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An American National Standard

Standard Classification for Serviceability of an Office Facility for Change and Churn by Occupants[1,2]

This standard is issued under the fixed designation E 1692; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This classification contains pairs of scales for classifying an aspect of the serviceability of an office facility, that is, the capability of an office facility to meet certain possible requirements to accommodate changes in working method, and frequent relocations of staff, and realignment of workstations.

1.2 Each pair of scales shown in Figs. 1-5, printed side by side on a page, are for classifying one topic of serviceability within that aspect of serviceability. Each paragraph in an Occupant Requirement Scale (see Figs. 1-5) summarizes one level of serviceability on that topic that occupants might require. The matching entry in the Facility Rating Scale (see) is a translation of the requirement into a description of certain features of a facility that, taken in combination, indicate that the facility is likely to meet that level of required serviceability.

1.3 The entries in the Facility Rating Scale (see Figs. 1-5) are indicative and not comprehensive. They are for quick scanning, to estimate approximately, quickly, and economically how well an office facility is likely to meet the needs of one or another type of occupant group over time. The entries are not for measuring, knowing, and evaluating how an office facility is performing.

1.4 This classification can be used to estimate the level of serviceability of an existing facility. It can also be used to estimate the serviceability of a facility that has been planned but not yet built, such as one for which single-line drawings and outline specifications have been prepared.

1.5 This classification indicates what would cause a facility to be rated at a certain level of serviceability, but it does not state how to conduct a serviceability rating or how to assign a serviceability score. That information is found in Practice E 1334. The scales in this classification are complementary to and compatible with Practice E 1334. Each requires the other.

2. Referenced Documents

2.1 *ASTM Standards:*

E 631 Terminology of Building Constructions[3]

E 1334 Practice for Rating Serviceability of a Building or Building-Related Facility[3]

E 1679 Practice for Setting Requirements for Serviceability of a Building or Building-Related Facility[3]

2.2 *ISO Documents:*[4]

ISO 6240 International Standard, PerformancemStandards in Building—Contents and Presentation

ISO/DIS 7162 Draft International Standard, Performance Standards in Building—Contents and Format of Standards for Evaluation of Performance

ISO/DIS 7164 Draft International Standard, Performance Standards in Building—Definitions and Means of Expression for the Performance of a Whole Building

3. Terminology

3.1 *Definitions*—For standard definitions of additional terms applicable to this classification, see Terminology E 631.

3.1.1 *facility*, *n*—physical setting used to serve a specific purpose.

3.1.1.1 *Discussion*—A facility may be within a building, or a whole building, or a building with its site and surrounding environment; or it may be a construction that is not a building. The term encompasses both the physical object and its use. **(E 631)**

3.1.2 *facility serviceability*—the capability of a facility to perform the function(s) for which it is designed, used, or required to be used.

3.1.2.1 *Discussion*—The scope of this performance is of the facility as a system, including its subsystems, components, and materials and their interactions, such as acoustical, hydrothermal, air purity, and economic; and of the relative importance of each performance requirement. **(E 631)**

3.1.3 *office*—a place, such as a room, suite, or building, in which business, clerical, or professional activities are conducted. **(E 631)**

[1] This classification is under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.25 on Whole Buildings and Facilities.

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[2] Portions of this document are based on material originally prepared by the International Centre for Facilities (ICF) and © 1993 by ICF and Minister of Public Works and Government Services Canada. Their cooperation in the development of this standard is acknowledged.

[3] *Annual Book of ASTM Standards*, Vol 04.11.

[4] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

3.2 *Descriptions of Terms Specific to This Standard:*

3.2.1 *churn rate*—the rate at which changes in the layout or location of individual workstations occur in an organization, calculated as the number of occasions during the year in which the location at which an individual works is changed, or a workstation was relocated, including realignments or moves within the building, and moves in or out of the facility, with the total being divided by the total number of occupants at the end of the year and expressed as a percentage.

3.2.1.1 *Discussion*—The workstation that is relocated may be as an individual's workstation or a workstation that is shared by a workgroup or project team. The relocation may require the movement of furniture screens or of partition walls, or it may require no change to the physical premises, for example, when "universal footprint" has been installed.

3.2.2 *footprint (of a workstation)*—the size and shape of the part of usable office area occupied by a single workspace.

3.2.2.1 *Discussion*—A footprint may be of a workspace containing a single workplace, for example, the office or open-plan workplace of a single individual; or of a workspace containing one or more workplaces assigned to individuals, for example, a mail room; or of a workspace containing no workplaces assigned to individuals, for example, a meeting room.

3.2.3 *major changes*—changes in layout that cause sufficient disruption so that the occupants cannot continue to work and must be moved to another location.

3.2.4 *minor changes*—changes in layout that do not require the occupants to leave their work area. Instead, the tradesmen can work around the occupants.

3.2.4.1 *Discussion*—Minor changes normally involve only a few workstations in open plan, or one or two rooms, with no affect on nearby workstations and no affect on heating, ventilating, or air conditioning systems.

3.2.5 *universal footprint*—a method of office space planning in which only a very few standard sizes and shapes of footprint are used.

3.2.5.1 *Discussion*—Two or three standard sizes are established in typical applications of this method. If larger sizes are needed, they are two of the initial footprint modules, without a dividing partition or wall between them.

4. Significance and Use

4.1 Each Facility Rating Scale in this classification provides a means for estimating the level of serviceability of a building or facility for one topic of serviceability, and for comparing that level against the level of any other building or facility.

4.2 This classification can be used for comparing how well different buildings or facilities meet a particular requirement for serviceability. It is applicable despite differences such as location, structure, mechanical systems, age, and building shape.

4.3 This classification can be used to estimate the amount of variance of serviceability from target or from requirement for a single office facility or within a group of office facilities.

4.4 This classification can be used to estimate the following: (*1*) the serviceability of an existing facility for uses other than its present use; (*2*) the serviceability (potential) of a facility that has been planned but not yet built; and (*3*) the serviceability (potential) of a facility for which a remodelling has been planned.

4.5 The use of this classification does not result in building evaluation or diagnosis. Building evaluation or diagnosis generally requires special expertise in building engineering or technology and the use of instruments, tools, or measurements.

4.6 This classification applies only to facilities that are building constructions or parts thereof. (While this classification may be useful in rating the serviceability of facilities that are not building constructions, such facilities are outside the scope of this classification.)

4.7 This classification is not intended for, and is not suitable for, use for regulatory purposes, nor for fire hazard assessment or fire risk assessment.

5. Basis of Classification

5.1 The scales shown in Figs. 1-5 contain the basis for classification.

5.2 Instructions for the use of these figures are contained in Practices E 1334 and E 1679.

6. Keywords

6.1 air diffusers; relocating; air exhaust (in building); special; building; change and churn by occupants; facility; facility occupants; function; light fixtures; relocating; office; partition walls; in office; performance; rating; rating scale; requirements; serviceability; use; walls (partition) in office; workplace layouts; changes in

A.6. Change and Churn by Occupants

Scale A.6.1. Disruption due to physical change

Occupant Requirement Scale		Facility Rating Scale
9 ❑ ○ **TOLERANCE FOR DISRUPTION**: No loss of work effectiveness can be tolerated. ○ **EXTENT OF STAFF DISRUPTION**: Relocation of individuals or small groups completed overnight. ○ **DISRUPTION OF NEARBY STAFF**: No disruption to staff.	9 ❑	○ **Disruption during relocation**: If universal footprint geometry, this is not a problem. Individuals and small groups can be relocated overnight with almost no disruption to occupants. ○ **Disruption to neighbouring occupants**: If universal footprint geometry, this is not a problem. Relocating or rearranging workplaces causes no disruption to nearby occupants *If universal footprint geometry, neither of the above is a problem.*
	8 ❑	
7 ❑ ○ **TOLERANCE FOR DISRUPTION**: No disruption and loss of work effectiveness can be tolerated. ○ **EXTENT OF STAFF DISRUPTION**: Essential that relocation of individuals or small groups be completed over a weekend. ○ **DISRUPTION OF NEARBY STAFF**: Minor disruption to staff for packing and unpacking files and equipment.	7 ❑	○ **Disruption during relocation**: Individuals and small groups can be relocated over a weekend, including rearrangement of communications and network systems, with minor disruption to occupants. ○ **Disruption to neighbouring occupants**: Remodelling or rearranging workplaces causes negligible disruption to nearby occupants. . *If universal footprint geometry, neither of the above is a problem.*
	6 ❑	
5 ❑ ○ **TOLERANCE FOR DISRUPTION**: Limited disruption and loss of work effectiveness can be tolerated. ○ **EXTENT OF STAFF DISRUPTION**: Can lose some productivity for one or two working days for staff involved in relocation or realignment of offices. ○ **DISRUPTION OF NEARBY STAFF**: Maximum of one or two hours of significant disruption for other nearby staff.	5 ❑	*If universal footprint geometry is NOT or WILL NOT BE installed:* ○ **Disruption during relocation**: It takes one weekend plus one or two working days with severe disruption of office area to relocate small groups and make necessary adjustments, e.g. services. ○ **Disruption to neighbouring occupants**: Remodelling or rearranging workplaces causes minor disruption to occupants nearby, e.g. downtime of one or two hours.
	4 ❑	
3 ❑ ○ **TOLERANCE FOR DISRUPTION**: Moderate disruption can be tolerated. ○ **EXTENT OF STAFF DISRUPTION**: Can lose equivalent of up to four working days when staff are unable to do normal work, or must spend time to move to temporary office space. ○ **DISRUPTION OF NEARBY STAFF**: Maximum of one day significant disruption for other nearby staff.	3 ❑	○ **Disruption during relocation**: It takes one weekend plus two to four working days with severe disruption of office area to relocate small groups and make necessary adjustments, e.g. services. ○ **Disruption to neighbouring occupants**: Remodelling or rearranging workplaces causes major disruption to occupants nearby or on floors above or below, e.g. total downtime of one day.
	2 ❑	

Scale A.6.1 continued on next page

FIG. 1 Scale A.6.1 for Disruption Due to Physical Change

A.6. Change and Churn by Occupants

Scale A.6.1. Disruption due to physical change (continued)

Occupant Requirement Scale	Facility Rating Scale
1 ❑ ○ **TOLERANCE FOR DISRUPTION**: Extended disruption can be tolerated, including relocation of staff to interim (swing) space for a few weeks. ○ **EXTENT OF STAFF DISRUPTION**: Can lose equivalent of up to five working days for staff involved in changes. ○ **DISRUPTION OF NEARBY STAFF**: Maximum about one day downtime for other nearby staff.	1 ❑ ○ **Disruption during relocation**: It takes two weekends plus up to five working days with severe disruption of office area to relocate small groups and make necessary adjustments, e.g. services. ○ **Disruption to neighbouring occupants**: Remodelling or rearranging workplaces causes major disruption to occupants nearby or on floors above or below, e.g. downtime of over 1 day, so consider moving occupants to temporary other space.

❑ Exceptionally important. ❑ Important. ❑ Minor Importance.	
Minimum Threshold level =	❑ NA ❑ NR ❑ Zero ❑ DP

NOTES *Space for handwritten notes on Requirements or Ratings*

FIG. 1 Scale A.6.1 for Disruption Due to Physical Change *(continued)*

A.6. Change and Churn by Occupants

Scale A.6.2. Illumination, HVAC and sprinklers

Occupant Requirement Scale		Facility Rating Scale
9 ❑ ○ **FREQUENCY OF LAYOUT CHANGE**: Churn rate is at least 75%, requiring very frequent minor realignment of individual workplaces or relocation of staff, including small groups. ○ **ADJUSTMENTS DUE TO RELOCATED EQUIPMENT**: Change typically requires relocation of heat-generating equipment and equipment that needs special exhaust ventilation, so adjustments to air system, lighting and ceiling are required in many relocations.	9 ❑	*If universal footprint geometry is NOT or WILL NOT BE installed:* ○ **Relocating light fixtures**: There is no need to relocate ceiling light fixtures, e.g. all are integrated with planning grid, or uplighting is used instead of ceiling mounted lights. ○ **Relocating air diffusers**Air diffusers on flexible ducts can be relocated at minimum cost, and with only a few minutes of disruption to office occupants. ○ **Special air exhaust**: Space and capacity are available in ceiling and duct shafts for exhaust air ducts for special exhausts. ○ **Relocating sprinklers heads**: There is no need to relocate sprinkler heads, e.g. all are integrated with planning grid. *If universal footprint geometry IS or WILL BE installed:* ○ **Special air exhaust** Flexible air ducts are easy to connect.
7 ❑ ○ **FREQUENCY OF LAYOUT CHANGE**: Churn rate is in the range of 30% to 75%, requiring frequent minor realignment of individual workplaces or relocation of staff, including small groups. ○ **ADJUSTMENTS DUE TO RELOCATED EQUIPMENT**: Change often requires relocation of heat-generating equipment and equipment that needs special exhaust ventilation, and requires many adjustments to air system, lighting and ceiling.	8 ❑ 7 ❑	*If universal footprint geometry is NOT or WILL NOT BE installed:* ○ **Relocating light fixtures**: Light fixtures are easily relocated within ceiling grid. ○ **Relocating air diffusers**: Air diffusers on flexible ducts can be relocated at minimum cost, and a few hours of disruption to office occupants. ○ **Special air exhaust**: Exhaust air ducts for special exhausts are easy to install, and space is available in ceiling and duct shafts. ○ **Relocating sprinklers heads**: Sprinkler heads are easily relocated within ceiling grid. *If universal footprint geometry IS or WILL BE installed:* ○ **Special air exhaust**: Can be installed at moderate cost.
5 ❑ ○ **FREQUENCY OF LAYOUT CHANGE**: Churn rate is in the range of 15% to 30%, requiring periodic minor realignment of individual workplaces or relocation of staff, including small groups. ○ **ADJUSTMENTS DUE TO RELOCATED EQUIPMENT**: Change sometimes requires relocation of heat-generating equipment and equipment that needs special exhaust ventilation, and requires some adjustments to air system and lighting.	6 ❑ 5 ❑ 4 ❑	*If universal footprint geometry is NOT or WILL NOT BE installed:* ○ **Relocating light fixtures**: Light fixtures can be relocated within ceiling grid with some difficulty. ○ **Relocating air diffusers**: Air diffusers can be relocated at moderate cost. ○ **Special air exhaust**: Exhaust air ducts for special exhausts are possible, but expensive or difficult to install. ○ **Relocating sprinklers heads**: Sprinkler heads can be relocated within ceiling grid with some difficulty and disruption, but only pipes serving relocated heads need to be realigned. *If universal footprint geometry IS or WILL BE installed:* ○ **Special air exhaust**: Expensive or difficult to install.

Scale A.6.2. continued on next page

FIG. 2 Scale A.6.2 for Illumination, HVAC, and Sprinklers

A.6. Change and Churn by Occupants

Scale A.6.2. Illumination, HVAC and sprinklers (continued)

Occupant Requirement Scale	Facility Rating Scale
1 ☐ Churn is negligible. Change rarely requires relocation of heat-generating equipment or equipment that needs special exhaust ventilation. Uniformity of furniture and screen arrangements means no adjustments are required to air system and lighting.	1 ☐ O **Relocating light fixtures:** Light fixtures are only relocatable by surface-mounting fixtures with surface mounted conduits. O **Relocating air diffusers:** Air diffusers are only relocatable by removing non-accessible ceiling. O **Special air exhaust:** Exhaust air ducts for special exhausts must be run exposed under the ceiling to the exterior with no space in duct shafts. O **Relocating sprinkler heads:** Sprinkler piping system will have to be replaced in the whole area where any sprinkler heads must be replaced, causing major disruption to occupants, and great expense. O **Universal footprint geometry:** Would be exceptionally difficult or costly to install.

☐ Exceptionally important. ☐ Important. ☐ Minor importance.	
☐ Mandatory minimum level (threshold) =	☐ NA or NR

NOTES

Space for handwritten notes on Requirements or Ratings

FIG. 2 Scale A.6.2 for Illumination, HVAC, and Sprinklers *(continued)*