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# IBC/Architectural Refresher

**John-Jozef "JJ" Proczka**  
**Structural Plans Engineer**

# Quality of Drawings



## **What does it mean to self-certify a set of drawings?**

- IBC 105.3.1. You are performing the legal requirement to examine the documents for code compliance

## **What is the difference between design and review?**

Review for:

- ✓ Completeness
- ✓ Coordination between disciplines
- ✓ Technical accuracy of all disciplines
  - Refer to checklists for help with this

# Complete Drawings



## Commonly Missed:

- Provide the project scope
- Review consultants' drawings for coordination
- Code modifications provided and identified
- Inspection and Observation Certificates
- Deferred submittals
  - List on architectural drawings
    - Cover sheet or sheet code



# Site Plan

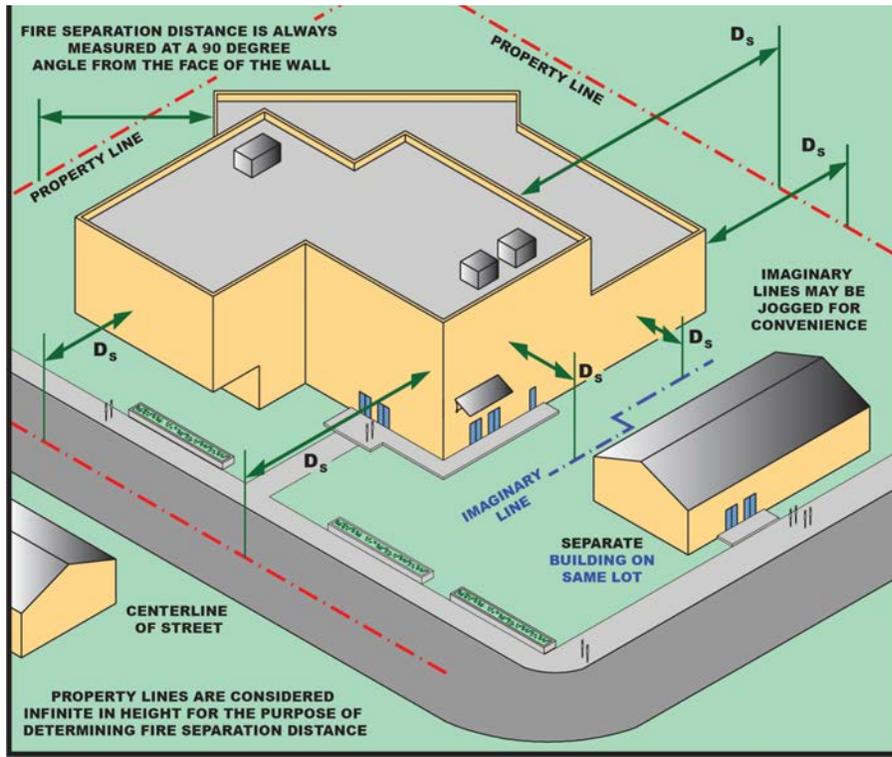
## Commonly missed items to show:

- Fire separation distance
- Path of exit discharge all the way to the public way
- Accessible upgrades for tenant improvements (Tis)
- No locked/cane bolted site gates that are needed to egress to a street!

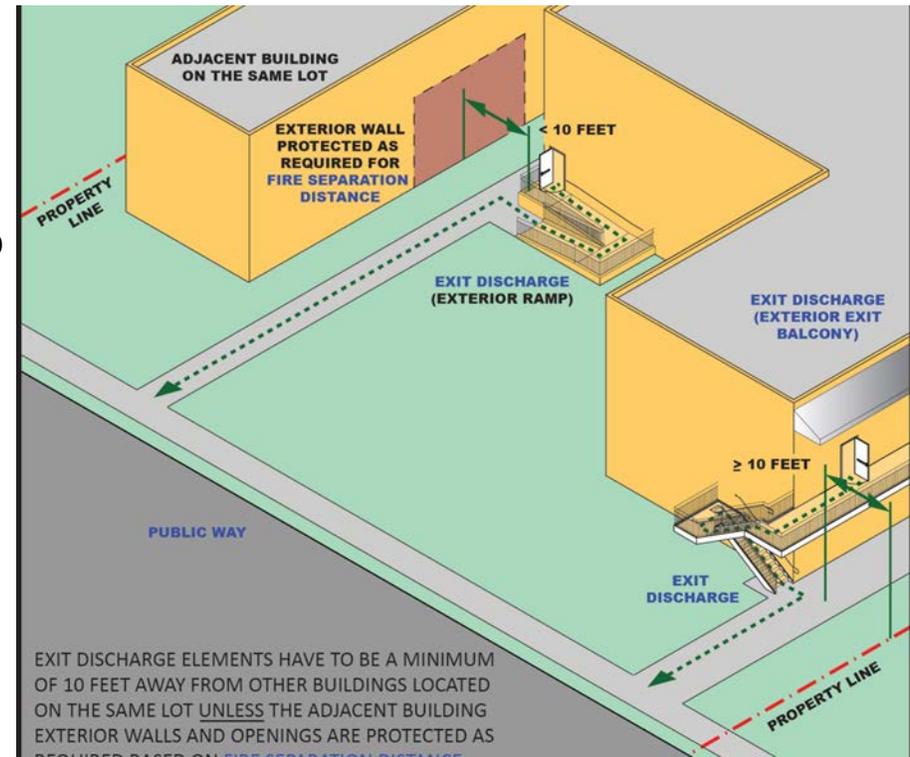


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2012 Interactive Guide Figure 2-01



2012 Interactive Guide Figure 3-23



# Mixed Occupancies

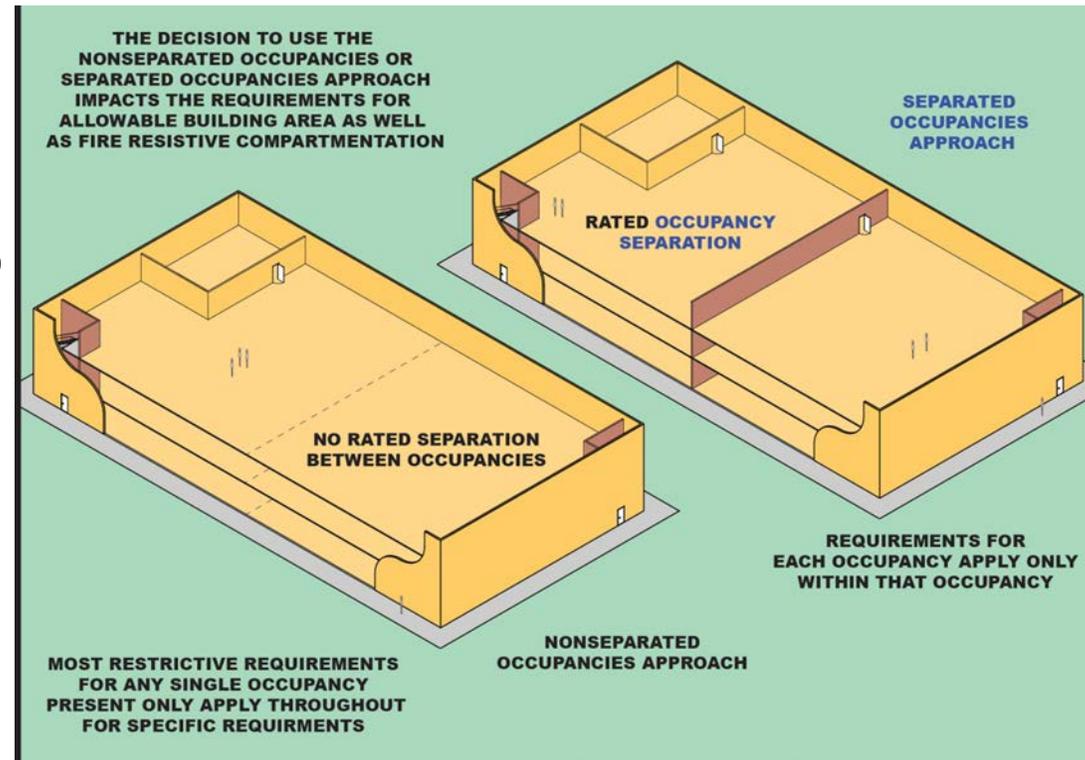
## What do you have to show?

- Each portion of the building is individually classified, usually into multiple classifications.
- Method used as either accessory, separated, or non-separated (or a combination if you want to make your area calculations difficult)



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2012 Interactive Guide Figure 1-19



# Occupant Load

## What do you have to show?

- Show the use/function of each space
- Number on every floor AND in every room and Space (IBC 107.2.3)
- Show the number of occupants using doors and stairways
- Show the entire path of egress, even for projects involving existing buildings



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Commentary Figure 1004.2



EXIT DOOR #1 DESIGN:

# OF OCCUPANTS FROM OPEN OFFICE	=	150
# OF OCCUPANTS FROM BUILDING OFFICE	=	20
# OF OCCUPANTS FROM LOBBY	=	10
TOTAL # OF OCCUPANTS (BY COMBINATION)	=	180

# Occupant Load - Gross

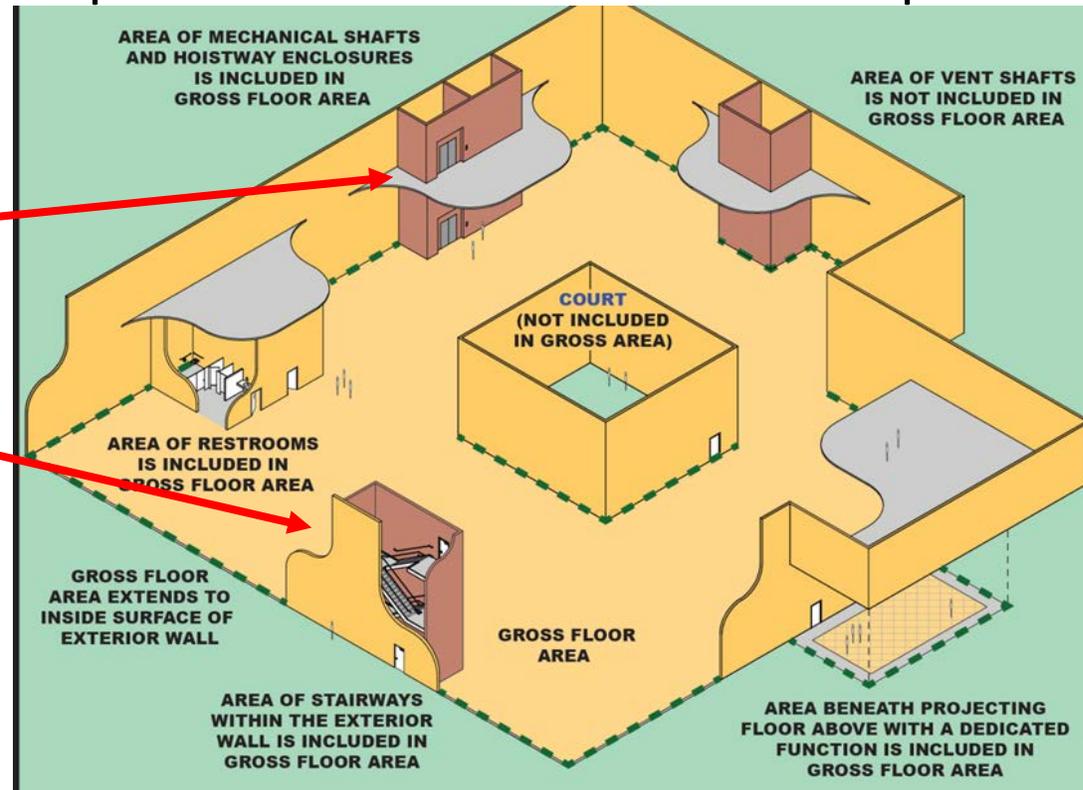
## Floor Area, Gross

- The area within the exterior walls
- No deductions for any interior space
- Includes non-occupiable spaces
- How do you label the occupants associated with non-occupiable areas in accordance with IBC 107.2.3?



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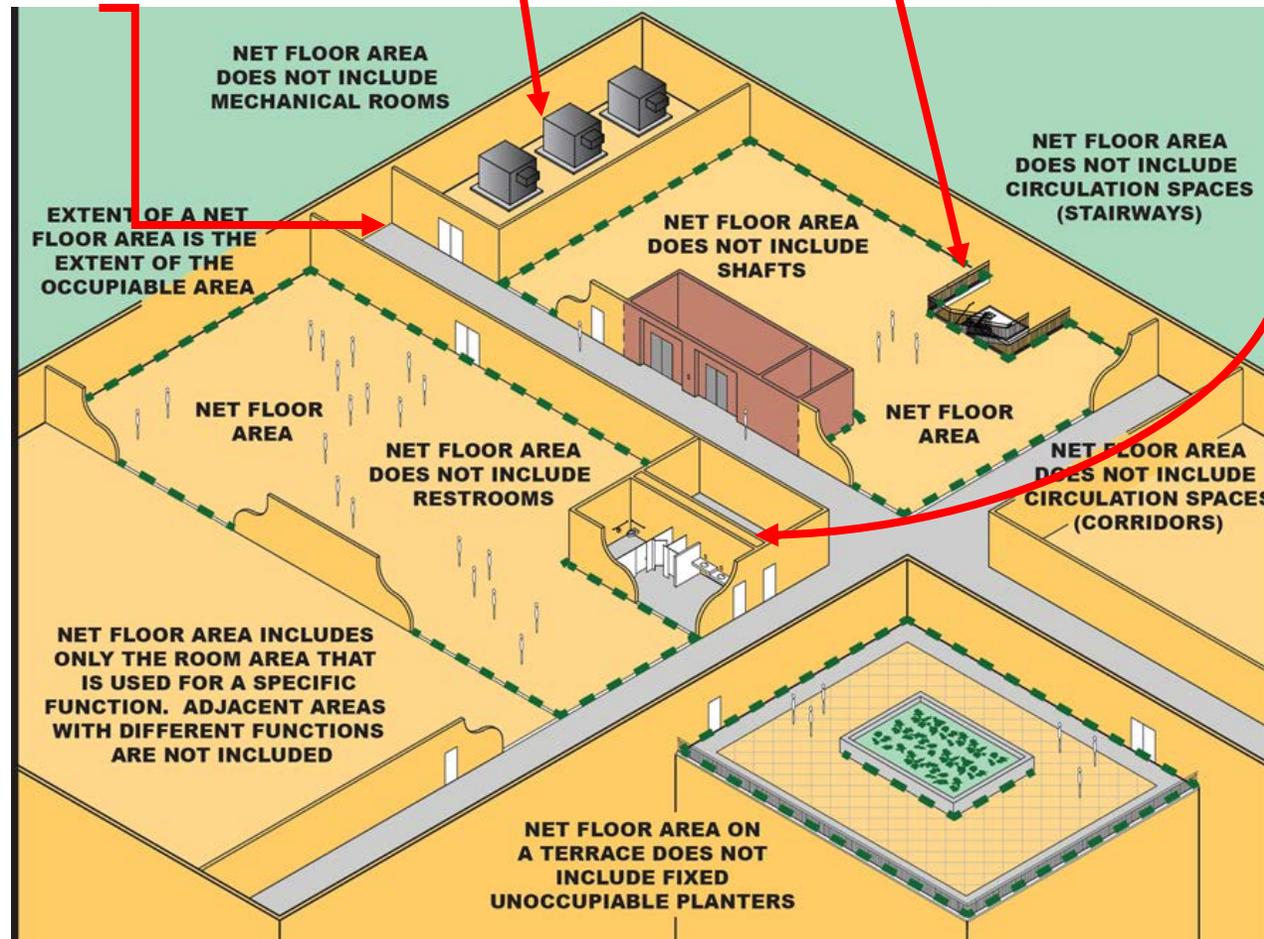
2012 Interactive Guide Figure 4-01



# Occupant Load - Net

## Floor Area, Net

- Actual occupied area
- Does not include corridors, mechanical rooms, stairways, restrooms, closets



2012 Interactive Guide Figure 4-02

# Occupant Load – Net Continued

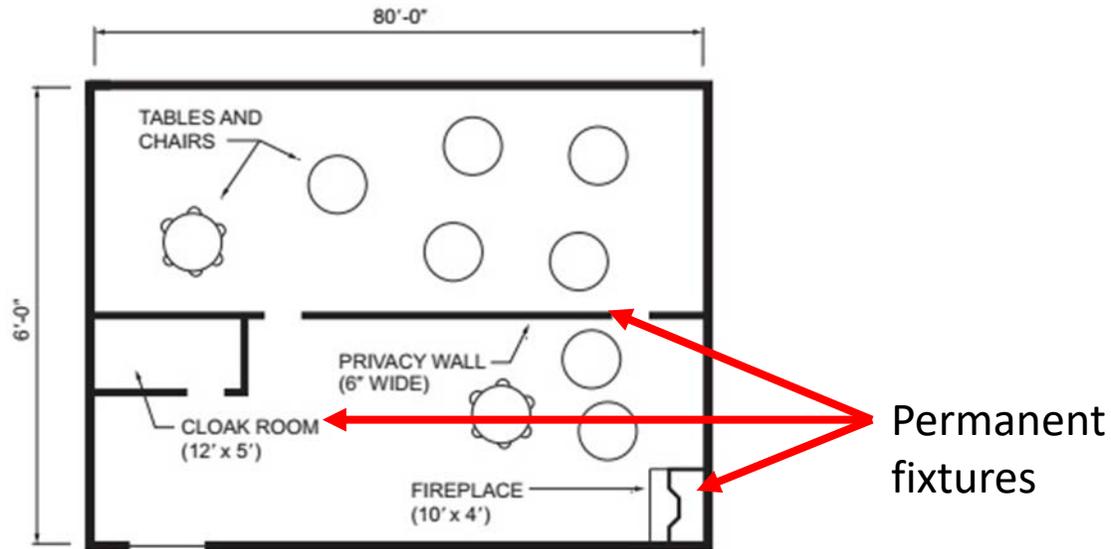
## Floor Area, Net

- Deductions for walls and permanent fixtures? **Yes**
- Deductions for aisles and aisle accessways? **No**



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Commentary Figure 1004.5

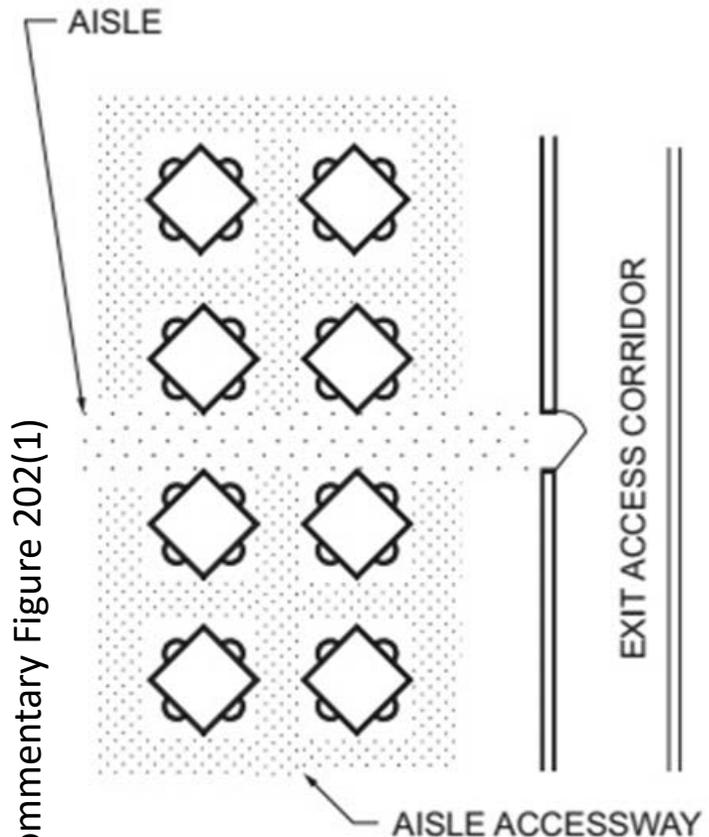


80' x 60'	=	4,800 SQ.FT.
PRIVACY WALL:	40 SQ.FT.	
FIREPLACE:	40 SQ.FT.	
CLOAK ROOM:	60 SQ.FT.	
TOTAL:	140 SQ.FT.	

(TOTAL AREA WITHIN WALLS) - (EXCLUDED ITEMS) = (NET FLOOR AREA)  
4,800 SQ.FT. - 140 SQ.FT. = 4,660 SQ.FT.

(NET FLOOR AREA)/(TABLE 1004.5 VALUE) = (OCCUPANT LOAD)  
4,660 SQ.FT./15 SQ.FT. PER OCCUPANT = 311 OCCUPANTS

Commentary Figure 202(1)



# Egress

## Means of egress – What is it?

- A continuous & unobstructed path of egress from any occupied portion of a building to the public way
- Exit from a building – protected from fire & smoke – without special knowledge

## What should you show?

- Have an egress plan
- Number of occupants using features
- Egress width: minimum and calculated
- Exit separation distance – measured
- Travel distances – measured



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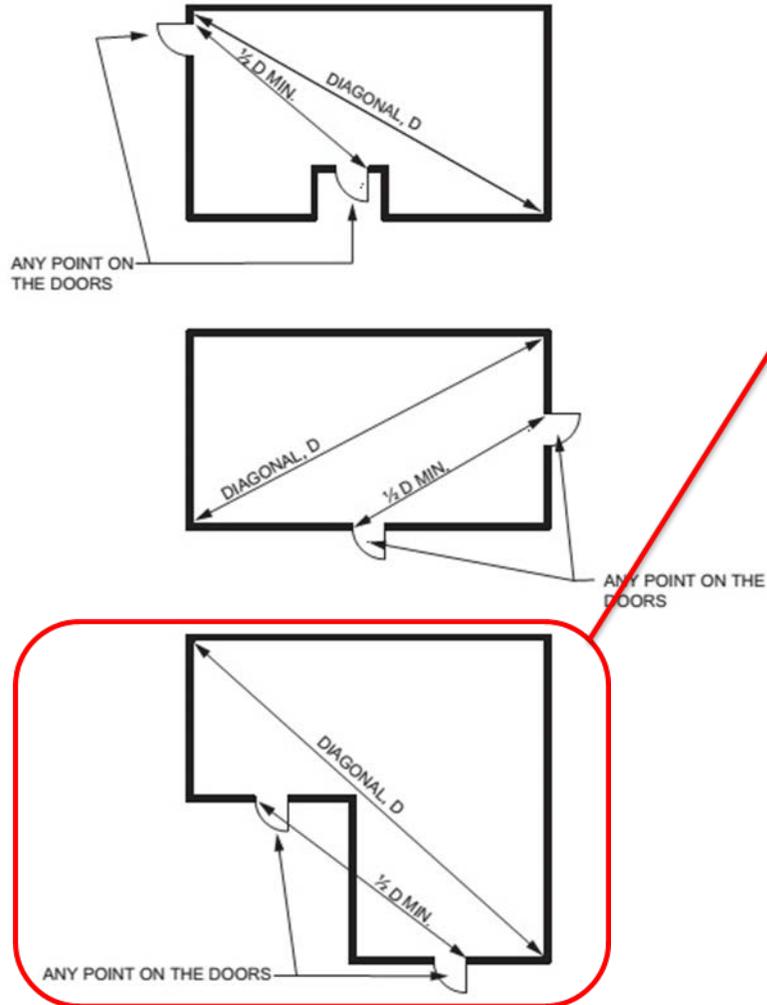
# Egress Plan – Exit Remoteness



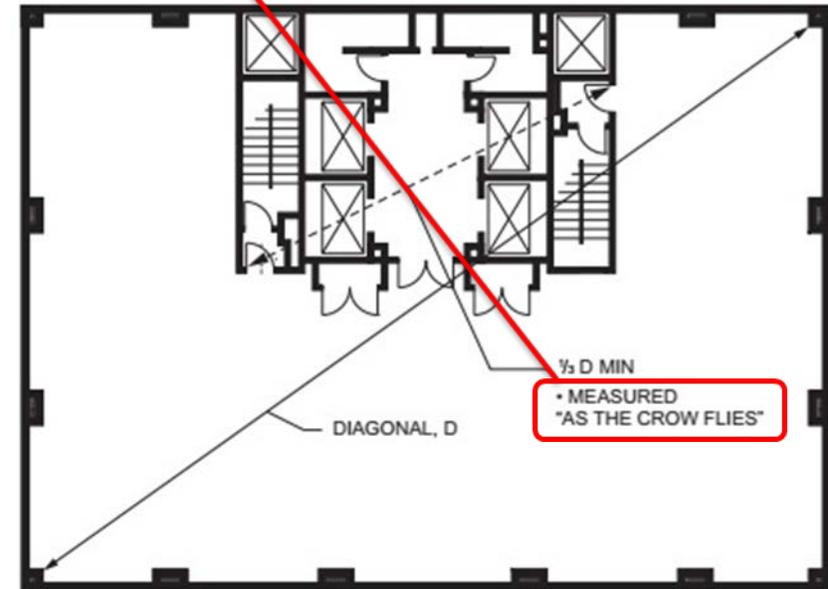
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## Egress Component - Remoteness

- How is it measured?
- Exit Access AND Exits



Commentary Figure 1007.1.1.1(1)



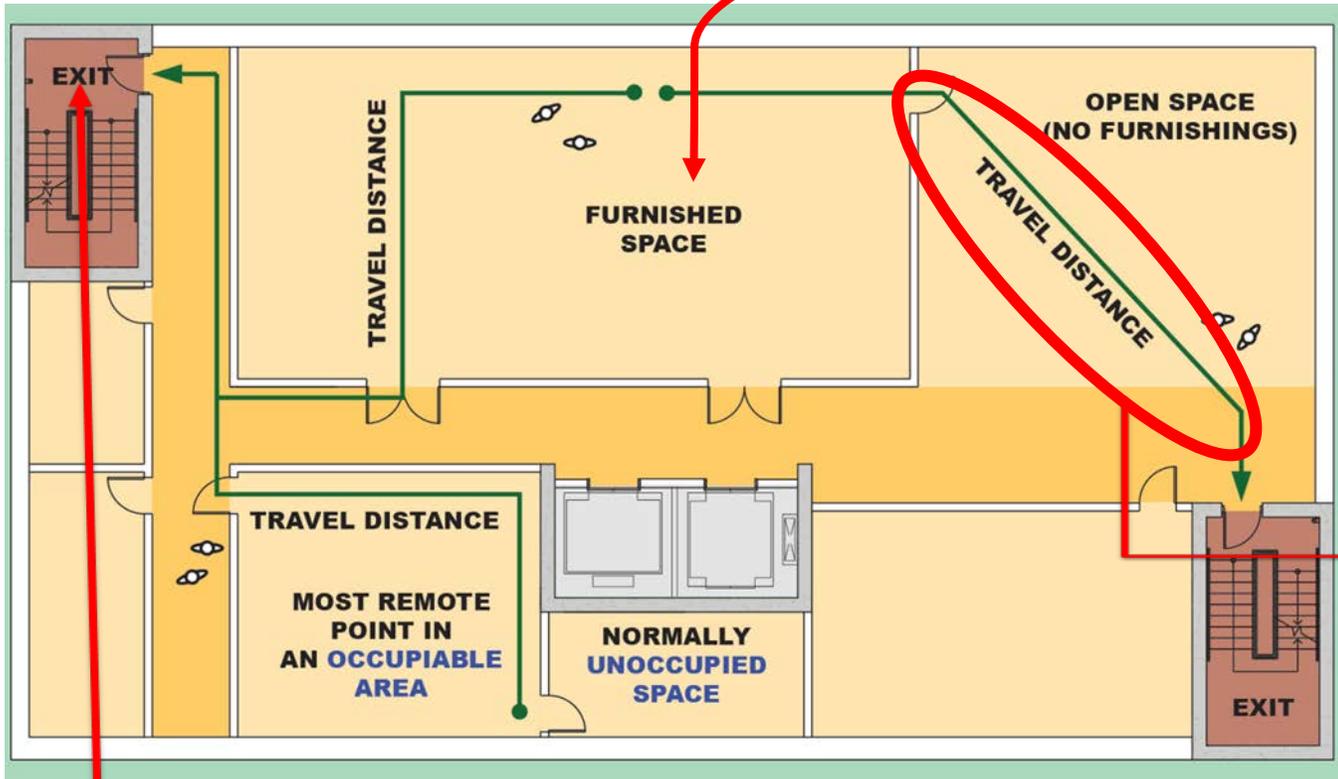
Commentary Figure 1007.1.1.1(3)

EXAMPLE:  
DIAGONAL DIMENSION = 134'-0"  
MIN. SEPARATION OF EXITS = 134' ÷ 3 = 44'-8"

# Egress Plan – Exit Access Distance



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## Egress Access Travel Distance:

- Depends on occupancy classification
- Natural and unobstructed path (Generally like the furnished space example)
- Diagonal paths are generally not appropriate. There are exceptions.

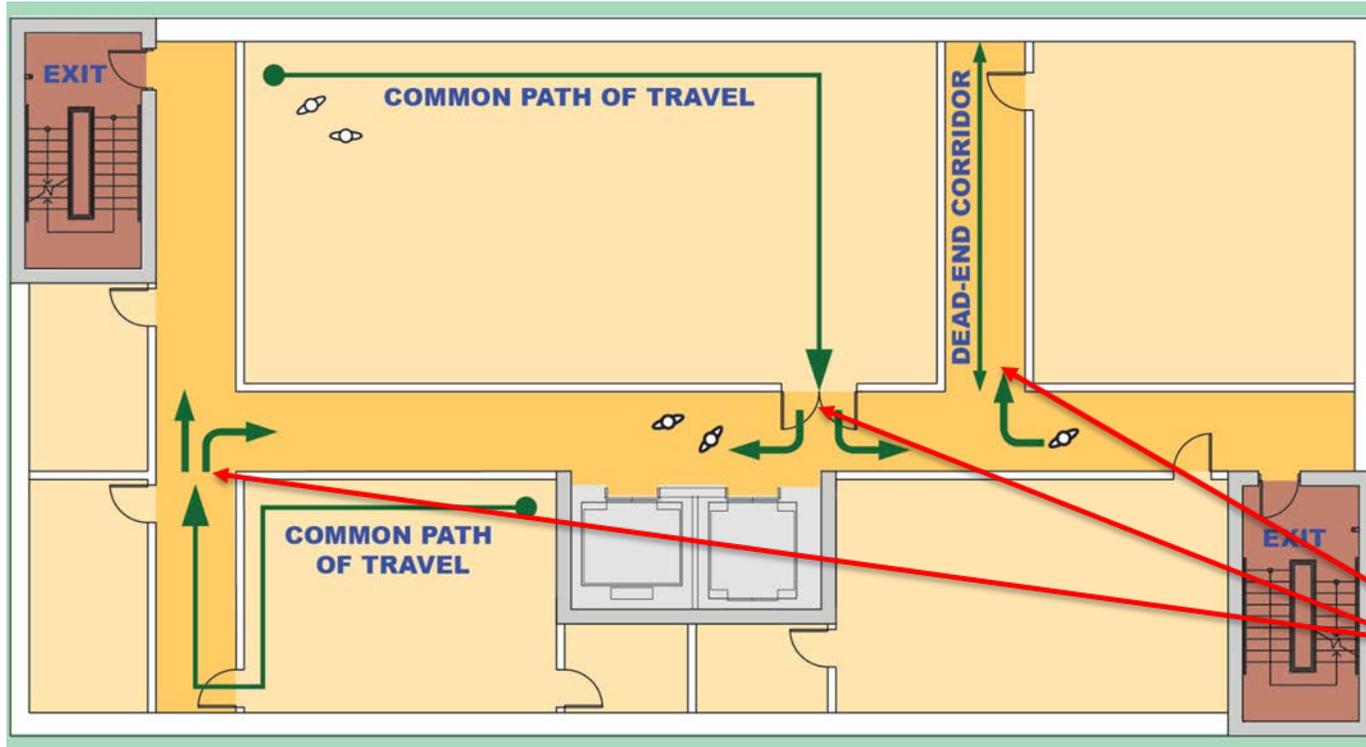
2012 Interactive Guide Figure 3-29

Not an exit access stair!

# Egress Plan – Common Path



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## Common Path of Egress Travel:

- Depends on occupancy classification
- Part of exit access travel distance
- Most remote point to choice of two paths for egress

2012 Interactive Guide Figure 3-34

# Passive Fire Protection

## What does it do?

- Protection of the structure AND/OR Resistance to the spread of fire

## Design factors to consider:

- Required hourly rating
- Continuity detailed
- Openings & penetrations detailed
- Combustible materials allowed or not
- Structural support is also protected

Show the entire fire-resistance rated detail



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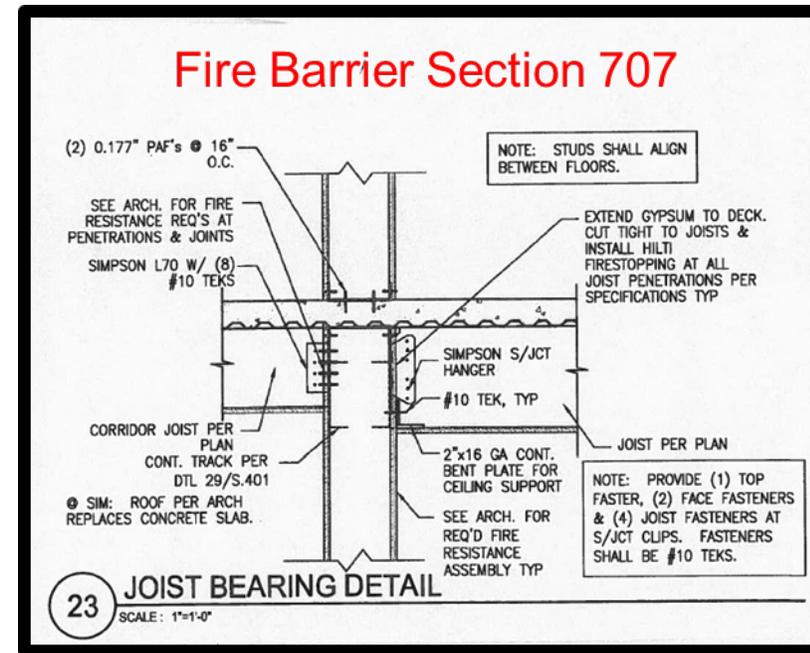
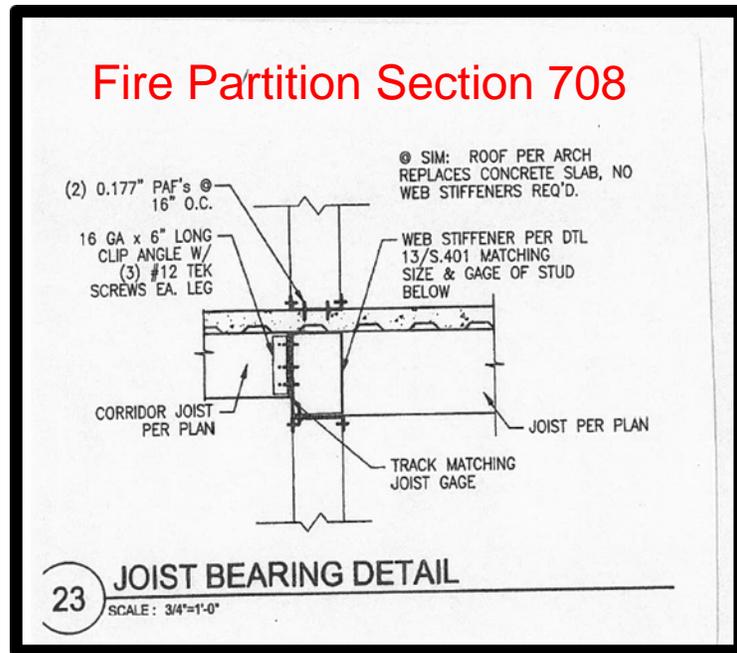


# Coordination



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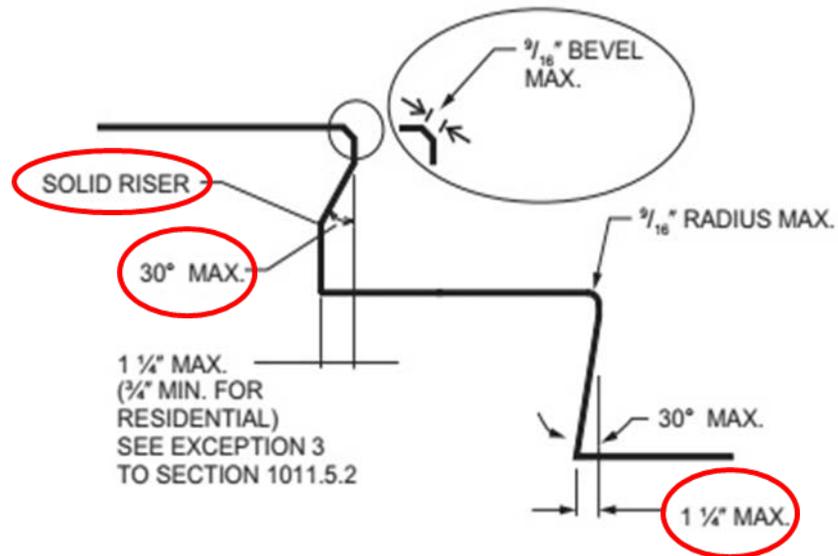
**Is your intent to provide a fire barrier being reflected on the other disciplines' drawings?**



# Stair and Handrail Issues

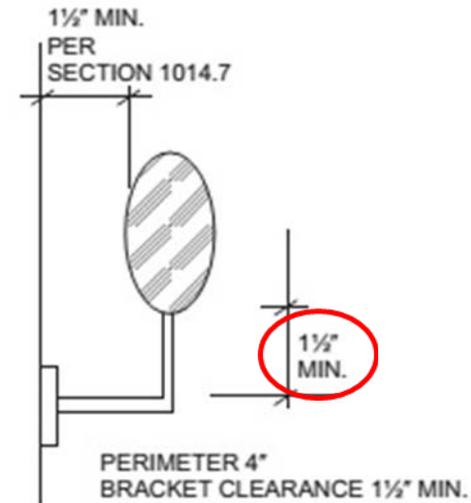


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Commentary Figure 1011.5.5.1

not 1 1/2"



Partial Commentary Figure 1014.4(2)

# Common Issues



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- Stairs and guards cannot be deferred
- Doors and stairs are sized based on the occupant load
- Existing buildings have selected one of the three compliance methods from IEBC Section 301.3 that has to be selected. There is no default.
- Show whether multiple buildings on one lot separate or considered as one. If not, show an imaginary line.
- Special Inspections certificates are provided

# New Code Requirement

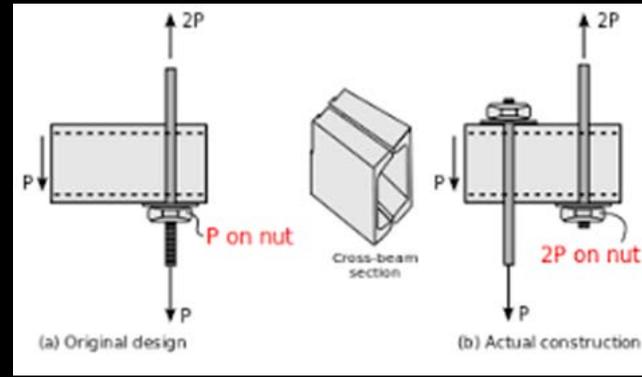
- IBC Sections 2304.12.2.5, 2304.12.2.6, 107.2.5, and 110.3.6 have all been created to address elevated exterior walking surfaces
- Wood framing for balconies, decks, patios, etc.
- Methods: Naturally durable, preservative-treated, or **impervious moisture barrier**



Source:  
<https://archinect.com/news/article/132118750/after-deadly-balcony-collapse-berkeley-building-and-safety-codes-tighten>



- Includes framing under a concrete slab!
- Always requires cross ventilation openings
- Where an **impervious moisture barrier** is used:
  - Provide details for the connections of this moisture barrier
  - Include the manufacturer's installation instructions



## QUESTIONS?



**John-Jozef "JJ" Proczka**  
**Technical Lead Structural**  
**Technical Lead IBC**  
**602-534-7329**  
**[john-jozef.proczka@phoenix.gov](mailto:john-jozef.proczka@phoenix.gov)**