



Society for Environmental
Graphic Design

The Americans with Disabilities Act White Paper

*SEGD's Clarification and Interpretation
of the ADA Signage Requirements*

Second Edition, April 1993

SEGD

The Society for Environmental Graphic Design (SEGD) is an international, professional, non-profit design organization founded in 1973 to promote public awareness and professional development of environmental graphic design. SEG D is a committed group of over 700 members involved in three-dimensional visual communication design. Members' work ranges from large-scale sign systems to exhibit design to public art programs.

Environmental graphic design is the planning, design and execution of graphic elements in the built and natural environments. Environmental graphics include communication systems that identify, direct and inform, and architectural graphics that visually enhance the environment.

The Society's national and international membership from the United States, Canada, Europe, Asia, Australia and the Middle East is drawn from the fields of environmental graphic design, architecture, interior design, industrial design, landscape architecture, education, research and manufacturing.

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One Story Street
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Telephone 617/868-3381
Fax 617/868-3591

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2	Preamble
2	Introduction
4	Background
4	The Published Legislation and Guidelines
4	The Five ADA Titles
5	Privately-Owned Facilities Affected by Title III
6	State and Local Governmental Facilities
6	Exempt Facilities
7	Standards of Compliance and Effective Dates
8	The ADA Guidelines for Signage
8	Sign Categories
8	<i>Permanent Room Designation Signs</i>
8	<i>Overhead Signs</i>
9	<i>Directional and Informational Signs</i>
9	<i>Temporary Information Signs</i>
9	Exterior Signs
9	Protruding Objects
9	Identification of Accessible Facilities and Features
9	<i>Entrances, Rest Rooms and Bathing Facilities</i>
9	<i>Parking Areas</i>
9	<i>Assembly Areas</i>
10	<i>Areas of Rescue Assistance</i>
10	<i>Public Telephones</i>
10	<i>Assistive Listening Systems</i>
11	SEGD's Interpretations of the ADA Guidelines
11	Sans Serif
11	Simple Serif
11	Letterform Body and Stroke Width-to-Height Ratio
14	Viewing Distance
15	Permanent Identification of Rooms and Spaces
17	'Architectural' Signs
17	Location of Accessible Parking Signs
17	Finishes
18	Contrast
18	Illumination
18	Mounting Locations
19	<i>Glass Panels Adjacent to Latch Side of Door</i>
19	<i>Doors with No Adjacent Wall Surface of the Latch Side</i>
19	<i>Doors with No Adjacent Wall Surface Clear of Swing</i>
19	<i>Combinations of the Above</i>
19	<i>Oversize Signs</i>
19	Signs Identifying Non-Accessible Spaces or Systems
21	Other Important Information
21	Typographic Problems to be Avoided
21	Braille
22	Implementation of Title III
22	<i>Enforcement</i>
22	<i>Legal Remedies</i>
22	<i>Good Faith Efforts</i>
22	<i>Recommended Priorities</i>
23	<i>Alternatives to Barrier Removal</i>
23	<i>Continuing Obligation to Remove Barriers</i>
23	<i>Tax Deduction and Credits</i>
24	Credits
24	SEGD ADA Resources

Preamble

This White Paper has been developed by the Society for Environmental Graphic Design (SEGD) in response to the Americans with Disabilities Act (ADA) and its supporting regulations and guidelines. It is intended to assist designers from all disciplines, their clients, sign manufacturers, building owners and facility managers by providing clarification and interpretation of the regulations with regard to signage requirements.

The White Paper includes input from the ATBCB and many other organizations. It has been refined with information resulting from a series of day-long education seminars, which featured representatives from professional, government and industry organizations. Organized by SEG D, the seminars were held in April 1992 in Washington, Chicago and San Francisco. Although SEG D has made every effort to be thorough in the preparation of this document, the ADA is a complex law of uncertain application. This White Paper is an interpretation only and should not be construed to be legal advice. SEG D assumes no liability, express or implied, for any errors or omissions contained herein.

SEGD will continue to monitor interpretation of the ADA requirements, and will issue information as clarifications emerge. In the meantime, environmental graphic designers and their clients should proceed with caution, and seek the advice of an attorney whenever there is a compliance issue related to the ADA regulations.

Introduction

The Americans with Disabilities Act was signed into Law in July 1990. This historic act was designed to provide equal access and opportunities to all Americans with disabilities—a constituency which, in the context of the ADA's broad definition, presently accounts for approximately 20% of the population, and is expected to grow to be in excess of 50% of the population by the year 2000.

The act made part of its conditions that regulations would be developed to support it within the following year. Most professional design organizations did not become aware of this fact until a draft of the proposed supporting regulations appeared late in 1990. At that time, the SEG D and groups representing many other organizations and user groups, such as the American Hospitals Association, attempted to “set aside” those aspects of the regulations that dealt with signage until a thorough study could be made of the real needs of people with disabilities.

While the intention of the law was applauded by all and is clearly an important achievement for all people with disabilities, the resulting regulations fail to respond adequately in some areas to the needs of the ADA's target audience. Those parts of the regulations that apply to signage do not display an adequate appreciation of wayfinding and communication principles, character and symbol recognition, and typography.

For instance, permanent room designations are required to be tactile and in all caps. This is potentially helpful to the very small number of totally blind people who can read tactile letters and cannot read Braille. However, because of the reduced readability per inch of line length of an all-caps message—particularly when spaced correctly—and the fact that we read most upper and lower case sign messages as a single ‘footprint’ rather than as individual characters (which is not possible with an all-caps inscription), it is detrimental to the vision-impaired constituency. This is a target group whose numbers are extensive and growing at a rapid rate as the average age of the population becomes older.

Comparable legibility of a 5/8" all caps message and a 3/4" upper and lower case message. Note improved 'footprint' legibility and reduced line length of preferred lower example. In other aspects, both samples are approximately equal in legibility under the same conditions of distance and contrast.

LEGIBILITY

Legibility

SEGD believes that there are many potential strategies that could be explored and their effectiveness evaluated, which would hopefully result in benefits for all groups of users. Such strategies could include the investigation of complete wayfinding and information systems and might include tactile maps, auditory information stations, 'talking' signs or the inclusion of small-scale, all caps tactile information as part of the Braille strips, to assist those who are visually impaired, as well as a conventional message for the sighted. A well-developed information system utilizing pictograms, for example, would benefit not only the many millions of Americans with mental retardation and those who have traumatic brain injury, Alzheimer's disease or learning disabilities, but also the even greater number of Americans who are functionally illiterate. Such a system would ease wayfinding for all people.

The prime example of a parallel situation in which all groups benefit is the creation of sidewalk curb cuts, which not only make the streets accessible to those who use wheelchairs, but also assist the entire population, particularly the elderly. There is equally no doubt that, if the regulations were developed to require a complete and effective information system which worked well, it would benefit all users.

While some of the requirements of the final regulations, which are described below in detail, are quite clear, many aspects are open to considerable interpretation. In order to assist in clarifying some of these issues to the benefit of all user groups, SEG D has developed this document. In making these interpretations where the requirements are vague or confusing, we have attempted to follow the intent of the law and apply to it the benefit of our professional expertise.

It must be understood, however, that while we believe the following interpretations are both in accordance with the ADA regulations, and furthermore, that they interpret the law in the light of an understanding of the issues involved, this document is not an official clarification. It is up to each individual to satisfy themselves, by reading the published legislation and guidelines, that they are in effective compliance. An attorney should be consulted where advice is needed, particularly with regard to legal aspects of the act.

Background

This section summarizes the regulations that have been issued. While it focuses on those aspects that specifically apply to signage, by necessity it refers to many closely related issues, such as barrier removal, which also form part of the act.

The Published Legislation and Guidelines

The Americans with Disabilities Act (ADA) was signed into law in July 1990. The guidelines supporting the law were issued in July 1991 by the Architectural



Transportation Barriers Compliance Board (ATBCB). The ATBCB also provides assistance and will answer questions regarding the regulations at (800) USA ABLE, (202) 272-5434 and (202) 272-5447. The intent of the law is to broadly protect the civil rights of disabled individuals, prohibiting discrimination in employment and access to goods and services.

The ADA legislation and guidelines (ADAAG) have been published in the Department of Justice Federal Register, dated Friday, July 26, 1991, 28 CFR Part 36, Title III, and may be obtained from the office on Americans with Disabilities Act at (202) 514-0301 (Voice) or (202) 514-0381 (TDD). The material is also available on electronic bulletin board at (202) 514-6193.

In the following summary, specific sections of the regulations are referred to by the regulation clause numbers from the Department of Justice Document, indicated in parentheses.

The Five ADA Titles:

Title I: Employment

Prohibits companies with 15 or more employees from discriminating against qualified disabled job applicants or workers.

Title II: Public Services and Transportation

Prohibits state and local governments from discriminating against the disabled.

Title III: Public Accommodations and Commercial Facilities

Prohibits private facilities from discriminating against the disabled. It incorporates accessibility guidelines for privately owned facilities.

Title IV: Telecommunications

Requires telephone companies to provide special services for the hearing and/or speech impaired.

Title V: Miscellaneous

Contains miscellaneous legal and implementation details.

Privately Owned Facilities Affected By Title III

Public Accommodations (36.104)

Public accommodations are defined as facilities operated by a private entity, whose operation affects commerce (i.e. provides goods and services to the public) and falls within the following twelve categories mentioned in the act:

1. An inn, motel or other place of lodging, except for an establishment located in a building containing not more than five rooms for rent or hire that is also occupied by the proprietor as a residence.
2. A restaurant, bar or other establishment serving food and drink.
3. A motion picture house, theater, concert hall or other place of public gathering.
4. An auditorium, convention center, lecture hall or other place of public gathering.
5. A bakery, grocery store, clothing store, hardware store, shopping or other sales or rental establishment.
6. A laundromat, dry cleaner, bank, barber shop, beauty shop, travel service, shoe repair service, funeral parlor, gas station, office of an accountant or lawyer, pharmacy, insurance office, professional office of a health care provider, hospital or other service establishment.
7. A terminal, depot or other station used for public transportation.
8. A museum, library, gallery or other place of public display or collection.
9. A park, zoo, amusement park or other place of recreation.
10. A nursery, elementary, secondary, undergraduate or postgraduate private school or place of education.
11. A day care center, senior citizens center, homeless shelter, food bank, adoption agency or other social service establishment.
12. A gymnasium, health spa, bowling alley, golf course or other place of exercise or recreation.

Commercial Facilities (36.104)

Commercial facilities are defined as privately owned, non-residential establishments whose operation affects commerce. There are no specific examples mentioned in the act. We interpret that examples would include facilities primarily for the use of employees and are not generally open to the public.

1. Factories.
2. Warehouses.
3. Office buildings, to the extent they are used only by employees and are not generally open to the public. This may include corporate office buildings or entire corporate office floors, but would not typically include multi-tenant office floors such as professional offices. The interiors of such office suites may, however, be classified as commercial facilities.

Mixed Use Facilities

Commercial facilities often have areas classified as public accommodations. For example: a corporate office building that is only accessible to its employees but con-

tains a cafeteria which is open to the public. Not only the cafeteria, but the building lobby, the hall leading from the lobby to the cafeteria and the path from accessible parking spaces to the lobby would be considered a public accommodation under the concept of “accessible path”.

Examination Facilities Offering Courses (36.309)

Any private entity offering examinations or courses relating to applications, licensing, certification or credentials for secondary or post-secondary education, professional or trade purposes shall offer them in an accessible place and manner or offer alternative arrangements for individuals with disabilities.

State and Local Government Facilities (Title II)

State and local government facilities are not covered by Title III of the ADA, Public Accommodations. That does not mean they are exempt from the ADA. Title II, Public Services and Transportation, prohibits state and local governments from discriminating against any individual with disabilities in a program, service, or activity. All programs and activities of all state and local governments are covered, regardless of whether or not they receive federal funds.

Title II is a combination of laws already in effect in other parts of the ADA. It also mandates certain ADA-related requirements unique to state and local governments including the need to conduct self-evaluations, name ADA coordinators, develop transition plans for structural changes, and take steps to ensure accessible communications. We would propose that signage be considered part of an accessible communications plan.

Subpart E of the Justice Department’s Title II regulations (§35.160) requires public entities to ensure that communication with applicants, program participants and members of the public with disabilities is as effective as communication as that with the non-disabled public. However, they are not required to take any action that would fundamentally alter their programs and services and create undue financial and administrative burdens (§35.164). State and local governments bear the burden of proving that an action would be an undue burden. According to the Title II regulations (§35.164), the head of a public entity (or its designee) must decide that an action would be an undue burden or a fundamental alteration, making that decision only after considering all resources available for funding and operating the service. The decision must be explained in a written statement outlining the reasons for reaching that conclusion.

That a particular action is an undue burden does not excuse a state or local government from having to provide accessible communications. A public entity is still required to use alternate means to provide effective communication, which would not result in such a burden.

Exempt Facilities (36.102)

1. Private clubs, except to the extent that the facility is made available to customers or users of a public accommodation. For example: a public restaurant housed within a private country club.
2. Religious entities. This exemption also applies to health care and other facilities owned, operated or controlled by religious entities.
3. Railroads (covered under Title II, Public Services and Transportation).

Standards of Compliance and Effective Dates

Existing Public Accommodations (36.304 – 36.508)

Existing facilities defined as public accommodations must take steps to remove “architectural and communications barriers” by January 26, 1992, where such removal is “readily achievable” or “easily accomplishable and able to be carried out without much difficulty or expense.” Priority should be given to measures that will enable individuals with disabilities to “get in the front door”, followed by measures providing access to goods and services and providing access to restroom facilities. If physical barrier removal is not “readily achievable”, the facility may be required to take appropriate alternative measures. Such a measure might be having store employees assist in removing articles from high shelves for a customer with a disability.

Alterations (36.402 – 36.405)

Alterations to existing facilities defined as public accommodations or commercial facilities must generally be “readily accessible to and usable by” people with disabilities, “to the maximum extent feasible” if the alteration has begun after January 26, 1992.

When alterations are made to a “primary function area”, an “accessible path of travel” to the altered area, restrooms, telephones and drinking fountains serving the area must be created. The additional accessibility costs need not be “disproportionate” relative to the overall alteration. The term “disproportionate” is considered to mean that the additional accessibility costs are not expected to exceed 20% of the total cost of the project.

New Construction (36.401)

New construction of public accommodations or commercial facilities must be “readily accessible and usable by” people with disabilities if the facility is first occupied after January 26, 1993, assuming the last official permission (such as a building permit) was issued after January 26, 1992. The standard of compliance is highest for new construction and is not limited by “disproportionate cost” or “readily achievable” rules. The ADA’s signage guidelines are primarily intended to make facilities accessible to those who are blind, visually impaired or mobility impaired.

**The ADA Guidelines
for Signage**

While the statute requires “removal of communication barriers in existing public accommodations”, compliance will most often be achieved either by modifying existing signs, for example, by adding tactile and Braille characters, or by installing new, compliant signs. Additional signs may be required to identify and give directions to accessible facilities and features.

Sign Categories

The guidelines define four categories of interior and exterior signs:

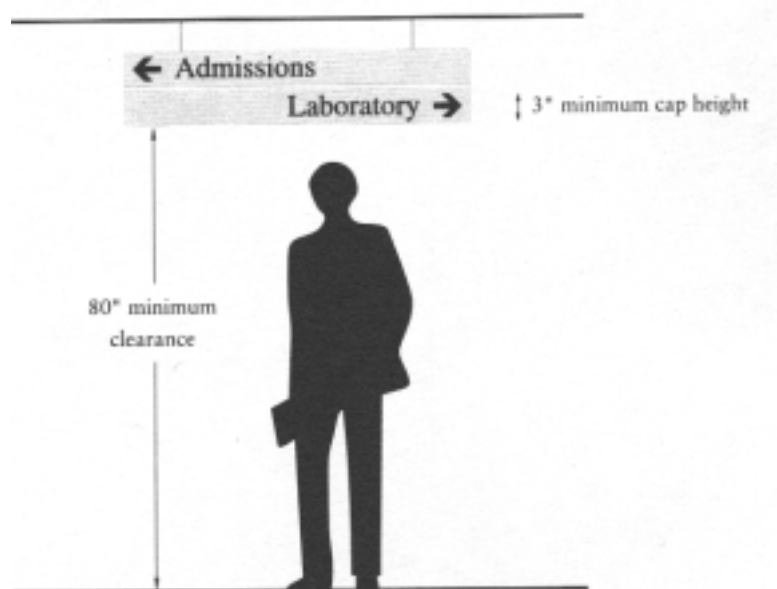
Permanent Room Designation Signs (4.1.3[16][a], 4.30.1, 4.30.4, 4.30.5, 4.30.6)

“Signs which designate permanent rooms and spaces” whose designation will not change, must comply with the highest standards. This includes tactile and Braille lettering raised at least 1/32” from the plaque surface. They must use exclusively, upper case characters of at least 5/8” cap height, but not exceeding 2” cap height. Typestyle shall be “sans serif” or “simple serif”. The use of pictograms or symbols on permanent room designation signs is optional, but where used they must be located on a border or field of at least 6” in height. An equivalent grade 2 Braille and tactile written description must be placed directly below the symbol (with the exception of arrows) and may not intrude into the 6” field specified above. Characters and background must be eggshell, matte or other non-glare finish, which is recommended as between 11 and 19 degrees on a 60 degree glossimeter. Characters are recommended to have a minimum 70% reflectance contrast with their background.

Overhead Signs (4.1.2[7], 4.1.3[16][b], 4.30.3)

Signs that are “projected or suspended overhead” including hanging or ‘flag’ mounted signs must meet requirements for clearance, character proportion and height, sign finish and contrast. They may use upper and lower case characters, cap height must be 3” minimum, and there must be at least 80” of clearance below the bottom of the sign.

Typical Overhead Sign



Directional and Informational Signs (4.1.2[7], 4.1.3[16][b], 4.30.1, 4.30.2, 4.30.3, 4.30.5)

Wall mounted “signs which provide direction to or information about functional spaces” are not required to have tactile and Braille lettering. However, they must meet requirements for character proportion, sign finish and contrast. They may use upper and lower case characters. The cap height is not specified, but “characters and numbers on signs shall be sized according to the viewing distance from which they are to be read”.

Temporary Information Signs (4.1.3[16])

“Building directories, menus and all other signs that provide temporary information about rooms and spaces, such as the current occupant’s name, are not required to comply” with the guidelines.

Exterior Signs

The requirements for exterior and interior signs are generally the same. Most exterior signs are not required to have tactile and Braille lettering—other than in the situation where a sign is provided to designate a permanent room, such as a bathroom which is directly accessed from the outside. However, exterior signs must meet requirements for character proportion, sign finish and contrast. They may use upper and lower case characters. Similarly all of the conditions affecting overhead signs and protruding objects described in this section should be observed.

Protruding Objects (4.4.1-2, 4.30.3, Illus: Fig.8[2] p.22)

The law requires that no objects, including signs, shall protrude more than 4” from the wall surfaces or 12” from posts or pylons in a horizontal zone between 27” from the floor to 80” from the floor. Similarly, all corridors, halls, etc., shall have a minimum clearance of at least 80” below ceilings, dropped beams, door jambs and overhead signs.

Identification of Accessible Facilities and Features

Entrances, Restrooms and Bathing Facilities (4.1.2[7][c-d])

The international symbol of accessibility must be displayed at accessible entrances if all entrances are not accessible. Directions including the symbol must be provided from inaccessible entrances to accessible ones. Similar guidelines apply to restrooms and bathing facilities.

Parking Areas (4.1.2[7][a-b])

Accessible parking spaces and loading zones must be marked by a sign showing the symbol of accessibility, located so it cannot be obscured by a parked vehicle.

Assembly Areas (4.30.7[4])

The international symbol of access for hearing loss must be displayed where assistive listening systems are required, together with a description of the system installed.

Areas of Rescue Assistance (4.3.11.5)

Areas of rescue assistance must be identified with illuminated and/or non-illuminated signs including the international symbol of accessibility. Instructions must be posted on how to use the area during emergencies. Inaccessible exits must be identified as such. Where all exits are not accessible, signs including the symbol shall be required to direct visitors to areas of rescue assistance.

Public Telephones (4.30.7[2-3])

Text telephones must be identified with the TDD symbol. Volume control telephones must be identified by the volume control telephone symbol. Where all telephone banks are not so equipped, directions including the appropriate symbols must be provided from unequipped telephone banks to equipped ones.

Assistive Listening Systems (4.1.3[19][b])

Assistive listening systems must be identified by the international symbol for hearing loss, together with a description of the system provided.



*International Symbol
of Accessibility*



*Symbol of Access
for Hearing Loss*



*TDD Symbol
(Text Telephone)*



*Volume Control
Telephone Symbol*

The four symbols illustrated above represent the four required for use by the ADA regulations. They have been modified by SEG D from the commonly available symbols to improve readability, to coordinate them with other standard symbols such as those issued by the Department of Transportation (which includes the traditional men's and women's symbols) and to render them less stigmatic. In accordance with the requirements of the International Organization for Standardization (ISO), the image content has not been changed.

SEGD would like members and others to encourage the use of these standardized symbols. However, SEG D recommends that these symbols be re-examined, tested for comprehension, and modified, if necessary, in due course. They have not yet been officially considered acceptable in all situations or by all regulatory authorities, and users should attempt to determine their acceptability on a case-by-case basis.

The set of four symbols are available in EPS format on one Macintosh disc. Contact the SEG S office at 617/868-3381 for an order form.

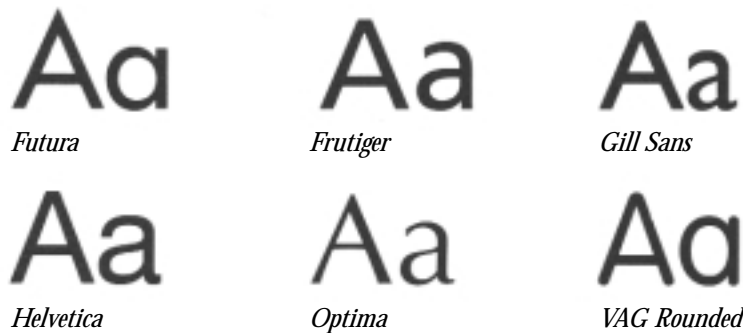
SEGD's Interpretations of the ADA Guidelines

While many aspects of the regulations outlined above are clear, such as the specified height and finish of characters, others, such as “simple serif”, “permanent identification of room spaces” and “sized according to viewing distance” are not. The following section deals with these more ambiguous aspects, item by item, and suggests what we consider to be an appropriate interpretation of each.

Sans Serif (4.30.4)

Sans Serif is an accepted typographic term. However, Sans Serif letterforms include a wide range of styles ranging from those that are clearly legible to some fairly eccentric display faces. Care should be taken to use only those faces that are clearly legible.

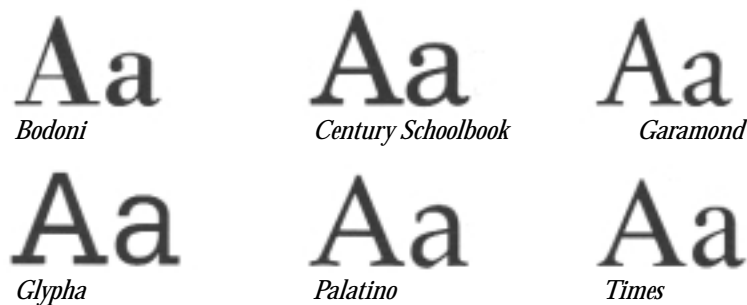
Examples of some acceptable styles of Sans Serif faces.



Simple Serif (4.30.4)

The term “simple serif” has no typographic meaning. We assume however that it means ‘conventional’ rather than ‘exaggerated’ or ‘exotic’. Although personal judgment may vary here, we would suggest, as with sans serif forms, that legibility is the primary issue.

Examples of some acceptable styles of Serif faces.



Letterform Body and Stoke with Width-to-Height Ratio (4.30.2)

The regulations state “letters and numbers on signs shall have a width-to-height ration between 3:5 and 1:1 and a stroke width-to-height ratio between 1:5 and 1:10”.

However, no method has been specified as to how such a calculation is to be made. There are practically no typefaces where several of the characters do not exceed these requirements. The logical characters to measure to determine this requirement are the capital letter O or the numeral 0. In typographic design these characters are

among the basic building blocks of the alphabet. In effect they determine the basic ratio of width-to-height, and have the further advantage of not being distorted by serifs in the case of serif alphabets. In most alphabets the numeral 0 is condensed in relationship to the capital letter O to keep it in proportion with the other numerals. SEGD is proposing that the average of these two characters be used to determine the basic ratio of letterform width-to-height.

In the case of stroke width-to-height ratio, the logical characters to measure are the capital letter I and the numeral 1. These letterforms again are among the basic building blocks of any alphabet and determine the stroke thickness. SEGD is proposing that the average of these two characters be used to determine stroke width-to-height ratios.

As stated above, the required body width-to-height ratio is between 3:5 and 1:1, and the required stroke width-to-height ratio is between 1:5 and 1:10. In practice, however, it is much easier to calculate these ratios by determining the width as a percentage of the height. Translated into these percentages the body width should be between 60% (3:5) and 100% (1:1) of the height, and the stroke width should be between 10% (1:10) and 20% (1:5) of the height.


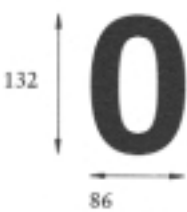


This percentage can be calculated by using the following simple equation:

$$(\text{width} \div \text{height}) \times 100 = \text{width as a percentage of the height}$$

After calculating the percentage for both the capital letter O and the numeral 0, both should be added together and then divided in half to calculate the average percentage. The same calculation should be performed to find the average percentage of the capital letter I and the numeral 1. These percentages should then be compared to the allowable range to determine whether or not the letterforms are compliant.

The following sample calculation, using Helvetica Bold, has been measured in millimeters from large-scale laserwriter proofs. Please note that although the same point size (500) was specified in each case, the height of each character differs, as is typical with any alphabet, due to the reduced size of the numerals in relationship to the capitals and the vertical extension of the round letterforms above and below the mean height of the 'flat' characters.

Sample calculations of letterform body and stroke width-to-height percentages. Because in this example, using Helvetica Bold, the average percentage of the body width-to-height ratio of 78% falls within the acceptable range of 60% to 100%, and the average percentage of the stroke width-to-height ratio of 20% falls within the acceptable range of 10% to 20%, the letterforms are considered compliant.

	1.	$(124 \div 135) \times 100 = 91\%$
	2.	$(86 \div 132) \times 100 = 65\%$
	3.	To determine average percentage: $91\% + 65\% = 156\% \div 2 = 78\%$
	4.	$(26 \div 129) \times 100 = 20\%$
	5.	$(25 \div 125) \times 100 = 20\%$
	6.	To determine average percentage: $20\% + 20\% = 40\% \div 2 = 20\%$

Unfortunately, these percentages omit many letterforms which are eminently suitable both from the viewpoint of visual and tactile legibility. SEGD would strongly recommend that the issue of letterform and stroke width-to-height ratios be re-examined. To simplify matters, SEGD suggests that the capital letters O and I be used alone to determine letterform body and stroke width-to-height percentages, and that the ratio be expressed as width as a percentage of height. In order to include an appropriate range of letterforms that are intended to be read visually, SEGD proposes that the range for character body be between 55% and 115%, and for stroke width be between 8% and 33%. A separate set of conditions should be established for letter forms intended for tactile use only on signs where visual and tactile components are separate.

Using the above method of calculation for determining body and stroke width-to-height percentages, these letterforms have been determined as acceptable. Italic and oblique versions are also acceptable.

ABCIO xyz 0123

Futura

ABCIO xyz 0123

Futura Book

ABCIO xyz 0123

Frutiger

ABCIO xyz 0123

Gill Sans

ABCIO xyz 0123

Helvetica

ABCIO xyz 0123

Otpima

ABCIO xyz 0123

Bodoni

ABCIO xyz 0123

Century Schoolbook

ABCIO xyz 0123

Garamond Semi Bold

ABCIO xyz 0123

Glypha Bold

ABCIO xyz 0123

Palatino Bold

ABCIO xyz 0123

Futura Condensed Bold

ABCIO xyz 0123

Frutiger Light

ABCIO xyz 0123

Frutiger Bold

ABCIO xyz 0123

Gill Sans Bold

ABCIO xyz 0123

Helvetica Bold

ABCIO xyz 0123

VAG Rounded Light

ABCIO xyz 0123

Bodini Book

ABCIO xyz 0123

Garamond

ABCIO xyz 0123

Glypha

ABCIO xyz 0123

Palatino

ABCIO xyz 0123

Times

Using the above method of calculation for determining body and stroke width-to-height percentages, these letterforms have been determined as unacceptable. Italic and oblique versions are also unacceptable.

ABCIO xyz 0123

Futura Light

ABCIO xyz 0123

Futura Condensed

ABCIO xyz 0123

Futura Bold

ABCIO xyz 0123

Frutiger Black

ABCIO xyz 0123

Gill Sans Light

ABCIO xyz 0123

Helvetica Light

ABCIO xyz 0123

Helvetica Black

ABCIO xyz 0123

Helvetica Condensed

ABCIO xyz 0123

Optima Bold

ABCIO xyz 0123

VAG Rounded Thin

ABCIO xyz 0123

VAG Rounded Bold

ABCIO xyz 0123

Bodoni Bold

ABCIO xyz 0123

Century Schoolbook Bold

ABCIO xyz 0123

Garamond Bold

ABCIO xyz 0123

Times Bold

ABCIO xyz 0123

Univers Condensed

Viewing Distance (4.30.3)

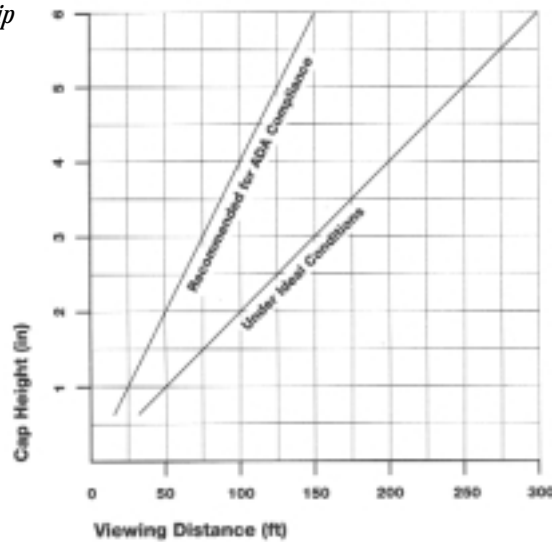
Overhead directional or ‘flag’ signs may be upper and lower case, and must have a cap height of at least 3”. Other directional signs do not have a specified cap height, but must be “sized according to viewing distance”.

One reliable source of basic data on viewing distance, among many others, was established by Paul Arthur in the New York State University Campus Graphics Project in Albany in 1970. This study showed that high contrast Helvetica, under optimal viewing conditions, viewed head-on and observed with 20/20 vision, needed 1” of cap height for each 50 feet of viewing distance.

However, the constituency we are addressing includes a wide range of individuals whose ability ranges from slightly to severely impaired. In addition, general viewing conditions will often be far from perfect, and signs will frequently be viewed at an angle. Consequently, we are proposing that an appropriate cap height be two times that determined in the above study. This results in 1” cap height for each 25 feet of viewing distance, as shown in the table below. We would also recommend that 5/8” be considered the minimum size, regardless of viewing distance.

We are still left with the task of deciding what might be considered an appropriate viewing distance. In certain instances this will be determined by the architectural space in which the sign is located; an entrance or elevator lobby, for example. In other situations, such as an airport concourse or a long corridor, viewing distance can be difficult to determine. In such a situation, where space is otherwise unrestricted, we would recommend 75 feet 3" cap height as a minimum.

Diagram showing relationship of sign message cap height to viewing distance.



The issue of overhead signs still remains problematic. In hospitals, for instance, headroom is often limited, and the 3" cap height requirement will often make it impossible to provide directional and other information.

Perpendicular 'flag' mounted signs, if they are to be ADA compliant, must also comply with the 3" cap height requirement. This is clearly impractical in many instances. The prime example would be a long corridor, such as that in a hospital, along which many departments are located. Flag mounted signs in this case would probably be so large they would be impractical.

However, because the regulations require a 60" high, wall-mounted, compliant plaque in any event, it is permissible to mount a non-compliant 'flag' mounted sign of more conventional format in addition to the compliant plaque. In such a case an upper and lower case non-tactile message may be used, however, contrast and finish recommendations should be observed.

Permanent Identifications of Rooms and Spaces (4.30.4)

The regulations state, "where permanent identification is provided for rooms and spaces" the signs carry the maximum requirements of 5/8" minimum cap height, all caps, tactile lettering together with Grade 2 Braille, conforming to contrast and finish requirements, and mounted 60" from the centerline of the sign to the floor.

The regulations do not require that character proportion and stroke thickness restrictions apply to room plaques. However, SEGD recommends compliance whenever possible for reasons of both legibility and consistency.

It should be noted that the regulations do not specifically require identification of any spaces whatsoever (other than certain accessible facilities), but where spaces are identified they must comply. Permanent identification is considered to consist of the room number only unless the room is known solely by its name such as Men's or Women's rooms, or in

the case of named rooms without numbers such as the 'Amelia Earhart Room', in which case the entire name must be included on the plaque and be compliant.

Where rooms are numbered, descriptions of room functions or identification or occupant (name strips) are considered to be additional information, and they are not required to be tactile and Braille. Although they are not required to comply with recommendations for proportion, size, contrast and finish; SEGD recommends that they should comply.

In order to provide an effective wayfinding system, it will often be advisable to go beyond the minimum requirements of the regulations and include many major room function descriptions in both tactile lettering and Braille.

Example of a room plaque with a number only. Number must be tactile and comply with size, finish and contrast requirements and be accompanied by Grade 2 Braille translation of number.



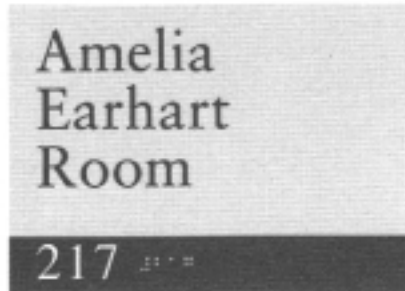
5/8" min 2" max cap height
All caps, tactile, plus Braille

Example of a plaque for a room known by its name only. Copy must be all caps, tactile, and comply with size, finish and contrast requirements, and be accompanied by Grade 2 Braille translation of full name of room.



5/8" min 2" max cap height
All caps, tactile, plus Braille

Name or function of a room can be considered as additional information when a room number is also provided and may be non-tactile, upper and lower case. It is still suggested that it comply with size, finish and contrast requirements.



5/8" min 2" max cap height
Upper and lower case, not tactile

Example of a restroom plaque. Pictogram must be on a 6" field and be accompanied by a description of the symbol complying with size, finish and contrast requirements, and accompanied by a Grade 2 Braille translation. Pictogram need not be tactile.



6" field
Pictogram not tactile

5/8" min 2" max cap height
All caps, tactile, plus Braille

'Architectural' Signs

It should be understood that the ADA does not make any demand on or regulate 'architectural' signs as long as they are installed in addition to required ADA signage. In this context 'architectural' signs means signs that serve an architectural, formal, honorific, or decorative function in addition to being informational. Certainly, the regulations should not be construed as to require the abolition of the enrichment of the environment with formal or decorative graphic elements.

For example, the guidelines do not require the main identification of a building to be ADA compliant and may be of any style, form, material or finish. Other signs which are not included in the guideline requirements are dedication plaques, honorary identification of rooms, 'architectural' room numbers, such as the case of a decorative or thematic number on hotel doors (as long as they are provided in addition to ADA compliant signs on the wall on the latch side of the door).

Similarly, a door plaque may consist partially of 'architectural' components and partially of ADA compliant components. The plaque may, for instance, be comprised of compliant tactile room number and Braille components with header and footer strips in non-compliant finishes and materials.

Location of Accessible Parking Signs (4.6.4)

The law states that accessible parking signs should be located so that they cannot be obstructed by a vehicle. This presents difficulties due to the wide range of potential vehicles that could possibly obstruct such a sign. In many parts of the country, local laws also apply, many of which require the accessibility symbol, together with other information, to be located at a height of 80" to the bottom of the sign.

In determining an appropriate location, local regulations should first be considered. For signs that are required to be mounted at 80" height, care should be taken to appropriately incorporate them into the landscape and architectural environment otherwise they can become intrusive.

In many instances, a sign mounted at a lower height, such as 60" to the center of the sign, can be adequately viewed over the roof of most vehicles, and is a more appropriate response in relation to human scale and overall aesthetic considerations. Other possibilities include signs mounted at the front of parking bays, rather than at the back, thus preventing them from being obstructed by a parked vehicle regardless of the height at which they are mounted. Such signs can be typically mounted at relatively low heights and can be incorporated into landscaping elements.

Finishes (4.30.5, A4.30.5)

Finishes of the compliant components of signs are required to be "eggshell, matte or other non-glare finish", which is "recommended" to be between 11 and 19 degrees on a 60 degree glossimeter. Acceptable finishes include:

- Eggshell and matte finish paints and inks;
- Most non-glare acrylic sheet, mylar or frosted glass;
- Most non-glossy self adhesive vinyl film;
- Certain satin or random-brushed finishes on metal.

Unacceptable finishes include:

Gloss or semi-gloss finish paints and inks;
Polished surface acrylic sheet, mylar or glass;
Glossy self-adhesive film;
Polished or directional brushed finishes on metal.

In any event, designers and specifiers should include reflectance values in their specifications, and manufacturers should have glossimeter tests made of actual samples to determine compliance.

It should be noted again that the finish recommendations apply only to the compliant components of a sign. The rest of the sign, such as headers, footers and non-compliant message areas can be of any appropriate material, finish and contrast. However, in this regard it is still important to understand that any components of a sign should be designed to be clearly legible.

Contrast

Characters and symbols are “recommended” to have a minimum 70% contrast with their background. Most paint and ink manufacturers will provide a list of reflectance values for specific colors. Remember, however, that even black and white are never absolutely 0% or 100%, so care must be taken with the use of black or white copy together with a color, to ensure that a 70% contrast is obtained.

It should also be remembered that the ADA contrast requirement is only a “recommendation”, not a requirement. Consequently, while we would suggest strongly that the recommendations are followed, minor discrepancies in measured values need not be considered critical.

It would seem that with regard to contrast of messages and symbols with their background, insufficient information has been available on when to establish the guidelines. The selection of 70% as a criteria appears to be arbitrary and the issue of color contrast, which can outweigh issues such as reflectance values, has been entirely ignored. SEGD hopes that research and testing can be done in this area to establish more effective recommendations.

Illumination (4.30.8, A4.30.8)

The issue of illumination has been “reserved”, with the recommendation that signs be illuminated within a range of 100 to 300 lux, or 10 to 30 footcandles, and that illumination should be “uniform” over the entire sign surface. Signs are recommended to be located so that the illumination level on the surface is not significantly lower than the ambient light level, or is not subject to glare of a bright light source either in front of or behind the sign, including natural light such as that from an opening or window.

Mounting Locations (4.30.6)

Signs permanently designating rooms and spaces must be mounted on the wall adjacent to the latch side of the door, 60” from the centerline of the sign to the floor or, in the case of obstructions, on the wall surface nearest to the latch side of the door and located to avoid door swing and protruding objects. Some exceptions may apply to oversize signs as described below.

In practice there are often many instances where doors are located so that such mounting is not feasible, such as:

Glass Panels Adjacent to Latch Side of Door

In such an instance the sign should be mounted on the nearest wall surface adjacent to the latch side of the door.

Doors with No Adjacent Wall Surface on the Latch Side

Such an instance would be where two doors are mounted side by side, or where a corridor ends in three doors. In such instances a possible solution would be to mount the plaques on the door itself, above the latch.

Doors with No Adjacent Wall Surface Clear of Swing

Such an instance would be a door opening toward you at the end of a corridor. The intent of the regulations is that a sight-impaired or blind person should be able to safely read the sign from a close distance, without being struck by the opening door. In such an instance the plaque should be mounted at a sufficient distance from the door to allow a person to safely stand there. We would suggest a clear dimension of 18" from the nearest point of the door swing to the nearest point of the sign.

Combinations of the Above

Such an instance would be a door opening toward you bounded by an adjacent door. In such an instance compliance is not again possible, and mounting the sign on the outward opening door above the latch would seem to be the only solution, other than omitting the sign completely (which is acceptable under ADA regulations).

Oversize Signs

A further difficulty arises where signs are so large, such as those which include a 'window' or 'reader board', so that when they are centered at 60" height, the tactile and Braille components are located at a much higher or lower location than elsewhere in the project. As the purpose of the mounting height requirement is to enable a blind person to easily locate signs at a consistent height, SEGD is suggesting that the regulations be interpreted to mean that the mounting height may be applied either to the entire sign or solely to the tactile and Braille components.

Signs Identifying Non-Accessible Spaces or Systems

Where a facility is not entirely accessible, or where all systems such as telephones are non-compliant, signs are required to inform the public of this, and/or direct them to accessible or compliant locations. Such signs are required to include the appropriate symbols. Other requirements such as character size, etc., are not specified in the regulations.

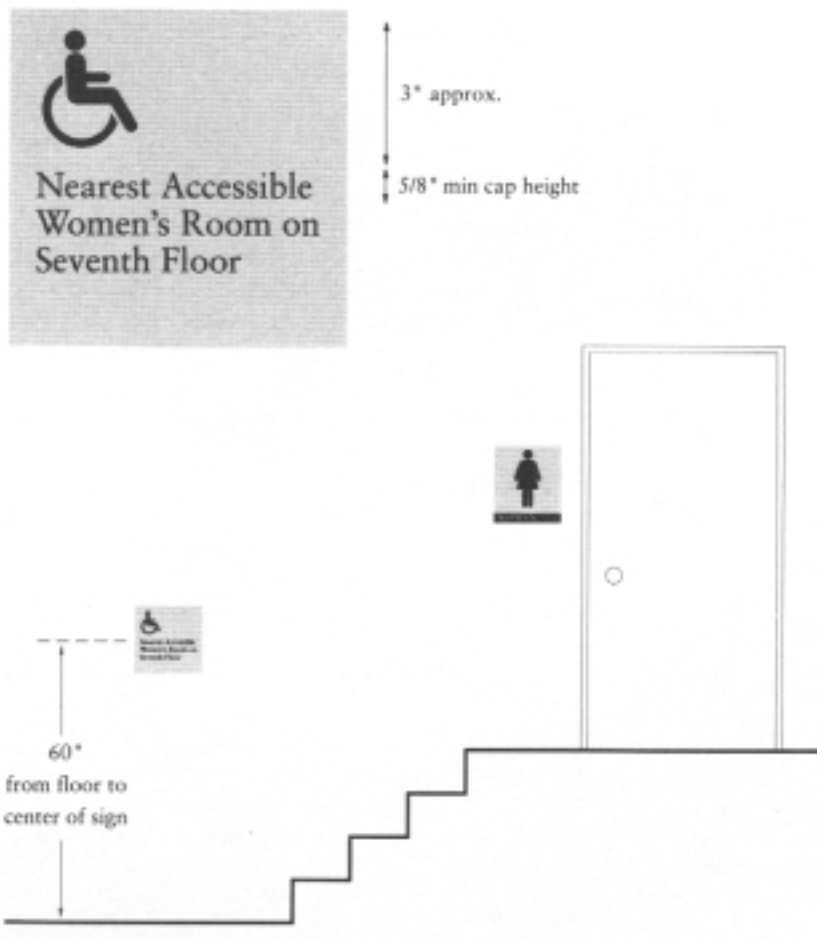
We would suggest in such an instance that common sense would dictate, as in the case of non-overhead directional signs, that upper and lower case non-tactile letters are appropriate, conforming to both contrast and finish requirements, and sized according to viewing distance. For signs mounted at eye level, we would suggest a cap height of at least 5/8", which would correspond to an average viewing distance of approximately 15'-0".

Such signs also require inclusion of the appropriate symbol, although the act again provides no information regarding size. A distinct problem clearly arises in this situation. For instance, if a large pictogram on a 6" field was used on a non-accessible fire stair directing disabled users to an accessible location, users would assume, when viewing the sign from a distance, that the sign was identifying an accessible entrance.

We would therefore propose that a suitable response for such signs would be a small pictogram on an uninterrupted field of approximately 3", accompanied by the appropriate information in minimum 5/8" cap height, upper and lower case lettering.

It is also important to consider the location of such a sign. If a door is considered inaccessible because it is located beyond an obstacle, such as some steps, the sign should be located in a position where a disabled user can read the information before having to encounter the obstacle.

Sign identifying non-accessible facility and giving directions to the nearest accessible location.



Other Important Information

Typographic Problems to be Avoided

To comply with the ADA regulations, designers and fabricators must be careful to use typography in an appropriate manner.

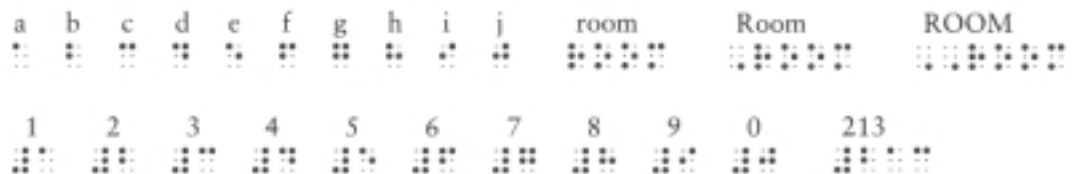
For appropriate legibility, where all caps messages are required, it should be remembered that letterspacing should be wider than is 'normal' for upper and lower case copy. The accepted typographic 'rule of thumb' is to track letterspacing between 110% and 120% depending upon typeface. The sizing of plaques needs to be carefully considered to comfortably accommodate expected messages with appropriate spacing. In no case should copy be tightly spaced just to fit it on an improperly sized sign.

Appropriate manipulation of type can be achieved by the careful use of computers to slightly condense or expand a typeface. More appropriately, by using multiple master font technology, such as that recently released by Adobe, a typeface can be interpolated to any point between light, bold, condensed and expanded, with further stroke width and serif compensations based on size. It should be stressed that this should still be done with care and the inexpert manipulation of type simply to get it to comply with stroke and body width-to-height ratios should not be considered acceptable.

Braille

Many designers and fabricators may be unfamiliar with Braille and how it should be specified and used. Braille Grade 1 and Grade 2 (Grade 2 Braille is required for ADA signage), are generally similar, with the exception that Grade 2 Braille includes additional characters and character combinations which represent contractions of certain words and word components, such as 'the' and 'ation'. Consequently, considerable care must be taken to translate Braille Grade 2 correctly, using either a computer-based or other translation program. It is also recommended that a Braille proofreader approve all final artwork.

Braille is read with the pad of the finger, not the very tip, so no obstructions such as dimensional frames or decorative features should prevent the finger from lying flat against the sign face. The form of the dots should ideally be distinct 'mounds' rather than sharp-edged 'cylinders' and should feel smooth but well defined when the finger scans them with light pressure. Braille only exists in one size. The center point of dots within a cell should be .09" apart, should be separated from adjacent cells by .245" horizontally, and by .4" vertically to the center point of the top line on the next line.



The numerals 1-9 and 0 in Braille are identical to the letters a-j, but are preceded by the Braille character ⠠ . The number symbol ⠼ need only be used once preceding a multiple digit number. Initial capital letters are indicated by preceding the character with ⠠ . All caps are indicated by preceding the word by ⠠⠠ . Note that when translating proper names, etc., only initial caps should be indicated in Braille, even though all caps may be required on the visually read components of the sign.

Editor's note: To order the Braillefont program disk, contact the SEG D office at 617/868-3381.

Implementation of Title III

Enforcement (Subpart E, DOJ Regulations)

The Americans with Disabilities Act is based on the Civil Rights Act of 1964, with similar enforcement provisions. Any individual may request the Department of Justice to investigate and take action where they or a class of persons have been subjected to discrimination prohibited by the act. Lawsuits may be filed directly by such individuals, and under certain conditions the act authorizes the courts to appoint an attorney for complainants who cannot afford their own representation. The Attorney General is also authorized to file civil action in cases of general public importance. Suits may be filed even before discrimination has actually occurred if a person has “reasonable grounds” for believing they are about to be discriminated against. For example, if the design of a new building does not comply with the ADA requirements, a suit may be filed prior to commencement of construction.

Where state and local codes incorporate the new ADA accessibility guidelines and such codes are “certified” by the Department of Justice, provisions of the ADA could become subject to legal actions in state as well as federal courts.

Legal Remedies

The courts can provide injunctive relief, such as an order to alter a facility to make it accessible to the disabled. Where discrimination is proven, monetary damages, attorney’s fees and costs may be awarded to the plaintiff. In actions brought by the Attorney General, penalties of up to \$50,000 for the first violation and up to \$100,000 for any subsequent violations may be assessed.

Good Faith Efforts (DOJ Regulations, “Section-by-Section Analysis...”, Subpart E)

The courts will consider the “good faith effort” a building owner has made to comply with the law when considering what amount of civil penalty, if any, is appropriate. For example, the development and implementation of a barrier removal plan could serve as evidence of a good faith effort.

In developing such a plan, it is recommended that existing barriers be identified by comparing the existing facility to the requirements for new and altered construction. All existing barriers that can be removed through readily achievable measures should be identified, and priorities and a timetable for removal established.

Recommended Priorities for Barrier Removal (36.304)

The following priorities are not mandatory, but suggest ways to determine what types of barriers should be minimized or eliminated first.

1. Access from public sidewalks, parking, van loading or public transportation stops to a building entrance. Examples include installing an entrance ramp, widening entrances and providing accessible parking.
2. Access to areas where goods and services are offered to the public. Examples include adjusting the layout of display racks, rearranging tables, providing tactile and Braille signage, widening doors, installing visual alarms and installing ramps.
3. Access to restrooms. Examples include the removal of obstructive furniture or vending machines, widening doors, installing ramps, providing accessible signage, widening toilet stalls and installing grab bars.
4. Access in any remaining ways to the goods and services provided.

The entire survey process and the subsequent determination of readily achievable measures should be fully documented. In particular, a list should be maintained of existing barriers that are not removed, along with the specific reasons why removal was not readily achievable. Keep in mind that these decisions will be subject to scrutiny by others in the event of a discrimination complaint. By involving local disability organizations in the process, the likelihood of complaints could be greatly diminished.

Alternatives to Barrier Removal (36.303[f], 36.305)

If barrier removal is not readily achievable, the goods, services, facilities, privileges or advantages of a public accommodation shall be made available through alternative methods, if it is readily achievable to do so. Examples of alternatives to barrier removal provided by the Department of Justice are:

- Providing valet parking for disabled persons;
- Providing curb service or home delivery;
- Retrieving merchandise from inaccessible shelves;
- Relocating activities to accessible locations.

A disabled person cannot be charged for the costs associated with providing an alternative method.

Continuing Obligation to Remove Barriers (DOS) Regulations, "Section-by-Section" Analysis...". Section 36.304)

The obligation to engage in readily achievable barrier removal is a continuing responsibility of a public accommodation. Items whose removal is currently not readily achievable may become so in the future. No periodic assessment of self-evaluation is required by the ADA. However, the Department of Justice urges public accommodations to establish procedures for an ongoing assessment of their compliance with barrier removal requirements.

Tax Deductions and Credits (IRS Publication No. 907)

The Internal Revenue Code allows deductions of up to \$15,000 for expenses associated with the removal of qualified architectural barriers. Small businesses are also allowed a tax credit for certain costs of complying with the ADA. The necessary and reasonable costs of removing architectural, physical, and communication barriers are included among "eligible expenditures".

Credits

This paper is the result of the input of many SEG D members. In particular, Roger Whitehouse, RIBA, who was the author of the basic document; Ken Ethridge, AIA, of ASI Sign Systems, who wrote the summaries of the ADA and its regulations; and Nora Olgyay, who originally spearheaded the SEG D attempt to modify and improve the proposed regulations, reviewed the document and provided much valuable advice.

SEG D ADA Resources

“ADA in Focus” Transcripts

A series of three transcripts of presentations at the SEG D “ADA in Focus” Education Seminars in April 1992. *What is the ADA?*, by Nora Olgyay, begins the series, followed by the *SEG D ADA White Paper*, and Ken Ethridge’s *Integrating the ADA into Your Practice*.

“ADA in Focus” Videotapes

Two tapes featuring compliant design and fabrication techniques (Part I), and a panel discussion with allied organizations, “Working Together Toward More Effective Solutions” (Part II).

ADA Symbols for Accessibility

One Macintosh disk containing the four required accessibility symbols which conform to the graphic style of the national transportation and recreation symbols.

Braillefont

One Macintosh or IBM disk with instructions. Enables you to create Grade 2 Braille type on the computer.

Contact the SEG D office at 617/868-3381 for an order form.