

2018 NC State Plumbing Code Amendments

(adopted December 2017 through December 2021)

(Note: includes identified NC Errata)

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The following pages represent a summary of the Building Code Council adopted amendments that have been approved by the Rules Review Commission.

2018 NC Plumbing Code (based on the 2015 International Plumbing Code)
effective 1/1/2019

These amendments revise, delete or add to the adopted NC Plumbing Code.

2018 NC Plumbing Code

202 GENERAL DEFINITIONS. (170613 Item B-14)

SECTION 202 GENERAL DEFINITIONS

Water service pipe. The pipe from the water main or other source of potable water supply, or from the meter when the meter is at the public right of way, to the water distribution system of the building served.
~~The water service pipe shall terminate 5 feet (1524 mm) outside the foundation wall.~~

The delayed effective date of this Rule is January 1, 2019.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Plumbing Code
305.4 Freezing. (190312 Item B-11)

305.4 Freezing. Water pipes installed in a wall exposed to the exterior shall be located on the heated side of the wall insulation. ~~Water, soil,~~ and condensate waste pipes shall not be installed outside of a building, in unconditioned attics, unconditioned utility rooms, or in any other place subjected to freezing temperatures unless adequate provision is made to protect such pipes from freezing by a minimum of R-6.5 insulation determined at 75°F (24°C) in accordance with ASTM C177 or heat or both.

Exterior water supply system piping shall be installed ~~not less than 6 inches (152 mm)~~ below the frost line and not less than 12 inches (305 mm) below grade.

Note: These provisions are minimum requirements, which have been found suitable for normal weather conditions. Abnormally low temperatures for extended periods may require additional provisions to prevent freezing.

The delayed effective date of this Rule is January 1, 2021.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Plumbing Code

306.2.4 Tracer wire. (190312 Item B-12)

306.2.4 Tracer wire. For plastic sewer *pip*ing, an insulated copper tracer wire or other *approved* conductor shall be installed adjacent to and over the full length of the *pip*ing. Access shall be provided to the tracer wire or the tracer wire shall terminate at the cleanout between the building drain and building sewer. The tracer wire size shall be not less than 14 AWG and the insulation type shall be listed for direct burial.

The delayed effective date of this Rule is January 1, 2021.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Plumbing Code

Table 403.1 Minimum Number of Required Plumbing Fixtures. (191210 Item B-18 and B-20)

(Only affected portions of the table are displayed here. Other portions of the table are unchanged by this amendment.)

**TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES**

NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
				MALE	FEMALE	MALE	FEMALE			
2	Business (see sections 403.2, 403.3 and 403.3.3.1)	B	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses	1 per 25 <u>30</u> for the first 50 <u>30</u> and 1 per 50 for the remainder exceeding 50 <u>30</u>		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink ^o
6	Mercantile (see sections 403.2, 403.3 and 403.3.3.2)	M	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500		1 per 750		—	100 - 1,000 1 greater than 1,000 require 1 more for each additional 1,000	1 service sink ^o

- a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.
- b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.
- c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient *sleeping units* shall be permitted, provided that each patient *sleeping unit* has direct access to the toilet room and provisions for privacy for the toilet room user are provided.
- d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.
- e. The number of fixtures provided shall be based on either the capacity of the church sanctuary or the church educational building (including fellowship halls and multiple purpose rooms), whichever is larger and within 300 feet (91.44 m).
- f. For attached one- and two-family dwellings, one automatic clothes washer connection shall be required per 20 dwelling units.
- g. A mop receptacle with a water supply, or a hose bib and floor drain, may be used in lieu of a service sink.
- h. A can wash may be used in lieu of a service sink.
- i. See Section 403.9 for additional information on plumbing fixtures for schools.
- j. When the rearrangement of an area or space increases the occupant content, the plumbing facilities shall be increased in accordance with this code.
- k. For baseball stadiums, the number of fixtures shall be reduced by 50 percent.
- l. Service sink may be omitted when located within a single-family dwelling.
- m. Self-service mini-storage facilities without an office area are exempt.
- n. Unheated storage buildings which are used periodically are not required to have toilet rooms.
- o. For business and mercantile occupancies with an occupant load of ~~25~~ 30 or fewer, service sinks shall not be required.

p. See section 403.6 for adjustments in occupant count.

The delayed effective date of this Rule is January 1, 2021.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

Table 403.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES

2	Business (See Sections 403.2, 403.3, and 403.3.3.1)	B	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	-	1 per 100 ^q	1 service sink ^o
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q. For business occupant loads of 25 or fewer, drinking fountains shall not be required.

The delayed effective date of this Rule is January 1, 2020.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES

NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
				MALE	FEMALE	MALE	FEMALE			
1	Assembly (See Sections 403.2, 403.3 and 403.3.3.2)	A-3	Places of worship and other religious services. Churches without assembly halls	1 per 150	1 per 75	1 per 200		-	1 per 1,000	1 service sink
3	Educational	E ^{b,i}	K-8 9-12 Teacher/staff	1 per 25 1 per 30 1 per 30		1 per 25 1 per 25 1 per 25		1 per 60 1 per 100 1 per 100	1 per 100	—

- a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.
- b. Toilet facilities for employees shall be separate from facilities for inmates, students or care recipients.
- c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient *sleeping units* shall be permitted, provided that each patient *sleeping unit* has direct access to the toilet room and provisions for privacy for the toilet room user are provided.
- d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.
- e. The number of fixtures provided shall be based on either the capacity of the church sanctuary or the church educational building (including fellowship halls and multiple purpose rooms), whichever is larger and within 300 feet (91.44 m).
- f. For attached one- and two-family dwellings, one automatic clothes washer connection shall be required per 20 dwelling units.
- g. A mop receptacle with a water supply, or a hose bib and floor drain, may be used in lieu of a service sink.
- h. A can wash may be used in lieu of a service sink.
- i. See Section 403.8 for additional information on plumbing fixtures for schools.
- j. When the rearrangement of an area or space increases the occupant content, the plumbing facilities shall be increased in accordance with this code.
- k. For baseball stadiums, the number of fixtures shall be reduced by 50 percent.
- l. Service sink may be omitted when located within a single-family dwelling.
- m. Self-service mini-storage facilities without an office area are exempt.
- n. Unheated storage buildings which are used periodically are not required to have toilet rooms.
- o. For business and mercantile occupancies with an occupant load of ~~25~~ 30 or fewer, service sinks shall not be required.
- p. See section 403.6 for adjustments in occupant count.

2018 NC Plumbing Code

403.1.1 Fixture calculations. (170912 Item B-2)

403.1.1 Fixture calculations.

To determine the occupant load of each sex, the total occupant load shall be divided in half. To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the occupant load of each sex in accordance with Table 403.1. Fractional numbers resulting from applying the fixture ratios of Table 403.1 shall be rounded up to the next whole number. For calculations involving multiple *occupancies*, such fractional numbers for each *occupancy* shall first be summed and then rounded up to the next whole number.

Exceptions:

1. The total occupant load shall not be required to be divided in half where *approved* statistical data indicates a distribution of the sexes of other than 50 percent of each sex.
2. In buildings that contain dwellings or sleeping units that have a pool dedicated to the residents, a percentage reduction of the total required fixtures provided for a pool and pool deck without bleachers and grandstands may be taken equal to the percentage of ~~total~~ residential units whose entries fall within a 500 feet foot horizontal travel distance of the pool deck. In multi-story structures, the residential units located not more than one story above or below the pool and pool deck may be included in the percentage. Travel from the pool to the required toilet facilities shall be on an accessible route.

The delayed effective date of this Rule is January 1, 2019.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

(Note: Also printed in 2018 Building Code, Section 2902.1.1, Exception 2.)

2018 NC Plumbing Code
403.2 Separate Facilities. (191210 Item B-16)

403.2 Separate facilities.

Where plumbing fixtures are required, separate facilities shall be provided for each sex.

Exceptions:

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. Separate facilities shall not be required in business occupancies with a total occupant load, including both employees and customers, of 30 or fewer. Separate facilities shall not be required in all other structures or tenant spaces with a total occupant load, including employees and customers, of 25 or fewer.
3. Separate facilities shall not be required in mercantile *occupancies* in which the maximum occupant load is 100 or fewer.
4. Except as provided in Section 405.3.2.
5. Where the code requires only one toilet facility for each sex, two unisex facilities may be substituted for separate facilities.

The delayed effective date of this Rule is January 1, 2021.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Plumbing Code

405.3.1 Water closets, urinals, lavatories and bidets. (200714 Item B-5)

405.3.1 Water closets, urinals, lavatories and bidets.

A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) center to center between adjacent fixtures. There shall be not less than a 21-inch (533 mm) clearance in front of the water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width and not less than 60 inches (1524 mm) in depth for floor-mounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall-hung water closets.

Exceptions:

~~Exception:~~

1. For detached one- and two-family dwellings and townhouses, see the *North Carolina Residential Code*, ~~Figure~~ Section R307.1 for minimum fixture clearances.

2. Private side by side lavatories may be less than 30 inches (762 mm) center to center.

The delayed effective date of this Rule is January 1, 2022.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Plumbing Code
410.2 Small Occupancies. (191210 Item B-14)

410.2 Small occupancies. Drinking fountains shall not be required for an occupant load of ~~15~~ 30 or fewer.

The delayed effective date of this Rule is January 1, 2021.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Plumbing Code
410.2 Small occupancies. (180911 Item B-20)

410.2 Small occupancies. Drinking fountains shall not be required for an occupant load of 15 or fewer.

The delayed effective date of this Rule is January 1, 2020.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Plumbing Code
605.3 Water service pipe. (170613 Item B-15)

605.3 Water service pipe. Water service pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.3. **Water** service pipe or tubing, installed underground and outside of the structure, shall have **a working** pressure rating of **not less than** 160 psi (1100 kPa) at 73.4°F (23°C). Where the water pressure exceeds 160 psi (1100 kPa), piping material shall have **a working** pressure rating **not less than** the highest available pressure. Water service piping materials not third-party certified for water distribution shall terminate ~~5 feet (1524 mm) outside the building~~ at or before the full-open valve located at the entrance to the structure. **Ductile** iron water service piping shall be cement mortar lined in accordance with AWWA C104.

The delayed effective date of this Rule is January 1, 2019.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

**TABLE 710.1(1)
BUILDING DRAINS AND SEWERS**

DIAMETER OF PIPE (inches)	MAXIMUM NUMBER OF DRAINAGE FIXTURE UNITS CONNECTED TO ANY PORTION OF THE BUILDING DRAIN OR THE BUILDING SEWER, INCLUDING BRANCHES OF THE BUILDING DRAIN ^{a,b,e,d}			
	Slope per foot			
	$\frac{1}{16}$ inch	$\frac{1}{8}$ inch	$\frac{1}{4}$ inch	$\frac{1}{2}$ inch
$\frac{1}{4}$	—	—	1	1
$\frac{1}{2}$	—	—	3	3
2	—	—	21	26
$\frac{1}{2}$	—	—	24	31
3 ^c	—	36	42	50
4	—	180	216	250
5	—	390	480	575
6	—	700	840	1,000
8	1,400	1,600	1,920	2,300
10	2,500	2,900	3,500	4,200
12	3,900	4,600	5,600	6,700
15	7,000	8,300	10,000	12,000

For SI: 1 inch = 25.4 mm, 1 inch per foot = 83.3 mm/m.

a. The minimum size of any *building drain* serving a water closet shall be 3 inches.

b. No building sewer shall be less than 4 inches in size.

c. No more than three water closets.

d. Minimum of 2-inch diameter underground.

2018 NC Plumbing Code
718 Cured in Place Piping. (190910 Item B-13)

SECTION 718
CURED IN PLACE PIPING (CIPP)

718.1 General. This section shall govern the replacement, rehabilitation or repair of existing *building sewer* piping by cured in place piping methods.

718.2 Scope. Cured in Place Piping (CIPP) installations shall conform to the requirements of ASTM F1216 and be installed per the manufacturer's installation instructions.

CHAPTER 15
REFERENCED STANDARDS

ASTM STANDARDS

F1216-09 Standard for Cured in Place Piping (CIPP).....718.1, 718.2

The delayed effective date of this Rule is January 1, 2021.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021

2018 NC Plumbing Code

ERRATA – line added back for “3” inches with “12” dfu

**TABLE 912.3
WET VENT SIZE**

WET VENT PIPE SIZE (inches)	DRAINAGE FIXTURE UNIT LOAD (dfu)
1-1/2	1
2	4
2-1/2	6
3	12
4	32

SECTION 917
SINGLE STACK VENT SYSTEM (SOVENT)

917.1 Design and installation shall be in accordance with the design criteria contained in the *Copper Development Association (CDA) Handbook* No. 802. Materials shall meet standards and specifications listed in Tables 702.1 and 702.4 for drain, waste and vent pipe and fittings.

917.1 Single-stack vent system permitted. A drainage *stack* shall serve as a single-stack vent system where sized and installed in accordance with Sections 917.2 through 917.9. The drainage *stack* and *branch* piping shall be the vents for the drainage system. The drainage *stack* shall have a *stack vent*.

917.2 Stack size. Drainage *stacks* shall be sized in accordance with Table 917.2. *Stacks* shall be uniformly sized based on the total connected *drainage fixture unit* load. The *stack vent* shall be the same size as the drainage *stack*. A 3-inch (76 mm) *stack* shall serve not more than two closets.

TABLE 917.2
SINGLE STACK SIZE

STACK SIZE (inches)	MAXIMUM CONNECTED DRAINAGE FIXTURE UNITS		
	Stacks less than 75 feet in height	Stacks 75 feet to less than 160 feet in height	Stacks 160 feet and greater in height
3	24	NP	NP
4	225	24	NP
5	480	225	24
6	1,015	480	225
8	2,320	1,015	480
10	4,500	2,320	1,015
12	8,100	4,500	2,320
15	13,600	8,100	4,500

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm

917.3 Branch size. Horizontal *branches* connecting to a single-stack vent system shall be sized in accordance with Table 710.1(2). Not more than one water closet shall discharge into a 3-inch (76 mm) horizontal *branch* at a point within a developed length of 18 inches (457 mm) measured horizontally from the *stack*.

Where a water closet is within 18 inches (457 mm) measured horizontally from the *stack* and not more than one fixture with a drain size of not more than 1½ inches (38 mm) connects to a 3-inch (76 mm) horizontal *branch*, the *branch* drain connection to the *stack* shall be made with a sanitary tee.

917.4 Length of horizontal branches. The length of horizontal *branches* shall conform to the requirements of Sections 917.4.1 through 917.4.3.

917.4.1 Water closet connection. Water closet connections shall be not greater than 4 feet (1219 mm) in developed length measured horizontally from the *stack*.

Exception: Where the connection is made with a sanitary tee, the maximum developed length shall be 8 feet (2438 mm).

917.4.2 Fixture connections. Fixtures other than water closets shall be located not greater than 12 feet (3657 mm) in developed length, measured horizontally from the *stack*.

917.4.3 Vertical piping in branch. The length of vertical piping in a fixture drain connecting to a horizontal branch shall not be considered in computing the fixture's distance in developed length measured horizontally from the stack.

917.5 Minimum vertical piping size from fixture. The vertical portion of piping in a fixture drain to a horizontal branch shall be 2 inches (51 mm). The minimum size of the vertical portion of piping for a water-supplied urinal or standpipe shall be 3 inches (76 mm). The maximum vertical drop shall be 4 feet (1219 mm). Fixture drains that are not increased in size or have a vertical drop in excess of 4 feet (1219 mm) shall be individually vented.

917.6 Additional venting required. Additional venting shall be provided where more than one water closet discharges to a horizontal branch where the distance from a fixture trap to the stack exceeds the limits in Section 917.4. Where additional venting is required, the fixture(s) shall be vented by individual vents, common vents, wet vents, circuit vents, or a combination waste and vent pipe. The dry vent extensions for the additional venting shall connect to a branch vent, vent stack, stack vent, air admittance valve, or shall terminate outdoors.

917.7 Stack offsets. Where fixture drains are not connected below a horizontal offset in a stack, a horizontal offset shall not be required to be vented. Where horizontal branches or fixture drains are connected below a horizontal offset in a stack, the offset shall be vented in accordance with Section 907. Fixture connections shall not be made to a stack within 2 feet (610 mm) above or below a horizontal offset.

917.8 Prohibited lower connections. Stacks greater than 2 branch intervals in height shall not receive the discharge of horizontal branches on the lower two floors. There shall not be connections to the stack between the lower two floors and a distance of not less than 10 pipe diameters downstream from the base of the single stack vented system.

917.9 Sizing building drains and sewers. The building drain and building sewer receiving the discharge of a single stack vent system shall be sized in accordance with Table 710.1(1).

The delayed effective date of this Rule is January 1, 2021.

The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Plumbing Code
917.1.1 Engineered Single Stack Systems. (190910 Item B-11)

917.1.1 Engineered Single Stack Systems. Engineered single *stack* systems shall be listed in accordance to the standards of the specific material utilized in the system, designed by a *design professional* and installed in accordance with the manufacturer's installation instructions.

The delayed effective date of this Rule is January 1, 2021.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

November 8, 2021