



Designation: **E1663–03 (Reapproved 2019) E1663 – 22**

Standard Classification for Serviceability of an Office Facility for Typical Office Information Technology^{1, 2}

This standard is issued under the fixed designation E1663; 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-Scope*

1.1 This classification covers pairs-matched sets 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 equipment for information technology.

1.2 Within that aspect of serviceability, each pair-matched set of scales, shown in **Figs. 1-618**, are 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 (see **Figs. 1-618**) summarizes one level of serviceability on that topic, which occupants might require. The matching entry in the Facility Rating Scale (see **Figs. 1-618**) 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. 1-618**) 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 **E1334****E1679**. The scales in this classification are complimentary to, and compatible with, PracticesPractice **E1334** and **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.

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.

*A Summary of Changes section appears at the end of this standard

A.5.1. Density of office computers and equipment

Subject Matter: The ability to locate workplaces based on their density of office computers, equipment, and personal devices.

Notes:

1. Prior editions of this topic included the visual and acoustical environment related to the use of office computers and associated equipment. It is now assumed that these are consistent throughout the office environment regardless of the density of office equipment. Requirements and ratings for the visual environment are found in Topic A.3.4 of Classification E1662. Requirements and ratings related to office noise are found in Topic A.3.2 of Classification E1662.
2. Prior editions of this topic included HVAC services related to the density of office computers and related equipment. It is now assumed that these are consistent throughout the office environment regardless of the density of office equipment. Requirements and ratings for thermal comfort are found in Topic A.4 of Classification E2320.
3. Requirements and ratings for network access are found in Topic A.5.4 of this classification.

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

| Requirement Level | DEMAND | A.5.1. Density of office computers and equipment |
|-------------------------|--|--|
| 9 <input type="radio"/> | Must be able to locate or relocate densely equipped workplaces anywhere on the office floor. | |
| 8 <input type="radio"/> | | |
| 7 <input type="radio"/> | Must be able to locate or relocate densely equipped workplaces anywhere on the office floor with easily implemented improvements. | |
| 6 <input type="radio"/> | | |
| 5 <input type="radio"/> | Must be able to locate some densely equipped workplaces with limited building-imposed constraints on where such areas can be located. | |
| 4 <input type="radio"/> | | |
| 3 <input type="radio"/> | Must be able to locate a few densely equipped workplaces with some building-imposed constraints on where such areas can be located. | |
| 2 <input type="radio"/> | | |
| 1 <input type="radio"/> | Operations require only very few densely equipped workplaces with significant building-imposed constraints on where such areas can be located. | |
| 0 <input type="radio"/> | 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

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 A.5.1 for Density of Office Computers and Related-Equipment

1.8 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.9 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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

| Rating Level | SUPPLY | A.5.1. Density of office computers and equipment |
|---|-----------------------|---|
| 9 | <input type="radio"/> | Spatial layout and the distribution of networks and power to individual workplaces fully support densely equipped workplaces anywhere . Power can be distributed to any workplace, Wi-Fi reaches all workplaces, and the HVAC system has the capacity for multifunction copiers at all workplaces. |
| 8 | <input type="radio"/> | |
| 7 | <input type="radio"/> | Spatial layout and the distribution of networks and power to individual workplaces can be easily adjusted to support densely equipped workplaces anywhere . Power, Wi-Fi, and HVAC services can be easily expanded at minimal cost to any workplace where additional demand is created by a greater density of office equipment. |
| 6 | <input type="radio"/> | |
| 5 | <input type="radio"/> | Spatial layout and the distribution of networks and power to individual workplaces pose limited constraints on where densely equipped workplaces can be located . Power, Wi-Fi, and HVAC services can be expanded at moderate cost to most workplaces where additional demand is created by a greater density of office equipment. |
| 4 | <input type="radio"/> | |
| 3 | <input type="radio"/> | Spatial layout and the distribution of networks and power to individual workplaces pose some constraints on the number and location of densely equipped workplaces. Power, Wi-Fi, and HVAC services can be expanded at substantial effort and cost to most workplaces where additional demand is created by a greater density of office equipment. |
| 2 | <input type="radio"/> | |
| 1 | <input type="radio"/> | Spatial layout and the distribution of networks and power to individual workplaces limit very few densely equipped workplaces to be in specific locations . Power, Wi-Fi, and/or HVAC services are not feasible to be expanded where additional demand is created by a greater density of office equipment. |
| 0 | <input type="radio"/> | No information is available. |
| <p>If unable to choose scale level, select <input type="checkbox"/> OTHER and indicate reason below:</p> <p> <input type="checkbox"/> Lack Information <input type="checkbox"/> Postpone decision <input type="checkbox"/> In-depth evaluation required <input type="checkbox"/> Not applicable <input type="checkbox"/> Refer question to someone else: Whom? e-mail or phone? </p> | | |

FIG. 12 Supply Scale A.5.1 for Density of Office Computers and Related Equipment (continued)

2. Referenced Documents

2.1 ASTM Standards:³

[E631 Terminology of Building Constructions](#)

[E1334/E1662 Practice Classification for Rating the Serviceability of a Building or Building-Related Facility Serviceability of an Office Facility for Sound and Visual Environment \(Withdrawn 2013\)](#)

[E1666 Classification for Serviceability of an Office Facility for Work Outside Normal Hours or Conditions](#)

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.

| A.5.2. | Power at workplace | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------|--------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|--------------------------------|------------------------|--|
| <p>Scales in this Topic:</p> <ul style="list-style-type: none"> • Demand A.5.2.1 Location of available power • Supply A.5.2.1 Power distribution • Demand and Supply A.5.2.2 Plug-in points at workstation. <p>Subject Matter: Access to power at their individual workstation or office. Notes: Requirements and ratings for “Uninterruptible power supply” have been deleted. Building requirements for standby power are found in Topic A.10.3 of Classification E1666.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p><i>From the options below, please select the level that best describes the REQUIREMENT.</i></p> | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%; padding: 5px;">Requirement Level</th> <th style="width: 85%; padding: 5px;">DEMAND</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">9 <input type="radio"/></td> <td style="padding: 5px;">Operations require power supplied unobtrusively and easily to all workstations on any part of the floor.</td> </tr> <tr> <td style="text-align: center; padding: 5px;">8 <input type="radio"/></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">7 <input type="radio"/></td> <td style="padding: 5px;">Operations require power supplied easily to all workstations on any part of the floor.</td> </tr> <tr> <td style="text-align: center; padding: 5px;">6 <input type="radio"/></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">5 <input type="radio"/></td> <td style="padding: 5px;">Operations require power supplied to all workstations on any part of the floor.</td> </tr> <tr> <td style="text-align: center; padding: 5px;">4 <input type="radio"/></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">3 <input type="radio"/></td> <td style="padding: 5px;">Operations require power supplied to all workstations on most parts of the floor.</td> </tr> <tr> <td style="text-align: center; padding: 5px;">2 <input type="radio"/></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">1 <input type="radio"/></td> <td style="padding: 5px;">Operations require power supplied to all workstations somewhere on the floor.</td> </tr> <tr> <td style="text-align: center; padding: 5px;">0 <input type="radio"/></td> <td style="padding: 5px;">No requirement.</td> </tr> </tbody> </table> | Requirement Level | DEMAND | 9 <input type="radio"/> | Operations require power supplied unobtrusively and easily to all workstations on any part of the floor. | 8 <input type="radio"/> | | 7 <input type="radio"/> | Operations require power supplied easily to all workstations on any part of the floor. | 6 <input type="radio"/> | | 5 <input type="radio"/> | Operations require power supplied to all workstations on any part of the floor. | 4 <input type="radio"/> | | 3 <input type="radio"/> | Operations require power supplied to all workstations on most parts of the floor. | 2 <input type="radio"/> | | 1 <input type="radio"/> | Operations require power supplied to all workstations somewhere on the floor. | 0 <input type="radio"/> | No requirement. | <p style="text-align: center;">A.5.2.1. Location of available power</p> |
| Requirement Level | DEMAND | | | | | | | | | | | | | | | | | | | | | | |
| 9 <input type="radio"/> | Operations require power supplied unobtrusively and easily to all workstations on any part of the floor. | | | | | | | | | | | | | | | | | | | | | | |
| 8 <input type="radio"/> | | | | | | | | | | | | | | | | | | | | | | | |
| 7 <input type="radio"/> | Operations require power supplied easily to all workstations on any part of the floor. | | | | | | | | | | | | | | | | | | | | | | |
| 6 <input type="radio"/> | | | | | | | | | | | | | | | | | | | | | | | |
| 5 <input type="radio"/> | Operations require power supplied to all workstations on any part of the floor. | | | | | | | | | | | | | | | | | | | | | | |
| 4 <input type="radio"/> | | | | | | | | | | | | | | | | | | | | | | | |
| 3 <input type="radio"/> | Operations require power supplied to all workstations on most parts of the floor. | | | | | | | | | | | | | | | | | | | | | | |
| 2 <input type="radio"/> | | | | | | | | | | | | | | | | | | | | | | | |
| 1 <input type="radio"/> | Operations require power supplied to all workstations somewhere on the floor. | | | | | | | | | | | | | | | | | | | | | | |
| 0 <input type="radio"/> | No requirement. | | | | | | | | | | | | | | | | | | | | | | |
| <p>Select Relative Importance of scale = <input type="radio"/> Extremely Important <input type="radio"/> Important <input type="radio"/> Minor Importance</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Select Threshold Level of Scale: First, indicate whether Threshold Level of scale is a <input type="radio"/> Minimum OR <input type="radio"/> Maximum OR, if there is NO Maximum or Minimum Threshold level, then select <input type="radio"/> None.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Then, (unless there is none) select the Threshold Level of this scale <input type="radio"/> 09 <input type="radio"/> 08 <input type="radio"/> 07 <input type="radio"/> 06 <input type="radio"/> 05 <input type="radio"/> 04 <input type="radio"/> 03 <input type="radio"/> 02 <input type="radio"/> 01</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p>If unable to choose scale level, select <input type="checkbox"/> OTHER and indicate reason below:</p> <p><input type="checkbox"/> Lack Information <input type="checkbox"/> Postpone decision <input type="checkbox"/> In-depth evaluation required <input type="checkbox"/> Not applicable <input type="checkbox"/> Refer question to someone else: Whom? e-mail or phone?</p> | | | | | | | | | | | | | | | | | | | | | | | |

FIG. 23 Demand Scale A.5.2 for Power at the Workplace A.5.2.1 for Location of Available Power

[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](#)

[E1694 Classification for Serviceability of an Office Facility for Special Facilities and Technologies](#)

[E2320 Classification for Serviceability of an Office Facility for Thermal Environment and Indoor Air Conditions](#)

2.2 *ISO Document:*⁴

[ISO 6240 ISO 19208 International Standard, Performance Standards in Building—Contents and Presentation Framework for Specifying Performance in Buildings](#)

2.3 *Other Document: Documents:*⁵

[ANSI/TIA/EIA-569-A ANSI/TIA-569-E Commercial Building Standards for Telecommunications Pathways and Spaces](#)

[ANSI/BICSI-N1 Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure](#)

3. Terminology

3.1 *Definitions: Definitions*—For definitions of general terms related to building construction used in this classification, refer to Terminology [E631](#).

⁴ The last approved version of this historical standard is referenced on www.astm.org. Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

| From the options below, please select the level that best describes the RATING. | | |
|--|-----------------------|---|
| Rating Level | SUPPLY | A.5.2.1. Power distribution |
| 9 | <input type="radio"/> | Power is distributed to all workstations on any part of the floor unobtrusively and easily accessed through a raised access floor, or pre-wired modular furniture partitions, or adjacent walls or columns. |
| 8 | <input type="radio"/> | |
| 7 | <input type="radio"/> | Power is distributed to all workstations on any part of the floor: <ul style="list-style-type: none"> o easily accessed from power poles or pigtails fed from the ceiling at positions governed by ceiling grid dimensions and fixtures, in conduit or cable trays with power cables separated from data cables; or o from ducts in the floor that have access points on a grid 5 ft x 3 ft (1.5 m x 1.0 m) or less with power cables in separate ducts from data cables. |
| 6 | <input type="radio"/> | |
| 5 | <input type="radio"/> | Power is distributed to all workstations on any part of the floor: <ul style="list-style-type: none"> o from power poles or pigtails fed from cables accessed from the ceiling in conduit or cable trays, with positions governed by ceiling grid dimensions and fixtures; or o from ducts in the floor that have sufficient space capacity that pulling additional cables is never a problem, and that have access points on a grid 5 ft x 5 ft (1.5 m x 1.5 m) or less. |
| 4 | <input type="radio"/> | |
| 3 | <input type="radio"/> | Power is distributed to all workstations on most parts of the floor from power poles or pigtails fed from the ceiling, with positions governed by ceiling grid dimensions and fixtures. There are no cable trays. If there are floor ducts for cables, they are full in some parts of the building. |
| 2 | <input type="radio"/> | |
| 1 | <input type="radio"/> | Power is distributed to all workstations limited to specific areas of the floor. It is difficult to run cables, and outlets are poorly located, for example, horizontal distribution is in in-floor ducts that are mostly full, or by surface conduit, or by poke-through from the ceiling below. There is no accessible ceiling space, or space is insufficient for cable trays. |
| 0 | <input type="radio"/> | No information is available. |
| <p>If unable to choose scale level, select <input type="checkbox"/> OTHER and indicate reason below:</p> <p> <input type="checkbox"/>Lack Information <input type="checkbox"/>Postpone decision <input type="checkbox"/>In-depth evaluation required <input type="checkbox"/>Not applicable <input type="checkbox"/>Refer question to someone else: Whom? e-mail or phone? </p> | | |

FIG. 24 Supply Scale A.5.2A.5.2.1 for Power at the Workplace Distribution (continued)

3.1.1 ~~facility~~—*facility, n*—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 E631).

3.1.2 ~~facility serviceability~~—*serviceability, n*—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 E631).

3.1.3 ~~office~~—*office, n*—a place, such as a room, suite, or building, in which business, clerical, or professional activities are conducted (see Terminology E631).

| Requirement Level | DEMAND | A.5.2.2. Plug-in points at workstation |
|---|-----------------------|---|
| 9 | <input type="radio"/> | Each workplace requires up to 8 plug-in points (4 duplex outlets or an 8-outlet hard-wired power strip), with 2 or more dedicated for computer equipment and one of these on an isolated circuit. Plug-in power strips shall be prohibited by the building manager. |
| 8 | <input type="radio"/> | |
| 7 | <input type="radio"/> | Each workplace requires up to 6 plug-in points (3 duplex outlets), with 1 dedicated for computer equipment. A plug-in power strip can be used with the approval of the building manager. |
| 6 | <input type="radio"/> | |
| 5 | <input type="radio"/> | Each workplace requires up to 4 plug-in points (2 duplex outlets). Individuals have the flexibility to add a plug-in power strip for a small number of personal devices. |
| 4 | <input type="radio"/> | |
| 3 | <input type="radio"/> | Each workplace requires up to 2 plug-in points (1 duplex outlet). Individuals have the flexibility to add a plug-in power strip for a multifunction printer and small number of personal devices. |
| 2 | <input type="radio"/> | |
| 1 | <input type="radio"/> | Each workplace requires at least 1 plug-in point (a shared duplex outlet). A plug-in power strip can be used to supplement the number of plug-in points as necessary. |
| 0 | <input type="radio"/> | No requirement. |
| Select Relative Importance of scale = <input type="radio"/> Extremely Important <input type="radio"/> Important <input type="radio"/> Minor Importance | | |
| Select Threshold Level of Scale : First, indicate whether Threshold Level of scale is a <input type="radio"/> Minimum OR <input type="radio"/> Maximum OR, if there is NO Maximum or Minimum Threshold level, then select <input type="radio"/> None . | | |
| Then, (unless there is none) select the Threshold Level of this scale <input type="radio"/> 09 <input type="radio"/> 08 <input type="radio"/> 07 <input type="radio"/> 06 <input type="radio"/> 05 <input type="radio"/> 04 <input type="radio"/> 03 <input type="radio"/> 02 <input type="radio"/> 01 | | |
| If unable to choose scale level, select <input type="checkbox"/> OTHER and indicate reason below: | | |
| <input type="checkbox"/> Lack Information <input type="checkbox"/> Postpone decision <input type="checkbox"/> In-depth evaluation required <input type="checkbox"/> Not applicable <input type="checkbox"/> Refer question to someone else: Whom? e-mail or phone? | | |

FIG. 35 Demand Scale A.5.3 for Building Power A.5.2.2 for Plug-in Points at Workstation

<https://standards.iteh.ai/catalog/standards/sist/5483d6e3-c25a-4ba1-9218-4ed2d8e96cac/astm-e1663-22>

3.1.4 For standard definitions of additional terms applicable to this classification, see Terminology E631.

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

| Rating Level | SUPPLY | A.5.2.2. Plug-in points per workstation |
|--------------|-----------------------|--|
| 9 | <input type="radio"/> | There is the capacity and distribution to provide 8 plug-in points (4 duplex outlets or pre-wired power strip) per workplace. Of the circuits feeding the plug-in points, at least 2 are dedicated for computer equipment with standby power . Building policy prohibits the use of plug-in power strips. |
| 8 | <input type="radio"/> | |
| 7 | <input type="radio"/> | There is the capacity and distribution to provide 6 plug-in points (3 duplex outlets) per workplace. Of the circuits feeding the plug-in points, at least 1 is dedicated for computer equipment with standby power . |
| 6 | <input type="radio"/> | |
| 5 | <input type="radio"/> | There is the capacity and distribution to provide 4 plug-in points (2 duplex outlets) per workplace. |
| 4 | <input type="radio"/> | |
| 3 | <input type="radio"/> | There is the capacity and distribution to provide 2 plug-in points (1 duplex outlet) per workplace. |
| 2 | <input type="radio"/> | |
| 1 | <input type="radio"/> | There is the capacity and distribution to provide 1 plug-in points (a shared duplex outlet) per workplace. |
| 0 | <input type="radio"/> | 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. 36 Supply Scale A-5-3A.5.2.2 for Building Power Plug-in Points (continued) per Workstation

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *conduit capacity*—*capacity, n*—a conduit is considered full when the internal area occupied by cable has reached 50 % of the cross-sectional area of the conduit. Therefore, when additional future capacity is required, it must be part of the original 50 % permissible area.

3.2.2 *dedicated circuit*—*circuit, n*—an electric power supply circuit with its own circuit breaker and only one outlet box, so that its full capacity is dedicated to only one piece of electrical equipment.

3.2.2.1 Discussion—

Dedicated circuits often are installed with an orange plug receptacle, so they can easily be recognized. A dedicated circuit may or may not be connected to an uninterruptible power supply (UPS); in most buildings, an orange plug receptacle does not normally indicate UPS.

3.2.3 *entrance facility, n*—an entrance to a building for both public and private network service cables (including wireless), including the entrance point of the building and continuing to the entrance room.

3.2.3.1 Discussion—

Provides the point at which public and private cabling enters the building and proceeds to interface with the intrabuilding IT backbone cabling. Refer to ANSI/TIA-569-E for context related to definition.

3.2.4 *isolated circuit*—*circuit, n*—a dedicated electric power supply circuit with an isolated ground, separate from the ground of other circuits at its main panel.

3.2.5 *local area network (LAN)*—*network, LAN, n*—connecting computers in a single building or part of a building.

3.2.6 *telecommunications room, n*—a dedicated room that differs from equipment rooms and entrance facilities in that it is

A.5.3. Building power

Demand Scale in this Topic: Demand and Supply A.5.3 Reliability and quality of supply
Subject Matter: A building’s capacity to deliver reliable electrical power to workplaces.
Notes:

1. Requirements for future increases in power demand at the workplace related to officer computers no longer fit recent, current, and anticipated conditions, and have been dropped from the A.5.3 scales.
2. Descriptions of user requirements and electrical supply for power outlets in office areas have been deleted in favor of using A.5.2.2 Plug-in points per workstation to determine adequacy of building power.

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

| Requirement Level | DEMAND | A.5.3. Reliability and quality of supply |
|-------------------|-----------------------|---|
| 9 | <input type="radio"/> | Need a very reliable power supply, of good quality. System interruptions must not exceed 85 min per year. The building must have separate, identified circuits for electronic equipment throughout office areas protected from power quality disturbances. |
| 8 | <input type="radio"/> | |
| 7 | <input type="radio"/> | Need a mostly reliable power supply, mainly free of surges. System interruptions must not exceed 135 min per year. Power throughout office areas must be protected from the most common power quality disturbances harmful to typical office electronics. |
| 6 | <input type="radio"/> | |
| 5 | <input type="radio"/> | Need a reliable power supply, mainly free of surges. System interruptions must not exceed 200 min per year. Individual protection from power loss and quality disturbances can be provided as needed, for example, a plug-in UPS. |
| 4 | <input type="radio"/> | |
| 3 | <input type="radio"/> | Reliability and quality of power supply are not critical . System interruptions must not exceed 430 min per year. The power quality provided by the local utility is adequate for the electronic equipment used by building occupants. |
| 2 | <input type="radio"/> | |
| 1 | <input type="radio"/> | Reliability and quality of power supply have low importance . System interruptions can be the North American maximum of 840 min per year. |
| 0 | <input type="radio"/> | 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. 7 Demand Scale A.5.3 for Reliability and Quality of Supply

generally considered a floor-serving or tenant-serving (as opposed to building- or campus-serving) room that provides a connection point between backbone and horizontal cabling.

3.2.7 *uninterruptible power supply (UPS)*—*supplym, UPS, n*—a source of electrical power that is protected from dropping below standard voltage for even milliseconds, so that computer operation is effectively continuous.

3.2.7.1 Discussion—

A UPS is typically provided from batteries that are always connected to the circuit. A UPS typically provides power long enough to either shut down computers in an orderly way if outside power fails, or to start a standby generator. A UPS system of many large

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

| Rating Level | SUPPLY | A.5.3. Reliability and Quality of Supply |
|--------------|-----------------------|--|
| 9 | <input type="radio"/> | The local power provider's supply is very reliable and of very good quality , for example, system interruptions do not exceed 85 min per year, free of sags, swells, and harmonic distortion. The building has separate, identified circuits for electronic equipment throughout office areas with UPS, power conditioning, and filter equipment to protect against quality disturbances and brief interruptions from the local utility. |
| 8 | <input type="radio"/> | |
| 7 | <input type="radio"/> | The local power provider's supply is mostly reliable and of good quality , for example, system interruptions do not exceed 135 min per year, mainly free of sags, swells, and harmonic distortion. Power throughout office areas has UPS adequate to protect against the most common power quality disturbances harmful to typical office electronics. |
| 6 | <input type="radio"/> | |
| 5 | <input type="radio"/> | The local power provider's supply is reliable and of normal quality , for example, system interruptions do not exceed 200 min per year . The building has no infrastructure to protect against sags, swells, and harmonic distortion but the local utility meets industry norms. |
| 4 | <input type="radio"/> | |
| 3 | <input type="radio"/> | The local power provider's supply meets minimum industry standards for reliability and quality. System interruptions do not exceed 430 min per year . The building has no infrastructure to protect against interruptions, sags, swells, and harmonic distortion. |
| 2 | <input type="radio"/> | |
| 1 | <input type="radio"/> | The local power provider's supply sometimes fails to meet minimum industry standards for reliability and quality. System interruptions do not exceed the North American maximum of 840 min per year . The building has no infrastructure to protect against interruptions, sags, swells, and harmonic distortion. |
| 0 | <input type="radio"/> | No requirement. |

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. 48 Supply Scale for A.5.4 for Telecommunications Core A.5.3 for Reliability and Quality of Supply

batteries may be used to protect a group of electrical circuits. Small UPS systems, capable of protecting a single personal computer and its accessory equipment, weigh only a few kilos and that may be plugged into conventional electric power outlets at and small enough to fit in an office workstation.

4. Significance and Use

4.1 Each Facility Rating Scale (see Figs. 1-618) 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. Further information may be found in ISO 6240-ISO 19208.

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:

DEMAND A.5.4. Telecommunications Core

Demand Scales in this Topic:

- A.5.4.1 Horizontal distribution
- A.5.4.2 Risers
- A.5.4.3 Entrance Facility
- A.5.4.4 Services to site

Subject Matter: A building’s telecommunications infrastructure from entrance to the site to the workplace.

Notes:

1. A.5.4.1 *Horizontal distribution* focuses on access to horizontal distribution at the workplace. A.5.5 *Cable plant* focuses on the capacity of telecommunications infrastructure delivered to each workplace.
2. Requirements for the bandwidth and quality of telecommunications services are found in Topic A.13.5 of Classification E1694.
3. Scaled requirements for telecommunications rooms have been removed due to improved standardization since the original introduction of the Serviceability Tools & Methods. Maximum runs from telecommunications rooms to devices shall be approximately 300 ft (91 m).
4. Requirements for microwave and satellite antennas connecting to the telecommunications core are found in Topic A.13.4 of Classification E1694.

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

| Requirement Level | DEMAND | A.5.4.1. Horizontal Distribution |
|-------------------------|--------|---|
| 9 <input type="radio"/> | | Horizontal cable pathways can be delivered unseen to individual workplaces at any location on the floor without disruption to other workplaces during normal operations. Wi-Fi coverage is available throughout every floor plate. From 26 % to 50 % expansion of current capacity will be needed in the future. |
| 8 <input type="radio"/> | | |
| 7 <input type="radio"/> | | Horizontal cable pathways can be delivered unseen to any location on the floor with minor disruption to other workplaces or during downtime . Wi-Fi coverage is available at all workplaces and most support spaces. From 16 % to 25 % expansion of current capacity will be needed in the future. |
| 6 <input type="radio"/> | | |
| 5 <input type="radio"/> | | Horizontal cable pathways can be delivered to all workplaces on the floor with the regular use of visible whips or vertical poles. Rearrangement of cables can be accomplished without disruption during normal operations, for example, by scheduling rearrangements during downtime . Wi-Fi coverage is available at all workplaces and some support spaces. From 10 % to 15 % expansion of current capacity will be needed in the future. |
| 4 <input type="radio"/> | | |
| 3 <input type="radio"/> | | Horizontal cable pathways can be delivered to most workplaces with the frequent use of visible whips, poles, or cable molding. Rearrangement of cables is infrequent and can disrupt normal operations when needed. Wi-Fi coverage is available at all workplaces and a few support spaces. From 5 % to 9 % expansion of current capacity will be needed in the future. |
| 2 <input type="radio"/> | | |
| 1 <input type="radio"/> | | Minimal need for Wi-Fi or cabling for data or phone. No more than 4 % expansion of current capacity will be needed in the future. |
| 0 <input type="radio"/> | | 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**
 09 08 07 06 05 04 03 02 01

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. 9 Demand Scale A.5.4.1 for Horizontal Distribution

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

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

| Rating Level | SUPPLY | A.5.4.1. Horizontal Distribution |
|--------------|-----------------------|---|
| 9 | <input type="radio"/> | A mini-raised floor system enables cable pathways to be accessed and outlets installed in floor panels at any individual workplace during normal operations. Wi-Fi routers provide coverage throughout every floor plate. Unused installed cabling and unused pathway capacity totals about 26 % to 50 % of capacity. |
| 8 | <input type="radio"/> | |
| 7 | <input type="radio"/> | Cable pathways in the interstitial space deliver cables to all workplaces on the floor. The building's cable pathways coordinate with telecommunications connectors at the point of entry to the furniture system. Wi-Fi routers provide coverage to all workplaces and most support spaces. Unused installed cabling and unused pathway capacity totals about 16 % to 25 % of capacity. |
| 6 | <input type="radio"/> | |
| 5 | <input type="radio"/> | Cable pathways in the interstitial space enable cables to be delivered to all workplaces on the floor with the regular use of visible whips or vertical poles. Wi-Fi routers provide coverage to all workplaces and some support spaces. Unused installed cabling and unused pathway capacity totals about 10 % to 15 % of capacity. |
| 4 | <input type="radio"/> | |
| 3 | <input type="radio"/> | Cable pathways in the interstitial space enable cables to be delivered to most workplaces on the floor with the frequent use of visible whips, vertical poles, or cable molding. Wi-Fi routers provide coverage to all workplaces and a few support spaces. Unused installed cabling and unused pathway capacity totals about 5 % to 9 % of capacity. |
| 2 | <input type="radio"/> | |
| 1 | <input type="radio"/> | Cable pathways in the interstitial space enable one cable to be delivered to most workplaces on the floor with visible whips, vertical poles, or cable molding. Wi-Fi routers provide coverage to most workplaces and limited support spaces. Unused installed cabling and unused pathway capacity totals up to 4 % of capacity. |
| 0 | <input type="radio"/> | No requirement. |

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. 410 Supply Scale for A.5.4 for Telecommunications Core A.5.4.1 for Horizontal Distribution (continued)

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.