

Standard Classification for Serviceability of an Office Facility for Structure and Building Envelope^{1,2}

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1. Scope

1.1 This classification covers matched sets of scales (see [Figs. 1-24](#)) 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 structure and building envelope.

1.2 Within that aspect of serviceability, each matched set of scales (see [Figs. 1-24](#)) is for classifying one topic of serviceability. Each topic is typically broken down into two more demand functions and supply features. Each paragraph in an Occupant Requirement Scale summarizes one level of serviceability on that function, 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. 1-24](#)) 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 [E1679](#). The scales in [Figs. 1-24](#) are complimentary to and compatible with Practice [E1679](#). Each requires the other.

1.6 The scales are intended to identify the levels of various requirements unique to a particular user, and the serviceability (capability) of a building to meet those requirements. The scales thus supplement rather than include code requirements. It remains the responsibility of designers, builders, and building managers to meet applicable code requirements relative to their respective roles in facility design, construction, and ongoing management.

1.7 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Referenced Documents

2.1 ASTM Standards:³

[E631 Terminology of Building Constructions](#)

[E1660 Classification for Serviceability of an Office Facility for Support for Office Work](#)

[E1665 Classification for Serviceability of an Office Facility for Facility Protection](#)

[E1667 Classification for Serviceability of an Office Facility for Image to the Public and Occupants](#)

[E1669 Classification for Serviceability of an Office Facility for Location, Access and Wayfinding](#)

[E1679 Practice for Setting the Requirements for the Serviceability of a Building or Building-Related Facility, and for Determining What Serviceability is Provided or Proposed](#)

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](#)

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 For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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.

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 E631.

4. Significance and Use

4.1 Each Facility Rating Scale in this classification (see Figs. 1-24) 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 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.)

5. Basis of Classification

5.1 The scales in Figs. 1-24 contain the basis for classification.

5.2 Instructions for use of this classification are contained in Practice E1679.

6. Keywords

6.1 basements; buildings; building envelope and structures; facility; facility occupants; functions; offices; performances; ratings; rating scales; requirements; roofs; serviceability; serviceability of; structure and building envelopes; walls (external) and projections

DEMAND	B.1.1.	Typical Office floors
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Demand Scales in this Topic: B.1.1. Information on allowable loading

Subject Matter: Occupants' requirements for information on the ability of existing office floors to support special load conditions, their extent, and location.

Notes: Related occupant requirement scales for floor loading, levelness, and evenness are found in Topic A.1.5 of E1660.

From the options below, please select the level that best describes the REQUIREMENT.

Requirement Level	DEMAND
9 ☐	Occupants require very easy access to information, e.g. original structural drawings, calculations, specifications, and special engineering studies.
8 ☐	
7 ☐	Occupants require easy access to information, e.g. essential data in an Asset Management Plan.
6 ☐	
5 ☐	Occupants require reasonable access to information, e.g. by request from the local jurisdiction having authority.
4 ☐	
3 ☐	Occupants accept difficult access to information, e.g. the cost, time, and effort of engineering services that can rely on direct inspection.
2 ☐	
1 ☐	Occupants accept very difficult access to information, e.g. the cost, time, and effort of engineering services require destructive sampling, testing, and repairs.
0 ☐	No requirement.

Select **Relative Importance** of scale = ☐ Extremely Important ☐ Important ☐ Minor Importance

Select **Threshold Level of Scale:** First, indicate whether Threshold Level of **scale** is a ☐ **Minimum** OR ☐ **Maximum** OR, if there is NO Maximum or Minimum Threshold level, then select ☐ **None**.

Then, (unless there is none) select the **Threshold Level** of this **scale**
☐ 9 ☐ 8 ☐ 7 ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1

If unable to choose scale level, select ☐ **OTHER** and indicate reason below:

☐ Lack Information ☐ Postpone decision ☐ In-depth evaluation required ☐ Not applicable

☐ Refer question to someone else: Whom? e-mail or phone?

FIG. 1 Demand Scale B.1.1 for Information on Allowable Loading

SUPPLY B.1.1.	Typical office floors
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Supply Scales in this Topic: B.1.1. Information on allowable loading
Subject Matter: The availability of information on the ability of existing office floors to support special load conditions, their extent, and location.
Notes: Related rating scales for floor loading, levelness, and evenness are found in Topic A.1.5 of E1660.

From the options below, please select the level that best describes the RATING.

Rating Level	SUPPLY	B.1.1. Information on allowable loading
9 ☐		Information is very easy to obtain, e.g. original construction documents are available on-site to occupants.
8 ☐		
7 ☐		Information is easy to obtain, e.g. essential data can be found in an Asset Management Plan.
6 ☐		
5 ☐		Information is reasonable to obtain, e.g. the local jurisdiction having authority has construction documents archived.
4 ☐		
3 ☐		Information is difficult to obtain, e.g. engineering services that can rely on drawings and direct inspection are required.
2 ☐		
1 ☐		Information is very difficult to obtain, e.g. engineering services require destructive sampling, testing, and repairs.
0 ☐		No information is available.

If unable to choose scale level, select ☐ **OTHER** and indicate reason below:

☐ Lack Information
 ☐ Postpone decision
 ☐ In-depth evaluation required
 ☐ Not applicable
☐ Refer question to someone else: Whom? e-mail or phone?

FIG. 2 Supply Scale B.1.1 for Information on Allowable Loading

DEMAND B.1.2	External walls and projections
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Demand Scales in this Topic:

- B.1.2.1 Permanence of exterior finishes
- B.1.2.2 Weathertightness at exterior walls
- B.1.2.3 Condition of exterior walls and projections

Subject Matter: Occupants' requirements for the physical condition of the exterior of a building, as distinct from the perceived quality of the exterior.

Notes:

1. Perceived quality of the exterior is dealt with in Topic A.11 Image to public and occupants of E1667.
2. Related occupant requirement scales for the weathertightness of exterior doors and windows and the roof are dealt with in scales B.1.3.1 and B.1.4 respectively.

From the options below, please select the level that best describes the REQUIREMENT.

Requirement Level	DEMAND B.1.2.1. Permanence of exterior finishes
9 ☐	The expected replacement life of exterior finishes must be greater than 75 years.
8 ☐	
7 ☐	The expected replacement life of exterior finishes must be greater than 50 years up to 75 years.
6 ☐	
5 ☐	The expected replacement life of exterior finishes should be greater than 40 years up to 50 years.
4 ☐	
3 ☐	The expected replacement life of exterior finishes can be greater than 30 years up to 40 years.
2 ☐	
1 ☐	The expected replacement life of exterior finishes does not have to exceed 30 years.
0 ☐	No requirement.

Select **Relative Importance** of **scale** = ☐ Extremely Important ☐ Important ☐ Minor Importance

Select **Threshold Level of Scale:** First, indicate whether Threshold Level of **scale** is a ☐ **Minimum** OR ☐ **Maximum** OR, if there is NO Maximum or Minimum Threshold level, then select ☐ **None**.

Then, (unless there is none) select the **Threshold Level** of this **scale**

☐ 9 ☐ 8 ☐ 7 ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1

If unable to choose scale level, select ☐ **OTHER** and indicate reason below:

☐ Lack Information ☐ Postpone decision ☐ In-depth evaluation required ☐ Not applicable

☐ Refer question to someone else: Whom? e-mail or phone?

FIG. 3 Demand Scale B.1.2.1 for Permanence of Exterior Finishes

Requirement Level	DEMAND	B.1.2.2. Weathertightness at exterior walls
9 ○	Occupants cannot accept any signs of moisture penetration at the inside surface of exterior walls.	
8 ○		
7 ○	Occupants can accept isolated signs of minor moisture penetration at the inside surface of exterior walls.	
6 ○		
5 ○	Occupants can accept some minor signs of moisture penetration at the inside surface of exterior walls.	
4 ○		
3 ○	Occupants can accept noticeable signs of moisture penetration at the inside surface of exterior walls.	
2 ○		
1 ○	Occupants can accept signs of moisture penetration at the inside surface of exterior walls provided there is no moisture damage to work products, furnishings, or equipment or negative health impacts from associated mold.	
0 ○	No requirement.	
Select Relative Importance of scale =		☐ Extremely Important ☐ Important ☐ Minor Importance
Select Threshold Level of Scale : First, indicate whether Threshold Level of scale is a ☐ Minimum OR ☐ Maximum OR, if there is NO Maximum or Minimum Threshold level, then select ☐ None .		
Then, (unless there is none) select the Threshold Level of this scale ☐ 9 ☐ 8 ☐ 7 ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1		
If unable to choose scale level, select ☐ OTHER and indicate reason below: ☐ Lack Information ☐ Postpone decision ☐ In-depth evaluation required ☐ Not applicable ☐ Refer question to someone else: Whom? e-mail or phone?		

FIG. 4 Demand Scale B.1.2.2 for Weathertightness at Exterior Walls

Requirement Level	DEMAND	B.1.2.3. Condition of exterior walls and projections
9 ☐	Occupants require exterior to be in like-new condition.	
8 ☐		
7 ☐	Occupants require exterior to be in good condition.	
6 ☐		
5 ☐	Occupants can accept exterior with some minor signs of deterioration.	
4 ☐		
3 ☐	Occupants can accept exterior with noticeable signs of deterioration.	
2 ☐		
1 ☐	Occupants can accept exterior with extensive signs of deterioration.	
0 ☐	No requirement.	
Select Relative Importance of scale =		☐ Extremely Important ☐ Important ☐ Minor Importance
Select Threshold Level of Scale : First, indicate whether Threshold Level of scale is a ☐ Minimum OR ☐ Maximum OR, if there is NO Maximum or Minimum Threshold level, then select ☐ None .		
Then, (unless there is none) select the Threshold Level of this scale ☐ 9 ☐ 8 ☐ 7 ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1		
If unable to choose scale level, select ☐ OTHER and indicate reason below: ☐ Lack Information ☐ Postpone decision ☐ In-depth evaluation required ☐ Not applicable ☐ Refer question to someone else: Whom? e-mail or phone?		

FIG. 5 Demand Scale B.1.2.3 for Condition of Exterior Walls and Projections

SUPPLY B.1.2.	External walls and projections
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Supply Scales in this Topic:

- B.1.2.1 Permanence of exterior finishes
- B.1.2.2 Water penetration
- B.1.2.3 Condition of exterior walls and projections

Subject Matter: This topic deals with the physical condition of the exterior of a building, as distinct from the perceived quality of the exterior.

Notes: Building features affecting the perceived quality of the exterior are dealt with in Topic A.11 Image to public and occupants of E1667.

From the options below, please select the level that best describes the RATING.

Rating Level	SUPPLY	B.1.2.1. Permanence of exterior finishes
9 ○		The expected replacement life of exterior finishes is greater than 75 years (e.g. 8 in. cast-in-place concrete walls).
8 ○		
7 ○		The expected replacement life of exterior finishes must be greater than 50 years up to 75 years (e.g. 4 in. masonry veneer).
6 ○		
5 ○		The expected replacement life of exterior finishes should be greater than 40 years up to 50 years (e.g. aluminum curtain wall).
4 ○		
3 ○		The expected replacement life of exterior finishes can be greater than 30 years up to 40 years (e.g. cement plaster or cedar siding).
2 ○		
1 ○		The expected replacement life of exterior finishes does not have to exceed 30 years (e.g. T1-11 plywood).
0 ○		No information is available.

If unable to choose scale level, select ☐ **OTHER** and indicate reason below:

☐ Lack Information
 ☐ Postpone decision
 ☐ In-depth evaluation required
 ☐ Not applicable
☐ Refer question to someone else: Whom? e-mail or phone?

FIG. 6 Supply Scale B.1.2.1 for Permanence of Exterior Finishes