



Designation: E1666 – 95a (Reapproved 2018)

Standard Classification for Serviceability of an Office Facility for Work Outside Normal Hours or Conditions^{1,2}

This standard is issued under the fixed designation E1666; 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 covers pairs of scales for classifying an aspect of the serviceability of an office facility, that is, the capability of an office facility to meet certain possible requirements to be able to do normal office tasks outside scheduled hours.

1.2 Within that aspect of serviceability, each pair of scales, shown in Figs. 1-4, are for classifying one topic of serviceability. Each paragraph in an Occupant Requirement Scale (see Figs. 1-4) summarizes one level of serviceability on that topic, which occupants might require. The matching entry in the Facility Rating Scale (see Figs. 1-4) 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. 1-4) 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

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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.

serviceability score. That information is found in Practice E1334. The scales in this classification are complimentary to and compatible with Practice E1334. Each requires the other.

1.6 *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.*

2. Referenced Documents

2.1 ASTM Standards:³

E631 Terminology of Building Constructions

E1334 Practice for Rating the Serviceability of a Building or Building-Related Facility (Withdrawn 2013)⁴

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 Document:⁵

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. **E631**

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.

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. **E631**

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 The last approved version of this historical standard is referenced on www.astm.org.

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

A. 10. Work Outside Normal Hours or Conditions

Scale A.10.1. Operation outside normal hours

Occupant Requirement Scale	Facility Rating Scale
<p>9 <input type="checkbox"/> PREDICTING WORK OUTSIDE NORMAL HOURS: Occupants cannot predict, even an hour or two in advance, which parts of the facility will be used outside normal hours or shifts, and need operation of ventilation, temperature control, illumination and security systems.</p> <p>FREQUENCY OF WORK OUTSIDE NORMAL HOURS: This happens most days.</p> <p>ADVANCE NOTICE FOR ACTIVATION OF SERVICES: Either the occupants must be able to give only one hour advance notice, or they must be able to turn the systems on and off themselves.</p> <p>RESTRICTION OF SERVICE TO OCCUPIED AREA: For energy conservation and to reduce cost, after-hours services should only be turned on in the small portions of the facility that are actually occupied.</p>	<p>9 <input type="checkbox"/> Operating building: Ventilation, temperature control, illumination and security systems can be switched on or off, and adjusted, floor by floor or by parts of a floor. Control is either by the building operator (from a central control station), or an occupant group (from the office floor).</p> <p>Lead-time to change operating hours or conditions: One hour notice is required for change in hours for ventilation, temperature control, illumination or security systems, for specific zones.</p>
<p>7 <input type="checkbox"/> PREDICTING WORK OUTSIDE NORMAL HOURS: Occupants cannot predict, even half a day in advance, which parts of the facility will be used outside normal hours or shifts, and need operation of ventilation, temperature control, illumination and security systems.</p> <p>FREQUENCY OF WORK OUTSIDE NORMAL HOURS: This happens at least 90 days a year.</p> <p>ADVANCE NOTICE FOR ACTIVATION OF SERVICES: Either the occupants must be able to give only two hours advance notice, or they must be able to turn the systems on and off themselves.</p> <p>RESTRICTION OF SERVICE TO OCCUPIED AREA: For energy conservation and to reduce cost, after-hours services should only be turned on in the portions of the facility that are actually occupied.</p>	<p>7 <input type="checkbox"/> Operating building: Ventilation, temperature control, and security systems can be operated floor by floor, and lights can be switched on a single floor or part of a floor.</p> <p>Lead-time to change operating hours or conditions: Two hours notice is required for change in hours for ventilation, temperature control, illumination or security systems, for specific zones.</p>
<p>5 <input type="checkbox"/> PREDICTING WORK OUTSIDE NORMAL HOURS: Occupants sometimes use the facility for additional hours or shifts, into the evening or on weekends. The building must allow operation of ventilation, temperature control and illumination systems outside normal office hours.</p> <p>FREQUENCY OF WORK OUTSIDE NORMAL HOURS: This happens less than 90 days per year.</p> <p>ADVANCE NOTICE FOR ACTIVATION OF SERVICES: Required advance notice must not exceed half a day.</p> <p>RESTRICTION OF SERVICE TO OCCUPIED AREA: For energy conservation and to reduce cost, space of other occupant groups should not be affected.</p>	<p>5 <input type="checkbox"/> Operating building: Building can be operated floor by floor or in major sections such as wings, e.g. able to run heating and ventilating systems, and switch lights on separate floors or wings.</p> <p>Lead-time to change operating hours or conditions: Two to four hours notice is required to operate ventilation, temperature control, illumination or security systems outside normal hours.</p>

Scale A.10.1 continued on next page

FIG. 1 Scale A.10.1 for Operation Outside Normal Hours

A. 10. Work Outside Normal Hours or Conditions

Scale A.10.1. Operation outside normal hours (continued)

Occupant Requirement Scale	Facility Rating Scale
<p>3 <input type="checkbox"/> PREDICTING WORK OUTSIDE NORMAL HOURS: Operations seldom require use of the facility outside normal scheduled hours. (Normal may be a single shift or some other regular schedule). FREQUENCY OF WORK OUTSIDE NORMAL HOURS: Operations seldom require use of the facility outside normal scheduled hours. (Normal may be a single shift or some other regular schedule). ADVANCE NOTICE FOR ACTIVATION OF SERVICES: Required advance notice must not exceed one day to arrange operation of ventilation, temperature control, illumination and security systems.</p> <p>2 <input type="checkbox"/></p> <p>1 <input type="checkbox"/> PREDICTING WORK OUTSIDE NORMAL HOURS: Operations rarely require occupancy of the building outside normal hours, or operation on a shift basis and require the entire building. FREQUENCY OF WORK OUTSIDE NORMAL HOURS: Operations rarely require occupancy of the building outside normal hours, or operate on a shift basis and require the entire building. ADVANCE NOTICE FOR ACTIVATION OF SERVICES: Required to give building operator one weeks notice to change hours of operation, or indoor environment conditions.</p>	<p>3 <input type="checkbox"/> Operating building: Building can only be operated in major sections such as wings, e.g. able to run heating and ventilating systems on all floors on one side, and switch lights on separate floors or wings. Lead-time to change operating hours or conditions: One day notice is required to operate building systems outside normal hours.</p> <p>2 <input type="checkbox"/></p> <p>1 <input type="checkbox"/> Operating building: Only whole building can be operated, e.g. not able to run the heating, ventilating systems or lighting on separate floors or wings. Lead-time to change operating hours or conditions: Two or more days notice is required to operate building systems outside normal hours.</p>

<input type="checkbox"/> Exceptionally important.	<input type="checkbox"/> Important.	<input type="checkbox"/> Minor Importance.
Minimum Threshold level =		
<input type="checkbox"/> NA	<input type="checkbox"/> NR	<input type="checkbox"/> Zero <input type="checkbox"/> DP

NOTES Space for handwritten notes on Requirements or Ratings

FIG. 1 Scale A.10.1 for Operation Outside Normal Hours (continued)

A. 10. Work Outside Normal Hours or Conditions

Scale A.10.2. Support after-hours

Occupant Requirement Scale	Facility Rating Scale
<p>9 <input type="checkbox"/> FOOD SERVICE: Require very good food service outside day-shift hours. ACCESS TO STORAGE: Require access to off-floor storage outside normal hours. SECURITY OF STAFF LEAVING AFTER HOURS: Because many people arrive or leave alone outside day-shift hours, there must be very low risk, actual and perceived, of violence to individuals in the immediate area around the building and for gaining access to parked cars and public transportation.</p>	<p>9 <input type="checkbox"/> Food: The lunchroom has vending machines and a self-serve microwave. There is a choice of after-hours food services in the same building and nearby area. Access to storage: Off-floor storage is accessible to any occupant working outside normal hours, e.g. during shift work. Added physical protection: This is a very low risk locality. Excellent physical protection is provided after-hours, e.g. guard service, good lighting, and alarms on windows and doors and in parking structures. Few people feel vulnerable in the building or carpark after-hours.</p>
<p>7 <input type="checkbox"/> FOOD SERVICE: Require good food service outside day-shift hours, e.g. lunchroom with vending machines for use by night shift, or safe and convenient access to fast food outlets. ACCESS TO STORAGE: Access is required to off-floor storage during transition hours. SECURITY OF STAFF LEAVING AFTER HOURS: Because many people arrive or leave alone, outside day-shift hours, access to parked cars and public transportation must involve low risk of violence.</p>	<p>7 <input type="checkbox"/> Food: There is a choice of after-hours food services in the nearby area, or space and services (electrical and plumbing), or food vending machines and lunchrooms are available for after-hours food service. Access to storage: Off-floor storage is accessible during transition hours. Added physical protection: This is a low risk locality. Enhanced physical protection is provided after-hours, e.g. guard service, good lighting, and alarms on all ground floor windows and doors. Few people feel vulnerable in the building or carpark after-hours.</p>
<p>5 <input type="checkbox"/> FOOD SERVICE: Require some nearby food service after day-shift hours. ACCESS TO STORAGE: Rarely need access to storage after-hours. SECURITY OF STAFF LEAVING AFTER HOURS: Although most staff arrive or leave at the same time as others, some do arrive or leave alone, so risk of violence to individuals in car park area must be low.</p>	<p>5 <input type="checkbox"/> Food: There is a choice of after-hours food services in a nearby commercial area, but no food service is publicly available in the building, e.g. no vending machines or lunchroom. Access to storage: After-hours access to off-floor storage area is not possible, except by special arrangement. Added physical protection: This is a low to medium risk locality. Added physical protection is provided after-hours, e.g. guard service, adequate lighting, and alarms on all ground floor windows and doors. Some people feel vulnerable in the building or carpark after-hours.</p>
<p>3 <input type="checkbox"/> FOOD SERVICE: Minimal after-hours food service needed. ACCESS TO STORAGE: No access needed to storage after-hours. SECURITY OF STAFF LEAVING AFTER HOURS: Basic physical protection is required for personal safety after-hours, e.g. very few people work after-hours, and they arrive and leave together.</p>	<p>3 <input type="checkbox"/> Food: Limited after-hours food service is available in a nearby commercial area, but no food service is publicly available in the building, e.g. no vending machines or lunchroom. Access to storage: There is no after-hours access to off-floor storage area. Added physical protection: This is a medium to high risk locality. Some added physical protection can be provided after-hours, e.g. guard service or good lighting or alarms on doors and windows. People feel vulnerable in the building or carpark after-hours.</p>
	<p>2 <input type="checkbox"/></p>

Scale A.10.2. continued on next page

FIG. 2 Scale A.10.2 for Support After Hours

A.10. Work Outside Normal Hours or Conditions

Scale A.10.2. Support after-hours (continued)

Occupant Requirement Scale	
1	<input type="radio"/> FOOD SERVICE: No requirement for after-hours food service. <input type="radio"/> ACCESS TO STORAGE: No requirement for after-hours access to storage area. <input type="radio"/> SECURITY OF STAFF LEAVING AFTER HOURS: No requirement for after-hours added physical protection, e.g. no operational need to work during silent hours.

Facility Rating Scale	
1	<input type="radio"/> Food: No after-hours food service is available in any nearby commercial area, and no food service is publicly available in the building, e.g. no vending machines. <input type="radio"/> Access to storage: There is no after-hours access to off-floor storage area. <input type="radio"/> Added physical protection: This is a high risk locality. No added physical protection is provided after-hours, e.g. standard locks, no alarms, no guard service, few lights. People feel very vulnerable in the building or carpark after-hours.

<input type="checkbox"/> Exceptionally important.	<input type="checkbox"/> Important.	<input type="checkbox"/> Minor Importance.		
Minimum Threshold level =	<input type="checkbox"/> NA	<input type="checkbox"/> NR	<input type="checkbox"/> Zero	<input type="checkbox"/> DP

NOTES Space for handwritten notes on Requirements or Ratings

FIG. 2 Scale A.10.2 for Support After Hours (continued)

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A.10. Work Outside Normal Hours or Conditions

Scale A.10.3. Temporary loss of external services

Occupant Requirement Scale	Facility Rating Scale
<p>9 <input type="checkbox"/> REQUIRED STANDBY SERVICES: Operations require total continuity of most office functions, including telecommunications. Major standby facilities are required.</p>	<p>9 <input type="checkbox"/> Disruption to occupants: Occupants have never had to evacuate the building or interrupt normal hours of operation because of temporary loss of external services. <input type="checkbox"/> Continued occupant operations: Conditions inside building are temporarily tolerable to continue occupant operations during failure of any 2 building services from the list in Table A.10.A., for up to one day. Windows are openable allowing sufficient daylight to enable almost all occupants to read, or, standby power is sufficient for the continuation of essential occupant operations. <input type="checkbox"/> Standby during loss of external power: A standby power supply exists and is sufficient to maintain full office operations, with moderate inconvenience for all occupants. There is ample space in mechanical rooms and shafts to install additional standby equipment and cabling for occupants requiring added standby power. Added installation is possible at a low cost, with minimal effort and disruption. <input type="checkbox"/> Alternative telecommunications services: There is existing standby telecommunications in case the primary circuit or power is lost, e.g. an extra land line or microwave relay to an alternative telephone central office, or link via satellite, and standby power for telephone services.</p>
<p>7 <input type="checkbox"/> REQUIRED STANDBY SERVICES: Operations require standby power for critical office functions (specify). No present need for standby telecommunications, but may have a need in the future.</p>	<p>7 <input type="checkbox"/> Disruption to occupants: Occupants have never had to evacuate the building because of temporary loss of external services, but work has been interrupted in some non-critical functions within the past two years. <input type="checkbox"/> Continued occupant operations: Conditions inside building are temporarily tolerable to continue occupant operations during failure of any 2 building services from the list in Table A.10.A., for up to half a day. Windows are openable. <input type="checkbox"/> Standby during loss of external power: A standby power supply exists to supply partial electrical power for the whole building, and includes sufficient capacity to maintain critical office operations for one designated occupant group occupying less than one quarter of the building. There is sufficient space in mechanical rooms and shafts to install additional standby equipment and cabling for occupants requiring added standby power. Added installation is possible at moderate effort, cost and disruption. <input type="checkbox"/> Alternative telecommunications services: No standby telecommunications exist. The building has the capability to add alternative service at moderate effort and cost. Power-fail telephone jacks exist at every reception point.</p>
<p>5 <input type="checkbox"/> REQUIRED STANDBY SERVICES: No present need for standby power or telecommunications, but possibly a need in the future.</p>	<p>5 <input type="checkbox"/> Disruption to occupants: Occupants have never had to evacuate the building because of temporary loss of external services, but staff have been sent home within half a day of interruption of services, or told not to come in to work the next day. <input type="checkbox"/> Continued occupant operations: It is temporarily tolerable to continue occupant operations during failure of any one building service from the list in Table A.10.A., for up to half a day. Windows are not openable. During a daytime power outage, there is sufficient daylight to enable most occupants to read. <input type="checkbox"/> Standby during loss of external power: No standby power supply exists, only backup power for life-safety. There is limited space in mechanical rooms to install standby power equipment. Installation is possible at considerable effort, cost and disruption. <input type="checkbox"/> Alternative telecommunications services: No standby telecommunications exist. The building has the capability to add alternative service, but it is difficult and expensive.</p>
<p>4 <input type="checkbox"/></p>	<p>4 <input type="checkbox"/></p>

Scale A.10.3. continued on next page

FIG. 3 Scale A.10.3 for Temporary Loss of External Services