

Designation: E 1701 - 95 (Reapproved 1999)

An American National Standard

Standard Classification for Serviceability of an Office Facility for Manageability 1,2

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1. Scope

- 1.1 This classification contains pairs of scales (see Figs. 1-8) 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 manageability.
- 1.2 Within that aspect of serviceability, each pair of scales (see Figs. 1-8) are for classifying one topic of serviceability. Each paragraph in an Occupant Requirement Scale summarizes one level of serviceability on that topic, which occupants might require. The matching entry in the facility rating scale 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. 1-8) 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 Figs. 1-8 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 Constructions³

E 1334 Practice for Rating the Serviceability of a Building or Building-Related Facility³

E 1679 Practice for Rating Serviceability of a Building or Building-Related Facility³

2.2 ISO Documents:⁴

ISO 6240 International Standard, Performance Standards 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:
- 3.1.1 *facility*, *n*—a 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.
- 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.
- 3.1.3 *office*—a place, such as a room, suite, or building, in which business, clerical, or professional activities are conducted.

¹ This classification is under the jurisdiction of ASTM Committee E06 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.

Scale B.2.1. Reliability of external supply

Facility Management Requirement Scale Facility Rating Scale 9 O FREQUENCY OF POWER OUTAGES: Required levels are: O Electrical power supply: There were no electrical power out not more than once, for less than 3 hours, electrical power outages in the last 12 in a 3 year period. months. Electrical power (utility supply O FREQUENCY OF LOSS OF LISTED SERVICES: Required or on-site distribution) was out not more levels are: no loss of building services (see Table B2-A.) in a 12 than once, for less than 3 hours, in the last month period, or backup services available. O WORK DURATION DURING LOSS OF SERVICES: O <u>Building services (except power)</u>: From Required levels are: staff able to work for up to one day with the list in Table B2-A. there was no loss of loss of two building services, e.g. windows open, sufficient service in the last 12 months, or, there are daylight for almost all people, or enough standby power to backup services for continued operations. continue essential operations. O NEED FOR EVACUATION: Required levels are: no evacuations. 7 O FREQUENCY OF POWER OUTAGES: Required levels are, O Electrical power supply: Electrical for a 12 month period: electrical power out 1 or 2 times, each power (utility supply or on-site lasting less than half a day, or 3 times, each lasting less than 20 distribution) was out 1 or 2 times in the last 12 months, with each occasion less minutes. O FREQUENCY OF LOSS OF LISTED SERVICES: Required than half a day. O Building services (except power): From levels are, for a 12 month period: loss of building services (see Table B2-A.) 1 or 2 times, each lasting less than half a day, or 3 the list in Table B2-A. loss of service in the times, each lasting less than 30 minutes. last 12 months was 1 or 2 outages, each O WORK DURATION DURING LOSS OF SERVICES: less than half a day. 6 Required levels are, for a 12 month period: staff able to work for up to half a day with loss of two building services, e.g. sufficient daylight for most people, and windows open. O NEED FOR EVACUATION: Required levels are, for a 12 month period: no evacuations. O FREQUENCY OF POWER OUTAGES: Acceptable levels 5 5 O <u>Electrical power supply</u>: Electrical are, for a 12 month period: electrical power out 1 or 2 times, power (utility supply or on-site each lasting less than half a day, or 3 times, each lasting less distribution) was out 2 or 3 times in the than 30 minutes. last 12 months, with one occasion more O FREQUENCY OF LOSS OF LISTED SERVICES: than half a day. Acceptable levels are, for a 12 month period: loss of building O Building services (except power): From services (see Table B2-A.) 2 or 3 times, each lasting less than the list in Table B2-A. loss of service in the half a day, or 5 times, each lasting less than 30 minutes. last 12 months was 2 or 3 outages, each O WORK DURATION DURING LOSS OF SERVICES: less than half a day. Acceptable levels are, for a 12 month period: staff able to work for up to half a day with loss of one building service, e.g. sufficient daylight for most people, but windows do not open. O NEED FOR EVACUATION: Acceptable levels are, for a 12 month period: no evacuations.

Scale B.2.1. continued on next page
FIG. 1 Scale B.2.1 for Reliability of External Supply

Scale B.2.1. Reliability of external supply (continued)

	Facility Management Requirement Scale			Facility Rating Scale			
3	O FREQUENCY OF POWER OUTAGES: Acceptable levels are, for a 12 month period: electrical power out 2 or 3 times, each lasting less than 1 day, or 4 to 6 times, each lasting less than 30 minutes. O FREQUENCY OF LOSS OF LISTED SERVICES: Acceptable levels are, for a 12 month period: loss of building services (see Table B2-A.) up to 3 times, each lasting less than one day, or 4 to 6 times, each lasting less than 1 hour. O WORK DURATION DURING LOSS OF SERVICES: Acceptable levels are, for a 12 month period: staff able to work for up to 2 hours, e.g. sufficient daylight for some people, but windows do not open. O NEED FOR EVACUATION: Acceptable levels are, for a 12 month period: occasional full or partial evacuation of the building, e.g. once in 1 to 3 years.	2	3	O Electrical power supply: Electrical power (utility supply or on-site distribution) was out 2 or 3 times in the last 12 months, each less than 1 day. O Building services (except power): From the list in Table B2-A. loss of service in the last 12 months was up to 3 outages, each lasting less than 1 day.			
1 https	O FREQUENCY OF POWER OUTAGES: Acceptable levels are, for a 12 month period: electrical power out more than 3 times, lasting more than 1 day on one of the occasions. O FREQUENCY OF LOSS OF LISTED SERVICES: Acceptable levels are, for a 12 month period: serious loss of building services (see Table B2-A.) more than 3 times, each lasting a day or more. O WORK DURATION DURING LOSS OF SERVICES: Acceptable levels are, for a 12 month period: staff unable to work during that time; e.g. not enough daylight, windows do not open. O NEED FOR EVACUATION: Acceptable levels are, for a 12 month period: full or partial evacuation of the building 2 or more times.	lar ds re	.it vio	O Electrical power supply: Electrical power (utility supply or on-site distribution) was out more than 3 times, or more than 1 day, in the last 12 months. O Building services (except power): From the list in Table B2-A. there was serious loss of service, e.g. more than 3 times in the last 12 months, with each lasting a day, or more.			
	□ Exceptionally important □ Important □ Minor Importance						

Minimum $\underline{\mathbf{T}}$ hreshold level = **NOTES** Space for handwritten notes on Requirements or Ratings

□ NA □ NR

FIG. 1 Scale B.2.1 for Reliability of External Supply (continued)

☐ Zero

3.1.4 For standard definitions of additional terms applicable to this classification, as well as those in 3.1.1-3.1.3, see Terminology E 631.

4. Significance and Use

- 4.1 Each facility rating scale in this classification (see Figs. 1-8) 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 aslocation, 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.

Scale B.2.2. Anticipated remaining service life

Facility Management Requirement Scale		е			Facility Rating Scale		
9	O REMAINING SERVICE LIFE OF COMPONENTS AND SYSTEMS: level is a total of 26 or more points f with remedial action budgeted or apremaining items.	The acceptable rom Table B2-l		- 1	9	O <u>Major building components</u> : A total of 26 or more points are scored from Table B2-B., with remedial action budgeted and approved on the remaining items.	
7	O REMAINING SERVICE LIFE OF COMPONENTS AND SYSTEMS: level is a total of 22 to 25 points from	The acceptable	6	- 1	7 •	O <u>Major building components</u> : A total of 22-25 points are scored from Table B2-B.	
5	O REMAINING SERVICE LIFE OF COMPONENTS AND SYSTEMS: level is a total of 16 to 21 points from	The acceptable	4	- 1	5 •	O <u>Major building components</u> : A total of 16-21 points are scored from Table B2-B.	
3	O REMAINING SERVICE LIFE OF COMPONENTS AND SYSTEMS: level is a total of 11 to 15 points from	The acceptable	S 12	2	3	O <u>Major building components</u> : A total of 11-15 points are scored from Table B2-B.	
1	O REMAINING SERVICE LIFE OF COMPONENTS AND SYSTEMS: level is less than 10 points from Tab	The acceptable	an 1en	Q n1	1	O <u>Major building components</u> : Less than 10 points are scored from Table B2-B.	
ASTM F1701-95(1999).							
□ Exceptionally important. □ Important. □ Minor Importance42d0_980e_ 740799∏b5f/astm-e1701_951999							
Minimum Threshold level = □ NA □ NR □ Zero □ DP							

NOTES Space for handwritten notes on Requirements or Ratings

FIG. 2 Scale B.2.2 for Anticipated Remaining Service Life

- 4.4.3 Serviceability (potential) of a facility for which a 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 fire risk assessment.

5. Basis of Classification

- 5.1 The scales in Figs. 1-8 contain the basis for classification.
- 5.2 Instructions for use of this classification are contained in Practices E 1334 and E 1679.

6. Keywords

6.1 building; energy consumption in office buildings; facility; facility occupants; function; maintenance and operation; ease of; manageability; of building; office; performance; rating; rating scale; requirements; serviceability

Scale B.2.3. Ease of operation

	Facility Management Requirement Scale		Facility Rating Scale			
9	O STOREROOM FOR BUILDING OPERATIONS: Require well located, well ventilated storeroom for supplies and parts for building operations. O SPACE FOR BUILDING OPERATION PERSONNEL: Require space for building operation personnel that is quiet, convenient, and well ventilated.	8	9	 ○ <u>Storeroom</u>: A good size storeroom for supplies and small consumables for building operations is provided. It is well located, with good humidity control and air quality. ○ <u>Space for building operation personnel</u>: The operator's office and locker space are well ventilated, and quiet, with a convenient location. ○ <u>Operating instructions for services and equipment</u>: Operating instructions are complete and up-to-date for instruction and verification. 		
7	O STOREROOM FOR BUILDING OPERATIONS: Require well located, well ventilated storeroom for supplies for building operations. O SPACE FOR BUILDING OPERATION PERSONNEL: Require space for building operation personnel that is quiet, convenient, and well ventilated.	6 D eh	7 0	 ○ <u>Storeroom</u>: An adequate storeroom for supplies and small consumables for building operations is provided. ○ <u>Space for building operation personnel</u>: The operator's office, adjacent to the mechanical room, is well ventilated, and quiet. There are lockers in the corridor. ○ <u>Operating instructions for services and equipment</u>: Operating manuals are up-to-date, and adequate for instruction and verification. 		
5 C	O STOREROOM FOR BUILDING OPERATIONS: Basic storeroom for building operations is needed. O SPACE FOR BUILDING OPERATION PERSONNEL: Size and condition of space for building operator's office are not important.	/\$1 4 01 st/a1	M E d412	 Storeroom: A barely adequate storeroom for supplies and small consumables for building operations is provided. Space for building operation personnel: The operator's office is just adequate, e.g. noisy, small, ventilation just adequate. There are lockers in the corridor. Operating instructions for services and equipment: Operating manuals are just adequate, e.g. mostly up-to-date. 		
3	O STOREROOM FOR BUILDING OPERATIONS: No need for a building operations storeroom on-site.	2	3	 ○ <u>Storeroom</u>: There is no building operations storeroom on-site, but shelving and storage lockers are provided in shops and mechanical spaces. ○ <u>Space for building operation personnel</u>: The operator's area is inadequate, e.g. operator's desk and lockers are in the mechanical room or passage. ○ <u>Operating instructions for services and equipment</u>: Operating manuals are poor, e.g. incomplete operating instructions. 		
1	O STOREROOM FOR BUILDING OPERATIONS: No need for a building operations storeroom on-site.		1	 ○ <u>Storeroom</u>: There is no building operations storeroom on-site. ○ <u>Space for building operation personnel</u>: There is no allocated space for the operator. ○ <u>Operating instructions for services and equipment</u>: Manuals are mostly missing, or non-existent. 		
	□ Exceptionally important □ Important □ Minor Importance					
<u> </u>	□ <u>E</u> xceptionally important. □ <u>I</u> mportant. □ <u>M</u> inor Importance.					

NOTES Space for handwritten notes on Requirements or Ratings

Minimum $\underline{\mathbf{T}}$ hreshold level =

FIG. 3 Scale B.2.3 for Ease of Operation

□NA □NR □Zero □DP

Scale B.2.4. Ease of maintenance

Facility Management Requirement Facility Rating Scale Scale O REOUIRED LEVEL OF MAINTENANCE: O <u>Storeroom for maintenance</u>: The storeroom is generous Building operations require that there be no for tools and spares, and conveniently located. delays due to failure of the ventilating, heating or O Maintenance workshop: A well-equipped workshop is cooling systems. on-site. O STORAGE AND WORKSHOP: An ample O Maintenance contractors: To fix or replace key or major storeroom for tools and spares, and a well equipment in each of the main categories, there is a choice equipped workshop of competing maintenance contractors available locally to O ACCESS TO CONTRACTORS AND PARTS: fix or replace key/major equipment. O Availability of replacement parts: Important Easy access to maintenance contractors, and replacement parts/equipment for all major units are same-day access to replacement parts/equipment. O DATA FOR INVENTORY AND available for same-day delivery or installation. MAINTENANCE PROGRAM: Complete data O <u>Data for maintenance</u>: Complete data is available for for an inventory and maintenance program. inventory and maintenance program. O EASE OF MAINTENANCE AND REPAIRS O Painting and repairs: Surfaces and materials require OF SURFACES AND MATERIALS: Surfaces and little attention. Where required, they are very easy to materials need to be very easy to maintain and paint or repair. Repairs require average skill. repair. O REQUIRED LEVEL OF MAINTENANCE: 7 O Storeroom for maintenance: The storeroom is quite Building operations require an above average adequate for tools and minimum spares, and is level of maintenance. conveniently located. O STORAGE AND WORKSHOP: An adequate O Maintenance workshop: A basic workshop is on-site. storeroom for tools and a minimum of spares, and O Maintenance contractors: At least one firm of each type a basic workshop. of maintenance contracting is locally available to fix or O ACCESS TO CONTRACTORS AND PARTS: replace all categories of key or major equipment. Access to maintenance contractors, and same-day O Availability of replacement parts: Important 6 access to replacement parts/equipment. replacement parts/equipment for most key equipment are O DATA FOR INVENTORY AND available for same-day delivery or installation. MAINTENANCE PROGRAM: Adequate data O <u>Data for maintenance</u>: Data is available for most parts for an inventory and maintenance program. of an inventory and maintenance program. O EASE OF MAINTENANCE AND REPAIRS O Painting and repairs: Surfaces and materials are easy to OF SURFACES AND MATERIALS: Surfaces and paint or repair. Repairs require average skill. materials that are easy to maintain and repair. O **Storeroom for maintenance**: The storeroom is adequate O REQUIRED LEVEL OF MAINTENANCE: Building operations require an average level of for tools and minimum spares, but not conveniently O STORAGE AND WORKSHOP: An adequate O Maintenance workshop: Workshop functions are storeroom for tools and a minimum of spares, and carried out in a section of one of the mechanical rooms, or in part of a storeroom. a basic workshop. O ACCESS TO CONTRACTORS AND PARTS: O Maintenance contractors: At least one firm of each type Access to maintenance contractors, and access to of maintenance contracting is available either locally or within 24 hours to fix or replace key or major equipment. replacement parts/equipment within 24 hours. O Availability of replacement parts: Important O DATA FOR INVENTORY AND replacement parts/equipment are available within 24 MAINTENANCE PROGRAM: Adequate data hours. for an inventory and maintenance program. O Data for maintenance: Basic data is available for the O EASE OF MAINTENANCE AND REPAIRS OF SURFACES AND MATERIALS: Surfaces and start of an inventory and maintenance program, but it is materials that are reasonably easy to maintain and incomplete. O Painting and repairs: Surfaces and materials are repair. reasonably easy to paint or repair. Repairs require

Scale B.2.4. continued on next page

average skill.

FIG. 4 Scale B.2.4 Ease of Maintenance