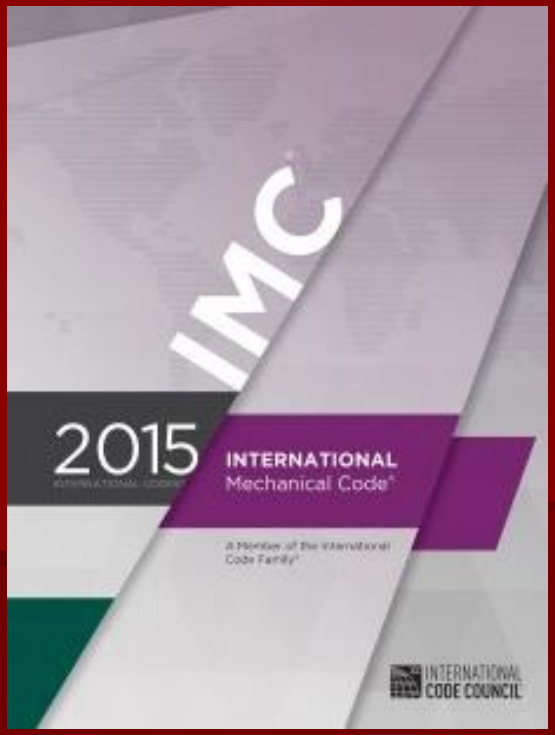
The 2015 IMC
What Are The Changes?

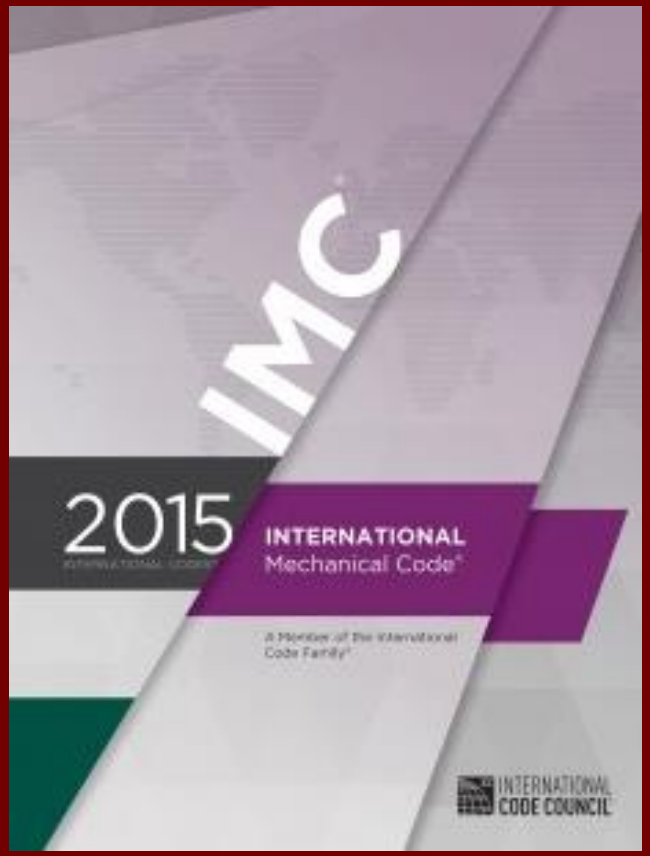
Industry Services Division

Dept. of Safety & Professional Services



Randy Dahmen, PE

- The following discussion addresses changes to various topics as addressed in the 2015 IMC & WI amendments as contained in SPS Chapter 364



Definitions
SPS 364.0202

- "Enclosed Parking Garage" means an enclosed building where motorized vehicles are stored or parked.

Definitions
SPS 364.0202

- "Health Care Facility" means a hospital, nursing home, outpatient surgical facility, or community-based residential facility.

- "Living Area" means those areas within a dwelling unit involving living rooms, bedrooms, dens, family rooms, and recreation rooms, but not rooms used for cooking, bathing, washing, and sanitation purposes.

Definitions
SPS 364.0202

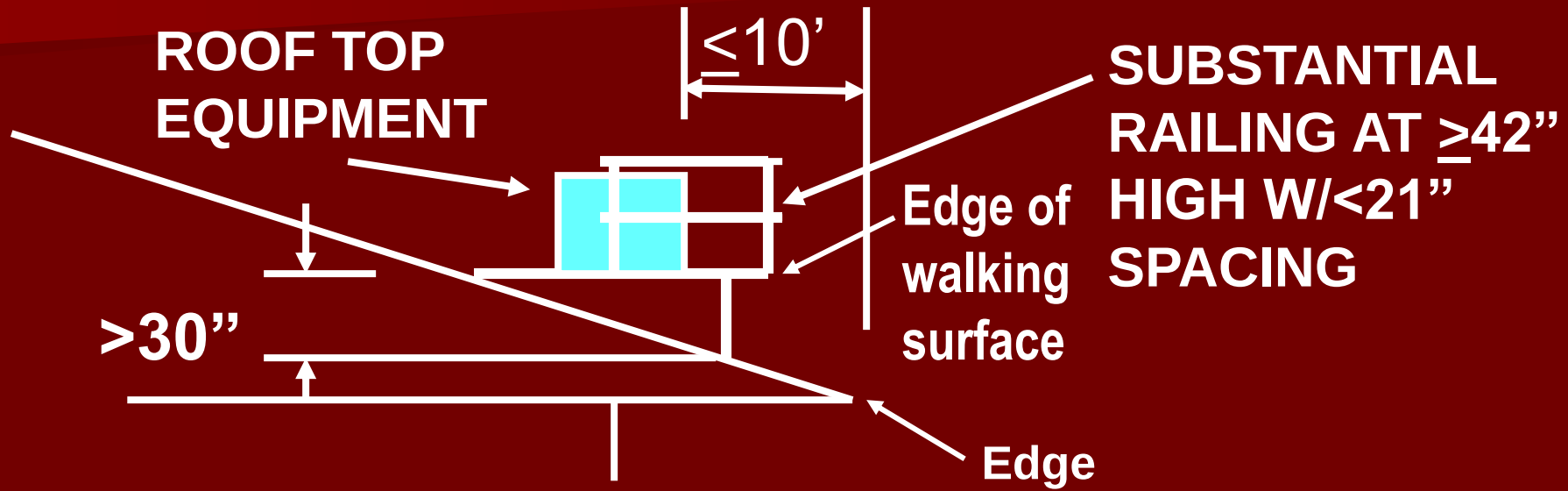
- "Motorized vehicle" means a self-propelled motor-driven vehicle that is used for moving people or products on land, water, or air. "Motorized" vehicle does not include a boat that is dry stored and not operated in the building in which it is stored.

FGI Guidelines
SPS 364.0300/SPS 364.1500

- **New References:**
  - **FGI Guidelines for Design and Construction of Hospitals and Outpatient Facilities-2014**
  - **FGI Guidelines for Design and Construction of Residential Health, Care, and Support Facilities-2014**

HVAC Equipment & Roof Hatch Guards

IMC 304.11, 306.5, IBC 1009.11, 1011.13, 1015.7, 1607.8.1, IFGC 306.6



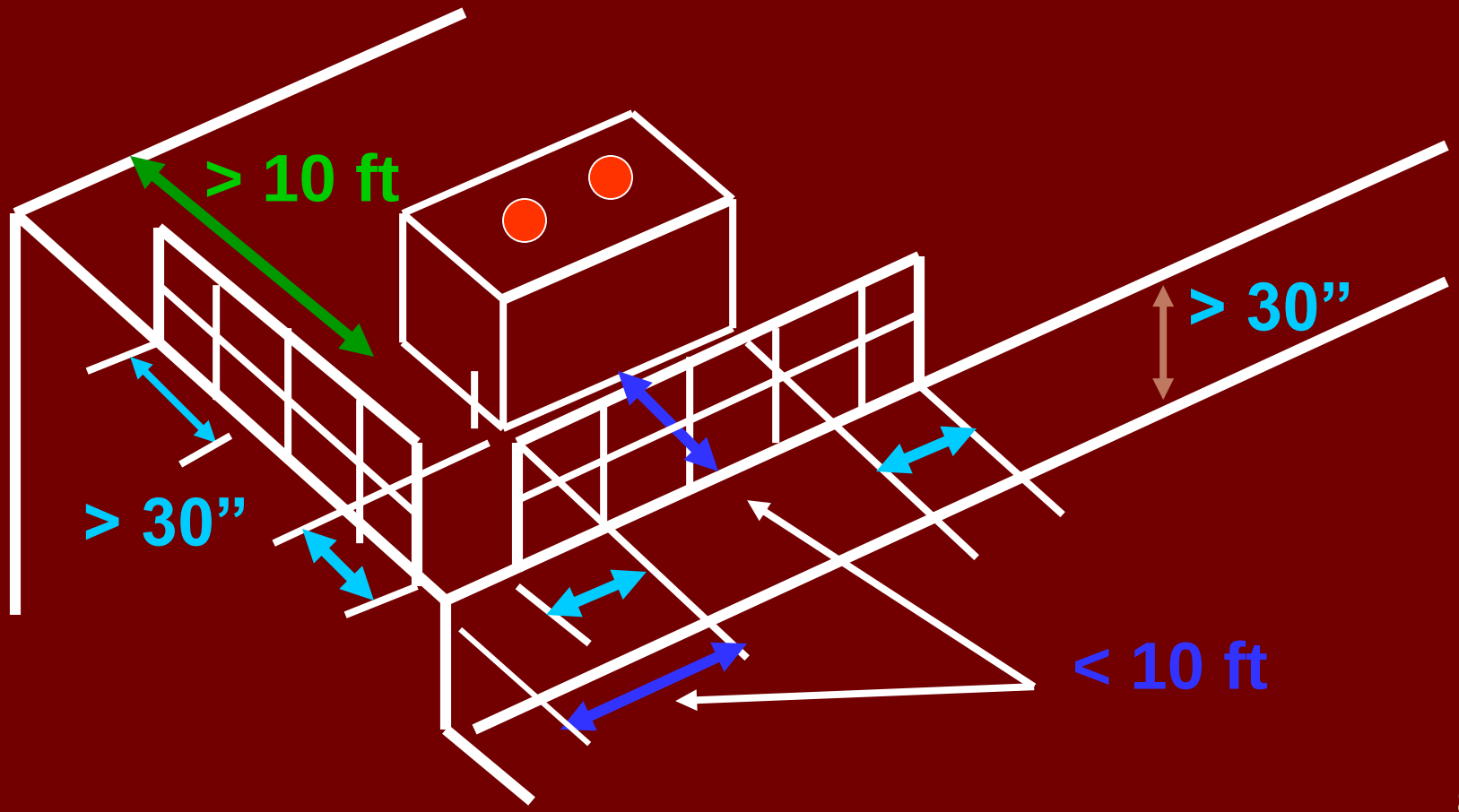
GUARD MUST BE ≥30” BEYOND EACH END OF THE APPLIANCE

GUARD REQUIRED IF ≤10’ FROM EDGE AND THERE IS AN OPEN SIDE >30” ABOVE THE FLOOR, ROOF, OR GRADE BELOW

HVAC Equipment & Roof Hatch Guards

IMC 304.11, 306.5, IBC 1009.11, 1013, 1607.8.1, IFGC 306.6

EXAMPLE:



HVAC Equipment & Roof Hatch Guards IMC 304.11

HVAC Equipment Guards
IMC 304.11

Hmmmm……..


BANANZA

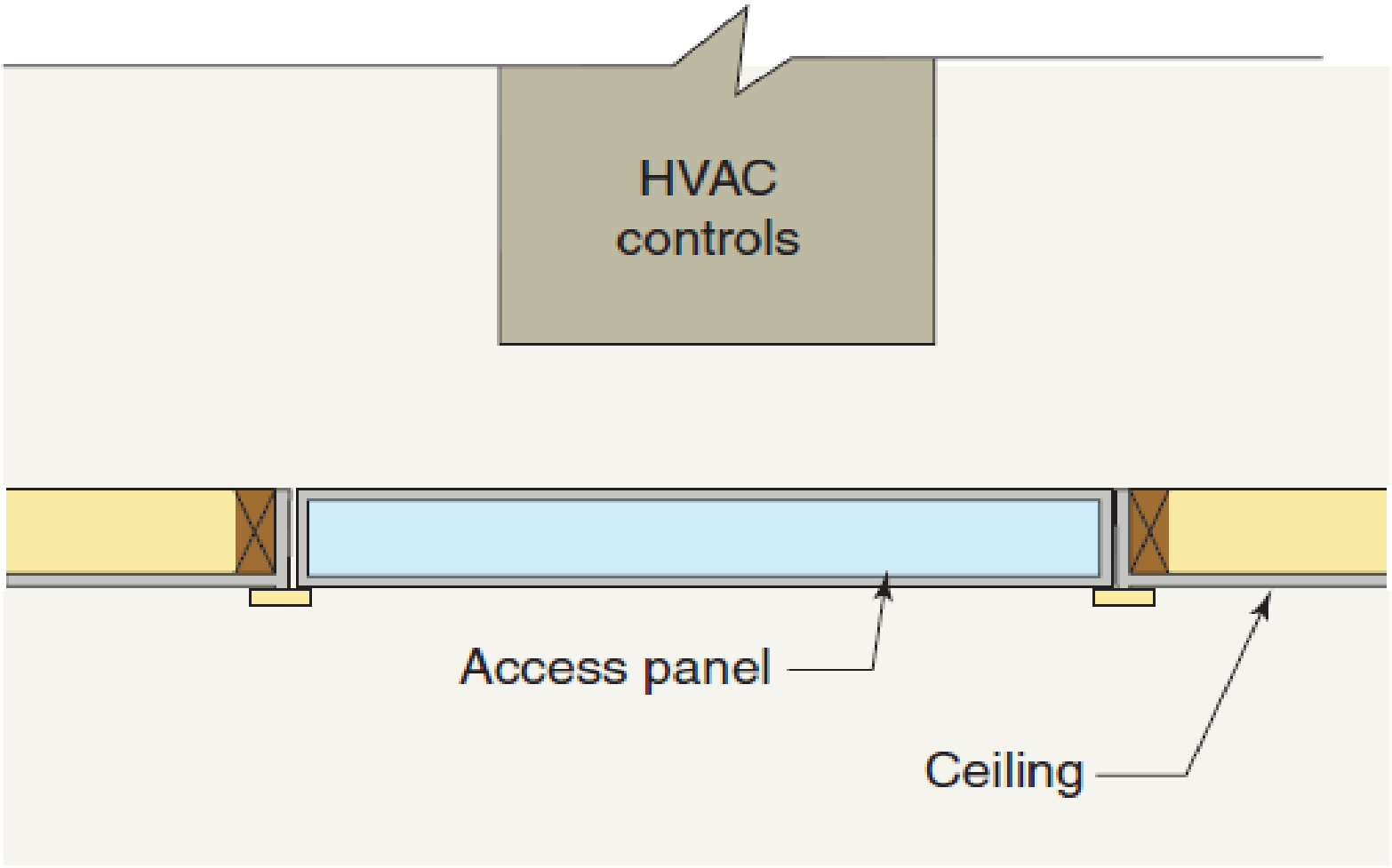
Fall-Arresting Restraint System
IMC 304.11

- Guards not req'd where permanent fall arrest/restraint anchorage connector devices are affixed for use during the entire roof conveying lifetime.
- Devices to be placed $\leq$10 ft on center along hip & ridge lines; as well $\leq$ 10 ft from roof edge or open side of walking surface.

Fall-Arresting Restraint System
IMC 304.11

Access
IMC 306.1

- More than just appliances now req'd to have access for inspection, service, replacement & repair.
- Sometimes HVAC controls, heat exchanger units & similar devices are installed behind, under or above permanent construction or installed where other appliances & equipment obstructs access.



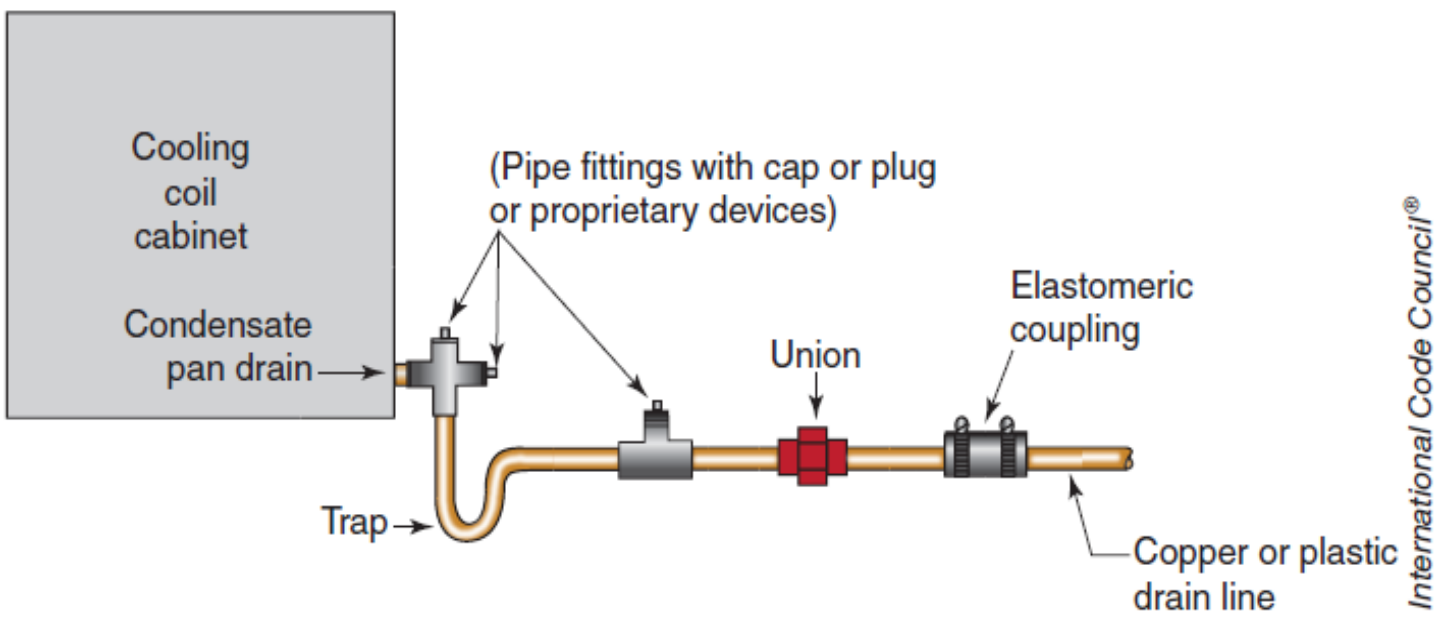
Access is required for HVAC controls, heat exchangers and similar components.

Sloped Roof-Equipment Req't
Amendment Removal from IMC 306.5.1

- Removal of amendment now requires installation of guards & platforms when installations consist of fans only.
  - If the roof is $\geq$ 3/12
    - Install guards if > 30" drop at each edge
    - Install platform with not less than 30" clearance in any dimension
  - *This is an important issue when addressing upblast fans associated with kitchen exhaust systems*

Drain Line Maintenance
IMC 307.2.5

- Condensate drain lines shall be configured to permit the clearing of blockages and performance of maintenance without requiring the drain line to be cut.



Possible means to provide access to a drain line interior without requiring the pipe to be cut

Condensate Pumps in Uninhabitable Spaces IMC 307.3

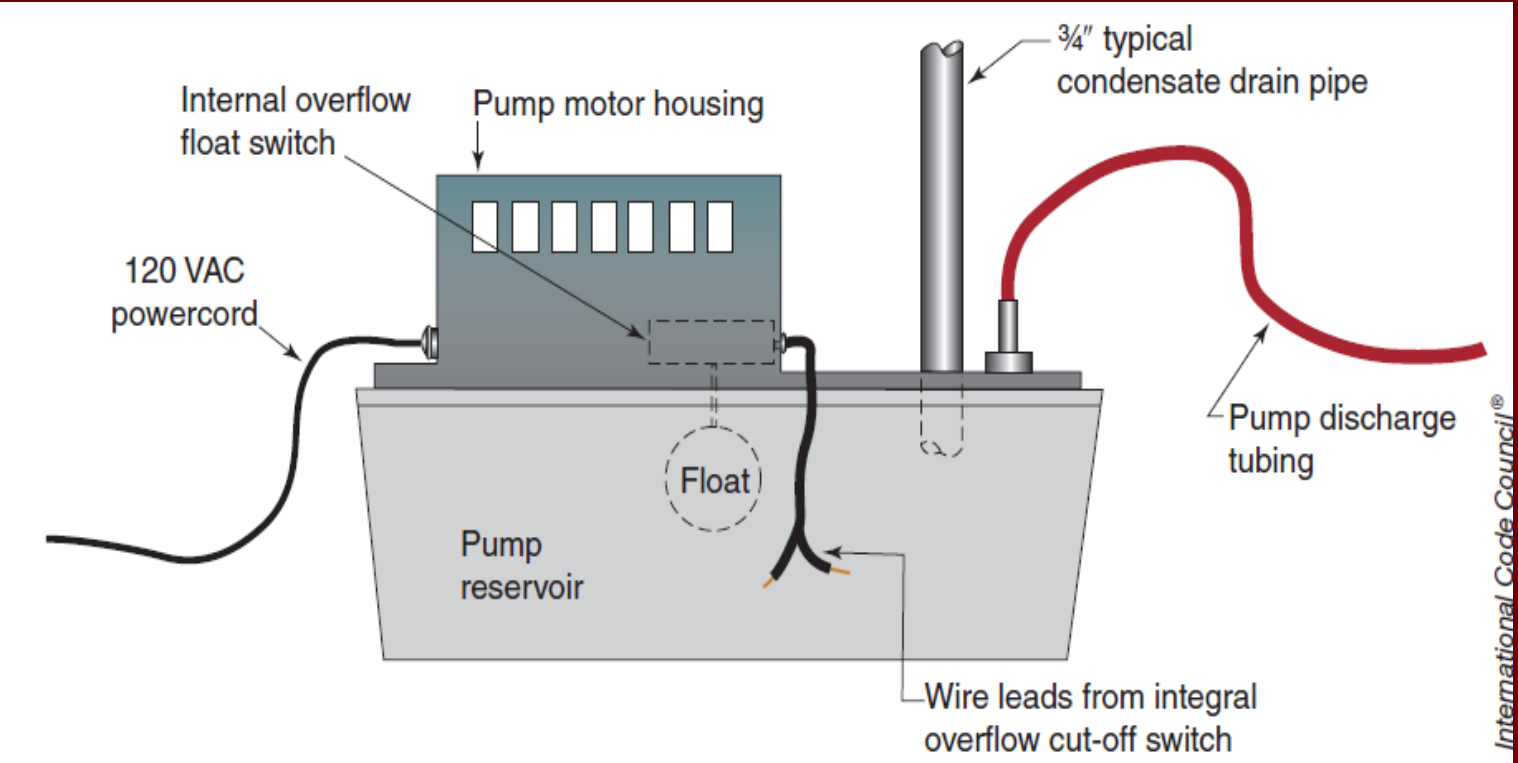
- Condensate pumps in attics & crawl spaces to be connected to appliance or equipment served such that when the pump fails, the appliance or equipment will be prevented from operating.

- Pumps to be installed per manufacturer's instructions.

Spot Heating
SPS 364.0309

- Spot heating may be used to heat individual workstations in industrial buildings in lieu of heating the entire space specified in IMC section 309, provided the design temperature at the fixed workstation is at least 60°F

The majority of such pumps are equipped with simple float controls that can be wired in series with the appliance/equipment control circuit.
When the pump system fails, the float will rise in the reservoir and open a switch before the condensate starts to overflow the reservoir.



Float switch for appliance shut-off to prevent overflow

Chemical/Septic Toilets & Composting Privies

SPS 364.401(1)(a)3. (Renumber from SPS 364.0407)

- Chemical or septic toilets & composting privies are prohibited in spaces under negative pressure. Toilet rooms with chemical or septic toilets shall be provided with natural ventilation via a window, louver or skylight with at least 2 sf of area openable directly to the outside per septic vault or per chemical toilet.

Chemical/Septic Toilets & Composting Privies

SPS 364.0401(1)(a)3.

- The opening shall be provided with a screen to limit the passage of insects and vermin.

Ventilation Required
IMC 401.2/ SPS 364.0401

- WI amendment removes need to determine if dwelling unit has air infiltration rate < 5 air changes, and still allows the use of natural ventilation for all R-2, R-3 & R-4

Intake Opening Locations
SPS 364.0401(4)(e)

- Intake openings shall be located a minimum of 10 ft from lot lines or buildings on the same lot.
- *Where openings front on a street or public way, the distance shall be measured to the centerline of the street or public way.*

SPS Table 364.0403 Changes

Occupancy Classification	Estimated Maximum Occupant Load (persons per 1,000 sq. ft.)	Exhaust [c] (cfm/net sq. ft. floor area)	Common Ventilation System Alternative – Minimum AC Rate per Hour with A/C
Health care facilities			
Hospitals	**See s. SPS 364.0300**	**See s. SPS 364.0300**	**See s. SPS 364.0300**
Nursing homes	**See s. SPS 364.0300**	**See s. SPS 364.0300**	**See s. SPS 364.0300**
Outpatient surgical facilities	**See s. SPS 364.0300**	**See s. SPS 364.0300**	**See s. SPS 364.0300**

SPS Table 364.0403 Changes

Occupancy Classification	Estimated Maximum Occupant Load (persons per 1,000 sq. ft.)	Exhaust [c] (cfm/net sq. ft. floor area)	Common Ventilation System Alternative – Minimum AC Rate per Hour with A/C
[illegible] and dorms			
Assembly rooms	120	NR	2.0
Bathrooms for guest rooms [c, d]	NA	35 cfm/room	NR
Bedroom	footnote f	NR	1.0
Conference rooms	50	NR	2.0
Dormitory sleeping areas	20	NR	1.0
Casinos	NA	2.0	NR
Living rooms	footnote f	NR	1.0
Lobbies	30	NR	2.0

SPS Table 364.0403 Changes

Occupancy Classification	Estimated Maximum Occupant Load (persons per 1,000 sq. ft.)	Exhaust [c] (cfm/net sq. ft. floor area)	Common Ventilation System Alternative – Minimum AC Rate per Hour with A/C
Platforms	100	NR	2.0
Waiting rooms	100	NR	2.0
Aircraft hangars (for 2 or more aircraft or any hanger with adjacent occupancies)	NA	0.5	NR

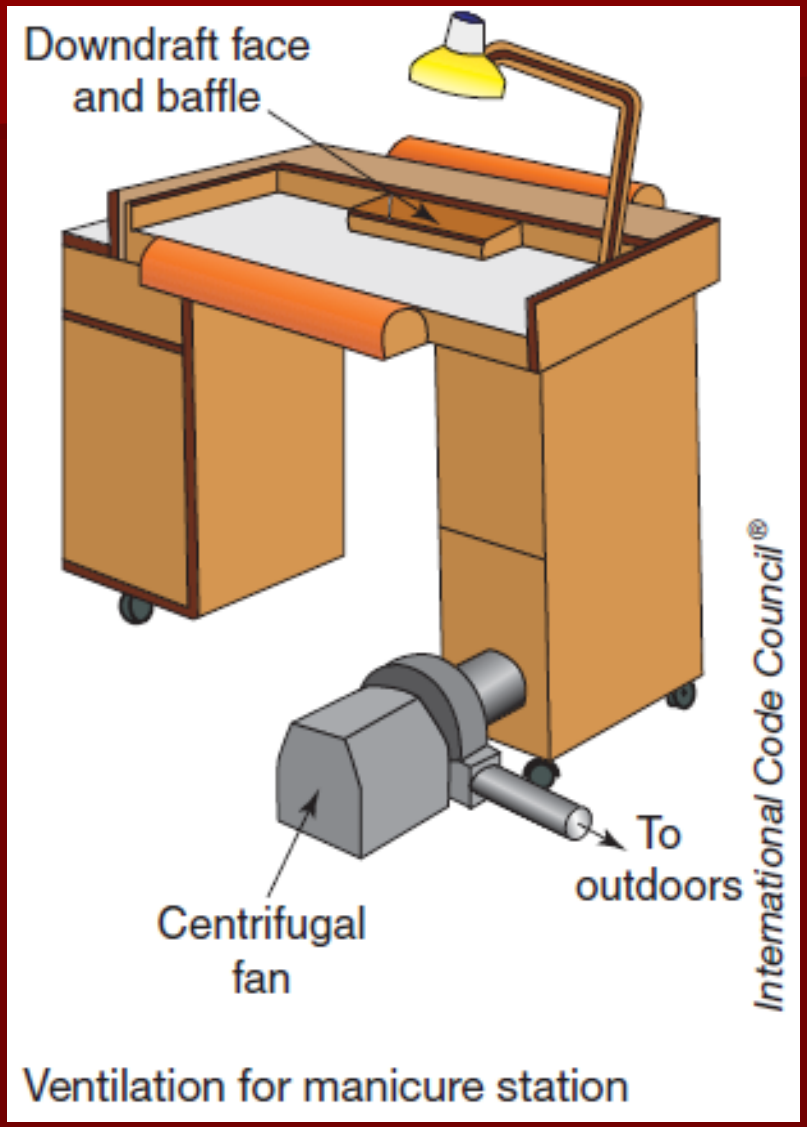
SPS Table 364.0403 Changes

Occupancy Classification	Estimated Maximum Occupant Load (persons per 1,000 sq. ft.)	Exhaust [c] (cfm/net sq. ft. floor area)	Common Ventilation System Alternative – Minimum AC Rate per Hour with A/C
Locker and dressing rooms [c]	NA	0.5	NR
Shower rooms (per shower head)	NA	50 cfm intermittent or 20 cfm continuous	NR
Toilet rooms [c, d]	NA	75 cfm/TF [g]	NR

Occupancy Classification	Estimated Maximum Occupant Load (persons per 1,000 sq. ft.)	Exhaust [c] (cfm/net sq. ft. floor area)	Common Ventilation System Alternative – Minimum AC Rate per Hour with A/C
Automotive service and repair garages for gasoline or diesel fueled vehicles [ckl.]	NA	0.5	NR
Barber shops	25	NR	1.0
Beauty ~~Salons~~ salons[h]	NA	0.5	NR
Car washes	NA	NR	NR
Clothier, furniture ~~specialty~~ shops	8	NR	1.0
Florist shops	8	NR	1.0
Hardware, drugs, fabrics stores	8	NR	1.0
Nail salons[m]	NA	0.6	NR
Supermarkets	8	NR	1.0

So as to differentiate from CNG req'ts in IMC 502.16

Manicure & Pedicure Station Exhaust Rate SPS Table 364.0403 Footnote m



Ventilation for manicure station

- For nail salons, the exhaust system shall be capable of exhausting the greater of 50 cfm per station or 0.6 cfm per square foot of work area.

Manicure & Pedicure Station Exhaust Rate SPS Table 364.0403 Footnote m

- The exhaust inlet shall be located in the work area.

Manicure & Pedicure Station Exhaust Rate SPS Table 364.0403, 502.20

Pedicure station

Manicure & Pedicure Station Exhaust Rate IMC 502.20/IMC 502.1.1

- Because there is no reference from IMC 502.20 to SPS Table 364.0403, it's application is not valid.
- *The need for tables or stations not provided w/factory-installed exhaust inlets, to have exhaust inlets located ≤ 12" horizontally & vertically from the point of chemical application has been removed.*

Manicure & Pedicure Station Exhaust Rate SPS Table 364.0403, 502.20

Enclosed Parking Garage
SPS Table 364.0403 Footnote i

- Enclosed parking garages are parking garages ~~with less than 30% open areas in the total wall area enclosing the garage~~ *that fail to meet the criteria for open garages in IBC section 406.5.2.*
- Ventilation systems in enclosed parking garages shall comply with IMC section ~~404~~ *502.13*.

Enclosed Parking Garage
SPS Table 364.0403 Footnote I, IMC 502.13

- A mechanical ventilation system is not required if the room or space meets all of the following:
  - 1. Has a floor area of ≤ 850 sf
  - 2. Is used for the storage of ≤ 5 or fewer motorized vehicles, and
  - *3. The space meets the natural ventilation requirements of IMC 402 & s. SPS 364.0402.*

Enclosed Parking Garage
SPS Table 364.0403 Footnote i

- The requirements for enclosed parking garages shall apply to all buildings, or parts of buildings, *into which motor vehicles are driven for loading, unloading, or storage.*

Automotive Service and Repair Garages for Gasoline or Diesel Fueled Vehicles
SPS Table 364.0403 Footnotes k & l

- For Compressed National Gas (CNG), refer to IMC 502.16

- Mezzanine floor areas that are open to a service and/or repair area may not be included as floor area when determining the minimum exhaust rate from the room or space

Air Change Exception
SPS 364.0403(5)(d)2.

- Air change rate of less than 6 air changes per hour is permitted where mechanical cooling is provided to maintain an interior design temperature of ~~78° F~~ *75° F* or lower.
  - *This allows for consistency between IECC C302.1 & R302.1; and SPS 364.0403(5)(d)2.*

Air Change Exception
SPS 364.0403(5)(d)2.e.

- The air change requirement for 6 air changes per hour may be omitted in any of the following applications:
  - 1. Bldgs or rooms using spot heating as ONLY source of heat.
  - 2. Bldgs where outside air is waived
  - 3. Bldg utilizing natural ventilation per IMC 402

Intermittent Operation of Mechanical Systems for Enclosed Parking Garages SPS 364.0404(1)

- Option 1
  - System to continuously exhaust @ min. of 0.05 cfm/sf
  - System to operate at a min. of 0.75/cfm/sf automatically upon detection of vehicle operation, the presence of occupants…
  - Must also be automatically controlled for intermittent operation for minimum 0.75 cfm/sf exhausts utilizing both CO & NO_2 detectors

Intermittent Operation of Mechanical Systems for Enclosed Parking Garages SPS 364.0404(1)

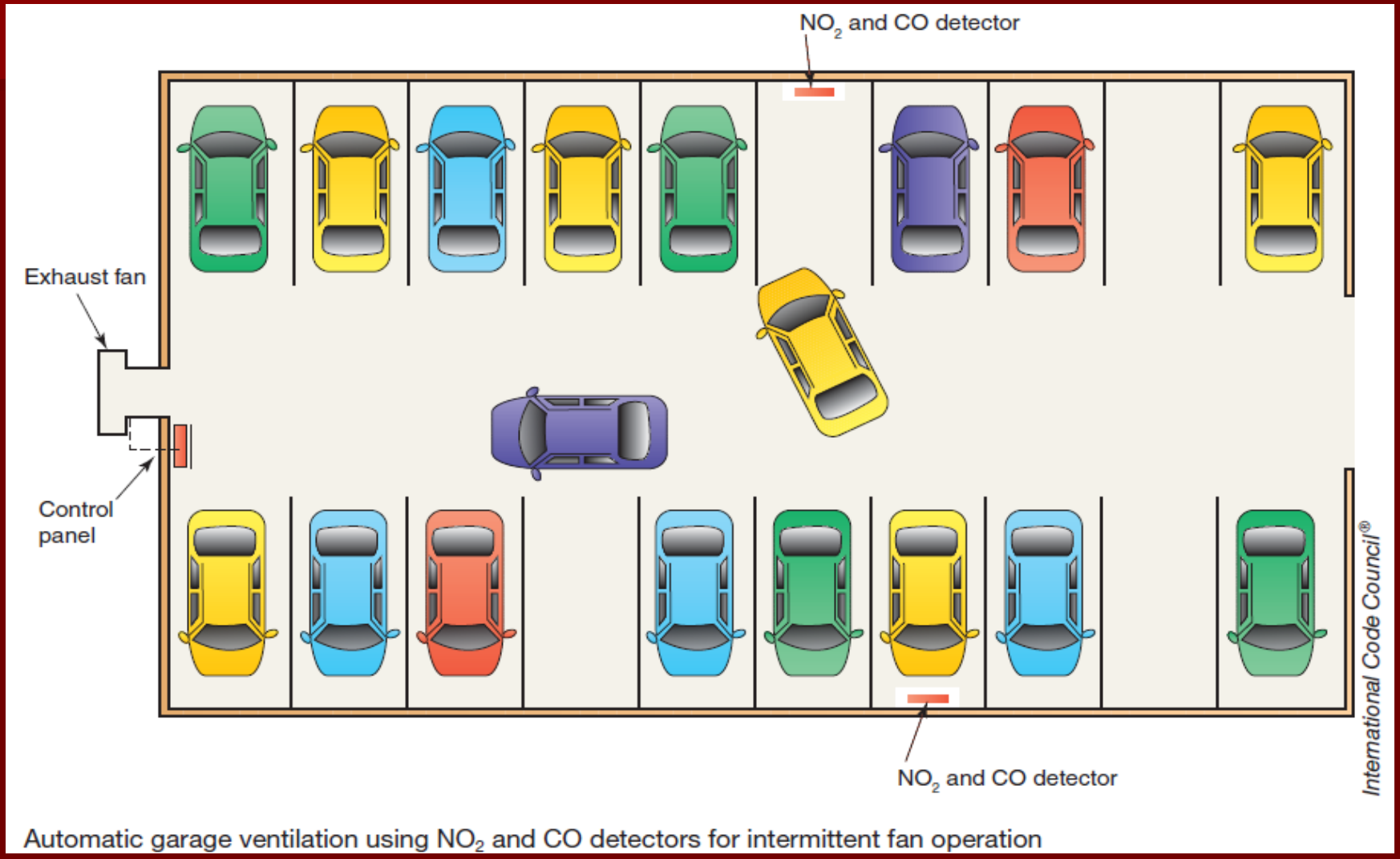
- Option 2
  - System to be arranged to operate intermittently for a total of least 5 hrs in each 24 hour period at a minimum rate of 0.75 cfm/sf and shall also include the installation of CO & NO_2 sensors

Intermittent Operation of Mechanical Systems for Enclosed Parking Garages
SPS 364.0404(2)

- All systems to operate automatically upon detection of:
  - CO > 35 parts per million (ppm)
  - NO2 > 1 part per million (ppm) if diesel-fueled vehicles are stored.

Intermittent Operation of Mechanical Systems for Enclosed Parking Garages

IMC 404.1



Automatic garage ventilation using NO_2 and CO detectors for intermittent fan operation

Ventilation-Ambulatory Care Facilities
IMC 407.1

- Ambulatory Care Facilities & Group I-2 occupancies to be designed and installed in accordance with this code & ASHRAE 170.

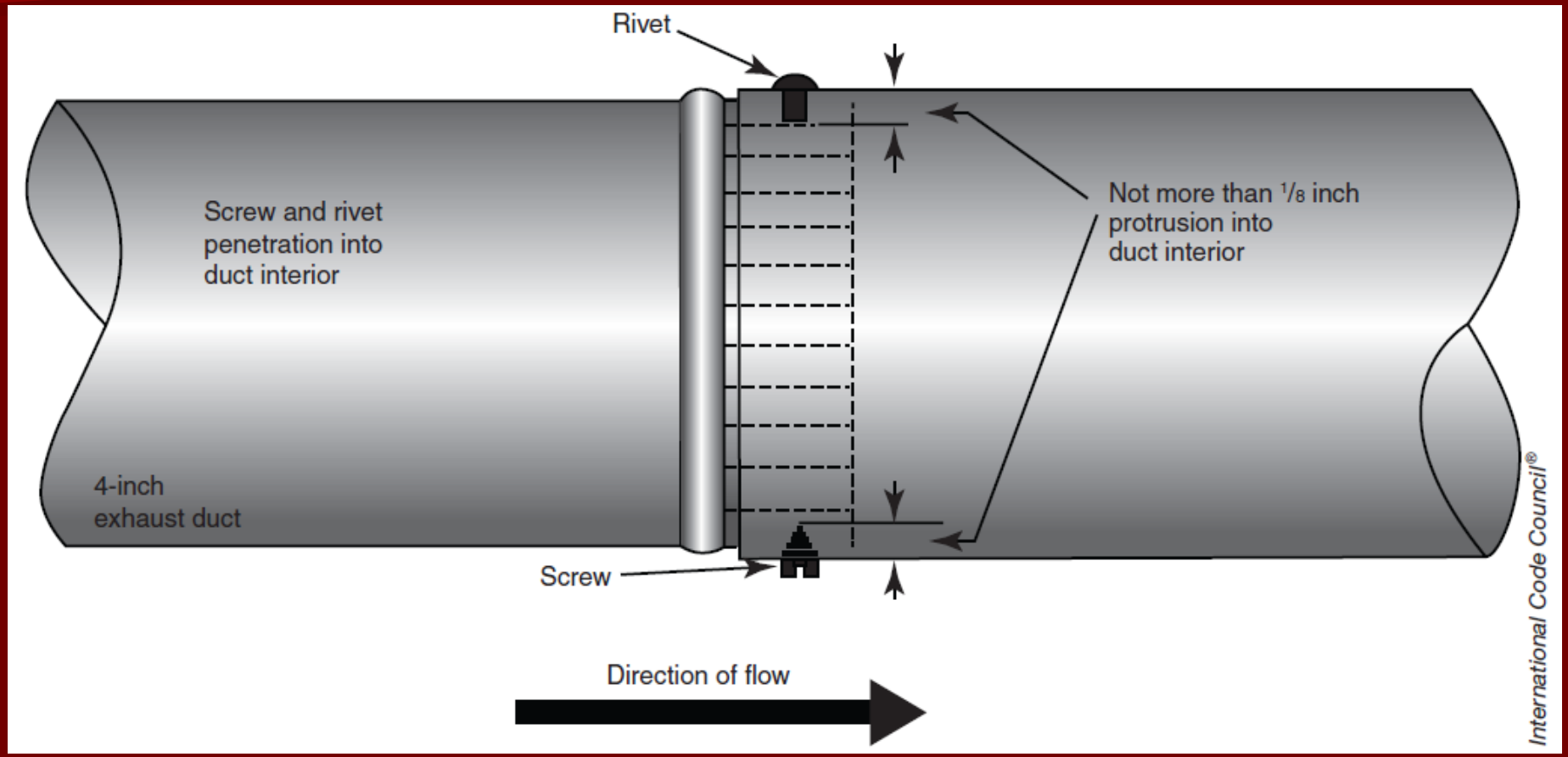
Clothes Dryer Exhaust Duct Installation
IMC 504.8.2

- Ducts shall not be joined w/screws or similar fasteners that protrude more than 1/8” into the inside of the duct.
- A fastener protrusion of $\leq$ 1/8” or less will collect some lint, but it is insignificant.
- If ducts are not mechanically fastened, the only method to address joints is duct tape—which is inappropriate.

Dryer Exhaust Duct Installation
IMC 504.8.2

- **NOTE !!**
  - Listed duct tape is not allowed to be depended upon as the sole means of securing duct systems because it is a *sealing means* not a *fastening means.*

Dryer Exhaust Duct Installation
IMC 504.8.2



Dryer Exhaust Duct Power Ventilators
IMC 504.5 & 504.8.4.3

- The maximum length of the exhaust duct shall be determined by the dryer exhaust duct power ventilator manufacturer's installation instructions.

- *Such systems were not previously recognized. This will help in addressing extended dryer exhaust duct lengths*

Dryer Exhaust Duct Power Ventilators
IMC 504.5 & 504.8.4.3

- Domestic units to be listed & labeled to UL 705 for use in dryer exhaust duct systems.

- The dryer exhaust duct power ventilator shall be installed in accordance with the manufacturer's instructions.

Dryer Exhaust Duct Power Ventilators
IMC 504.8.4.3

Dryer exhaust duct power ventilator

Domestic Kitchen Exhaust Systems in Multistory Bldgs IMC 505.3 (Similar to 2009 IMC 504 requirements for clothes dryer exhausts)

- Construction to address the following:
  - Shaft to be constructed fire rated per IBC 713
  - Dampers are prohibited except by 505.1
  - Penetrations to shaft to be addressed per IMC 607.5.5 Exc. 2
  - Rigid metal ductwork to be installed within shaft, minimum 0.0187 (No. 26 gage) per SMACNA
  - Ductwork within shaft to have no offsets

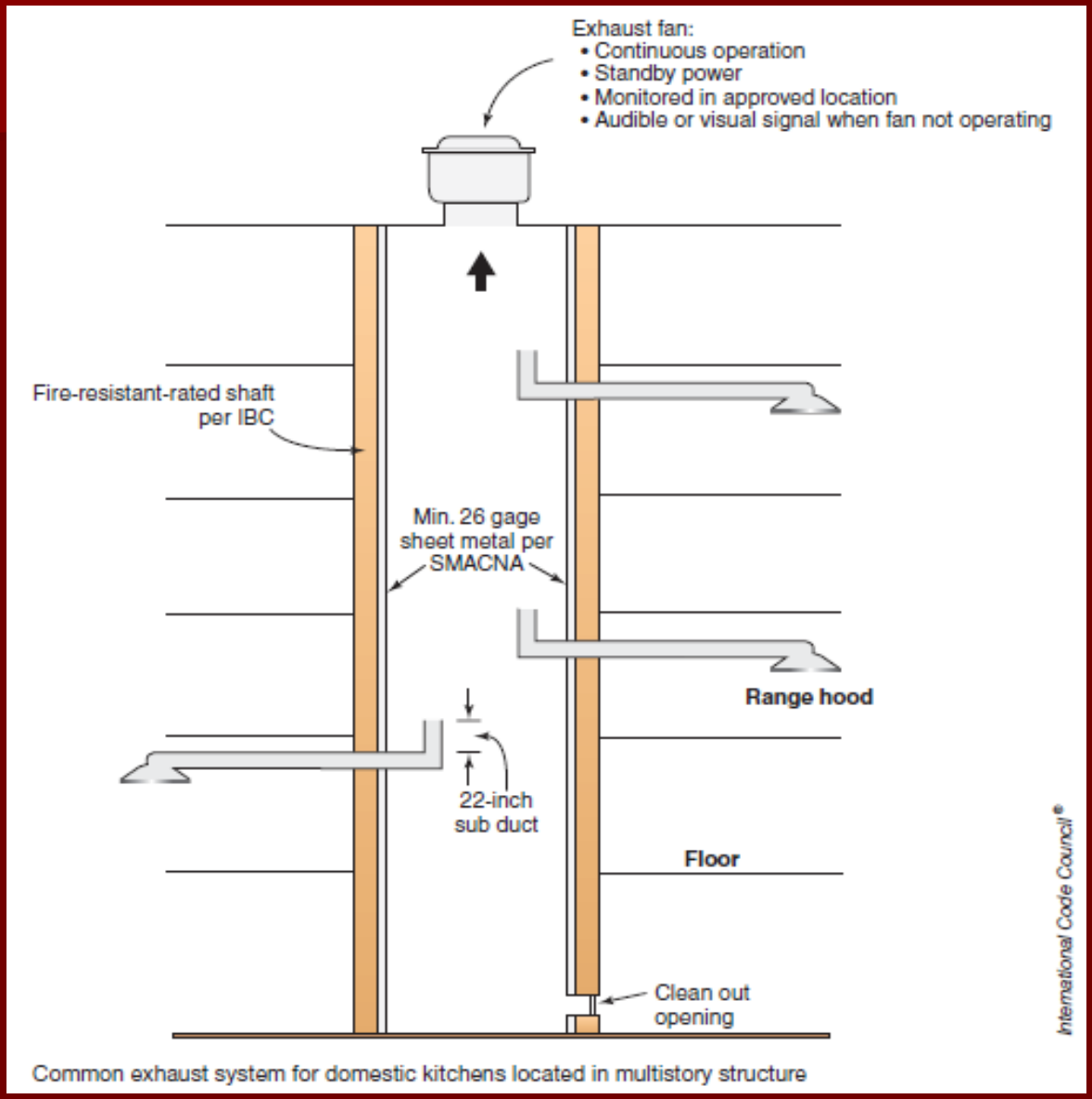
Domestic Kitchen Exhaust Systems in Multistory Bldgs IMC 505.3

- Exhaust fan motor to be per IMC 503.2
- Exhaust fan motor to be outside air stream
- Exhaust fan to run continuously & shall be connected to standby power source
- Exhausts fan operation to be monitored & shall initiate an audible or visual signal when fan is **NOT** in operation
- Provide make up air if exhausts are > 400 cfm

Domestic Kitchen Exhaust Systems in Multistory Bldgs IMC 505.3

- Cleanout opening at base of shaft for access. Openings to be min. 12” by 12”
- Screens may not be used at the termination
- Common multistory duct system shall serve **ONLY** kitchen exhaust and shall be independent of other exhaust systems.

Domestic Kitchen Exhaust Systems in Multistory Bldgs IMC 505.3



Common exhaust system for domestic kitchens located in multistory structure

Domestic Range Hoods
IMC 505.1, 505.4, SPS 364.0505

- The requirements of IMC 505.4 are not included as part of Chs SPS 361 to 366

- *The rule required those occupancies, other than Group R, be provided with domestic range hoods where domestic cooking appliances are utilized*

Grease Duct Test
IMC 506.3.2.5

- Prior to the use of concealment of any portion of a grease duct system, a leakage test shall be performed

- Ducts are considered concealed where installed in shafts or covered by coatings or wraps that prevent the ductwork from being visually inspected on all sides.

Grease Duct Test
IMC 506.3.2.5

- The "permit holder" (Contractor) shall be responsible to provide the necessary equipment and perform the grease duct leakage test.

- A light test shall be performed to determine that all welded & brazed joints are liquid tight.

Grease Duct Test
IMC 506.3.2.5

- A light test shall be performed by passing a lamp having a power rating > 100 watts through the entire section of ductwork to be tested.

- For listed factory built grease ducts, this test shall be limited to duct joints assembled in the field & shall exclude factory welds.

Type I Commercial Hood Grease Duct Reservoirs IMC 506.3.7.1

- Grease duct reservoirs shall be:
  - Constructed for the grease duct they serve
  - Be located on the bottom of the horizontal duct or the bottommost section of the duct riser.
  - Extend across the full width of the duct & have a length of ≥ 12”
  - Have a depth of not less than 1”
  - Have a bottom that slopes to a drain (ie. drain must be provided)

Grease Duct Reservoir
IMC 506.3.7.1 (cont.)

- Be provided with cleanout opening per 506.3.8 installed to provide access to the reservoir. The cleanout opening shall be located on a side or on top of the duct so as to permit cleaning of the reservoir.

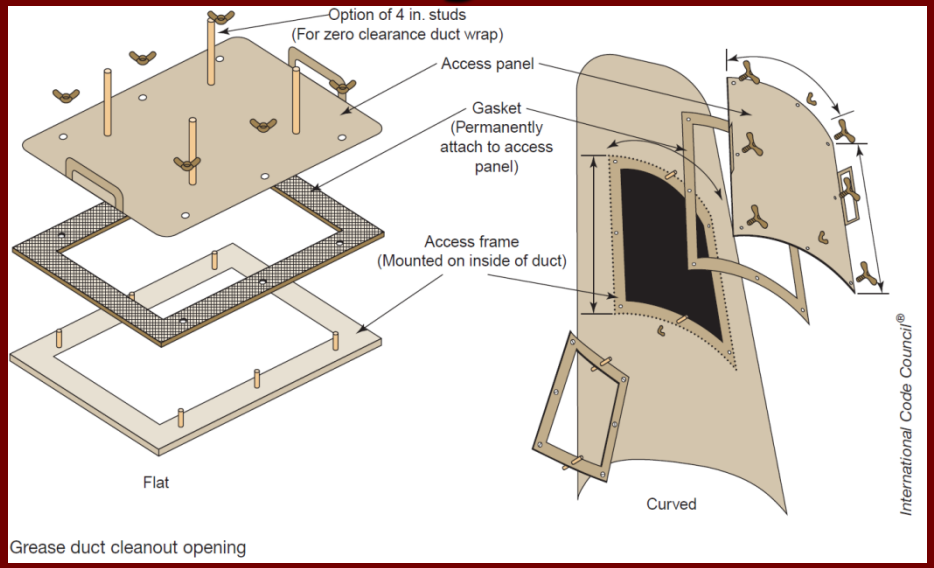
- Be installed per manufacturer's instructions where such listed devices are utilized

- Grease duct reservoir with drain

There's nothing like a coffee can for use in collecting grease….nothing…

Grease Duct Cleanouts & Openings
IMC 506.3.8

- Sections of grease duct that are inaccessible from the hood or discharge openings shall be provided with cleanout openings ≤ 20 ft apart *& ≤ 10 ft from changes in direction greater than 45°*.



Grease duct cleanout opening

Grease Duct Cleanouts & Openings
IMC 506.3.8

- Cleanouts & openings to be equipped w/tight fitting doors constructed of steel of thickness no less than req'd by duct
- Cleanout doors to be liquid tight
- Door assemblies including any frames and gaskets
- Gasket & sealing materials to be rated for Minimum 1,500°F
- Install listed door per instructions

Underground Grease Duct Installations
IMC 506.3.10

- Underground grease ducts to comply with ***ALL*** of the following:
  - 1. Must use min. 16 ga steel & shall be coated to provide protection from corrosion or shall be constructed of stainless steel having a min. 18 ga stainless steel
  - 2. The underground system to be tested per 506.3.2.5 (Light Test) prior to coating or placement in the ground

Underground Grease Duct Installations
IMC 506.3.10

- Underground grease ducts to comply with ***ALL*** of the following:
  - 3. The underground duct system shall be encased in concrete with a minimum thickness of 4”.
  - 4. Duct shall slope to toward reservoirs
  - 5. Grease reservoir with cleanout shall be provided at base of duct riser

Underground Grease Duct Installations
IMC 506.3.10

- Underground grease ducts to comply with ***ALL*** of the following:
  - 6. Cleanouts to be provided with access to permit cleaning per IMC 506.3
  - 7. Cleanouts in horizontal ducts to be installed on topside of the duct
  - 8. Cleanout shall be legibly identified at he point of access from the interior space.

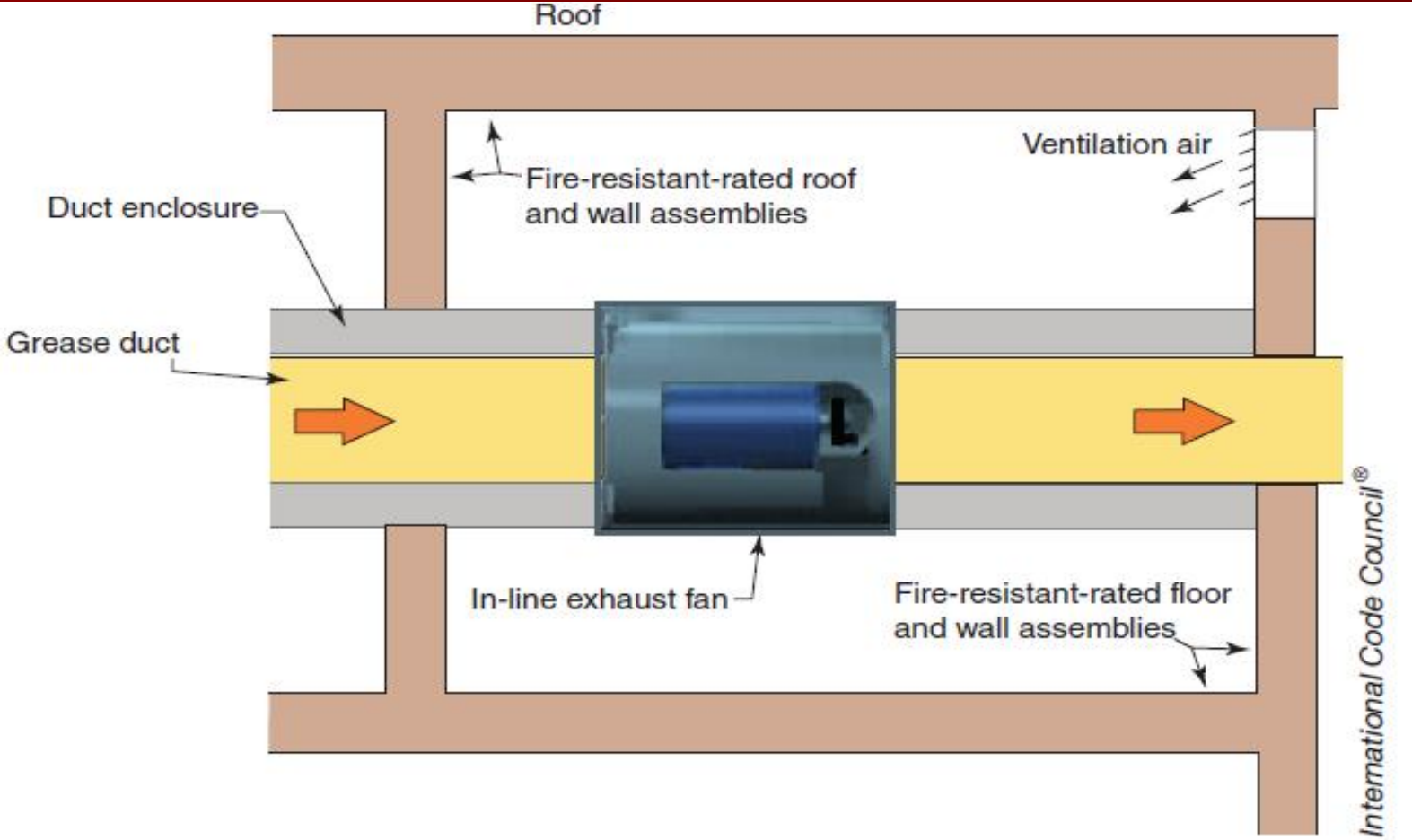

DO NOT
BLOCK
ACCESS
PORT


ACCESS PANEL
DO NOT OBSTRUCT
PUERTA DE ACCESO
NO OBSTRUIR
PORTE D'ACCÈS
NE PAS OBSTRUER

In-Line Fan Location
IMC 506.5.1.2

- Where enclosed duct systems are connected to in-line fans not located outdoors, the fan shall be located in a room or space having the same fire resistance rating as the duct enclosure.

In-Line Fan Location in Exhaust Ducts Serving Commercial Kitchen Hoods
IMC 506.5.1.2



An in-line fan must be located in a room or space having the same fire-resistance rating as the grease-duct enclosure.

In-Line Fan Location
IMC 506.5.1.2

- Access shall be provided for servicing and cleaning of fan components.

- Such rooms or spaces shall be ventilated in accordance with the fan manufacturer's installation instructions.


NOTICE / AVIS

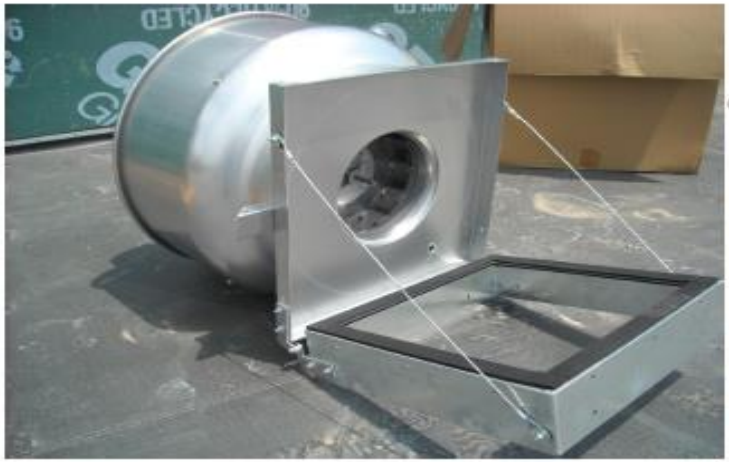
Really??

Exhaust Fan Mounting
IMC 506.5.3

- Up-blast fans serving *type I hoods* & installed in a vertical *OR horizontal position* shall be hinged, supplied with a flexible weather poof electrical cable to permit inspection *and cleaning and shall be equipped with a means of restraint to limit the swing of the fan on its hinge.* The ductwork shall extend not less than 18”

Hinged Up-Blast Fans
IMC 506.5.3

Hinged up-blast fan for Type I hood exhaust



Restraint cable for hinged exhaust fan

- The code now requires that *vertical & horizontal hinged exhaust fans* be provided with a means to limit the travel of the fan assembly on its hinges to prevent injury to personnel & damage to the building & fan.

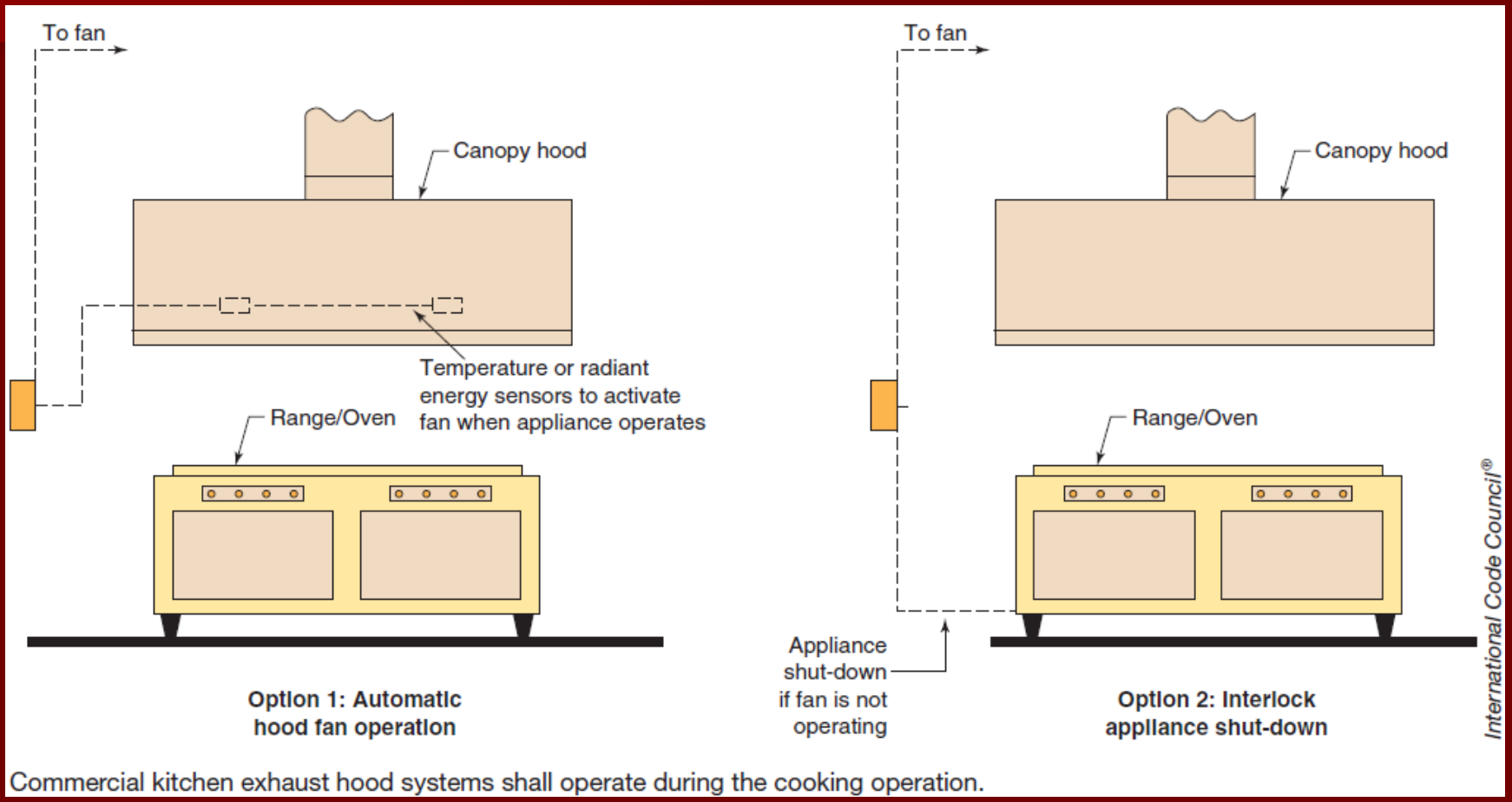
Type I Hood Installation
IMC 507.1

Where a Type I hood is installed, the entire system must comply with the requirements for Type I hoods.

Type I Hood Installation
IMC 507.1

- Interlock required on Type I hoods to prevent operation when the exhaust fan is NOT turned on
- Where ≥1 sensors are installed, the fan is to activate for ≤ 15 minutes after the first appliance served by the hood, has been turned on.

Type I Hood Installation
IMC 507.1



Commercial kitchen exhaust hood systems shall operate during the cooking operation.

Type I Hood Installation
IMC 507.1

- Type I or II hood to be installed above commercial cooking appliances.
- Where any cooking appliance located under a single hood req'rs a type I hood, a type I hood shall be used.
- Where a type II hood is req'd, type I or II to be installed
- Where type I hood is installed, the installation of entire systems shall comply with Type I hood.

Commercial Kitchen Hoods
IMC 507.1 Exception 3

- Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood shall not be req'd at or above them.

Commercial Kitchen Exhaust Hood Systems IMC 507.1.1

- The exhaust fan serving a Type I hood to have a automatic controls which activate the fan when any appliances requiring a type I hood is turned on, or a means of interlock shall be provided that will prevent operation of such appliances when the exhaust fan is not turned on.

Type I Hood Operation
IMC 507.1.1

- Net exhaust volumes permitted to be reduced during part-load cooking conditions, where engineered or listed multi-speed or variable speed controls automatically operate the exhaust system.

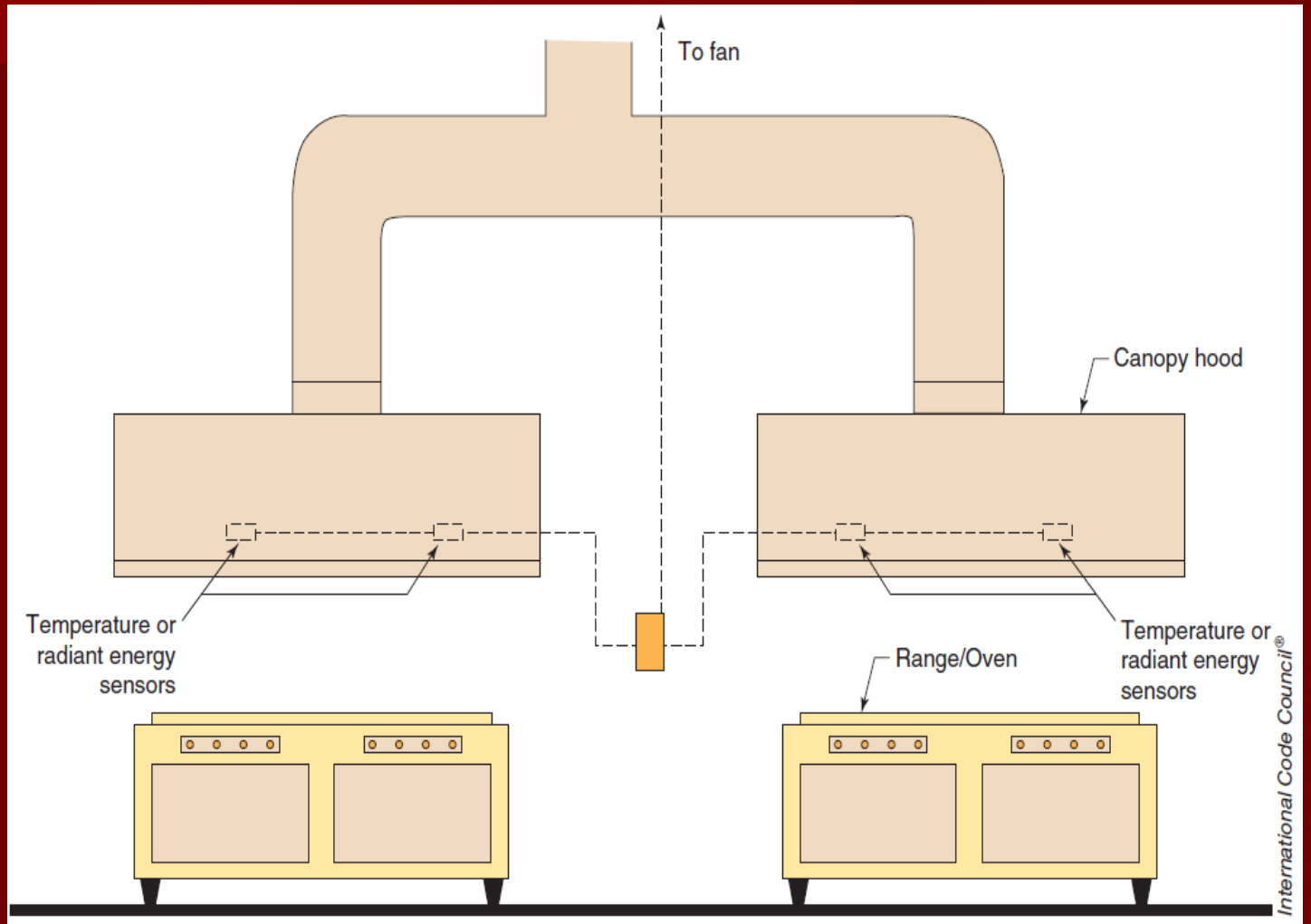
Heat Sensors for Multiple Commercial Kitchen Hoods
IMC 507.1.1.1/SPS 364.0507(3)

- The requirements in IMC 507.1.1.1 are not included.

- *This section required that where heat or radiant energy sensors are utilized in hood systems consisting of multiple hoods served by a single exhaust system, such sensors shall be provided in each hood.*

Heat Sensors for Multiple Commercial Kitchen Hoods

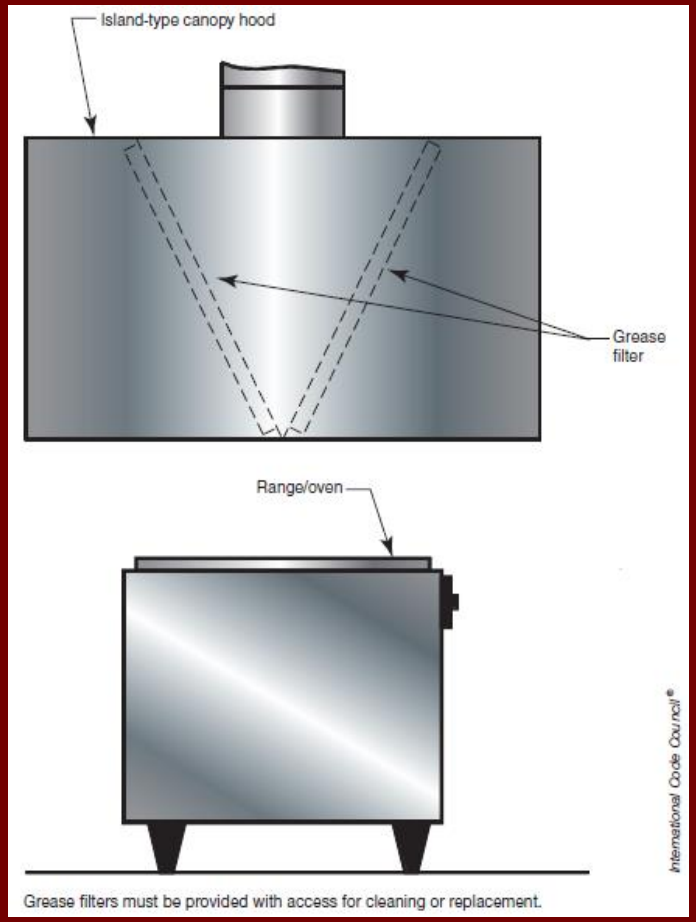
IMC 507.1.1.1



Sensors for automatic operation must be located in each hood served by a common exhaust system.

Type I Hood Grease Filters
IMC 507.2.8.1

- The code recognizes the use of disposable grease filters



Grease filters must be provided with access for cleaning or replacement.

Dishwashing Appliances
IMC 507.5.5

- A Wisconsin amendment was removed

- The minimum net airflow for Type II hoods used for dishwashing appliances shall be 100 cfm/linear ft of hood length
  - Exception: Dishwashing appliances and equipment installed in accordance with IMC 507.3

Domestic Range Hoods
IBC 904.13

- The 2015 IBC & IFC require domestic cooking hoods in I-2, condition 1, occupancies to be equipped with an automatic fire extinguishing system recognized for protection of domestic cooking equipment & requires a manual activation device.

- K-Type fire extinguisher to be within 30 ft of domestic cooking equipment .

Air Balance for Commercial Kitchen Ventilation Systems
IMC 508.1.2

- The design outdoor air balance shall indicate all exhaust & replacement air for the facility, plus the net exfiltration if applicable.

- Total replacement air airflow =

Total exhaust airflow rate + net exfiltration

It is requested that designer's address on all Kitchen Hood Plans

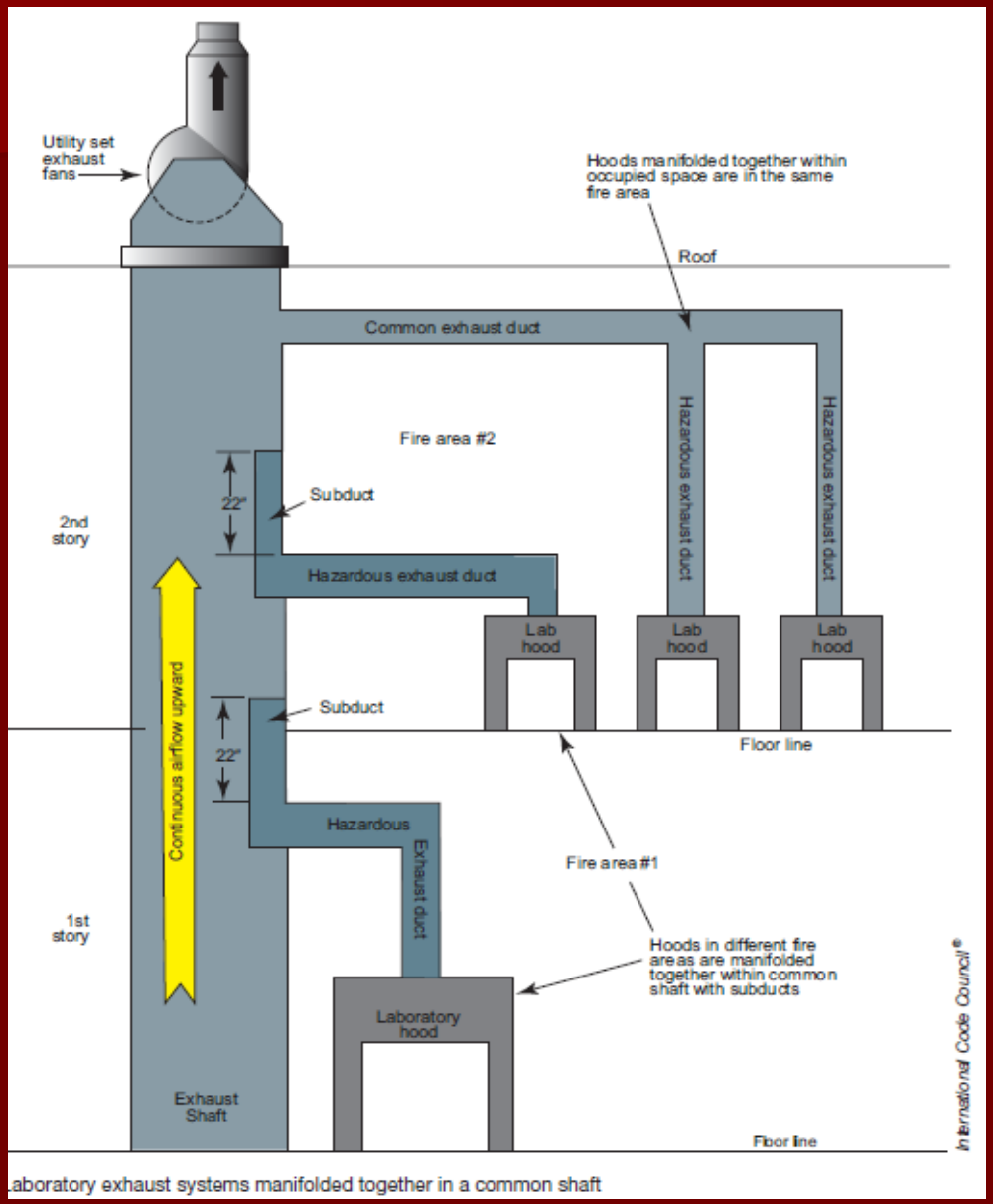
Air Balance for Commercial Kitchen Ventilation Systems
IMC 508.1.2

- 1,400 cfm hood A
- 1,225 cfm hood B
- 300 cfm toilet exhausts
- 75 cfm janitor room
- Total Exhaust
  - 3,000 cfm
- 2,200 cfm make- up air
- 800 O.A. for ventilation
- Total Outside Air
  +3,000 cfm

Hazardous Exhaust Systems
IMC 510.4 & 501.5

- Text in previous editions of the code which alluded to the recirculation of hazardous exhaust has been deleted
- Code now allows the combining of exhaust ducts that originate in same fire areas
- Redundant backup exhaust fans are required so as to increase dependability of the system

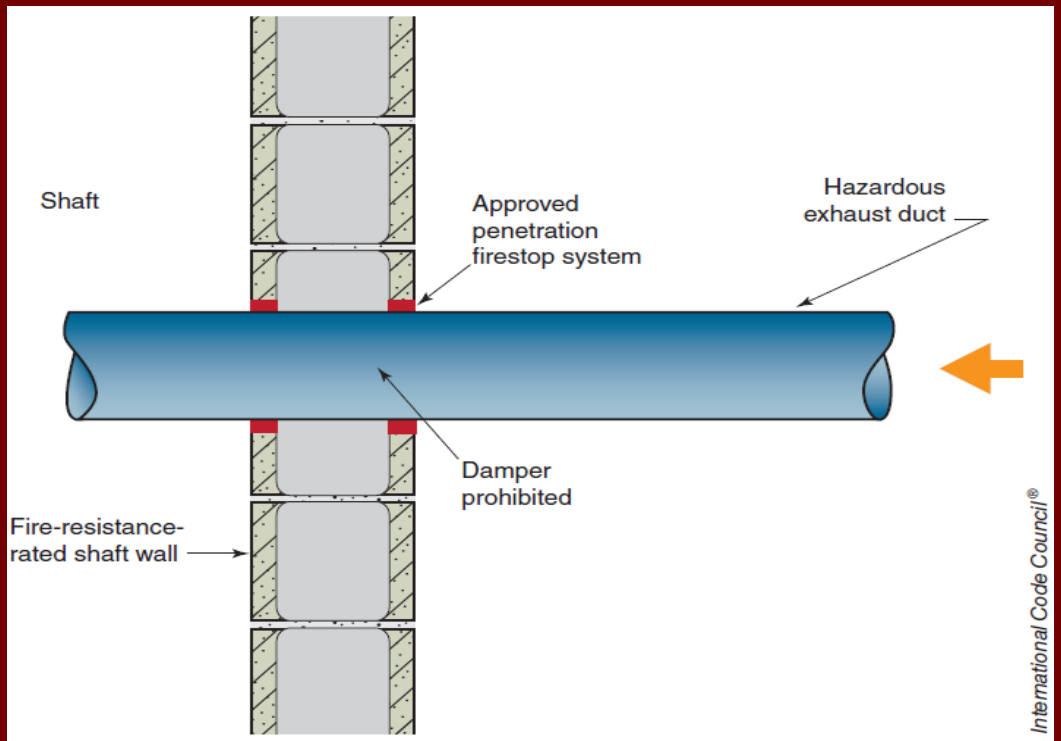
Hazardous Exhaust Systems
IMC 510.4 & 501.5



Laboratory exhaust systems manifolded together in a common shaft

Hazardous Exhaust Duct Penetrations of Shafts IMC 510.7.1.1

- Hazardous exhaust ducts that penetrate fire resistance-rated shafts shall comply with IBC 714.3.1 or 714.3.1.2

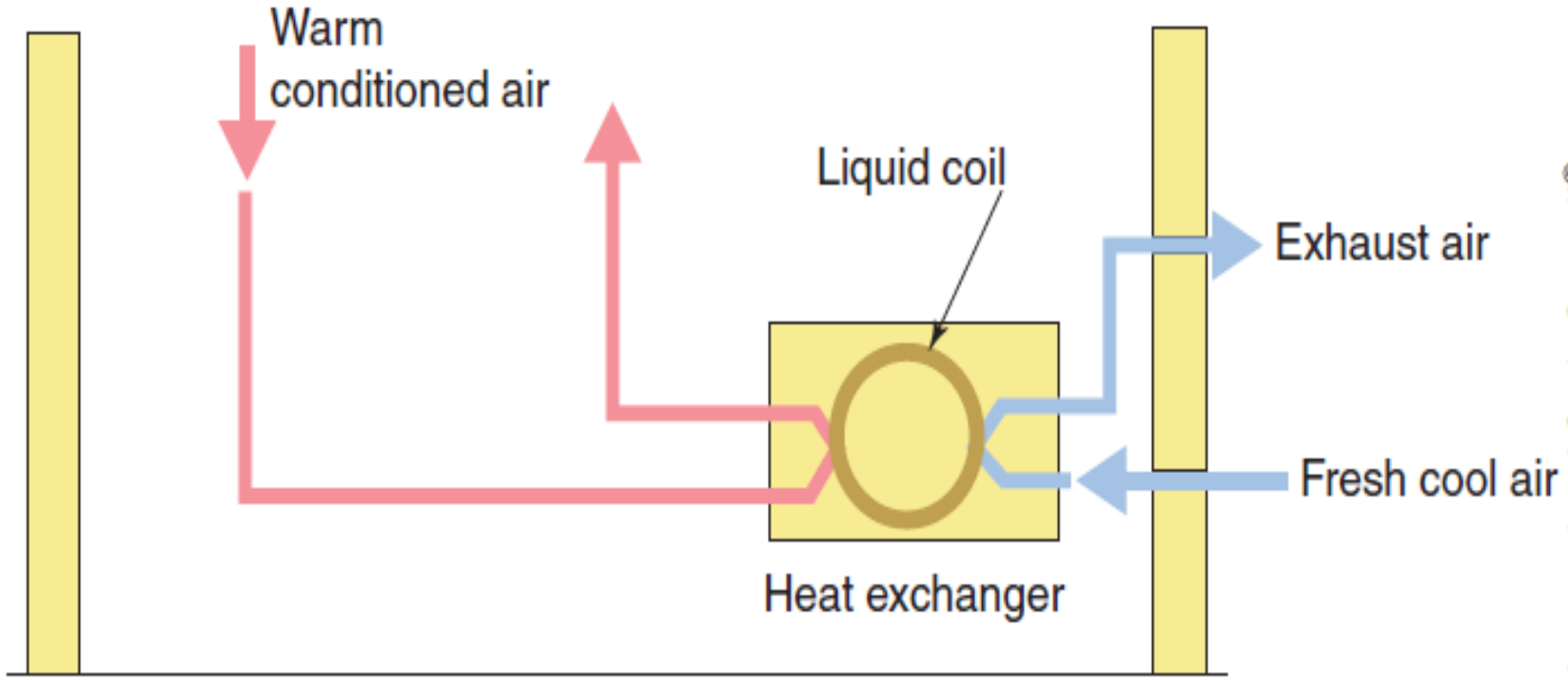


Penetrations must be protected by an approved penetration firestop system or installed as tested in an approved fire-resistance-rated assembly.

Energy Recovery Ventilation Systems
IMC 514.2

- Prohibited applications now given an exception
- Exception: The application of ERV equipment that recovers sensible heat only utilizing coil-type heat exchangers shall not be limited by this section.
- *Reason: The risk of cross-contamination is limited for this type of system*

Energy Recovery Ventilation Systems
IMC 514.2



Energy recovery ventilation with coil-type heat exchangers is not limited in application by Section 514.2.

Return Air Openings
IMC 601.5

- Shall comply with:
  - Openings to be located <10 ft from an open combustion chamber or draft hood of another appliance in the same roof or space.
  - Return air not be taken from hazardous, insanitary location or refrigeration room
  - Amount of return air to be $\leq$ flow rate of supply air from a room or space.
  - Return & transfer openings to be properly sized

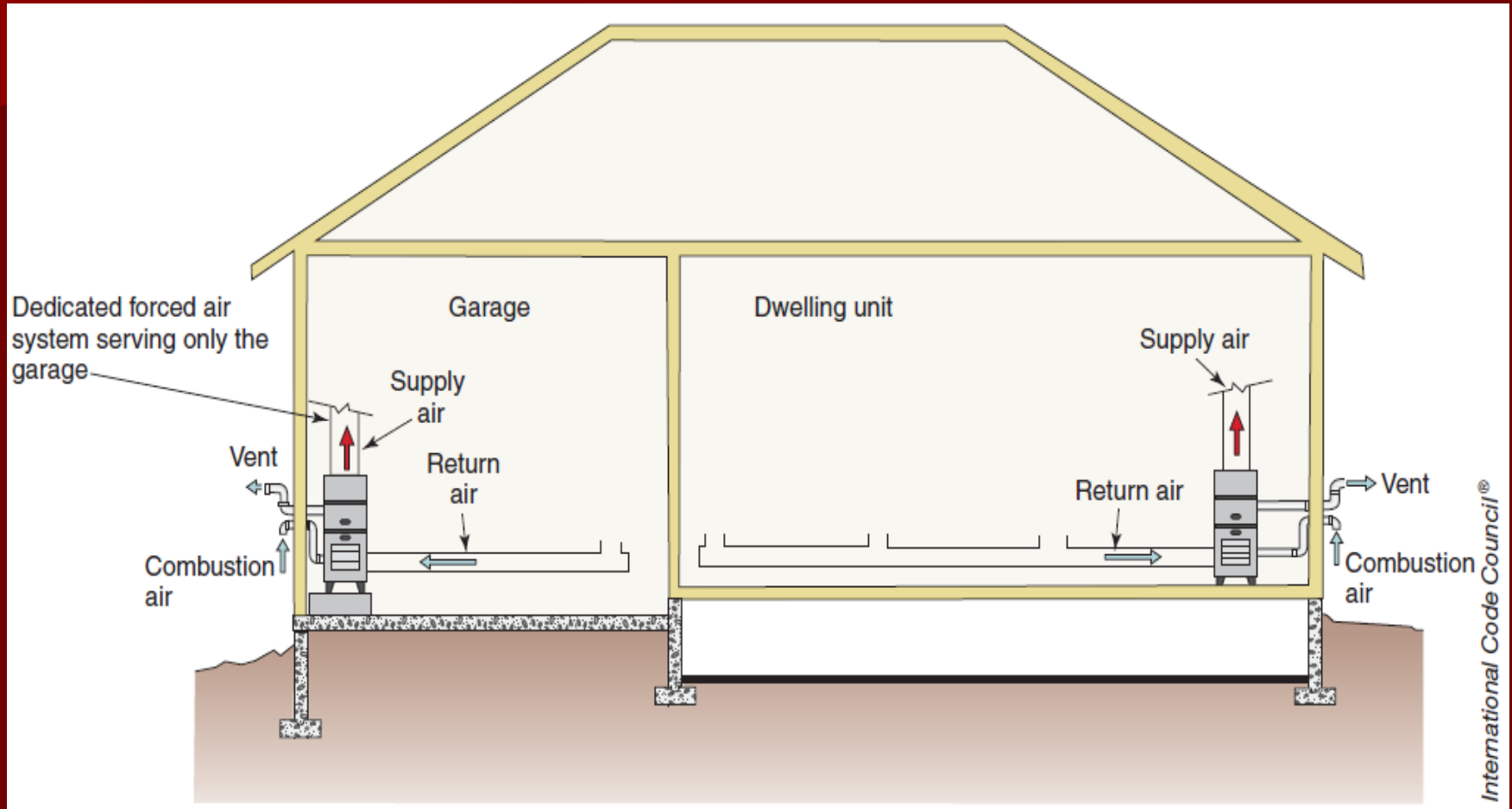
Return Air Openings
IMC 601.5

- *Return air taken from one dwelling unit shall not be discharged into another dwelling unit.* (now includes not only furnaces but roof-tops)
- Taking return air from a crawl space shall not be accomplished through a direct connection to the return side of a forced air furnace…

Return Air Openings
IMC 601.5

- Return air shall not be taken from closet, bathroom, toilet room, kitchen, garage, boiler room, furnace room or unconditioned attic
- Exceptions
  - Taking return from a kitchen is not prohibited where return air openings are located ≥10 from the cooking appliance
  - Dedicated forced air systems serving only the garage shall not be prohibited from obtaining return air from the garage

Return Air Openings for a Dwelling Unit IMC 601.5



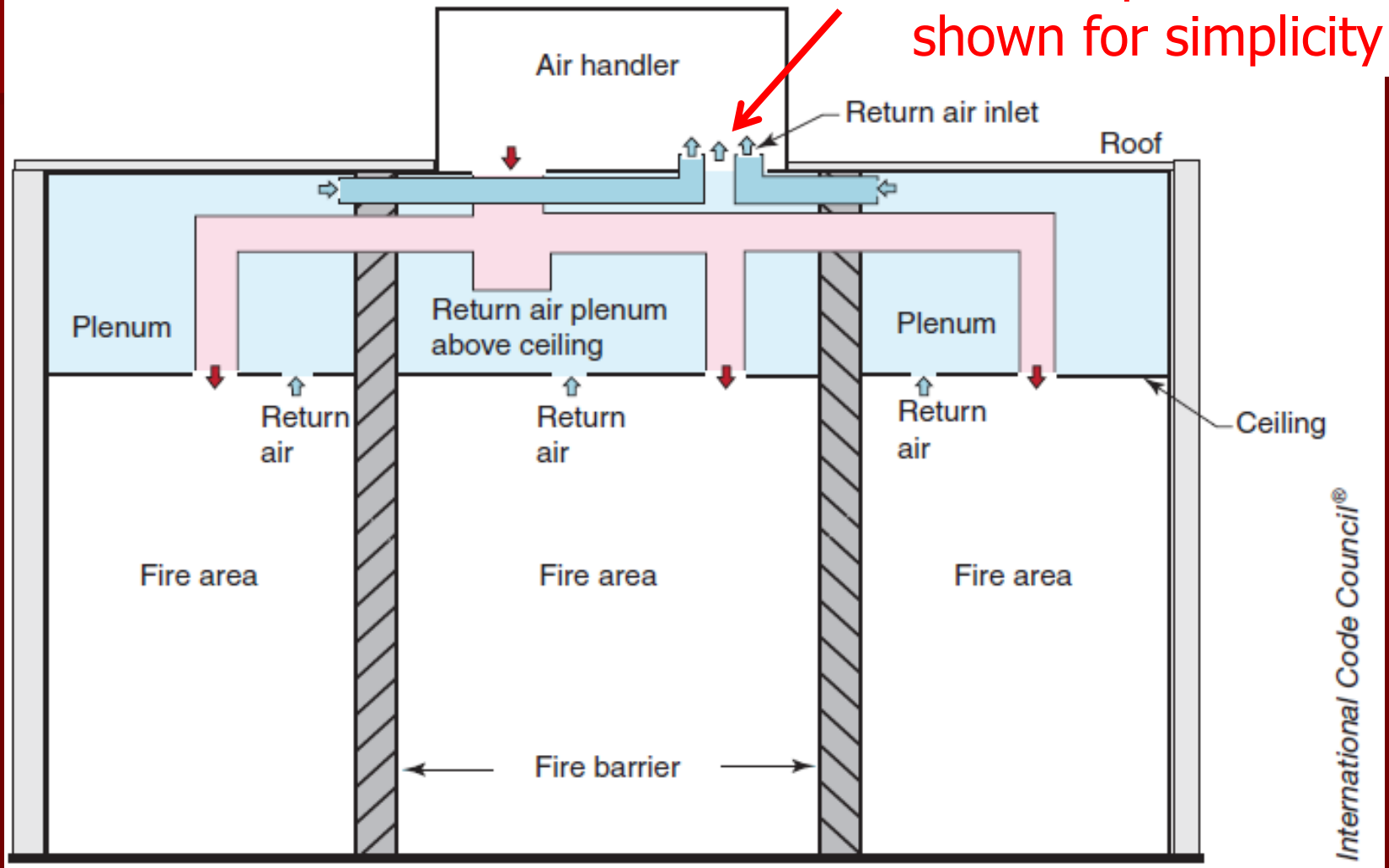
Furnaces and air handlers that serve a dwelling cannot also serve a garage and vice versa. Independent systems are required.

Plenums Limited to One Fire Area
IMC 602.1

- "…Plenums shall be limited to one fire area."
- Air systems shall be ducted from the boundary of the fire area served directly to the air handling equipment.

Plenums Limited to One Fire Area
IMC 602.1

Fire dampers not shown for simplicity



Plenums are limited to one fire area.

Plenum Materials
SPS 364.0602

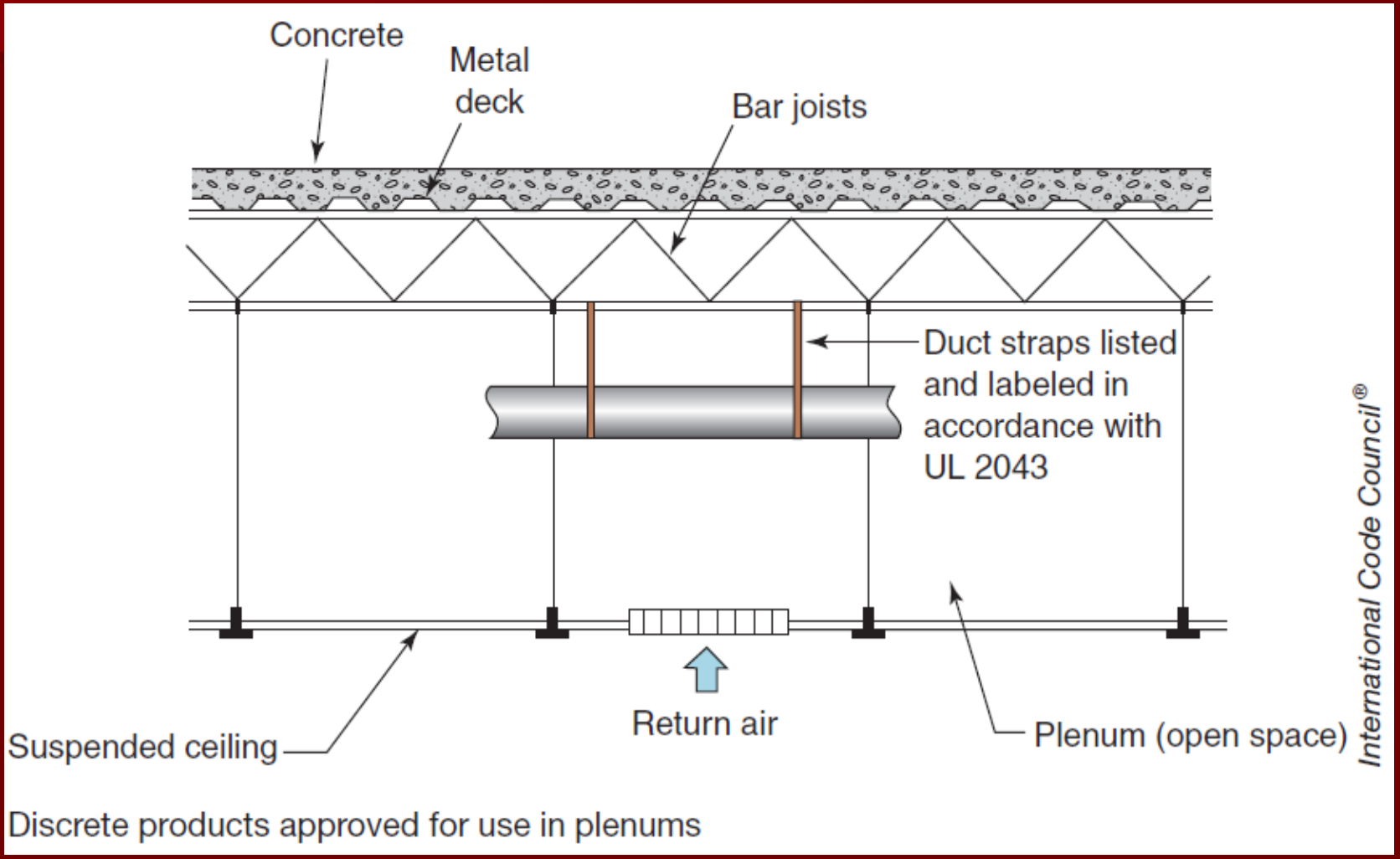
- Plenum enclosures shall be constructed of materials permitted for the type of construction classification of the building.
  - Ie. Wood framed construction can have wood framing located within the plenum

Discrete Plumbing & Mechanical Products in Plenums
IMC 602.2.1.5

- Discrete plumbing & mechanical products located a in plenum … shall be listed for such use in accordance with UL 2043
- Discrete Product: Products that are non-continuous, individual, distinct pieces such as, but not limited to, electrical, plumbing, mechanical products & duct straps, duct fittings, duct registers & pipe hangers.

Discrete Plumbing & Mechanical Products in Plenums

IMC 602.2.1.5



Discrete products approved for use in plenums

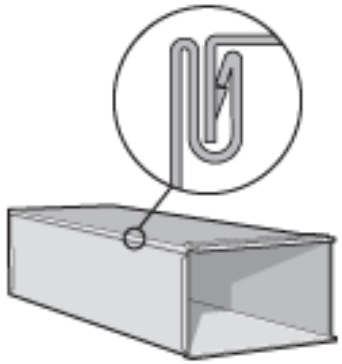
Materials Within Plenum
IMC 602.2.1 Exception 5

- Materials within plenums shall be noncombustible or listed for flame spread & smoke indexes of ≤ 25 & 50, respectively.
- Exceptions: Combustible materials (not meeting criteria above) fully enclosed within one of the following:….
  - 5.3 Materials listed and labeled for installation within a plenum *and listed for the application.*
  - ***Note how this is how this section will be enforced in Wisconsin.***

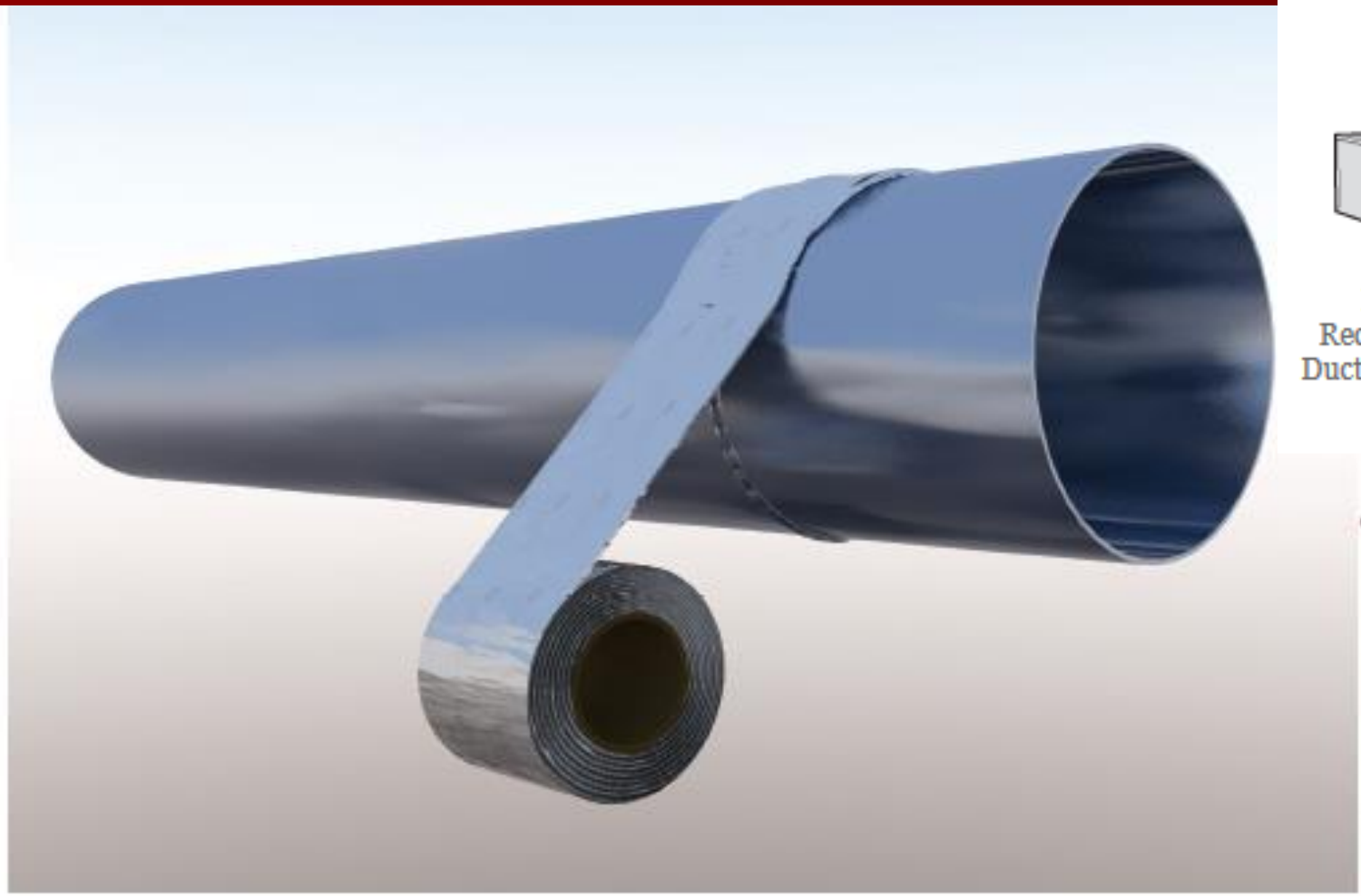
Duct Joints, Seams & Connections
IMC 603.9

- Duct sealant tapes used on sheet-metal duct to be UL 181B
- Snap-lock and button-lock seams are no longer exempt from the sealing requirements.

Duct Joints, Seams & Connections
IMC 603.9



Button Lock Seam
Rectangular Button Lock Duct in Lengths of 32", 48", 60", & 96"



International Code Council®

Tapes and mastics used to seal sheet-metal ducts must be listed to UL 181B.

Smoke Detection Systems Control
IMC 606.2.1

- Required when return air > 2,000 cfm
  - Exception: Smoke detectors are not required in return air systems where all portions of the building served by the air distribution system are protected by area smoke detectors connected to a fire alarm system in accordance with the IFC.
  - *The exception formerly addressed AHU's which would not spread smoke to other spaces.*

Smoke Damper Activation
SPS 364.0607(1m) Exception

- Where a listed ducted smoke detector is installed inside the duct or outside the duct with sampling tubes protruding into the duct in the supply air ductwork downstream of the air handling equipment, including air filters, & ahead of any branch ductwork …

Smoke Damper Activation
SPS 364.0607(1m) Exception

- …and return air duct smoke detectors are installed inside the duct or outside the duct with sampling tubes protruding into the duct within 5 ft of each return air smoke damper, all supply and return smoke dampers shall be closed when any of the duct smoke detections in the supply or return air ducts are in alarm. …

Smoke Damper Activation
SPS 364.0607(1m) Exception

- …Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.

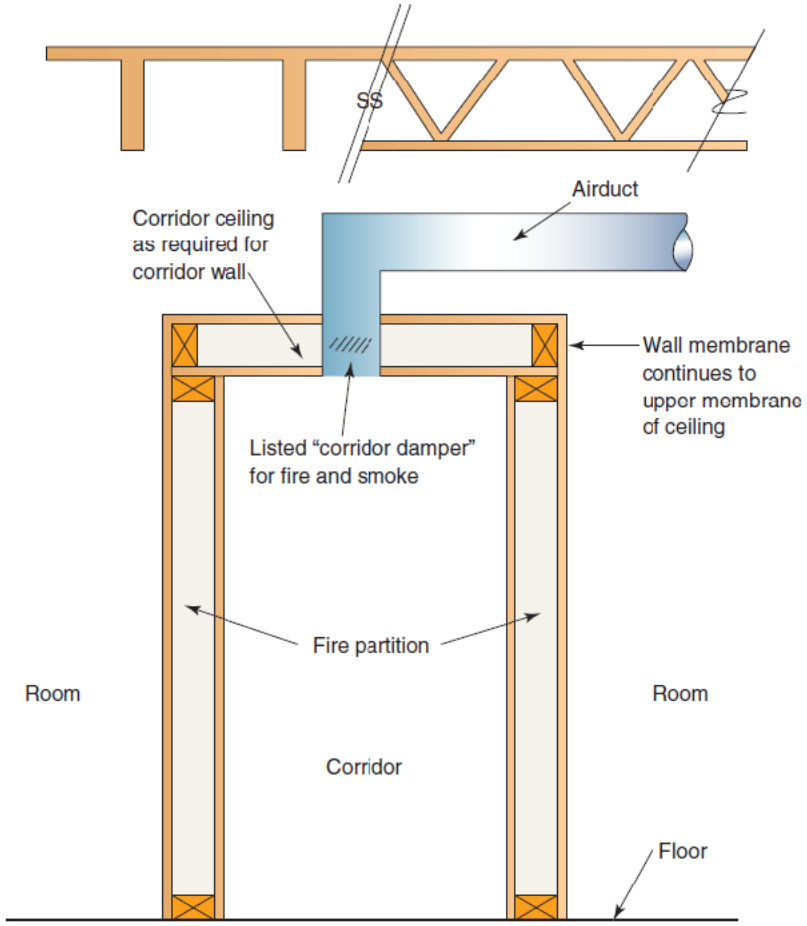
Corridors-Fire Rated
IBC 717.5.4.1 / IMC 607.5.4.1

- Duct & Transfer Penetrations to Corridors shall be protected with:
  - *Corridor Dampers* – Where corridor ceilings, constructed as required for the corridors as permitted in Section 708.4 Exception 3, are penetrated
  - IBC 708.4 #3 – "Ceiling is constructed as required for the corridor walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly"

717.3, 717.5 Corridor dampers

2015

- Duct and air transfer openings into FRR 'tunnel' corridors shall be protected with 'corridor' dampers where dampers are required.
- Other types of corridor construction to continue to be protected selectively with fire, smoke, fire/smoke or ceiling radiation dampers.



Corridor damper at "tunnel corridor"

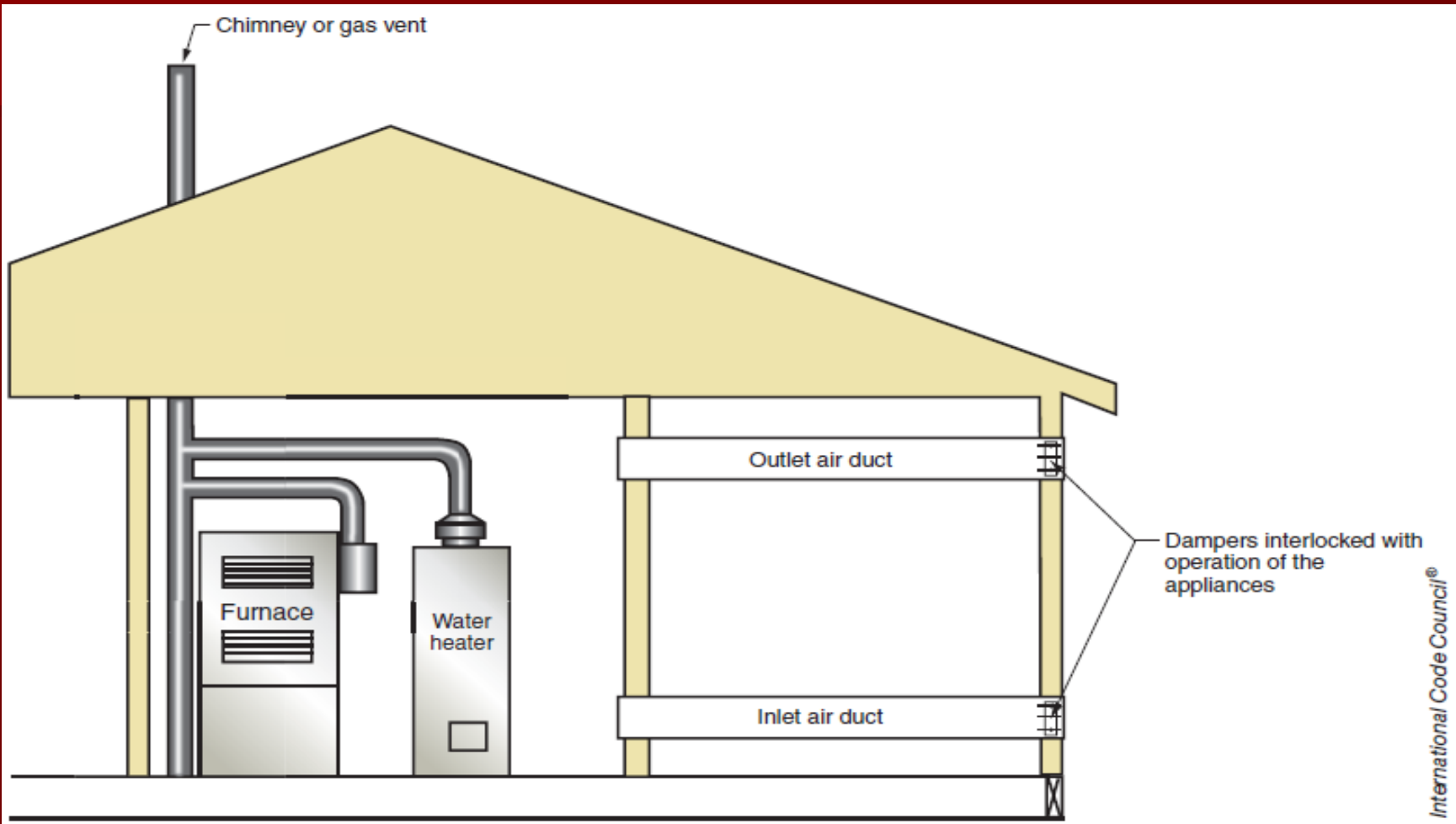
Non-Fire Resistance – Rated Floor Assemblies IMC 607.6.3/IBC 717.6.3

- Allowed to be protected as follows without a shaft:
  - In floor assemblies *composed of noncombustible materials,* a shaft shall not be required where the duct connects ≤ 3 stories, and the annual space around the penetrating duct is protected with an approved noncombustible material that resists the free passage of flames & the products of combustion and a fire damper is installed at each floor line.

Dampered Combustion Air Openings
IMC 701.2/SPS 364.001

- Where dampers are installed on combustion air openings, the 2015 code requires an interlock with the appliance to prevent operation of the appliance when the damper is closed.
- Manual dampers are prohibited on combustion air openings.
- Barometric dampers may not be used for combustion air as allowed by IFC 304.3

Dampered Combustion Air Openings
IMC 701.2



Where dampers are installed on combustion air openings, they must be interlocked to shut down appliances when dampers are closed.

Door Clearance to Vent Terminals
IMC 802.9/SPS 364.0802

- The requirements in IMC 802.9 are not included as part of chs. SPS 361 to 366.

- *The need for vent terminals from appliances and equipment to be located such that doors cannot swing within 12" horizontally of the vent terminal has been removed.*

Door Clearance to Vent Terminals
IMC 802.9/SPS 364.0802

Prohibited location for vent terminal

Gasketed Fireplace Doors
IMC 903.4

- Gasketed (sealed) doors are prohibited on factory-built fireplaces except where fire places are listed for such use via UL 127

Gasketed doors are prohibited on factory-built fireplaces unless the fireplace is listed for their use.

Cooling Towers – Conductivity or Flow-Based Control of Cycles of Concentration IMC 908.8.1

- Cooling towers & evaporative condensers shall include controls that automate system bleed based on conductivity, fraction of metered makeup volume, metered bleed volume, recirculating pump run time or bleed time

Cooling Towers - Open & Closed Circuit Drift Eliminators IMC 908.8.2

- Cooling towers & evaporative condensers shall be equipped w/drift eliminators that have a maximum drift rate of 0.005% of the circulated water flow rate as established in the equipment's design specifications.

Related Topic in IBC
SPS 362.0904(2)

- *System interconnection.* Substitute the following wording for IBC 904.12.2: The actuation of the fire suppression system (for comm'l kitchen hood) shall automatically shut down all sources of fuel and power to all equipment located beneath the exhaust hood *(for commercial kitchens)* & protected by the suppression system.
- The fuel & power reset shall be manual.

Questions on the 2015 IMC?