



# CHARLOTTE FIRE DEPARTMENT

Fire Marshal's Office  
500 Dalton Avenue  
Charlotte, North Carolina 28206

## Fire Plan Review Guidelines

October 1, 2015

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### General Requirements

#### A. Submittal Requirements:

1. Building permit information can be found on Mecklenburg County's "LUESA" site. [Click Here](#)
2. City of Charlotte Planning Department (City Engineering). [Click Here](#)

#### B. Appendix B:

Provide information for the entire project and include the following:

1. Project name and address
2. Fire district status
3. Occupant load
4. Seismic category
5. Fire alarm status and type
6. Sprinkler status and type

### New/Shell Building Requirements

#### A. Site Requirements:

1. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 14 feet. This shall include multi-family properties and residential communities with privately-maintained streets; on-street parking shall be prohibited unless the minimum 20 feet width can be established and maintained.
2. Dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus.
3. The minimum turning radius shall be 42 feet outside and 30 feet inside for all proposed fire apparatus access roads.
4. Fire apparatus access roads shall not have a slope greater than 10%.
5. Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities. CFD's largest trucks (ladder companies) have a Gross Vehicle Weight (GVW) of 80,000 lbs.
6. Fire apparatus access roads shall be within 200 feet of all exterior walls of sprinklered buildings and 150 feet of all exterior walls of non-sprinklered buildings.

#### B. Water Supply:

1. An approved fire hydrant shall be located within 750 feet from the most remote point of all buildings, and measured "as the truck travels".



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2. The fire department connection (FDC) shall not be greater than 50 feet from a fire department access road.
  3. Water mains that are 6 inches in diameter and serving a fire hydrant shall not exceed 350 feet in length.
  4. Show an NFPA 13 FDC location within 200 feet of a fire hydrant.
  5. Show an NFPA 13R FDC location within 750 feet of a fire hydrant.
  6. Show all existing and new hydrant locations, including size of mains. Friction loss calculations shall be required for all new hydrant installations.
  7. An ISO needed fire flow (NFF) calculation shall be completed for all non-sprinklered buildings.
  8. Buildings protected with an NFPA 13R sprinkler system shall be calculated, with a 50% credit allowance given on the NFF.
  9. Include recent hydrant flow test of the most remote hydrant at 20 psi from our hydrant test coordinator by calling 704-336-2101 or [Click Here](#).

### C. Fire Sprinkler Protection:\*

1. Provide the sprinkler design criteria.
2. Show all FDC and hydrant locations.
3. Provide riser diagram and type of system.
4. Show the riser location.

\*Fire sprinkler shop drawings are required for all new systems.

### D. Fire Alarm Systems:\*

1. Show all notification and initiating devices, and the fire alarm control panel (FACP) location.
2. Provide the riser diagram including all devices and monitoring of all suppression systems.
3. Provide the matrix/sequence of operations.

\*Fire alarm shop drawings are required for all new systems.

### E. Stand Pipe Systems:

1. Provide the type of system, and note "wet" or "dry".
2. FDC location shall be within 200 feet of an approved hydrant and with-in 50 feet of access road.
3. Hose valves shall be on all floor landings; NOT intermediate landings. Additional hose valves are required where the most remote portion of a floor or area exceeds 200 feet from a hose connection for a sprinklered building, or 150 feet for a non-sprinklered building.

### F. Alternative Suppression Systems:



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1. Engineer to provide the design criteria and type of system being used.
2. Provide cut sheets of new equipment.

\*Shop Drawings are **not** required for alternative suppression systems.

### Upfit/Existing Buildings

#### A. Fire Sprinkler Protection:

1. Show all sprinkler head locations on a reflected ceiling plan (RCP) or fire protection sheet (FP).
2. Identify all sprinkler heads as new, existing, relocated, or plugged.
3. Show all ceiling obstructions and walls and show heads on both sides of tenant separation walls.

\*Fire Sprinkler Shop Drawings are required when adding **20 or more heads.**

#### B. Fire Alarm Systems:

1. Indicate all notification and initiating devices, and the FACP location.
2. Provide the riser diagram including all devices, and monitoring of all suppression systems.
3. Provide the matrix/sequence of operations.

\*Fire Alarm Shop Drawings are required for **5 or more devices and new panels.**

#### C. Alternative Suppression Systems:

1. Engineer shall provide the design criteria and type of system being used.
2. Provide cut sheets of new equipment.

\*Shop Drawings are **not** required for alternative suppression systems, but such systems must be installed per manufacturer's specifications.

### Special Circumstances/Use

#### A. High-rise Buildings:

1. For two-way fire department communications, although the North Carolina Fire Code requires that a two-way fire department communication system comply with NFPA 72 be installed in high-rise buildings, with a repeater system being the "exception", the Charlotte Fire Department **requires a**



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**repeater system.** If a designer/building owner wishes to install fire phones complying with NFPA 72 that will be an added level of protection, but not an alternative.

2. Pressure reducing valves (PRV) are required to be field adjustable.

### B. Cell Phone Towers:

1. Site shall be provided with an approved fire department access road of not less than 20 feet in width, and an unobstructed vertical clearance of not less than 14 feet.
2. Dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus.
3. The minimum turning radius shall be 42 feet outside and 30 feet inside for the proposed fire apparatus access road.
4. Fire apparatus access road shall not have a slope greater than 10%.
5. Fire apparatus access road shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities. CFD's largest trucks (ladder companies) have a Gross Vehicle Weight (GVW) of 80,000 lbs.
6. Fire apparatus access road shall be within 150 feet of all exterior walls of the building (200 feet if building is sprinklered).

### C. Gates and Access Controlled Fencing:

1. Must be a minimum width of 20 feet for **undivided entry/exit** or 16 feet for **divided entry/exit**.
2. All gates shall have a Knox Box or Knox Switch for fire department access.

## Shop Drawing Requirements

### A. Plan Submittal:

#### 1. *Fire alarm systems:*

Shop drawing submittal for fire alarm systems shall include, but not be limited to, the following information, in accordance with Section 907 of the North Carolina Fire Code:

- A floor plan that indicates the use of all rooms.
- Locations of alarm-initiating devices.
- Locations of alarm notification appliances, including candela ratings for visible appliances.
- Location of fire alarm control unit, transponders and notification power supplies.
- Annunciators.
- Power connection.
- Battery calculations.
- Conductor type and sizes.
- Voltage drop calculations.



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- Manufacture's cut sheets for equipment, devices and materials.
  - Details of ceiling heights and construction.
  - The interface of fire safety control functions.
  - Classification of supervising station.

### 2. *Fire sprinkler systems:*

Shop drawings for fire sprinkler systems shall include, at a minimum, the following:

- Cut sheets for sprinkler heads.
- Hydraulic calculations (**must include 15psi fixed loss for back-flow device**).
- Utility plans indicating all below-ground piping and associated connections.
- Fire hydrant flow test results, unless current test is within a 12 month period.

### B. Submittal Timeline:

1. Shop drawings shall be submitted within 90 days of building permit issuance. Installation shall not take place until plans are reviewed and approved.
2. Plans will be reviewed within 5 business days from the date the reviewer receives them. We will notify the submitter when the review has been completed.

### C. Submittal Procedure:\*

The FY'16 shop drawing fee for fire alarm systems and fire sprinkler systems is \$135.00 per system. In order to process and complete your review request, you must complete the "Charlotte Fire Department Shop Drawing Review Application" form. This form must accompany all shop drawings. [Click Here](#)

**Plans must be submitted in electronic format.** Submittal may be via: Other electronic format via the link below, dropbox.com (or similar program), or delivered in electronic format to our office at 500 Dalton Avenue.

1. When submitting electronically, submit via [cfplansubmittal@charlottenc.gov](mailto:cfplansubmittal@charlottenc.gov).
2. Upon receipt of your plans, we will contact you for payment arrangements.

\*If you have any questions, contact Simmie Ford at 704-336-2101.



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### Review Application and Fees:

Plans Review Fees		
Hydrant Test	<b>34a</b>	\$170.00
Rezoning Petitions	<b>34b</b>	\$70.00
Multi Family	<b>34c</b>	\$270.00
Fire Alarm Plans (Shop drawings)	<b>34d</b>	\$135.00
Fire Sprinkler Plans (Shop drawings)	<b>34e</b>	\$135.00
Plans Review-Const. less than 50,000	<b>34g</b>	\$205.00
Plans Review-Const. \$50,001 to 100,000	<b>34h</b>	\$235.00
Plans Review-Const. \$100,001 to 500,000	<b>34i</b>	\$270.00
Plans Review-Const. \$500,001 to 1,000,000	<b>34j</b>	\$340.00
Plans Review-Const. \$1,000,001 to 5,000,000	<b>34k</b>	\$578.00
Plans Review-Const. \$5,000,001 to 10,000,000	<b>34l</b>	\$880.00
Plans Review-Const. Greater Than 10,000,000	<b>34m</b>	\$1,350.00
Plans Review-Mega/HCDT (Phased, Mixed-Use, and Design Projects)	<b>34v</b>	\$2,700.00
Performance Tests - Fire pumps	<b>34n</b>	\$205.00
Performance Tests - Sprinkler System	<b>34o</b>	\$205.00
Performance Tests - Fire Alarm (Shell)	<b>34p</b>	\$270.00
Performance Tests - Fire Alarm (Upfit)	<b>34q</b>	\$135.00
Performance Tests - Private fire hydrants	<b>34r</b>	\$170.00
Performance Tests - Standpipe system tests	<b>34s</b>	\$440.00
Performance Tests - Automatic fire-extinguishing systems	<b>34f</b>	\$170.00