UDC Commentary 21 Code Refresher Quiz Part 1

Instructions

1. Print these pages. **Fee $30**
2. Answer the **Simple questions** that follow mini sections of the code language.
3. Circle the correct answers and transfer the answers to the answer sheets (see last 3 pages).
4. After answering the simple questions you will become familiar with the new code changes.
5. Page down to the last page for the verification form, answer sheets and mailing instructions.

3 hour course for:

1. Dwelling Contractor Qualifier Certification.
2. UDC Construction Inspector.
3. Manufactured Home Installer License

Questions call Trisha at 920-381-6714 or email tmklinka@hotmail.com

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21.02 (1) (a) Dead Load of Insulation

To avoid ceiling gypsum board sag or related problems, attic insulation dead load should not exceed gypsum board manufacturer's recommended capacity. This is especially true today where thick attic insulation and 24-inch truss spacing are common.

For example, one manufacturer, United States Gypsum, in its Gypsum Construction Handbook recommends that 3/8-inch gypsum board not be used to support insulation. They also specify that their other panel thickness may support insulation given the following load and framing spacing (gypsum board span) criteria:

Maximum Load	Panel Thickness	Framing Spacing
1.3 psf	1/2 inch	24 inch o.c.
2.2 psf	1/2 inch	16 inch o.c.
2.2 psf	5/8 inch	24 inch o.c.

Attic insulation materials vary in density and thermal properties. Therefore, the total weight per installed R-value will vary depending on type, installation method and manufacturer of insulation product. Some typical values are estimated below; check actual weights supplied from your manufacturer or installer.

Type	Density	R/Thickness	R-38 Weight	R-50 Weight
Cellulose	2.4 pcf	3.6/inch	2.1 psf	2.8 psf
Blown Mineral Wool	1.2 pcf	2.8/inch	1.4 psf	1.8 psf
Blown Fiberglass	0.6 pcf	2.7/inch	0.7 psf	1.0 psf
Loose Fill Fiberglass	1.1 pcf	2.5/inch	1.4 psf	1.8 psf
Fiberglas Batt R(19+19+13)	0.7 pcf	3.2/inch	0.7 psf	0.9 psf
Rigid (expanded polystyrene)	1.8 pcf	4.0/inch	1.4 psf	1.9 psf
Rigid (extruded polystyrene)	2.2 pcf	5.0/inch	1.4 psf	1.8 psf
Spray (polyurethane foam)	1.9 pcf	6.2/inch	1.0 psf	1.3 psf
Spray (open cell)	0.5 pcf	3.3/inch	0.4 psf	0.6 psf
Mineral fiber (rockwool)	2.0 pcf	2.3/inch	2.8 psf	3.6 psf

From the data above, most typical R-50 installations would exceed the capacity of 1/2-inch gypsum board on 24-inch o.c. framing unless the ½" gypsum board has been specifically designed for that purpose. However, 5/8-inch gypsum board on 24-inch framing (typical

truss construction) would support most R-50 installations. Designers may want to check with the specific gypsum board manufacturer for span/load capacities when using 24-inch framing and high R-value cellulose installations. The above "USG" example indicates this may cause overloading.

1. Gypsum Construction Handbook recommends that _____ gypsum board not be used to support insulation.
   a. 3/8”
   b. ½”
   c. 5/8”
   d. all of the above
2. Maximum insulation load for a 1/2” thick panel with a framing spacing of 16” would be _____?
   a. 1.3 psf
   b. 2.2 psf
   c. 2.2 psi
   d. none of the above
3. Maximum insulation load for a 5/8” thick panel with a framing spacing of 16” would be _____?
   a. 1.3 psf
   b. 2.2 psf
   c. 2.2 psi
   d. none of the above
4. Most typical R-50 installations would not exceed the capacity of 1/2-inch gypsum board on 24-inch o.c. framing.
   a. true
   b. false
5. The density for blown fiberglass insulation would be ____?
   a. .06 pcf
   b. 0.6 pcf
   c. 0.6 psf
   d. 0.6 psi
6. 2” thick of blown fiberglass insulation would equal what R-value?
   a. 2.7
   b. 5.4
   c. 8.1
   d. none of the above
7. One psf of blown fiberglass insulation would equal what R-value?
   a. R 38
   b. R 36
   c. R 50
   d. none of the above
8. 5/8-inch gypsum board on 24-inch framing (typical truss construction) would support most R-___ installations.
   a. R 38
   b. R 36
   c. R 50
   d. none of the above

21.02 (1) (b) 2. Live Load - Snow

Exterior balconies or decks should be designed to withstand 40 PSF as the critical live load.

The effect of drifting or sliding snow on a roof should be considered as a matter of good design practice. However, the UDC only requires a 30 or 40 PSF snow load applied uniformly to roofs. In complex roofs with side by side low-high portions or flat roofs below sloped upper roofs, a designer may want to consider potentially higher snow loads in the low roof areas where sliding or drifting snow may collect. The UDC does not set lower snow live load values for roofs with glass or other slippery surfaces. Comm 21.27(1)(c) does allow a reduced snow load for steeper roofs with slopes of 7 in 12 or greater. Otherwise, attached greenhouses, solar spaces, solar panels and other similar roof construction should be designed to withstand 40 or 30 PSF for zone 1 or 2 respectively.

21.02 (1) (d) Fasteners

The fastener schedule in the appendix presents one means of showing adequate fastening to meet the code in most typical designs with sawn lumber. However, it may not be sufficient for certain designs, especially those using engineered lumber that can handle greater spans and loads that those assumed in the appendix fastener table. Be sure to verify that the fasteners provided will adequately transfer the greater loads that required special lumber.

9. In complex roofs with side by side low-high portions or flat roofs below sloped upper roofs, a designer shall design for higher snow loads in the low roof areas where sliding or drifting snow may collect.
   a. true
   b. false

10. Exterior balconies or decks should be designed to withstand 40 PSF as the critical ___ load.
   a. total
   b. dead
   c. live
   d. all of the above

11. Comm 21.27(1)(c) does allow a reduced snow load for steeper roofs with slopes of _____ or greater.
   a. 5 in 12
   b. 6 in 12
   c. 7 in 12
   d. 8 in 12

12. Attached greenhouses, solar spaces, solar panels and other similar roof construction should be designed to withstand 60 or 40 PSF for zone 1 or 2 respectively.
   a. true
   b. false

13. The fastener schedule in the appendix presents one means of showing adequate fastening to meet the code in most typical designs with _____.
   a. engineered lumber
   b. sawn lumber
   c. any materials
   d. all of the above

21.02 (1) (d) Dwelling Anchorage

Question: When does a dwelling need to be anchored to the foundation?

Answer: This section only discusses anchorage of the aboveground portion to the foundation. This is to prevent potential movement of the upper level due to wind pressure.

Section 21.18 requires the top of the foundation wall to have adequate lateral bracing to the floor above to resist lateral soil loads, as through anchor bolts or other means. Where failures of foundations walls have occurred in the past, investigation has shown that many times damage could be attributed to lack of lateral support at the top of the walls rather than to faulty material or workmanship. In other cases, the use of a

weak mortar in the masonry walls was an important contributing factor. The practice of some contractors backfilling basement walls before the first floor lateral support system is in place contribute to failures. In order for the floor system to provide lateral support where the joists are parallel to the foundation wall, solid bridging or blocking needs to be installed between the rim joist and adjacent floor joist.

14. In order for the floor system to provide lateral support where the joists are parallel to the foundation wall, solid bridging or blocking needs to be installed between the ____ and _____.

a. rim joist
b. sill plate
c. adjacent floor joist
d. both a & c

15. Section 21.18 requires the top of the foundation wall to have adequate lateral bracing to the floor above to resist lateral _____.

a. wind pressures
b. soil loads
c. uplift
d. both a or b

21.02 (2) "Typical" Structural Analysis

Question: A builder submits a building plan and includes "typical" structural calculations. Is there any time limit placed on the acceptability of such calculations?

Answer: Usually the typical calculations correspond to a master plan of a home built repetitively. When reviewing the building plans, you should verify that the loading conditions, spans, member sizes, member spacing and lumber grade as specified in the "typical" calculations are consistent with the plans. The use of such typical calculations or span tables (as in the Appendix to Ch. 21) is generally acceptable as long as the design criteria coincide with the building plans. There would be no time limit on the use of such calculations as long as they do not conflict with the requirements of the current code. An update of the calculations should be required if the code changes and different loads, load duration factors or other design criteria become effective.

16. An update of the "typical" structural calculations are not required even if the code changes and different loads, load duration factors or other design criteria become effective.

a. true
b. false

21.02 (2) Manufacturer's Installation Requirements

Section Comm 21.02(2), requires that all dwellings be designed by the method of structural analysis or the method of accepted practice. It is accepted practice to install a material in a manner required by the material's manufacturer, if the installation is regulated by the code.

A material installed in a manner that is inconsistent with the manufacturer's requirements should not be allowed unless additional information is provided showing that the installation will still meet the performance requirement of the code. An example is listed equipment—if the equipment is not installed per manufacturer requirements, the acceptance provided by the listing is not applicable. A manufacturer's installation requirement must also be checked for compliance with the Uniform Dwelling Code. It is the responsibility of the builder to have manufacturer's installation instructions available for review by the inspector (per s. Comm 20.09) when a question of proper installation arises.

17. It is the responsibility of the _____ to have manufacturer's installation instructions available for review by the inspector (per s. Comm 20.09) when a question of proper installation arises.

a. inspector

b. designer
c. builder
d. all of the above

18. Section Comm 21.02(2), requires that all dwellings be designed by the method of _____.
a. structural analysis
b. the method of accepted practice
c. none of the above
d. both a or b

21.02 (3) (b) Structural Analysis Standards - Wood
The following code-referenced standards shall be used in the design of roof and floor trusses.
The 2005 edition of the "NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION" and its supplement, "DESIGN VALUES FOR WOOD CONSTRUCTION," as published by the American Forest & Paper Association.
The "DESIGN SPECIFICATIONS FOR METAL PLATE CONNECTED WOOD TRUSSES" TPI-02 as published by the Truss Plate Institute, Inc.
The department has determined that the design minimum live load in Table 21.02 for ceilings with storage of 20 PSF applies to stick-built frame construction. Roof trusses designed in accordance with TPI-02 for attic storage loading will meet the intent of the code, only if such design criteria has been identified on the truss and drawings.

19. The department has determined that the design minimum live load in Table 21.02 for ceilings with storage of ____ PSF applies to stick-built frame construction.
a. 10
b. 20
c. 30
d. 40

20. Roof trusses designed in accordance with TPI-02 for attic storage loading will meet the intent of the code, only if such design criteria has been identified on the _____.
a. truss
b. drawings
c. none of the above
d. both a & b

21.02 (3) (b) Outline of the National Design Specification (NDS)
This specification is adopted by the UDC s. Comm 20.24(2)(a) and s. Comm 21.02(3)(b). The NDS is used for structural design of wood members as an alternative or in addition to the prescriptive (accepted practice or "cookbook") standards in Ch. 21. It is the basis for the development of the Fastener and Span Tables in Appendix App-17 of the UDC. Its accompanying NDS Supplement provides allowable stress values depending on grade, species and dimensions of lumber used. It is also the basis for "Design Values For Joist And Rafters-Visual Grading" tables in Appendix App-17.

21. NDS Supplement provides allowable stress values depending on _____of lumber used.
a. grade
b. species
c. dimensions
d. all of the above

22. NDS stands for _____.
a. Uniform Dwelling Code

b. National Development Counsel
c. National Design Specification
d. National Design Standards

21.02(3)(b)1.b. Re-Used Graded Lumber
Sound used lumber with grade marks still identifiable may be used for one- and two-family dwellings as follows:
The published NDS allowable design stresses for the lumber species and grade represent values for new lumber. To apply to used lumber, formerly these were to be reduced to a 90 percent value. NOTE: For joists and rafters, use "Fb" for repetitivemember use under normal duration load conditions. These used, 90 percent reduced bending values should not be increased using LDF's for snow or construction loading conditions. The span tables for joist and rafters in the appendix of the code may be used with the reduced design stresses.
Used re-sawn graded lumber must be graded based on the re-sawn and certified in accordance with nationally recognized lumber grading rules for visually graded lumber per ASTM D245. Agencies publishing grading rules are listed in the NDS "DesignValues for Wood Construction."

23. Used re-sawn graded lumber must be graded based on the _____accordance with nationally recognized lumber grading rules for visually graded lumber per ASTM D245.
a. re-sawn
b. certified in
c. none of the above
d. both a & b

24. Agencies publishing grading rules are listed in the _____ "DesignValues for Wood Construction."
a. UDC
b. NDS
c. UBC
d. IRC

Sound lumber is defined as materials without structural damage such as splits, cracks, gouges, saw, rot or insect damage and with notching and borings limited as follows:
21.02(3)(b)3. Native Sawn Ungraded Lumber
Sound, native, sawn un-graded lumber may be used for one- and two-family dwellings per the NDS published allowable design stresses for the lumber species using No. 3 grade when used for studs, stair stringers, rafters or joists and No. 1 grade for beams, posts or timbers in lieu of certified graded lumbers.
How may this section be applied?
Example #1:
1. I have an Eastern White Pine ungraded 2 X 4. Can I use it as stud material?
2. Default Grade 3 can be applied to this lumber. In accordance with the lumber species and grade table in the UDC code appendix, grade number 3 has an Fb of 605 psi.
3. This Fb value is greater than the stud grade for the same species (570 psi) required by Table 21.25-A. Therefore, it is OK to use this for a stud.
Example #2:
1. I have an Eastern White Pine ungraded 2 X 10. Can I use this as floor framing material?
2. Default Grade 3 can be applied to this lumber. In accordance with the lumber species and grade table found in the UDC code appendix, grade number 3 has an Fb of 445 psi and a modulus of elasticity of 900,000 psi.
3. To determine the maximum permitted span for this lumber to be used as a floor joist, go to UDC code appendix Table F-2.

4. The maximum span for a 2 X 10 with a modulus of elasticity of 900,000 psi spaced at 12" on center is 14'-11".
5. Note, though, that the table minimum Fb for this member spaced at 12" o.c. is 777 psi. This default Grade 3 lumber in question has an Fb of 445 psi. Therefore, this lumber may not be used without structural analysis.

25. Sound, native, sawn un-graded lumber may be used for one- and two-family dwellings per the NDS published allowable design stresses for the lumber species using No. 1 grade for _____ in lieu of certified graded lumbers.

a. beams
b. posts
c. timbers
d. all of the above

26. Sound, native, sawn un-graded lumber may be used for one- and two-family dwellings per the NDS published allowable design stresses for the lumber species using No. 3 grade when used for _____ in lieu of certified graded lumbers.

a. studs,
b. stair stringers
c. rafters or joists
d. all of the above

27. Sound lumber is defined as materials with minimal structural damage such as splits, cracks, gouges, saw, rot or insect damage and with notching and borings.

a. true
b. false

28. The above noted Eastern White Pine ungraded 2 X 4 can be use it as stud material with a # _____ grade?

a. 1
b. 2
c. 3
d. not allowed

2007 Wisconsin Act 208 became law on April 22, 2008. This law permits individuals that saw their own lumber on site to "self-grade" their lumber. The person that does the self grading must take a basic lumber grading program developed by the forest products outreach program at the UW-Stevens Point. Go to the website http://www.legis.state.wi.us/2007/data/acts/07Act208.pdf to get more information on this act.
An alternative for lumber species not listed in the NDS "Design Values for Wood Construction" and where nationally recognized allowable design stresses are not available, structural testing of the materials will be required. Testing must be conducted by a recognized independent testing agency in accordance with the appropriate ASTM load test procedure. The cost of such testing shall be borne by the person applying for the building permit.
The department will accept lumber species design stresses recommended by the U.S. Forest Products Laboratory, Madison, Wisconsin.

29. Wisconsin Act 208 became law on April 22, 2008. This law permits individuals that saw their own lumber on site to "self-grade" their lumber without any training.

a. true
b. false

Sound lumber is defined as materials without structural damage such as splits, cracks, gouges, saw, rot or insect damage and with notching and borings limited as follows:

21.02 (3) (b) T-30 and T-50 Lumber
These 2" x 4" spruce-pine-fir lumber products designated by Weyerhaeuser as T-30 and T-50 are taken from machine stress rated stock graded 1450-1.3E and 1800-1.6E, respectively. These designations are intended to take advantage of better than average lumber within the stress grade level as well as more accurate stress grading procedures and equipment. The following allowable stresses (in PSI) associated with these products are approved for use in Wisconsin.
Grade Fb Ft Fc MOE
T-30 1450 800 1150 l,300,000
T-50 1800 1175 1450 l,600,000
Any design values differing from the above are not to be accepted without complete test data from an approved testing lab wherein ASTM procedures are followed.
These products do not require a material approval as this is not a new construction material or new assembly.

30. 21.02 (3) (b) T-30 and T-50 Lumber. These 2" x 4" spruce-pine-fir lumber products designated by Weyerhaeuser as _____ are taken from machine stress rated stock graded 1450-1.3E and 1800-1.6E.
a. T-30
b. T-50
c. none of the above
d. both a & b

21.02 (3) (d) Concrete
Chapter 22 of ACI 318 provides minimum requirements for design and construction of structural plain concrete members (those will no or little reinforcement) such as footings and foundation walls. Unless foundation walls are alternatively designed and constructed in accordance with accepted engineering practice, section 22.6.6.5 of this standard requires not less than two No. 5 bars around all window and door openings. Such bars shall extend at least 24 in. beyond the corners of the openings.

31. Unless foundation walls are alternatively designed and constructed in accordance with accepted engineering practice, section 22.6.6.5 of this standard requires not less than two No. 5 bars around all window and door openings. Such bars shall extend at least ___ in. beyond the corners of the openings.
a. 12
b. 18
c. 24
d. 36

21.02 (3) (f) Roof and Floor Trusses
It is the responsibility of the inspector to verify conformance of the dwelling through the plan review process and the inspection process. It is recommended that builders or truss manufacturers demonstrate code conformance of their product to the building inspector in one of the two following manners:
1. DIRECT APPROVAL In this situation, the builder provides the structural drawings and calculations for the truss or building component directly to the building inspector for the inspector's review. The code does not require that structural drawings or calculations be provided by a licensed professional engineer or architect. The building inspector may review structural drawings and calculations for code compliance. Structural drawings and calculations are commonly sealed & signed by a professional engineer or architect and are generally considered as complying with the code. All structural drawings and calculations shall conform to s. Comm 21.02(3) structural analysis standards. Checking of input loadings, bearing support sizes and locations, and even the span of the trusses should easily be checked to match the building design.

2. MATERIAL EVALUATION NUMBER Under this method, the manufacturer of the building component submits drawings and calculations to the Department of Commerce. The Department would review the drawings and calculations and issue an evaluation number to the manufacturer. The manufacturer provides the shop drawings with the appropriate evaluation number to the builder and/or inspector. These evaluation numbers will also be supplied on our website if available to the inspection offices from the department by way of the Material Evaluation Notices. This will serve as a means of cross-referencing the numbers to the manufacturer and the trusses.
With this method, the building inspector has to rely on the shop drawing provided by the manufacturer to determine whether or not the product on the construction site conforms to the standards. The inspector would compare the shop drawing to the truss to verify that the same quality and size of lumber, connection plates, etc., were being provided as were approved on the shop drawing. The background structural calculations need not be repetitively submitted.

32. It is recommended that builders or truss manufacturers demonstrate code conformance of their product to the building inspector in one of the two following manners:
a. MATERIAL EVALUATION NUMBER
b. DIRECT APPROVAL
c. Demonstration method
d. both a or b

33. It is the responsibility of the _____ to verify conformance of the dwelling through the plan review process and the inspection process.
a. builder
b. designer
c. inspector
d. all of the above

34. The inspector would compare the shop drawing to the truss to verify that the same quality and size of _____ were being provided as were approved on the shop drawing.
a. lumber
b. connection plates
c. none of the above
d. both a & b

35. Structural drawings and calculations are commonly sealed & signed by a professional engineer or architect and are generally considered as complying with the code.
a. true
b. false

21.02 (3) (g) Log Homes
This section addresses log home construction; however, log homes are often engineered and kit-produced by a manufacturer. In that case, their requirements should be followed when stricter than the code minimums. The UDC also adopts the log home construction standards in Comm Tables 20.24-7 and 20.24-8. General guidelines for log homes that may be useful to you can be downloaded or you can order the adopted standards from the organizations referenced in the tables. The ICC standard is generally applicable to log structures, while the ILBA standard applies only to construction using handcrafted, interlocking, scribe fit construction.

36. The UDC also adopts the log home construction standards in Comm Tables _____.
a. 20.24-7
b. 20.24-8

c. 20-24-9
d. both a & b

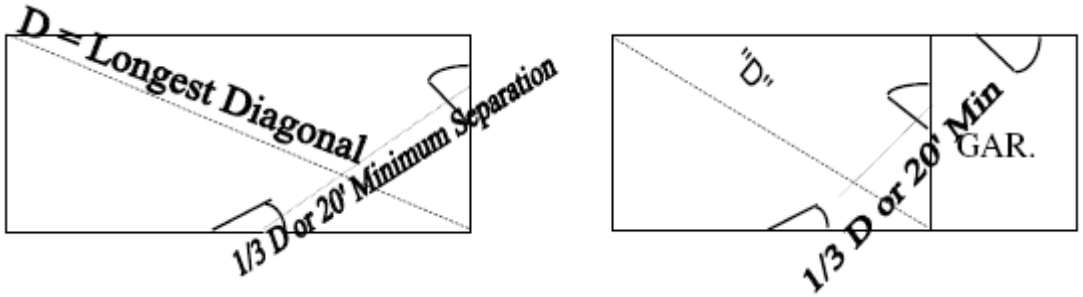
21.03(1) Acceptable First Floor Exits
Question: Is it acceptable to use a ground floor exit door to help satisfy the requirement for two exits from a first floor?
Answer: Yes, assuming the two floors are connected with a stairway and the other requirements are met. In this situation, the exit separation distance would be measured from the middle of the first floor exit door to the middle of the top of the stairway on the first floor.
Question: Are first floor bedrooms required to have egress windows?
Answer: No. The code indicates two exits are required from the first floor; however, if the exit separation requirements of 21.03(1)(e) are not met then any first floor bedroom would require egress windows.

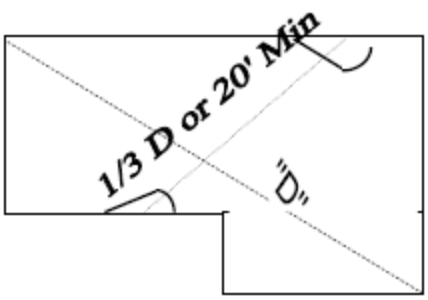
37. If the exit separation requirements of 21.03(1)(e) are met then any first floor bedroom would require egress windows.
a. true
b. false

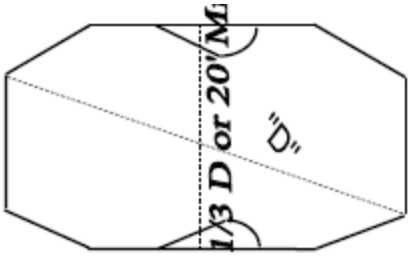
21.03(1) Earth-Sheltered Dwellings
Per the definition of first floor in s. Comm 20.07(34e), there is always a first floor, so a single-story (first floor) earth sheltered dwelling requires two exits per this section. Egress windows may not be used to satisfy requirement unless it is a small dwelling. See sections 20.07(34e) of this commentary for further discussion.

38. Single-story (first floor) earth sheltered dwelling requires one exit per this section with egress windows regardless of size.
a. true
b. false

21.03(1)(e) Separation of Exits
Note that these sections require the two required exits to be separated a distance of at least one-third the longest diagonal measurement in plan view of that floor or at least 20 feet (see diagrams).







ss. Comm 21.03(1), (e) 1., & (e) 2.

39. Note that these sections require the two required exits to be separated a distance of at least one-third the longest diagonal measurement in plan view of that floor or at least ___ feet.

a. 10
b. 20
c. 30
d. none of the above

21.03(2) Second Floor Bedroom Egress

Question: If one of the second floor bedrooms has a code-compliant exit door out of the bedroom onto a deck or balcony, can the requirement for egress windows in the other second floor bedrooms be waived?
Answer: Yes, but only if the hardware on the bedroom door, which leads to the second exit is incapable of being locked from the hallway that serves as the exit path from these other bedrooms .See chapter 20.07 for 'EXIT' definition.

40. One of the second floor bedrooms has a code-compliant exit door out of the bedroom onto a deck or balcony, the entry door to this bedroom cannot be locked, therefore the requirement for egress windows in the other second floor bedrooms are waived?

a. true
b. false

21.03(3) Acceptable Exits Above the Second Floor

Small third floor rooms specified under s. Comm 21.03 (3) (b) require only one stairway or ramp that leads to the second floor or lower in the dwelling. If the dwelling is fully sprinklered, only one exit is required from the third floor. Otherwise, only stairways or ramps to the second floor or grade are acceptable to meet the two exit requirements. If an exterior stair is used, access to it from the third floor shall be with a door and if the stairway terminates at the second floor, then there must be a door leading back into the dwelling or a code-compliant egress balcony to complete the exit path.

41. If an exterior stair is used, access to it from the third floor shall be with a door and if the stairway terminates at the second floor, then there must be ____ door leading back into the dwelling.

a. a lockable
b. a non-locking
c. either a or b
d. both a & b

21.03(3) Exits from Attics

Question: Does the requirement for two exits for floors above the second floor apply to walk-up attics?
Answer: No - it would only apply to habitable spaces including offices, playrooms or other conditioned spaces [see s. Comm 22.10 (3)] that may be occupied. Since attics are not considered habitable spaces they need not have natural light and ventilation nor multiple electrical outlets or lights unless they are used for mechanical equipment or electrical equipment.

42. Two exits for floors above the second floor apply to walk-up attics?
    a. true
    b. false

21.03(4) Exits from Lofts

A code-complying loft is not subject to the exiting requirements of the other subsections of this section. In other words, a loft open to a first-floor or second-floor below, only requires a single stairway or ladder (depending on area) to satisfy exiting. A loft bedroom or loft level would not require an egress window but would require natural light and ventilation the same as any other habitable space. See s. Comm 20.07(50) of the code and this commentary for a discussion of what is considered "open to the floor below."

43. A loft bedroom or loft level would not require an egress window but would require _____.
    a. natural light
    b. ventilation
    c. none of the above
    d. both a & b

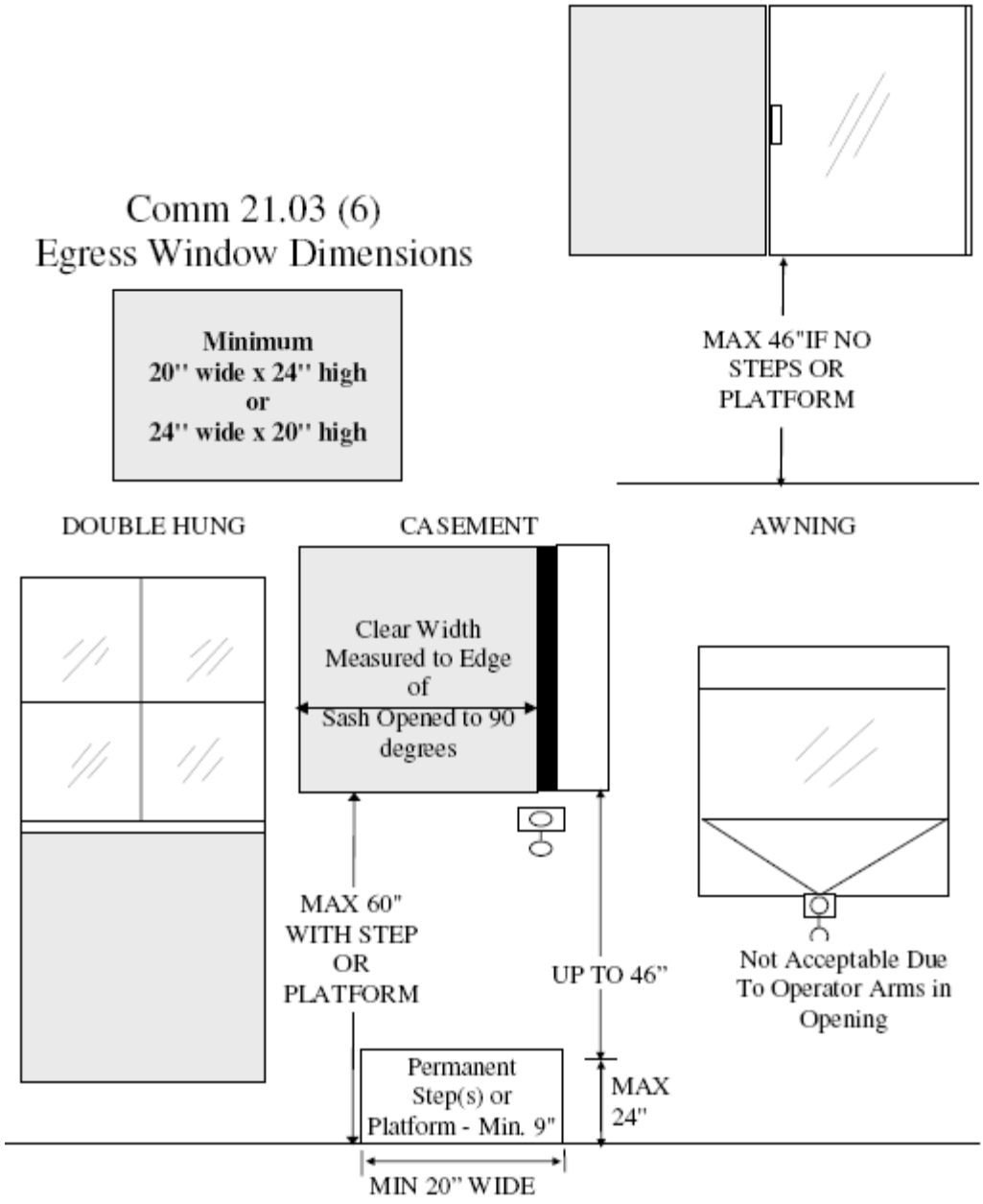
21.03(6) Bedroom Exit Windows

Question: Can egress windows be located in sitting or dressing areas of a master bedroom suite?

Answer: This section requires egress windows in some bedrooms. However, it does not specify the location of the window within the bedroom itself. A sitting room or area located in an alcove of a master bedroom is an acceptable location for the bedroom egress window. The alcove can be considered part of the bedroom if there are no doors obstructing communication between the two areas.

44. The alcove can be considered part of the bedroom if there are no _____ obstructing communication between the two areas.
    a. railing
    b. ½ walls
    c. doors
    d. windows

45. Egress windows can be located in sitting or dressing areas of a master bedroom suite?
    a. true
    b. false



46. Egress windows must be within ___ inches of the floor.
    a. 36
    b. 42
    c. 46
    d. 60
47. Egress window dimensions for the clear opening must be _____.
    a. 24” wide x 24” high
    b. 24” wide x 20” high
    c. 20” wide x 24” high
    d. both b & c
48. An acceptable egress window type would be _____.
    a. slider
    b. double hung
    c. casement
    d. all of the above

49. Awning windows are an acceptable egress window type.
    a. true
    b. false
50. Egress windows must be within ____ inches maximum of a floor if a step or platform is permanently installed.
    a. 36
    b. 42
    c. 46
    d. 60
51. The minimum width of an egress step or egress platform would be _____ inches.
    a. 20
    b. 24
    c. 36
    d. none of the above
52. The maximum height of an egress platform would be _____ inches.
    a. 20
    b. 24
    c. 36
    d. none of the above
53. The minimum width of an egress tread for a step or platform would be ____ inches.
    a. 9
    b. 8
    c. 12
    d. none of the above

21.03(8) Balconies
The floor level of the balcony shall be no more than 15 feet above the finished grade below to be considered as the second exit.
Balconies not used for a required exit purposes may be greater than 15 feet above grade.
All guardrails for balconies more than 24" above grade are required to comply with Comm 21.04(3) regarding height, in-fill or spindle and rail spacing requirements.
21.03(9) Split Level Dwellings
This section allows floor levels within 5 feet vertically of each other to be considered one floor level for exiting purposes. This does not change the definitions of the floor levels as set forth in s. Comm 20.07. Also the requirements of ss. Comm 21.03(1), 21.03(5)(b), and 21.03(6)(b) for proper separation of exits apply to the combined areas of the floor levels..
Also, any combined floor levels must all be within 5 feet of each other. In other words, a floor level that is between two other floor levels, separated by more than 5 feet, does not make all three levels into one even if exiting is from the middle level. However, the middle level may be combined with only one of the other levels.

54. Balconies not used for a required exit purposes may be greater than ___ feet above grade.
    a. 3
    b. 10
    c. 15
    d. none of the above
55. All guardrails for balconies more than ___" above grade are required to comply with Comm 21.04(3) regarding height, in-fill or spindle and rail spacing requirements.
    a. 12
    b. 18

c. 24
d. 36

56. Floor levels within ___ feet vertically of each other to be considered one floor level for exiting purposes.
a. 4
b. 5
c. 6
d. 3

57. A floor level that is between two other floor levels, separated by not more than 5 feet, shall make all three levels into one.
a. true
b. false

21.035 Interior Circulation
Question: What is considered a full bath for this section?
Answer: The code is clear in requiring one full bathroom to be provided with a 2'-8" wide door. A full bathroom would contain a lavatory, water closet and bathtub or shower.
Question: What use is an "accessible" bathroom or bedroom with a 2'-8" door when it is on the second floor?
Answer: The intent of this section is to minimize future structural door framing alterations necessary to make a dwelling accessible to a physically handicapped resident. Obviously, further alterations would be necessary for the second floor situation, such as a stairway chair-lift or platform lift. Also, there may be temporary situations where a handicapped resident or
guest, with physical assistance, could still make use of these second story rooms. "Accessible" does not always mean wheelchair-accessible.
Question: Can a 2'-6" flush opening pocket door be considered accessible?
Answer: This section requires, where cased or uncased openings are provided in lieu of doors, the clear width of passageway openings shall be at least 2'-6" wide. Where a pocket door is installed into a cased opening, the 2'-6" width requirement still applies. In this situation, the pocket door could not be provided with any doorstops and must open at least flush with the cased opening so that neither the door or trim infringe upon the cased opening width.
The intent of this code section is to provide a minimum 2'-6" width for disabled person use. Alternatively, a 2'-8" wide opening is required when swing doors are installed because of the door stops and door itself infringe on the opening width such that the effective opening is 2'-6".
Question: Are interior doors required to separate rooms such as bedrooms or bathrooms from the rest of the dwelling?
Answer: No, although it is common practice to have door separating these areas, doors are not required. The minimum opening requirements in Comm 21.03 (8) must be met but doors or privacy hardware is not a code requirement.
Question: When these sections refer to a minimum door width of 2'-8", how is it measured?
Answer: The door itself should be measured - not the distance between jambs or stops.

58. A full bathroom would contain a _____.
a. lavatory
b. water closet
c. bathtub or shower
d. all of the above

59. The code is clear in requiring one full bathroom to be provided with a _____ wide door.
a. 24"
b. 30"

c. 32”
d. 36”

60. "Accessible" always mean wheelchair-accessible.
a. true
b. false

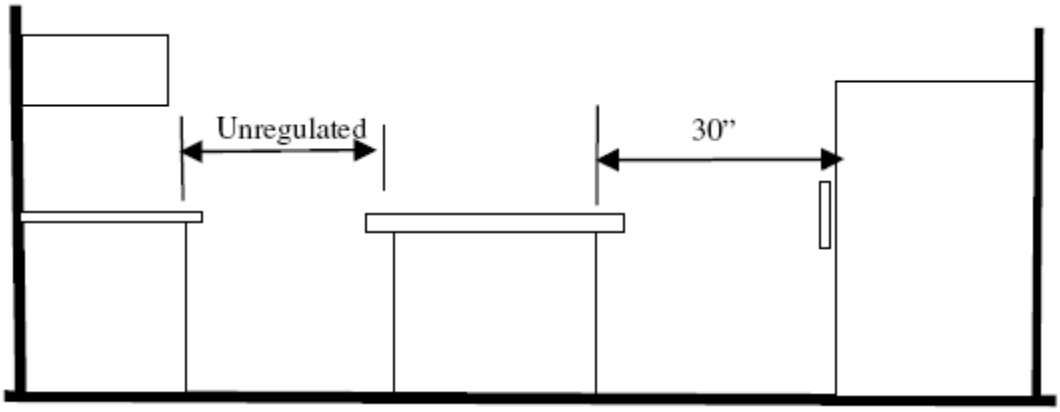
61. A 30” pocket door is installed into a cased opening is considered code complaint.
a. true
b. false

62. A 2’-8” wide opening is required when swing doors are installed because of the _____ infringe on the opening width such that the effective opening is 2’-6”.
a. door stops
b. door itself
c. door handles
d. only a & b

63. Interior doors are required to separate rooms such as bedrooms or bathrooms from the rest of the dwelling.
a. true
b. false

64. When these sections refer to a minimum door width of 2’-8”, measurements are taken between the jambs.
a. true
b. false

21.035(3) Clearance Between Cabinets & Appliances
The required 30 inches of clearance between major appliances and islands, walls or built in cabinets is measured to the face of the cabinets, not including countertop nosings.



65. The required 30 inches of clearance between major appliances and islands, walls or built in cabinets is measured to the face of the cabinets, including countertop nosings.
a. true
b. false

66. The required 30 inches of clearance between cabinets and islands or built in cabinets is measured to the face of the cabinets, not including countertop nosings.
a. true
b. false

21.04(1) Non-required Stairs
Although stairways to attics and crawlspaces are not covered by the code, other nonrequired

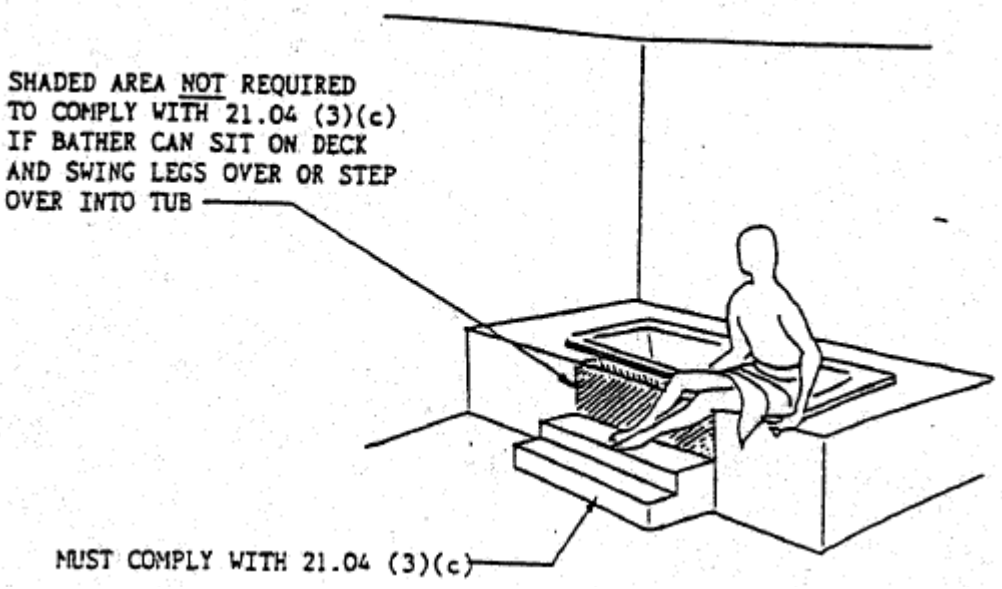
stairs, such as a second stairway from the first floor to a basement, are covered. Stairways are a major location of deaths and serious injuries in the home. Statistics from the U.S. Consumer Product Safety Commission (CPSC) show that one in four people will be injured and seek hospital treatment due to an injury related to stairways sometime in their lives. In 1994, the number of injuries from stairs, ramps, landings and floors was 1,879,029. This was an increase over the previous year by 11 percent (200,000-plus injuries), and was roughly equivalent to 19 percent of the total number of injuries reported in all categories for that same year. The CPSC also estimates that the cost of home injuries in 1994 was $94.3 billion. The cost directly related to injuries from stairs, ramps, landing and floors was $17.5 billion. Similarly, a study prepared for the U.S. National Bureau of Standards estimated that stair riser/tread dimensions are factors in nearly 50 percent of all stair-related injuries in the home.

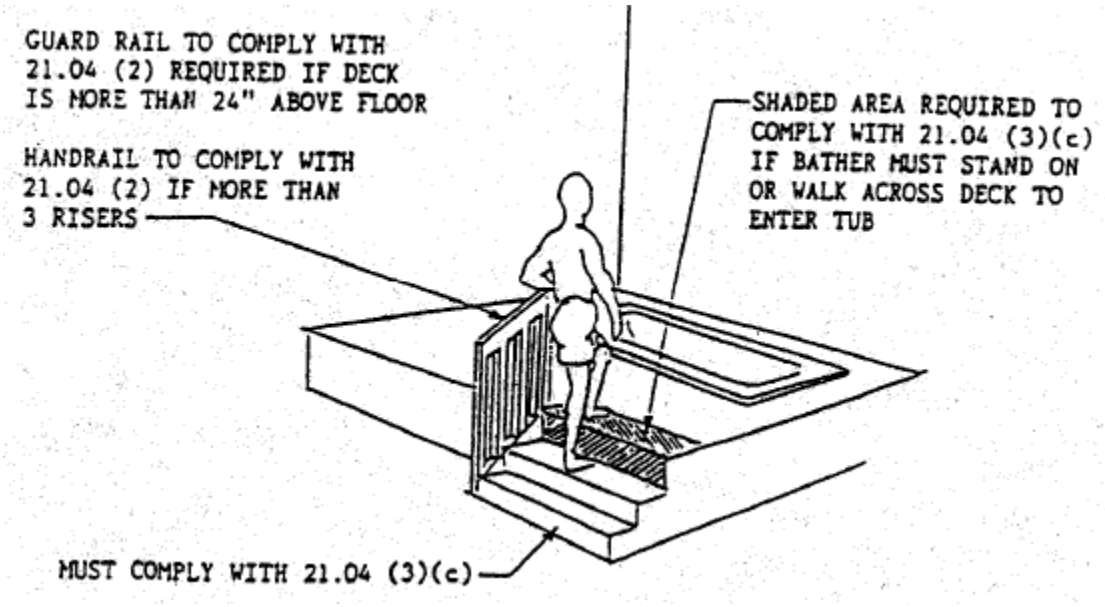
21.04(1) Exterior Stairs

Question: This section applies to exterior stairs but how far away from the dwelling would this coverage extend?

Answer: The stair requirements would apply to any steps necessary to get an occupant free and clear of the dwelling and to grade, as stated in Comm 20.02(1)(g) Scope.

67. Stairways to attics and crawlspaces are covered by this code.
    a. true
    b. false
68. Nonrequired stairs, such as a second stairway from the first floor to a basement, are not covered by this code.
    a. true
    b. false
69. Stairways built into the landscape away from the dwelling must meet this code.
    a. true
    b. false





21.04(1)(a)2. Bathtub Platforms
Question: Do the stair code requirements apply to steps serving a bathtub platform?
Answer: Yes, unless the stairs were manufactured as an integral part of the tub. Where a step or steps are provided at a bathtub, whirlpool or hot tub, the steps are required to have a minimum 9-inch tread and maximum 8-inch riser. Where more than one step is provided, the steps need uniform risers and treads. The rim of the tub should not be considered a step unless it is a large area where occupants are likely to walk around the tub. Steps are not required to be provided at the base of a tub, but due to damp slippery conditions associated with tubs, steps that are provided should comply with the code.

70. The rim of the tub should not be considered a step even if it is a large area where occupants are likely to walk around the tub.

a. true
b. false

71. Where a step or steps are provided at a bathtub, whirlpool or hot tub, the steps are required to have a minimum 8-inch tread and maximum 9-inch riser.

a. true
b. false

21.04(1)(b)2. Exterior Stairs to Basements
Question: Do bulkhead-type doors and stairways need to be code complying?
Answer: No, they must be code complying only if they are used AS AN EXIT, not if they are used as a service or non-required stairway. However, if they are required for egress, then verify the following items:
 landings,
 handrails,
 stairway width,
 headroom, and
 stair treads and risers.
In the case of bulkhead-type doors and stairs:
 The headroom height may be measured with the doors open, since the stairway is only usable if the doors are opened; and
 A landing is not required at the head of the stairway since this is considered an interior stairway protected from the weather.
However, a landing is required at grade outside the door.

Regarding the door(s), they must meet the exit door requirements if this is a required exit. That means it must be 2'-8" wide if there is a single door and 2'-6" each if there are double doors. If this is not a required exit, then no minimum width applies. Door headroom, at the bottom of stairs, would normally have to be in compliance with the required stairway headroom.

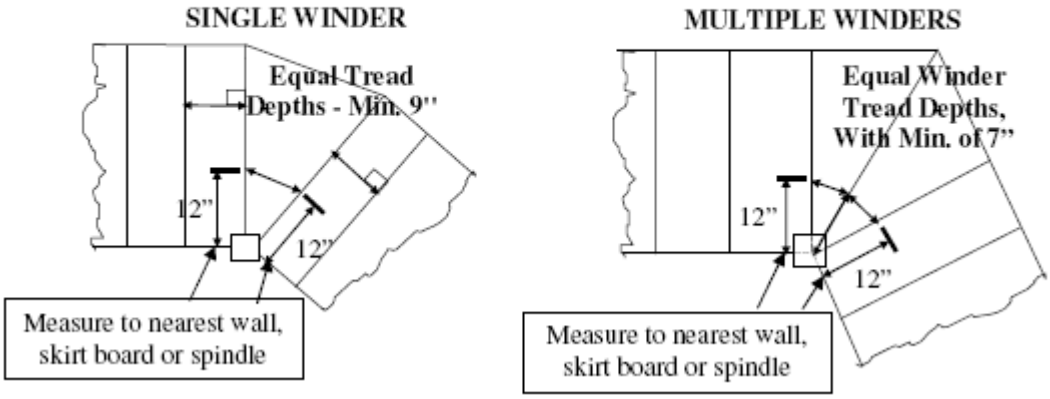
72. Exterior Bulkhead-type doors used as a service or non-required stairway to a basement must meet this code.

a. true
b. false

73. Required basement door(s), they must meet the exit door requirements if this is a required exit. That means it must be 2'-8" wide if there is a single door and ____ each if there are double doors.

a. 24"
b. 28"
c. 30"
d. 32"

21.04(2)(c)3.&4. Winder Steps



Comm 21.04 Stairways

2. 'Spiral staircase treads.' Spiral staircase treads shall have a minimum tread depth of 7 inches from nosing to nosing measured at a point 12 inches from the outer edge of the center column.

3. 'Winder treads in series.' Two or more winder treads may be placed immediately adjacent to each other anywhere in a stairway provided both of the following conditions are met:

a. The winder treads shall have a minimum tread depth of 7 inches measured at a point 12 inches from the narrow end of the tread.

b. The depth of the immediately adjoining winder treads shall be equal at a point 12 inches from the narrow end of the tread or inside face of spindles or balusters.

c. Winder treads may not be used on a straight stairway.

4. 'Individual winder treads.' a. An individual winder tread may be placed between rectangular treads or at the end of a flight of rectangular treads provided the tread depth, measured at a point 12 inches from the narrow end, is equal to the tread depth of the rectangular steps in the flight.

b. There may be more than one individual winder tread in a stairway or in a flight of stairs.

c. Winder treads may not be used on a straight stairway.

74. 'Individual winder treads.' Include:

a. An individual winder tread may be placed between rectangular treads or at the end of a flight of rectangular treads provided the tread depth, measured at a point 12 inches from the narrow end, is equal to the tread depth of the rectangular steps in the flight.
b. There may be more than one individual winder tread in a stairway or in a flight of stairs.
c. Winder treads may not be used on a straight stairway.
d. all of the above

75. 'Winder treads in series.' Two or more winder treads may be placed immediately adjacent to each other anywhere in a stairway provided both of the following conditions are met:

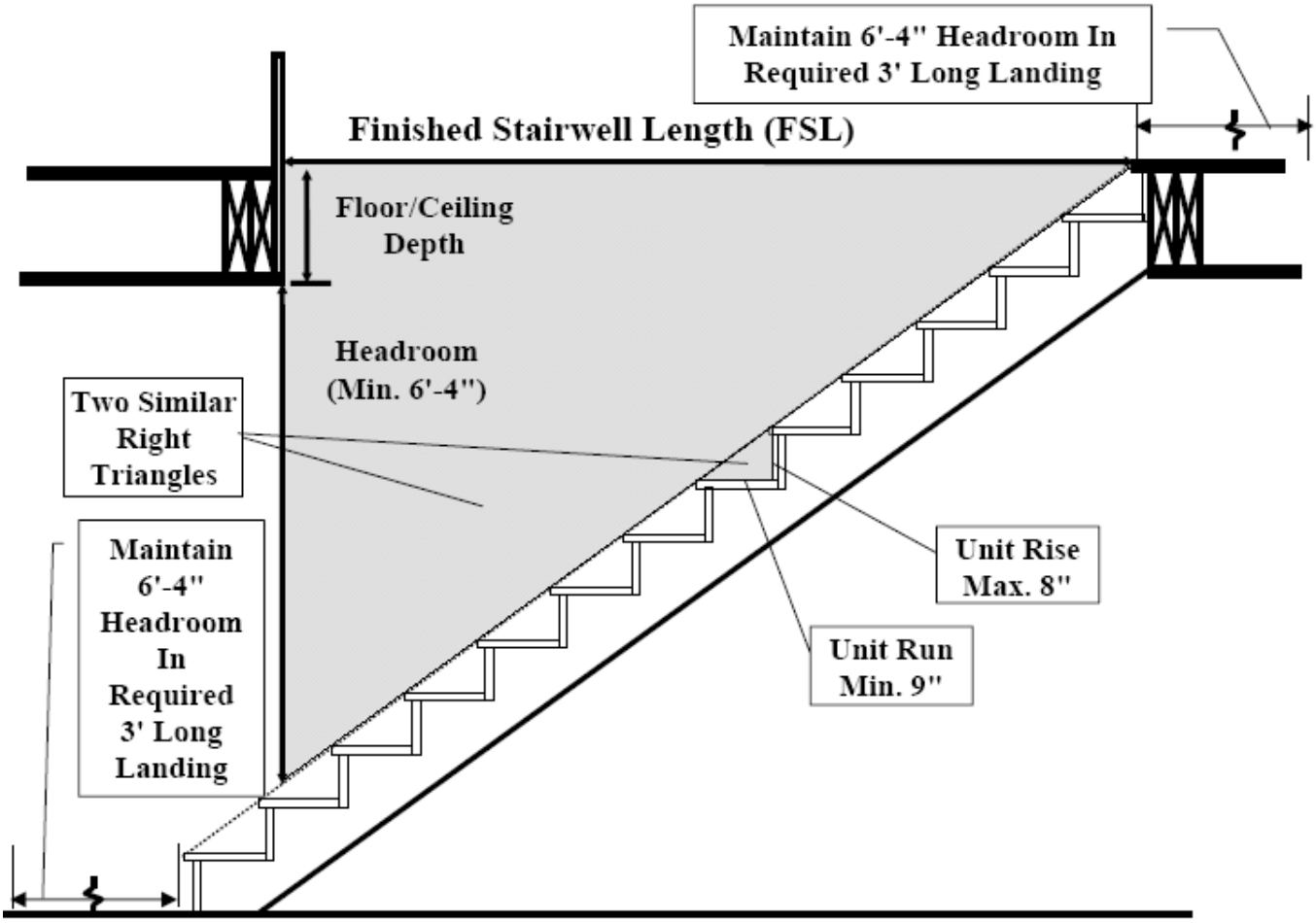
a. The winder treads shall have a minimum tread depth of 7 inches measured at a point 12 inches from the narrow end of the tread.
b. The depth of the immediately adjoining winder treads shall be equal at a point 12 inches from the narrow end of the tread or inside face of spindles or balusters.
c. Winder treads may not be used on a straight stairway.
d. all of the above

76. Winder treads may be used on a straight stairway.

a. true
b. false

77. 'Spiral staircase treads.' Spiral staircase treads shall have a minimum tread depth of 12 inches from nosing to nosing measured at a point 7 inches from the outer edge of the center column.

a. true
b. false



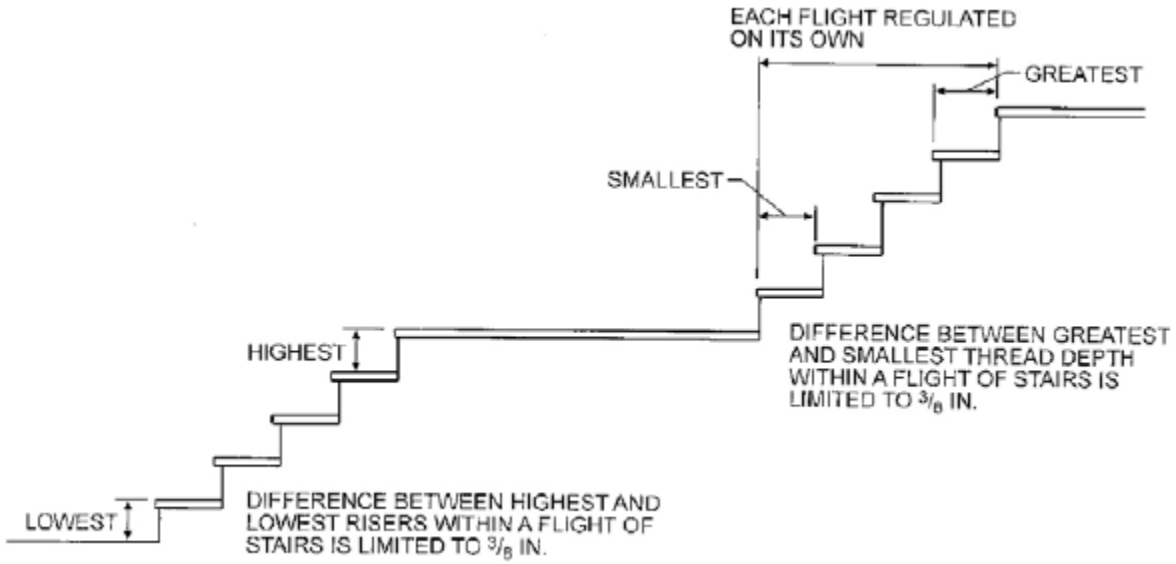
Comm 21.04 Stairways and elevated areas.

(1) SCOPE. (a) *General.* Except as provided under par. (b), the following stairways shall conform to the requirements of this section.
1. Every interior and exterior stairway attached to, or supported by any part of the structure covered under this code.
2. Tub access steps, unless they are an integral part of an approved plumbing product.
(b) *Exceptions.* The following stairways are not required to comply with the requirements of this section:
1. Stairways leading to non−habitable attics or crawl spaces.
2. Non−required stairways connecting the basement directly to the exterior of the structure without communicating with any other part of the structure.
(2) DETAILS. (a) *Width.* 1. Except for spiral staircases under subd. 2., stairways shall measure at least 36 inches in width. Handrails and associated trim may project a maximum of 4.5 inches into the required width at each side of the stairway.
2. Spiral staircases shall be at least 26 inches wide measured from the outer edge of the supporting column to the inner edge of the handrail.
(b) *Riser height.* 1. a. Except for spiral staircases under subd.
2., risers may not exceed 8 inches in height measured vertically from tread to tread.
b. At the top and bottom of a flight, measurement shall be taken from the top of the nosing to the finished floor surface unless the finished surface is carpeting, in which case measurement shall be made to the hard surface below the carpeting.
2. Risers in spiral staircases may not exceed 9.5 inches in height measured vertically from tread to tread.
(c) *Tread depth.* 1. 'Rectangular treads.' Rectangular treads shall have minimum tread depth of 9 inches measured horizontally from nosing to nosing.
(d) *Headroom.* 1. Stairways shall be provided with a minimum headroom clearance of 76 inches measured vertically from a line parallel to the nosing of the treads to the ceiling, soffit or any overhead obstruction directly above that line.
2. The headroom clearance shall be maintained over an intermediate landing.
3. The headroom clearance shall be maintained over a landing that is at the top or bottom of a stairway for a minimum distance of 36 inches in the direction of travel of the stairway.

78. The following stairways shall conform to the requirements of this section.
    a. Every interior stairway attached to, or supported by any part of the structure covered under this code.
    b. Every exterior stairway attached to, or supported by any part of the structure covered under this code.
    c. Every exterior stairway not attached to, or not supported by any part of the structure and not covered under this code.
    d. both a & b

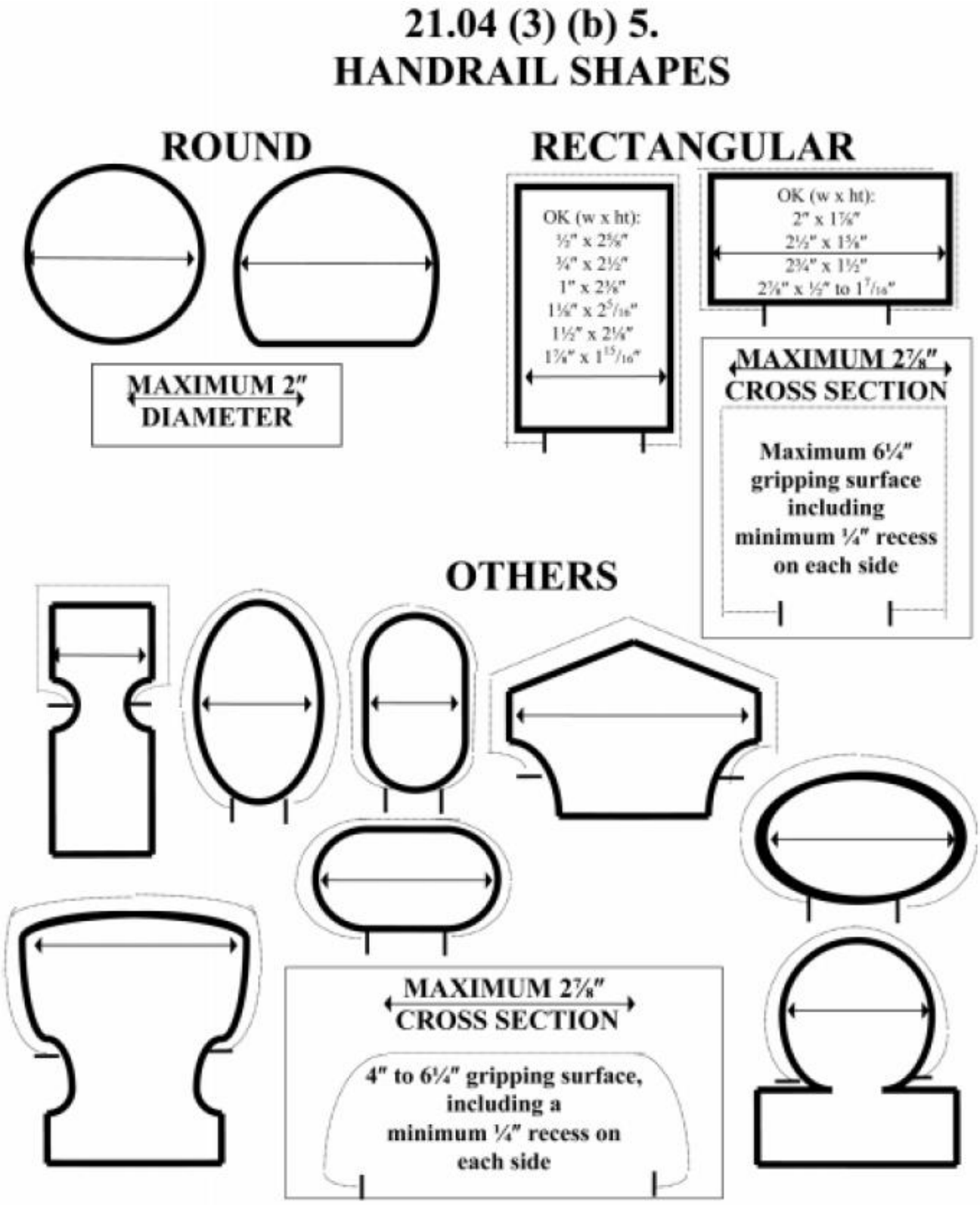
79. Except for spiral staircases under subd. 2., stairways shall measure at least ___ inches in width.
    a. 30
    b. 32
    c. 36
    d. none of the above

80. The following stairways are not required to comply with the requirements of this section:
    a. Stairways leading to non−habitable attics or crawl spaces.
    b. Non−required stairways connecting the basement directly to the exterior of the structure without communicating with any other part of the structure.
    c. Landscaping type stairs not attached to the dwelling.
    d. both a & b



(e) *Uniformity.* 1. Within a stairway flight, the greatest tread depth may not exceed the smallest tread depth by more than 3/8 inch and the greatest riser height may not exceed the smallest riser height by more than 3/8 inch.
2. The allowed variation in uniformity under subd. 1. may not be used to exceed the maximum riser height under par. (b) or to decrease the minimum tread depth under par. (c).
(f) *Open risers.* Stairways with open risers shall be constructed to prevent the through−passage of a sphere with a diameter of 4 inches or larger between any 2 adjacent treads.
(g) *Walking surface.* The walking surface of stair treads and landings shall be a planar surface that is free of lips or protrusions that could present a tripping hazard.

81. The allowed variation in uniformity under subd. 1. may be used to exceed the maximum riser height under par. (b) or to decrease the minimum tread depth under par. (c).
a. true
b. false
82. Stairways with open risers shall be constructed to prevent the through−passage of a sphere with a diameter of ___ inches or larger between any 2 adjacent treads.
a. 3
b. 4
c. 5
d. 6
83. Within a stairway flight, the greatest tread depth may not exceed the smallest tread depth by more than ___ inch and the greatest riser height may not exceed the smallest riser height by more than __ inch.
a. 1/8
b. ¼
c. 3/8
d. ½
84. The walking surface of _____ shall be a planar surface that is free of lips or protrusions that could present a tripping hazard.
a. stair treads
b. landings
c. stair risers
d. both a & b



21.04(3) Handrails or Guardrails

Question: At the time of occupancy, a sliding patio door installed in an exterior wall is viewed by the inspector without an exterior deck, landing, stairway or platform. The floor to grade elevation difference is greater then 8 inches. Is this okay since two other exit doors could provide exiting from the dwelling and the elevation difference is less than 24 inches?

Answer: No. The presence of the door, whether required or not, is installed to allow exiting and movement between areas. There is an elevation difference from the floor to grade in the exit path so a stairway or landing platform is required per s. Comm 21.04 prior to occupancy. However, if the door was substantially fastened closed with hardware and screws that would not allow it to be opened more then 4", then it would not be considered a door and steps would not be required in the interim until a proper exit path is provided.

Question: Does a non-required guardrail serving a porch less than 24 inches above grade need to comply with the code?

Answer: This section does not require the guardrail where the porch is less than 24 inches above exterior grade; therefore the height and other specifications are not required for the guardrail installed. The designer may still want to install the guardrail per code to alleviate concerns that the installation of a non-required guardrail meeting less than the minimum specifications may provide a false sense of safety for the building occupants.

Question: Does a window well require a guardrail around it?

Answer: No

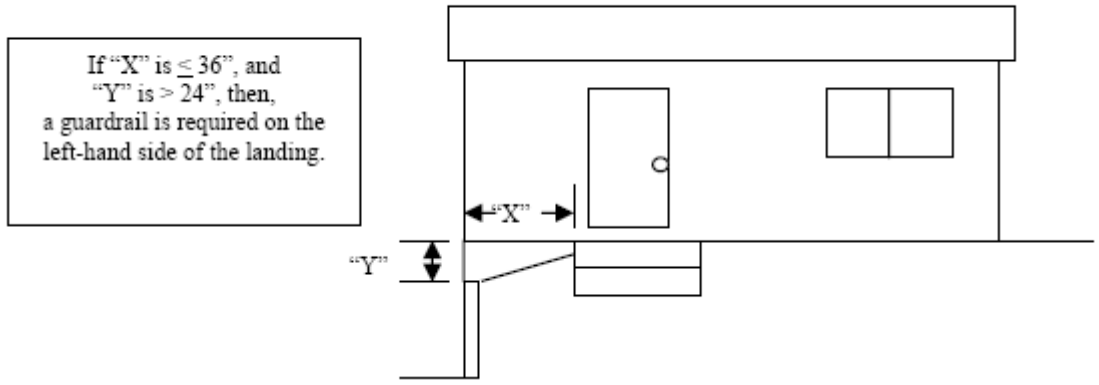
85. If the patio door was substantially fastened closed with hardware and screws that would not allow it to be opened more then ___", then it would not be considered a door and steps would not be required in the interim until a proper exit path is provided.

a. 2
b. 4
c. 6
d. none of the above

86. Guardrail serving a porch less than 24 inches above grade needs to comply with the code.

a. true
b. false

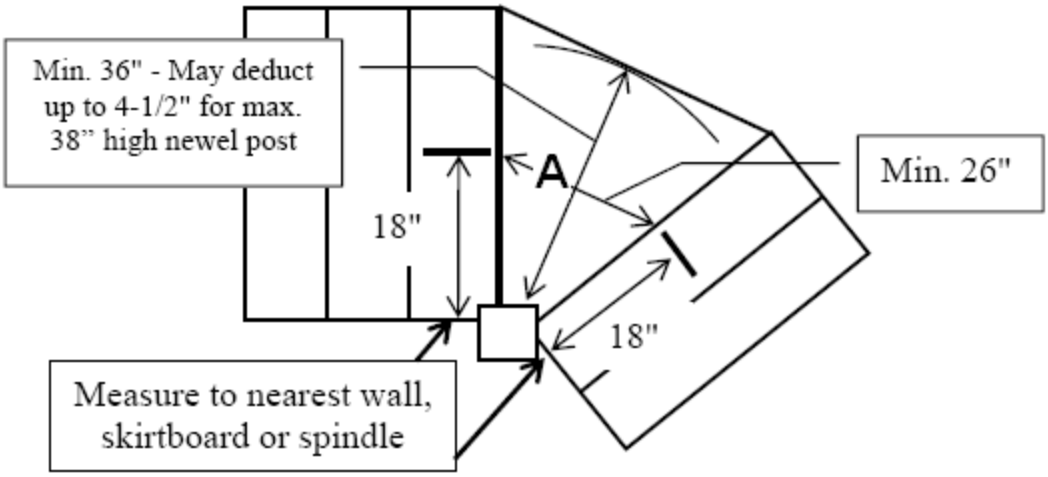
21.04(3)(c) Measurement of Grade Differences for Guardrails



87. If "X" is greater than 3' and "Y" is greater than 2' then a guardrail is required.

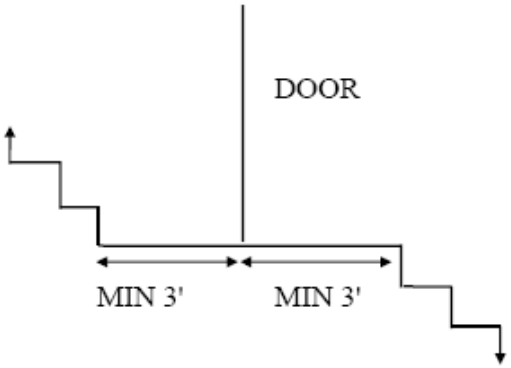
a. true
b. false

21.04(4)(a) Irregular Landings



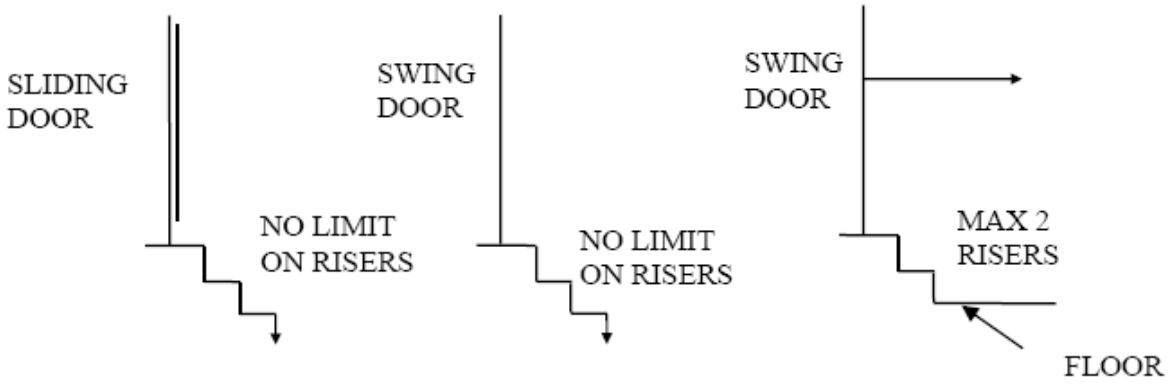
88. “A” above must be a minimum of ____ inches.

a. 18
b. 24
c. 26
d. 36

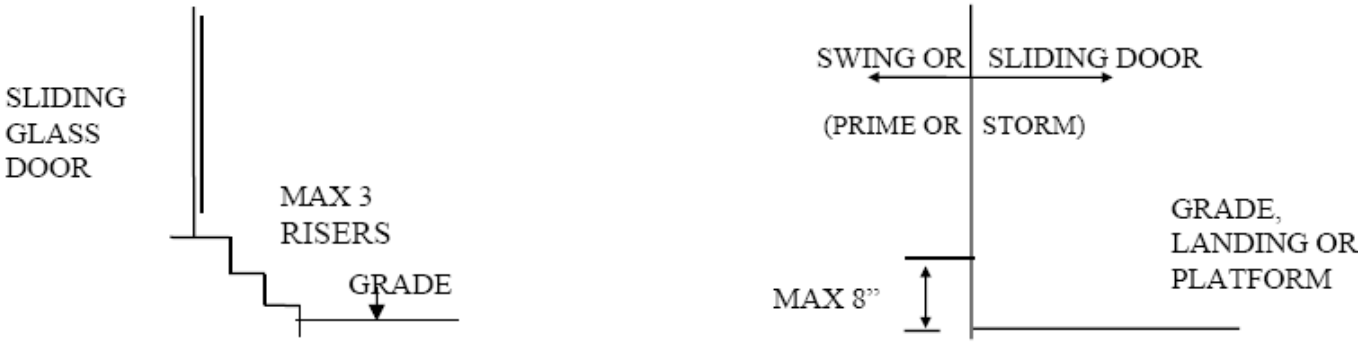


Exceptions

Interior Stairs (Garages and protected porches are interior spaces):



Exterior Stairs



89. As a general rules doors must have a ____ landing on each side of the door.
    a. 24"
    b. 26"
    c. 36"
    d. any of the above

90. Exterior stairs with a swinging door must have a landing within ___ inches of the door bottom reference point or in other words one legal riser down and a landing is required.
    a. 6
    b. 7
    c. 8
    d. none of the above

UDC Commentary 21 Part 1 Code Refresher Quiz-Answer Sheet

1	a	b	c	d	31	a	b	c	d	61	a	b	c	d
2	a	b	c	d	32	a	b	c	d	62	a	b	c	d
3	a	b	c	d	33	a	b	c	d	63	a	b	c	d
4	a	b	c	d	34	a	b	c	d	64	a	b	c	d
5	a	b	c	d	35	a	b	c	d	65	a	b	c	d
6	a	b	c	d	36	a	b	c	d	66	a	b	c	d
7	a	b	c	d	37	a	b	c	d	67	a	b	c	d
8	a	b	c	d	38	a	b	c	d	68	a	b	c	d
9	a	b	c	d	39	a	b	c	d	69	a	b	c	d
10	a	b	c	d	40	a	b	c	d	70	a	b	c	d
11	a	b	c	d	41	a	b	c	d	71	a	b	c	d
12	a	b	c	d	42	a	b	c	d	72	a	b	c	d
13	a	b	c	d	43	a	b	c	d	73	a	b	c	d
14	a	b	c	d	44	a	b	c	d	74	a	b	c	d
15	a	b	c	d	45	a	b	c	d	75	a	b	c	d
16	a	b	c	d	46	a	b	c	d	76	a	b	c	d
17	a	b	c	d	47	a	b	c	d	77	a	b	c	d
18	a	b	c	d	48	a	b	c	d	78	a	b	c	d
19	a	b	c	d	49	a	b	c	d	79	a	b	c	d
20	a	b	c	d	50	a	b	c	d	80	a	b	c	d
21	a	b	c	d	51	a	b	c	d	81	a	b	c	d
22	a	b	c	d	52	a	b	c	d	82	a	b	c	d
23	a	b	c	d	53	a	b	c	d	83	a	b	c	d
24	a	b	c	d	54	a	b	c	d	84	a	b	c	d
25	a	b	c	d	55	a	b	c	d	85	a	b	c	d
26	a	b	c	d	56	a	b	c	d	86	a	b	c	d
27	a	b	c	d	57	a	b	c	d	87	a	b	c	d
28	a	b	c	d	58	a	b	c	d	88	a	b	c	d
29	a	b	c	d	59	a	b	c	d	89	a	b	c	d
30	a	b	c	d	60	a	b	c	d	90	a	b	c	d

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2. Fill out this form below completely.
3. Applicable fees by check payable to our business name: **GaryKlinka.com**
4. Mail to: **GaryKlinka.com** at 1316 Cardinal Circle, Neenah, WI 54956.

Live Support at 920-381-6714 or tmklinka@hotmail.com

----------Educational Course Attendance Verification Form ----------

Attendee's Name_____Date_____

Address_____

Credential Number_____Phone#_____

Course Title and Name _____UDC Commentary 21 Refresher Quiz **Part 1**_____

List each credential held by attendee_____

_____Credited Hours 3hrs Fee:$30 ____

Email address_____Fax#_____

To be completed by GaryKlinka.com

Course Password_____Course ID# 12851_____

Attendee passed the course with a greater than 70% score on Date_____

Instructor Signature_____