



Residential Land Design Requirements

Charlotte Fire Department's role in the residential review process. This includes Residential structures built under the NC Residential Code per NCFC 102.5. Group R-3 occupancies.

102.5 says, when structures are designed and constructed in accordance with the International Residential Code, the provisions of this code shall apply as follows:

1. Construction and design provisions of this code pertaining to the exterior of the structure shall apply to premise identification, fire apparatus access, and water supply

Water Supply

NCFC 507.3: Shall be determined by the use of the ISO Guideline for determining Needed Fire Flow.

Needed Fire Flow:

1. NCFC 507.3: Shall be determined using the ISO Guideline for determining Needed Fire Flow.
2. For a NFPA 13 designed sprinklered building, the needed flow for the hydrant is the required sprinkler demand.
3. For a sprinklered building with an NFPA 13R or 13D system, the needed fire flow for the hydrant is determined by the ISO needed fire flow calculation with a 50% credit.
4. For buildings that have a standpipe system the required fire flow for the hydrant is determined by the standpipe demand.

Fire hydrant

1. (NCFC 507.5.1) For group R-2 occupancies, the fire hydrant distance shall not exceed 400' as measured by an approved route around the exterior of the building.



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2. ([NCFC 507.5.1 Exception 1](#)) For group R-3 occupancies, the fire hydrant distance shall not exceed 600' as measured by an approved route around the exterior of the building.
3. ([NCFC 507.5.1.1](#)) Fire hydrants are required within 200', as the truck travels along the access road, to the fire department connection serving the fire sprinkler system.
4. ([NCFC 507.5.5](#)) A fire hydrant shall have 3' clearance around it in all directions.
5. ([NCGS-20-162](#)) Fire hydrants cannot be located within 15' of parking space(s) or private driveway.
6. A six-inch fire line shall not exceed 350'.
 - a. Exception – A fire line can exceed 350' if a hydraulic calculation is provided to determine that the needed fire flow can be achieved with the additional distance.
7. Fire hydrants located across major thoroughfares or divided highways cannot be used for water supply.
8. A water model will be required for the proposed hydrants. Friction loss calculations shall be required for all new hydrant installations in a water-model format; label hydrants whether they are public or private. If hydrants are part of a combination line and they are private, a fixed 15 psi loss for each hydrant shall be calculated for possibility of installation of back-flow preventers on each hydrant.

Fire Department Connection

1. The Charlotte Fire Department requires that the FDC be located on the address side of the building, and be located either directly on the building, or be a free-standing connection located in close proximity to the main entrance from the fire apparatus access road.
 - a. Additionally, FDC's shall:
 - i. Be located no less than 18 inches nor more than 5 feet above finished grade.
 - ii. Have a clear horizontal and vertical clearance of 10 feet in all directions.
 - iii. Be located no more than 50 feet from an access roadway or entrance drive.



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- iv. Be located with-in 200 feet of an approved fire hydrant.
9. Be located such that the laying of hose or parking of apparatus will not impede or obstruct access to the building.

Fire apparatus access

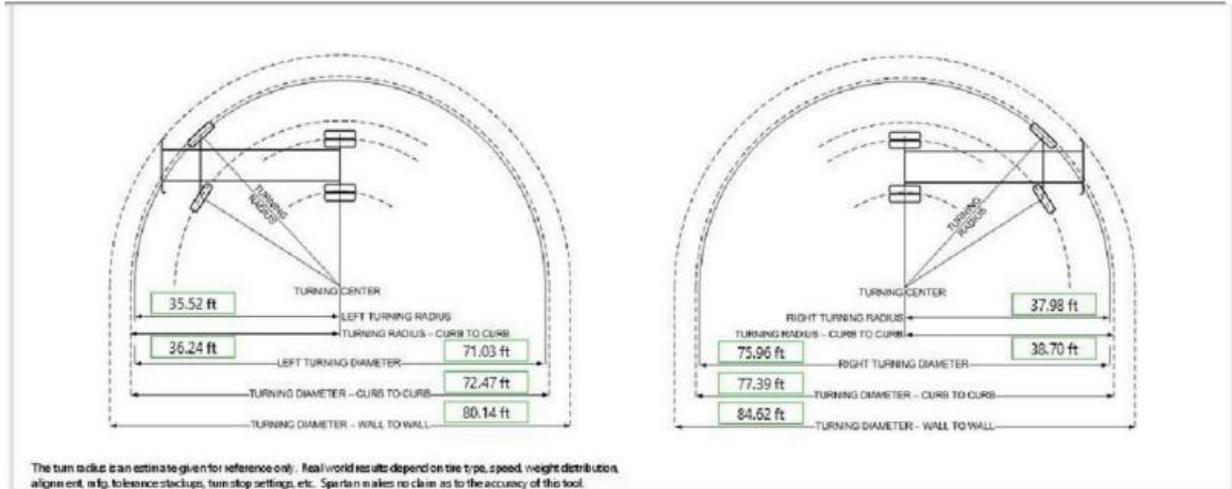
1. (NCFC 503.1.1) Apparatus access road shall be provided for every building and shall not exceed 150' of all portions of the exterior wall of the first story as measured by an approved route (by the fire dept.)
2. (NCFC 503.1.1 exception 1.1) Shall be increased from 150' to 200' if the building is sprinklered per NFPA 13, 13R, or 13D.
 - a. (NCFC 503.1.1 exception 1.2) Any land challenges like grade, water ways, topography or other similar conditions will require the installation of a fire protection system as defined in chapter 2 of the NCFC. A required fire protection system cannot be used to comply with this exception. A separate and approved system would need to be added.
3. (NCFC 503.1.1 exception 1.3) No more than TWO R-3 occupancies are on the same lot and a U occupancy.
4. (NCFC 503.2.1) Fire apparatus access road shall not be less than 20' unobstructed width and 13'6" unobstructed height
5. (NCFC 503.2.1 exception) Subdivision roads complying with NCDOT "Minimum construction standards for Subdivision roads when approved by the code official.
6. (NCFC 503.2.3) Road shall support 85,000 pounds and be an all-weather driving surface.
7. (NCFC 503.2.4) Turn Radii shall be 30' inside and 42'3 1/2" outside. (see diagram below)
8. (NCFC 503.2.5) Dead end fire apparatus access roads shall not exceed 150' without an approved turn-a-round.
9. (NCFC 503.2.4.1) Traffic calming devices shall be approved by the fire code official.

Property identification

(NCFC 505.1) Address identification numbers shall be visible and legible from the road.



Mfg. Turn Template:



End User Name	Charlotte Fire Department
Chassis Model	0100-012 Gladiator
Wheelbase	250.00 in
Bumper Extension	6.00 in
Bumper Width	104.40 in
Left hand outside tire turn angle	33.50 deg
Right hand outside tire turn angle	31.00 deg
Left hand Curb-to-Curb turning radius	36.24 ft, 11.04 m
Right hand Curb-to-Curb turning radius	38.70 ft, 11.79 m
Left hand Wall-to-Wall turning radius	40.07 ft, 12.21 m
Right hand Wall-to-Wall turning radius	42.31 ft, 12.90 m

Plans Examiner information

All fire department personnel contact information for the Charlotte Land Development process can be found on the Land Development website.

1/26/26