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An American National Standard

Standard Practice for Rating the Serviceability of a Building or Building-Related Facility[1,2]

This standard is issued under the fixed designation E 1334; 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.

INTRODUCTION

This is a definitive procedure for rating the serviceability of a specific building or building-related facility, that is, its capability to perform to any one of a range of levels of serviceability. This procedure takes into account factors such as location, mechanical systems, age, and building shape. It can also be used to compare how well different buildings or building-related facilities can meet any given set of occupant requirements, despite differences in any or all of those factors. Many parts of the procedure can also be used to rate the serviceability of a proposed building, that has been designed but not yet built, remodelled, or rehabilitated.

For each generic type or category of building or building-related facility, many topics of serviceability are rated. For each topic a rating scale is obtained, or prepared. A rating scale contains descriptions of combinations of features, such as materials and design, which may be found in a building or building-related facility. Each combination of features described in the scale is indicative of a certain level of serviceability on that topic, within a predetermined range.

For each topic, the combination of features found in the building, building-related facility, or design are compared with those described in the appropriate rating scale. The combination of features that most closely matches what is physically present in the building, building-related facility, or design, indicates the serviceability level for that topic.

In comparing ratings prepared for one building with ratings for another building, it is essential that the same set of rating scales be used for both buildings. Organizations may use a generic, standardized set of scales. An organization may also adapt the scales for specialized, internal application, or create its own, in which case, it forgoes the possibility of external comparison.

1. Scope

1.1 This practice covers a definitive procedure for rating the serviceability of a building or building-related facility, that is, for ascertaining its capability to perform the functions for which it is designed, used, or required to be used. A separate scale is used for each topic of serviceability. For each topic, a serviceability level is ascertained. Overall serviceability is expressed as a profile of levels (that is, not as a single number), and may be presented as a bar chart.

1.2 This practice is not intended to be used for regulatory purposes.

1.3 This practice can be used to rate the serviceability of a building or building-related facility that has been planned but not yet built, or which is about to be remodelled or rehabilitated, for example, for which single-line drawings and outline specifications have been prepared.

1.4 This practice specifies how to ascertain serviceability levels for a specific building, but not what would cause a building to be rated at a given level. That information is found in standard classifications for specific topics of serviceability that contain a set of requirement and rating scales. This practice and one or more such standard classifications are mutually dependent. Each requires the other. The format of such standard classifications, and of related information, is described in Appendix X1. An example of the scales written for such classifications is given in Appendix X3.

[1] This practice 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.

1.5 This practice does not cover building evaluation, building condition reports, nor diagnosis of performance; nor does it cover instruments, tools or quality of measurements for evaluation, condition reports, or diagnosis of performance.

1.6 This practice applies only to facilities that are building constructions, parts thereof, or building-related. While this practice may be useful in rating the serviceability of facilities that are not building constructions, such facilities are outside the scope of this practice.

1.7 The process for creating or adapting a set of classifications for a specific facility type or category is outside the scope of this practice.

1.8 This practice contains the following information:

2. Referenced Documents

2.1 *ASTM Standards:* [3]

E 631 Terminology of Building Constructions

E 1480 Terminology of Facility Management (Building-Related)

2.2 *ISO Document:*

ISO 6240 International Standard, Performance Standards in Building—Contents and Presentation[4]

3. Terminology

3.1 *Definitions*—For standard definitions of additional terms applicable to this practice, see Terminologies E 631 and E 1480.

3.1.1 *aspect*, *n—of serviceability*, a broad component of serviceability, comprising several related topics of serviceability.

3.1.1.1 *Discussion*—The serviceability of a building or building-related facility can be rated on each topic for which a scale has been prepared, but not for an aspect.

3.1.2 *building*, *n*—a shelter comprising a partially or totally enclosed space, erected by means of a planned process of forming and combining materials. Compare facility (E 631)

3.1.3 *facility*, *n*—a physical setting used to serve a specific purpose. Compare building (E 631)

3.1.3.1 *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.

3.1.4 *facility performance*—the behavior in service of a facility for a specified use. (E 631)

3.1.4.1 *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.

3.1.5 *facility serviceability*—capability of a facility to perform the function(s) for which it is designed, used, or required to be used. (E 631)

3.1.6 *facility serviceability profile*, *n*—a graphic representation, usually as a bar chart, of the level of serviceability for each topic of serviceability.

3.1.7 *feature*, *n—of a facility*, a physical element of a building, building component, building subsystem, unit of furnishing or equipment, or of a location, or of an aspect of design, arrangement, form or color, which helps or hinders the satisfaction of a requirement for serviceability.

3.1.7.1 *Discussion*—A feature may be a physical feature or design feature, or both. For example, a particular sound absorbency in a ceiling may be adequate in a carpeted space but may be inadequate in a space with a hard floor covering.

3.1.8 *combination of features*, *n—of a facility*, two or more features which, when present together in a facility, affect a level of serviceability of that facility.

3.1.9 *functionality*, *adj—of a building*, being suitable for a particular use or function. (E 1480)

3.1.10 *knowledgeable person*, *n*—an individual who has technical knowledge about the building or facility, for example, about occupant requirements, building design, mechanical systems, operation, and maintenance.

3.1.10.1 *Discussion*—In larger facilities, the senior person who is at a facility full time to manage its operation may be best qualified to participate, as knowledgeable person, in the process of rating that facility.

3.1.11 *level*, *n—of serviceability*, a number indicating the relative serviceability of a building for one topic on a predetermined range, for example, a range from 1 to 9.

3.1.12 *occupant*, *n—of a facility*, a group, department, agency or corporation, or other organization, or a part thereof, or an individual or individuals thereof, that is or will be occupying space in a particular facility.

[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.

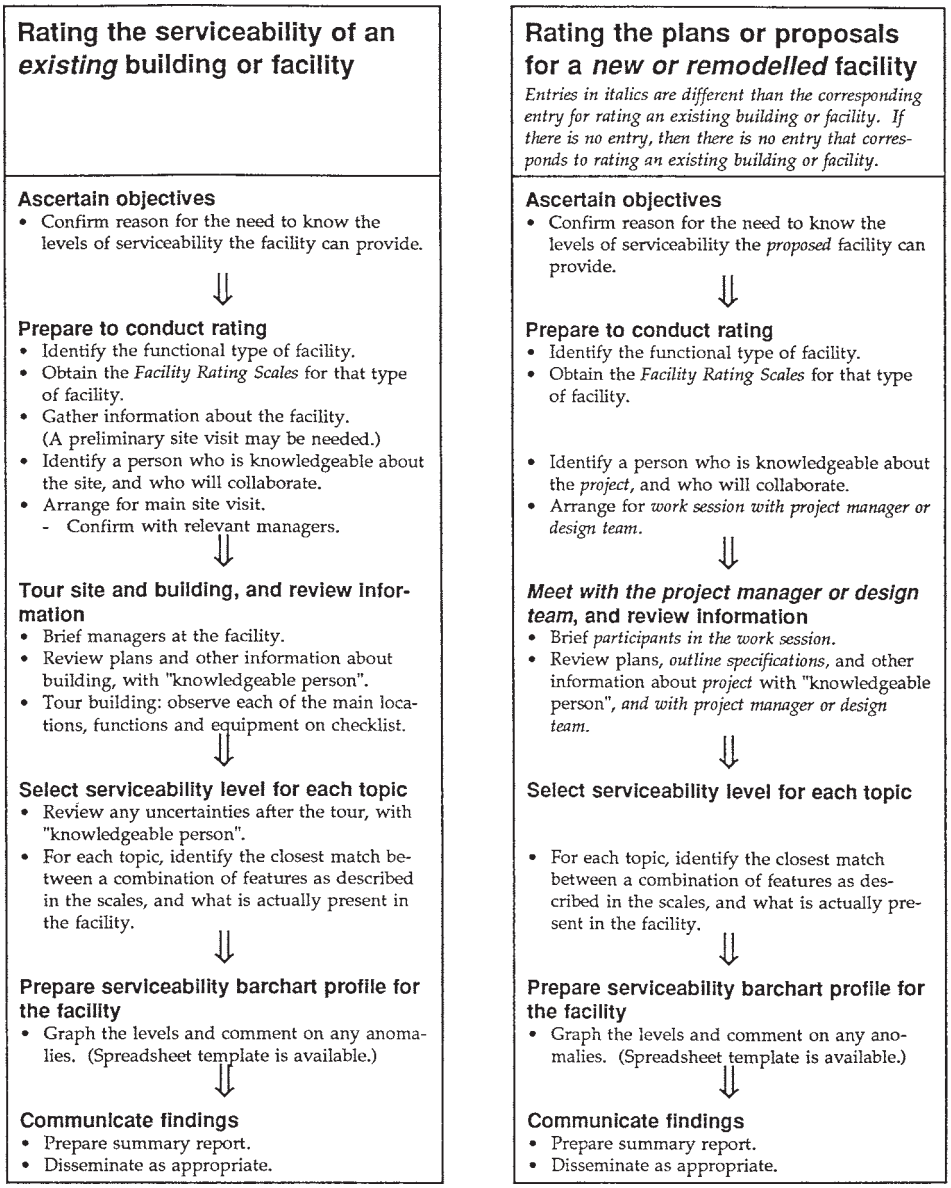


FIG. 1 Summary Diagram of Procedure for Rating the Serviceability of a Building or Building-Related Facility

3.1.12.1 *Discussion*—Persons who are authorized to be present only temporarily, or in special circumstances as those permitted to pass through during an emergency, are visitors.

3.1.13 *office*, *n*—a place, such as an open workspace, room, suite, or building, in which business, clerical, or professional activities are conducted.

3.1.14 *rater*, *n*—a person having primary responsibility for organizing and conducting the rating process for a building or building-related facility.

3.1.15 *rating process*, *n*—the process of determining the serviceability of a facility for a specified purpose. (E 1480)

3.1.16 *rating scale*, *n—for a topic of facility serviceability*, a set of descriptions of combinations of features, in which each combination has been selected to indicate a specific level of serviceability on a scale from the lowest to the highest level likely to be encountered. (E 1480)

3.1.17 *serviceability*—see *facility serviceability.*

3.1.18 *topic*, *n—of serviceability*, a part of the serviceability of a facility, for which a paired set of requirement and rating scales can be prepared.

3.1.18.1 *Discussion*—At any level of serviceability, a topic can be expressed in two ways: (*1*) a statement of requirement in the normal language of occupants or owners, and (*2*) a statement in technical performance language describing the combination of features which meet that requirement. Each statement is a translation of the other. Several related topics, taken together, typically comprise one aspect of serviceability.

3.2 *Description Of Term Specific to This Standard:*

3.2.1 In this practice, unless otherwise indicated, the term building is used to encompass, building, building-related facility, and proposed design for a building. The term facility is used to mean building-related facility. Use of the singular in this practice does not exclude the plural (and vice versa) when the sense allows.

4. Summary of Practice

4.1 This practice is summarized in Fig. 1, which provides a flow chart for rating the serviceability of a building for a specific purpose.

4.2 For rating its own buildings, an organization may choose among these options:

4.2.1 The organization may use an existing ASTM standard set of classifications for the type(s) of facility used by the organization.

4.2.2 It may prepare a set of classifications containing requirement and rating scales, and rules for adjustment, all consistent with its own internal standards for facilities.

NOTE 1—Serviceability ratings prepared with such internal standards would not be directly comparable to ratings prepared using an ASTM standard set of classifications.

4.2.3 It may support the development of a new set of standard classifications through the ASTM voluntary consensus process. The recommended format of such classifications is described in Appendix X1.

5. Significance and Use

5.1 This practice provides a means of rating the serviceability levels of any building.

5.2 This practice provides a method for comparing how well different buildings meet a particular set of requirements for serviceability, despite differences such as location, structure, mechanical systems, age, and building shape.

5.3 This practice is not affected by the complexity of the requirements for serviceability.

5.4 This practice provides a framework within which design professionals and managers can select the most cost-effective means to achieve a target level of serviceability.

5.5 This practice can be used by any individual with sufficient knowledge of buildings to identify the features that are present.

5.6 This practice can be applied to many functional types of buildings, provided that an appropriate set of classifications, including rating scales, has been established for each type (see Appendix X1).

5.7 This practice can be used to determine (*1*) the serviceability (present capability) of an existing building for uses other than its present use; (*2*) the serviceability (potential capability) of a building that has been planned but not yet built; and (*3*) the serviceability (potential capability) of a building for which a remodeling or rehabilitation has been planned.

5.8 This practice can be used to determine how well a building is capable of meeting some social objective and requirement, such as the impact of its location on the transportation needs of its present or future occupants, the need for water and energy conservation, the impact of the building systems, and materials on green building issues.

5.9 Use of this practice will help the user understand how various subsystems and materials used in a building interact to provide an overall level of serviceability, and how various combination of features interact to determine the overall serviceability of the building.

5.10 *Examples of Potential Applications*:

5.10.1 *Project Feasibility*, For example, when the owner of an older building considers remodelling it into apartments, or needs to rehabilitate it to bring it up to current market demand.

5.10.2 *Select Option Before Leasing*, For example, a corporate real estate and facility manager compares ratings of several office facilities before selecting which to lease.

5.10.3 *Compare Serviceability of Design Options*, For example, an architect rates various designs to select the most effective way of achieving design objectives within a fixed construction budget.

5.10.4 *Marketing*, For example, an owner rates a building for several potential uses to identify target markets that would find the building most serviceable in its present condition, or when remodelled for another use.

5.10.5 *Suitability of Existing or Proposed Use*, For example, a potential buyer assesses the suitability of a facility for multi-tenant office use.

5.10.6 *Cost Reduction*, For example, the owner rates various design options to select the most cost-effective means for achieving a target serviceability profile.

5.10.7 *Financial Analysis*, For example, the owner or potential buyer assesses likely benefits of a proposed remodel and conversion from a warehouse to a highly technical manufacturing building.

5.10.8 *Energy and Water Conservation*, The owner or potential buyer compares the likely relative levels of energy or water consumption of a facility, or the likely cost-effectiveness of options to reduce energy and water consumption, or improve indoor air quality.

5.11 This practice is not intended for, and is not suitable for, use for regulatory purposes nor for fire hazard assessment nor for fire risk assessment.

6. Procedure

6.1 This practice covers a process for setting the serviceability profile for a building. The steps to be followed are summarized in Fig. 1.

6.2 *Start the Process of Rating the Serviceability of an Existing Building*—The rating process is initiated when someone in authority requires a building rating. Rating the serviceability of a building is usually done by a single individual, the rater, who should have experience or training in the rating process, or at most by a team of two. The rater(s) will have primary responsibility for organizing the rating, going to the site, conducting the rating, deciding what levels of serviceability the building provides, and producing the serviceability rating as a bar chart profile. The person in authority will provide authorization and directives so the rater(s) will have the collaboration of a knowledgeable person, authorization to enter the building to be rated, and permission to enter occupant space as necessary.

6.2.1 *Ascertain the Objectives*—Confirm the reason for the need to know the levels of serviceability the building can provide. This is necessary to ensure that the correct set of serviceability classifications will be used. Knowing the objectives will also enable the rater(s) to make best use of limited time at the site.

6.2.2 *Prepare to Conduct the Rating*—A total of about one person-day, spread over several days or weeks, is typically

required for the rater to prepare for the rating and to make arrangements and appointments as needed.

6.2.2.1 Identify the correct functional type of building from the most common generic types such as those listed and described in Appendix X6.

6.2.2.2 Obtain a set of serviceability classifications for that type of building. Verify that a set of classifications has been prepared for that facility type by the organization requesting the rating, or has been standardized by ASTM. If no set of classifications exist, then it is necessary to create a set of relevant classifications. For information, the format of a classification is included in Appendix X1, and an example of a pair of serviceability scales for one topic is included in Appendix X3.

6.2.2.3 Gather information about the building. Arrange for reference information to be available during the visit to the site. This information typically includes a description of the building; its occupants and their functions; diagrammatic or simplified floorplans of the building; building condition report; access to construction drawings and specifications, and to any drawings or specifications revised due to modifications, repairs, remodel, and so forth; information about floor load capacity, roof maintenance and repair history, energy use, and date last reviewed; total population in the building; building statistics including rentable and usable floor area; and any special target(s) for compliance applicable to this building.

6.2.2.4 Identify a knowledgeable person. The rater will need the collaboration of a knowledgeable person, someone with extensive knowledge of the building and its systems and who will participate in the rating. Ensure that the knowledgeable person has a copy of the rating scales and reviews them prior to the site visit.

6.2.2.5 Arrange for main site visit. The rater and knowledgeable person agree on the date and time of the main site visit and for making any necessary arrangements. This schedule is confirmed with relevant managers. If the building is occupied, the rater should, before starting the actual rating of the building, brief the relevant top manager(s) responsible at the site about the rating process and ensure that the rating process will not be disruptive to the activity of the occupants.

6.2.3 *Tour Site and Building, and Review Information*:

6.2.3.1 Before entering the building, the rater does a quick scan of the exterior of the building, site conditions, and nearby amenities.

6.2.3.2 The rater enters the building and briefs the relevant manager(s) and knowledgeable person.

6.2.3.3 The rater reviews plans and other information about the building with the knowledgeable person. The rater receives a briefing from the knowledgeable person. The rater reviews plans and other documents as appropriate.

6.2.3.4 Tour the building. The knowledgeable person guides the rater through the building, visiting each of the main locations listed in the building checklist in Appendix X2. Any uncertainties are reviewed after the tour, with the knowledgeable person.

6.2.4 *Select Serviceability Level for Each Topic*—Different sets of scales may have different ranges of levels. This practice uses a range from 1 to 9 as an example of how to go about selecting the appropriate level of serviceability. See Appendix X3 for an actual example.

6.2.4.1 The rater, with the collaboration of the knowledgeable person, establishes the serviceability level for each topic. Typically this process will take up to 4 h. More time may be required depending on the experience of the rater, the complexity of the building, and availability of required information.

6.2.4.2 For each classification and group of scales, first read the introductory material to the group of scales printed on the first page or pages. Then turn to the first topic and read through the rating scale.

6.2.4.3 Read the text of the rating scale for Level 5. If each feature is a good description of what is physically present in the building, or of the building's capability then blacken the small circle at the beginning of each feature. If each feature has been selected within Level 5, then blacken the small square next to Number 5.

6.2.4.4 If the description of a feature or features that best match the building is at a level other than Level 5, blacken the small circles next to the features that apply. They may all be at the same level, in which case that level is the applicable level, or they may be a mix from different levels. If the features selected are all within one level, blacken the small square at that level, for example, 1, 3, 7, 9. If the features selected are a mix of levels, select and blacken an in-between level, for example, Level 2, 4, 6, or 8 by doing an arithmetic averaging.

6.2.4.5 If Level 5 is not the level of serviceability for the building, or if there is some special requirement or feature which makes a level particularly important, explain briefly in the "Notes" area at the bottom of that scale.

6.2.4.6 If it is hard to decide what level the building is capable of providing because some information is not available, or some assumptions have to be made, then briefly explain what information is missing or what assumptions were made by writing in the "Notes" area at the bottom of that scale.

6.2.5 *Prepare the Serviceability Bar Chart Profile for the Building*—To create a serviceability rating profile, the rater graphs the levels selected for each topic of serviceability onto a form by hand or electronically. This can be used to create a bar chart. Any anomalies that were found are recorded.

6.2.6 *Communicate Findings*:

6.2.6.1 Prepare a summary report. The rater prepares the report documents. The report normally includes the building rating scales for that type of building, the bar chart profile showing the level found for each topic of serviceability, with abbreviated notes, and a memorandum presenting the findings, including a summary of the key weaknesses and strengths of the building that have been uncovered in the rating process. Other elements may be included in the findings, such as recommendations for further in-depth evaluation of the building on specific topics, or estimates for cost-to-cure, and so forth.

6.2.6.2 Disseminate as appropriate. The rater transmits a copy of the report documents that include the facility serviceability profile with comments as necessary, to an appropriate distribution. A copy normally will go into the asset management file, located at the site. A copy will normally also be given

to the authority who requested the rating and to the person having portfolio or management responsibility for the asset.

6.3 *Rating the Plans or Proposals for a New Building or for a Remodel or Rehabilitation Project*:

6.3.1 Ascertain objectives. Confirm the reason for the need to know the levels of serviceability the building will provide. This is necessary so that the rater can ensure that the correct set of serviceability classifications will be used.

6.3.2 *Prepare to Conduct Rating*:

6.3.2.1 Identify the correct functional type of building from the most common generic types, such as those listed and described in Appendix X6.

6.3.2.2 Obtain a set of serviceability classifications for that type of building. See 6.2.2.2.

6.3.2.3 Identify a person who is knowledgeable about the project and who will participate in the rating.

6.3.2.4 Provide the knowledgeable person with a copy of the rating scales and brief the person about the rating process.

6.3.2.5 Arrange for a work session with the knowledgeable person and the project manager. Arrange for information about the plans, outline specifications, and so forth, to be available during the work session.

6.3.3 *Work Session With the Project Manager and the Knowledgeable Person, and Review of the Information*:

6.3.3.1 Brief participants in the work session.

6.3.3.2 Review plans, outline specifications, and other information about the project with the knowledgeable person, and with the project manager.

6.3.4 *Select Serviceability Level for Each Topic*:

6.3.4.1 For each topic, identify the closest match between a combination of features as described in the scales, and what is found in the plans or proposals. (Section 6.2.4 describes how to pick a rating level for each topic).

6.3.5 *Prepare Serviceability Profile for the Building*:

6.3.5.1 See 6.2.5

6.3.6 *Communicate Findings*:

6.3.6.1 Prepare a summary report. See 6.2.6.1

6.3.6.2 Disseminate as appropriate. See 6.2.6.2

7. Keywords

7.1 building; design (of building); facility; function; facility occupants; office; performance; rating; rating scale; remodel; rehabilitation; requirements; serviceability; use

APPENDIXES

(Nonmandatory Information)

X1. FORMAT OF A CLASSIFICATION FOR THE SERVICEABILITY OF A FACILITY TYPE OR CATEGORY

X1.1 Section Requirements

X1.1.1 Listed as follows are typical sections for a serviceability classification, in preferred sequence:

X1.1.1.1 *Title* (mandatory).

X1.1.1.2 *Designation* (mandatory).

X1.1.1.3 *Introduction*, including:

(1) Context for the classification and its role in the rating process.

(2) Relevant and related serviceability topics to consider.

(3) Reasons for selecting the topics, and related combinations of features, in this classification.

(4) Purpose(s) for which this classification is likely to be applicable.

(5) Identification of any required expertise for conducting the rating of serviceability of the building for specific purpose or use.

X1.1.1.4 *Scope* (mandatory).

X1.1.1.5 *Referenced Documents* (mandatory).

X1.1.1.6 *Terminology*.

X1.1.1.7 *Significance and Use* (mandatory).

X1.1.1.8 *Basis for Classification* (mandatory).

X1.1.1.9 *Serviceability Topics (mandatory)*—Provide a list of the topics that need to be included in order to obtain a valid match of ratings and requirements for the intended purpose.

X1.1.1.10 *Serviceability Scale(s) (mandatory)*—For each topic include a pair of matching scales. In one of the scales, requirements are stated in layman's language and described for each of several levels within a range from low to high. Each statement of requirement is matched by a statement of required serviceability at the same level in the rating scale, which describes in technical performance language the combinations of features which make the facility capable of delivering the required serviceability.

(1) Requirement Scale(s) (mandatory)—Include a requirement scale for each serviceability topic. Provide a statement of requirement appropriate for each level within the chosen range.

(2) Rating Scale(s) (mandatory)—Include a rating scale for each serviceability topic. Provide a statement of the combinations of features which best describe each level of each topic of serviceability. The rating scale for a topic of serviceability is a tool for assigning a rating level to the combinations of relevant features found in the building.

(3) Examples—For example, regarding an occupant requirement for appropriate visual conditions to perform a certain type of task, the matching rating scale would describe a series of typical features for providing illuminance, together with other features of a building that would affect illuminance. The description of the physical and design features for each topic would be brief, but would mention the role of daylighting, the types and placement of artificial light sources, range of reflectances of primary surfaces in the space, range of brightness of areas in the field of vision, typical and extreme levels of illumination at that task, and so on. For examples of the format of a pair of scales, see Appendix X3. For an example of presentation of matching requirement and rating profiles, see

Appendix X4. For an example of a list of aspects and related topics, see Appendix X5.

(4) Discussion—The functional or technical basis for the pair of scales for a topic may be presented in a Discussion section for that topic, providing guidance on how to interpret the requirement statements or the descriptions of features. For instance, for each typical combination of features, the text may explain the advantages or disadvantages, or both, of each feature, and how it helps or hinders meeting the requirement.

(5) Standard Recommended Levels—The predetermined set of levels to be assigned must range from high to low, with a minimum of 5 levels. A typical range is from 1 to 9. The lowest level of serviceability which is likely to be found in typical practice is a Level 1 and the highest level of serviceability that is likely to be found is a Level 9. This does not mean worst to best. For example, some occupant groups need high security and low visibility, while some other groups need the reverse, low or unobtrusive security and high visibility.

NOTE X1.1—An organization may develop classifications using combinations of features typically found in that organization's facilities, each with typical serviceability levels established by the organization. The serviceability levels may be standardized, for example, through ASTM's voluntary consensus process, which is desirable because it permits levels established by one organization or by one individual to be compared directly against levels established by others, or published in benchmark reports.

X1.1.1.11 *Reference Literature*.

X1.1.1.12 *Annexes and Appendixes*.

X1.1.1.13 *Interaction Among Building Elements, Components, and Subsystems*—Provide, in an appendix, a statement regarding the interactions among the major elements, components, and subsystems of a building, as they affect the requirements being rated, or that they have no effect. Components include:

(1) Site and environmental context.

(2) Main structural system for the building, which may also be the building envelope, as in a masonry building, or may be separate, as in a building with a structural steel skeleton.

(3) Building envelope, including thermal envelope and moisture barriers.

(4) Servicing, including systems and equipment for heating, ventilation, air conditioning, plumbing, electrical power, illumination, vertical and horizontal movement (elevators, escalators), waste systems and sewers, and so forth.

(5) Interior, including nonstructural walls and ceilings, finish materials, screen systems, furnishings, and equipment, including all items placed in a building by its users.

(6) Occupants, including all people, flora, and fauna.

(7) Interactions between or among any of the preceding.

X1.2 Changes in a Classification

X1.2.1 A classification for matching occupant requirements to the serviceability of a facility is likely to need editing or revision over time as additional knowledge is gained, and specific requirements, and their related rating scales are added, deleted, or edited. This is analogous to a terminology which evolves over time as terms are added or deleted, and individual definitions are revised.

X2. EXAMPLE: CHECKLIST FOR THE TOUR OF A BUILDING

X2.1 The checklist given in Fig. X2.1 is for the convenience of the knowledgeable person and the rater when planning and conducting the building tour. Cover at least part of the checklist under each of the main headings, but do not try to cover every single item; that would take too long. Select while keeping in mind the purpose of the rating and the features of the particular building being rated. Also in any particular building being rated, some of the features and facilities listed may not be present at all. If the knowledgeable person lacks information about features not observed, then note on the scales that a particular topic could not be rated because of lack of information.

X2.2 This list is not a complete tabulation of all the features likely to be identified in the serviceability scales; however, if an observant person sights all the features mentioned in this list, then almost every feature mentioned in the scales will also have been visited. This example is for a tour of an office building.

X2.3 The features are not listed in rank order of importance. Instead, they are sequenced in groups, for convenience in planning a building tour. However, because every building has its own unique layout and arrangement of support and technical spaces, there is no one best sequence for the tour.

Exterior
- Nearest public transit routes and stops.
- Adjacent buildings and sites.
- Distances to property lines.
- Landscaping and parking.
- Entries for trucks and for car parking.
- Passenger drop-off.
- Sidewalks and paths.
- Exterior of building (facades, windows, cleanliness, and needs for repair, and so forth.)
- Sealants and likely points of leakage.
- Commercial facilities (shops, and so forth.)
- Signage and wayfinding to building and entrance.
- Air intakes, exhausts, and other equipment for HVAC.
- Roof surface.

Entry and Public Areas
- Entrance(s) and entrance doors.
- Public lobby.
- Information desk, guard desk, or control point.
- Retail/commercial facilities.
- Directory board.
- Elevator lobby.
- Wayfinding and signage.
- Security.

Building Service and Support Areas (at Grade and Basement)
- Loading dock and bays, and route to elevators.
- Holding areas near loading dock.
- Mail room or space for handling mail.
- Security room.
- Telephone cable entry point(s), and patch room.
- Basement car park.
- Basement mechanical equipment for HVAC.
- Basement storage areas for tenants.
- Basement storage and shops for building.
- Janitor and cleaning facilities.

Office Floors
- Typical workplaces (enclosed offices, open plan workstations, support spaces, and so forth.)
- Office workplaces near each main facade (and note if any “traces” indicating thermal problems, for example, people wearing sweaters; streamers of paper at air vents.)
- Meeting rooms of various sizes.
- Training rooms.
- Observe use of ceiling space at one or two locations.
- Cables for data and voice to individual workplaces.
- Public lobbies and corridors.
- Separation of tenant reception from tenant operational zone.
- Toilets/washrooms.

Mechanical and Support Spaces On-Floor
- On-floor mechanical rooms.
- Rooms and closets for telephone and data cables.
- Rooms and closets for electrical power.
- Janitorial and cleaning facilities.

Main Mechanical Spaces
- Equipment for HVAC.
- Building control system, displays, and control equipment, including computerized systems.
- Operations and management spaces: office; stores; shops, and so forth.
- Manuals and records.

Special Facilities
- Computer center.
- Food service.
- Conference center.
- Teleconferencing facilities.
- Auditorium.
- Areas with capacity for heavy floor loads.
- Any other significant special facilities or features.

FIG. X2.1 Checklist for the Tour of a Building

X3. EXAMPLE: PART OF A PAIR OF SERVICEABILITY SCALES FOR ONE TOPIC

X3.1 See Fig. X3.1

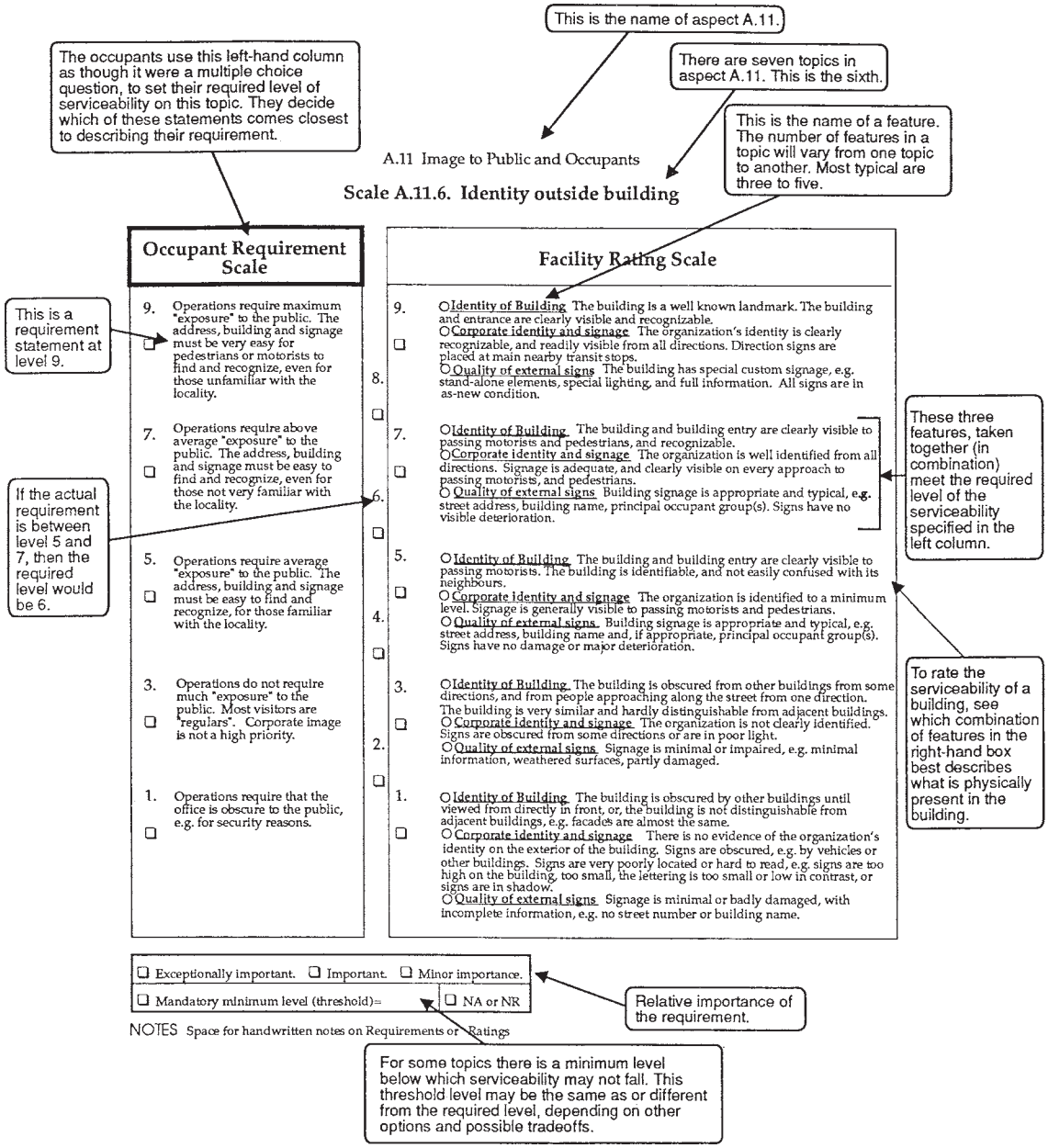


FIG. X3.1 Example of Serviceability Scales

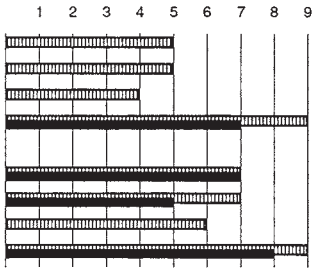
X4. EXAMPLE: PART OF A PAIR OF PROFILES PRESENTED AS BAR CHARTS

X4.1 See Fig. X4.1

Requirement Threshold Rating *Importance*

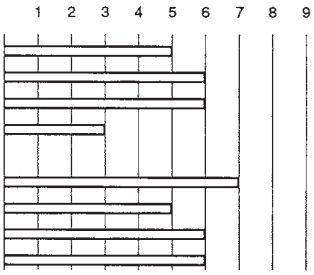
The first example shows only excerpts from the requirements profile (demand). The second example shows only excerpts from the serviceability rating (supply). In the third example, the rating is superimposed on the requirement, to see how well the facility meets that requirement.

				Part of A.11 IMAGE TO PUBLIC AND OCCUPANTS
5			*2*	*Exterior appearance A.11.1*
5			*5*	Public lobby of building A.11.2
4			*5*	Appearance and spaciousness of spaces A.11.4
9	7		*8*	**Identity outside building A.11.6**
				Part of B.2. MANAGEABILITY
7	7		*8*	**Reliability of external supply B.2.1**
7	5		*5*	Ease of operation B.2.3
6			*2*	*Ease of maintenance B.2.4*
9	8		*8*	**Energy consumption B.2.7**



1. Part of required levels of functionality, with minimum threshold levels in black

			Part of A.11 IMAGE TO PUBLIC AND OCCUPANTS
	5		Exterior appearance A.11.1
	6		Public lobby of building A.11.2
	6		Appearance and spaciousness of spaces A.11.4
	3		Identity outside building A.11.6
			Part of B.2. MANAGEABILITY
	7		Reliability of external supply B.2.1
	5		Ease of operation B.2.3
	6		Ease of maintenance B.2.4
	6		Energy consumption B.2.7



2. Part of a serviceability rating of a facility.

				Part of A.11 IMAGE TO PUBLIC AND OCCUPANTS
5		5	*2*	*Exterior appearance A.11.1*
5		6	*5*	Public lobby of building A.11.2
4		6	*5*	Appearance and spaciousness of spaces A.11.4
9	7	3	*8*	**Identity outside building A.11.6**
				Part of B.2. MANAGEABILITY
7	7	7	*8*	**Reliability of external supply B.2.1**
7	5	5	*5*	Ease of operation B.2.3
6		6	*2*	*Ease of maintenance B.2.4*
9	8	6	*8*	**Energy consumption B.2.7**

3. Comparing the facility rating to the required functionality.

For text above, relative importance is indicated as follows:
Extremely important=7-9 Important=4-6 *Minor importance=1-3*

Legend for the bar charts:
Requirement = striped. Threshold = black Rating = white

FIG. X4.1 Example: Part of a Rating Profile Presented as a Bar Chart and Compared to a Requirement Profile

X5. EXAMPLE: TITLES OF SERVICEABILITY ASPECTS, TOPICS, AND FEATURES

X5.1 See Fig. X5.1

A.2 **Meetings and Group Effectiveness** = *an aspect*

A.2.1 **Meeting and conference rooms** = *a topic*
1. Mix, quantity = *a feature*
2. Floorplate and access
3. Acoustic control
4. Environment
5. Fixtures and fixed equipment

A.2.2 **Informal meetings and interaction**
1. Internal circulation node(s)
2. Entrance node(s)
3. Pause area(s)
4. Food and public facilities

A.2.3 **Group layout and territory**
1. Layout for efficient group work
2. Layout for various group sizes
3. Environmental control
4. Separation
5. Legibility of boundaries and territory

A.2.4 **Group workrooms**
1. Group or project workroom(s)
2. Acoustic control for information security
3. Environment
4. Fixtures and fixed equipment
5. Access from individual workstations

A.5 **Typical Office Information Technology**

A.5.1 **Office computers and related equipment**
1. Zones for high density of equipment
2. HVAC services
3. Illumination
4. Acoustic control

A.5.2 **Power at workplace**
1. Power distribution
2. Plug-in points per workplace
3. Uninterruptible power supply (UPS)

A.5.3 **Building power**
1. Present capacity
2. Potential increase
3. Reliability and quality of supply

A.5.4 **Data and telephone systems**
1. Distribution
2. Future capacity
3. Shielding of data cables
4. Local area network
5. Rooms for data and telephone connections

A.5.5 **Cable plant**
1. Unshielded twisted pair
2. Distance to cable connection rooms
3. Coaxial cable
4. Fibre optic cable

A.5.6. **Cooling**
1. Increased capacity

A.6 **Change and Churn by Occupants**

A.6.1 **Disruption due to physical change**
1. Disruption during relocation
2. Disruption to neighbouring occupants

A.6.2 **Illumination, HVAC and sprinklers**
1. Relocating light fixtures
2. Relocating air diffusers
3. Special air exhaust
4. Relocating sprinkler heads

A.6.3 **Minor changes to layout**
1. Changes in workplace layouts
2. Consequences of minor changes

A.6.4 **Partition wall relocations**
1. Floor to ceiling partition walls
2. Extent of salvage

A.6.5 **Lead time for facilities group**
1. Planning major realignment
2. Ordering and installation

FIG. X5.1 Titles of Serviceability Aspects, Topics, and Features

X6. EXAMPLE: LIST OF COMMON GENERIC TYPES OF FACILITY

X6.1 In office buildings the most common generic types of facility are:

X6.1.1 *Basic general*, such as some headquarters, regional offices, and head offices of strategic business units (SBUs).

X6.1.2 *Much public contact*, such as sales offices, client, or customer service offices, and government and corporate employment centers.

X6.1.3 *Shared conference and training*, such as the conference centers in some of the largest corporate and government buildings.

X6.1.4 *Basic secure*, such as regional offices where checks are written or the offices where petroleum or mining geologists analyze exploration data, or where people work on product development or other confidential or private information.

X6.1.5 *Secure and prestige*, such as offices of some law firms, special government commissions and some offices of the Finance or Treasury Department, and so forth.

X6.1.6 *Quasi-judicial and courts*, such as facilities for legislative hearings, commissions that hold public hearings, Federal Courts, Tax Courts, and Citizenship Courts.

X6.2 In addition to those six types of facility which are normally thought of as offices, many large office organizations also need *production and warehouse*, or storage and warehouse, or food service, and some have all three. Some, such as banks, and even a few government departments, also use commercial retail.

X6.2.1 *Production and warehouse*, such as the portion of a regional office where the machines for check writing and envelope stuffing are installed, and a portion of bulk mailings are prepared and mailed: and the storage areas of paper, envelopes, and other materials required for each of these facilities.

X6.2.2 *Storage and warehouse*, where office supplies, surplus furniture, and other property is stored pending use or disposition.

X6.2.3 *Food and beverage service*, such as cafeterias and restaurants, and their kitchens and refrigerated storage.

X6.2.4 *Commercial retail*, such as the shops on the ground floor of an office building, whether they open to the street, to the building lobby, or to an interior commercial shopping mall.