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An American National Standard

Standard Classification for Serviceability of an Office Facility for Support for Office Work[1,2]

This standard is issued under the fixed designation E 1660; 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 for performance to support typical office work.

1.2 Within that aspect of serviceability, each pair of scales, shown in Fig. 1 through Fig. 6, are for classifying one topic of serviceability. Each paragraph in an Occupant Requirement Scale (see Figs. 1 through 6) summarizes one level of serviceability on that topic, which occupants might require. The matching entry in the Facility Rating Scale (see Figs. 1 through 6) is a translation of the requirement into a description of certain features of a facility which, 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 through 6) 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, or 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 does not state how to conduct a serviceability rating nor how to assign a serviceability score. That information is found in Practice E 1334. The scales in this classification are complimentary 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 Document*[4]

ISO 6240 International Standard, Performance Standards in Building—Contents and Presentation

3. Terminology

3.1 *Definitions:*

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

3.1.1.1 *Discussion*— A facility may be within a building, 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 (see Terminology 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 (see Terminology E 631).

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

3.1.4 For standard definitions of additional terms applicable to this classification, see Terminology E 631.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *enclosure*—floor-to-ceiling (full height) partitions around a space.

3.2.2 *convenience copiers*—medium-size photocopy machines, typically on a stand or worktable, located in or near

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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.

A.1. Support for Office Work

Scale A.1.1. Photocopying

Level	Occupant Requirement Scale	Level	Facility Rating Scale
9 ❑	❍ **ACCESS TO COPIERS**: Have sufficient copiers that staff do not need to wait for access to an appropriate machine. ❍ **LOCATION OF COPIERS**: Must be able to use small convenience copiers in open plan, and large copiers in rooms, without causing problems of distraction, pollution or power surges. ❍ **MINIMIZE DISRUPTION FROM COPIERS**: In open plan, fitup policy is to provide spaces dedicated to copiers, with 5 m minimum distance to nearest individual workstation, to minimize noise, distraction and pollution.	9 ❑ 8 ❑	❍ Power supply: Each copier is on a dedicated circuit. ❍ **Small table-top copiers:** Air exhaust from locations with table-top copiers, whether in small rooms or in open plan (e.g. by hood over copies), is not recirculated within the building. Such exhaust can easily and at low cost be provided to any location in the building. There is ample separation, e.g. minimum 5 m, from nearest workstation in open plan to a table-top copier in open plan, or to entrance of room containing a table-top copier. ❍ **Convenience copiers:** Located in separate rooms, with air exhaust not recirculated within the building. Added exhaust for copier rooms for convenience copiers is easily available in any location. There is ample separation, e.g. minimum 5 m, from entrance to copier rooms to the nearest workstation. ❍ **Large copiers:** Rooms for large copiers are provided and conveniently located. Exhaust air from the copier room is not recirculated within the building and the room is sound isolated from the nearest workstations. If rooms for large copiers are not provided, fitup to this level would be at minimal effort and cost.
7 ❑	❍ **ACCESS TO COPIERS:** Have sufficient copiers that staff rarely wait more than one minute to use an appropriate machine. ❍ **LOCATION OF COPIERS:** Need small convenience copiers in open plan, and large copiers in rooms, without causing problems of pollution or power surges. Can tolerate specified locations if centralized and adjacent to circulation. ❍ **MINIMIZE DISRUPTION FROM COPIERS:** Can tolerate minor disruption to nearby workers. In open plan, fitup policy is to provide spaces dedicated to copiers, with 3 m minimum distance to nearest individual workstation, to reduce noise, distraction and pollution.	7 ❑ 6 ❑	❍ **Power supply:** Each copier is on a dedicated circuit. ❍ **Small table-top copiers:** Air exhaust from small rooms with table-top copiers is not recirculated within the building but is recirculated from copiers in open plan areas. Added exhaust ventilation to the outside exists or is readily available in specific locations or zones; but elsewhere, added exhaust would be mixed with return air. There is at least 3 m separation from nearest workstation in open plan to a table-top copier in open plan or to entrance to a room containing a table-top copier. ❍ **Convenience copiers:** Located in separate rooms or separated from the nearest individual workstations by at least 3 m, or a wall, or equivalent separation. For convenience copiers, added exhaust ventilation to the outside exists or is readily available in specific locations or zones; but elsewhere, added exhaust would be mixed with return air. ❍ **Large copiers:** Rooms for large copiers are provided and well located for most people. Air from the copier room is exhausted to the outside (not recirculated) and noise is not heard in adjacent workplaces. If copier rooms are not provided, fitup to this level would be at moderate effort and cost.

Scale A.1.1. continued on next page

FIG. 1 Scale A.1.1 for Photocopying

work areas and used on a self-help basis. They typically accommodate two or more sizes of paper tray, and copy larger and smaller than the original. Many have collating bins for ten or twenty copies or automatic feeding of originals, or both.

3.2.3 *interview room*—place for meetings at which one or two staff interview or meet with one or two others, typically from outside the organization, for example: staff to be hired, clients with questions, clients who are filing a report or application, contractors or suppliers, etc.

3.2.4 *large copiers*—includes larger photocopy machines, typically floor mounted, with large collating and stapling functions, etc., located centrally and operated by trained personnel; or copiers for large sheets or drawings.

A.1. Support for Office Work

Scale A.1.1. Photocopying (continued)

Occupant Requirement Scale		Facility Rating Scale
5 ❑	○ **ACCESS TO COPIERS**: Have sufficient copiers that staff rarely wait more than 2 or 3 minutes to use an appropriate machine. ○ **LOCATION OF COPIERS**: Need convenience copiers in open plan, and large copiers in rooms spaced throughout the work area, without causing power surges. Can tolerate specified locations if centralized and adjacent to circulation. ○ **MINIMIZE DISRUPTION FROM COPIERS**: Can tolerate minor disruption to nearby workers. Can tolerate added heat and some recirculation of exhaust air if compensating features are provided, e.g. openable windows. In open plan, fitup policy is to provide spaces dedicated to copiers, with 3 m minimum distance to nearest individual workstation, to reduce noise, distraction and pollution.	5 ❑ ○ **Power supply:** There are separate circuits for copiers, not shared with other office machines, e.g. computers, but may have two small copiers on one circuit. ○ **Small table-top copiers:** Workstations in open plan can have separation from a table-top copier by a wall, or at least 3 m distance to copier or to entrance to a room containing a copier. ○ **Convenience copiers:** Added exhaust ventilation for copiers exists, or is readily available in specific locations. This exhaust is diluted with extra outdoor air before recirculation, or outdoor air is available through openable windows. There is adequate separation, e.g. minimum 3 m, from the nearest workstation. ○ **Large copiers:** Rooms for large copiers are provided, but only to a basic quality. If copier rooms are not provided, building layout and services are capable, at substantial effort or cost, of providing dedicated rooms for large copiers to a basic quality, e.g. air from the copier room is exhausted directly into the return air system. Noise can just be heard at adjacent workplaces. The location of copiers is adequate for most people.
4 ❑		
3 ❑	○ **ACCESS TO COPIERS**: Minimal need for convenience photocopiers, e.g. one copier per 100 people. ○ **LOCATION OF COPIERS**: Located well away from areas where most people work. ○ **MINIMIZE DISRUPTION FROM COPIERS**: If more copiers are required, say one copier per 50 people, then need compensating features, e.g. get added ventilation to copier room by openable windows, or by putting copier in poor location.	3 ❑ ○ **Power supply:** Copiers are on the same circuits as other machines, e.g. computers. There is capacity for added dedicated circuits at moderate effort and cost. ○ **Small table-top copiers:** Workstations in open plan cannot be separated from a table-top copier by a wall, and these copiers cause noticeable heat gain, odours and noise.
2 ❑		○ **Convenience copiers**: Added exhaust ventilation for copiers does not exist. Added ventilation is possible but only by mixing with return air, and it is difficult and costly. Noise control is not feasible. Convenience copiers cause noticeable heat gain, odours, and noise. ○ **Large copiers**: Rooms for copiers are not provided, or if provided, are not to basic quality. The building layout and services are not capable of providing copier rooms to a basic quality except at prohibitive cost, e.g. air exhausted from copier space is recirculated to the rest of the building. Noise of the copier is heard at many workplaces in the general area.

Scale A.1.1. continued on next page

FIG. 1 Scale A.1.1 for Photocopying *(continued)*

3.2.5 *small table-top copiers*—small personal copiers with limited features. They are typically placed on a work surface and used for low-volume copying.

A.1. Support for Office Work

Scale A.1.1. Photocopying (continued)

Occupant Requirement Scale	Facility Rating Scale
1 ❑ ○ **ACCESS TO COPIERS**: No need for photocopiers, or only one copier required for occasional use. ○ **LOCATION OF COPIERS**: Located away from densely populated office areas, or other arrangements, e.g. can use commercial copying service, or copy centre located elsewhere.	1 ❑ ○ **Power supply:** Copiers are on the same circuits as other machines, e.g. computers, with no potential for dedicated power, or it is very difficult. ○ **Small table-top copiers:** Table-top copiers cause problems, e.g. heat gain, pollution, odours and noise. ○ **Convenience Copiers:** No added exhaust ventilation is possible and copiers cannot be in separate rooms. No noise control is possible. Convenience copiers cause problems, e.g. heat gain, pollution, odours, and noise. ○ **Large copiers:** No added exhaust ventilation is possible and all exhaust air from spaces with copiers is treated like other air from office areas. All possible locations for copiers are also near workplaces, e.g. within 3m. There is negligible noise control and large copiers cause serious problems, e.g. heat, noise, and pollution.

❑ 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.1.1 for Photocopying *(continued)*

4. Significance and Use

4.1 Each Facility Rating Scale (see Figs. 1 through 6) in this classification provides a means to estimate the level of serviceability of a building or facility for one topic of serviceability and to compare 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:

4.4.1 Serviceability of an existing facility for uses other than its present use.

4.4.2 Serviceability (potential) of a facility that has been planned but not yet built.

4.4.3 Serviceability (potential) of a facility for which remodeling has been planned.

4.5 Use of this classification does not result in building evaluation or diagnosis. Building evaluation or diagnosis generally requires a 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 nor for fire risk assessment.

5. Basis of Classification

5.1 The scales in Figs. 1 through 6 contain the basis for classification.

5.2 Instructions for the use of this classification are contained in Practices E 1334 and E 1679.

6. Keywords

6.1 building; copiers; facility; facility occupants; function; office; performance; rating; rating scale; requirements; serviceability

A.1. Support for Office Work

Scale A.1.2. Training rooms, general

Occupant Requirement Scale

9 ❑ ❍ **ROOM SIZES**: Require training sessions (without computers) to run for various group sizes, sometimes concurrently. Need breakout rooms nearby, accessible to trainees.
❍ **OCCUPANT COMFORT**: Need excellent ventilation, lighting and sound control for concentration.
❍ **LOCATION OF ROOMS**: Need to locate training rooms in any part of the office, e.g. to be close to trainees, or convenient for trainees from outside the facility. Need to let trainees go from building entry to training rooms, toilet and food service, without compromising security zones.

7 ❑ ❍ **ROOM SIZES**: Need to run concurrent training sessions for two different group sizes, the larger up to about 25 trainees. Need several breakout rooms nearby.
❍ **OCCUPANT COMFORT**: Need high quality ventilation, lighting and sound control for concentration.
❍ **LOCATION OF ROOMS**: For some courses, some or most of the trainees come from outside the facility so access from building entry must not compromise security zones.

Facility Rating Scale

9 ❑ ❍ **Mix, quantity, future capability**: Suitable mix of capacities of dedicated training rooms exist, e.g. for 12, 25 and 35 people. Sufficient quantity. Adjacent meeting rooms are easy to enhance to meet requirements for a training room, if more training rooms become needed.
❍ **Environment**: Excellent, e.g. ventilation rates and volume of air entering the space exceed or meet target (current ASHRAE Standards 62 and 55) at all times that the training rooms are in use. Rooms are comfortable for full-day use. Local control of lighting, ventilation and temperature exists in all training rooms. Separate illumination for wall-wash, for presentation at end of the room, and for work surfaces, all under instructor control. Instructor can augment ventilation, including 100% outdoor air, on demand.
❍ **Acoustic control**: Excellent, e.g. raised voices or amplified sounds are not heard in adjacent spaces, and sounds from adjacent spaces are never distracting. It is easy to understand soft-spoken speech from across the room, and no echo or reverberation from loud or abrupt sounds.

8 ❑

❍ **Fixtures and fixed equipment**: There is provision for full audio-visual presentations, including projection of TV and computer images with quality sound system. Large screens with rear projection are installed in existing training rooms, with sufficient ceiling height at screen end of room to provide good visibility, e.g. 2.7 m for capacity of up to 10 trainees and 3 m for larger rooms. The present high-quality standards for training rooms is achievable in any location on the floor.
❍ **Breakout/syndicate rooms**: Adjacent cluster of small and medium meeting rooms has capacity for all trainees.
❍ **Floorplate and access**: No wayfinding difficulties for visitors. There is sufficient space to add or enlarge a training room.

7 ❑ ❍ **Mix, quantity, future capability**: Suitable number and capacities of dedicated training rooms exist, e.g. for 12 and 25 people. Sufficient quantity. Additional training rooms can be installed with moderate cost and difficulty.
❍ **Environment**: Good, e.g. ventilation rates per person reach target (current ASHRAE Standards 62 and 55) for training rooms, making them comfortable for full-day use. There is a thermostat for occupant control of ventilation and temperature. Local control of lighting exists in all training rooms. Instructor can augment ventilation, on demand.

6 ❑

❍ **Acoustic control**: Good, e.g. never hear sounds from outside the room. Raised voices or amplified sounds are not understood in adjacent spaces. Soft-spoken speech from across the room can be understood. Only slight echo or reverberation from loud or abrupt sounds; or, only slight muffling of speech and loud sounds.
❍ **Fixtures and fixed equipment**: There is provision for full audio-visual presentations, using built-in projection of TV and computer images, and extra ceiling height, e.g. 3 m at screen end of room, for training rooms for more than 20 people.
❍ **Breakout/syndicate rooms**: Adjacent to training room cluster is cluster of small and medium meeting rooms with at least half capacity of training rooms.
❍ **Floorplate and access**: No wayfinding difficulties for visitors.

Scale A.1.2. continued on next page

FIG. 2 Scale A.1.2 for Training Rooms, General

A.1. Support for Office Work

Scale A.1.2. Training rooms, general (continued)

Occupant Requirement Scale		Facility Rating Scale
5 ❑ ❍ **ROOM SIZES**: Training sessions are required to run for a single group size and may require additional larger or smaller size rooms in the future. ❍ **OCCUPANT COMFORT**: Typical training sessions to be half day or less. The content of training requires average concentration. ❍ **LOCATION OF ROOMS**: Within the facility, location of training room(s) is not significant.	**4** ❑	**5** ❑ ❍ **<u>Mix, quantity, future capability</u>**: One or two dedicated training rooms exist. Would be difficult and costly to install more. It is difficult to locate training rooms near reception. ❍ **<u>Environment</u>**: Adequate, e.g. ventilation rates per person reach target (current ASHRAE standards 62 and 55) for training rooms, making them comfortable for half-day use. Ventilation and temperature are controlled by thermostat with fixed settings which cannot be adjusted by occupants. Limited capability exists for added ventilation. Local control of lighting is possible, but costly to install. ❍ **<u>Acoustic control</u>**: Good, e.g. raised voices or amplified sounds are not understood in adjacent spaces, and sounds from adjacent spaces are rarely distracting. Easy to understand normal speaking voice across the room. Soft-spoken speech is sometimes hard to understand, or, distinct but hard to hear. ❍ **<u>Fixtures and fixed equipment</u>**: There is basic provision for audio-visual presentations, e.g. screens are installed and basic sound system and video monitors can conveniently be used. Ceiling height is 2.6 m to 2.7 m. ❍ **<u>Breakout/syndicate rooms</u>**: A few medium size meeting rooms are nearby. ❍ **<u>Floorplate and access</u>**: Some wayfinding difficulties for visitors to find training rooms, but potential to resolve problems easily.
3 ❑ ❍ **ROOM SIZES**: No special requirements for training rooms. Basic instruction can occur in a standard large meeting room. May require medium-size training room in the future. ❍ **LOCATION OF ROOMS**: If no large meeting room, can rent space in a hotel or conference centre nearby.	**2** ❑	**3** ❑ ❍ **<u>Mix, quantity, future capability</u>**: No dedicated training rooms exist. Would be difficult and costly to install, and ventilation would be unlikely to meet target. It is difficult to locate training rooms near reception. ❍ **<u>Environment</u>**: Poor, e.g. ventilation rates do not meet target (current ASHRAE standards 62 and 55) for training rooms. No local control of ventilation or temperature. Limited capability exists for added ventilation, but not sufficient to meet target. Local control of lighting in training rooms is possible, but difficult and costly. ❍ **<u>Acoustic control</u>**: Only raised voices or amplified sounds are understood in adjacent spaces. Sounds from adjacent spaces are occasionally distracting; difficult and costly to fix. In some parts of the room, a normal speaking voice is hard to understand, or hard to hear. ❍ **<u>Fixtures and fixed equipment</u>**: Limited provision exists for audio-visual presentations, e.g. screens only, and low ceilings (2.4 m) which prevent the use of projection screens higher than 1.5 m. ❍ **<u>Breakout/syndicate rooms</u>**: None nearby. ❍ **<u>Floorplate and access</u>**: Floorplate permits large training room. It is difficult to place training rooms near reception from the public access zone. Some wayfinding difficulties for visitors.

Scale A.1.2. continued on next page

FIG. 2 Scale A.1.2 for Training Rooms, General *(continued)*