

# RALEIGH FIRE DEPARTMENT

## FIRE PROTECTION DIVISION

### GENERAL INFORMATION FOR FIRE PROTECTION PERMITS AND INSPECTIONS

#### QUICK REFERENCE INFORMATION

#### PERMITS MAY BE OBTAINED FROM:

**City of Raleigh**  
**Development Services Customer Service Center**  
One Exchange Plaza, Suite 400  
P. O. Box 590  
Raleigh, North Carolina 27602

#### OFFICE HOURS:

<b>General Office</b>	8:00 am - 4:45 pm
<b>Field Inspections</b>	7:30 am - 4:15 pm

#### Numbers to call to schedule an inspection:

Development Services- (919) 996-2500

#### Other contacts:

##### Field Inspectors:

DFM Landen-919-524-6062  
DFM Deal- 919-427-1373  
DFM Fletcher- 919-215-9060  
DFM Lovic- 919-524-2851  
DFM Laxton - 919-524-6071

##### Plan Reviewers:

Ryan Cutright- 919-996-2197  
Kareem Kashmiry- 919-996-2189  
Charles Kneeshaw- 919-996-2181

For more information please contact RFD Office of Fire Marshal at:

Office: 919-996-5972

Link to drawing details and bulletins on City of Raleigh website:

<https://www.raleighnc.gov/business/content/PlanDev/Articles/DevServ/DrawingsStandardDetailsIndex.html>

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## **SPRINKLER AND STANDPIPE REQUIREMENTS**

**All Design drawings are required to be sealed by a NC Licensed Professional Engineer or a NC Licensed Fire Sprinkler Contractor as permitted by North Carolina General Statutes.**

### **1.0 Water Flow Tests**

- 1.1 Tests are required on all new buildings, additions, alterations and upgrades that require additional supply or verification of the system. A copy of the water flow test result must be submitted with the building plans when applying for a building permit and with the sprinkler/standpipe plans when applying for a stand alone sprinkler/standpipe permit. Water flow tests must be performed and sealed by a North Carolina Registered Professional Engineer who is certified by the City of Raleigh Fire Department (919-996-6392). The Fire Flow test shall be no more than one year old for New Construction, First Interior Completion of shell space, Additions and Change of building occupancy and/or Change to a higher sprinkler hazard. The Fire Flow test shall be no more than three years old for existing system alterations and renovations.
- 1.2 Fire Pump tests from the pump manufacture or their direct representative can be used and private fire hydrant tests when used for fire protection system design are required to be performed and sealed by a North Carolina Registered Professional Engineer who is certified by the City of Raleigh Fire Department. The other requirements are the same as listed above.
- 1.3 Pressure reducing valves (PRV), if applicable, shall be included in hydraulic calculations and a copy of annual test for that valve shall be included. The validation of the test shall be based on the type of alteration going on, same as the fire flow test in 1.1. (PRV test shall include the above requirements for review)

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## **2.0 Utilities Site Plan**

- 2.1 Utilities site plans shall be sealed by an engineer registered in North Carolina and provide the following information: (Note: This information is necessary to prove Hydraulics.) A permit will be required for all underground work.
- 2.2 Size of city main, identify test hydrants and give flow and pressure data for each, circulating and dead-end mains and distance to circulating main must be shown.
- 2.3 Valve type and size must be indicated. Valve types include control valves, fire department connections, backflow preventer, etc.
- 2.4 Size, type and depth of underground piping (from the city main to the inside of the building) must be indicated. See COR PUD Handbook details.
- 2.5 Other water supply (i.e. wells, tanks, etc.), where applicable, must be indicated.
- 2.6 Streets, parking lots, and buildings must be indicated on plans.
- 2.7 Five (5) sets of the Utilities Site Plan drawing(s) are required to be submitted with the permit application.
- 2.8 All underground line shall be flushed per the NFPA standards and witnessed by the Fire Marshal's office

## **3.0 System Calculations**

- 3.1 Hydraulically calculated systems shall be designed with a 10 psi safety margin at test hydrant for all new buildings, first time interior completions, change of building occupancy, change of use, change to a higher sprinkler hazard, and additions to existing buildings (all water protection systems).

## **4.0 Rated Penetrations**

- 4.1 Rated penetrations are required to be shown on plans (see detail FP-11).
- 4.2 Identify all rated walls, floors, ceiling and other pertinent data.
- 4.3 Include UL listed fire stop penetration detail on plans.
- 4.4 Include data sheets for approved non-ferrous sprinkler pipe on plans showing approved fire-stop materials.

## **5.0 Revisions**

- 5.1 Cloud all changes, notes and other pertinent information to **clearly** identify revisions without having to go through the complete review process. Revision Plans are required to clearly identify the change and shall list the date of each revision.

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## **Fire Protection Plan Requirements**

### **6.0 Plan Requirements - New Construction**

- 6.1 Plans/design drawings shall be provided on separate sheets and designated with a sheet number, FP-1, FP-2, etc.
- 6.2 Plans shall be properly scaled and legible. **(Minimum Scale 1/8" = 1'-0).**
- 6.3 Plans/design drawings need to clearly indicate the type(s) of system(s) being utilized.
- 6.4 Incorporate completed Sprinkler Design Data sheet as a part of the first sheet of each set of Fire Protection Plans (see detail FP-1).
- 6.5 Ceiling plans (see detail FP-2).
- 6.6 Sprinkler head layout, all walls, soffits, openings, doors, cross sections, details, head spacing and identification of use of rooms and areas.
- 6.7 Floor Plans (see detail FP-3).
- 6.8 Piping layout, sizes, hangers, materials, locations of walls/doors/shutters/etc. and identify use of all rooms and areas.
- 6.9 Hangers including complete hanger attachment details, spacing chart, and trapeze chart (see FP-13 and FP-28).
- 6.10 P.E. approval letter for hanger concentrated loads and hanger attachment (4" and larger pipe) to be reproduced on plans. (Hanger attachment of smaller pipe per RFD requirements).
- 6.11 Elevation view of sprinkler main, riser nipple, branch line, sprig-up, pendent drop with outlet sizes shown.
- 6.12 Identify use of all rooms and areas.
- 6.13 Symbols and legend (see detail FP-9 and FP-10).
- 6.14 Sprinkler Head Details - Submit cut sheets for all heads with plans.
- 6.15 Type, size and location of
  - a. Alarm, water flow, check, riser check, indicating, control valves and other pertinent information.
  - b. All fire alarm system requirements, controls, alarms, tamper switches, flow switches, alarm bells and all detection devices and other pertinent information.
  - c. Main or auxiliary drain and inspector's test to test water supply, water flow, alarms and other pertinent information.
  - d. Pipe size, fitting type and hanger detail plus cut sheets with complete information for materials for all systems. (valves, hangers, back flow, special equipment, etc.).
  - e. Fire Department Connection- 5" Storz on all commercial, (2-1/2" National

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Standard Thread for 13D, 13R systems, and High-Rise buildings). See 15.10 for quantities of 2 ½" Fire Department Connections for High-Rise.

- 6.16 Drawings including high-piled storage shall be submitted with information including locations and dimensions (width, height, length) of racks and aisles. (Examples: Warehouse space, Sam's Club, B.J.'s Wholesale, etc.)
- 6.17 Fire flow analysis shall be included and approved to receive building permits for new buildings. Analysis will include a current fire flow test and be determined by an approved method, such as Appendix B of the NCFPC or ISO and shall be designed and sealed by a design professional.

## **7.0 Main System Riser (Sprinkler/Standpipe/Fire pump)**

- 7.1 Riser detail with dimensions (see detail FP-4a and FP-4b) showing all equipment to include alarm valve, fire department connection, system drain, water motor gong/electrical alarm bell, check valves, pressure gauges, flow and tamper switches, and other pertinent information. For all new systems please be sure to include the requirement for the forward flow test of the backflow device per NFPA 13 (The system shall always remain live and active).
- 7.2 Elevation riser detail (see detail FP-6), to include gpm and psi at each level of multi-story buildings.
- 7.3 Fire pump and isometric riser detail of fire pump installation showing all equipment (see detail FP-7). If applicable, include dimensioned plan, elevation and end view of the fire pump installation (see detail FP-8).
- 7.4 Clearances and obstructions around all fire protection equipment (see detail FP-5) i.e. backflow, riser, fire pump/equipment and height of all valves.  
**(CONTROL VALVES - MAXIMUM 6' A.F.F)**
- 7.5 Around the pump flow meters (UL Listed) shall be required for all new pump installations within the City of Raleigh. This requirement is due to water restrictions that limit pump testing during water shortages.

## **8.0 Standpipe systems size - type and location**

- 8.1 Standpipe and distance of hose lay to all areas in feet.
- 8.2 Control and isolation valves.
- 8.3 Hose valve cabinets, Hose valves, Hose valve threads are required to be cut on the valve body (46"- 50" to center of valve outlet; New installation = NST/ Existing =Raleigh thread (3.340 x 6 Sharpe V Form) (see detail FP-12a and FP-12b).
- 8.4 Standpipe pressure summary (see detail FP-6).
- 8.5 Isometric drawing for standpipe systems showing all connections.

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- 8.6 For manual standpipe pressure supply: use 150 psi at 1500 gpm, the 1250 pump curve (see FP-32) using the points listed on the curve. All systems that require 150 psi and above shall have signage at all FDCs.

**9.0 Fire Suppression Plan Submittal Requirements – Interior Completion  
(first time fit-up of shell)**

- 9.1 Signed and sealed plan package required.
- 9.2 Reflected ceiling layout.
- 9.3 Piping layout (see detail FP-3).
- 9.4 Show adjacent tenant coverage on other side of all new walls - first line of heads off wall.
- 9.5 Water supply data must be no more than one (1) year old.
- 9.6 Changes to existing systems (make all conditions clear, show on plans).
- 9.7 Show rated walls and penetrations on plans to match architect's rated walls.
- 9.8 Provide hydraulic calculations.

**10.0 Fire Suppression Plan Submittal Requirements – Alteration  
(Reconfiguration of occupied space)**

- 10.1 Signed and sealed plan package required.
- 10.2 Reflected ceiling layout.
- 10.3 Piping layout (see detail FP-3).
- 10.4 Show adjacent tenant coverage on other side of all new walls. (first line of heads off wall).
- 10.5 Water supply data must be no more than three (3) years old.
- 10.6 Changes to existing systems (make all conditions clear, show on plans)
- 10.7 Show rated walls and penetrations on plans to match architect's rated walls.
- 10.8 Provide hydraulic calculations.
- 10.9 Exception to the above submittal requirements in **Light Hazard occupancies only** are as follows:
  - Provide a reflective ceiling plan showing the location of existing heads, renovated walls, soffits, openings, doors, dimensions and room identities shown.
  - When the following conditions exist:
    - a) In Light hazard occupancies
    - b) Relocating 10 heads or less
    - c) A maximum of 4 ft. radius from original head location

**11.0 Fire Suppression Plan Submittal Requirements –**

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## **Change of Occupancy, Change of hazard, Change of Use**

- 11.1 Signed and sealed plan package required.
- 11.2 Reflected ceiling layout.
- 11.3 Piping layout (see detail FP-3).
- 11.4 Show adjacent tenant coverage on other side of all new walls - first line of heads off walls.
- 11.5 Water supply data must be no more than one (1) year old.
- 11.6 Changes to existing systems (make all conditions clear, show on plans).
- 11.7 Show rated walls and penetrations on plans to match architect's rated walls.
- 11.8 Provide hydraulic calculations.

### **12.0 Pipe Schedule Systems**

- 12.1 Additions to light and ordinary hazard existing and new systems under 5000 sq. ft. are allowed with a 20 psi residual pressure flowing 850-1500 gpm (500-750 gpm. light hazard) at base of riser. Residual pressure is calculated at the highest sprinkler elevation.
- 12.2 New light and ordinary hazard systems exceeding 5000 sq. ft. are allowed with a 50 psi residual pressure flowing 850-1500 gpm (500-750 gpm. light hazard) at base of riser. Residual pressure is calculated at the highest sprinkler elevation.
- 12.2 Water flow test must be hydraulically calculated to the base of the riser flowing 850-1500 gpm. (500-750 gpm light hazard) and friction loss of the backflow preventer must be accounted for in the calculations.
- 12.3 Elevation loss must be calculated from the base of the riser to the highest sprinkler elevation.
- 12.4 Piping plans are required to verify that the pipe schedule is according to requirements of NFPA 13 (current adopted edition)

### **13.0 Storage and Special Occupancy Requirements**

- 13.1 Complete details shall be submitted for all operational permits listed in the North Carolina Fire Prevention Code.
  - a. Submit storage plans
  - b. Commodities stored
  - c. MSDS
  - d. [Hazardous Material Summary](#), may be required
- 13.2 Complete detailed plans shall be submitted for all Storage areas covered in NFPA 13.
  - a. Submit Storage plans
  - b. Commodities stored

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- c. Construction documents referenced in NCFPC.
- d. [Hazardous Material Summary](#), may be required

13.3 Complete detailed plans shall be submitted for all Special Occupancy Requirements detailed in NFPA 13, (current adopted edition)

- a. Submit equipment plans
- b. Storage plans
- c. Commodities stored
- d. [Hazardous Material Summary](#)

#### **14.0 Backflow Prevention** – (see details FP-16, 17a, 17b, 18a, 18b, 19)

14.1 When installed outside the building, the back-flow prevention device must be installed above ground and have proper freeze protection (i.e. hot box approved by City of Raleigh with permanent heat and tamper switches wired back to fire alarm panel in building). Clearances and access at equipment must be maintained per City requirements. Submit cut sheet. Back-flow prevention is required in:

- a. All new buildings.
- b. Existing buildings where existing water service is replaced, or connection is made to a new water service.
- c. Alterations to an existing building.
- d. Where required by Public Utilities. See cross connection approval list: <https://fccchr.usc.edu/downloads/List/list.pdf>

14.2 Reduced Pressure detecting assemblies (RPDA) are required. Bypass meter shall read in cu. ft.

14.3 Friction loss for backflow shall be included per cut sheet recommendations. See requirements per 3.0 for hydraulic calculations.

#### **15.0 Fire Department Connection Requirements**

15.1 All fire department connections shall be within 100 feet (hose lay) of a fire hydrant. FDC with Storz connection shall be within 40 feet of the fire truck access. FDC with 2 ½" connection shall be within 90 feet of the fire truck access.

15.2 All fire department connections shall be located on the front (address side) of all buildings.

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- 15.3 Fire department connections shall be 36"-42" above finished grade to center. (see detail FP-14 and FP-15).
- 15.4 Three feet of clearance is required around the fire department connection This includes bushes, walls, retaining walls, and hot boxes unless attached.
- 15.5 Fire department connections shall be at least 10 feet away from all utilities (i.e. natural gas, LP gas, electrical meters and transformers).
- 15.6 All systems installed in a building (same apparatus response address) shall use a common Fire Department Connection, unless otherwise approved.
- 15.7 Multiple fire department connections, when approved, shall be grouped together and clearly marked.
- 15.8 Fire department connections shall not be located on loading docks or inside of apartment breezeways.
- 15.9 One additional remotely located Fire Department Connection shall be installed for high rise buildings.
- 15.10 Quantity of 2 ½" Fire Department Connections, each that will supply 250 GPM, shall be available for the largest water demand.

## **16.0 Fire Alarm Plans Submittal Requirements**

- 16.1 All fire alarm plans shall be sealed by a North Carolina Professional Engineer.
- 16.2 Fire alarm "design concept" plans will be conditionally approved. Plans reviewed will be stamped "Not Approved for Construction" and are required to be resubmitted as "shop drawings." Shop drawings shall duplicate the layout of Engineered drawings and shall include battery calculations and voltage drops for all the circuits. Include cut sheets for all fire alarm devices with drawings.
- 16.3 Fire alarm plans approved for construction **shall comply with the North Carolina State Codes. Construction Document requirements**
- 16.4 Any ceilings other than flat or any unusual ceilings must have ceiling information provided.
- 16.5 Show locations of all appliances within work areas and immediately adjacent areas and indicate candela requirements at each appliance.
- 16.6 Confirm fire alarm is shown along with the other life safety information on the code data summary sheet. This is typically completed by Architect.
- 16.7 Annunciator and/or Fire Alarm Control Panel must be indicated on plans (one must be located within 15 feet of the main entrance or at approved alternate location, subject to prior approval).
- 16.8 Power extenders, NAC panels, booster panels and any other control equipment must be indicated on plans and will require smoke detection per NFPA 72 (within 15 feet of the device).
- 16.9 Provide mounting heights and locations for all devices (see detail FP-26).

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- 16.10 All devices controlled by fire alarm system shall be clearly shown (including duct detectors, smoke dampers, fire doors, shunt trips, etc.)
- 16.11 Drawings including high-piled storage shall be submitted with information including locations and dimensions (width, height, length) of racks and aisles. (Examples: Warehouse space, Sam's Club, B.J.'s Wholesale, etc.)
- 16.12 Racking plans (locations and dimensions of racks and aisles) are still required for shelving that is not high-piled, to show no interference with strobe coverage (Examples: Wal-Mart, K-Mart, Grocery Stores, etc.).
- 16.13 Detailed sequence of operation matrix shall be provided for all systems.
- 16.14 Manual pull station for sprinkler supervisory alarms shall be in an accessible area.
- 16.15 "B" accessible units shall have plans provided for converting unit to "A" type. Plans should include spare conduit or pre-wiring to allow additional devices and circuits to be added.
- 16.16 Plans/design drawings shall be provided on separate sheets and designated as FA-1, FA-2, etc.
- 16.17 Provide Fire Alarm Matrix detail (see detail FP-31).
- 16.18 Please provide fire alarm symbol legend per symbol guidelines (Adapted from NFPA 170). (see detail FP-33)

#### **17.0 Best Practice for Fire Alarm**

- 17.1 Ceiling mount devices are recommended in all retail/mercantile and other similar uses where wall mount strobes could be obstructed by shelving, stock or racks.
- 17.2 Building shell fire alarm control panels should be adequate for entire interior completion with 20% additional capacity for future expansion.
- 17.3 Booster panels, power extenders, NAC panels and any other control equipment should be in a readily accessible, identifiable, and centralized location. Height to center shall not exceed 6 feet above finished floor.

#### **18.0 Alternative Automatic Fire-Extinguishing Systems (the list includes but is not limited to: NCMC 509.1, NCSFC 904.11, NFPA 12, 12A, 17, 17A, 750, & 2001)**

The NC Fire Prevention Code requires that a construction permit be obtained for the installation of/or modification to alternative automatic fire-extinguishing systems. The fire code also requires that construction documents be submitted for review and approval prior to system installation. These systems are normally used for the protection of cooking equipment, ventilation and exhaust systems,

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spray booths, electrical rooms and areas where an alternative to required automatic sprinkler system is allowed and approved. A fire code official must witness a full acceptance test on any new or modification to any alternative automatic fire-extinguishing system before use.

Construction Documents shall include:

- 18.1 Documents submitted for the installation or modification to an Alternative Automatic Fire-Extinguishing system shall include the company name, installer's name and a valid certificate of training from the manufacture of the system being installed/modified or NICET level 3 in special hazards with manufactures manuals.
- 18.2 A change in cooking medium or appliance arrangement will require a construction permit and construction documents with a subsequent acceptance test and inspection by a Fire Marshal.
- 18.3 Provide four (4) copies of construction documents for the complete installation and the permit application to City of Raleigh Development Services. Drawings shall be legible, drawn to scale; a graphic representation of the scale used, point of compass, and includes a floor plan with a descriptive name of the various rooms or spaces.
- 18.4 Provide manufactures data sheets, model numbers and listing information for equipment, devices, and materials. Manufactures specifications must verify compatibility of new equipment with any existing equipment.
- 18.5 Construction documents shall show appliance arrangement from left to right, and appliance heights.
- 18.6 Number and dimensions of all exhaust ducts including the location, number, and height of all protection nozzles.
- 18.7 Number and dimensions of all plenums including the location, number, and height of all protection nozzles.
- 18.8 Number and description, and dimensions of all appliances being protected including location, number, and height of all protection nozzles.
- 18.9 Piping schematic. Include the type of pipe, sizes, lengths, maximum and minimum pipe lengths include "tees and elbows", support brackets, listed nozzles and caps, nozzle locations, nozzle types, heights of nozzles, etc.

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- 18.10 Note the specific type of alternative fire suppression system (total flooding, local application, pre-engineered, etc.) and associated NFPA standards utilized in design. Include manufacturer's model number and UL listing date.
- 18.11 Number, location, and temperature rating of all detection devices.
- 18.12 Number and location of all manual activation devices. If more than one manual actuation device is present, then they shall be clearly identified as to the system they serve. Show identification placard. Must show location in relation to means of egress and include distances from exhaust system they serve.
- 18.13 The remote pull station shall be shown between 10 to 20 feet, Max pull force 40 pounds and maximum movement of 14 inches to activate extinguishing agent.
- 18.14 Gas shut-off valve shall be shown per Mechanical code. (Must be installed in an accessible location and indicated on construction documents)
- 18.15 Show and state the location and size of the cylinder(s) and the chemical agent. Must include the total number of flow points (nozzles) to verify sizing of the cylinder(s).
- 18.16 Show all flow rates, nozzle pressures and total quantities of extinguishing agent.
- 18.17 Must include all automatic equipment shunt trips, shut-offs, and interlocks. Provide sequence of operation and identify the equipment they serve.
- 18.18 Automatic shutdown of fuel and power upon actuation of fire extinguishing system (located under the hood); including make-up air and/or HVAC.
- 18.19 Indicate the location, type, and size of all portable fire extinguishers. Portable fire extinguishers for Commercial cooking operations shall be: A K-class extinguisher shall be provided within 30 feet of travel distance of commercial-type cooking equipment.
- 18.20 The method of annunciation must be indicated on the plans. If fire alarm system is present, then indicate the point of connection and how it interfaces with the fire alarm system.
- 18.21 Booth manufactures specifications and UL listing information if applicable. All booths shall be installed in accordance with the applicable NC Fire Code and NFPA 33.

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- 18.22 Sequence of operation. Certain systems including but not limited to NFPA 12A, and NFPA 2001, will need a detailed sequence of operation that includes pre-alarm time, method to abort, etc.

## **19.0 Fire Department Vehicle Access**

- 19.1 All buildings and facilities shall require fire department vehicle access complying with North Carolina Fire Prevention Code (NCFPC), Chapter 5, and all COR guides and handbooks. Some examples are shown in Appendix D of NCFPC.
- 19.2 Minimum unobstructed street width of 20 feet (back to back curb) must be maintained the entire travel route of the fire truck. Entrances, gated entrances, islands, and traffic circles are of special concern. See alternative access for entries with guard shacks (FP-29).
- 19.3 Minimum inside turning radius of 28 feet must be maintained throughout the site plan for any access lanes that would commonly be used by fire apparatus.
- 19.4 Fire department access lanes must allow fire apparatus to drive within 150 feet of all portions of the first floor. Buildings that do not comply shall be required to install fire sprinklers. (See technical bulletin 12).
- 19.5 Dead end streets and access lanes 150 feet or more shall have an approved fire apparatus turn-a-round provided.
- 19.6 Apparatus access road grade shall not exceed 12 percent in grade, except as approved by the fire chief. (prohibit use of driving on gravel)

## **20.0 Fire Hydrants**

### **20.1 Commercial**

- a) All commercial construction shall be located within a 400 foot from a public or (approved) private fire hydrant. "All parts of all buildings shall be located within 400' of a fire hydrant as measured "as the hose lays" Method or within 600' of a fire hydrant for buildings equipped with a fully installed fire sprinkler system.
- b) Fire hydrants shall be required at every named street intersection.
- c) Fire hydrants shall be spaced not more than 300' along named roads. Alternate sides on divided roads.
- d) Fire hydrant serving FDC shall be located on same side of road and same side of driveway to limit blocking responding apparatus access to building.
- e) Topography shown on site plan to ensure access is available.
- f) Hydrant shall be located within 100' hose lay of FDC.

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- g) Fire department vehicle access shall be within 40' hose lay of Storz FDC and 90 feet of 2 ½" connections.
- h) Additional fire hydrants may be required by fire department.

## 20.2 Residential

- a) Fire hydrant shall be spaced not more than 600' along named roads. Alternate sides on divided roads.
- b) Fire hydrants shall be at every named street intersection.
- c) Fire department vehicle access shall be within 90' hose lay of FDC.
- d) Additional fire hydrants may be required by fire department.

## 21.0 Site Plans

- 21.1 Site plans shall clearly show apparatus access routes to all buildings on the site within 150 feet of all portions of the first floor.
- 21.2 Site plans shall clearly show all fire hydrants, control valves, fire department connections, and all water mains on site.
- 21.3 Site plans shall clearly show the fire hydrants used for the water flow test and indicate whether water main is circulating or dead end.

## 22.0 Above ground storage tank requirements

**Submit all above ground storage tank plans to RFD plans examiner, c/o Development Services Customer Service Center located at One Exchange Plaza, Suite 400, Raleigh, NC.**

- 22.1 Flammable and combustible liquid tank site plans shall include the following:  
NO ABOVE GROUND STORAGE TANK IS ALLOWED IN FIRE DISTRICT
  - I. Zoning approval is required for any tank taller than 42 inches. Permit may be required.
  - II. Conservation approval is required for all tanks to ensure they are not in flood plain.
  - III. Building permit may be required for the concrete pad to install/mount tank onto.
  - IV. Electrical permit may be required, if a pump or lights is needed at tank.
- 22.2 The location of the tank(s). see NCFPC, current edition,
- 22.3 The location of the dispenser(s). see NCFPC current edition
- 22.4 The location of the emergency disconnect switches.
- 22.5 Site plans must show distances for all the following and be to scale:
  - 22.5.1 The property line(s)
  - 22.5.2 The location(s) and distances of the nearest important building(s).
  - 22.5.3 The distance to the public way.
  - 22.5.4 The location and distances of any other tanks on the property.

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- 22.6 All tanks over 1100 gallons will require a Design Professional (Engineer) seal.
- 22.7 Submittals shall include:
  - 21.7.1 Cut sheet(s) for each type of tank.
  - 22.7.2 Manufacturer's instructions on how to test the tank(s) (psi & time).
  - 22.7.3 Underwriters Laboratories listings.
  - 22.7.4 No Smoking signage template.
  - 22.7.5 NFPA 704 placard template.
  - 22.7.6 Vehicle Impact Barriers (bollards) details per NCFPC, current Edition,
  - 22.7.7 Contents of tank (s).
  - 22.7.8 Use of tank (s) – generator used for life safety circuits required to be UL 2200 listed.  
Tanks used for life safety generators are required to be UL142 or UL 2085 (Protected).
  - 22.7.9 Maximum size for tanks inside buildings is 120 gallons (kerosene or diesel)
  - 22.7.9 Fire extinguisher placement.

### **23.0 Underground storage tank requirements**

**Submit all underground storage tank plans to RFD plans examiner, c/o Development Services Customer Service Center located at One Exchange Plaza, Suite 400, Raleigh, NC.**

- 23.0 Flammable and combustible liquid tank site plans shall include the following:
  - I. Fuel dispensing devices shall always be in clear view of the attendant. In lieu of full visibility to both sides of the dispensers, camera monitoring may be used if documentation and testing provides that in the event camera power is interrupted, all power to the pumping units shall also be interrupted. (This will require field verification).
  - II. Conservation approval is required for all tanks to ensure they are not in flood plain.
  - III. Electrical permit may be required if a pump or lights is needed at tank.
- 23.1 The location of the tank(s).
- 23.2 The location of the dispenser(s).
- 23.3 The location of the emergency shut off.
- 23.4 Site plans must show distances for all the following:
  - 23.4.1 The property line(s).
  - 23.4.2 The location(s) and distances of the nearest important building(s).

Link to drawing details and bulletins on City of Raleigh website:

<https://www.raleighnc.gov/business/content/PlanDev/Articles/DevServ/DrawingsStandardDetailsIndex.html>

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- 23.4.3 The distance to the public way.
- 23.4.4 The location and distances of any other tanks on the property.
- 23.5 Submittals shall include:
  - 23.5.1 Cut sheet(s) for each type of tank.
  - 23.5.2 Manufacturers instructions on how to test the tank(s).
  - 23.5.3 Underwriters Laboratories listings.
  - 23.5.4 No Smoking signage template.
  - 23.5.5 NFPA 704 placard template.
  - 23.5.6 Vehicle Impact Barriers (bollards) details per NCFPC, Current Edition.
  - 23.5.7 Gas station vent piping and coloring (Vent pipe minimum to be 12' (IFC 3404.2.7.3.3) (5' above structure if attached) NFPA 30 color coding.
  - 23.5.6 Piping plans – per current NCFPC – Design to meet Chapter 3 of NFPA 30.
  - 23.5.7 Fire extinguisher placement.

## **24.0 Fire Extinguisher Plans**

- 24.1 Provide floor plan showing location of all fire extinguishers, hose stations and other building occupant fire protection equipment.
- 24.2 Fire extinguishers shall be spaced according to NC Fire Prevention Code and NFPA 10.
- 24.3 Consult NC Accessibility Code for maximum allowable projection from walls (provide detail).

## **25.0 Emergency Generator Plans**

**Submit all Emergency Generator storage tank plans to RFD plans examiner, c/o Development Services Customer Service Center located at One Exchange Plaza, Suite 400, Raleigh, NC**

Emergency Generator Plans site plans shall include the following:

**NO ABOVE GROUND STORAGE TANK IS ALLOWED IN PRIMARY FIRE DISTRICT.**

Zoning approval is required for any tank taller than 42 inches. Permit may be required.

Conservation approval is required for all tanks to ensure they are not in flood plain.

Building permit may be required for the concrete pad to install/mount tank onto.

Electrical permit will be required.

- 25.1 The location of the tank(s). NCFPC, current Edition
- 25.2 The location of the emergency disconnect switches.
- 25.3 Site plans must show distances for all the following and be to scale:
  - 25.3.1 The property line(s).
  - 25.3.2 The location(s) and distances of the nearest important building(s).
  - 25.3.3 The distance to the public way.
  - 25.3.4 The location and distances of any other tanks on the property.

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- 25.4 All tanks over 1100 gallons will require a Design Professional (Engineer) seal.
- 25.5 Submittals shall include:
  - 25.5.1 Cut sheet(s) for each type of tank.
  - 25.5.2 Manufacturer's instructions on how to test the tank(s) (psi & time).
  - 25.5.3 Underwriters Laboratories listings.
  - 25.5.4 No Smoking signage template.
  - 25.5.5 NFPA 704 placard template.
  - 25.5.6 Vehicle Impact Barriers (bollards) details per NCFPC, current Edition,
  - 25.5.7 Contents of tank(s).
  - 25.5.8 Use of tank (s) – generator used for life safety circuits required to be UL 2200 listed.  
Tanks used for life safety generators are required to be UL 142 or UL 2085 (Protected).
  - 25.5.9 Maximum size for tanks inside buildings is 120 gallons (kerosene or diesel).
  - 25.5.9 Fire extinguisher placement.
- 25.6 Underground storage tanks used with Emergency generators shall comply with 22.0 above.

## **26.0 Definitions and Additional Information**

**Shell Building** – An unoccupied building where all basic systems, including sprinkler and fire alarm systems, have been inspected and approved for code compliance. Sprinkler coverage of uncompleted spaces or floors must meet the distance requirements between the deflector and ceiling.

**Alteration** – An alteration is a re-configuration of a previous occupied space.

**Interior Completion** – An interior completion is configuring walls, ceilings, etc. within a shell building.

**Freeze Protection** – Wet sprinkler piping shall not be in outside wall cavities, unheated ceiling spaces or attics. Heat sources must be permanent. Baseboard heaters in combustible concealed spaces are considered to be a fire hazard (consult fire official).

**Code deficiencies in existing systems** – Modifications shall be noted with corrections to be made on plans when submitted. All modifications shall be clearly detailed on plans.

**Install Per Approved Plans** – Installation shall be in accordance with City of Raleigh approved plans. If problem is discovered, contact the appropriate City department and the designer of the plans for approval. Field changes to approved plans will require approval by the Fire Protection Inspector or Fire Protection Plan Reviewer.

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