

Chapter 8

8-2 – 12

Revise as follows:

802.1 General. Wheelchair spaces and wheel chair space locations in assembly areas with spectator seating shall comply with Section 802. Where tiered seating includes dining surfaces or work surfaces, wheelchair spaces and wheelchair space locations shall comply with Section 802.6, 802.7, 802.9, 802.10 and 902. Team and player seating shall comply with Sections 802.2 through 802.6.

802.7.2 Companion Seat Alignment. In row seating, the companion seat shall be located to provide shoulder alignment with the wheelchair space occupant. The shoulder of the wheelchair space occupant shall be measured either 36 inches (915 mm) from the front or 12 inches (305 mm) from the rear of the wheelchair space. The floor surface for the companion seat shall be at the same elevation as the wheelchair space floor surface.

EXCEPTION: Companion seat alignment is not required in tiered seating includes dining surfaces or work surfaces.

8-2-12 PC1

Ron Burton, PTW Advisors LLC, representing Building Owners and Managers Association, International; David S. Collins, The Preview Group, representing American Institute of Architects (AIA); Ron Nickson, representing the National Multi-housing Council; Steve Orłowski, representing the National Association of Home Builders; Kim Paarlberg, representing International Code Council

See comment under 3-6-12 PC2

8-3– 12

Revise as follows:

802.4 Depth. Where a wheelchair space can be entered from the front or rear, the wheelchair space shall be ~~48~~ 52 inches (~~1220~~ 1320 mm) minimum in depth. Where a wheelchair space can only be entered from the side, the wheelchair space shall be 60 inches (1525 mm) minimum in depth.

8-3-12 PC1

Ron Burton, PTW Advisors LLC, representing Building Owners and Managers Association, International; David S. Collins, The Preview Group, representing American Institute of Architects (AIA); Ron Nickson, representing the National Multi-housing Council; Steve Orłowski, representing the National Association of Home Builders; Kim Paarlberg, representing International Code Council

See comment under 3-6-12 PC2

8-4 – 12

Revise as follows:

802.10.1 Horizontal Dispersion. Wheelchair space locations shall be dispersed horizontally to provide viewing options. Where seating encircles the stage or field, in whole or in part, horizontal dispersion shall include the entire seating area. Two wheelchair spaces shall be permitted to be located side-by-side.

EXCEPTION:

(No change to the exception)

8-4-12 PC1

Curt Wiehle, Minnesota Construction Codes and Licensing, representing self

Further revise as follows:

802.10.1 Horizontal Dispersion. Wheelchair space locations shall be dispersed horizontally to provide viewing options. Where seating encircles the stage or field, in whole or in part, horizontal dispersion shall include occur around the entire seating area. Two wheelchair spaces shall be permitted to be located side-by-side.

EXCEPTION:

(No change to the exception)

Reason: Around is the word used in the 2010 ADA guidelines and is more descriptive than include.

8-6– 12

Add new text as follows:

802.11 Stage Lighting for Sign Language Interpreters. Lighting shall be provided at each side of a stage for the purposes of illuminating a Sign Language Interpreter. The illuminated presentation area shall be 25 square feet (2.3 m²) minimum measured in a vertical plane with the bottom edge at 48 inches (1220 mm) above the finished floor and a minimum of 36 inches (915 mm) measured from the presentation wall. The illumination shall be provided by directional light fixtures controlled independently from the general room lighting. The fixtures shall be located as necessary to provide a diagonal cast of light for facial illumination at no less than 15 degrees from the vertical plane. The illumination shall be 10 foot candles (108 lux) minimum greater than the least light level.

8-6-12 PC1

Hansel Bauman representing National Association of the Deaf

Further revise as follows:

~~**802.11 Stage Lighting for Sign Language Interpreters.** Lighting shall be provided at each side of a stage for the purposes of illuminating a Sign Language Interpreter. The illuminated presentation area shall be 25 square feet (2.3 m²) minimum measured in a vertical plane with the bottom edge at 48 inches (1220 mm) above the finished floor and a minimum of 36 inches (915 mm) measured from the presentation wall. The illumination shall be provided by directional light fixtures controlled independently from the general room lighting. The fixtures shall be located as necessary to provide a diagonal cast of~~

~~light for facial illumination at no less than 15 degrees from the vertical plane. The illumination shall be 10 foot candles (108 lux) minimum greater than the least light level.~~

802.11 General. Sign language interpreter stations shall comply with 802.11.

802.11.1 Area. A sign language interpreter station shall provide a level and clear floor of sufficient floor area necessary to enable a sign language interpreter to produce sign language legible from the seating area identified in 802.11.2 and allow periodic interpreter shift changes to take place.

802.11.2 Location. Sign language interpreter stations shall be located so that seating within an arc centered on the station and subtending 120 degrees maximum and not more than 65 feet from the station is provided with sightlines providing unobstructed view of the signers from top of their heads to their waists and to an arm's length to both sides of the signer, all as measured to the center of the station. The vertical viewing angle to the interpreter station shall not exceed 30 degrees.

802.11.4 Illumination: The sign language interpreter station shall be illuminated in compliance with 802.11.2 while signing is underway. Illumination of the sign language interpreter station shall comply with the Recommended Maintained Illuminance Targets established for a "Transitional Sermon" by IES Handbook 10th Edition, Table 37.2.

802.11.5 Backdrop. When a sign language interpreter station is located no greater than 10 feet in front of a permanent wall as measured tangent to the centerline of the arc described in 802.11.2 a portion of the wall measuring 69 inches wide centered on the sign language interpreter station and 96 inches high from the finish floor shall be considered as a backdrop. *The surface treatment of the backdrop shall comply with 802.11.5 while sign language interpretation is being provided.* The backdrop shall provide a flat, smooth surface with a monochromatic, low-luster finish treatment.

Reason: The proposed revision to **802.11 Stage Lighting for Sign Language Interpreters** is a complete replacement of the text provided in the Public Review Draft dated October 25, 2013. The revised proposal provides a performance standard for **Sign Language Interpreter Stations** to accommodate a reasonable range of possible performance venues where sign language interpreting would likely be provided rather than providing targeted guidance for a specific location. The revision provides measureable lighting conditions, spatial relationships and adds guidance for the surface treatment for a backdrop which could greatly enhance ones acuity of reading sign language from a prescribed area within audience seating.

In the revised text the sign language interpreter station (the station) is defined in terms of its performance as an area that enables an interpreter to perform visual communication. The station is located in relation to a seating area within the audience that would have reasonable visual access to the station. The dimensions and geometry used to describe the Location / seating area derived from information on acceptable theater viewing angles published in Time Saver Standards for Building Types by De Chiara and Callender.

Measures for lighting are provided by way of reference to the Illuminating Engineering Society (IES) Handbook. The proposed lighting levels and methods for measuring the lighting levels at the station are consistent with lighting levels determined as beneficial for viewing sign language in similar conditions observed over time at public forums held at Gallaudet University where sign-language interpreting is used in public forums on a daily basis. The IES standard substantiates the lighting levels for viewing gestures in sermons that are video recorded. Until further detailed research is provided this the IES standard provides a reasonable measure of light levels in both the vertical and horizontal directions in which sign language is viewed.

Finally the proposal provides guidance for surface treatment for a permanent wall that, because of its proximity to the area identified as the station would serve as a backdrop to the sign language produced by the interpreter. The proposed language seeks to provide a reasonable requirement for an architectural backdrop that would not interfere or be a part of the stage set of the performance being interpreted. Furthermore, the standard for the backdrop intends to allow reasonable flexibility to the wall surface treatment while controlling glare and visual vibrations caused by shadows produced by heavy wall texture and or surface patterns. Controlling these adverse conditions greatly reduces eye strain and enhances acuity.

8-6-12 PC2

Harold Kiewel, representing self

Further revise as follows:

802.11 Stage Lighting for Sign Language Interpreters. Lighting shall be provided at each side of a stage for the purposes of illuminating a Sign Language Interpreter. The illuminated presentation area shall be 25 square feet (2.3 m²) minimum measured in a vertical plane with the bottom edge at 48 inches (1220 mm) above the finished floor and a minimum of 36 inches (915 mm) measured from the

presentation wall. The illumination shall be provided by directional light fixtures controlled independently from the general room lighting. The fixtures shall be located as necessary to provide a diagonal cast of light for facial illumination at no less than 15 degrees from the vertical plane. The illumination shall be 10 foot candles (108 lux) minimum greater than the least light level of the seating area.

Reason: I am opposed to changing dimensions to non-modular (odd) numbers. I believe that dimensional requirements of the Standard should, to the maximum extent practicable, be modular in both Imperial and metric (SI) systems. Imperial dimensions should be multiples of 4-inches, and conversion to metric measure should use 4-inches = 100 mm.

As a professional technical writer, I take exception to the modern practice of wasting the first Article of every major sub-part with the phrase "[this work] shall comply with this Standard." If the Standard has a purpose, and the Article has title, the phrase is superfluous. You could save a couple of pages by deleting those lines.

I have not pointed out spelling, tense, or minor grammatical errors. There are some, but I presume that the committee has access to editors who will, in due course, correct those items.

8-6-12 PC3

Kimberly, Paarlberg, representing ICC

Disapprove the change. Return the text to that found in existing standard.

Reason: The proposal does not take into consideration the size of the stage. Not all stages would need two locations. I do not understand the language for the size of the presentation area. Are they saying this always has to be a platform 48" above the floor of the auditorium, even if the stage area is higher or lower? Given the slope of the floor and the height of the ceiling, the angle of light may be substantially higher than 15 degrees. Is directly overhead okay? Since theaters typically turn their lights off in the seating area for performances, is the lighting level set for 10 foot candles, or are they measuring the room with the lights on. This is not clear.

8-9– 12

Revise as follows:

804.2.2 U-Shaped Kitchens. In kitchens enclosed on three contiguous sides, clearance between all opposing base cabinets, countertops, appliances, or walls within kitchen work areas shall be 60 inches (1525 mm) minimum.

EXCEPTION: U-shaped kitchens with an island shall be permitted to comply with Section 804.2.1.

1003.12.1.2 U-Shaped Kitchens. In kitchens with counters, appliances, or cabinets on three contiguous sides, clearance between all opposing base cabinets, countertops, appliances, or walls within kitchen work areas shall be 60 inches (1525 mm) minimum.

EXCEPTION: U-shaped kitchens with an island shall be permitted to comply with Section 1003.12.1.1.

1004.12.1.2 U-Shaped Kitchens. In kitchens with counters, appliances, or cabinets on three contiguous sides, clearance between all opposing base cabinets, countertops, appliances, or walls within kitchen work areas shall be 60 inches (1525 mm) minimum.

EXCEPTION: U-shaped kitchens with an island shall be permitted to comply with Section 1004.12.1.1.

8-9-12 PC1

Ron Burton, PTW Advisors LLC, representing Building Owners and Managers Association, International; David S. Collins, The Preview Group, representing American Institute of Architects (AIA); Ron Nickson, representing the National Multi-housing Council; Steve Orłowski,

representing the National Association of Home Builders; Kim Paarlberg, representing International Code Council

See comment under 3-6-12 PC2

8-9-12 PC2

Harold Kiewel, representing self

Comment: The problem with redundancy is every time you change a word, requirement, or exception you also have to make the change in all the places that the language is repeated. It creates an exponential inflation pattern in the size of the Standard and creates the opportunity for one case to be missed, or for one of the iterations to be done incorrectly or incompletely – a coordination nightmare.

8-10– 12

Revise as follows:

804.3 Work Surface. At least one accessible work surface shall be provided in accordance with Section 902. At least one accessible work surface shall be located in accordance with Section 804.5.5.2 or 804.5.5.3.

EXCEPTION: Spaces that do not provide a cooktop or conventional range shall not be required to provide an accessible work surface.

1002.12 Kitchens and kitchenettes. Kitchens and kitchenettes shall comply with Section 804. ~~At least one work surface, 30 inches (760 mm) minimum in length, shall comply with Section 902.~~

~~**EXCEPTION:** Spaces that do not provide a cooktop or conventional range shall not be required to provide an accessible work surface.~~

1003.12.3 Work Surface. At least one section of counter shall provide an accessible work surface 30 inches (760 mm) minimum in length complying with Section 1003.12.3.

EXCEPTION: Spaces that do not provide a cooktop or conventional range shall not be required to provide an accessible work surface.

8-10-12 PC1

Harold Kiewel, representing self

Further revise as follow:

804.3 Work Surface. At least one accessible work surface shall be provided in accordance with Section 902. At least one accessible work surface shall be located in accordance with Section 804.5.5.2 or 804.5.5.3.

~~**EXCEPTION:** Spaces that do not provide a cooktop or conventional range shall not be required to provide an accessible work surface.~~

1003.12.3 Work Surface. At least one section of counter shall provide an accessible work surface 30 inches (760 mm) minimum in length complying with Section 1003.12.3.

~~**EXCEPTION:** Spaces that do not provide a cooktop or conventional range shall not be required to provide an accessible work surface.~~

Reason: This exception implies that micro-wave cooking and other kitchen activities require no preparation which is definitely not the case. Even mixing a salad, or making a cold-cut sandwich, neither of which requires cooking, requires preparation – i.e. a work surface.

8-13– 12

Revise as follows:

804.2 Clearance. Where a pass-through kitchen is provided, clearances shall comply with Section 804.2.1. Where a U-shaped kitchen is provided, clearances shall comply with Section 804.2.2. Kitchens where a cook top or conventional range are not provided shall comply with Section 804.2.3.

~~**EXCEPTION:** Spaces that do not provide a cooktop or conventional range shall not be required to comply with Section 804.2 provided there is a 40-inch (1015 mm) minimum clearance between all opposing base cabinets, counter tops, appliances, or walls within work areas.~~

804.2.3 Spaces where a cook top or conventional range are not provided. In a kitchen space where a cooktop or conventional range is not provided, clearance between all opposing base cabinets, counter tops, appliances, or walls within work areas shall be 40-inch (1015 mm) minimum.

1002.12 Kitchens and kitchenettes. Kitchens and kitchenettes shall comply with Section 804. At least one work surface, 30 inches (760 mm) minimum in length, shall comply with Section 902.

~~**EXCEPTION:** Spaces that do not provide a cooktop or conventional range shall not be required to provide an accessible work surface.~~

1003.12.3 Work Surface. At least one section of counter shall provide a work surface 30 inches (760 mm) minimum in length complying with Section 1003.12.3.

EXCEPTION: Spaces that do not provide a cooktop or conventional range shall not be required to provide an accessible work surface.

1003.12.4 Sink. Sinks shall comply with Section 1003.12.4.

Exception: A parallel approach complying with Section 305 and centered on the sink, shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided.

8-13-12 PC1

Harold Kiewel, representing self

Further revise as follow:

1003.12.4 Sink. Sinks shall comply with Section 1003.12.4.

~~**Exception:** A parallel approach complying with Section 305 and centered on the sink, shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided.~~

Reason: This exception implies that no “work” will be done at the kitchen sink by the disabled person because a parallel approach the sink allows only one-handed access to the fixture. One may rinse a cup, or leave a plate, but one will not be able to WASH their cup or other dishes. This puts the disabled person in an elitist position; it appears to others that the common courtesy kitchen duties (cleaning up after one-self) are too far beneath him/her.

Also, as an added benefit, knee space at the kitchen sink or a work space builds turning space into the design - it's a win-win situation.

8-15– 12

Add new text as follows:

Section 808 Acoustics

808.1 General. Classrooms not exceeding 20,000 cubic feet (565 m³) and required to provide enhanced acoustics shall comply with Section 808.

808.2 Reverberation Time. Classrooms shall provide reverberation times complying with Sections 808.2.1 or 808.2.2. Reverberation times shall apply to fully furnished classrooms while not in use.

808.2.1 Compliance Method A. In each of the octave frequency bands of 500, 1000, and 2000 Hz, reverberation times for sound to decay by 60 dB (T60) shall not exceed the times specified below:

1. 0.6 seconds in classrooms 10,000 cubic feet (285 m³) maximum.
2. 0.7 seconds in classrooms more than 10,000 cubic feet (285 m³) but not exceeding 20,000 cubic feet (565 m³).

Reverberation times shall be field verified and shall be measured over a minimum level decay of 20 dB for which the maximum time shall not exceed 0.2 seconds for classrooms listed in item #1 and 0.23 seconds for classrooms listed in item #2 .

808.2.2 Compliance Method B. Small classrooms 10,000 cubic feet (285 m³) maximum complying with Table 808.2.2(a) for T60 of 0.6 s., and large classrooms more than 10,000 cubic feet (285 m³) but not exceeding 20,000 cubic feet (565 m³) complying with Table 808.2.2(b) for T60 of 0.7s., shall be deemed to comply with Section 808.2.

Table 808.2.2(a) — Minimum surface area of acoustical treatment for small classrooms.

Sound absorption coefficient, α_1	Ceiling height, H, ft.									
	8	9	10	11	12	13	14	15	16	
	Ceiling height, H, m.									
	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.88	
Minimum combined area of wall and ceiling sound-absorbing material as a percentage of the floor area										
0.45	112	130	148	167	185	203	221	239	257	
0.50	101	117	134	150	166	183	199	215	232	
0.55	92	107	121	136	151	166	181	196	211	
0.60	84	98	111	125	139	152	166	179	193	
0.65	78	90	103	115	128	141	153	166	178	
0.70	72	84	95	107	119	130	142	154	166	
0.75	67	78	89	100	111	122	133	144	154	
0.80	63	73	83	94	104	114	124	135	145	
0.85	59	69	79	88	98	107	117	127	136	
0.90	56	65	74	83	92	101	111	120	129	
0.95	53	62	70	79	88	98	105	113	116	
1.00	50	59	67	75	83	91	100	108	116	

Table 808.2.2(b) — Minimum surface area of acoustical treatment for large classrooms.

Sound absorption	Ceiling height, H, ft.									
	8	9	10	11	12	13	14	15	16	

coefficient, α_1	Ceiling height, H, m.								
	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.88
	Minimum combined area of wall and ceiling sound-absorbing material as a percentage of the floor area								
0.45	91	107	122	138	154	169	185	200	216
0.50	82	96	110	124	138	152	166	180	194
0.55	75	87	100	113	126	138	151	164	177
0.60	68	80	92	104	115	127	139	150	162
0.65	63	74	85	96	106	117	128	139	149
0.70	59	69	79	89	99	109	119	129	139
0.75	55	64	73	83	92	102	111	120	130
0.80	51	60	69	78	86	95	104	113	121
0.85	48	57	65	73	81	90	98	106	114
0.90	46	53	61	69	77	85	92	100	108
0.95	43	51	58	65	73	80	88	95	102
1.00	41	48	55	62	69	76	83	90	97

808.3 Ambient Sound Level. Ambient sound levels within a classroom shall comply with Section 808.3. Ambient sound levels from exterior and interior sound sources shall be evaluated individually. The greatest one-hour averaged sound levels shall be evaluated at a height of 36 inches (915 mm) above the floor and no closer than 36 inches (915 mm) from any wall, window, or fixed object. Ambient sound levels shall apply to fully furnished classrooms while not in use.

808.3.1 Exterior Sound Sources. Ambient sound levels within a classroom 20,000 cubic feet (565 m³) maximum shall not exceed 35 dBA and 55 dBC for noise intrusion from exterior sound sources.

808.3.2 Interior Sound Sources. Ambient sound levels within a classroom not larger than 20,000 cubic feet (565 m³) shall not exceed 35 dBA and 55 dBC, for noise from interior sound sources.

8-15-12 PC1

Maria Haynes, representing self

Comment: I am licensed and certified as a Speech/Language Pathologist and also as an Audiologist (MA State Board of Registration, and American Speech/Language Hearing Association. I have worked in the public school system for 30 yrs., have also taught at the college level. My experience is that even in the newest schools the classroom acoustics are poor. All surfaces are hard surfaces(in an attempt to make them easy to clean) but makes them terrible listening situations. At least 25-30% will have difficulty catching all the auditory material – anyone with a hearing loss is doomed, and more than are realized in the rest of the class miss information because of auditory discrimination/processing issue, 2nd language learning, and someone with a cold, which is much of the winter in the northeast. They don't complain because they figure everyone else can hear well, and don't know what they missed. Especially now that there is an emphasis on class discussion, they don't hear other children. I have given up being able to do speech therapy within classrooms for several reasons, one of which is I know the kids I am there for are not hearing it all. When we have had hearing impaired children we have treated surfaces with acoustic material. That should be standard in ALL classrooms, plus use FM equipment.

8-15-12 PC2

Chantal Kealey, representing CASLPA

Comment: CASLPA has reviewed and supports the October 25, 2013 changes/amendments to the ICC A117.1 building codes standard, Chapter 8, Section 808. CASLPA has long supported the need for improved classroom acoustics in Canada and has advocated on this issue. www.caslpa.ca/caslpa-work/classroom-acoustics

8-15-12 PC3

Kimberly Paarlberg, representing ICC

Comment: I don't know if this will be addressed by the editorial committee or not. The proponent does not use consistent terminology for the ranges in sizes or levels.

coefficient, α_1	Ceiling height, H, m.								
	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.88
	Minimum combined area of wall and ceiling sound-absorbing material as a percentage of the floor area								
0.45	91	107	122	138	154	169	185	200	216
0.50	82	96	110	124	138	152	166	180	194
0.55	75	87	100	113	126	138	151	164	177
0.60	68	80	92	104	115	127	139	150	162
0.65	63	74	85	96	106	117	128	139	149
0.70	59	69	79	89	99	109	119	129	139
0.75	55	64	73	83	92	102	111	120	130
0.80	51	60	69	78	86	95	104	113	121
0.85	48	57	65	73	81	90	98	106	114
0.90	46	53	61	69	77	85	92	100	108
0.95	43	51	58	65	73	80	88	95	102
1.00	41	48	55	62	69	76	83	90	97

808.3 Ambient Sound Level. Ambient sound levels within a classroom shall comply with Section 808.3. Ambient sound levels from exterior and interior sound sources shall be evaluated individually. The greatest one-hour averaged sound levels shall be evaluated at a height of 36 inches (915 mm) above the floor and no closer than 36 inches (915 mm) from any wall, window, or fixed object. Ambient sound levels shall apply to ~~fully furnished~~ unfurnished classrooms while not in use.

808.3.1 Exterior Sound Sources. Ambient sound levels within a classroom 20,000 cubic feet (565 m³) maximum shall not exceed 35 dBA and 55 dBC for noise intrusion from exterior sound sources.

808.3.2 Interior Sound Sources. Ambient sound levels within a classroom not larger than 20,000 cubic feet (565 m³) shall not exceed 35 dBA and 55 dBC, for noise from interior sound sources.

Reason: I see that the reverberation times are for fully furnished classrooms. This will make the modeling much more unpredictable and will not provide for flexibility in use of the classroom space. If, for example the room is modeled with 30 desks, plus teacher's desk and appurtenances, then the requirements change to an open classroom with different furniture, the reverberation time could change significantly. I have seen great variation in how standard classrooms are being furnished.

It seems much more predictable to model an unfurnished classroom, and assume that furniture will add to the absorption. The unfurnished method will provide a school district with much more flexibility as the rooms will all be controlled to the same T-60 initially. Plus it will add a standardization to the methodology. I can fore vision continuing arguments with Architects and Designers concerning furnishings, and then have some poor school district end up with spaces with high reverberation times when they change out furniture to something less absorptive than the originally modeled arrangement

8-15-12 PC5

Mark Schaffer, representing self

Delete and replace as follows:

~~Section 808 Acoustics~~

~~**808.1 General.** Classrooms not exceeding 20,000 cubic feet (565 m³) and required to provide enhanced acoustics shall comply with Section 808.~~

~~**808.2 Reverberation Time.** Classrooms shall provide reverberation times complying with Sections 808.2.1 or 808.2.2. Reverberation times shall apply to fully furnished classrooms while not in use.~~

~~**808.2.1 Compliance Method A.** In each of the octave frequency bands of 500, 1000, and 2000 Hz, reverberation times for sound to decay by 60 dB (T60) shall not exceed the times specified below:~~

1. 0.6 seconds in classrooms 10,000 cubic feet (285 m³) maximum.

2. 0.7 seconds in classrooms more than 10,000 cubic feet (285 m³) but not exceeding 20,000 cubic feet (565 m³).

Reverberation times shall be field verified and shall be measured over a minimum level decay of 20 dB for which the maximum time shall not exceed 0.2 seconds for classrooms listed in item #1 and 0.23 seconds for classrooms listed in item #2.

808.2.2 Compliance Method B. Small classrooms 10,000 cubic feet (285 m³) maximum complying with Table 808.2.2(a) for T60 of 0.6 s., and large classrooms more than 10,000 cubic feet (285 m³) but not exceeding 20,000 cubic feet (565 m³) complying with Table 808.2.2(b) for T60 of 0.7s., shall be deemed to comply with Section 808.2.

Table 808.2.2(a) — Minimum surface area of acoustical treatment for small classrooms.

Sound absorption coefficient, α_1	Ceiling height, H, ft.								
	8	9	10	11	12	13	14	15	16
	Ceiling height, H, m.								
	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.88
Minimum combined area of wall and ceiling sound-absorbing material as a percentage of the floor area									
0.45	112	130	148	167	185	203	221	239	257
0.50	101	117	134	150	166	183	199	215	232
0.55	92	107	121	136	151	166	181	196	211
0.60	84	98	111	125	139	152	166	179	193
0.65	78	90	103	115	128	141	153	166	178
0.70	72	84	95	107	119	130	142	154	166
0.75	67	78	89	100	111	122	133	144	154
0.80	63	73	83	94	104	114	124	135	145
0.85	59	69	79	88	98	107	117	127	136
0.90	56	65	74	83	92	101	111	120	129
0.95	53	62	70	79	88	98	105	113	116
1.00	50	59	67	75	83	91	100	108	116

Table 808.2.2(b) — Minimum surface area of acoustical treatment for large classrooms.

Sound absorption coefficient, α_1	Ceiling height, H, ft.								
	8	9	10	11	12	13	14	15	16
	Ceiling height, H, m.								
	2.44	2.74	3.05	3.35	3.66	3.96	4.27	4.57	4.88
Minimum combined area of wall and ceiling sound-absorbing material as a percentage of the floor area									
0.45	91	107	122	138	154	169	185	200	216
0.50	82	96	110	124	138	152	166	180	194
0.55	75	87	100	113	126	138	151	164	177
0.60	68	80	92	104	115	127	139	150	162
0.65	63	74	85	96	106	117	128	139	149
0.70	59	69	79	89	99	109	119	129	139
0.75	55	64	73	83	92	102	111	120	130
0.80	51	60	69	78	86	95	104	113	121
0.85	48	57	65	73	81	90	98	106	114
0.90	46	53	61	69	77	85	92	100	108
0.95	43	51	58	65	73	80	88	95	102
1.00	41	48	55	62	69	76	83	90	97

808.3 Ambient Sound Level. Ambient sound levels within a classroom shall comply with Section 808.3. Ambient sound levels from exterior and interior sound sources shall be evaluated individually. The greatest one-hour averaged sound levels shall be evaluated at a height of 36 inches (915 mm) above the floor and no closer than 36 inches (915 mm) from any wall, window, or fixed object. Ambient sound levels shall apply to fully furnished classrooms while not in use.

808.3.1 Exterior Sound Sources. Ambient sound levels within a classroom 20,000 cubic feet (565 m³) maximum shall not exceed 35 dBA and 55 dBC for noise intrusion from exterior sound sources.

808.3.2 Interior Sound Sources. Ambient sound levels within a classroom not larger than 20,000 cubic feet (565 m³) shall not exceed 35 dBA and 55 dBC, for noise from interior sound sources.

Section 808 **Acoustics**

808.1 General. This section applies to classrooms with volumes up to 20,000 cubic feet (565 m³)

808.2 Reverberation Time. Classroom Reverberation Times shall comply with either section 808.2.1 or section 808.2.2, depending on the size of the room. Reverberation times shall apply to fully-furnished, unoccupied classrooms.

808.2.1 Performance Method. For each of the octave frequency bands with center frequencies of 500, 1000, and 2000 Hz, the Reverberation Time (T60) shall not exceed the times specified below:

1. 0.6 seconds in classrooms with volumes up to and including 10,000 cubic feet (285 m³).
2. 0.7 seconds in classrooms with volumes of more than 10,000 cubic feet (285 m³), but less than 20,000 cubic feet (566 m³).

Reverberation times shall be field-verified via measurements made in accordance with ASTM E2235-04(2012) "Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods" over a minimum 20 dB decay in each octave frequency band.

808.2.2 Prescriptive Method. The Noise Reduction Coefficient (NRC) ratings for floor, wall and ceiling surface finishes shall conform to the following equations:

For a classroom with a volume less than or equal to 10,000 cubic feet (285 cubic meters):

$$(NRC_{\text{Floor}} \times S_{\text{Floor}}) + (NRC_{\text{Ceiling}} \times S_{\text{Ceiling}}) + (NRC_{\text{Wall}} \times S_{\text{Wall}}) \geq \text{Volume}/12$$

For a classroom with a volume between 10,000 cubic feet (285 cubic meters) and 20,000 cubic feet (565 cubic meters):

$$(NRC_{\text{Floor}} \times S_{\text{Floor}}) + (NRC_{\text{Ceiling}} \times S_{\text{Ceiling}}) + (NRC_{\text{Wall}} \times S_{\text{Wall}}) \geq \text{Volume}/14$$

where

<u>NRC_{Floor}</u>	= NRC rating of the floor finish material
<u>S_{Floor}</u>	= floor area in square feet
<u>NRC_{Ceiling}</u>	= NRC rating of the ceiling finish material
<u>S_{Ceiling}</u>	= ceiling area in square feet
<u>NRC_{Wall}</u>	= NRC rating of the wall acoustical treatment
<u>S_{Wall}</u>	= wall treatment area in square feet
<u>Volume</u>	= room volume in cubic feet

Where a floor, ceiling or wall has multiple surface finishes, the NRC x S product for each surface finish shall be added to the left side of the equation.

808.3 Ambient Sound Level. Classroom ambient sound levels shall comply with Sections 808.3.1 and 808.3.2. Ambient sound levels from sound sources outside and inside the classroom shall be evaluated individually. The greatest one-hour averaged sound levels shall be evaluated at the loudest usable location in the room at a height of 36 inches (915 mm) to 42 inches (1065 mm) above the floor and no closer than 36 inches (915 mm) from any wall, window, or object. The ambient sound level limits shall apply to fully-furnished, unoccupied classrooms, and with only permanent HVAC, electrical and plumbing systems functioning. Classroom equipment, including, but not limited to, computers, printers, fish tank pumps shall be turned off during these measurements.

808.3.1 Sound Sources Outside of the Classroom. Classroom ambient sound levels shall not exceed 35 dBA and 55 dBC due to intruding noise from sound sources outside of the classroom, whether from the exterior or from other interior spaces.

808.3.2 Sound Sources Inside the Classroom. Classroom ambient sound levels shall not exceed 35 dBA and 55 dBC for noise from sound sources inside the classroom.

Reason: Includes edits from Mark Schaffer. I'm sorry to not have followed the specified review protocol, but I found that the number of suggested changes made my "Track Changes" document very difficult to read. I offer the wording below with the knowledge that the vast majority of this section's users will not be familiar with acoustical terminology and calculation methods. For example, the tables in paragraph 808.2.2. assume that the reader knows how to calculate an average sound absorption coefficient; I doubt that this is the case. I know that the NRC method that I suggest below is not as accurate as a calculation method that uses octave band absorption coefficients, but I believe that in the overall scheme of things it is accurate enough, while being more accessible to non-acoustical people.

8-15-12 PC6

David Hall, representing self

Disapprove the change.

Reason: Delete this entire section! Once again you guys are going way over the line. There is now ay anyone in the field can inspect and verify this proposed requirement. Only a Registered Engineer that specializes in this type of work can understand all this and no builder is ever going to want to build another school in this country if they have to comply with these requirements.

Have any of you even considered how a teacher conducts their class? Have you considered what they teachers may bring into the room and use versus what this code will require the room to look like? Once again the disabled are becoming a special class . . . not "equal" with the "normal people". As I said before . . . you are heading for a huge backlash from the real world.