

NORTH CAROLINA

HOUSING
FINANCE
AGENCY



**Construction Field Guide
For 2015 NCHFA-Financed
Rental Properties**

Introduction

The design and construction of an apartment community is a complex undertaking that requires compliance with numerous codes, requirements, and specifications. This Field Guide is intended to help architects, developers, and contractors as they work together to comply with the provisions of the North Carolina Qualified Allocation Plan and NCHFA Design Standards, as well as the requirements of the N.C. State Accessibility Code, the federal Fair Housing Amendments Act, and the Americans with Disabilities Act.

This guide provides a very brief outline of the codes and requirements related to multifamily construction. The intent is not to be an all-inclusive resource, but rather to highlight key points and address the areas that seem to cause the most questions and difficulties in the field.



Inspections

As a routine part of its work, the Agency inspects all of the properties that it finances. At least two evaluations are completed on every project, one during the framing/rough-in phase, and a final site visit at the completion of the project. Managing the inspection process is a difficult task, as there are typically more than 100 projects under construction statewide at any time. While Agency staff makes every effort to stay current with the progress of each development, the development team is responsible for informing the Agency about the status of their projects and for scheduling the required inspections.

As part of the cost certification and closing process, project owners are required to submit a copy of the final NCHFA Site Observation form along with a letter stating that all items noted during the final inspection have been corrected. NCHFA will not close out a project until a final inspection has been completed and any necessary corrections have been made.

Foreword

The mission of the North Carolina Housing Finance Agency is to create housing opportunities for North Carolinians whose needs are not met by the market. One of our values is “stewardship.” In other words, our Agency emphasizes quality housing that improves the lives of people, and we promote long-term solutions.

Apartment communities are a major capital investment and we need to ensure that they are located thoughtfully and built well. If we all do our jobs properly, these developments will be a long-term asset that provides opportunities to a wide range of households.

I appreciate your interest in producing affordable housing and building it right. Working together, we can continue to build a better North Carolina and provide better homes for our fellow citizens.

*A. Robert Kucab
Executive Director*



NCHFA Requirements for Elderly Housing

- Emergency pull chain alarms in master bedroom and full bathrooms. Must include strobe light and an audible alarm wired to exterior of apartment.
- Loop handles on all cabinets and drawers.
- Single lever faucets in all kitchens and baths.
- Remote switches for all range hoods. One switch for light, one switch for fan.
- All lever-handle door hardware.
- Maximum threshold height of 1/2" at all entry doors.
- Minimum hall width is 42".
- Minimum door size is 36".
- Offset controls on all tubs and showers.
- Blocking for grab bars at all toilets and tub/shower units.
- Minimum 18" grab bar required opposite controls in all tubs/showers. Install vertically at 48" above finished floor and offset towards front.
- Handrails mounted at 34" above finished floor on both sides of all common area corridors.

Site and Parking

Site Issues

- All storm water from roofs and gutters must be piped away from buildings.
- No sidewalks may exceed a 2% cross slope **regardless of location**.
- All disturbed areas must be planted or otherwise stabilized at the completion of construction.
- Accessible sidewalks must allow for a 2 1/2 foot vehicle overhang and still maintain a 4 foot clear path of travel. Parking bumpers may be used to prevent vehicle overhangs from blocking sidewalks.

Designated Handicap Parking Spaces

- The slope of all handicap parking spaces and access aisles cannot exceed 2% in any direction.
- There must be at least one handicap parking space for every Type A unit and must be the closest space available to accessible route to building entrance(s). First, seventh and thirteenth accessible space must be van accessible, if available.
- There must be additional handicap parking spaces equal to 2% of all Type B unit designated parking spaces. The first such space must be van accessible.
- There must be one van accessible parking space at all site office locations for public accommodation.
- 1 of 6 handicap spaces, with a minimum of one, must be van accessible.
- All site amenities, including dumpsters, must have either designated handicap parking spaces or be served by an accessible route.

Framing

- **Blocking for grab bars must be installed at all toilets and tub/shower areas in both Type A and Type B units. Reference the 2009 A117.1 Accessibility Standards for guidance.**
 - ♦ Blocking should be either 2x10 or 2x12 lumber with the bottom edge at 30" above floor.
 - ♦ Tub/shower units with built-in support for grab bars (OSB/plywood molded into unit) do not require additional blocking in the wall framing.
- **Laundry room closets must be 36" minimum depth measured from back wall to back of laundry room door in the closed position. Must have required clear floor space at each appliance.**

Doors and Windows

- Exterior doors for fully accessible units (Type A) must have spring hinges.
- Insulated vinyl windows with Model Energy Code U-Factor and SHGC compliant values or better are required for all new construction projects or when replacing windows in renovation projects.
- Windows must be installed per manufacturer's specifications, including the installation of silicone caulk behind nail fins and rubber window flashing around exterior side of nail fins.
- Bi-fold, by-pass, pocket and louvered doors are not allowed.

Apartment Units

- All ceilings and walls in all full bathrooms, laundry rooms, mechanical closets, exterior storage closets and wall behind kitchen sink base must utilize mold and water resistant drywall.
- All apartment signage/numbering, along with common areas must have Braille.
- The minimum width of interior hallways in residential units is 40".
- All bedroom closets, interior storage rooms/coat closets and laundry rooms/closets must have a 4" tall by 8" wide minimum pass-thru grille above doors for air circulation.
- There must be a minimum of 3/4" air space under all interior doors for air circulation.
- All interior and exterior mechanical and storage closets must have finished floor coverings. Interior closets must have either carpet, sheet vinyl or VCT flooring. Exterior storage closets may have sealed or painted concrete floors.
- All under sink/vanity cabinet penetrations must be sealed.

Kitchens

- A pantry cabinet or closet (with 24" minimum door size) in or near each kitchen must be provided in 1, 2 and 3 bedroom apartments.
- All handicap "Type A" kitchen sinks must be rear-draining.
- Removable fronts are acceptable on accessible sink bases and work stations as long as the floor is finished underneath, the rear wall under the knee space is finished, and there are finished side panels on each side of the knee space. Removal of fronts must be simple and require no plumbing work.
- Pull-out worktops are prohibited. Roll-under work stations must be installed beside ranges.
- All "family" designated apartments must have a dishwasher.
- All accessible "Type A" units must have a side by side refrigerator or one with a bottom freezer drawer. The refrigerator doors must be able to swing to allow storage bins to open.
- All residential units must have either a dry chemical fire extinguisher mounted and readily visible and accessible in every kitchen, or a fire suppression canister mounted under each range hood.
- All dishwashers and refrigerators must be Energy Star rated.
- In Type A units, at least one lowered kitchen wall cabinet must be installed at 48" maximum AFF over the work station.
- In Type A units the kitchen sinks must be rear draining and have two compartments.
- Anti-tip devices must be installed under all kitchen ranges and be securely fastened to the floor.
- In Type A units the 60" clear floor space must be in the usable part of the kitchen.
- Walls behind range must be covered with a splash panel. Ranges must fit flush on wall.
- Water/ice dispenser rough-in boxes must be installed with cold water supply line in the wall.

HVAC

- HVAC air handlers must be entirely enclosed (ducted) from return air grille to blower motor.
- Clothes dryer vent connections may not exceed 2” maximum AFF in laundry rooms.
- Bath fans must be wired to the overhead light and must be vented to the exterior with hard duct.
- Range hoods, microhoods and bathroom exhaust fans must be vented to the exterior with hard duct.
- Galvanized sheet metal ductwork is required. Duct board is not allowed.

Plumbing/Bathrooms

- All full bathrooms must have recessed medicine cabinets **AND** a full height mirror over all vanities.
- Controls in **ALL** tubs and showers in **ALL** units must be offset toward the front of the bathing unit.
- Vanity sizes in all units must be a minimum of 36” wide.
- Blocking for grab bars must be provided at all tubs and showers in all Type A and Type B units.
- All faucets, shower heads and toilets must be EPA “Watersense” rated.
- All water heaters, regardless of location, must be in an overflow pan that is piped to exterior. Pressure relief valves must also be piped to the exterior. Water heaters must be placed in closets to allow for their removal and inspection by/through the closet door.
- Hub/floor drains must be piped to the outside or piped to sanitary sewer with mandatory primed p-trap.
- Electric water heaters must have an Energy Factor rating of at least 93%.
- Offset toilet flanges are prohibited for use under toilets.
- In all Type A units the grab bars must be installed per code around toilets and in the tubs/showers.
- Roll-in showers must have shower head with wand on a sliding bar. The controls must be installed at 27” maximum from **mandatory** permanently mounted seats. Showers may have a maximum 1/2” curb with half of it being beveled. Curbless showers require a collapsible water dam installed prior to occupancy. All roll-in showers must have a 36” x 60” minimum clear inside “usable” floor space and have a shower rod and weighted shower curtain installed. There must be a diverter on the shower control that diverts water to a separate shower head that is mounted on the end wall opposite the fold down seat.

Electrical

- Walk-in closets (36” or deeper from wall to back of closet door) must have a switched overhead light.
- If using ceiling fans with light kits, the fan and light kit must have separate switches.
- Switches to be no higher than 48” AFF.
- Remote switches for range hoods (one switch for fan, another for light) are required in all elderly and Type A units. Switches must be at accessible locations and may not be installed under work stations.
- Overhead lighting, ceiling fans, telephone and cable jacks required in all bedrooms and living rooms.
- All full bathrooms must have an overhead ceiling light and also a vanity light centered over the sink. Exhaust fan must be wired to the overhead light fixture. Vanity lights must be on a separate switch.
- Electrical panels in Type A and Type B units must be mounted at 48” maximum AFF to top breaker.
- In all Type A units an emergency pull station with visual/audible alarm is required in all bathrooms and master bedrooms.
- All telephone lines must be toned and tagged properly to each unit.

Required Site Amenities

All projects are required to include a minimum of six (6) project amenities. Three (3) of the amenities are mandatory and an additional three (3) can be selected from a list of approved options.

The required amenities vary by project type and are listed below.

Family Designated Housing	Senior Designated Housing
Playground	Multi-Purpose Room (250 sq. ft.)
Covered Picnic Area (150 sq. ft. with 2 tables and grill)	Indoor or Outdoor Sitting Areas (Minimum of 3 locations)
Multi-purpose Room (250 sq. ft.)	Tenant Storage Areas

Besides the three required amenities above, three additional amenities must be selected from the list below.

- Covered drive-thru or drop-off at entry
- Covered patio with seating at 150 sq. ft. minimum
- Covered picnic area with 2 tables and one grille (150 sq. ft. min.) One table must be ADA approved
- Screened porch at 150 sq. ft. minimum
- Walking trails (4 ft. wide concrete or paved, continuous around property)
- Exercise room (must include new equipment)
- Resident computer center (minimum of two computers)
- Raised garden plots in elderly projects only (50 sq. ft. per box, 24 inches deep, one plot per 10 residents)
- Gazebo (100 sq. ft. min.)
- Sunroom with chairs (150 sq. ft. min.)
- Tot lot (family projects only)
- High-speed Internet access (involves both a data connection in the living area of each unit that is separate from the cable/telephone connection and support from a project-wide network or a functional equivalent)

Building Ramps That Work

The minimum clear width of an accessible route is 48". This includes sidewalks and ramps. If ramps have handrails then handrails may not reduce the inside clear travel width below 48" and include proper edge protection.

An accessible route with a slope that is 5% (1:20) or less is considered a sidewalk. If the slope is between 5% (1:20) and 8.33% (1:12) the sidewalk becomes a ramp. No accessible route can exceed the 8.33% slope.

If the slope of the ramp is between 5% (1:20) and below 6.3% (1:16), the maximum horizontal run shall be 40 feet. If the slope is between 6.3% (1:16) and 8.33% (1:12), the maximum horizontal run shall be 30 feet.

Ramps shall have level 60" minimum landings at the top and bottom of each ramp and each ramp run. Where the ramp changes direction there must be a minimum 60" by 60" landing.

Handrails are required on both sides of any ramp that has a rise of 6" or greater or a horizontal run greater than 72".

DIGITAL LEVELS MUST BE SET TO MEASURE PERCENT % INSTEAD OF DEGREE.

Accessibility

This Field Guide is based on the language in the North Carolina Accessibility Code and requirements of the 2009 ANSI A117.1 and 2009 ICC with North Carolina Amendments accessibility standards.

Unit Types

N.C. Code requires two different types of accessible units in multifamily development for new construction:

Type A Units:

These apartment units, often called “handicapped” units or “fully accessible” units, are somewhat different than a typical apartment. Type A units are required to have special features, including additional clear floor space in bathrooms and kitchens, wider doors, knee spaces at sinks, and workspaces beside ranges.

Type B Units:

These units, often called “adaptable” units or “Fair Housing” units, are very similar to a typical apartment yet with a few additional features to improve accessibility.

Number of Units

Type A Units:

N.C. Code (2009 IBC with NC Amendments, Section 1107) requires 5% of all units, and at least one of each “class of unit, to be fully accessible. The “class” of unit is determined by the different bedroom types.

When calculating the number of **Type A** units required by the 5% rule, you must round up to the next whole unit.

Example: 5% of a 24-unit development is 1.2 units. To meet code requirements, the 1.2 must be rounded up, meaning the development would need at least 2 Type A units.

Example: A 24-unit development has 1-, 2-, and 3-bedroom apartments. While the 5% requirement only calls for 2 units, because of the different classes of units available, code

For

new construction and adaptive re-use projects, NCHFA requires an additional 5% of units to be fully accessible Type A units with a roll-in shower. The easiest way to determine the number and type of units required is to double the number required by the state code with the 5% additional units containing roll-in type showers. See the Agency’s Qualified Allocation Plan, Section IV (F)(3) for reference.

Type B Units:

The N.C. Code does not require a certain number of Type B units. Instead, code requires all single story ground floor units in buildings with 4 or more units to follow the Type B guidelines. Also, in buildings with an elevator, every unit that is served by the elevator is considered a Type B unit.

These units are also required under federal law and is described in HUD’s Fair Housing Act Design Manual.

Location of Type A Units

The fully accessible units must be distributed throughout a development to provide equal housing choice for all future residents. If a building is served by an elevator, then Type A units must be spread among all floors, including those with roll-in showers (required in the Agency’s Appendix B, Design Standards).

N. C. Accessibility Code and NCHFA Design

	Type A Units	Type B Units	NCHFA Requirements
Entry Doors			
Hardware	Lever handles	Lever handles	Lever handles
Exterior Door Size	Min. 3/0		Min. 3/0
Exterior Thresholds	Max. 1/2" at all doors	Max. 1/2" at main entry	Max. 1/2" at all doors for elderly designated units.
Security Viewer	2 nd viewer at 48"	No higher than 48"	2 nd viewer at 48" in all units of elderly designated units.
Clear Floor Space	Min. 18" on pull side	Min. 18" on pull side	
Interior Doors			
Door Size	Min. 3/0	Min. 2/10	Min. 3/0 in elderly designated units.
Hardware	All lever handles	No Requirement	All lever handles in elderly designated units.
Clear Floor Space	18" on pull side	No Requirement	
Bathrooms			
Clear Floor Space	<ul style="list-style-type: none"> ◆ 60" clear turning circle. ◆ Clear floor space at door may not use knee and toe spaces. ◆ 30" x 48" space at all fixtures. 	<ul style="list-style-type: none"> ◆ 30" x 48" space inside room. ◆ Clear floor space at door may not use knee and toe spaces. ◆ 30" x 48" space at all fixtures. 	Clear floor spaces may not include areas under base and shoe moldings.
Grab Bars	Must be installed around tubs, showers and toilets.	No Requirement	18" bar at 48" AFF and offset on end wall opposite controls required in tubs in all elderly designated units
Lavatories			
Height (maximum)	34"	Option B Bathroom is 34" Option A Bathroom is 36"	
Knee Space (minimum)	30" wide x 27" high under sink. The 27" height must extend at least 8" minimum under sink.	When using a forward approach to vanity the 48" clear floor space may extend under the vanity top. Sink base must have a removable front.	Lavatory may have a removable front as long as the knee space, toe space, clear floor space and floor finishes are available and meet H/C code.
Controls	Lever handle required in all A and B units.		All units must have lever handle faucets.
Tub / Shower			
Controls	Offset to front of fixture required for all fixtures in all apartments.		
Blocking for Grab Bars	Required at all tubs and showers in all A and B units.		
Toilets			
Location	Centered at 16" to 18" from sidewall in all A and B units.		
Seat Height	15" to 19"	15" to 19"	
Blocking for Grab Bars	Required at all toilets and tub/showers in all A and B units.		

	Type A Units	Type B Units	NCHFA Requirements
Kitchens			
Clear Floor Space	<ul style="list-style-type: none"> ♦ 60" clear turning circle ♦ 30" x 48" space at all fixtures ♦ T-turns not allowed. 	<ul style="list-style-type: none"> ♦ Min. 42" between cabinets ♦ Min. 60" in U-shaped kitchens ♦ 30" x 48" space at all fixtures 	
Cabinets	<ul style="list-style-type: none"> ♦ Lowered wall cabinets not mandatory. See NCHFA requirements. ♦ Loop hardware required 	No Requirements	<ul style="list-style-type: none"> ♦ One lowered wall cabinet mounted over work stations in Type A units. ♦ Loop handles required for all cabinets in all "elderly" designated units.
Range/Controls	Front controls required	No Requirements	<ul style="list-style-type: none"> ♦ All anti-tip devices must be secured to the floor. ♦ Range must fit flush to wall.
Remote Switches for Range Hood	Location must be accessible	No Requirements	Required in all "elderly" designated units.
Dishwasher	<ul style="list-style-type: none"> ♦ Push button controls with café handle required ♦ Must be located beside sink 	No Requirements	Required in all "family" designated units and be Energy Star rated.
Work Station	<ul style="list-style-type: none"> ♦ 34" max. height. ♦ Under counter knee space min. 30" wide and 27" high. ♦ May have removable front, yet the floor, sides and rear wall must be finished. 	No Requirement	<ul style="list-style-type: none"> ♦ Must be beside range in Type A units. ♦ Work station may have removable front. ♦ Pull-out work tops are not allowed.
Kitchen Sinks			
Height	34" Max.	36" Max.	
Knee Space	Min. 30" wide and 27" high. The 27" minimum height must be able to extend 8" minimum under sink.	No Requirement	<ul style="list-style-type: none"> ♦ Type A unit kitchen sinks must be rear draining. ♦ Sink base may have removable front, yet the floor, sides and rear wall must be finished.

Parking			
Allowable Slope for Handicap Parking and Access Aisles	Max. 2% in any direction	Max. 2% in any direction	1 in every 6 handicap parking spaces, or a minimum of one, must be van accessible.
Required Number of Handicapped Parking Spaces	<ul style="list-style-type: none"> ♦ One space for each H/C unit ♦ Required space must be the one closest to the unit. 	2% of the parking spaces serving Type B units.	

New Construction Framing Inspection Checklist

Kitchens

- Make sure the handicap Type A kitchens have at least 9'3" wall-to-wall space to allow for 5' clear floor space.
- Make sure the range location has room for a work station beside it in Type A units.
- In Type B units, make sure the finished cabinet-to-cabinet distance in walking paths is at least 42".
- Make sure Type A units and all elderly units get a dual remote wall switches to the range hood.
- Make sure the range receptacle is mounted in such a way as to allow the range to fit flush against the kitchen wall.

Bathrooms

- Door swings may not include knee and toe clearances in meeting the clear floor space requirements at doors.
- Type A and Type B unit doors may not overlap into the 30" x 48" required clear floor space.
- Make sure roll-in showers have a clear usable floor space of at least 36" x 60".
- Be sure shower or tub have a clear floor space of 30" x 60" at the approach.
- Make sure toilet and shower/tub grab bar blocking is available and covering 31" to 37" above finished floor.
- Be sure toilet accessories, medicine cabinets and wall hung sinks are blocked.
- Talk about shower curb height and approach.
- Make sure that roll-in shower drain is centered.
- Permanently mounted seats in roll-in showers are mandatory. Shower controls must be within 27" reach range of seat.
- Make sure toilet is centered at 16" to 18" off adjacent wall. No tolerances accepted.
- All units must have offset tub controls in all bathrooms.
- Make sure there will be 30" x 48" clear floor space at all bathroom fixtures.
- All full bathrooms must have recessed medicine cabinets as well as full-width vanity mirrors. Type A units mount at 44" max. above finished floor.
- In Type A and Type B units the clear floor space must be centered on the bathroom lavatories.

Common Areas

- Make sure hallways have 40" minimum width in family housing and 42" minimum width in elderly housing.
- All Type A usable doors are 36" wide with 18" minimum clear floor space on pull side of door.
- All pantry doors must have a minimum width of 24".
- Reach-in closets must not be deeper than 36".
- Thermostats must be at 48" minimum above finished floor. Reach ranges above this will not be allowed.
- Look for slab cracks.
- Check threshold heights.
- Type A entrance and secondary doors allow for 1/2" max. threshold.
- Type B entrance doors allow for 1/2" max. threshold. Rear sliding glass door threshold 3/4" max. height.
- Type B patio doors may have up to 4" max. step if floor is slab, a 1/2" max. if floor is wood decking.
- Check for required tempered window glass where required.
- Check for hallway handrail heights and blocking.
- Check to be sure laundry rooms are usable (36" minimum depth) and allow for the required clear floor space in all Type A and Type B units.

Site

- Check for grades at handicap units for slope issues.
- Make sure weep holes in brick veneers are at or below slab grade.
- Check for mold/mildew. Make sure materials are stored properly.
- Make sure lumber has grade stamps.
- All sill plates on concrete must be treated and sealed.
- Check for broken floor and roof trusses.
- Look at flashing to be sure it is installed properly.

This checklist is not inclusive of all items inspected during the North Carolina Housing Finance Agency's visit. This report does not convey in any manner that the property inspected meets all federal, state, city or local building codes or regulations. If building code issues are mentioned, it is only suggesting to the property owner to investigate possible code violations and to correct the violations if existing. The North Carolina Hous-

Accessibility Codes To Consider

- In congregate buildings, 60% of building entrances must be made accessible.
- All apartment units must have Braille signage at entry doors, mounted on latch side of door.
- Minimum door clearances at the pull side of a door may not use the knee and toe clearances under vanities or knee spaces.
- Main house panels in Type A and Type B units installed over 48” maximum AFF to top breaker.
- Thermostats and telephone jacks mounted over 48” in Type A and Type B units.
- Clear floor space is “on the floor”. The base and shoe molding is not part of the required clear floor space.
- Closets 48” or deeper must have the 60” clear floor space in Type A units.
- Where there is a range of tolerance it shall be 1/4”.
- Minimum shower dimensions must use “finished floor “ dimensions.
- Vanities in Type A units must be similar to those installed in non-accessible units. This means you can’t install wall hung sinks in Type A units if you do not install them in every other unit.
- In Type A unit kitchens the 60” minimum clear floor space is mandatory. You may not use the T-turn option. The 60” minimum clear floor space may only include 6” maximum under one side of cabinet toe space, if such toe space is 9” high minimum.
- For Type B bathroom sink heights, a bathroom Option A may have a 36” maximum sink height. For bathroom Option B the sink height is 34” maximum AFF.
- The clear floor space at lavatories must be centered on the bowl.
- Type A units must be disbursed among the various classes of units, meaning bedroom types.
- Laundry rooms require a 48” clear floor space for a parallel approach that is centered on the clothes washer and dryer. This will require additional space in front of/in the laundry room.
- In Type A kitchens the wall cabinets do not have to be mounted at 48” to the top of the lowest shelf. The Agency does require one wall cabinet, next to the range and over the work station, to be mounted at such height.
- On-site concrete steps on sidewalks beyond building cover must have a 2” minimum contrasting color on tread nosings. The color can be black, green, red or yellow.
- contrasting color. The paint is 2” wide covering the full width of the tread.
- Mailboxes for Type A and Type B units may not be installed higher than 48” AFF.

Problems to Avoid

A handicap access aisle must continue onto a curb cut and accessible route.



All site amenities must be on an



Roll-in showers must have a level approach and have shower rod and curtain installed.



Curbless roll-in showers must have a water dam mounted at shower floor entrance.



Tub controls must be within a 27" reach range in roll-in showers with a permanently mounted seat.



A 60" wide by 30" deep minimum clear floor space is required in front of fully accessible tubs and showers.



Clothes dryer vents must be installed in the closet at a usable location and 2" maximum off the floor.



Pipe wrap under accessible kitchen sinks must be installed in a professional manner.



Successful Construction

If a curb cut is placed inside an accessible route and there is no accessible concrete route behind it, the curb cut landing becomes part of the sidewalk and must not exceed a 2% slope. Full side flares can be at 8% maximum. Landing must have a non-skid surface.



The garden plots must be on an accessible route and elevated so the residents won't have to bend down to use them.



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