Fire Access Equivalencies

City of Madison Planning Commission 2024

Welcome

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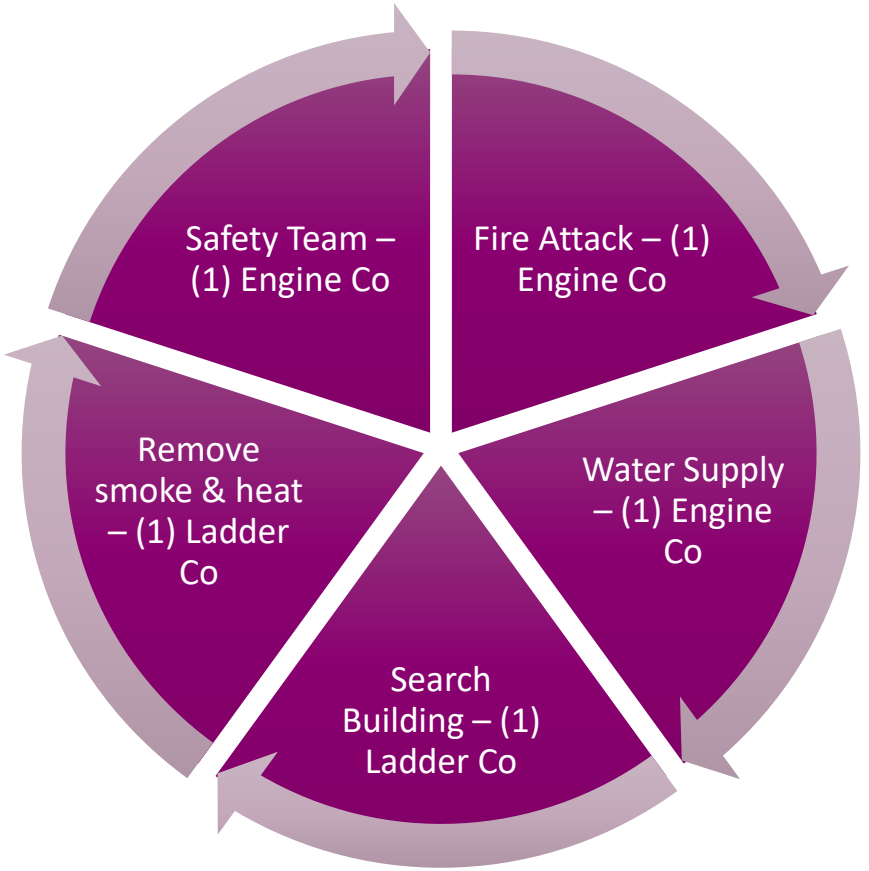
Objectives

- Purpose of Fire Access Regulations
- Fire Apparatus Access Lanes Code Requirements
  - Concepts of 25% of perimeter
- Designer/Developer Options
- MFD Equivalency Options

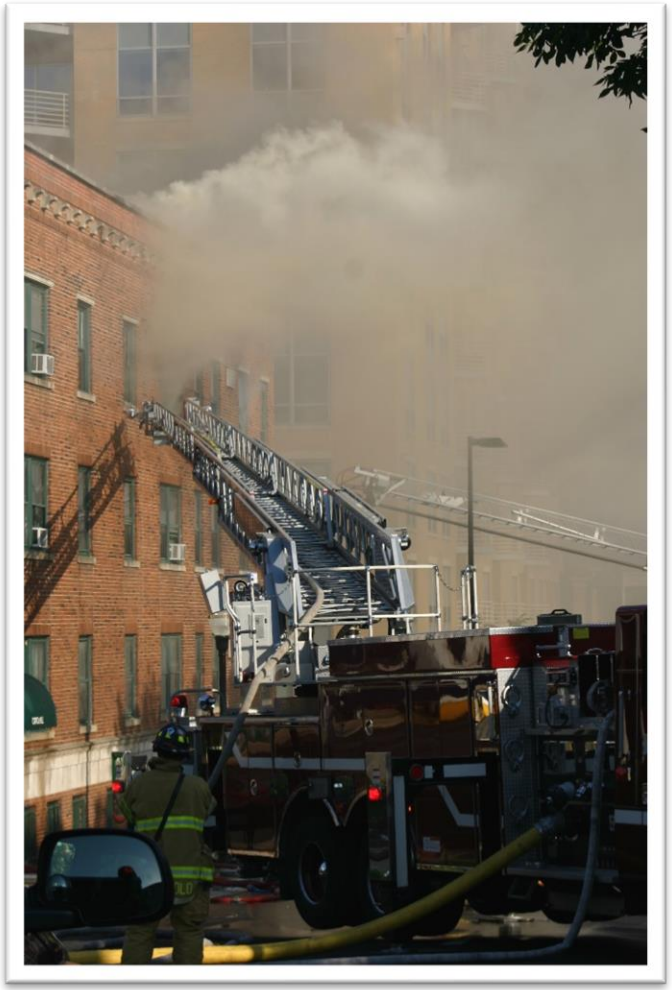
Building Fire Response

- (3) Engines
- (2) Ladders
- (1) Medic
- (1) Command Vehicle

Fire Ground Tasks

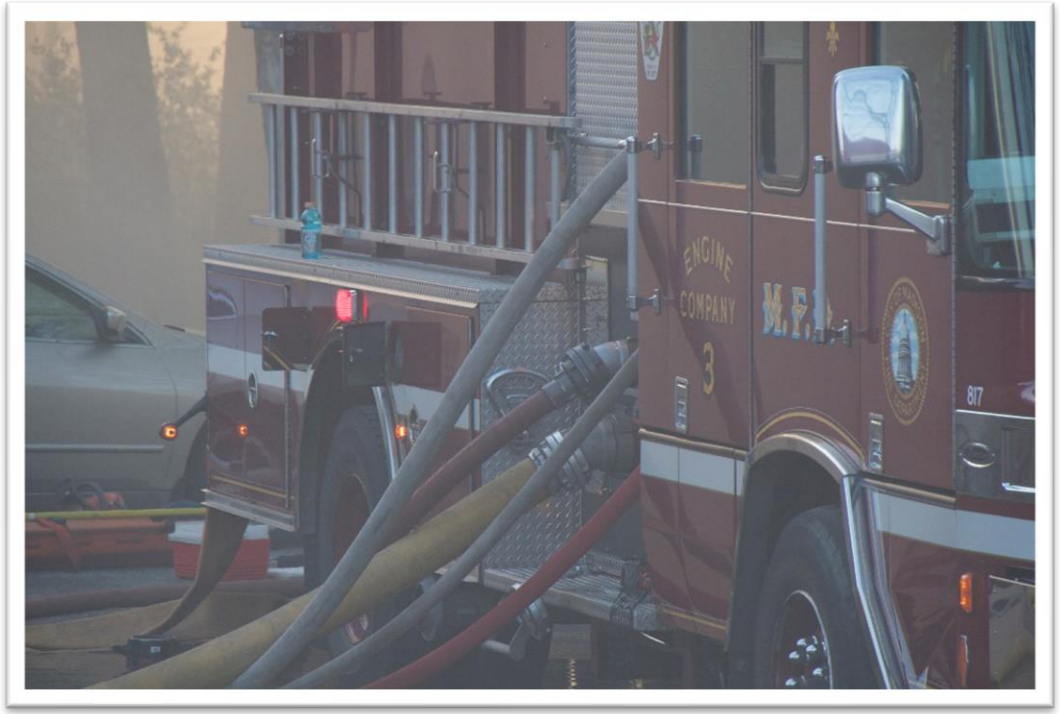


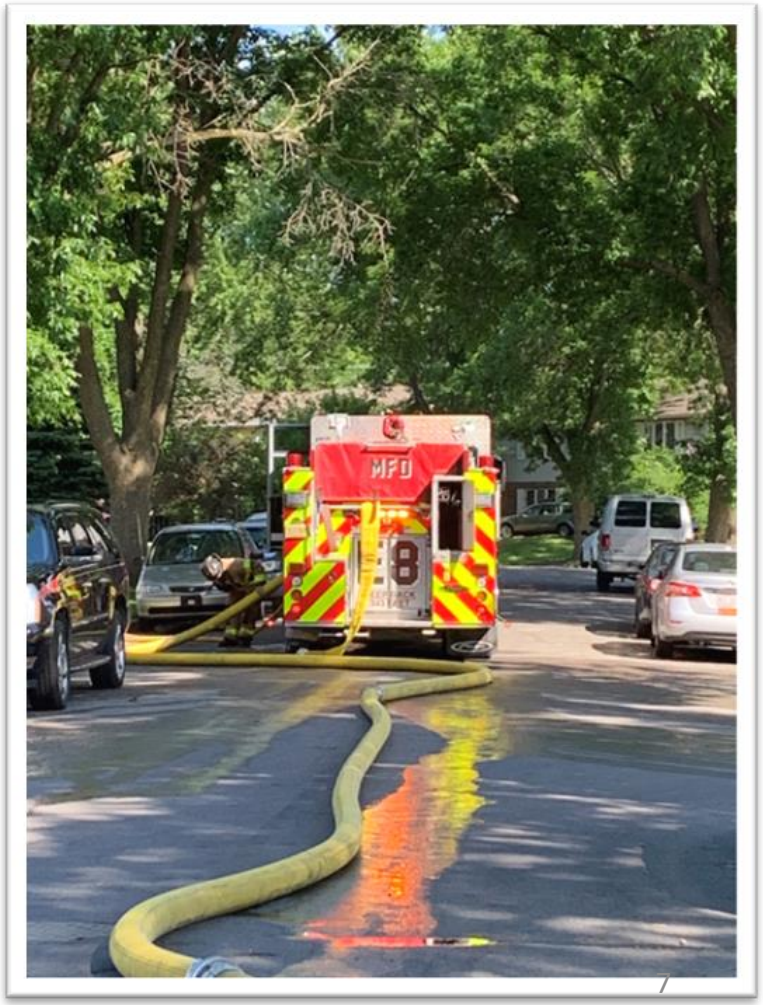
Fire Attack



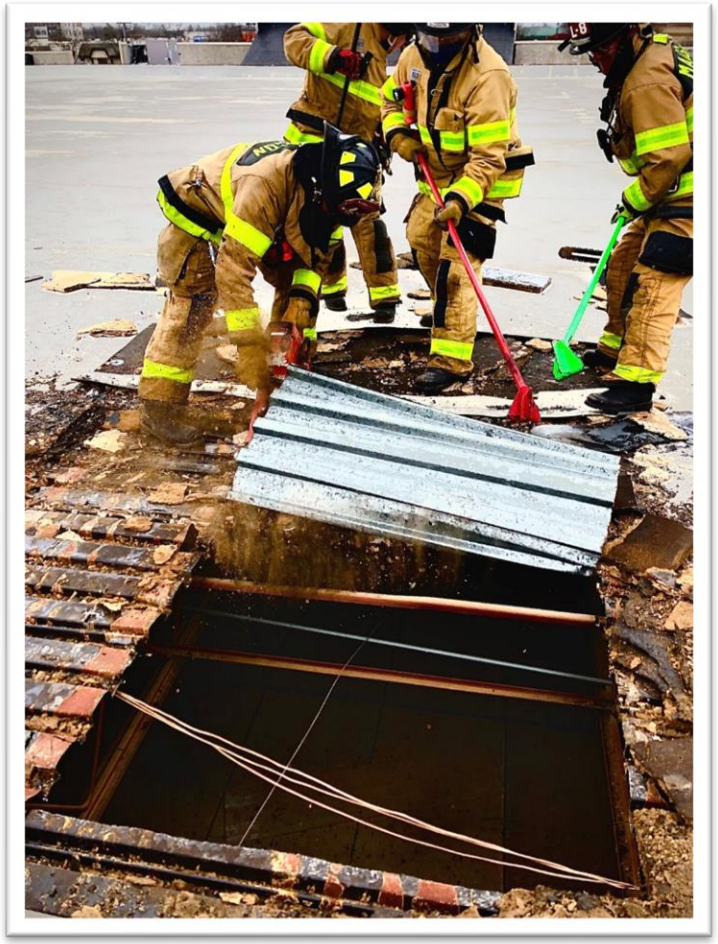
Water Supply

- Large diameter hose (LDH) from the fire hydrant to the fire truck to supply water.





Ventilation



- Cut open roof
- Release smoke & heat

Rescue

- Elevated Rescues
- Ground ladders have limited working height
- Safer to work from ladder trucks

Command & Safety

- Command Car: Manage incident & track personnel
- Ambulance: Injuries, monitor health of personnel
- Rapid Intervention Team: ready to rescue any personnel in danger

Why do Fire Lane Widths Matter?

- Large Apparatus
- Stabilization for Aerial
- Multiple Units
- Need access to side doors
- Be able to move tools and equipment

Wisconsin Building & Fire Codes

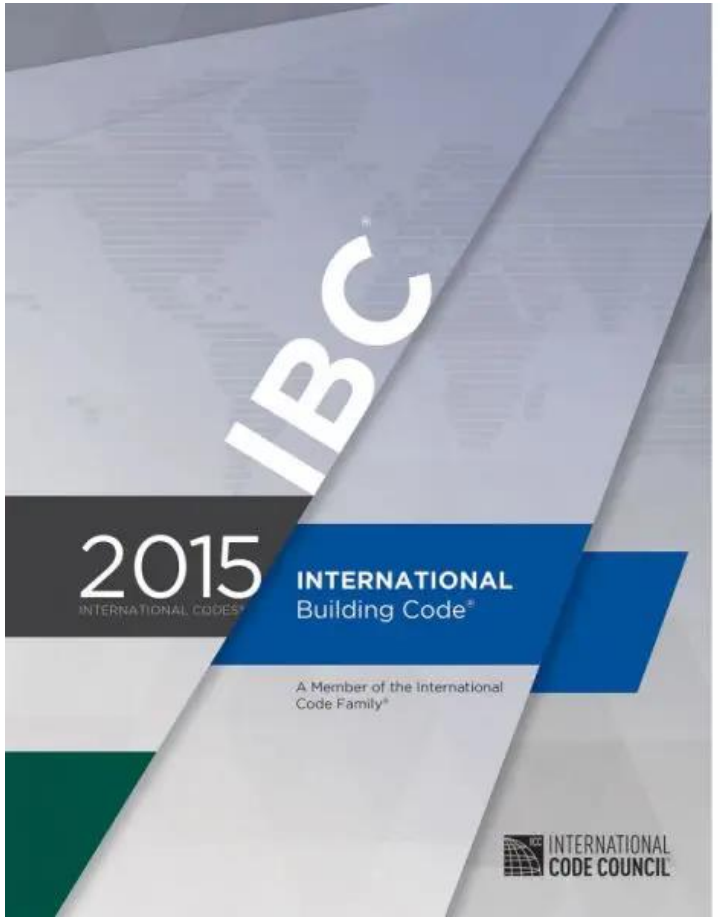
Prior to July 1, 2002: Fire Access Requirements non-existent in the WI building and fire codes

The State of Wisconsin adopts first model codes effective July 1, 2002.

International Building Code (IBC)

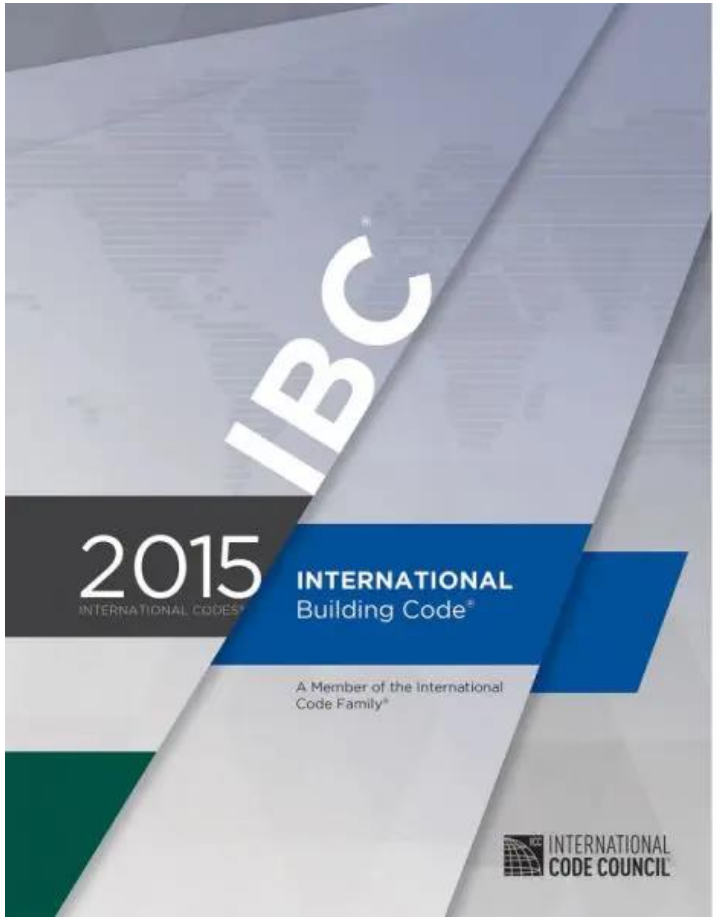
International Fire Code (IFC)

Fire Apparatus Access Roads now required for newly constructed buildings as required in the IBC.



Wisconsin Building & Fire Codes

- The International Building Code (IBC) covers all new buildings except:
  - One and two family dwellings
  - Federal or located on Indian Reservation land
  - Agricultural used exclusively for farming purposes.



Two Types of Fire Access Roads

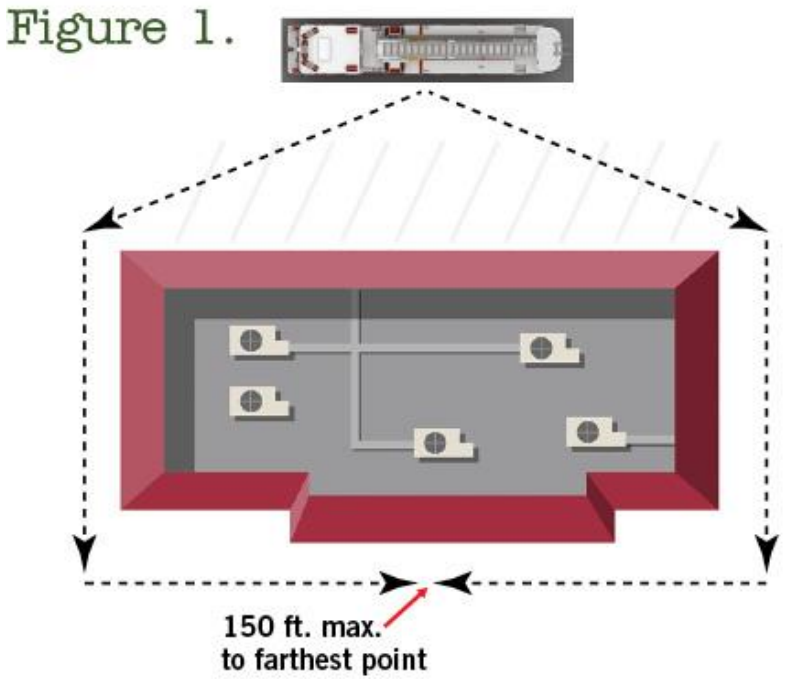
- **Fire Apparatus Access Road**
  - All commercial/public buildings

- **Aerial Fire Apparatus Access Road**
  - Additional requirements for buildings over 30-ft in height and are in addition to standard Fire Apparatus Access Road requirements.

Fire Apparatus Access Roads

- **All** new buildings of any height.
  - Allows fire engines to get close to a building to operate efficiently
  - 20-ft wide
  - 13-ft 6-in clear height
  - 28-ft inside turn radius
  - Able to reach all exterior walls from fire lanes with 150-ft of hose
  - 250-ft of hose allowed if building is sprinklered
  - Concrete or asphalt able to support a load of 85,000 lbs.
  - Fire Lane is within 500-ft of (2) fire hydrants

Fire Apparatus Access Road



If the distance measured from the fire engine to the farthest point on the building exceeds 150 ft., additional access (fire lanes) is required.

Aerial Fire Apparatus Access Roads

Allow ladder trucks to reach & work at elevated heights

Buildings over 30-ft in height

26-ft wide

Within 15-30-ft from building edge

Parallel to one entire side

No overhead utility and other obstructions

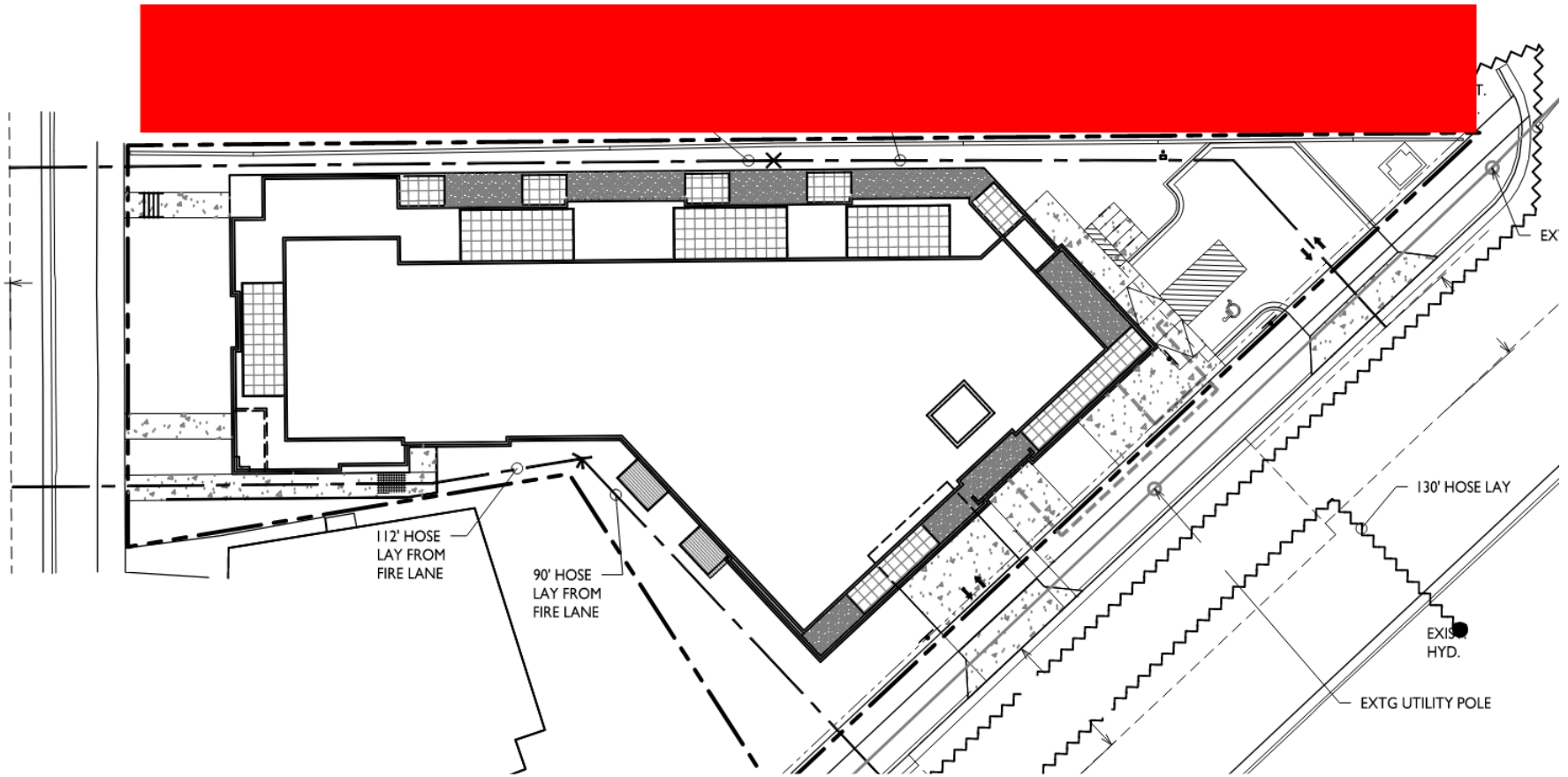
Parallel to one entire side

- International Fire Code (IFC) requires one entire side of the building be covered and approved by Authority Having Jurisdiction (AHJ)

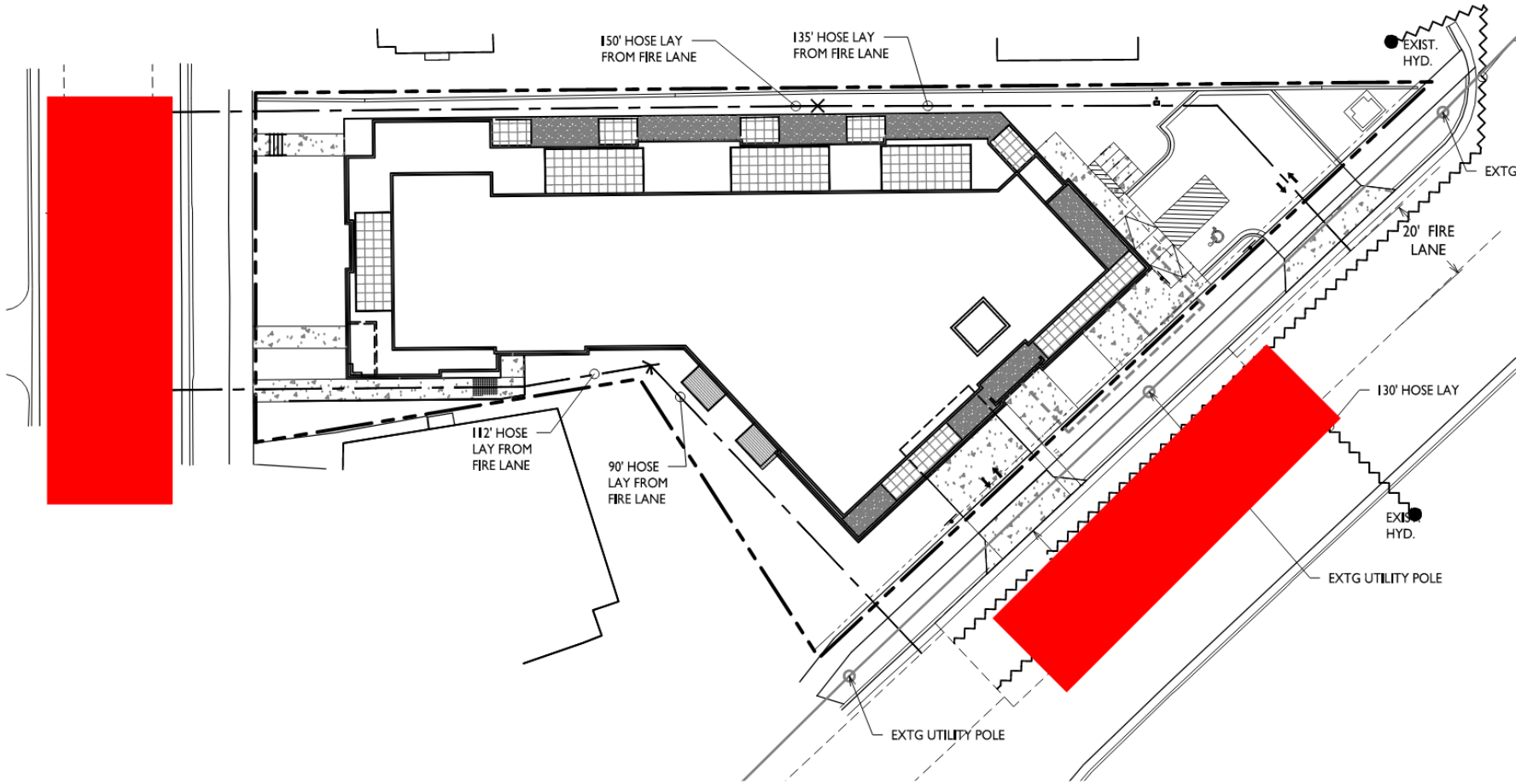
  Or

- Multiple access points from different roads
  - Covers 25% of perimeter
  - Minimum 45’ in length
  - No overhead obstructions

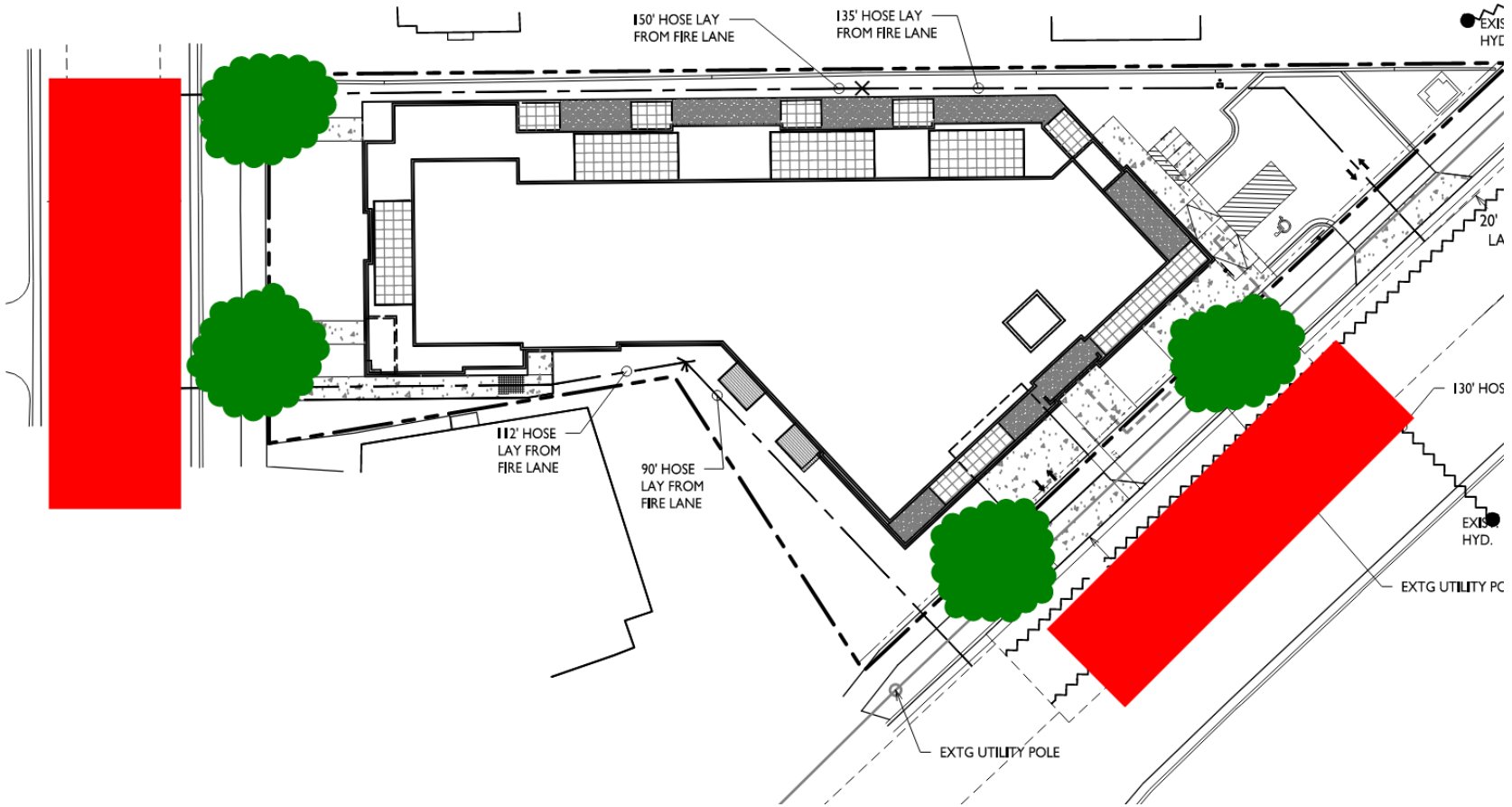
Parallel to Side



Multiple Access Points



Tree Spacing Allowance



Code allowances for Fire Lanes

Fire Lanes

- Sprinkler systems allow increase of distance to exterior walls
- MFD may allow increase of distance to exterior walls due to topography, waterways, etc with alternative means of fire protection (equivalency guide)

Aerial Fire Lanes

- Not required when all of the following is provided:
  - Type IA, IB, or IIA (non-combustible) construction
  - Fire Sprinklers
  - Stairs to roof with a fire standpipe system

What Can Be Used For Fire Roads?

- Public Roads
  - Need to account for parking in determining available width
- Driveways or Parking Lots on the Building Site
- Dedicated fire lanes

Building Designer Options if Public Roads Not an Option

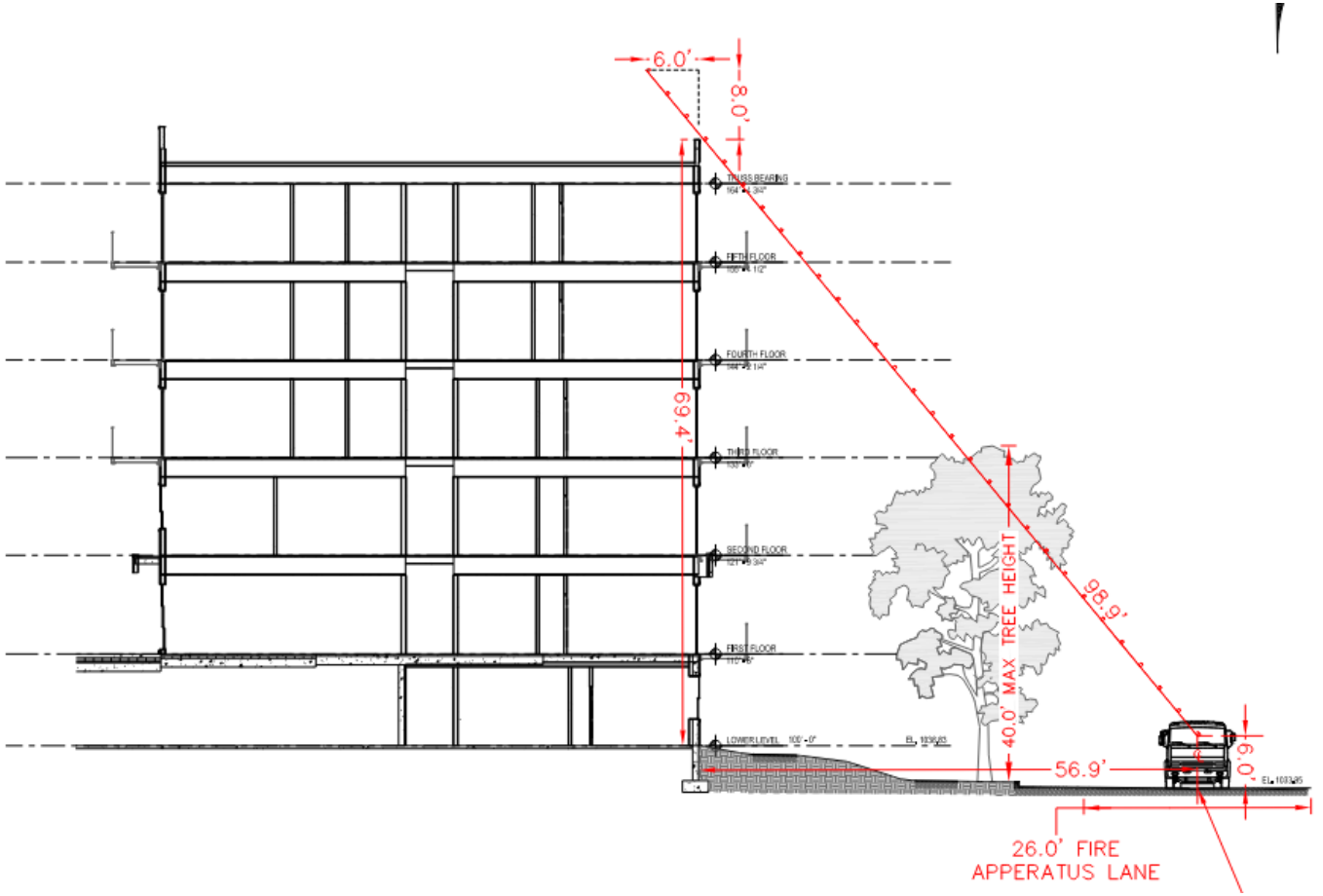
- Dedicated fire lanes on property
- Shorter buildings
- Higher Class of Construction
  - (Non-combustible)
- Documented Cross Access Easements

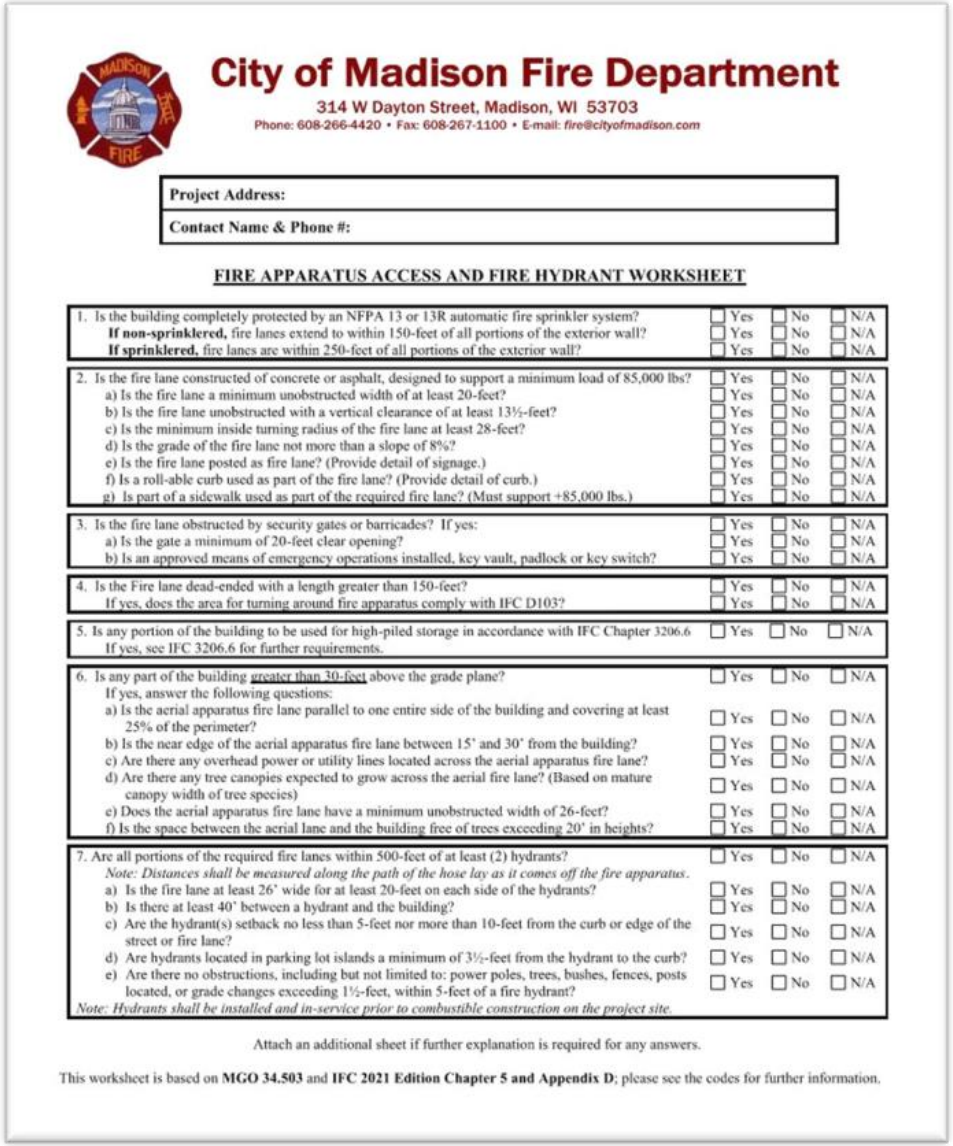
MFD Equivalency Guide

- Options a designer **may** incorporate if unable to meet building code requirements
- Keeps ability to perform fireground tasks

- *Higher class of construction*
- *Multiple stairs to the roof*
- *Higher standard of fire sprinkler protection*
- *Geometric demonstration of reach*
- *Fire Service Access Elevators*

Geometric Demonstration





City of Madison Fire Department

314 W Dayton Street, Madison, WI 53703

Phone: 608-266-4420 • Fax: 608-267-1100 • E-mail: fire@cityofmadison.com

Project Address:

Contact Name & Phone #:

FIRE APPARATUS ACCESS AND FIRE HYDRANT WORKSHEET

1. Is the building completely protected by an NFPA 13 or 13R automatic fire sprinkler system?	☐ Yes	☐ No	☐ N/A
If non-sprinklered, fire lanes extend to within 150-feet of all portions of the exterior wall?	☐ Yes	☐ No	☐ N/A
If sprinklered, fire lanes are within 250-feet of all portions of the exterior wall?	☐ Yes	☐ No	☐ N/A
2. Is the fire lane constructed of concrete or asphalt, designed to support a minimum load of 85,000 lbs?	☐ Yes	☐ No	☐ N/A
a) Is the fire lane a minimum unobstructed width of at least 20-feet?	☐ Yes	☐ No	☐ N/A
b) Is the fire lane unobstructed with a vertical clearance of at least 13½-feet?	☐ Yes	☐ No	☐ N/A
c) Is the minimum inside turning radius of the fire lane at least 28-feet?	☐ Yes	☐ No	☐ N/A
d) Is the grade of the fire lane not more than a slope of 8%?	☐ Yes	☐ No	☐ N/A
e) Is the fire lane posted as fire lane? (Provide detail of signage.)	☐ Yes	☐ No	☐ N/A
f) Is a roll-able curb used as part of the fire lane? (Provide detail of curb.)	☐ Yes	☐ No	☐ N/A
g) Is part of a sidewalk used as part of the required fire lane? (Must support +85,000 lbs.)	☐ Yes	☐ No	☐ N/A
3. Is the fire lane obstructed by security gates or barricades? If yes:	☐ Yes	☐ No	☐ N/A
a) Is the gate a minimum of 20-feet clear opening?	☐ Yes	☐ No	☐ N/A
b) Is an approved means of emergency operations installed, key vault, padlock or key switch?	☐ Yes	☐ No	☐ N/A
4. Is the Fire lane dead-ended with a length greater than 150-feet?	☐ Yes	☐ No	☐ N/A
If yes, does the area for turning around fire apparatus comply with IFC D103?	☐ Yes	☐ No	☐ N/A
5. Is any portion of the building to be used for high-piled storage in accordance with IFC Chapter 3206.6 If yes, see IFC 3206.6 for further requirements.	☐ Yes	☐ No	☐ N/A
6. Is any part of the building greater than 30-feet above the grade plane?	☐ Yes	☐ No	☐ N/A
If yes, answer the following questions:			
a) Is the aerial apparatus fire lane parallel to one entire side of the building and covering at least 25% of the perimeter?	☐ Yes	☐ No	☐ N/A
b) Is the near edge of the aerial apparatus fire lane between 15' and 30' from the building?	☐ Yes	☐ No	☐ N/A
c) Are there any overhead power or utility lines located across the aerial apparatus fire lane?	☐ Yes	☐ No	☐ N/A
d) Are there any tree canopies expected to grow across the aerial fire lane? (Based on mature canopy width of tree species)	☐ Yes	☐ No	☐ N/A
e) Does the aerial apparatus fire lane have a minimum unobstructed width of 26-feet?	☐ Yes	☐ No	☐ N/A
f) Is the space between the aerial lane and the building free of trees exceeding 20' in heights?	☐ Yes	☐ No	☐ N/A
7. Are all portions of the required fire lanes within 500-feet of at least (2) hydrants?	☐ Yes	☐ No	☐ N/A
Note: Distances shall be measured along the path of the hose lay as it comes off the fire apparatus.			
a) Is the fire lane at least 26' wide for at least 20-feet on each side of the hydrants?	☐ Yes	☐ No	☐ N/A
b) Is there at least 40' between a hydrant and the building?	☐ Yes	☐ No	☐ N/A
c) Are the hydrant(s) setback no less than 5-feet nor more than 10-feet from the curb or edge of the street or fire lane?	☐ Yes	☐ No	☐ N/A
d) Are hydrants located in parking lot islands a minimum of 3½-feet from the hydrant to the curb?	☐ Yes	☐ No	☐ N/A
e) Are there no obstructions, including but not limited to: power poles, trees, bushes, fences, posts located, or grade changes exceeding 1½-feet, within 5-feet of a fire hydrant?	☐ Yes	☐ No	☐ N/A
Note: Hydrants shall be installed and in-service prior to combustible construction on the project site.			

Attach an additional sheet if further explanation is required for any answers.

This worksheet is based on **MGO 34.503** and **IFC 2021 Edition Chapter 5 and Appendix D**; please see the codes for further information.

Fire Apparatus Access and Fire Hydrant Worksheet

- On website
- Shared through planning packet
- Staff comments at the Developers Assistance Team
- Staff comments on Land Use submittal process

https://www.cityofmadison.com/fire/documents/Fire%20Access%20and%20Fire%20Hydrant%20Worksheet.pdf

Equivalency Guide

- Madison Fire developed a guide of suggested options that a developer could consider incorporating to address non-code compliant fire access.
- Madison Fire must approve but discussions typically occur during the Land Use application phase of a project.
- The guide is available on our website: https://www.cityofmadison.com/fire/permits-inspections/equivalency-guide-for-code-deficient-fire-apparatus-access

Building Board of Appeal

- An owner may apply for a Variance from any building or fire code to the Building Board of Appeal.
- Existing buildings may be based on hardship.
- New buildings approval typically requires an alternative method of providing the same level of safety or comply with a newer standard or product.

Thank You