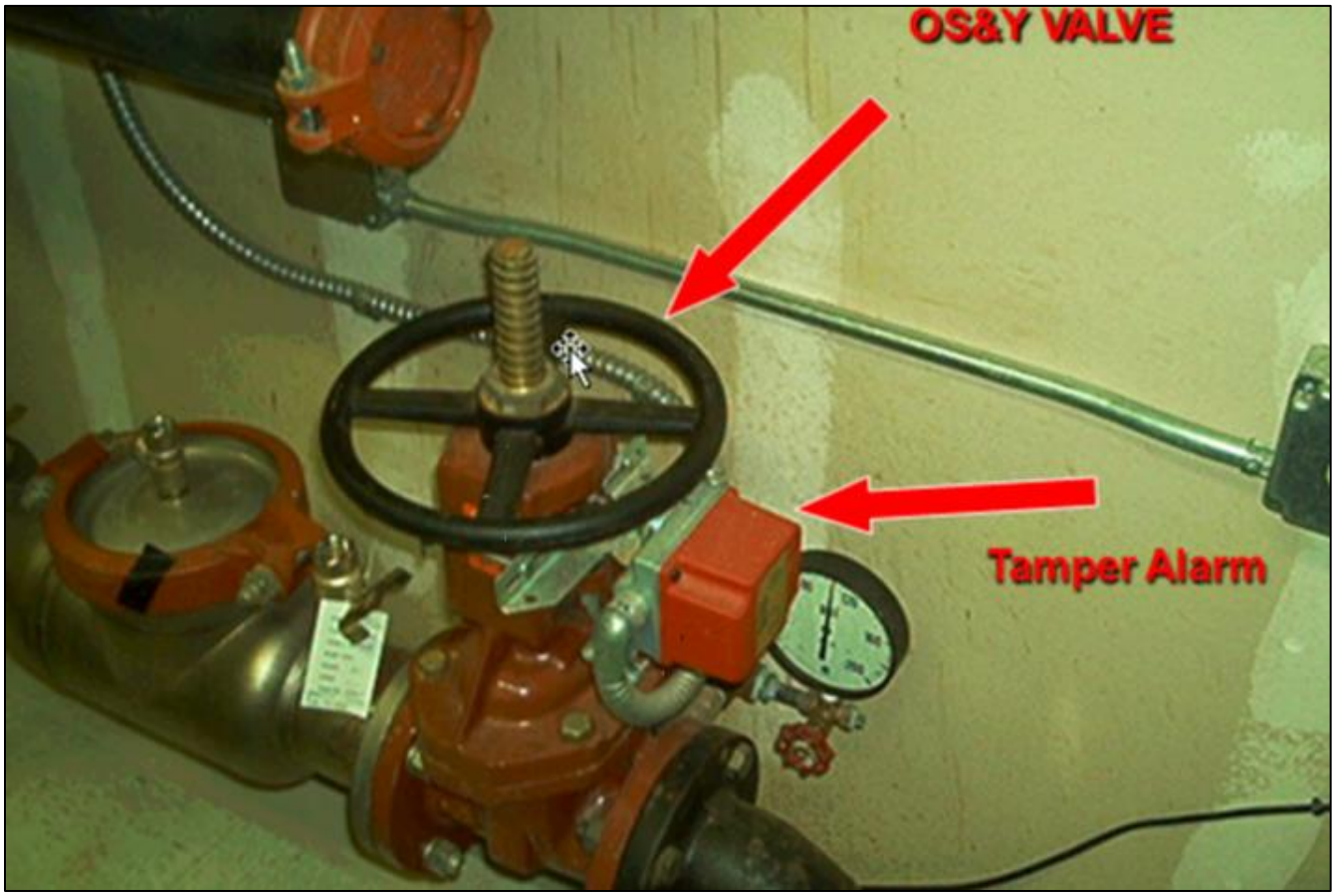
Zone #	Density (gpm/sf)	Riser Dia. (")	Upper Gauge (psi)	Lower Gauge (psi)

Valves Open:	Yes No NA No access
Valve Room Heated:	Yes No Not susceptible to freezing See Remarks
All wet pipe areas heated:	Yes No-See Remarks See Remarks
Chained Open:	Yes No NA No access
Tamper Alarm:	Yes No NA No access
Flow Alarm:	Yes No NA No access
Alarm Monitoring:	Local Fire Dept. Central St. None See Remarks
Service Frequency	Annual Quarterly Semi-Annual None See Remarks
Name of Service Company:	
Date of last Trip Test (dry pipe):	
Date of last Flow Test (wet pipe):	
Pipes & hangers in good condition:	Yes No See Remarks
Storage at least 18 inches from sprinkler heads:	Yes No See Remarks
Sprinkler heads free of build-up:	Yes No See Remarks
Extra Sprinkler Heads on premises:	Yes No See Remarks
Fire Dept connection caps in place:	Yes No See Remarks
Remarks:	None Yes-See Text

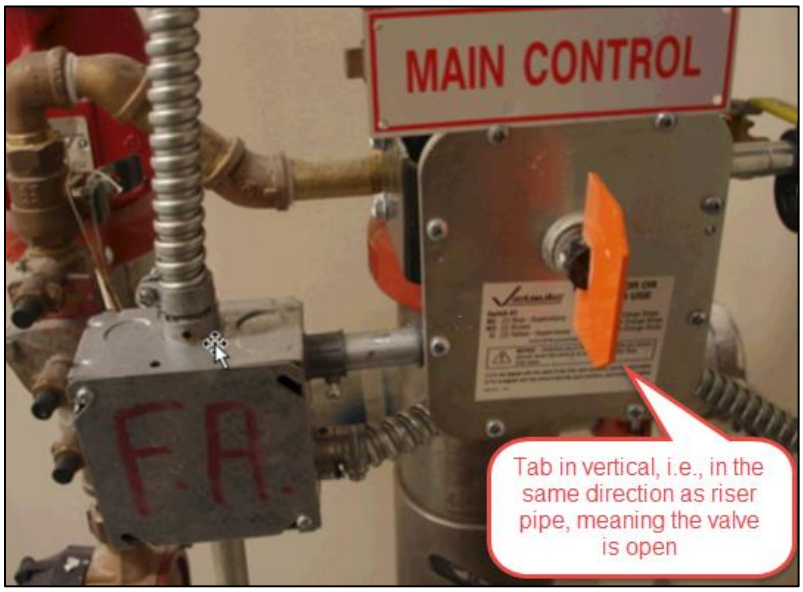
Always fill out the sprinkler segment with all information that is available. If some information is not available or you have no access to determine the information, then state that accordingly. But always include photos.

Valves, Alarms & OS&Y Valves:

This is an OS&Y Valve, you can see that the screw is showing so you can tell that it is open. If the screw is down, then it would be shutting off the water. There is also a Tamper Alarm, via conduit, which is connected to the OS&Y Valve. If someone were to start turning the OS&Y Valve to shut off the water, the Tamper Alarm would detect that movement and send a signal via the conduit back to the fire alarm that would in turn call and dispatch the fire department. Tamper alarms were mainly installed to protect buildings from arsonists.



Valve and Tamper Alarm/Fire Alarm



This picture is another type of control valve. This is the silver kind with an orange tab. Remember that it is open if the tab is running in the same direction as the pipe. If the tab in this picture was turned horizontally (and the water pipe riser is running vertically) we would know that the control valve was closed and would be blocking water from getting into the system. Attached to this control valve is a fire alarm (indicated by "F.A."). It looks a little bit different from the other tamper alarms that you've seen, but it's still essentially the same thing. If someone were to turn the control valve, the tamper alarm would pick it up and would send a signal via the conduit running into the top of the fire alarm and would in turn dispatch the fire department.

Flow Alarms:

The photo below is a system with two riser pipes (possibly a combo wet and dry pipe system, or just multiple zones set up). You can see that each riser pipe has its own flow alarm. As water moves through the pipe, the flow alarm notices the movement and then sends a signal back to the fire alarm to dispatch the fire department. This flow movement is detected because a sprinkler head has been released, water is moving through the system and the fire department needs to come out to either put out the fire or turn off the system.

This is another example of a flow alarm and is attached directly to the pipe. Once again, it is red and you can see the conduit running back to the fire alarm.

Protecting OS&Y Valves

There are various ways of protecting OS&Y valves. For example, we've already discussed tamper alarms. Another method of protection is for valves to be chained & padlocked in the open position (see bottom left picture) to keep someone from turning to close them. Valves can also be covered, (see bottom right picture) so a person cannot get a good grip on them, so therefore they would remain open. The valves in both of these pictures are open because you can see the screw poking out. Also in both these pictures there are two backflow preventers. These are the two silver round objects in both pictures.

What are Fire Alarm panels?

They are connected to detection systems like tamper and flow alarms, or to manual pull stations.

Also connected to smoke detectors or heat detectors.

Connected to notification systems like sirens and strobes.

Calls central station who in turn calls the fire department

Has a central communicator or dialer.

What are Annunciator Panels?

LED lights detail the location of the fire. Fire department uses this to determine the correct action to take. It speeds up the fire suppression process.

Annunciator panels centralize fire alarm signals. They help to locate where smoke or a fire has been detected in larger or more complex facilities, such as schools, hospitals, large hotels and many other examples.

This panel will light up when a certain section of the building has reported a fire. So, if a smoke detector has gone off in a portion of the building, these LED lights will light up to pinpoint exactly where the fire is. The LED lights will tell the fire department whether the fire is on the first floor, second floor, fifth floor and also what side of the building it's on. For example, the fire could be on the east side or the west side.

You may have seen a similar panel (shown at right) on the wall by the front desk when checking in to a hotel, and not realized what it was. The annunciator panel will identify which area or 'zone' in the building is the concern for smoke and fire. Again, this helps firefighters quickly locate the area of concern.

This is a simpler LCD Keyboard that controls and monitors the zones of the fire alarm. Liquid Crystal Display shows what zones have been affected by a fire.

On the LCD Keyboard, there is simply a screen that could tell the fire department that the fire is located on the 2nd story in the conference room, etc.

Fire Pumps:

Fire pumps are used to provide additional water pressure and water to a fire. They are most commonly found in high rise buildings, in order to boost the water pressure so adequate water for firefighting can reach the upper stories.

Post Indicator Valve (PIV):

You will see these valves from time to time, located outside of buildings. They may be in the lawn or other landscaped area outside the building, or might be seen on an island in a parking lot. Sometimes they are located on the exterior wall of the building. These valves typically control the water supply to fire hydrants in an area.

What to look for:

See photos below. The valve must read Open and the control lever should be locked. If it has been tampered with, or the display indicates it is closed, that means there is no water supply to the fire hydrants in that area.

Critical Sprinkler System Issues.

Sprinkler systems, like any other type of system needs to be maintained and should be serviced on an annual basis. A service contractor will come out and will test the water, they may do a water flush to make sure water is still running through the system and that the pressure is being maintained. They'll also make sure the Tamper and Flow alarms are intact and haven't been tampered with and may also recommend central station monitoring if they do not have it already.

- Regular system maintenance
  - Annual inspection
  - Flow test & flush annually
- Tamper alarm or valves chained open
- Flow alarms
- Recommend central station monitoring.

Always note the contracted service provider for the sprinkler system and check the service tag to record the date of last service. Remember, they must be serviced annually, so if the tag indicates the last service was greater than 12 months ago, make a recommendation

Sprinkler Action: How does it work?

This is a picture showing how the sprinklers work. At left we see a sprinkler in normal conditions. The plug above the glass vile is holding back the water. If the room temperature rises to the point where it shatters the glass bulb, then the plug releases and water comes out on to the deflector, which disperses the spray. This shows a 'red' vial. The colors of the vial indicate the temperature rating at which time the glass tube would break, activating the sprinkler head.

Types of Sprinkler Heads:

Color of sprinkler heads:

Each color of sprinkler head has a different temperature rating.

Pictured to the left is a heat rated head (see the red vial). It has a temperature rating of 155 degrees.

The temperature rating can also be located on the bottom of the head (155 F).

Here is a sprinkler head temperature guide:

Bulb Colour	Temperature	Temperature Rating	maximun Ceiling Temperature
	135˚F 57˚C	Ordinary	100˚F 38˚C
	155˚F 68˚C	Ordinary	100˚F 38˚C
	175˚F 79˚C	Intermediate	150˚F 65˚C
	200 or 212˚F 93 or 100˚C	Intermediate	150˚F 65˚C
	286˚F 141˚C	Intermediate	225˚F 107˚C
	360˚F 182˚C	High	300˚F 149˚C
	500˚F 260˚C	Extra High	465˚F 240˚C

As you walk around a building, observe the sprinkler heads to make sure no sprinkler heads are blocked. Storage should be a **minimum of 18 inches** away from sprinkler heads. When sprinkler heads are blocked, this will hinder their effectiveness. In the picture below on the left, the cardboard box is too close to the sprinkler head for it to be effective. In the picture on the right, the sprinkler head is too close to the wall and there is also a shelf too close that will deflect the water, greatly reducing its effectiveness.

Make sure you look for extra sprinkler heads. If a sprinkler head were to ever be activated they would need a spare head to replace it immediately after the fire event. In most cases there will be a red box located in the sprinkler riser room. You can always open the box to make sure there are extra heads present. See example below:

Fire Department Connections:

Here we look at fire department hose connections. These will be located on the outside of the building. The fire department may connect to these connections to add more water to the sprinkler system or send water to a standpipe. See examples below:

To the left is an example where a cap is missing off of the connection. This is a problem. If caps are missing, then items such as trash, rodents, birds (may build nest) or other objects such as tennis balls can be stuffed into the connection. This can cause a problem when the fire department hooks up their hoses to the connection and tries to feed water into the system. The water flow can be impeded or blocked entirely, affecting firefighting capabilities.

If caps are missing, always make a recommendation that they be replaced.

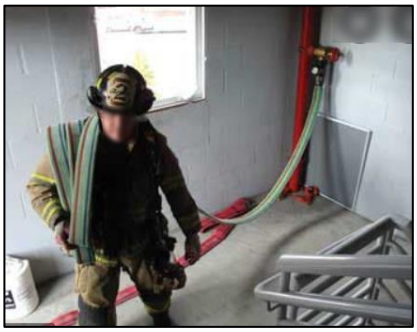
In this photo at right, the connections are clearly marked.

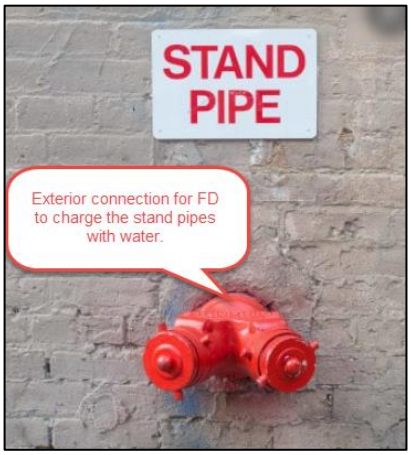
The left connection (red) is to charge the standpipe with water. A Standpipe is inside the building where fireman can connect a fire hose.

The right connection (green) is if the fire crew would like to add more water to the sprinkler system.

Stand Pipe System:

Stand pipes are placed where the fire department can connect their hoses inside the building. As you see in photos below, they are often located in stairwells of multi-story buildings, or could be inside the fire extinguisher wall cabinet. The stand pipe may not already be charged with water and must be charged by a fire truck.





Hose Reels:

Hose reels are most often seen in older buildings, but still used today. This is to provide firefighting capabilities on each floor or area of the structure.

Sprinkler System Issues and Costs

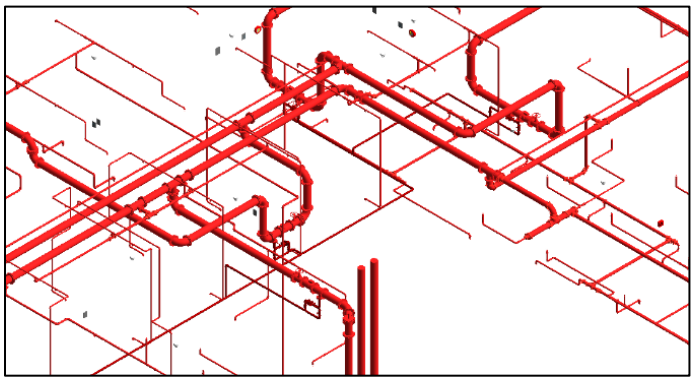
Reasons for poor system performance:

- The system is shut off
- Partial connection
- Faulty building construction
- Inadequate water supply
- Hazards of the occupancy
- Sprinkler obstruction
- Poor system maintenance.

As a loss control surveyor, you can look for several of these issues to make sure the sprinkler system is running well. You should know by now how to make sure the system is turned on and that water is flowing through it by looking at the valves. As you walk around a building, make sure the entire area is protected. You also can look at the sprinkler head to make sure none of them are obstructed and you can make recommendations that they be maintained at least on an annual basis. As a loss control surveyor, you can help protect a building and its occupants from having a fire disaster.

Sprinkler System Costs:

It's much better to install a sprinkler system in the building when being constructed vs. during renovations.



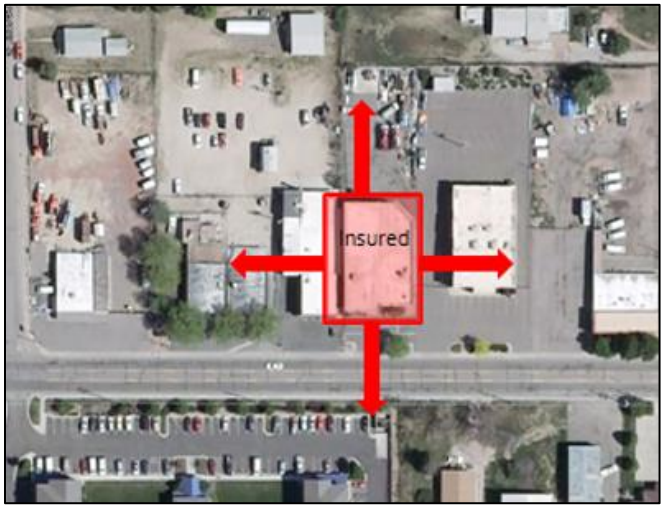
New Construction: Average cost $1.50 - $3.00 per SF.

Retrofit to Existing Buildings: Average cost is $3.50 - $7.00 per SF.

Note: High rise buildings requiring fire pumps would incur additional costs.

BUILDING EXPOSURES

What are exposures and how do we identify them?



Exposures are typically buildings that are within 100 feet of the insureds building.

Why are there concerns about other buildings?

Fire losses do not always come from fires that originate in the insureds building(s). Fires may start in an adjacent building and spread to the insured's location resulting in a loss for the insured.

When reporting exposures, we want to report the building exposures within 100' of the insured's building.

The image above shows the exposure to the insured's building.

Note: There is only 1 building exposure within 100' of the insured's building.

Example of Exposure Segment in report form:

Exposures

(Report ALL building exposures within 100 feet of the insured building or location.)

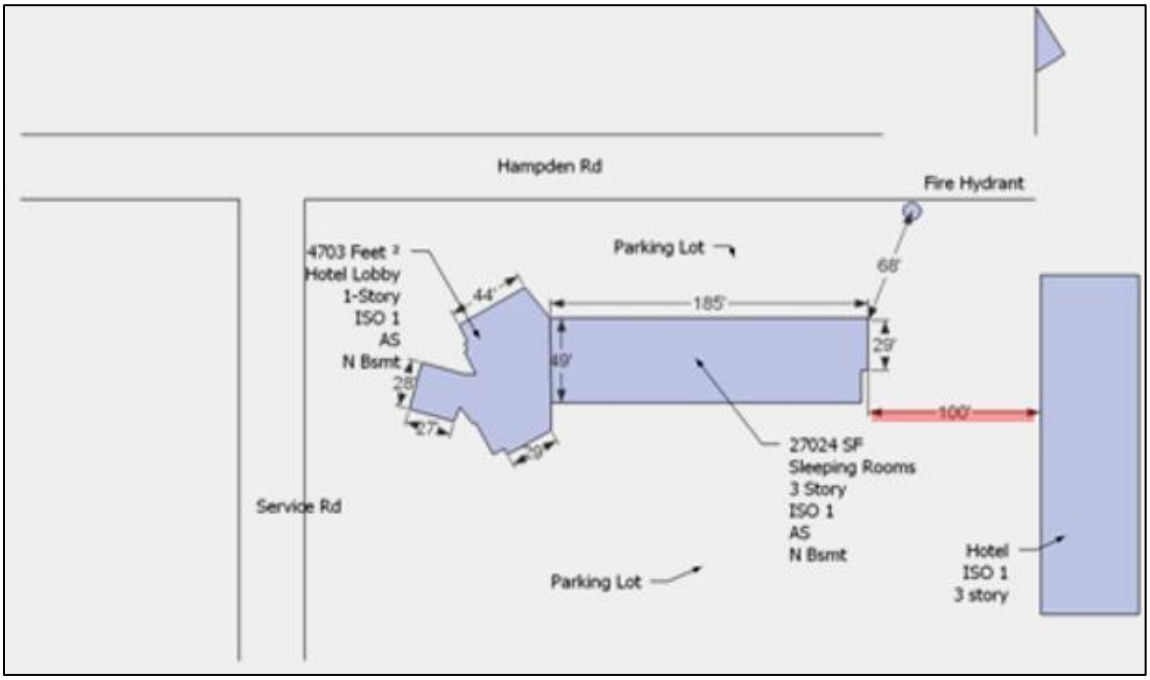
Exposure	Feet	Stories	ISO Class #	Occupancy
North				
South				
East				
West				

Nearby bodies of water? ☐ None ☐ River ☐ Lake ☐ Reservoir ☐ Ocean ☐ Gulf ☐ Other

Remarks ○ Yes - See Text ○ None

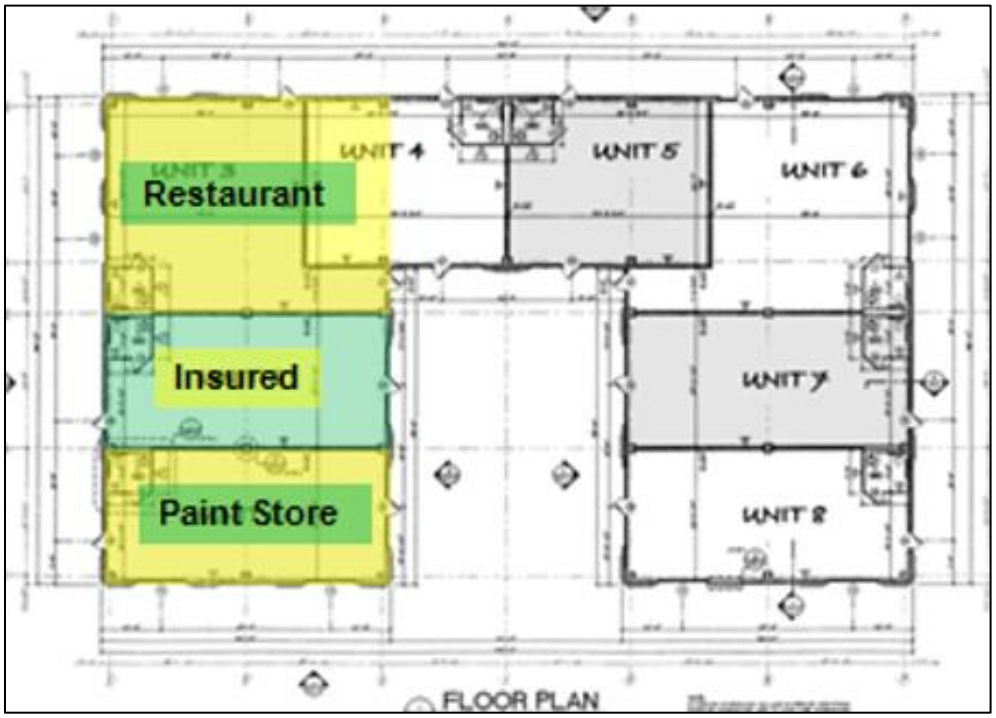
Below is an example of how a diagram depicts the exposures:

The insured's building is in the middle. On the north and west sides is a street. On the south side is a parking lot and on the east side is another building. This building to the east is the exposure.



So what if the insured is a tenant in a multi-tenant building?

In these circumstances you will report the operations that **immediately adjoin** the insureds operation. In this example shown below you would report the adjoining paint store and restaurant as exposures.



There will always be exposures.

In the case of this residential dwelling, the exposures within 100 feet are other residential dwellings.

When you encounter a multi-building insured, such as an apartment complex, condominiums or a strip mall complex, etc., the exposures are to the entire building complex as a whole, and not each building within the complex. In the example above, to the north and west there is a field. To the south and east we have roads and residential homes. Always report what is in all four cardinal directions of the insured's building(s).

When there are no building exposures within 100 feet of the insured, the exposures you should report will be the fields, lawn, parking lots, forest, railroads, or street/road/alley, etc. The picture below shows no other buildings within 100 feet but there are streets, lawn, etc., that comprise the four exposures.

Also note if there are any rivers, lakes or oceans near the property and their distance from the insured's property, even when more than 100 feet away. This is important to the underwriters to assess potential property damage from flooding, hurricanes, etc.

Side Note: Google Earth has a tool to measure distances on satellite images, which can be helpful.

BURGLARY PROTECTION

Example of Burglary/Crime Segment in report form:

Commercial Crime / Burglary Protection

Protection Features:

☐ None ☐ Apartment on Premises ☐ Fencing ☐ Exterior Lighting ☐ Interior Lighting ☐ No Obstructed Views
☐ Regular Police Patrols ☐ Key in Handle Locks ☐ Deadbolt Locks ☐ Padlocks ☐ Panic Bars ☐ Peepholes
☐ Bars on Windows ☐ Bars on Doors ☐ Video Cameras ☐ Video Recording ☐ Security Guards ☐ Guard Dogs

Burglar Alarm: ☐ None ☐ Local Alarm ☐ Central Station ☐ Police Monitoring ☐ Door Contacts ☐ Window Tape
☐ Motion Detection ☐ Ultrasonic ☐ Panic Buttons ☐ Glass Breakage ☐ Skylight Tape

Overhead Door Padlock in Rails? ○ Yes ○ No ○ N/A

Remarks ○ Yes - See Text ○ No

What is a burglary?

Burglary is the criminal offense of breaking and entering any dwelling or building illegally with the intent to commit a felony or crime.

Any home or business operation is susceptible to burglary. However, operations with target merchandise are most susceptible. Target merchandise are items that can easily be sold and is most desired by criminals.

Examples of target merchandise:

- Alcohol and tobacco products
- Electronics of all kinds
- Drugs/Medications
- Jewelry and fine art
- Automobile, trucks and related parts
- Boats & water crafts, RV's and ATV's
- Tools & machinery
- Building supplies
- Metals, such as copper wiring, etc.

What is burglary protection?

Burglary protection are the steps that are taken to reduce the risk that a location will be subject to burglary.

Burglary protection consists of the following elements:

- Perimeter protection
- Door, window and open security
- Alarms and monitoring
- Security services

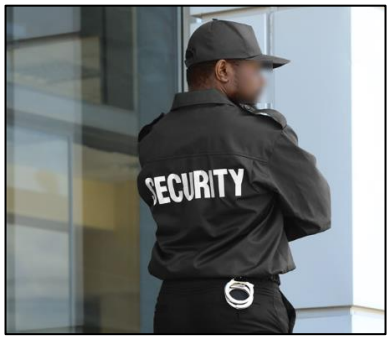
What is Perimeter Protection?

Perimeter protection can be as basic as locked gates and secure fencing around a building or construction jobsite.

Security services that patrol a building or their site perimeter. Or it can be as advanced as close circuit TV monitoring and recording.

Exterior lighting is also an important part of perimeter protection. It makes it harder to hide in illuminated areas.

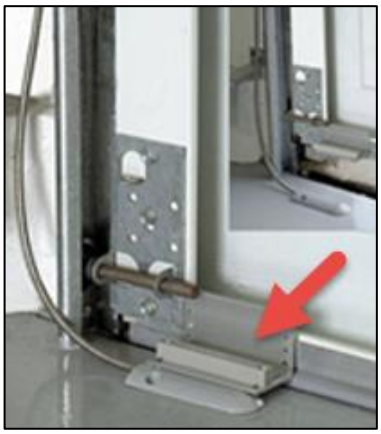
Commercial guard dog services are also a method of perimeter protection.



Door, Window and Opening Security:

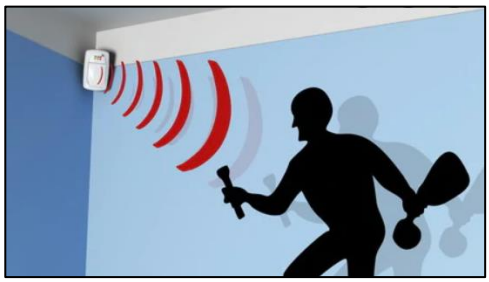
Securing openings in a building can be accomplished by several means. Most common would be installation of deadbolt locks, shutters and security bars/gates.

Doors and windows can be protected in many ways. Below is a pad lock protecting an overhead door from opening.



Doors and windows can be protected by contacts that detect unauthorized openings. The pictures shown above are connected to a burglar alarm.

Most modern security systems also have motion detectors. Motion detection systems can provide a secondary level of defense to door and window contacts. Many may have cameras and can record activity.



Alarms and Monitoring:

Just as with fire alarms, burglar alarms are monitored in 3 ways:

- **Local alarm** - This sounds a siren only at the location. No call is made.
- **Proprietary alarm** - This transmits a signal directly to a local police or sheriff's department.
- **Central station alarm** - The signal is transmitted to a central station which is monitored 24/7 and will dispatch security or law enforcement as needed.

Security Services:

Security services can range from an on-site caretaker to a hired service. It is important for you to report if the security service is provided by employees or a contracted service. It is very important to report if the security service is armed or carries any type of weapons.

Side note when you get to Liability coverage lessons: Services that carry firearms or weapons create a more significant exposure for their Liability coverage. Therefore, it needs to be reported to the underwriter in your report.

THE ITV (Valuation)

What is an ITV:

ITV= Insurance to Value

The ITV is the value of a structure verses the coverage in place. Another way to explain it is how the current building or dwelling's insurance coverage compares to the cost of rebuilding it.

For example, a building may be insured for $2 million, but the cost to replace it would actually be $2.5 million, indicating the building is underinsured.

ITV addresses the flowing questions:

- Is the building properly insured?
- Is it over or under insured?

What if a building is <u>over-insured</u>?

If a building is over-insured this may mean that the insured is paying too much in premium. For an agent it may mean their pricing on the insurance account may be too high and not competitive.

What if a building is <u>under-insured</u>?

If a building is under-insured, this may mean that in the event of a loss, the insured may not recover sufficient funds to rebuild and resume operations.

In cases of under-insurance, these can end up as errors and omissions claims against the agent for not making sure a building was properly insured.

What is the purpose of the ITV calculations?

The ITV calculation is prepared to provide information to the carrier and agent to indicate if the building is properly valued for replacement so they can determine if the building is properly insured. You do not make the calculation yourself. As the loss control surveyor, you will provide all the information necessary for the AFIRM staff to make the ITV calculations.

How do I know when to prepare an ITV?

Refer to the Client Special Instructions when and if an ITV/Eval is needed.

ITV (VALUATION):
Prepare only if ordered. Provide one ITV for each building on site that is over 200 square feet.

The survey request will state in the notes section under Eval if the underwrite wants an ITV/Eval completed.

Notes

HO JOB# 6898380;
Photos: YES;
Eval: YES;
Diagram: YES;
Preister Excavating Inc 27040
Insurance Company: LeMars
Ordered By: Duane Schn
Policy Type: Commercial Package/Monoline
Coverages: Package - Package Policy, Workers Compensation, Commercial Auto

Insured Name and Address: Excavating Inc 27040 STATE HIGHWAY
Business Description: WELL DRILLING
Roof photo required for any building 20 feet or less
We have 2 buildings at this address that need evaluated
Property Inspection Requested
Premises Inspection Requested
Commercial Auto Inspection Requested
Workers Compensation Inspection Requested
Contractors Equipment Inspection Requested
Contractors Liability Inspection Requested
Diagram Requested
Product/Completed Operations Inspection Requested
ITV Requested

Additional Buildings
Building Valuation Commercial
Diagram

In the Report forms, you will learn how to add the ITV segment, and answer additional questions in more detail about the building, it's features, etc.

How Does What I Report Impact the ITV?

Accuracy is key. You must provide accurate measurements, square footage, age, construction type and features.

Inaccurate data may result an in incorrect ITV determination resulting in the homeowner or building owner not being properly insured.

Make sure that the information you provide is accurate.

 *Proceed to Afirm Institute (LearnUpon) for the final exam on Insurance Property Basics.*