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MIKE CAUSEY, INSURANCE COMMISSIONER & STATE FIRE MARSHAL
BRIAN TAYLOR, CHIEF STATE FIRE MARSHAL

March 20, 2020

Chad Askew
Housing Studio, PA
333 West Trade Street, Suite 300
Charlotte, NC 28202

RE: Fountains at Endhaven, Charlotte, NC
2012 NCPC Section 405.3.1 Clearance Requirements Between Lavatories

Mr. Askew:

This letter is in response to your request for formal interpretation dated March 12, 2020 that was received in NCDOI by email on March 16, 2020. Your request for formal interpretation states:

> "In summary, we are seeking clarification regarding whether this 30" requirement (2012 NC Plumbing Code, Section 405.3.1) should extend to additional, non-required fixtures such as second sinks in a master bedroom, given that the code is silent regarding this specific condition."

Remarks:

Code sections noted in this letter are referring to the 2012 edition of the NC Plumbing Code unless otherwise noted.

Although the appeal request identifies 403.5.1 as the section being addressed it is actually 405.3.1.

Code Analysis:

The basis of the appeal appears to be that because the second lavatory is not a required fixture it is not required to comply with Section 405.3.1. Unfortunately, 405.3.1 is not limited to required fixtures; it addresses all fixtures just as the sanitary drain requirement of Chapter 7 apply to all fixtures.

The appeal also mentions using the fixture clearances of the NC Residential Code (NCRC) because the lavatories are contained within a dwelling unit. Section 405.3.1 contains no exception that allows use of the NCRC fixture clearances for dwelling constructed under the NC Building Code.

Conclusions:

All lavatory fixtures are required by Section 405.3.1 to be spaced a minimum of 30 inches center-to-center of the lavatory bowl.

As a matter of reference, a copy of your letter of request for formal interpretation (Attachment A below) and associated exhibits are included with this letter.

Please call if you have comments or questions.

Sincerely,

Carl Martin, RA
Chief Code Consultant

cc: File
Robbie Davis, Chairman – BCC
Keith Rogers, Chairman Plumbing Standing Committee – BCC
Cliff Isaac, Deputy Commissioner of Engineering – NCDOI

ATTACHMENT A

APPENDIX E
APPEALS
NORTH CAROLINA
BUILDING CODE COUNCIL

325 North Salisbury Street, Room 5_44
Raleigh, North Carolina 27603
(919) 647-0009

APPEAL TO NCDOI/NCBCC Hearing Date_____/_____/_____

GS 153A-374, GS 160A-434
Formal Interpretation by NCDOI _____
Appeal of Local Decision to NCDOI ____X____

GS 143-140, GS 143-141
Appeal of Local Decision to NCBCC _____
Appeal of NCDOI Decision to NCBCC _____

APPELANT **Chad Askew** PHONE: **(704) 877-1495**
REPRESENTING: **Housing Studio, PA**
ADDRESS: **333 West Trade Street, Suite 300**
CITY: **Charlotte** STATE: **NC** ZIP: **28202**
E-MAIL: **caskew@housingstudio.com** FAX: **(704) 343-9380**

North Carolina State Building Code, Volume **2012 NC Plumbing Code** - Section **403.5.1**

REQUEST ONE: [ ] Formal Interpretation by NCDOI [ ] Appeal of Local Decision to NCBCC
[X] Appeal of Local Decision to NCDOI [ ] Appeal of NCDOI Decision to NCBCC

Type or print. Include all background information as required by the referenced General Statutes and the attached policies. Attach additional supporting information.

Project: **Fountains at Endhaven, Charlotte, NC**
Primary Occupancy: R-2, apartments
Construction Type: Type VA, wood frame
Sprinkers: 13R at R-2, 13 at amenity areas

Exhibits: **Exhibit 'A': Selected pages from NC Plumbing Code & Commentary and the NC Residential Code**
Exhibit 'B': Correspondence with Mecklenburg County Code Enforcement, most recent first
Exhibit 'C': Rejected Mecklenburg County Alternate Methods Request
Exhibit 'D': Project photographs showing conditions in field

REASON: **Installation of second lavatory in certain residential unit bathrooms was rejected by the inspector based on spacing from the primary lavatory. The project has spacing of 25" to 27", depending on the unit, instead of the 30" required in the code between fixtures. An Alternate Methods Request was submitted to Mecklenburg County Code Enforcement to clarify the design intent with regard to the Plumbing Code. The Alternate Request suggests that a second lavatory, over and above the minimum number required in the space is not required to**

comply with Section 405.3.1 as long as the primary lavatory does meet this requirement in relation to the toilet. Mecklenburg County Code Enforcement denied this request specifically to allow us to elevate the interpretation question to the NC Department of Insurance.

We provided 30" clearance from center of fixture to center of fixture to all primary, required fixtures in each bathroom. Given that the second lavatory is not required by code, we believe it is not required to meet the 30" center to center requirements of Section 405.3.1. The project has provided a lavatory with the required side to side clearance as required relative to other required fixtures. Section 405.3.1 and accompanying commentary are silent with regard to how additional "bonus" fixtures are to be treated. However, Figure 405.3.1(1) of the commentary provides specific direction relative to toilet and sink configuration, suggesting that this is where the primary spacing concern lies. Further, both lavatories at each condition in question comply with ANSI A117.1 requirements for clear floor space, therefore meeting the requirements of the Americans with Disabilities Act. The commentary seems clear that the section's primary function is to provide adequate space for use of all fixtures. Certainly, meeting the ADA requirements for clear floor space at each fixture should provide adequate space for use. By meeting the ADA and meeting 405.3.1 for required fixtures, the lavatory design does meet the intent of the Plumbing Code - which is to provide adequate space for use of fixtures.

Please also note that Section 405.3.1 of the NC Plumbing Code provides an exception for townhouse and one- and two-family dwellings so that they are not required to comply with this spacing requirement at all. Apartments share many more similarities to that use groups than they do to other commercial use groups. This was additional language added by the North Carolina Code Council to base code language so it stands to reason that the intent was to provide less restriction in residential units.

Lastly, it is important to point out that this is not, in our professional opinion, a health, safety or welfare issue and, as such, we feel that it warrants a little flexibility in interpretation.

In summary, we are seeking clarification regarding whether this 30" requirement should extend to additional, non-required fixtures such as second sinks in a master bathroom, given that the code is silent regarding this specific condition.

Please note that the code sections provided herein are from the 2015 IPC Commentary and not the 2009 IPC Commentary – we do not have that commentary in house to share. However, the code language is the same in both editions of the code.

Signature:  Date: 12 March 2020

MECKLENBURG COUNTY CodeEnforcement

REQUEST FOR ALTERNATE METHOD / MATERIAL

Project Information:

Residential Single Family Project: Y N	Commercial Project: **Y** N
Code Enforcement Project No: **381202**	Permit No: **B3430848, B3430840**
Project Name: **Fountains at Endhaven**	Owner: **Proffitt Dixon Partners**
Project Address: **7021 Endhaven Lane, Charlotte, NC 28277**	Suite No:
Date Requested: **March 10, 2020**	

Person Requesting the Alternate Method / Material:

Name:	**Chad Askew, AIA**
Requestor's Association with the Project:	**Senior Associate in Charge, Housing Studio, PA, Architect of Record**
Phone Numbers:	Office: **704-348-8987** Mobile: **704-877-1895 (Preferred)**
Email Address:	**caskew@housingstudio.com**
Mailing Address:	**333 West Trade Street, Suite 300, Charlotte, NC 28202**

Registered Design Professional in Responsible Charge (RDPIRC):
(Architects or Engineers must be licensed in the State of North Carolina)

Name:	**Charles L Travis, III**
Firm Name:	**Housing Studio, PA**
Phone Numbers:	Office: **704-348-8970** Mobile: **704-905-2980**
Email Address:	**ctravis@housingstudio.com**
Mailing Address:	**333 West Trade Street, Suite 300, Charlotte, NC 28202**

CODE SECTION(S) FOR WHICH THE ALTERNATE IS BEING REQUESTED:

Trade(s)	Code Year	Section Number & Title
B E M **P**	2012	**Section 405.3.1 Installation of Fixtures / Setting / Water Closets, Urinals, Lavatories & Bidets**
B E M P		

Reason for Alternate Request: **Installation of second lavatory in certain bathroom units was rejected by inspector based on spacing from the primary lavatory. This Alternate Request is to clarify the design intent with regard to the Plumbing Code. The Alternate Request asks that a second lavatory, over and above the minimum number required in the space not be required to comply with Section 405.3.1 as long as the primary lavatory does meet this requirement.**

Explain how the proposed alternate continues to maintain the spirit and the intent of the Code (i.e. how it is equivalent to the level of protection prescribed by the Code: **We provided 30" clearance from center of fixture to center of fixture to all primary, required fixtures in each bathroom. Given that the second lavatory is not required by code, it should not be required to meet the 30" center to center requirements of Section 405.3.1. The project has provided a lavatory with the required side to side clearance as required. Further, both lavatories at each condition in question comply with ANSI A117.1 requirements for clear floor space, therefore meeting the requirements of the Americans with Disabilities Act. By meeting the ADA and meeting 405.3.1, the lavatory design does meet the intent of the Plumbing Code - which is to provide adequate space for use of fixtures.**

Please identify any supporting documentation attached to this request. (e.g. test data, Materials Safety Data Sheets, etc.)

1. **None**

Additional Comments: **None**

Review fees ($145/hour) to be paid by: (please choose from one of the following options)

Bond Account _____ (account number*) **In person** (cash, check or credit card)

*If using an MCCE Bond Account, please attach a Letter of Authorization from the Bond Account holder on their company letterhead.

Signatures:

Requestor

Charles L. Travis III

RDPIRC

Office use only

Results: Approved [Denied] Need More Information Cancelled

Reason: Section 405.3.1 NCPC requires 30 inches from center line of adjacent fixtures, it does not specify that it applies to only required fixtures. Commentary clarifies the 30 inch spacing is required for adjacent lavatories. Request is denied. This was discussed with Patrick Granson and he supports the decision. Appeal to NCDOI will need to be made within 10 days.

Disapproved
Tommy Rowland
Code Administrator
03/10/2020 11:15:10 AM

Code Administrator

Director, Code Enforcement (optional)

Chad Askew

From:	Rowland, Tommy D. <Tommy.Rowland@mecklenburgcountync.gov>
Sent:	Tuesday, March 10, 2020 11:25 AM
To:	Chad Askew; Granson, Patrick; Vernon, Jeffrey D.; Charles L. Travis, III; Gieser, David
Cc:	Raymond McGill
Subject:	RE: [External]Fountains at Endhaven Alternate Methods Request - Plumbing - Lavatory Spacing
Attachments:	Endhaven Alternate Request.pdf

Chad,

See attached. With the denial of this request, Appeal to NCDOI can now be made. It must be made within 10 days. Patrick will follow-up with David about the TCO when we get out of the meeting we are in.

Tommy Rowland
Mechanical/Plumbing Code Administrator
2145 Suttle Ave
Charlotte, NC 28208
980-314-3099
Tommy.Rowland@Mecklenburgcountync.gov

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From: Chad Askew <caskew@housingstudio.com>
Sent: Tuesday, March 10, 2020 11:03 AM
To: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>; Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>; Rowland, Tommy D. <Tommy.Rowland@mecklenburgcountync.gov>; Charles L. Travis, III <ctravis@housingstudio.com>; Gieser, David <David.Gieser@mecklenburgcountync.gov>
Cc: Raymond McGill <rmcgill@housingstudio.com>
Subject: [External]Fountains at Endhaven Alternate Methods Request - Plumbing - Lavatory Spacing
Importance: High

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Tommy, Patrick, Jeff, David,
See attached and let us know at your earliest opportunity when we can get TCOs issued for the affected buildings/units as well as whether this alternate method can be approved. Thanks to everyone for your assistance!

Tommy,

I left the payment info section blank for now. We need to get the payment info from Carocon, which I have requested. Please go ahead and review and provide a decision if you can. I will send the payment info ASAP. Thanks.
Chad

HOUSING STUDIO
Chad Askew, AIA, LEED AP, Senior Associate
333 West Trade Street, Suite 300
Charlotte, NC 28202
T:704.333.7862 D:704.348.8987
F:980.237.3862
www.housingstudio.com

Chad Askew

From: Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>
Sent: Monday, March 9, 2020 7:12 PM
To: Charles L. Travis, III
Cc: Chad Askew; Granson, Patrick; Gieser, David; Stuart Proffitt
Subject: Re: [External]Endhaven Vanity Sinks - TCO Turned Down

Hi Chuck,

I haven't been ignoring you & Chad, I just really am that busy. In fact, I'm getting home from the office now.

Patrick and I talked about this again earlier today and he was going to call you but he had meetings to go and probably got busy with that.
I should say here that this is not a Building Code issue, it comes from the Plumbing Code. That's why we were waiting for Tommy since he's the Plumbing Code Administrator. Unfortunately, even after talking with him I don't think there is any alternative for us to consider since the code requirement is pretty plain. The only thoughts we've had are to eliminate one of the sinks or, of course, tear it out and fix it.

I wish there was something more we could offer but there doesn't seem to be any wiggle room with this. Even allowing for typical construction tolerance, which is 1/8" - 1/4", the sinks are still too close by a few inches.

Sent from my iPhone

> On Mar 9, 2020, at 5:54 PM, Charles L. Travis, III <ctravis@housingstudio.com> wrote:
>
> CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.
>
> Jeff, can you please call me in the morning on my cell phone to discuss? Thank you in advance, Chuck 704-905-2980
>
> Sent from my iPhone
>
> > On Mar 5, 2020, at 5:00 PM, Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov> wrote:
> >
> > Hi Chad,
> >
> > I think we're waiting for Tommy to get back into the office since he is the Plumbing Code Administrator. He should be back tomorrow.

From: Chad Askew <caskew@housingstudio.com>
Sent: Thursday, March 05, 2020 4:20 PM
To: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>; Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>
Cc: Gieser, David <David.Gieser@mecklenburgcountync.gov>; Charles L. Travis, III <ctravis@housingstudio.com>
Subject: RE: [External]Endhaven Vanity Sinks - TCO Turned Down

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Patrick, Jeff,
I just wanted to check in to see if you guys have had a chance to get together on this yet. Give me a shout when you are able. Thanks.
Chad

<image001.jpg>

From: Chad Askew
Sent: Wednesday, March 4, 2020 4:35 PM
To: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>; Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>
Cc: Gieser, David <David.Gieser@mecklenburgcountync.gov>; 'Chuck Travis' <ctravis@housingstudio.com>
Subject: RE: [External]Endhaven Vanity Sinks - TCO Turned Down

Hey Patrick,
After some further digging, I just wanted to provide some back-up to our request to allow us to retain less than 30" spacing between lavatories at Endhaven (I believe where the issue presents itself, we are at 27"). The line items below, I believe, provide back-up that the distance between lavatories is a minor consideration at residential units and is worthy of an enforcement waiver in this case. Obviously, on future projects we will endeavor to space them appropriately.

1. The 2015 IPC Commentary (base language matching 2018 NC Plumbing Code) is silent on the specific relationship of one lavatory to another lavatory such as in our context. The commentary spends a great deal of time discussing the separation needs between urinals, toilets and bidets and between those items and lavatories. In fact, the one figure provided in the commentary (Figure 405.3.1(1)) speaks only to the distance between the toilet and the lavatory. This implies that these are the primary considerations and the lavatory to lavatory relationship is secondary.
2. The 2018 NC Plumbing Code also provides an exception back to Figure R307.1of the NC Residential Code for clearances related to one and two family dwellings and townhouses. While Figure R307.1 memorializes many of the dimensional requirements in Section 405.3.1 of the NC Plumbing Code, it does not provide for any requirement of spacing between fixtures – only between fixtures and walls or other impediments. Apartments are much more similar in use to the uses covered by the NC Residential Code than other uses in the NC Building Code.
3. There is reference in the commentary to the primary reason these distance guidelines is enacted is to provide adequate space to use the facilities. However, the design is compliant with ANSI A117.1 for accessible

design, which does not have this 30" requirement between lavatories. It would seem that compliance with ANSI A117.1 should be satisfactory to insure adequate space for use.

See attached pages from the 2018 NC Residential Code and 2015 International Plumbing Code Commentary for reference. Please give me a call to discuss if you have any questions. I look forward to hearing back from you soon. Thanks!
Chad

<image002.jpg>

From: Chad Askew
Sent: Wednesday, March 4, 2020 10:15 AM
To: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>; Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>
Cc: Gieser, David <David.Gieser@mecklenburgcountync.gov>
Subject: RE: [External]Endhaven Vanity Sinks - TCO Turned Down

Thanks Patrick!
I know we are asking you to approve something that technically does not meet code, but because it is not a life safety nor an accessibility issue and it has such a long lead time to correct, we are throwing ourselves on your mercy here!!
C

<image001.jpg>

From: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>
Sent: Wednesday, March 4, 2020 9:16 AM
To: Chad Askew <caskew@housingstudio.com>; Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>
Cc: Gieser, David <David.Gieser@mecklenburgcountync.gov>
Subject: RE: [External]Endhaven Vanity Sinks - TCO Turned Down

Thank you Chad. I will look it over

From: Chad Askew <caskew@housingstudio.com>
Sent: Wednesday, March 4, 2020 8:32 AM
To: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>; Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>
Cc: Gieser, David <David.Gieser@mecklenburgcountync.gov>
Subject: RE: [External]Endhaven Vanity Sinks - TCO Turned Down

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Patrick,
It is 381202. Thanks.
C

<image001.jpg>

From: Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>
Sent: Wednesday, March 4, 2020 6:19 AM
To: Chad Askew <caskew@housingstudio.com>; Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>
Cc: Gieser, David <David.Gieser@mecklenburgcountync.gov>
Subject: RE: [External]Endhaven Vanity Sinks - TCO Turned Down

Chad,

Good morning.

Can you give the project number? I need to look over the plans and see the details.

Thank you.

<image003.jpg>
Patrick G. Granson, MCP, CBO, LEED-AP
Director
Mecklenburg County Code Enforcement
Land Use & Environmental Services Agency
2145 Suttle Avenue | Charlotte, NC 28208
Office 980.314.3434
<image004.jpg>

https://meckcounts2020.com/

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From: Chad Askew <caskew@housingstudio.com>
Sent: Tuesday, March 3, 2020 5:56 PM
To: Vernon, Jeffrey D. <Jeff.Vernon@mecklenburgcountync.gov>; Granson, Patrick <Patrick.Granson@mecklenburgcountync.gov>
Subject: [External]Endhaven Vanity Sinks - TCO Turned Down
Importance: High

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Jeff,
We had our TCO turned down at Endhaven today because the vanity sinks in certain bathrooms were less than 30" apart. Honestly, and I know ignorance is not an excuse, we were not aware or this requirement nor was our MEP engineer. I've never run across it before in 22 years of professional work.

See below for the issue in the field and the code reference.

That said, the code requirement certainly does not seem to be a life safety issue nor is it an accessibility requirement. As such, we would like to request that Mecklenburg County allow the issue to pass in this case, if you'd be willing to consider that. Even without the challenges that the Coronavirus is creating in procuring countertop materials from China (where these tops are sourced), it would take weeks for us to be able to procure new tops and cabinets to correct this issue in the field and meet the exact code requirement. This will cost our client a lot of money in delays turning units over and moving tenants in for what seems to be an innocuous issue.

I will give you a call in the morning to discuss but I wanted to get this information in front of you first. Thanks so much.
Chad

<image002.jpg>

From: Larry McWilliams <lmcwilliams@mcveighmangum.com>
Sent: Tuesday, March 3, 2020 8:17 AM
To: Chad Askew <caskew@housingstudio.com>; scampagna@mcveighmangum.com; jcassidy@mcveighmangum.com; Paris McAdoo <pmcadoo@housingstudio.com>; Raymond McGill <rmcgill@housingstudio.com>
Subject: RE: Endhaven

Chad,

I have not seen that before, but here is what I found in the IPC:

<image005.png>

It looks to me like the separation distance of 30" is measured from centerline to centerline and not edge to edge.

Thanks,

Larry McWilliams, P.E., LEED AP BD+C, QCxP
Assoc VP / Mechanical Department Manager
lmcwilliams@mcveighmangum.com
Office: (704) 547 9035 | Ext: 2409
Cell: (803) 361-4251
McVeigh & Mangum Engineering, Inc.
916 W 5th St
Charlotte, North Carolina, 28202
www.mcveighmangum.com
Atlanta | Charlotte | Jacksonville | Raleigh

<image006.jpg>

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From: Chad Askew [mailto:caskew@housingstudio.com]
Sent: Tuesday, March 03, 2020 7:50 AM
To: Scott Campagna <scampagna@mcveighmangum.com>; John Cassidy <jcassidy@mcveighmangum.com>; Larry McWilliams <lmcwilliams@mcveighmangum.com>; Paris McAdoo <pmcadoo@housingstudio.com>; Raymond McGill <rmcgill@housingstudio.com>
Subject: Fwd: Endhaven

Scott, Larry,
See below. Are you aware of a plumbing code requirement that sinks need to be a minimum of 30" apart? I've never encountered this or known of it being a code requirement. Can you let us know what you know? Thanks.
C

Sent from my iPhone

Begin forwarded message:

> **From:** Ken Walsh <ken@proffittdixon.com>
> **Date:** March 3, 2020 at 7:43:04 AM EST
> **To:** Chad Askew <caskew@housingstudio.com>, Raymond McGill <rmcgill@housingstudio.com>, Paris McAdoo <pmcadoo@housingstudio.com>, Martha Fakadej <Martha.Fakadej@am.jll.com>, Jeff Rikard <jeffr@Carocon.com>
> **Subject: Endhaven**
>
> Plumbing inspector turned down TCO on Bldg 2 3rd floor units yesterday as he said our double bowl sinks were not the required 30" apart. This could be huge issue for us. Please check code, plans and shops this am and advise what you find. Jeff is checking impacted units on site.
>
> Kenneth P Walsh Jr, PMP, LEED GA
> Managing Director
> Proffitt Dixon Partners
> 1420 E. 7th St, Suite 150
> Charlotte, NC 28204
> 704-650-2524(c)
> Sent from my iPhone
>
> <image007.jpg>

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be based upon the seating capacity of the largest single auditorium plus 50 percent of the seats in the remaining auditoriums.

403.9 Plumbing fixtures for public schools.

403.9.1 Occupant content. Occupant content of public schools for the purpose of determining the number of required facilities shall be the maximum legal class size multiplied by the number of classrooms. A public school classroom is a room or space 500 square feet (46.5 m^2) or larger normally used for instructional purposes. Maximum class sizes are 29 students for grades K through 9 and 33 students for grades 10 through 12 (GS 115C-301). The occupant load for private schools shall be as listed in Table 1004.1.2 of the *North Carolina Building Code*.

403.9.2 Occupant load and distance. The total student occupant load shall be the sum of the occupant loads for all classrooms, labs, shops and vocational spaces. The total occupant load for all buildings on a campus may be utilized when calculating the total number of fixtures required. Toilet facilities for students and teachers may be located in an adjacent building but shall be located so that no person will have more than 200 feet (61 mm) of accessible, covered horizontal travel distance from any classroom lab, shop or vocational space closest door for access to the required number of fixtures. The occupant content of kindergarten and first grade classrooms with internal toilet facilities is not required to be used in determining the number of group facilities for the entire school.

403.9.3 Occupant load for teachers and staff. Fixtures provided for teachers and staff shall be determined by multiplying the number of classrooms by 1.75. Staffing ratio for grades K through 8 is 80-percent female and 20-percent male. Staffing ratio for grades 9 through 12 is 70-percent female and 30-percent male.

403.9.4 Gymnasiums, cafeterias, auditoriums and stadiums for schools. Fixtures in group toilet facilities provided for classroom areas may be used toward satisfying the total number of required fixtures for gymnasiums, cafeterias and auditoriums provided that such facilities are located within 200 feet (61 m) from the space and cannot be locked off from access during after-school-hours' use of the gymnasium, cafeteria or auditorium. Simultaneous use of classrooms, gymnasium, cafeteria or auditoriums shall not be considered for calculation of occupant loads for toilet fixtures. Stadium facilities shall be located within 400 feet (122 m) of the closest bleacher exit from each set of bleachers that the facility serves.

403.9.5 Miscellaneous provisions.

403.9.5.1 Unisex facilities. A single unisex facility may be used when the classroom area served is 1,200 square feet (112 m^2) or less and is used either for K through grade 2 or is a modular classroom used for any grade level. Unisex facilities may be provided for teacher/staff if their total occupant load within 200 feet (61 m) is 15 or less.

403.9.5.2 Student group facilities. Every public school group facility shall have a minimum of four flushing type fixtures. Four flushing male group toilets shall have a minimum of two water closets.

403.9.5.3 Substitutions. Water closets may be substituted for urinals for grades K through 2. Urinals may be substituted for water closets in male group toilet rooms for teachers/staff and gyms, auditoriums, cafeterias or stadiums. The number of water closets shall not be reduced to less than one-third of the required total number of flushing fixtures.

403.9.5.4 Modular classroom buildings. Toilet rooms may be omitted in a modular classroom building when facilities of sufficient capacity for the additional occupants are provided in an adjacent building and located within 200 feet (61 m) of horizontal travel distance from the modular classroom.

403.9.5.5 Temporary modular classroom buildings. Toilet rooms may be omitted in modular classroom buildings housing grades 9 through 12 when these temporary buildings are to be replaced by permanent facilities which are under contract. Facilities of sufficient capacity for the additional occupants shall be provided within 450 feet (137 m) of horizontal travel distance from the modular classroom.

SECTION 404
ACCESSIBLE PLUMBING FACILITIES

404.1 Where required. Accessible plumbing facilities and fixtures shall be provided in accordance with the *International Building Code*.

SECTION 405
INSTALLATION OF FIXTURES

405.1 Water supply protection. The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow.

405.2 Access for cleaning. Plumbing fixtures shall be installed so as to afford easy *access* for cleaning both the fixture and the area around the fixture.

405.3 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls.

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 at least 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 not be less than 30 inches (762 mm) wide and 60 inches (1524 mm) deep (see Figure 405.3.1).

Exception: For one- and two-family dwellings and townhouses, see the *North Carolina Residential Code*.

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Showers (Type B, Option B Design)

The shower requirements are the same as for the Type B, Option A design.

Hand Showers (Type B, Option B Design)

Hand showers are required in compliance with Accessible design requirements.

Lavatories (Type B, Option B Design)

The lavatory requirements are the same as for the Type B, Option A design.

Sinks (Type B, Option B Design)

The sink requirements are the same as for the Type B, Option A design.

Drinking Fountains (Type B, Option B Design)

There is no requirement for drinking fountains in the Type B, Option B design.

Enhanced Reach Range Lavatories (Type B, Option B Design)

There are no requirements for this type of lavatory in the Type B, Option B design.

Faucets (Type B, Option B Design)

❖ Faucets are required be compliant with the operational limitations required for accessible controls.

404.3 Exposed pipes and surfaces. Water supply and drain pipes under accessible lavatories and sinks shall be covered or otherwise configured to protect against contact. Pipe coverings shall comply with ASME A112.18.9.

❖ Persons seated in a wheelchair and using a sink or lavatory designed for accessibility could have their legs come in contact with the drain trap and water supply tubing and valves under those plumbing fixtures. The traps, tubing and valves could have sharp edges that could abrade skin. One way to protect the wheelchair-seated person from coming in contact with those components is to build cabinetry to conceal the components. The cabinetry would need to be designed to allow the necessary leg and toe clearance for a wheelchair-seated person. Figures 306.2 and 306.3 in ICC A117.1 indicate the required clearance. Another way to protect the wheelchair-seated user is to install "covers" on the components. The covers must comply with ASME A112.18.9.

SECTION 405
INSTALLATION OF FIXTURES

405.1 Water supply protection. The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow.

❖ This section identifies minimal installation requirements for water supply protection. Backflow prevention is perhaps the most important aspect of a plumbing code (see commentary, Section 608). All plumbing fixtures, plumbing appliances and water distribution system openings, outlets and connections are potentially capable of contaminating the potable water supply.

405.2 Access for cleaning. Plumbing fixtures shall be installed so as to afford easy access for cleaning both the fixture and the area around the fixture.

❖ Poorly designed facilities lead to challenges for housekeeping professions. For proper sanitation, every plumbing fixture must be capable of being cleaned. The installation of any fixture must not result in concealed spaces that do not facilitate proper cleaning.

405.3 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls.

❖ The operational design of plumbing fixtures and the connections to those fixtures requires that the fixture be installed with certain surfaces either level or plumb. This level fixture setting is required regardless of any out-of-level or out-of-plumb condition of the building structure that the fixture attaches to or rests upon. For example, a floor surface around a water closet connection may be out of level, but when the water closet is installed, the base of the water closet must be either shimmed or grouted such that the fixture is in level condition. Where a water closet is in an out-of-level condition, the integral trap may not provide the required water seal depth and the flushing action within the fixture may be compromised. Where a wall-mounted lavatory is mounted to an out-of-plumb wall, water in the basin may not completely drain and the trap below may not have the required water seal depth due to also being in an out-of-plumb condition. The lavatory must be installed so as to be level, regardless of the wall condition.

Proper alignment to adjacent walls is a subjective requirement, but the intent is that the installed fixture appear to be "square" and "in alignment" with the walls that are in close proximity to the fixture. An example would be the clearance from the back of a water closet flush tank to the wall behind it. The gap should appear to be even. Another example is one-piece lavatory countertop with bowl on a vanity. The backsplash of the countertop should appear to be even against the wall so as to prevent large gaps that are difficult to caulk and maintain a seal against possible splashing. While the code is not specific on the precision of the alignments, the intent is to ensure that fixtures are installed with attention to details that could affect the operation and future sanitary condition of the fixture.

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

Providing 2015 IPC Commentary because we do not have 2009 IPC Commentary in house

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than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall-hung water closets.

❖ For the 2012 edition, Code Figure 405.3.1 was removed because the figure fell short of providing a clear understanding of the requirements and, in some cases, made the requirements more confusing. In the context of this section only, bathtubs and showers are not considered to be "fixtures" but "obstructions" for which the minimum clearance dimensions from the indicated fixtures must be observed. Required minimum clearances in front of bathtubs and showers are not addressed in the code.

The requirements for placement and installation of plumbing fixtures for accessibility in toilet and bathing facilities "override" this section's dimensional requirements for "nonaccessible" plumbing fixture installation (see commentary, Section 404). A critical point that is often overlooked by designers and contractors is the accessibility requirement that the distance between urinal partitions for the wheelchair-accessible urinal must be at least 36 inches (914 mm). The centerline of the wheelchair-accessible urinal must be at least 18 inches (457 mm) from the face of each partition and not the minimum of 15 inches (381 mm) as required for a nonaccessible urinal.

Even though the code section is silent on exactly how the dimensions indicated in this section are to be measured, the intent is that the dimensions are to be measured to finished surfaces of walls (including tile or other coverings) and to imaginary vertical planes located against the most exterior feature of a fixture or obstruction. The code is also silent on whether minor protrusions from walls such as paper product dispensers, hand dryers, cove moldings, diaper-changing units, display cases, vending machines and grab bars impact the measurements discussed in this section.

The centers of the fixtures discussed in this section are not specific points on the fixtures, but a point that is "derived." For example, a centerline of a lavatory bowl is typically ascertained by calculating the "halfway" dimension between the widest outside dimensions of the bowl. Given the difficulty in locating an exact center of a fixture and a lack of coordination between trades, establishing an inspection tolerance for the spacing and clearance dimensions required by this code section is next to impossible. However, code officials will necessarily impart their own acceptance criteria (i.e., tolerances) during an inspection in order to accept or reject a required clearance dimension. Therefore, designers of toilet facilities are cautioned against creating layouts, which require building to the exact minimum clearance dimensions. A fixture layout having greater-than-the-minimum-clearance dimensions is inherently easier to build and results in far less inspection difficulties.

Note that all of the minimum dimensions stated in this code section might be overridden by the accessibility requirements of Chapter 11 of the IBC. See the commentary for Section 404 for more information.

Good design practices for toilet facilities and bathrooms usually provide clearances in excess of the minimum requirements in order to provide for appealing aesthetics and user friendliness.

The 21-inch (533 mm) minimum clearance from the front edge of a fixture to any wall, fixture or door applies only to water closets, urinals, lavatories and bidets. This dimension has been determined to be the necessary space required by a user to properly and safely use these fixtures. A question that is frequently asked is: "Does the intent of the requirement for providing at least 21 inches clearance in front of a water closet, urinal, lavatory or bidet to any wall, fixture or door include the door in any position of its swing path?" The answer is no. The purpose of the 21-inch (533 mm) clearance is to provide the user adequate space in front of the fixture to use it comfortably. As the door in any open position is an object that can be moved out of the way to provide the user space, there is no need to provide additional clearance from the door in any position of its opening swing path. Toilet room doors are normally closed when the fixtures are being used, which is another reason why it is assumed that the user will have adequate space to be able to use the fixture after moving the door out of his or her way.

There are many real-world examples of where doors swing into this 21-inch (533 mm) clearance zone. One example is a typical three-fixture, minimum size, hotel/motel bathroom where the door swings through the clearance area in front of all three fixtures in the bathroom. Typical powder rooms in dwellings and single-occupant toilet rooms in commercial occupancies are commonly designed with doors that swing into the space in front of water closets and lavatories. Another example is the typical (nonaccessible) minimum size-[30-inch by 60-inch (762 mm by 1524 mm)] water closet compartment, where the door swings into the compartment. If the many users of the code enforced this section to require the clearance for the door swing path, there would have been many attempts over numerous past code cycles to change the code text to specifically state that requirement; however, there have been no such proposals brought forth. And, because it has been common practice to allow door swing paths into the fixture user area (as evidenced by the examples presented), the commentary authors have concluded that this code section does not intend to prohibit doors from swinging into the 21-inch (553 mm) clearance. In other words, if the code intended to measure from the door swing, there would be evidence that the code is being enforced that way, but it is apparently not being enforced that way.

Could there be some multiple-user toilet room arrangements where allowing the door swing path to encroach into the 21-inch (553 mm) user clearance area would, in some cases, be aggravating to the users of the toilet facility? There are bound to be some; however, in most cases, this potential problem is rarely encountered in real-world scenarios because accessibility travel path and clear floor space requirements

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automatically require larger spaces in toilet rooms. If the code intended to apply to the door swing path, it would be stated outright, similar to the way the IBC addresses doors that swing into corridors, for example.

Note that the egress requirements of the IBC require that egress doors not be prevented from fully opening (see Commentary Figure 405.3.2).

If there are two fixtures facing each other, the 21-inch (533 mm) clearance in front of each fixture can overlap; however, the minimum egress width requirements in the IBC would most likely prevent a complete overlap of the frontal minimum clearances. Accessibility requirements for fixtures that are required to be accessible will require greater frontal approach dimensions. Door swing paths, in some accessible situations, are not allowed to overlap the accessible frontal approach dimensions.

The 15-inch (381 mm) minimum clearance dimension from the center of a fixture to any sidewall, partition, vanity or other obstruction only applies to water closets, urinals, lavatories and bidets. Note that the requirement does not include "to any fixture" as the 30-inch (762 mm) minimum center to center for fixtures, as discussed below, controls the spacing between fixtures. Fixtures that are required to be accessible require greater clearances from centerline to sidewall, partition, vanity or other obstructions (see commentary, Section 404).

The 30-inch (762 mm) minimum center-to-center dimension is only between the centers of water closets, urinals, lavatories and bidets. Public restrooms, having the requirement for partitions and compartments separating fixtures, cannot have fixtures located at the minimum of 30 inches (762 mm) center to center. The controlling aspect is the 15-inch (381 mm) minimum dimension from the center of the fixture to the required partition or compartment wall, not the center of the adjacent fixture. In other words, the thicknesses of partitions must be considered, thereby necessitating dimensions greater than 30 inches (762 mm) center to center.

Lavatories, both private and public, that are part of vanities require special attention. As indicated in the previous paragraph, a vanity, an "obstruction" in the context of this section, can be no closer than 15 inches (381 mm) to the centerline of an adjacent fixture. The center of the lavatory bowl, which is in the lavatory top that rests on the vanity, must be no closer than 30 inches (762 mm) to the centerline of an adjacent fixture. If the center of the lavatory is less than 15 inches (381 mm) from the side edge of the lavatory top, then the 30-inch (762 mm) center-to-center minimum dimension controls. If the center of the lavatory is greater than 15 inches (381 mm), then the 15 inches (381 mm) from the centerline of the adjacent fixture to the nearest obstruction (i.e., the edge of the lavatory top, not necessarily the vanity cabinet) controls (see Commentary Figure 405.3.1(1). Note that locating the vanity cabinet at 15 inches (381 mm) from the centerline of the adjacent fixture would not necessarily provide the required minimum clearance, as most lavatory tops overhang the edge of the vanity cabinet to some extent [e.g., $^3/_4$ inch (19.1 mm)]. For example, a 48-inch-wide (1219 mm) vanity cabinet is provided with a 49-inch-wide (1245 mm) cultured marble integral lavatory bowl countertop. Theoretically, this countertop could overhang along one side as much as 1 inch (25 mm).

Improper location of lavatories and lavatory vanities narrower than 30 inches (762 mm), offset-to-one-side bowls in lavatory countertops, and corner lavatory arrangements can unknowingly cause code violations. Where there is a strong emphasis on minimizing bathroom spaces, designers might be tempted to reduce the space for the lavatory by choosing a narrow vanity width or providing a wall mount or pedestal lavatory of a narrow dimension with the intent of locating this fixture as close as possible to a side wall. This can be a violation. Bowls in the lavatory countertops are often located offset to one side in order to provide clearance for vanity cabinet drawers beneath. Again, a violation can be created as there is not sufficient clearance from the center of the lavatory (bowl) to the adjacent sidewall or to an adjacent fixture to provide for proper use of the lavatory.

The code does not offer any specific insight concerning corner sinks. One possible method for determining the required clearances would be to establish a vertical plane perpendicular to a horizontal centerline extending from the corner though the center of the lavatory bowl and positioning this plane at the front edge of the fixture. This "user width" could be determined by measuring horizontally within the established plane from the centerline of the lavatory to a point where the plane insects the adjacent wall. The intent of this section appears to be to provide a "user width" of at least 30 inches (762 mm). If the measured dimensions left and right of the lavatory centerline are 15 inches (381 mm) or more, then the "user width" requirement of this section is satisfied. The front clearance measurement for this type of fixture could also utilize the imaginary front edge plane as a reference point. The intent of this section appears to be to provide a "user depth" of at least 21 inches (533 mm). Therefore, for a corner lavatory, the "user space" of 30 inches (762 mm) wide by 21 inches (533 mm) deep must not be encroached upon by other fixtures, closed doors or walls (see Commentary Figure 405.3.1(2).

For the 2012 edition of the code, the language of this section was amended to make a distinction between the compartment depths for wall-hung water closets [56 inches (1422 mm)] versus floor-mounted water closets [60 inches (1524 mm)]. The reason for this change was to align the code with the minimum requirement of the accessibility standard ANSI A117.1, which is referenced by the IBC. Note, however, that where accessible water closet compartments for children's use are concerned, the required minimum compartment depth according to ANSI A117.1 is 59 inches (1499 mm).

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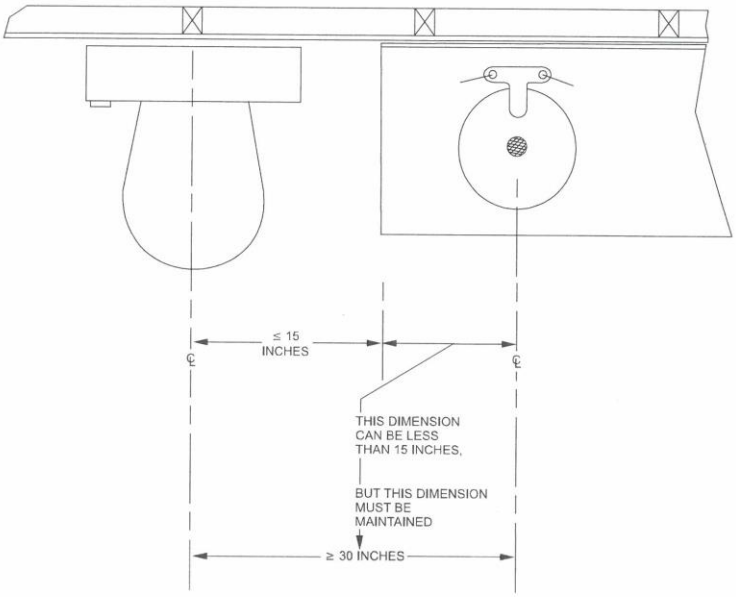

For SI: 1 inch = 25.4 mm.

Figure 405.3.1(1)
MINIMUM CLEARANCE BETWEEN FIXTURES

405.3.2 Public lavatories. In employee and *public* toilet rooms, the required lavatory shall be located in the same room as the required water closet.

❖ In employee and public toilet rooms, the required lavatory must be located in the same room as the required water closet or in an adjacent room connected by openings without doors. This provides the user with necessary sanitary facilities to promote proper hygiene and to prevent the spread of infectious diseases. In some public toilet arrangements, the water closets and urinals are located in a separate room from the lavatories, thereby requiring the user to engage doors to access the lavatories after using a urinal or water closet. Such an arrangement would be a violation of this section as the intent is that the lavatories be available to allow the user to wash his/her hands prior contacting any door handle or push plate for exiting the toilet facility.

405.3.3 Location of fixtures and piping. Piping, fixtures or equipment shall not be located in such a manner as to interfere with the normal operation of windows, doors or other means of egress openings.

❖ Fixtures and piping located in washrooms or toilet rooms cannot adversely affect the operation of building components such as windows and doors. The location of the fixtures and piping should not interfere with or block an occupant's egress to or from that space (see Commentary Figure 405.3.2). Obstructions caused by fixtures or piping can seriously hamper egress in an emergency condition or cause injury to the occupants.

405.3.4 Water closet compartment. Each water closet utilized by the *public* or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

Exceptions:

1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.
2. Toilet rooms located in child day care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.
3. This provision is not applicable to toilet areas located within Group I-3 housing areas.

❖ Psychological studies have proven that lack of privacy places a burden on an individual's physical ability to use bathroom facilities. This is caused by uneasiness, inhibition or indignation. A partitioned compartment can

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R303.9 Required glazed openings. Required glazed openings shall open directly onto a street or public alley, or a *yard* or court located on the same *lot* as the building.

Exceptions:

1. Required glazed openings that face into a roofed porch where the porch abuts a street, *yard* or court and the longer side of the porch is not less than 65 percent unobstructed and the ceiling height is not less than 7 feet (2134 mm).
2. Eave projections shall not be considered as obstructing the clear open space of a *yard* or court.
3. Required glazed openings that face into the area under a deck, balcony, bay or floor cantilever where a clear vertical space not less than 36 inches (914 mm) in height is provided.

R303.9.1 Sunroom additions. Deleted.

R303.10 Required heating. Where the winter design temperature in Table R301.2(1) is below 60°F (16°C), every *dwelling unit* shall be provided with heating facilities capable of maintaining a room temperature of not less than 68°F (20°C) at a point 3 feet (914 mm) above the floor and 2 feet (610 mm) from exterior walls in habitable rooms at the design temperature. The installation of one or more portable space heaters shall not be used to achieve compliance with this section.

Exception: Unconditioned *sunrooms* that are thermally isolated from the dwelling.

SECTION R304
MINIMUM ROOM AREAS

R304.1 Minimum area. Habitable rooms shall have a floor area of not less than 70 square feet (6.5 m^2).

Exception: Kitchens.

R304.2 Minimum dimensions. Habitable rooms shall be not less than 7 feet (2134 mm) in any horizontal dimension.

Exception: Kitchens.

R304.3 Height effect on room area. Portions of a room with a sloping ceiling measuring less than 5 feet (1524 mm) or a furred ceiling measuring less than 7 feet (2134 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required habitable area for that room.

SECTION R305
CEILING HEIGHT

R305.1 Minimum height. *Habitable space*, hallways and portions of *basements* containing these spaces shall have a ceiling height of not less than 7 feet (2134 mm). Bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6 feet 8 inches (2032 mm).

Exceptions:

1. For rooms with sloped ceilings, the required floor area of the room shall have a ceiling height of not less than 5 feet (1524 mm) and not less than 50 percent of the required floor area shall have a ceiling height of not less than 7 feet (2134 mm).
2. The ceiling height above bathroom and toilet room fixtures shall be such that the fixture is capable of being used for its intended purpose. A shower or tub equipped with a showerhead shall have a ceiling height of not less than 6 feet 8 inches (2032 mm) above an area of not less than 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.
3. Beams, girders, ducts or other obstructions in *habitable space* shall be permitted to project to within 6 feet 4 inches (1931 mm) of the finished floor.

R305.1.1 Basements. Portions of *basements* that do not contain *habitable space* or hallways shall have a ceiling height of not less than 6 feet 8 inches (2032 mm).

Exception: At beams, girders, ducts or other obstructions, the ceiling height shall be not less than 6 feet 4 inches (1931 mm) from the finished floor.

SECTION R306
SANITATION

R306.1 Toilet facilities. Every *dwelling* unit shall be provided with a water closet, lavatory, and a bathtub or shower.

R306.2 Kitchen. Each *dwelling* unit shall be provided with a kitchen area and every kitchen area shall be provided with a sink.

R306.3 Sewage disposal. Plumbing fixtures shall be connected to a sanitary sewer or to an *approved* private sewage disposal system.

R306.4 Water supply to fixtures. Plumbing fixtures shall be connected to an *approved* water supply. Kitchen sinks, lavatories, bathtubs, showers, bidets, laundry tubs and washing machine outlets shall be provided with hot and cold water.

SECTION R307
TOILET, BATH AND SHOWER SPACES

R307.1 Space required. Fixtures shall be spaced in accordance with Figure R307.1, and in accordance with the requirements of Section P2705.1.

R307.2 Bathtub and shower spaces. Bathtub and shower floors and walls above bathtubs with installed shower heads and in shower compartments shall be finished with a nonabsorbent surface. Such wall surfaces shall extend to a height of not less than 6 feet (1829 mm) above the floor.

SECTION R308
GLAZING

R308.1 Identification. Except as indicated in Section R308.1.1 each pane of glazing installed in hazardous locations as defined in Section R308.4 shall be provided with a manufacturer's designation specifying who applied the designation, designating the type of glass and the safety glazing standard with which it complies, which is visible in the final

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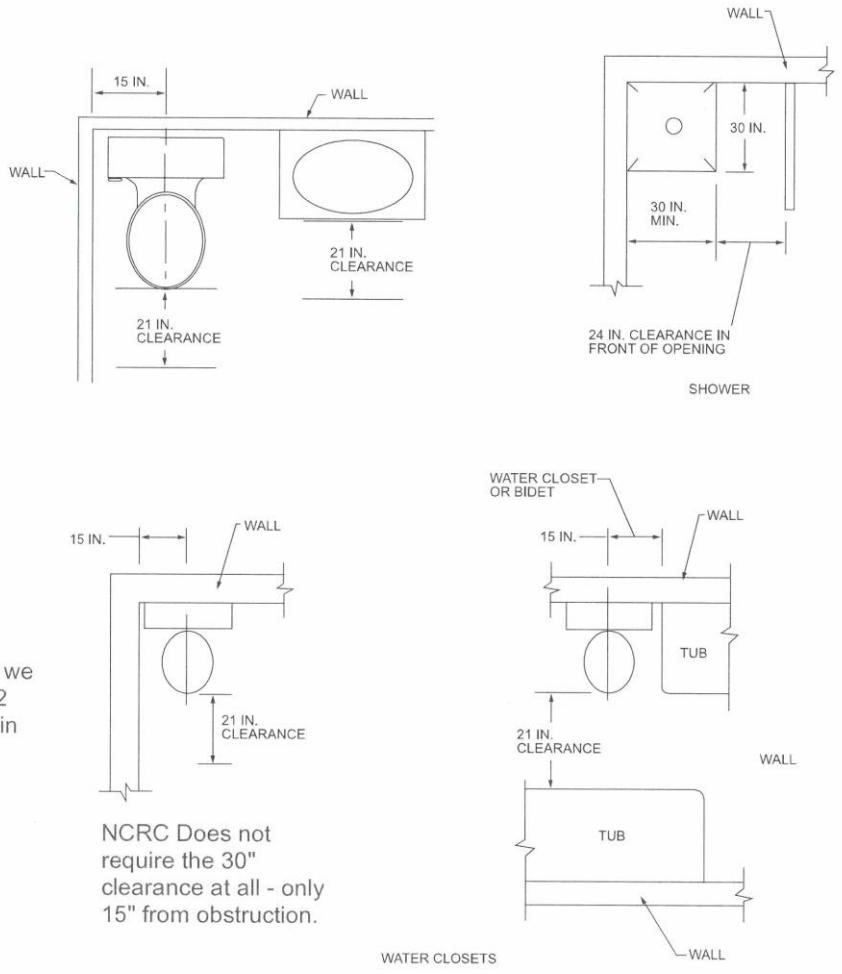
installation. The designation shall be acid etched, sandblasted, ceramic-fired, laser etched, embossed, or be of a type that once applied cannot be removed without being destroyed. A *label* shall be permitted in lieu of the manufacturer's designation.

Exceptions:

1. For other than tempered glass, manufacturer's designations are not required provided that the *building official* approves the use of a certificate, affidavit or other evidence confirming compliance with this code.
2. Tempered spandrel glass is permitted to be identified by the manufacturer with a removable paper designation.

R308.1.1 Identification of multiple assemblies. Multipane assemblies having individual panes not exceeding 1 square foot (0.09 m^2) in exposed area shall have not less than one pane in the assembly identified in accordance with Section R308.1. Other panes in the assembly shall be *labeled* "CPSC 16 CFR 1201" or "ANSI Z97.1" as appropriate.



Providing 2018 version because we do not have 2012 NCRC available in house

NCRC Does not require the 30" clearance at all - only 15" from obstruction.

For SI: 1 inch = 25.4 mm.

FIGURE R307.1
MINIMUM FIXTURE CLEARANCES

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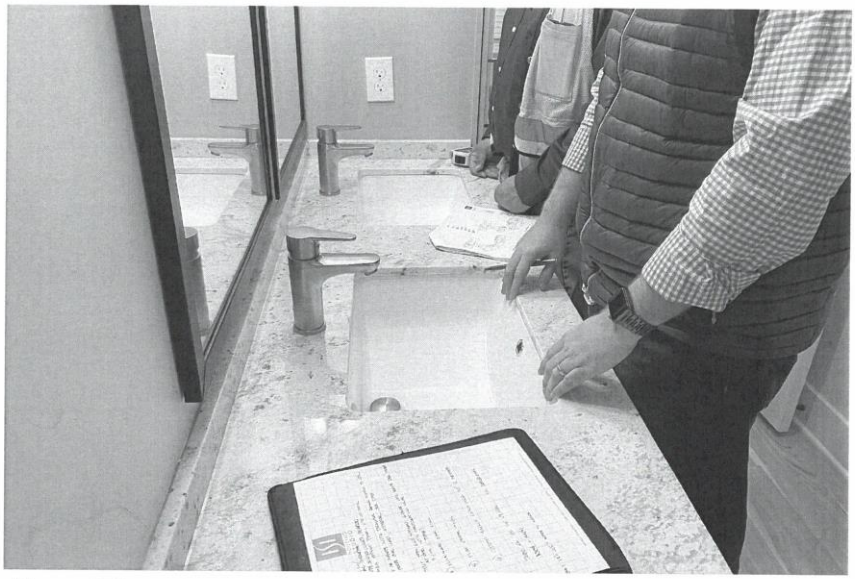

Above: 27" spacing with two grown men showing ample space for use.
Below: Required ANSI clear floor space shown at both sinks.

Tape measure showing 27" center to center of same set of cabinets.