DEPARTMENT OF PUBLIC SAFETY AND CORRECTIONS

Public Safety Services

J. "MIKE" FOSTER, JR.
GOVERNOR

V. J. BELLA
STATE FIRE MARSHAL

MEMORANDUM

DATE: December 23, 1997

TO: Baton Rouge District Supvr. and Inspectors
New Orleans District Supvr. and Inspectors
Lafayette District Supvr. and Inspectors
Shreveport District Supvr. and Inspectors
Health Care Section Supvr. and Inspectors

FROM: Steve Gogreve, Supvr.II
Inspections and Licensing

RE: Measuring Travel Distance; Common Path and Dead End Corridors

In our December training class on Life Safety Code, I instructed all inspectors when measuring travel distances to start one (1) foot from the most remote point subject to occupancy. This is correct for all buildings constructed utilizing the 1991 code and all existing buildings.

The 1991 code, section 5-6.2 states "starting one (1) foot from the most remote point subject to occupancy". However, the 1994 code (section 5-6.2) changed the wording to read: "starting from the most remote point subject to occupancy".

Therefore, please conduct your inspection in accordance with the code which is applicable to the building you are inspecting. Enclosed you will find a copy of the above referenced code.

If you have any questions, please do not hesitate to call me.

sg/dg

cc: Pat Slaughter, DSFM Administrator

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1991 - AND EXISTING BUILDING

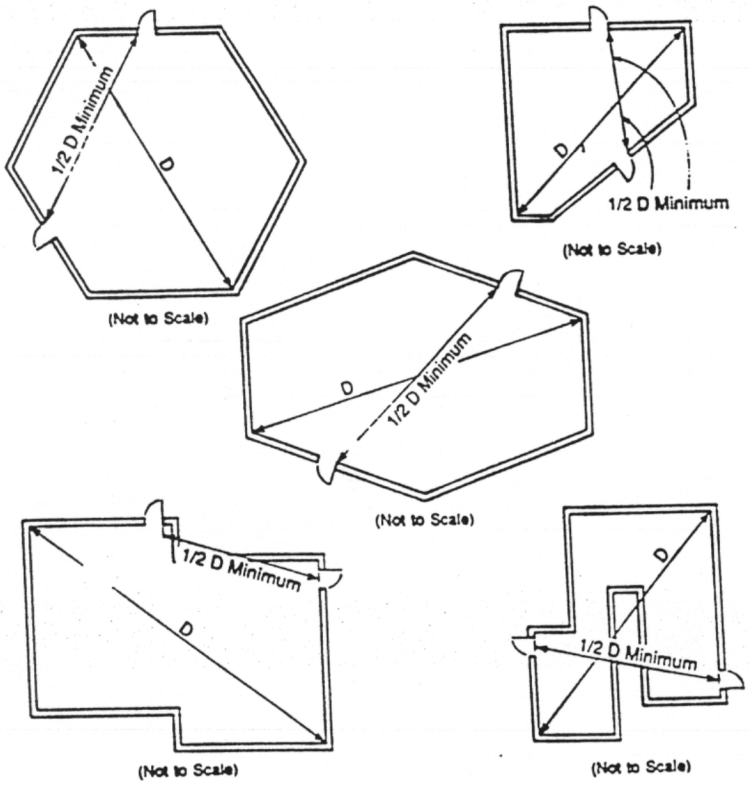

Figure A-5-5.1.4(e)

smoke and toxic gases between the stairs. Even if this can be done, there is still concern that settling of the building or exposure to fire conditions might result in the cracking of the separating wall, which could permit smoke and gases to pass into one exit stairway from the other. On the other hand, those who feel that scissor stairs do not present these problems see advantages because they reduce construction costs and save space. The *Code* requires separating construction to be noncombustible and 2-hour fire resistance rated. Note the definition of Noncombustible in Chapter 3. This definition normally will require some form of masonry or poured concrete wall. Even though, side by side, scissor stairs can be located with their entrances remote from one another and their discharges also remotely placed, it must be emphasized that the remoteness requirements are applicable to scissor stairs if they are to be considered as separate exits. Where not sufficiently remote, scissor stairs cannot be used as separate exits but can be used to increase the capacity of the single exit. These points are illustrated in Figures 5-56 and 5-57.

5-5.1.6* Exit access shall be so arranged that there are no dead-end pockets, hallways, corridors, passageways, and courts.

Exception: Where dead ends are permitted for an occupancy by Chapters 8 through 30, such dead ends shall be permitted but shall not exceed the limit specified.

A-5-5.1.6 The terms dead end and common path of travel are commonly used interchangeably. While the concepts of each are similar in practice, they are two different concepts.

A common path of travel exists where a space is arranged so that occupants within that space are able to travel in only one direction to reach any of the exits or to reach the point at which the occupants have the choice of two paths of travel to remote exits. Part (a) of Figure A-5-5.1.6 is an example of a common path of travel.

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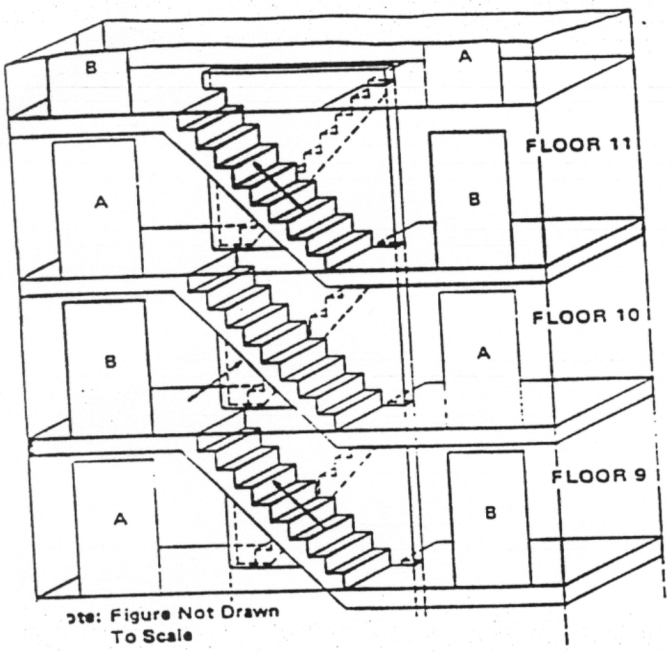

Figure 5-56. Scissor Stairs. Two stairways in the same enclosure but completely separated from each other are called scissor stairs. This result in space saving is that two stairways are provided in one enclosure. With this arrangement, two entirely independent escape paths are possible, even though they may not qualify as separate exits. Note the continuity of all walls, providing a complete separation at all points. Follow arrows for path of travel.

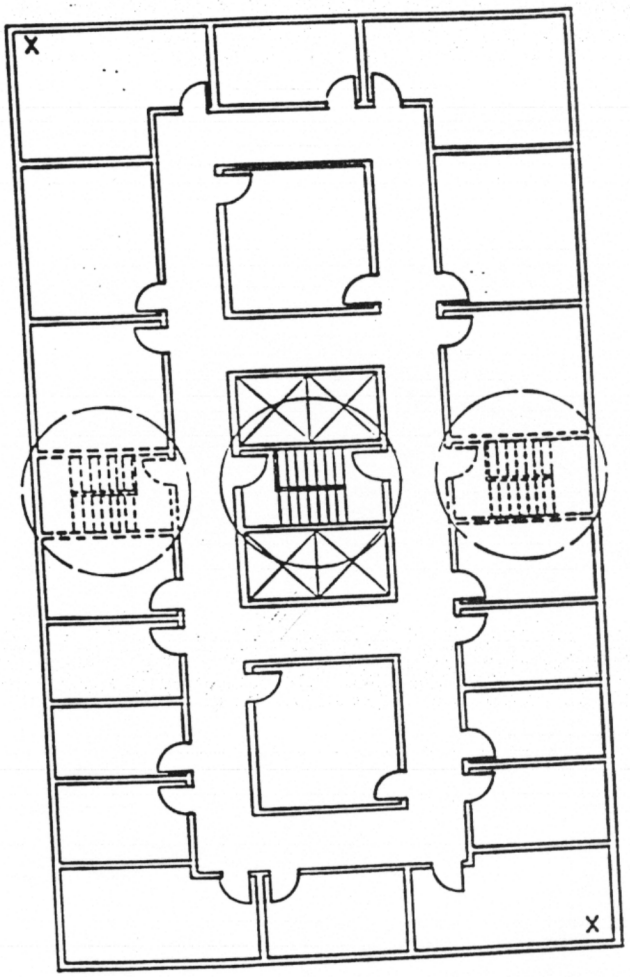

Figure 5-57. Scissor Stairs Versus Conventional Exit Stairs — Advantages and Disadvantages. This set of scissor stairs provides the same degree of remoteness as the stairs shown by dotted lines. Travel distance for all occupants is the same, even if the dotted exit stairs were located at opposite corners denoted by the cross mark. Space is saved. However, the integrity of the separation of the 2 scissored stairs may remain in question.

While a dead end is similar, a dead end may occur where there is no path of travel from an occupied space, but where an occupant may enter a corridor or space thinking there is an exit at the end and, finding none, must retrace his or her path to again reach a choice of exits. Part (b) of Figure A-5-5.1.6 is an example of such a dead-end arrangement.

Combining the two concepts, Part (c) of Figure A-5-5.1.6 is an example of a combined dead-end common path of travel problem.

Common paths of travel and dead-end travel are measured using the same principles used to measure travel distance as described in Section 5-6 of the *Code*. Starting in the room in Part (d) of Figure A-5-5.1.6, measurement is made 1 ft (30.5 cm) from the most remote point in the room along the natural path of travel, and through the doorway along the centerline of the corridor to Point C, located at the centerline of the corridor, which then provides the choice of two different paths to remote exits; this is common path of travel. The space between Point B and Point C is a dead end. (*See 5-1.2.4 for a definition of common path of travel.*)

A dead end occurs where a hallway or other space is so arranged that a person is able to travel in only one direction in order to reach any of the exits. Although relatively short dead ends are permitted by the *Code*, it is better practice to avoid them as much as possible, for they

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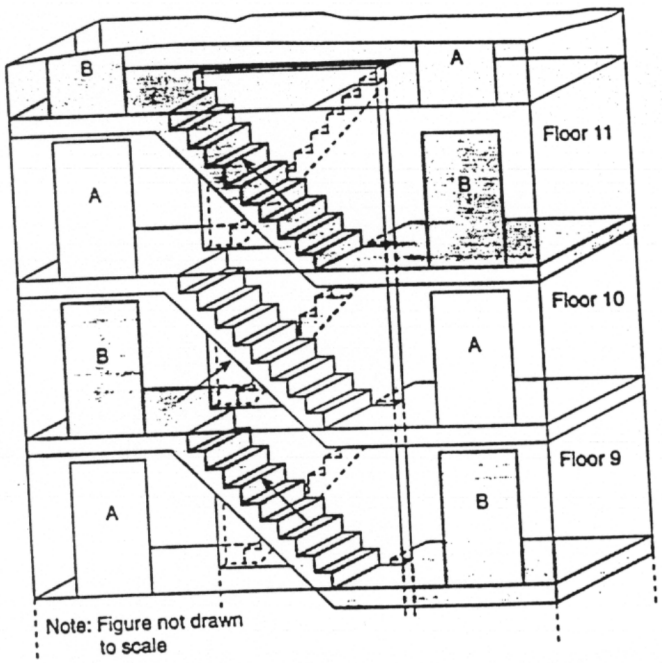

Figure 5-60. Scissor stairs. Two entwined stairways sharing the same enclosing walls are called scissor stairs. To be considered separate exits the stairs must be completely separated from each other. In effect, each stair's enclosure must consist of a fire resistance rated tube entwined around the other much like the form of a helix. This results in space and cost savings by permitting the stairs to share the common enclosing walls between them and the remainder of the building. With this arrangement, two independent escape paths are created, similar to that provided by two independent stair enclosures positioned some distance from each other. Note the continuity of all walls, providing a complete separation at all points. The arrows designate the direction of egress travel.

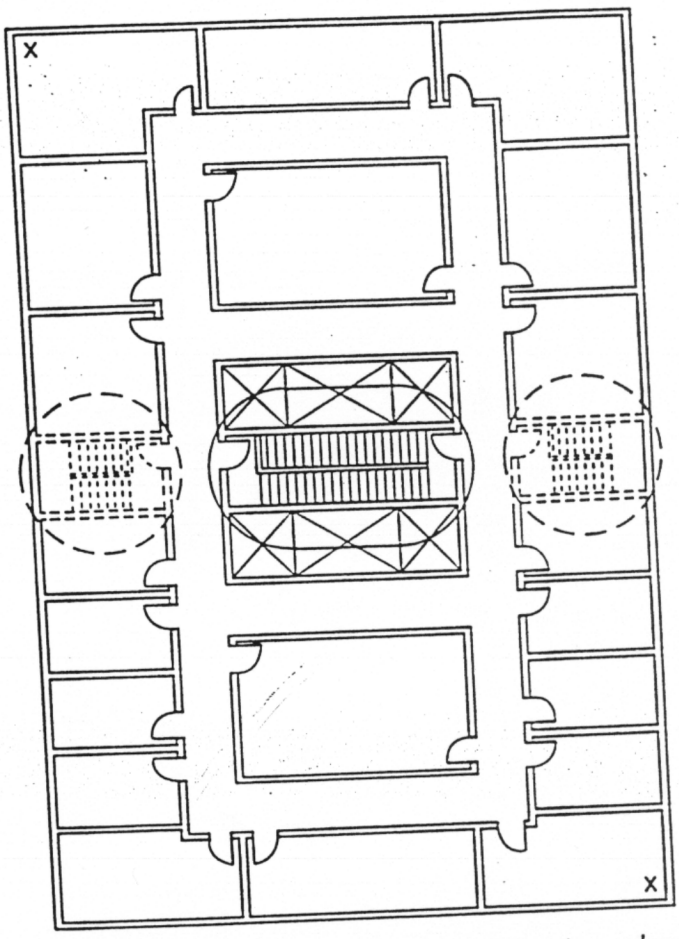

Figure 5-61. Scissor stairs versus conventional exit stairs — advantages and disadvantages. These two stairs, circled and positioned at the center of the figure, are entwined to create a set of scissor stairs. They provide the same degree of remoteness as the separate and independent stairs shown by dotted lines and encircled at the sides of the figure. Travel distance to either the scissor stairs or the independent stairs is the same, even if the independent exit stairs were located at opposite corners denoted by the cross marks.

ble. Although they must travel in one direction to reach an exit, they also might mistakenly turn the wrong way when leaving their rooms and travel into the remainder of the dead end pocket, only to have to retrace their steps to reach an exit.

* **A-5-5.1.6** The terms "dead end" and "common path of travel" are commonly used interchangeably. While the concepts of each are similar in practice, they are two different concepts.

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A common path of travel exists where a space is arranged so that occupants within that space are able to travel in only one direction to reach any of the exits or to reach the point at which the occupants have the choice of two paths of travel to remote exits. Part (a) of Figure A-5-5.1.6 is an example of a common path of travel.

While a dead end is similar, a dead end may occur where there is no path of travel from an occupied space, but where an occupant may enter a corridor or space thinking there is an exit at the end and, finding none, must retrace his or her path to again

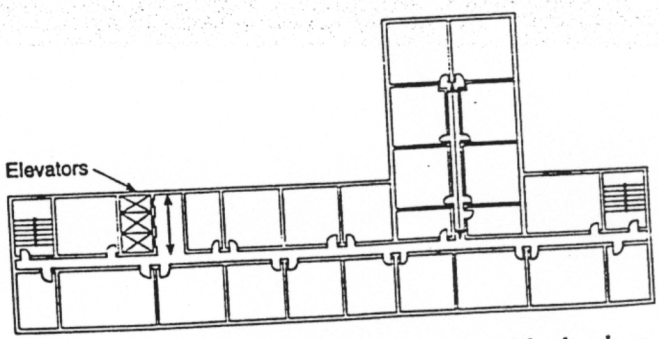

Figure 5-62. Examples of two common types of dead-end corridors. Both dead-end pockets serve as traps because travel into them does not lead to an exit; the egress path must be reversed to reach an exit.

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reach a choice of exits. Part (b) of Figure A-5-5.1.6 is an example of such a dead-end arrangement.

Combining the two concepts, Part (c) of Figure A-5-5.1.6 is an example of a combined dead-end/common path of travel problem.

Common paths of travel and dead-end travel are measured using the same principles used to measure travel distance as described in Section 5-6 of the *Code*. Starting in the room in Part (d) of Figure A-5-5.1.6, measurement is made from the most remote point in the room along the natural path of travel, and through the doorway along the centerline of the corridor to Point C, located at the centerline of the corridor, which then provides the choice of two different paths to remote exits; this is common path of travel. The space between Point B and Point C is a dead end. See 5-1.2 for a definition of common path of travel.

Common paths of travel are explained in A-5-5-1.6. Figure 5-63 shows examples of common paths of travel. In each case illustrated, an occupant is steered in only one direction for some distance before reaching a point at which travel in independent directions becomes possible. Common path of travel might occur only within rooms and occupied spaces or it may occur within the combination of room space and corridors.

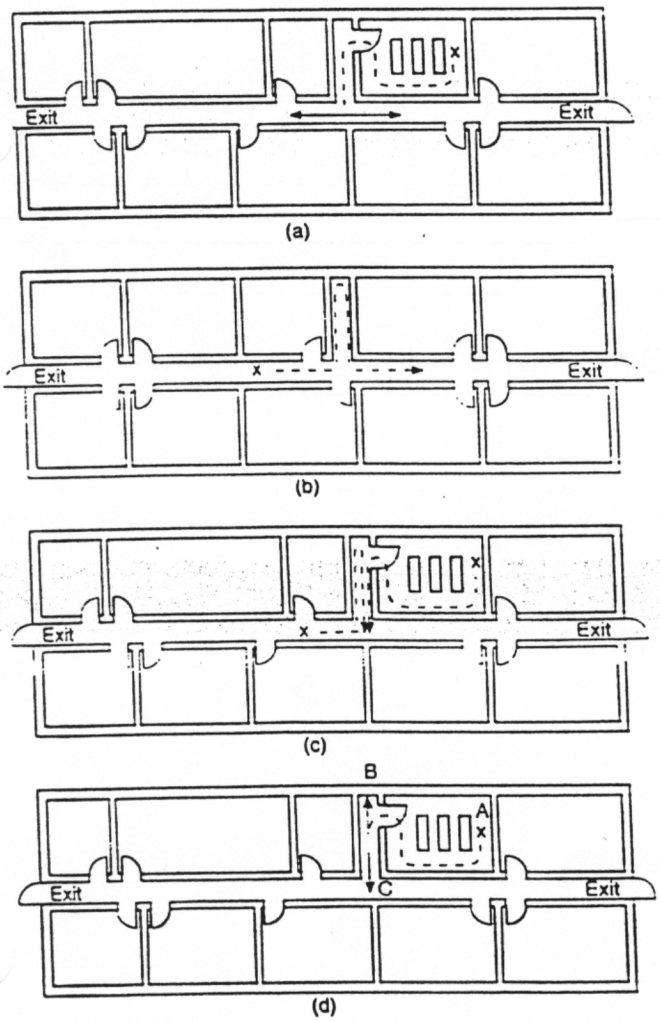

Figure A-5-5.1.6 Common paths of travel and dead-end corridors.

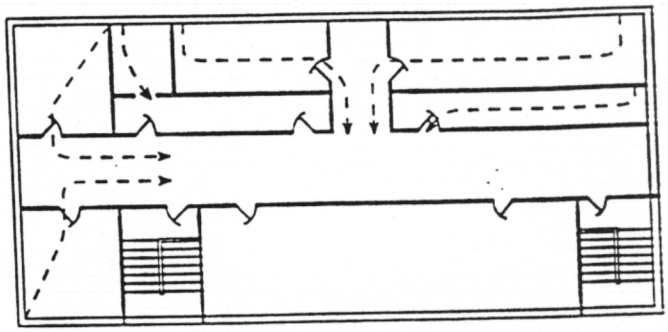

Figure 5-63. Common paths of travel. The portion of the exit access travel for which an occupant is steered in one direction only without the option of traveling in another independent direction toward an exit is common path of travel. Common paths of travel are illustrated by the dashed lines.

Figure 5-64 depicts the Rault Center Building shown in Figure 5-57(a) under the discussion of exit remoteness. Figures (a) and (b) contrast the difference between dead-end corridors and common paths of travel.

5-5.1.7 Exit access from rooms or spaces shall be permitted to be through adjoining or intervening rooms or areas, provided such adjoining rooms are accessory to the area served. Foyers, lobbies, and reception rooms constructed as required for corridors shall not be construed as intervening rooms. Exit access shall be arranged so that it will not be necessary to pass through any area identified under Protection from Hazards in Chapters 8 through 30.

Paragraph 5-5.1.7 permits exit access travel through adjoining spaces if such spaces are accessory to the area served and such travel is not through any area identified under "Protection from Hazards" (generally in the -3.2 subsection of an occupancy chapter). Figure 5-65 illustrates exit access travel through intervening spaces under the control of that tenant and not hazardous.

5-5.2 Impediments to Egress. (*See also 5-1.7 and 5-2.1.5.*)

5-5.2.1 In no case shall access to an exit be through kitchens, storerooms, restrooms, workrooms, closets, bedrooms or similar spaces, or other rooms subject to locking.

Paragraph 5-5.2.1 in combination with 5-5.1.7 prevents exit access from passing through certain rooms due either to increased relative hazard or to potential blockage or locking.

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 1994 - NEW CONSTRUCTION

Table A-5-6.1 (continued)

Type of Occupancy	Common Path Limit		Dead-End Limit		Travel Distance Limit	
	Unsprinklered ft (m)	Sprinklered ft (m)	Unsprinklered ft (m)	Sprinklered ft (m)	Unsprinklered ft (m)	Sprinklered ft (m)
Mercantile						
Class A, B, C						
New	75 (23)	100 (30)	20 (6.1)	50 (15)	100 (30)	200 (60)
Existing	75 (23)	100 (30)	50 (15)	50 (15)	150 (45)	200 (60)
Open Air	N.R.[d]	N.R.[d]	0 (0)	0 (0)	N.R.[d]	N.R.[d]
Covered Mall						
New	75 (23)	100 (30)	20 (6.1)	50 (15)	100 (30)	400[l] (120)
Existing	75 (23)	100 (30)	50 (15)	50 (15)	150 (45)	400[l] (120)
Business						
New	75[m] (23)	100[m] (30)	20 (6.1)	50 (15)	200 (60)	300 (91)
Existing	75[m] (23)	100[m] (30)	50 (15)	50 (15)	200 (60)	300 (91)
Industrial						
General	50 (15)	50 (15)	50 (15)	50 (15)	200[n] (60)	250[n] (75)
Special Purpose	50 (15)	50 (15)	50 (15)	50 (15)	300[P] (91)	400[P] (122)
High Hazard	0 (0)	0 (0)	0 (0)	0 (0)	75 (23)	75 (23)
Aircraft Servicing Hangars, Ground Floor	50[P] (15)	50[P] (15)	50[P] (15)	50[P] (15)	Note o	Note o
Aircraft Servicing Hangars, Mezzanine Floor	50[P] (15)	50[P] (15)	50[P] (15)	50[P] (15)	75 (23)	75 (23)
Storage						
Low Hazard	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]
Ordinary Hazard	50 (15)	100 (30)	50 (15)	100 (30)	200 (60)	400 (122)
High Hazard	0 (0)	0 (0)	0 (0)	0 (0)	75 (23)	75 (23)
Parking Garages, Open	50 (15)	50 (15)	50 (15)	50 (15)	200 (60)	300 (91)
Parking Garages, Enclosed	50 (15)	50 (15)	50 (15)	50 (15)	150 (45)	200 (60)
Aircraft Storage Hangars, Ground Floor	50[P] (15)	100[P] (30)	50[P] (15)	50[P] (15)	Note o	Note o
Aircraft Servicing Hangars, Mezzanine Floor	50[P] (15)	75[P] (23)	50[P] (15)	50[P] (15)	75 (23)	75 (23)
Underground Spaces in Grain Elevators	50[P](15)	50[P] (15)	N.R.[d,P]	N.R.[d,P]	200 (60)	400 (122)

[a] 20 ft (6.1 m) for common path serving ≤50 persons; 75 ft (23 m) for common path serving >50 persons.
[b] See Chapters 8 and 9 for special considerations for aisle accessways, aisles, and mezzanines.
[c] See Chapters 8 and 9 for special considerations for smoke-protected assembly seating in arenas and stadia.
[d] No requirement.
[e] See Sections 10-7 and 11-7 for requirement for second exit access based on room capacity or area.
[f] This dimension is for the total travel distance, assuming incremental portions have fully utilized their allowable maximums. For travel distance within the room, and from the room exit access door to the exit, see the appropriate occupancy chapter.
[g] Not applicable.
[h] See Chapter 15 for special considerations for existing common paths.
[i] This dimension is from the room/corridor or suite/corridor exit access door to the exit; thus it applies to corridor common path.
[j] See appropriate occupancy chapter for special travel distance considerations for exterior ways of exit access.
[k] See Section 22-3 for requirement for second exit access based on room area.
[l] See Sections 24-4 and 25-4 for special travel distance considerations in covered malls considered pedestrian ways.
[m] See Chapters 26 and 27 for special common path considerations for single tenant spaces.
[n] See Chapter 28 for industrial occupancy special travel distance considerations.
[o] See Chapters 28 and 29 for special requirements on spacing of doors in aircraft hangars.
[P] See Chapters 28 and 29 for special requirements if high hazard.

5-8.2* The travel distance to an exit shall be measured on the floor or other walking surface along the centerline of the natural path of travel starting from the most remote point subject to occupancy, curving around any corners or obstructions with a 1-ft (0.3-m) clearance therefrom, and ending at the center of the doorway or other point at which the exit begins. Where measurement includes stairs, the measurement shall be taken in the plane of the tread nosing.

Exception: Travel distance measurement shall be permitted to terminate at a smoke barrier in existing detention and correctional occupancies as provided in Chapter 15.

A-5-8.2 The natural exit access (path of travel) will be influenced by the contents and occupancy of the building. Furniture, fixtures, machinery, or storage may serve to increase the length of travel.

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The maximum permitted travel distance is that which must not be exceeded to reach the nearest exit. Although more than one exit might be required, the distance to those exits other than the nearest is permitted to exceed the maximum travel distance specified for a given occupancy.

A-5-6.1 Table A-5-6.1 is a compilation of the requirements of the individual occupancy chapters (Chapters 8 through 29) for permissible length of common path of travel, dead end corridors, and travel distance to at least one of the required exits.

A dead end occurs where an occupant may enter a corridor thinking there is an exit at the end and, finding none, must retrace the path traveled to again reach a choice of egress travel paths. Although relatively short dead ends are permitted by this *Code*, it is better practice to eliminate them wherever possible, as they increase the danger of persons being trapped in case of fire. Compliance with the dead-end limits does not necessarily mean that the requirements for remoteness of exits have been met. This is particularly true in small buildings or buildings with short public hallways. Adequate remoteness can be obtained in such cases by further reducing the length of dead ends. Also see A-5-5.1.6.

Table A-5-6.1 Common Path, Dead-End, and Travel Distance Limits (By Occupancy)

Type of Occupancy	Common Path Limit		Dead-End Limit		Travel Distance Limit	
	Unsprinklered ft (m)	Sprinklered ft (m)	Unsprinklered ft (m)	Sprinklered ft (m)	Unsprinklered ft (m)	Sprinklered ft (m)
Assembly						
New	20/75[a,b] (6.1/23)	20/75[a,b] 6.1/23)	20[b] (6.1)	20[b] (6.1)	150[c](45)	200[c](60)
Existing	20/75[a,b] (6.1/23)	20/75[a,b] (6.1/23)	20[b] (6.1)	20[b] (6.1)	150[c](45)	200[c](60)
Educational						
New	75 (23)	75 (23)	20 (6.1)	20 (6.1)	150 (45)	200 (60)
Existing	75 (23)	75 (23)	20 (6.1)	20 (6.1)	150 (45)	200 (60)
New Day-Care Center	N.R.[d,e]	N.R.[d,e]	20 (6.1)	20 (6.1)	150[f] (45)	200[f] (60)
Existing Day-Care Center	N.R.[d,e]	N.R.[d,e]	20 (6.1)	20 (6.1)	150[f] (45)	200[f] (60)
Health Care						
New	N.R.[d]	N.R.[d]	30 (9.1)	30 (9.1)	N.A.[g]	200[f] (60)
Existing	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	150[f] (45)	200[f] (60)
New Ambulatory Care	N.R.[d]	N.R.[d]	30 (9.1)	30 (9.1)	150[f] (45)	200[f] (60)
Existing Ambulatory Care	N.R.[d]	N.R.[d]	50 (15)	50 (15)	150[f] (45)	200[f] (60)
Detention and Correctional						
New - Use Conditions						
II, III, IV	50 (15)	100 (30)	50 (15)	50 (15)	150[f] (45)	200[f] (60)
V	50 (15)	100 (30)	20 (6.1)	20 (6.1)	150[f] (45)	200[f] (60)
Existing - Use Conditions						
II, III, IV, V	50[h] (15)	100[h] (30)	N.R.[d]	N.R.[d]	150[f] (45)	200[f] (60)
Residential						
Hotels and Dormitories						
New	35[i] (10.7)	50[i] (15)	35 (10.7)	50 (15)	175[f,j] (53)	325[f,j] (99)
Existing	35[i] (10.7)	50[i] (15)	50 (15)	50 (15)	175[f,j] (53)	325[f,j] (99)
Apartments						
New	35[i] (10.7)	50[i] (15)	35 (10.7)	50 (15)	175[f,j] (53)	325[f,j] (99)
Existing	35[i] (10.7)	50[i] (15)	50 (15)	50 (15)	175[f,j] (53)	325[f,j] (99)
Board and Care						
Small, New and Existing	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]
Large, New	35[k] (10)	35[k] (10)	N.R.[d]	N.R.[d]	175[f,j] (53)	325[f,j] (99)
Large, Existing	35 (10)	35 (10)	N.R.[d]	N.R.[d]	175[f,j] (53)	325[f,j] (99)
Lodging and Rooming Houses	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]
One- and Two-Family Dwellings	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]	N.R.[d]

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1991 - NEW CONSTRUCTION AND EXISTING BUILDINGS

distances, they are the result of the observation of people in motion, good judgment, and many years of studying the results of fires in which the prefire conditions of a building were known.

Excessive travel distances can be a factor in large losses of life because they increase the time required to exit. There is some evidence that excessive travel distances played a role in a number of the fatalities on the casino floor at the MGM Grand Hotel Fire in Las Vegas in 1980[20]. Of the 85 fatalities, 18 victims were locted on the casino level and some apparently were overrun by the flame front.

5-6.1* The maximum travel distance in any occupied space to at least one exit, measured in accordance with the following requirements, shall not exceed the limits specified in 5-6.4.

A-5-6.1 Table A-5-6.1 is a compilation of the requirements of the individual occupancy chapters (Chapters 8 through 30) for length of dead-end corridors and permissible travel distance to at least one of the required exits.

A dead end occurs where a hallway or other space is so arranged that a person therein is able to travel in one direction only in order to reach any of the exits. Although relatively short dead ends are permitted by this *Code*, it is better practice to eliminate them wherever possible, as they increase the danger of persons being trapped in case of fire. Compliance with the dead-end limits does not necessarily mean that the requirements for remoteness of exits have been met. This is particularly true in small buildings or buildings with short public hallways. Adequate remoteness can be obtained in such cases by further reducing the length of dead ends. (*Also see A-5-5.1.6.*)

It must be kept in mind that the maximum travel distance is that which must not be exceeded to reach the *nearest* exit as defined by 5-1.2.3.

5-6.2* The travel distance to an exit shall be measured on the floor or other walking surface along the centerline of the natural path of travel starting 1 ft (30.5 cm) from the most remote point subject to occupancy, curving around any corners or obstructions with a 1-ft (30.5-cm) clearance therefrom, and ending at the center of the doorway or other point at which the exit begins. Where measurement includes stairs, the measurement shall be taken in the plane of the tread nosing.

Exception: Travel distance measurement shall be permitted to terminate at a smoke barrier in existing detention and correctional occupancies as provided in Chapter 15.

A-5-6.2 The natural exit access (path of travel) will be influenced by the contents and occupancy of the building. Furniture, fixtures, machinery, or storage may serve to increase the length of travel. It is good practice in building design to recognize this by spacing exits at closer intervals than would be needed for a completely open floor area, thus reducing the hazard of excessive travel distances due to introduction of furniture, fixtures, machinery, or storage, and minimizing the danger of violation of the travel distance requirements of this *Code*.

Figures 5-60a and b illustrate the path along which travel distance to an exit is measured.

Travel distance is that length of travel to an exterior exit door (as shown in Figure 5-60b), an enclosed stair (as shown in Figure 5-60a), an exit passageway, or a horizontal exit. It includes all travel within the occupied space and its atmosphere until an occupant reaches that level of protection afforded by an exit. Therefore, where stairs form part of an exit access rather than an exit, they are to be included in the travel distance (as shown in Figure 5-60b). The measurement, in such cases, would be taken in the plane of the tread nosings. (*See Figure 5-61.*)

Travel distance is always measured from the most remote point, subject to occupancy. (*See Figure 5-62.*)

In the 1988 Edition of the *Code*, the maximum permitted travel distances were increased by 50 ft in most occupancies, since the exception for excluding small rooms or spaces from the measurement of travel distance was deleted at that time. This former provision exempted rooms that contained six or fewer people and that had a travel distance within them of less than 50 ft (15 m) from being included in the overall travel distance measurement. It was deleted since the provision had little validity and was easily and often abused.

5-6.3 Where open stairways or ramps are permitted as a path of travel to required exits, such as between mezzanines or bal-

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