

FOIA MARKER

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Collection/Record Group: Clinton Presidential Records
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Subseries:

OA/ID Number: 12029
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Folder Title:
Disability Accommodations - Working Group

Stack:	Row:	Section:	Shelf:	Position:
S	97	3	1	2

Withdrawal/Redaction Sheet

Clinton Library

DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
001. memo	Andrea Rutledge to Stanley Herr; RE: Personally Identifiable Information [partial] (1 page)	09/26/1994	b(6)
002. memo	Melvin Fowler to Stan Herr; RE: Personally Identifiable Information [partial] (1 page)	09/20/1994	b(6)
003. list	List for Meeting in Room 472; RE: Personally Identifiable Information [partial] (1 page)	08/18/1994	b(6)
004. list	RE: Personally Identifiable Information [partial] (1 page)	00/00/0000	b(6)
005. note	Handwritten paper; RE: Personally Identifiable Information [partial] (1 page)	00/00/0000	b(6)
006. list	RE: Personally Identifiable Information [partial] (1 page)	00/00/0000	b(6)

COLLECTION:

Clinton Presidential Records
Domestic Policy Council
Diana Fortuna
OA/Box Number: 12029

FOLDER TITLE:

Disability Accommodations - Working Group

2007-0143-F

db4494

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P1 National Security Classified Information [(a)(1) of the PRA]
- P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
- P3 Release would violate a Federal statute [(a)(3) of the PRA]
- P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).

RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

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- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]



Employment Standards Administration
Office of Federal Contract Compliance Programs

SHIRLEY J. WILCHER
Deputy Assistant Secretary

200 CONSTITUTION AVE. NW
WASHINGTON, DC 20210

PHONE: 202-219-9475
FAX: 202-219-6195



IN REPLY
REFER TO:

United States Department of the Interior

BUREAU OF RECLAMATION

Pacific Northwest Region
1150 North Curtis Road
Boise, Idaho 83706-1234

PN-7103

September 20, 1994

Memorandum

To: Mr. Stanley Herr, Domestic Policy

From: Ms. Karen Megorden, ADMS Project Manager

Subject: Videos of Accessibility Data Management (ADMS) Project Requested at September 9, 1994 Briefing in Washington DC

Enclosed are three (3) ADMS videos, duplicates of the video presented at the September 9, 1994 briefing. We are forwarding them directly rather than to Melvin Fowler, DOI, in the interest of time.

We look forward to our meeting on September 29, and the opportunity to present ADMS to your working group.

The White House
Washington

FAX COVER SHEET

OFFICE OF DOMESTIC POLICY

Old Executive Office Building
Washington, DC 20500

TO: Carolyn Gunning

FAX No: 482-4636

FROM: Stan Hen

DATE: 10/4/94

NUMBER OF PAGES (Including cover sheet) 2

COMMENTS:

Per your request.
P.S. - Larry Parks is pictured
in Annenberg's Annual
Program, I believe.

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E X E C U T I V E O F F I C E O F T H E P R E S I D E N T

26-Sep-1994 09:51am

TO: Stanley S. Herr

FROM: Andrea S. Rutledge
 Management and Administration

SUBJECT: Interpreter for 9/29 Meeting

Your interpreter for the meeting on Thursday will be Tracy Randolph. Her date of birth is (b)(6). She will be here at 2:00 p.m. She has already been cleared into the building. Will you call Lila Farazian and let her know? I have misplaced my notes with her phone number. [001]

Thanks.



United States
**Office of
Personnel Management**

Washington, D.C. 20415-0001

OFFICE OF DIVERSITY
Career Entry Group

FAX COVER SHEET

TO:

Stanley B. Hess

FAX NUMBER:

☐ **URGENT**

FROM:

Marilyn Thornton

REMARKS:

*Attached is OPM's input for the
Disability Issues Working Group.*

*Please call Mattie White on 202-606-0870
after you receive this fax.*

Shaw

NUMBER OF PAGES (INCLUDING COVER SHEET):

4

DATE:

9/29/94

The White House
Washington

FAX COVER SHEET

OFFICE OF DOMESTIC POLICY

Old Executive Office Building
Washington, DC 20500

TO: Andrea Atran

FAX No: Ph 690-7025 / FAX 690-6904

FROM: Stan Hen - FAX 456-7028

DATE: 9-27-94

NUMBER OF PAGES (Including cover sheet) 5

COMMENTS:

This is one of the
better reports I've received,
which I send FYI.

I misspoke: The date
when this assignment was
made was, Aug. 18th

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United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

September 20, 1944

TO: Stan Herr
FROM: Melvin C. Fowler

NOTE

In response to your recent inquiry asking for the birth dates of our ADMS representatives, their names and birth dates are as follows:

KAREN ELOISE MEGORDEN
DATE OF BIRTH (b)(6)

[002]

CURTIS CARL KRON
DATE OF BIRTH (b)(6)

For your information, there has been a change in plans and I will be able to attend your Federal Disability Accommodations Working Group Meeting on September 29, 1994.

Also, we are providing you with information you requested regarding the Department of Agriculture's Civil Rights Compliance and Enforcement Program (see attachment).

Should you have any questions in this regard please do not hesitate to contact me at 202-208-3455.

**NAMES AND PHONE NUMBERS
FOR STAN HERR
SEPTEMBER 15, 1994**

Following are names of individuals who have had involvement w/ the ADMS system via briefing or direct participation:

DEPARTMENT OF AGRICULTURE:

David Montoya
Assistant Secretary for Administration
202-720-5215
(Has program responsibility for Accessibility within DOA)

Note: David has not been briefed, only his staff has. Also of note David's wife works for the White House, however, I'm not sure in what capacity or position.

Jean Mahoney
DOA Accessibility Coordinator
202-720-0353
(Works for David Montoya and has responsibility for overall program management)

The following individuals were involved in past ADMS briefings:

John Kratze, Director
Real Property Management Division
202-720-6855

Lou Burrows, Assistant Director
Real Property and Management Division
202-720-6855

THE WHITE HOUSE
WASHINGTON

Meeting of Federal Disability Accommodations Working Group
September 29, 1994, 2:00 to 3:30, 472 OEOB

Welcome and Reintroductions

Stanley S. Herr
The White House

Primer on Disability Laws that
Apply to the Federal Executive Agencies

John L. Wodatch
Department of Justice

Accessibility Data Management Systems

Karen E. Megorden
and Curtis C. Kron
Department of Interior
Bureau of Reclamation

Agency Reports

Howard Moses
Department of Education
and Full Group

Open Forum

Full Group

Next Steps and Closing

Stanley S. Herr



U.S. Department of Justice

Civil Rights Division

Public Access Section

P.O. Box 66738

Washington, D.C. 20035-6738

SEP 27 1994

Stanley S. Herr
The White House
Office of Domestic Policy
Room 224L
Washington, D.C. 20500

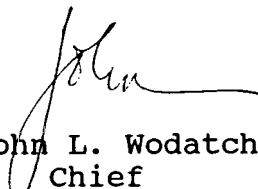
Dear Stan:

Attached you will find the briefing memorandum that you requested at the last meeting of the Federal Disability Accommodations Working Group. It is a brief synopsis of the obligations of Federal executive branch agencies under Federal disability rights laws. I hope that it will prove useful to the members of the Working Group. I have tried to avoid legalisms and make it complete, concrete, and relevant. I remain willing to assist the Working Group in any way that I can.

I have also included our most recent press release -- on the settlement of our case on discrimination on the basis of HIV status against the Castle Dental Center in Houston, Texas. The \$100,000 settlement, including \$80,000 in compensatory damages for an aggrieved individual and \$20,000 in civil penalties, is our largest settlement to date. This case is yet another strong signal that this Administration is fully committed to vigorous enforcement of the Americans with Disabilities Act.

I look forward to seeing you at the meeting on the 29th.

Sincerely,



John L. Wodatch
Chief

Public Access Section

Enclosure

cc: Deval L. Patrick



U.S. Department of Justice

Civil Rights Division

Washington, D.C. 20530

A PRIMER
Disability Laws that Apply to the Federal Executive Agencies

A. BUILDINGS

1. All buildings built by the Federal government or built on behalf of the Federal government since 1968 must be accessible. Architectural Barriers Act of 1968, as amended, 42 U.S.C. §§ 4151-57; section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794.

2. Any alteration to a Federal building, any alteration to a part of any Federal building, any alteration to any building housing a program of a Federal executive branch agency, or any alteration to space leased to a Federal agency must be done in an accessible manner. Id.

3. When a Federal agency leases space in buildings not owned by the Federal government, the agency shall lease space that is accessible. If accessible space is unavailable, the agency can only lease space that has or has been altered to have:

*at least one accessible route to those areas in the building for which the space was leased;

*if toilets are available, at least one accessible one for each sex on each floor having toilets;

*if parking is available, the appropriate number of accessible parking spaces.

*Exception: If no accessible space is available and the lease is necessary for officials servicing natural or human-made disasters on an emergency basis, or the space is used on an intermittent basis, or the occupancy is for no more than twelve months. 36 CFR Part 1190 (Minimum Guidelines and Requirements for Accessible Design of the Access Board), implemented as operating policy by the General Services Administration.

4. When leasing space for its programs, a Federal agency must ensure that, with the addition of the leased space, the Federal agency's program, when viewed in its entirety, is accessible to persons with disabilities. Section 504 of the Rehabilitation Act.

5. A building or alteration is accessible if it conforms to the Uniform Federal Accessibility Standards (UFAS). Most Federal buildings must conform to the standard of the General Services Administration (41 CFR 101-19.6). Residential buildings must conform to the standard of the Department of Housing and Urban Development (24 CFR Part 40). Post offices must conform to the standard of the United States Postal Service (Handbook RE-4). Military bases and buildings must conform to the standard of the Department of Defense (Chapter 18 of DoD 4270.1-M).

6. The Architectural and Transportation Barriers Compliance Board or Access Board is responsible for receiving and resolving complaints under the Architectural Barriers Act. All Federal executive agencies (and there are over 100 of them) are responsible for receiving, investigating, and resolving complaints of discrimination under section 504. Section 504 of the Rehabilitation Act; see, e.g., 28 CFR §39.170 (regulation of the Department of Justice)

B. EMPLOYMENT

1. All Federal executive branch agencies are prohibited from discriminating on the basis of disability against qualified persons with disabilities and must take affirmative action to hire, place, and advance persons with disabilities. Sections 501 and 504 of the Rehabilitation Act of 1973.

2. The Federal executive branch shall be a model employer. 29 CFR §1614.203(b) (regulation of the Equal Employment Opportunities Commission)

3. The standards for what constitutes discrimination on the basis of disability shall be the standards applied under title I of the Americans with Disabilities Act. Sections 501 and 504 of the Rehabilitation Act, as amended, 29 U.S.C. §§ 791(g), 794(d).

4. A Federal executive agency must make reasonable accommodation to the known physical or mental limitations of otherwise qualified individuals with disabilities who are applicants for employment or employees, unless the agency can demonstrate that the accommodation would impose an undue hardship on the operation of the agency. Sections 501 and 504 of the Rehabilitation Act.

*Reasonable accommodations include altering work sites or other facilities used by employees to make them accessible, acquiring or modifying equipment or devices (including the provision of computers), job restructuring, modifying work schedules, providing qualified readers or interpreters, adjusting or modifying examinations, training materials, or policies, or reassigning workers to vacant positions.

*An undue hardship is an action that is excessively costly, extensive, substantial, or disruptive, or that would fundamentally alter the nature or operation of the agency. Because of the resources and scope of Federal agencies, reasonable accommodations in Federal agencies rarely rise to the level of an undue hardship.

5. A Federal executive agency may not ask a job applicant about the existence, nature, or severity of a disability, but may ask about an individual's ability to perform specific job functions. Sections 501 and 504 of the Rehabilitation Act.

*Nor may a Federal executive agency make medical inquiries or conduct a medical examination until after a job offer has been made.

*A job offer may be conditioned on the results of a medical examination, but only if this examination is required for all entering employees in similar jobs.

*A Federal agency may only require a medical examination of an employee or may only make inquiries as to the nature or severity of a disability in limited situations, when the examination or inquiry can be shown to be job-related and consistent with business necessity.

6. The Equal Employment Opportunity Commission is chiefly responsible for enforcing the Federal government's employment nondiscrimination provisions. 29 CFR Part 1614 (regulation on Federal Sector Equal Employment Opportunity of the EEOC).

C. FEDERAL PROGRAMS, SERVICES, AND ACTIVITIES

1. A Federal executive branch agency must not discriminate in carrying out its programs, services, and activities. In simple terms, the nondiscrimination mandate extends to everything that a Federal agency does. Section 504 of the Rehabilitation Act.

2. Each Federal agency has a regulation implementing its nondiscrimination obligations and these regulations establish the specific nature of each agency's nondiscrimination obligations. See, e.g., 1 CFR Part 326 (regulation of the Administrative Conference of the United States); 22 CFR Part 144 (regulation of the Department of State); 29 CFR Part 33 (regulation of the Department of Labor).

3. Examples of programs operated by the Federal executive branch include the Social Security program, the FBI tour, the Internal Revenue Service, the White House tour, the National Parks system, the Federal prison system, the emergency management services programs of FEMA and SBA, and the schools operated by the Department of Defense.

4. Section 504's requirement not to discriminate extends to a wide range of the daily activities of each agency; examples include the obligation to:

- *Provide qualified sign language interpreters or other appropriate auxiliary aids at meetings or hearings held by the agency or at conferences or other events sponsored by the agency.

- *Provide materials in alternate accessible formats (large print, Brailled materials, audio recordings, computer disks) when materials are made available to the public in printed form.

- *Provide captions on all videotapes developed by or on behalf of the agency.

- *Provide a sufficient number of TDD's (telecommunication devices for the deaf or text telephones) for agency use, giving particular emphasis to frequently used agency telephone numbers and 800 numbers; Federal agencies should not just rely upon the telecommunications relay for telephone calls from people who are deaf.

- *Provide extra assistance or modifications in agency forms to assist persons with mental retardation or other mental disabilities.

- *Ensure that, when Federal agencies hold agency-sponsored meetings, conferences, hearings, or other events outside the Federal work place, they only locate these events at accessible sites.

- *Provide accessible services at agency facilities when open to the public, for example, the agency library or cafeteria.

- *Ensure that, in administering a Federal grant program, the agency neither discriminates on the basis of disability in making grant decisions nor provides funding to entities that themselves discriminate on the basis of disability.

- *Obtain written assurances that the grant applicant is not discriminating on the basis of disability.

*Require the submission of addition, targeted, specific information to establish compliance, including budgetary information.

5. Federal agencies shall ensure that individuals with disabilities can produce and have access to information and data regardless of the type of medium, including all electronic and information technologies, that is comparable to the opportunities of individuals who do not have disabilities. Section 508 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794d.

6. Each Federal executive branch agency is responsible for designating an official to coordinate implementation of section 504 for federally conducted programs. Each Federal agency shall receive and resolve complaints of discrimination. Section 504 of the Rehabilitation Act.

D. THE AMERICANS WITH DISABILITIES ACT

*Remember that the Americans with Disabilities Act does not apply to the Federal executive branch. When the ADA was enacted in 1990, a full and rich set of Federal civil rights laws already covered the Federal executive branch. The ADA does apply to all employers with 15 or more employees (other than the Federal government), all units of State and local government, public accommodations, commercial facilities, carriers engaged in telecommunications, the U.S. Senate, the U.S. House of Representatives, and instrumentalities of the U.S. Congress.



UNITED STATES DEPARTMENT OF EDUCATION
OFFICE OF SPECIAL EDUCATION AND REHABILITATIVE SERVICES

THE ASSISTANT SECRETARY

TO : Stanley S. Hear *[Signature]*
FROM : Howard Moses, Deputy Assistant Secretary
SUBJECT : Report to Federal Disability Accommodations
Working Group
DATE : September 27, 1994

1. Specific accommodations issues that the Department of Education is addressing.

- o The Department has concluded a review of the legal sufficiency of a proposed statement of work for emergency/back-up reader and interpreter services for ED employees. Presently, no adequate system exists for covering illness, vacations or other absences by staff readers and interpreters. The proposed contractual services offers the first such system of emergency and back-up services for the Department. Legal sufficiency was required to reconcile conflicts between procurement regulations and statutory requirements for reasonable accommodations.
- o The Office of Special Education and Rehabilitative Services/ED completed the establishment of a task order contract for braille services for departmental publications and documents through FY 1995.
- o The FY 1995 ED budget, submitted to OMB, requested the exclusion of Schedule A readers, interpreters and assistants from the FTE ceiling for the Department. Upon denial of this request by OMB, a Departmental pool of FTEs for readers, interpreters, and personal assistants was formulated within the current and projected FY 1995 ceilings. The pool is being managed by OSERS, and includes two FTE slots allocated for such reasonable accommodations.

The Secretary's Disability Work Group identified the creation of the pool as vital in addressing the issue of adequately providing reasonable accommodations. However, assigning only two slots to the pool for the entire Department limited its effect. In response, a policy proposal is currently under review for making the authority used in creating the pool of readers, interpreters, and personal assistants a flexible authority, thus allowing adequately coverage of all appropriate requests for reasonable accommodations. (See attached policy draft.)

Further, the Department's FY 1996 budget request, once again, includes the proposed exemption of Schedule A-related positions from the FTE ceiling.

- o The Department's fire safety evacuation plan and procedures are currently being revised, focusing on: 1) adequate audio and visual warning systems; 2) frontline and back-up buddy system; 3) evacuation training and coordination with local fire officials for individuals with disabilities; and 4) warning systems for building guests.
- o ED is currently developing a vigorous, nationwide network among disability rights organizations, centers for independent living, traditional civil rights organizations, vocational rehabilitation programs, and community based organizations for the recruitment of highly qualified individuals with disabilities and disabled individuals of color for departmental positions. Training for supervisors and staff with hiring authority on issues surrounding the hiring of qualified individuals with disabilities is currently being planned to supplement the recruitment initiative.
- o ED's Office of the General Counsel is leading the development of a Department policy for responding to requests for, and making ED documents and audio-visual materials available in braille, audiotape, e-text, open captioned and other alternative formats.
- o Accessibility standards and accommodations for employees with visual disabilities are being reviewed in the Department's move to a Windows-based LAN and electronic-mail system.
- o Improvements in the Department's voice-mail system includes: 1) the awarding of a contract for a system that accommodates the use of TDD equipment; and 2) the installation of equipment on all main office telephones that allow the detection of TDD calls for appropriate routing.

2. Reports developed or proposed by the Department of Education regarding the topics covered by the Working Group.

See attached.

PURPOSE: ACTION

DATE:

TO: The Executive Management Council
Through: ES _____

FROM: Judith E. Heumann, Assistant Secretary, OSERS

Rod McCowan, Assistant Secretary, OHRA

SUBJECT: Proposed Policy to expand Departmental pool of Schedule A Reasonable Accommodations (including Interpreters, Readers, and Personal Assistants)

As co-chairs of the Secretary's Work Group on the Recruitment, Advancement, and Access for People with Disabilities, we are recommending a policy proposal to address a long-standing problem related to the hiring and retention of qualified employees with disabilities. The problem is the inability to provide needed reasonable accommodations because of perceived administrative and budgetary constraints.

By law, we must provide reasonable accommodations for qualified employees with disabilities in those situations that such accommodations are essential to the performance of the primary functions of their jobs. Accommodations may include such services as readers for employees who are blind or visually impaired, sign language interpreters for employees who are deaf or hard of hearing, or notetakers and assistants for an employee with a manual or mobility disability. Accommodations might also include assistants or appropriately trained supervisors for developmentally disabled employees. Determining an appropriate accommodation must be considered based on the known disability and on a case-by-case basis. The costs of providing accommodations vary and are dependent upon the skill level and specific job duties of the individual employee, as well as the grade or pay level of the employee who needs the accommodation.

In cases where a full-time interpreter, reader, or personal assistant is required for high-level or professional employees, we and other agencies are usually able to provide these accommodations within our FTE ceiling and S&E budget, although some smaller agencies such as the Access Board sought and were given relief on their FTE ceiling levels to allow them to hire a reader/interpreter to accommodate the needs of several staff members. In the future, however, reduced staffing and S&E funding levels will make it more difficult to hire qualified people with disabilities who may require service-based accommodations. In such an environment, we envision substantially fewer employees with disabilities in the

Federal work force simply because we cannot provide reasonable accommodations within the constraints of FTE or budgetary restrictions. Managers could also be placed in the position of discriminating against qualified applicants with disabilities either by not offering them employment or by not providing accommodations required to enable such persons to perform effectively following employment. This is certainly counter to the intent the Secretary expressed in his memorandum of October 25, 1993 (attached).

LEGAL REQUIREMENTS

The Rehabilitation Act of 1973, as amended, (which applies to the Federal Government and federally funded programs and activities) and the Americans with Disabilities Act (ADA) of 1990 (which applies to the private sector and State and local government entities) require that we may not "...deny employment opportunities to an otherwise qualified job applicant or employee with a disability based on the need ... to make reasonable accommodation to such individual's physical or mental impairment." Accordingly, we have an obligation to provide reasonable accommodations within an atmosphere that is as restriction free as possible. Currently, the Schedule A appointing authority [Section 213.3102(11)] authorizes the provision of accommodations for employees who have disabilities. Moreover, these employees are legally entitled to those accommodations needed to perform their assigned job functions. Failure to provide accommodations may well result in discrimination against individuals with disabilities.

ISSUE

Recognizing that some applicants and employees with disabilities may require service based accommodations, the dilemma becomes one of providing these mandated accommodations in the most efficient and cost effective manner. The harsh reality is that under current policy, POCs must count assistants against their FTE ceiling. If POC's have reached their FTE ceiling, managers have and will make one of two inadequate choices: (1) not hiring persons with disabilities who need service-based accommodations or (2) reducing scarce program resources by utilizing diminishing FTEs for non-programmatic functions.

Currently, when there is one vacancy to fill, we may be forced to take an additional FTE allocated for another position which happens to be vacant in order to meet the accommodation needs of the employee with a disability. Alternately, if a second position is not vacant and no FTE is available, managers may well be forced to discriminate either by not hiring or by failing to meet the reasonable accommodation needs of that applicant subsequent to employment. If the choice is made to utilize two FTEs to hire the employee and to provide the accommodation, thus complying with the law, managers are then faced with a compromised ability to carry out it's offices functions and operations.

In past years, we and others have been able to make accommodations within our FTE ceilings or have been given permission to exceed those ceilings when needed to provide required accommodations. However, because of recent changes, Departments now may not exceed current FTE ceilings for any type of employee and must instead utilize another, existing FTE to hire an interpreter, reader, or assistant. If this is the only way to provide an accommodation, the result clearly will be a reduction in the number of staff positions available to carry out the work of the agency. This will also put supervisors and managers in the untenable position of having to choose between (1) not hiring (or retaining) a qualified employee with a disability who requires a service-based accommodation or (2) not providing that accommodation, either because an FTE is not available or for fear of not being able to carry out program functions with fewer staff. Selection of the second option may put the agency in jeopardy of violating anti-discrimination laws.

This issue has been addressed recently by the formation of a Departmental pool of FTEs for readers, interpreters, and personal assistants. The pool is being managed by OSERS. As of now, there have been two FTE slots allocated for this reasonable accommodation pool.

The Secretary's Disability Work Group feels that the creation of the pool was vital in addressing the issue of adequately providing reasonable accommodations. However, assigning only two slots to the pool for the entire Department doesn't seem adequate. The Secretary has been very clear about supporting efforts to diversify the Department's workforce. If we are to include qualified individuals with disabilities in our diversity efforts, including hiring, retaining and promoting those individuals, we must be prepared to adequately provide all reasonable and necessary accommodations.

Currently the Department employs 84 individuals with targeted disabilities. Of those 84 individuals, 15 are provided a reader, interpreter or personal assistant (17 percent) as reasonable accommodation. If the Department is successful in meeting the planned EEO goals for fiscal year 1994, which projects an increase of thirty-five percent (35%) of the number of employees with targeted disabilities, the number of FTE slots needed to provide accommodations would increase by six. This is assuming that the prevailing pattern remains consistent.

PROPOSED POLICY ACTION

The Disability Work Group proposes that the Department of Education establish a policy that addresses adequately providing reasonable accommodations to individuals with disabilities that is consistent with all applicable Federal laws. We recommend that the Department make the authority used in creating the pool of readers, interpreters, and personal assistants a flexible authority, thus allowing full coverage of all appropriate requests for reasonable

accommodations. The work group also recommends that the management of the reasonable accommodation pool be transferred from OSERS to the Office of Management.

DECISION

Approve _____ Signature _____ Date _____

Disapprove _____ Signature _____ Date _____

Other/Comments:

CONTACT: Howard Moses, OSERS, MES Bldg., Room 3006, 205-5465



General Services Administration
Public Buildings Service
Washington, DC 20405

SEP 22 1994

Mr. Stanley S. Herr
Office of Domestic Policy
The White House
Washington, DC 20500

Dear Mr. Herr:

This is in response to your memorandum of September 12, 1994, regarding the August 18 meeting of the Domestic Policy Council's Federal Disability Accommodations Working Group and your request at the meeting for the following information:

Responsibility for the implementation of the Architectural Barriers Act (ABA) of 1968, and the resulting standards, the Uniform Federal Accessibility Standards (UFAS), falls under the General Services Administration's (GSA's) Public Buildings Service, Office of Design and Construction. Mr. Steve McCormick, our Accessibility Program Manager, will attend your September 29, 1994, meeting and present a brief overview of our activities.

Listed below are the Public Buildings Service's responses to the four-part assignment given at the August 18 meeting. Our colleagues will be sending their submissions under separate cover.

1. Identify some of the specific accommodations issues that your department or agency are now addressing.

GSA, as one of the four standard-setting agencies identified in the ABA, has taken an aggressive approach to providing accessibility in buildings designed, constructed, renovated, and leased by this agency.

Ms. Julia M. Stasch, Deputy Administrator of GSA, is a member of the Architectural and Transportation Barriers Compliance Board, and is the appointed Chair of the Federal Facilities Work Group. This group is charged with updating the UFAS to be consistent with the Americans with Disabilities Act (ADA) standards. We expect the UFAS update process to take several months.

Following a comparison of the two standards, it became apparent that, in some areas, a dichotomy existed between UFAS and ADA. To establish the Federal Government in a leadership position of providing the highest level of accessibility in design and



-2-

construction until this update is accomplished, GSA has adopted a policy of using the more stringent standard, whether it be UFAS, the ADA Title II Interim Final Guidelines, or Title III ADA Standards.

2. Produce or identify any reports that your agency has written or proposed on the topics covered by this Working Group.

Each year, GSA submits an annual report to Congress outlining any waivers or modifications to the UFAS which we have granted. As a general policy, we encourage every effort be made to make Federal facilities accessible. Only in rare cases when accessibility cannot be provided, do we grant a waiver or modification of Federal accessibility standards. Enclosed is a copy of GSA's portion of the fiscal year 1993 annual report to Congress.

3. Produce or identify any publications or brochures that you have written on those topics.

N/A

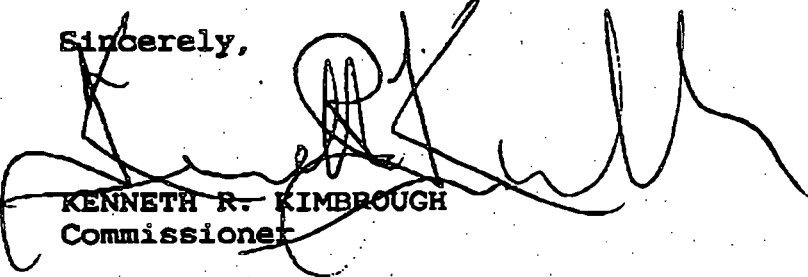
4. Describe briefly any other issues, accomplishments, and problems that your agency has noted that bear on the charge to this Working Group.

Beginning in late 1990, GSA embarked on an intensive accessibility training program for our Central Office and regional office personnel. Although originally scheduled to be a 1-year effort, our training is ongoing to date. In addition to training over 1,200 GSA employees, training has been given to several Federal agencies, including the Departments of Agriculture, Housing and Urban Development, Veterans Affairs, Education, and Transportation.

Since the accessibility program is a dynamic effort in applying developing technology, we expect our training effort to continue into the foreseeable future.

We appreciate the opportunity to participate in the Federal Disability Accommodations Working Group. If you require additional information, please contact Mr. Steve McCormick on 501-0989.

Sincerely,



KENNETH R. KIMBROUGH
Commissioner

Enclosure

General Services Administration
Annual Report of Activities Under the Requirements of
The Architectural Barriers Act, as Amended

**General Services Administration
Annual Report of Activities Under the Requirements of
the Architectural Barriers Act, as Amended**

Introduction:

The General Services Administration (GSA) is continually increasing the accessibility of buildings and facilities in our inventory. New buildings are being built, older buildings are being renovated, and leased facilities are the most accessible offered by the private sector.

The Deputy Administrator of GSA is a member of the Architectural and Transportation Barriers Compliance Board (ATBCB) and was actively involved in "rulemaking" and other activities associated with the implementation of the Americans with Disabilities Act (ADA) of 1990. The GSA Public Buildings Service (PBS) Accessibility Program Manager attended scheduled Board and Committee meetings of the ATBCB, as well as most of the special meetings called to develop rulemaking for the ADA.

Training Program:

In fiscal year 1993, GSA continued hands-on training of the Uniform Federal Accessibility Standards (UFAS) and additional training on the comparisons of UFAS and ADA. Over the past few years, GSA has trained over 1,200 of its PBS employees nationwide. Accessibility trainees included building managers, building designers, leasing specialists, interior designers, repair and alteration specialists, child care specialists, and fire protection engineers.

GSA has also provided accessibility training to other Federal agencies, such as the Department of Housing and Urban Development, the Federal Aviation Administration, the Department of Education, the Department of Veterans Affairs, and the Administrative Office of the United States Courts.

New Accessibility Policy

GSA has not issued, revised, or repealed any accessibility standards during fiscal year 1993. However, a new policy has been established within GSA, effective July 8, 1992, that all new GSA design and construction projects will comply with the more stringent standard, whether it be UFAS or Title III of the ADA standard. Our goal is to follow the highest standard and provide maximum accessibility.

Updating of the Existing Standard

We have started the process to update the UFAS standard to be consistent with the new ADA standards. GSA submitted comments on the ADA Title II standards which cover State and local government facilities, scheduled to be published in 1994.

Meetings have been held between the four standard-setting agencies of the Federal Government and the ATBCB to begin the updating process. Until the UFAS is updated, GSA's policy of following the highest standard will ensure that our buildings provide the highest level of accessibility during the update process.

Accessibility Complaints Opened and Closed During Fiscal Year 1993

Each year, the number of accessibility complaints made against GSA-controlled buildings has decreased. In addition, we have been able to close complaints in less time, thereby reducing our backlog.

Thirteen new accessibility complaints were opened in fiscal year 1993. During this same period of time, we closed seventeen complaints. The total number of open complaints at this time is eleven.

Waivers and Modifications of UFAS Granted by GSA During Fiscal Year 1993:

Each request for a waiver or modification of UFAS is carefully considered to ensure that every reasonable effort has been made to make the subject facility accessible before a waiver or modification is granted. In addition, we coordinate our actions with the ATBCB to confirm whether a complaint has been filed, how the subject entity responded to that complaint, and what actions were taken to make their facilities accessible. Only when we are assured that every effort has been taken to make the facility accessible do we recommend that a waiver of modification be granted.

During fiscal year 1993, GSA granted five modifications and three waivers of the UFAS.



United States Architectural and Transportation Barriers Compliance Board

1331 F Street, NW • Washington, DC 20004-1111 • 202-272-5434 (Voice) • 202-272-5449 (TDD) • 202-272-5447 (FAX)

MEMORANDUM

TO: Stan Herr
White House, Office of Domestic Policy

FROM: Lawrence W. Roffee *LWR*
Executive Director

DATE: September 22, 1994

SUBJECT: Disability Accommodations Report

This memorandum is the report that was requested at the August 18, 1994 meeting of the new Federal Disability Accommodations Working Group.

1. Identify some of the specific accommodations issues that your department or agency are now addressing.

The Access Board leads all Federal agencies in the percentage (39%) of people with disabilities employed in our workforce. We have worked with each employee to make job accommodations and have not found them to be costly or difficult to make. The most common accommodation is simply flexible working hours. We are most proud of the accommodations we have made so that one of our Accessibility Specialists who is deaf, can easily perform her shift on our Technical Assistance telephone lines. A contractor, with materials purchased at a hardware store made a wire splinter so an interpreter can listen to the call using a head set. The interpreter is easily able to interpret the callers voice.

2. and 3. Produce or identify any reports, publications, or brochures that your agency has written or proposed on the topics covered by this working group.

The Access Board has produced over 20 publications on various aspects of accessible design. Our publications list is attached. The publications are available free of charge and most are available in large type, cassette tape, computer disk, and braille.

4. Describe briefly any other issues, accomplishments, and problems that your agency has noted that bear on the charge to this Working Group.

a. The Board has passed a resolution urging all Federal agencies to adopt the ADA Accessibility Guidelines (ADAAG) as the accessible design standards to use in the construction, leasing, or alteration of Federal buildings and facilities. We believe the ADAAG is a much more state-of-the-art set of guidelines than are the Uniform Federal Accessibility Standards (UFAS) which were developed in 1984. The General Services Administration, the Department of Interior, and the Department of Defense have announced they will use ADAAG. The Department of Justice has urged all Federal agencies to use ADAAG in their Section 504 regulations. This Work Group could continue to urge the use of ADAAG for Federal buildings and facilities.

b. The Board has a strict policy about having documents which are for public distribution available in alternate media which includes large type, cassette tape, computer disk, and braille. We have found that many Federal agencies do not make their documents available in these formats. The Government Printing Office will not make documents it sells or distributes available in any alternate format. The Working Group could press Federal agencies and the Government Printing Office to comply with the law and produce their materials in alternate formats.

Attachment

Publications Checklist

ACCESS BOARD (U.S. Architectural and Transportation Barriers Compliance Board)

1331 F Street, NW, Suite 1000, Washington, DC 20004-1111

202/272-5434 (Voice) • 202/272-5449 (TTY) • 202/272-5447 (FAX)

Technical Assistance: 800/872-2253 (Voice & TTY) • 800/993-2822 (TTY)

The Access Board produces or distributes the following publications. Single copies (regular print, braille [B], cassette [C], disk [5 ¼" DD floppy disk in ASCII format], or large type [LT]) are available at no cost. Circle the publication number (M41, for example) for a regular print copy or one of the letters (B, C, D, LT) for a single alternate format.* Clearly print your name and address in the space provided on the back of this form. Any publication may be photocopied or reprinted to use for nonprofit educational purposes.

The publications on this list may also be ordered through the Board's telephone or fax numbers as shown above. When you reach the automated switchboard, press 1 on your phone keypad to access the publications ordering menu. Allow three to five weeks for delivery.

GENERAL PUBLICATIONS

Pub.

No. Format

- M41** B C D LT **Access America:** A newsletter about the Access Board and its activities. To be added to the newsletter mailing list, check here []
- G08** B C D LT **Publications Checklist:** Additional copies of this order form can be obtained from the Access Board.
- G14** B C D LT **Americans with Disabilities Act Accessibility Requirements:** An overview in tabular form of accessibility requirements, effective dates, regulations, and enforcement of Titles I-IV of the Americans with Disabilities Act (12/91)
- P93** B C D LT **Annual Report to the President and Congress:** Report on Access Board activities for the previous fiscal year
- G15** B C D LT **Filing a Complaint ... It's Your Right:** Explains how to file an Architectural Barriers Act complaint with the Access Board about inaccessibility involving buildings designed, built, or altered with certain Federal funds or leased for occupancy by Federal agencies. Includes complaint form. Also provides a brief overview of other Federal accessibility laws (3/93)

ACCESSIBILITY GUIDELINES AND STANDARDS

- S14** B C D LT **Americans with Disabilities Act Accessibility Guidelines (ADAAG):** Accessibility requirements for new construction and alteration of buildings and facilities covered by the ADA. Also includes Department of Justice regulations for public accommodations and commercial facilities (7/91)
- S04** C **Uniform Federal Accessibility Standards (UFAS):** Design, construction and alteration standards for access to federally funded facilities (4/88)

ARCHITECTURAL ACCESS

- S09** D **Americans with Disabilities Act Accessibility Guidelines (ADAAG) Checklist:** A checklist for applying ADAAG in the design, construction, and alteration of buildings and facilities, including transit facilities (2/93)
- A26** C D **Hands-on Architecture:** Contains pertinent information from a Board-sponsored research project with suggested standards for specifying controls and operating mechanisms (12/86)
- S06** D LT **Technical Paper on Accessibility Codes and Standards:** Compares the *Minimum Guidelines and Requirements for Accessible Design* and the *Uniform Federal Accessibility Standards* with local, state, and foreign access codes and standards (7/89)
- S05** D **Uniform Federal Accessibility Standards (UFAS) Accessibility Checklist:** A checklist for applying UFAS in the design, construction, and alteration of buildings and facilities (6/90)
- S07** D **UFAS Retrofit Manual:** This 300-page document, based on UFAS, contains easy-to-understand, practical solutions to often-encountered alteration situations (4/91)

*If you represent a library or other organization needing more than one alternate format, call the Access Board.

- S10 D **Recommendations for Accessibility Standards for Children's Environments:** A technical report presenting draft standards for facilities that serve pre-kindergarten through elementary-aged children. Includes post-occupancy evaluations (1/92)

COMMUNICATION ACCESS

- C01 B C D LT **Assistive Listening Systems:** Describes commercially available devices and systems for making public address and other types of communication systems more accessible to persons with hearing impairments (10/91)
- C07 B C D LT **Using a TTY:** Describes how to make and receive TTY (also known as text telephone or TDD) calls, how to use a TTY machine, and how to recognize and answer TTY calls received on phones used for voice calls (7/92)

TRANSPORTATION ACCESS

- T19 B C D LT **Aircraft Stowage Procedures for Battery-Powered Wheelchairs:** Describes a procedure for safely stowing battery-powered wheelchairs on aircraft to conform with regulations governing hazardous materials, based on practices of several domestic and foreign air carriers (9/88)
- T10 B C D LT **Guidelines for Aircraft Boarding Chairs:** Guides purchasers, designers, and manufacturers of boarding chairs in the design and purchase of safer and more effective devices; also identifies elements of a proper training program (10/91)
- T27 B C D LT **Securement of Wheelchairs and Other Mobility Aids:** Provides technical assistance to transit operators and people with disabilities on how to secure most common manual and power wheelchairs, including three-wheel scooters. Discusses training and policy issues and lists transit agencies that have developed effective securement systems for dealing with these devices (9/90)

TECHNICAL ASSISTANCE BULLETINS

An ongoing series of technical assistance bulletins for design professionals developed from frequently asked questions about specific ADAAG provisions. Current bulletins include:

- A29 B C D LT **Bulletin #1: Detectable Warnings** (lists manufacturers)
- A31 B C D LT **Bulletin #2: Visual Alarms**
- A32 B C D LT **Bulletin #3: Text Telephones**
- A33 B C D LT **Bulletin #4: Surfaces (Slip-Resistant)**
- A34 B C D LT **Bulletin #5: Using ADAAG**
- A35 B C D LT **Bulletin #6: Parking**

DATE:

PHONE: ()

NAME:

ORGANIZATION:

STREET ADDRESS:

CITY:

STATE:

ZIP:

ATTENTION COMPUTER USERS: To download publications, call the Access Board Bulletin Board Service (BBS) at 202/272-5448. The BBS receives calls 24 hours a day. To request technical assistance on using the BBS and downloading documents, call 202/272-5434, extension 7/36.

August 1994

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August 1994

September 23, 1994

Memorandum For Stanley S. Herr

Thru: Larry Parks

From: Carolyn Gunney

Subject: Commerce Activities in Support of Federal
Disabilities Accommodations

The Department of Commerce is fully committed to providing reasonable accommodations for people with disabilities. As part of that commitment, operating units implemented many mechanisms which allowed Commerce to be responsive to the needs of employees and visitors that are disabled.

I. A listing of specific accomplishments, by operating units, follow.

Office of the Secretary

- Three sets of brass rails were installed at entrance steps of the main building.
- The braille elevator emergency procedures signage has been completed in all elevators.
- A survey was completed at the main building to determine the number of rest rooms needing modification to accommodate people with disabilities.

Bureau of Economic Analysis

- The Bureau of Economic Analysis (BEA) relocated to a new facility. The building is fully accessible to people with disabilities.
- For individuals with a hearing impairment, TDD systems are provided in the Public Information Office and at individual work stations.
- For individuals with a sight impairment, public access, information, and emergency signs have the information in braille. Recently released data from BEA is available in voice recorded messages for sight impaired clients and the general public.

Census Bureau

- All employees who have a hearing disability were provided with an opportunity to obtain an automated vibrating system that alerts them to situations requiring immediate evacuation.
- Permanent accessible parking spaces was established for visitors with disabilities.
- A directional sign was posted at the main entrance in Suitland, Maryland to notify people with physical disabilities that assistance is provided upon request.
- A TTY was installed in the Public Information Office to enable people with hearing disabilities to request products and information.
- The Equal Employment Opportunity Office and the Public Information Office purchased decoders to provide close captioned videos for persons who have hearing disabilities.
- Accessible restrooms, including showers, were installed in the exercise facility in Jeffersonville.
- Dual access door operators were installed at seven locations in Jeffersonville.
- TTYs and directional signs were installed in all regional offices and telephone centers.

National Institute of Standards and Technology

- Restrooms were modified throughout the site to accommodate people with disabilities.
- Accessible ramps, handicapped parking areas, and drinking fountains were installed throughout the facility to accommodate people with disabilities.
- A sound amplification system was installed in the auditoriums.
- A TDD phone mail system was installed in the office of Civil Rights. A pay TDD was installed near the auditoriums for visitors.
- Elevators were modified by adding auditory and braille features.

National Oceanic and Atmospheric Administration

- NOAA relocated to four newly constructed buildings in Maryland that are all fully accessible to people with disabilities.
- Regional offices and laboratories renovated bathrooms, provided parking services, built ramps, and installed electric doors to accommodate people with disabilities.

Patent and Trademark

- Parking spaces for the handicapped were installed.
- Restrooms were updated to accommodate people with disabilities.
- Stairwells in Crystal Plaza 3 and 4 were updated.

II. Commerce has written several reports addressing Federal Accommodations for the Disabled. Titles of some of the more recent reports are listed below.

- The Bureau of the Census recently completed a report entitled "Americans with Disabilities: 1991-92" -- the first comprehensive disability survey ever undertaken by the Bureau. This report will be useful in establishing baseline numbers as the Nation works to reduce barriers faced by persons with disabilities.
- The Bureau of the Census prepared a statistical brief entitled "Americans with Disabilities". The brief addressed, in part, the impact of having a disability on employment status.
- The National Institute of Standards and Technology released a report, for public comment, entitled "The Information Infrastructure: Reaching Society's Goals." The first chapter addresses meeting the needs of people with disabilities in developing the National Information Infrastructure. The report was prepared by the Committee on Applications and Technology of the Information Infrastructure Task Force.
- Commerce's Affirmative Action Program Report for People with Disabilities was prepared, and submitted to the Equal Employment Opportunity Commission, in accordance with the Rehabilitation Act of 1973, as amended, 29 U.S.C. Section 791 ET SEQ.

III. Commerce encourages new and innovative ideas on how to continue meeting the needs of people with disabilities. Listed below are a few notable accomplishments that might bear on the charge of the working group.

- In honor of the Federal Disability Awareness Month, the Department of Commerce is hosting the sixth annual interagency Accessible Computer Technology (ACT) exhibit. Ronald H. Brown, the Secretary of Commerce, will be the keynote speaker at the opening ceremony on October 5, 1994, at 9:30 A.M. in the Main Commerce Auditorium on the first floor, 14th Street and Constitution Avenue, N.W. Awards will be presented for outstanding performances by Federal workers, managers and vendor.

Exhibitors are invited to stage their technology in the lobby and demonstrate its application. The ACT, held this year October 5 & 6, 1994, is a collaborative effort of fourteen government agencies which contribute toward employing those with disabilities. This year private sector associations are being invited to join in the ACT. Commerce is very proud of this tradition and the good works that have come from it. As a result of the past ACTs, a wave of new accessible technology has been made available.

The General Services Administration's (GSA) Clearinghouse on Computer Accommodation (COCA) and Council on Accessible Technology (COAT) has coordinated and will present a free seminar on October 5 at 1:00 P.M. - 3:00 P.M. in the Main Auditorium. The seminar entitled "National Information Infrastructure: Electronic Access for All" will focus on Advancing Modality Choice Through Captioning. A panel of consumers with disabilities, researchers and commercial developers will exchange views and demonstrate progress with applications that support user choice of information media.

In keeping with the goals of the National Performance Review (NPR), this initiative promotes getting the information to the entire American community by the most efficient and effective means possible.

The exhibits are open in the Commerce Main Lobby following the opening ceremony until 4:00 P.M. and the next day, October 6, 9:00 A.M. - 2:00 P.M.

Page 5

- The International Trade Administration implemented a program which allows each unit, headed by an Assistant Secretary, to respond positively to request for reasonable accommodations. Each unit must set aside \$1500. Disabled employees make a written request to their supervisor. If the supervisor agrees, the request is forwarded to the Handicap Coordinator. A committee consisting of one representative from each unit reviews and approves all submitted requests. If the request is approved, the appropriate Assistant Secretary is notified of the need to authorize the allocation of funds.

Recent examples of its use include the purchase of special equipment including a large 20 inch monitor, a closed circuit television, zoom caps that enlarge keyboard keys, and a voice activated computer.

- Commerce revised the Real Property Management Manual to increase compliance with accessibility requirements in facilities leasing program. The revised provision should help reduce physical barriers for persons with disabilities to Commerce programs and activities.
- Under a Cooperative Research and Development Agreement with United Technologies' Otis Elevator, the National Institute of Standards and Technology is working to develop fire safe elevators to be available to evacuate disabled individuals in emergency situations.
- Larry Irving, the Assistant Secretary for The National Telecommunications and Information Administration, attended a meeting on Americans with Disabilities on August 4, 1994. He addressed the importance of building in accessibility for the disabled to the equipment and networks of the National Information Infrastructure at the onset rather than waiting to retrofit products and the infrastructure.
- Additionally, the National Telecommunications and Information Administration will hold an electronic hearing on the issue of universal access to the National Information Infrastructure. Access points will be set up in public libraries which will provide Americans with disabilities an excellent opportunity to have additional input into the process of redefining universal service.
- The Patent and Trademark Office developed an applicant referral system for individuals with disabilities. This system has markedly increased applicant referrals for individuals with disabilities.

1. The following information is provided in response to your request of September 9, 1994, regarding VA's compliance with laws and regulations pertaining to nondiscrimination on the basis of disability:

a. Currently VA is addressing the issue of centralizing funds for providing reasonable accommodations to persons with disabilities to remove a disincentive for hiring persons with disabilities. This would relieve managers of the need to find additional funds from their limited budgets, if disabled employees in their services required accommodations. On August 10, 1994, Secretary Brown approved the establishment of a General Operating Expense (GOE) account (\$50,000), which would include VBA and staff offices in VACO, for the purchase of adaptive equipment to accommodate employees with disabilities. Other organizations receiving non-GOE appropriations could set aside funds for the purchase of adaptive equipment. (See attachment.) Consideration is being given to expanding this provision to a centralized fund for expensive accommodations departmentwide.

b. Annually VA submits a report to the Equal Employment Opportunity Commission on the employment of people with disabilities. This report includes coverage of the agency's activity for the removal of architectural barriers. (See attached.)

c. In addition to VA's own publications, the Office of Equal Opportunity has used publications prepared by other lead agencies to publicize information about issues related to people with disabilities. (Copies attached.)

MP-7 "Equal Opportunity in the Veterans Administration" Chapter 2, Section E

38 CFR, Part 15 "Enforcement of Non-Discrimination on the Basis of Handicap in Programs or Activities Conducted by the Department of Veterans Affairs"

VA Directive #6621 "Accessible Technology"

VA Barrier Free Design Handbook

**Equal Employment Opportunity Management Directive 712
"Comprehensive Affirmative Action Programs for Hiring, Placement,
and Advancement of Handicapped Individuals" from the Equal
Employment Opportunity Commission (EEOC)**

**Equal Employment Opportunity Management Directive 713
"Affirmative Action for Hiring, Placement, and Advancement of
Individuals with Handicaps" from the EEOC**

**Office of Personnel Management's (OPM) "Handbook of Reasonable
Accommodation"**

OPM's Handbook of Job Analysis for Reasonable Accommodation"

**VA Memorandum "Answers to Questions on Issues Related to People
with Disabilities"**

**VA Memorandum "Disabled Veterans Affirmative Action and People
with Disabilities Programs"**

**Memorandum "Strategies for Making Documents Accessible to
Visually Impaired Employees" from the Interagency Committee on
Handicapped Employees (ICHE)**

EEOC's Memorandum "Individuals with Hearing Impairments"

ICHE's Memorandum "Individuals with Learning Disabilities"

**ICHE's Memorandum "Hiring, Placement, Training and
Advancement of Qualified Applicants and Employees with Handicaps"**

**Booklet from the President's Committee on Employment of People
with Disabilities (PCEPD) on the Job Accommodation Network**

**PCEPD's annual publication for National Disability Employment
Awareness Month and an all-station letter from the Secretary**

Handbook from the General Services Administration, "Managing End User Computing for Users with Disabilities." This publication provided an application form for receiving updates

EEOC's "A Guide for Managers and Supervisors" which was reprinted by VA

d. The MP-7 states that reasonable accommodation must be made to the known physical or mental limitations of a qualified applicant or employee with a disability unless it can be demonstrated that the accommodation would impose an undue hardship on the operation of the VA program. MP-7 lists VA's goals as follows:

- To be a model employer of persons with disabilities.
- To bring employees and applicants with disabilities into the mainstream of EEO planning and activities as a protected class.
- To eliminate architectural, systemic, communication, transportation, attitudinal or other barriers to the full representation of persons with disabilities in the work force.
- To focus on employment and advancement of persons with targeted disabilities, including special recruitment programs, numerical employment goals, and goals and timetables for facility accessibility.

38 CFR Part 15.130 states that no qualified individual with handicaps shall, on the basis of handicap, be excluded from participation in, be denied the benefits of or otherwise be subjected to discrimination under any program or activity conducted by the agency.

e. The frequent letters and issuances from Secretary Brown regarding nondiscrimination and affirmative action for people with disabilities illustrate forcefully VA's compliance with laws, regulations and policy issuances in the area of nondiscrimination on the basis of disability. (See attached.)

**Department of
Veterans Affairs**

Memorandum

Date: AUG 05 1994

From: Acting Assistant Secretary for Policy and Planning (008)

Subj: Special Account for the Purchase of Adaptive Technology

To: Secretary (00)

1. As you may know the Department is required by Public Law 102-569, the Rehabilitation Act of 1973, as amended, to provide reasonable accommodation to any disabled employee working in the Department. Often providing reasonable accommodation means the purchase of some type of adaptive equipment. Adaptive equipment is described in VA Acquisition Regulations and includes anything which is not ordinarily provided to employees as standard equipment, such as a desk or telephone, for aiding him/her in the performance of essential job functions.
2. In response to the requirements, the VA issued on April 11, 1994, Directive # 6621 Accessible Technology, in order to insure that Federal employees with disabilities have equivalent access to all information resources required to perform their jobs. The directive also requires each organizational unit to develop a technology accessibility plan to track the organization's progress in this area.
3. Most adaptive equipment referred to in VA Directive # 6621 is quite expensive. Due to this high cost, most disability advocates have argued that many managers are reluctant to hire persons with disabilities. In an effort to counteract such financial disincentives, other Federal agencies have established centrally funded accounts for the purchase of adaptive technology.
4. Currently the hiring organization must finance all of the cost of any accommodation for a newly-hired disabled employee. In recognition of the increased financial burden placed on smaller organizational units within VA, the former Chief of Staff and his Deputy asked the Assistant Secretary for Policy and Planning to study the feasibility of creating a special account for the purchase of adaptive equipment for newly-hired disabled employees in organizations funded through the General Operating Expenses account (GOE). The Assistant Secretary authorized creation of a working group charged with developing a proposal for a special adaptive equipment account within GOE-funded organizations.
5. After lengthy deliberations the working group coalesced around the following three related recommendations which we believe will help resolve the issue. It is clear these recommendations are illustrative of your ongoing commitment to the hiring and advancement of individuals with disabilities. The creation of this GOE account will aid managers in their efforts to recruit and hire individuals with targeted disabilities, which is consistent with the Departmental goal you set in your July 29, 1994, message.

Subject: Special Account for the Purchase of Adaptive Technology

6. Recommendations:

- 1 Establish a GOE account, which would include VBA and staff offices in VACO. The account would have a separate control point with centralized funding and ownership of adaptive equipment for disabled employees; further, the other organizations receiving non-GOE appropriations could set aside funds for the purchase of adaptive equipment. A centralized database for all adaptive equipment funded by the GOE account needs to be established for all adaptive equipment purchased for VACO employees. This approach counteracts the disincentive to hire persons with disabilities while providing a tracking mechanism to ensure that all adaptive equipment is "recycled."

☒ Approved
☐ Disapproved

- 2 Fund the special account for adaptive equipment at the \$50,000 level.

☒ Approved
☐ Disapproved

- 3 The responsibility for administration of the GOE centralized account for the purchase of adaptive equipment be placed under the Assistant Secretary for Human Resources and Administration, with the Individual Training Center serving in a consultative role for the purposes of assessment.

☒ Approved
☐ Disapproved

Signature:

Jose Brown

Date:

AUG 10 1994

7. David Walton of my staff, (202) 273-5061, coordinated this report and is available to reply to questions.

for Edward Chow, Jr.
H. David Burge



Department of Energy

Washington, DC 20585

September 21, 1994

TO: STANLEY S. HERR

SUBJECT: DISABILITY-RELATED ISSUES CURRENTLY ADDRESSED
BY THE DEPARTMENT OF ENERGY

Per your memorandum of September 12, 1994, I am forwarding the enclosed information about the Department of Energy's computer and electronic accommodations program for people with disabilities, and the disability-related issues currently addressed by the Department for your review.

If you need further information, please call me. Since I am hearing-impaired, I can be reached by dialing the DC Relay Center at (202) 855-1000. Your call will be facilitated by a relay communication assistant who will ask for my TDD office number which is (202) 586-5654.

I will be able to attend the next meeting on September 29th, and look forward to seeing you again.

A handwritten signature in cursive script, reading "Lila Farazian", is positioned above the typed name.

Lila Farazian
Coordinator, Affirmative Employment
Program for People with Disabilities

Encl.



DISABILITY-RELATED ISSUES CURRENTLY ADDRESSED
BY THE DEPARTMENT OF ENERGY

Following are the employment and accommodations issues which the Department of Energy is currently addressing:

EMPLOYMENT ISSUES:

In order to promote and increase employment opportunities for people with disabilities, the Department of Energy successfully obtained an authority from the Office of Management and Budget (OMB) in January 1993 for an exemption from full-time equivalent (FTE) ceiling controls for hiring people with disabilities including disabled veterans, sign language interpreters, readers, and personal assistants for the Department's employees with disabilities under the excepted appointing authorities. The success of the Department's ceiling exemption program for hiring people with disabilities has been hampered by the hiring and ceiling restrictions imposed by the Office of Management and Budget (OMB) Bulletin No. 93-08.

Furthermore, a large number of military bases across the country are in the process of closing down, and many Department of Defense (DOD) employees are being laid off. The National Defense Authorization Act for FY 1993, enforced by the Office of Personnel Management (OPM), requires all Federal agencies to give full consideration to the job applications of displaced Defense employees before selecting any candidate from outside the agency. Consequently, this law considerably slows down Federal agencies' efforts to increase the employment rate of disabled veterans and people with disabilities.

Due to the current downsizing efforts and scarcity of full-time equivalent (FTE) slots at the Department of Energy, managers and supervisors tend to overlook qualified applicants with disabilities and select those who seem to be "the Best and the Fittest" to fill those scarce FTE slots in their organizations. Because of the persistent myths and misconceptions, managers and supervisors tend to think that qualified applicants with disabilities cannot be the best qualified ones because of their severe disabilities. Consequently, it has become extremely difficult for highly qualified applicants with disabilities to compete for scarce FTE slots with women, minorities and other people who do not have disabilities. This unusually intensive competition perpetuates the Darwinian theory of "the Survival of the Fittest," and slows down Federal agencies' efforts to increase the employment rate of disabled veterans and people with disabilities.

I suggest that a central pool of FTE slots be established as a great incentive to encourage Federal managers and supervisors to hire people with disabilities and personal assistants (including interpreters and readers) under excepted appointing authorities at all Federal agencies. I suggest that the National Defense Authorization Act be amended to allow Federal agencies to select qualified candidates with disabilities from outside the agency without being required to give full consideration to the job applications of displaced Defense employees who do not have disabilities.

Currently, it is optional for managers and supervisors to take disability awareness training seminars. In fact, not many of them are highly motivated to take this necessary training seminar. Consequently, the myths, misconceptions and stereotypes about disabilities continue to perpetuate themselves at all Federal agencies, and discourage Federal managers and supervisors from increasing the representation of qualified people with disabilities.

I suggest that, like the AIDS awareness training, disability awareness training seminars be made mandatory for all Federal managers and supervisors in order to effectively eliminate those persistent myths, misconceptions and stereotypes and to open the Federal government's once-closed door to highly qualified people with disabilities.

ACCOMMODATIONS ISSUES:

The Department of Defense (DOD) established the central Computer/Electronic Accommodation Program (CAP) in 1990 to assist DOD field offices in procuring and providing adaptive devices for DOD employees with disabilities. The CAP program assisted DOD to significantly increase the employment and career advancement opportunities for people with disabilities by having successfully eliminated a wide variety of artificial barriers. The CAP office services as the primary DOD program office responsible for providing computer and electronic accommodations to individuals with disabilities, and assists DOD field offices by providing financial resources for services to make long-term training programs easily accessible. The CAP office also assists DOD field offices to fully integrate the electronic accommodations of persons with disabilities with the information resources management planning, programming, budgeting and acquisition processes.

Efforts to support the computer/electronic accommodation needs of employees with disabilities at the Department of Energy (DOE)

have been decentralized with each field office having their own program in addition to the Department of Energy Headquarters' program. While this arrangement meets existing requirements, the Department of Energy needs to expand and coordinate the program, especially in light of new DOE initiatives to increase employment and career advancement opportunities for people with disabilities. Occasionally, funding to procure adaptive devices has been difficult to obtain. There is no network among the Department of Energy field offices to expedite the acquisition and provision of accommodation services for people with disabilities. Furthermore, the Department of Energy does not provide additional financial assistance to small DOE field offices for reader/interpreting services for employees with visual or hearing impairments, for training opportunities for DOE employees with disabilities. Since some accommodations are expensive, many managers and supervisors have a hard time budgeting for these expenses, and therefore, are discouraged from hiring more people with disabilities.

The Department of Energy is currently considering the suggestion that the Department establish a central fund from which organizations can draw for procuring adaptive devices and support services, and the suggestion that the Department of Energy develop and implement a centralized DOE-wide accommodations system similar to the Department of Defense's CAP program. If the Department of Energy finds it feasible to adopt the above suggestions, the new program will eventually provide a wide variety of computer/electronic accommodations services for all DOE field offices, and will provide financial assistance to small DOE field offices for reader/interpreting services and for disabled employees' training opportunities. Such a centralized department-wide program will review the results of DOE field offices' efforts and provide constructive program feedback.

The Federal government needs to implement a new regulation which requires all Federal agencies to establish a separate line item in the annual Federal budget plan to provide resources and financial assistance to meet accommodation needs of Federal employees with disabilities.



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20410-0001

TO: Stan Herr, The White House

FROM: Thea Spires, ^{ts} HUD

RE: Federal Disability Accommodations Working Group
Assignment

DATE: September 26, 1994

HUD's federally-conducted 504 rule was published in June, and HUD is preparing to initiate the required self-evaluation. One aspect of the self-evaluation will be to review and revise existing procedures related to reasonable accommodation requests.

Some work has been done regarding employment-related reasonable accommodation requests. A guide for managers and supervisors, "The Employment of Persons with Disabilities", was developed and distributed in April, 1994. The guide provides a considerable amount of information about reasonable accommodations, including a section on such topics as "determining undue hardship", "types of reasonable accommodations", and "medical documentation", and a section on "procedures for processing requests for reasonable accommodations". The guide also includes a "Reasonable Accommodation Request" form, a glossary of functional limitations, and an extensive list of resource agencies.

Little work has been done on customer-related reasonable accommodation requests.

1. Specific accommodations issues now being addressed by HUD

Most "accommodations" noted by the office of personnel involved structural, equipment and/or communication-related modifications that were required programmatically (to meet general accessibility standards) rather than as responses to specific accommodation requests. Examples include: all elevators renovated to meet ADA access standards; water fountains in certain areas lowered to UFAS height; ADA-required signage installed in some areas; power doors installed in a few areas;

ramps and private shower areas installed in fitness center.

The few employee-specific accommodations that were noted included the following actions: installation and relocation of strobe lights as necessary in offices of hearing-impaired employees; provision of TTYs; interpreter services; modification of office furniture; installation of specially designed strength machine in fitness center.

2. Reports

At this time, no reports related to reasonable accommodation issues have been produced.

3. Publications or brochures

As noted above, HUD has produced a guide for managers and supervisors that includes information on employee accommodations. The guide is titled "The Employment of Persons with Disabilities".

Ken Tiktin

Department of Transportation

TASKS

1. Identify specific compliance issues DOT is grappling with-
Sign language interpreters--quality
quantity
reimburseable agreements
inter-agency sharing

Transportation-Accessible vans & buses for events, training, etc.

Disability Awareness in general--raise interest to a higher priority

2. Identify reports of interest to working groups
DVAAP/ FEORP/EEOC

3. Any publications or brochures to share with the task force

4. Other brief discussion of accomplishments within the Department
On-going classes "Introduction to American Sign Language and
Deaf Culture"
Monthly meetings of interagency Selective Placement Coordinators
discussions, problem-solving, sharing of issues related to
employees with disabilities
Bi monthly awareness workshops "Experiential Workshop on
Disability Awareness"--interagency
Train the Trainer--program to enable agencies to facilitate the
experiential workshop without the assistance of OST official
National Disability Awareness Campaign
Interagency, regions and headquarters--guest speakers
videos, workshops, lecturers, etc.
DOT Coalition of Minorities, Women, and Disabled
membership and involvement

SEP 27 1994

Stanley Herr;
Domestic Policy Council

Attached is EPA's response to the request of the Federal Disability Accommodations Working Group. Nelson Hallman will be representing EPA at the Thursday meeting. Any further communication on this subject should be directed to John C. Chamberlin 202 260 8400 or FAX(202 260 8408).

John C. Chamberlin

ENVIRONMENTAL PROTECTION AGENCY

ADA Accommodations

1. It is the policy of the Agency to meet the requirements of ADA and the Uniform Federal Accessibility Standards in all new construction and renovation projects at EPA facilities. Compliance with these standards is part of the Health and Safety review of plans. Deficiencies identified at existing facilities are typically corrected either by the facility or through the Agency's facility improvement process. An example of a major project designed to meet accessibility requirements is the new elevator for Narragansett that will provide access to the second floor of the office portion of that facility. Other examples would be the wheelchair accessible control panels that we installed in the Headquarters elevators and the ramps and handicapped accessible bathrooms in Headquarters that GSA had installed through the lessor when the lease was renewed.

2. Attached is a copy of the relevant section on accessibility of the Draft Laboratory Standards. This standard is made a part of the basic requirements for all new facilities. Also attached is a section of the Design Document for the Consolidated RTP Facility that describes the accessibility accommodations.

3. It is GSA policy to require lessors to make their buildings handicapped accessible when they negotiate or renegotiate leases. In those buildings that EPA owns or leases, it is our policy to meet ADA requirements when leases are renegotiated or renovations are made. In many instances, small renovations are undertaken solely to make ADA accommodations.

For new laboratories it is currently Agency policy to design rooms to be adaptable for use by persons with disabilities. This means that the width of each room will be sufficient to accommodate wheelchairs, the casework is modular and flexible so that it can be modified with no structural changes required, and all doorways and corridors are accessible. The particular concern we have for laboratories is in fume hoods and casework, which must also meet strict scientific standards. ADA accessible hoods are available, and adjustable casework can accommodate most configurations required. It is the intent of this policy to allow accommodation to be made in whichever area of the lab it may be required, rather than trying to prejudge what and where accommodations will be needed. All common areas of the facility, including bathrooms, corridors, lobbies, entries, as well as offices are designed to be accessible.

Executive Office of the President

Date of Meeting: Aug. 18

EOB Conference Rooms/White House Conference Center Time 2-3:30pm To (3:30p)

CONFIRMATION AND NOTIFICATION

STANLEY S. HERR

DOMESTIC POLICY

Name of Individual Hosting Event:

Office/Agency:

BEV. PETCHEL

65571

224

Staff Contact:

Extension No.:

Room No.:

FIRST WORKING GROUP MEETING RE EMPLOYMENT FOR THE DISABLED

Type of Event:

☒ Meeting

☐ Reception

☐ Other

Name/Description of Event:

See above (type of event)

Number of Outside Guests: 10

In Attendance:

Total Number of Attendees: 12-15

☐ President

☐ First Lady

☐ Vice President

☐ Second Lady

Room(s) Requested:

☐ Roosevelt Room

☐ Rm. 180

☒ Rm. 472

☐ Rm. 474 (Indian Treaty Room)

☐ Rm. 476

☐ Rm. 450

☐ Rm. 459

White House Conference Rooms:

☐ Truman Room

☐ Wilson Room

☐ Eisenhower Room

☐ Jackson Room

☐ Lincoln Room

Special Room Arrangements for the Truman Room:

☐ Truman Room

Number of Chairs

☐ Reception:

☐ Other:

☐ Coffee

☐ Water Service

Number of Attendees: 12-15

General Services:

☐ Elevator Service

☐ #4

☐ #6

☐ #7

Time Reserved

Floors Reserved

☐ Podium

☐ Flags

Entrance/Gate Preferred:

☐ 17th & G

☐ Pennsylvania Avenue

☐ Southwest Appointments Gate

☐ Northwest Appointments Gate

☐ East Appointments Gate

☐ East Visitors Gate

Additional Requirements or Requests:

Forms Must be Returned to Room 1, EOEB, 48 Hours Prior to Event



April 4, 1994

Enforcing the ADA

A Status Report from the Department of Justice

INSIDE...

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The Americans with Disabilities Act (ADA) is a comprehensive civil rights law for people with disabilities. The Department of Justice enforces the ADA's requirements in three areas --

Title I: Employment practices by units of State and local government

Title II: Programs, services, and activities of State and local government

Title III: Public accommodations and commercial facilities

I. Enforcement

Through lawsuits and both formal and informal settlement agreements, the Department has achieved greater access for individuals with disabilities in over 200 cases. Under general rules governing lawsuits brought by the Federal Government, the Department of Justice may not file a lawsuit unless it has first unsuccessfully attempted to settle the dispute through negotiations. As a result, most complaints filed with the Department will be resolved before a lawsuit becomes necessary. Many cases are settled after an on-site investigation.

A. Litigation

The Department may file lawsuits in Federal courts to enforce the ADA and may obtain court orders including compensatory damages to remedy discrimination. Under title III the Department may also obtain civil penalties of up to \$50,000 for the first violation and \$100,000 for any subsequent violation.

1. Ongoing lawsuits

The Department has initiated, or intervened in, the following pending lawsuits.

Title I

U.S. v. State of Illinois -- The Department sued the State of Illinois, the City of Aurora, and its police and fire pension funds for excluding police officers and firefighters from its pension funds on the basis of disability. Under the challenged system, police officers and firefighters are required to undergo separate physical examinations, after they are hired, to determine eligibility for retirement and disability benefits. The Department's investigation resulted from the complaint of an Aurora police officer who was ruled ineligible for pension benefits because he has diabetes.

Title III

U.S. v. Morvant, Louisiana and *U.S. v. Castle Dental Center*, Texas -- The Department filed lawsuits against a dentist in New Orleans and a dental center in Houston alleging that they had violated title III of the ADA by refusing to provide dental treatment to individuals who had tested positive for HIV. The Department asserts that there is no scientific or medical justification for excluding persons with HIV or AIDS from dental or orthodontic treatment solely on the basis of their HIV+ status. Both cases are in the early stages of litigation.

In *Morvant* the court denied the defendant's motion to dismiss. The court ruled that compensatory damages may be awarded on behalf of a deceased individual who suffered discrimination because of his positive HIV status. The court also held that the defendant dentist may be sued in his individual, as well as his corporate, capacity.

U.S. v. Becker CPA Review, Inc., District of Columbia -- The Department sued Becker CPA Review for failing to take appropriate steps to communicate effectively with students who have hearing impairments. Becker, the nation's largest CPA review course, prepares over 10,000 students a year to take the national certified public accountant exam. The Department is seeking (1) a permanent change in Becker's policy so that sign language interpreters and other auxiliary aids are provided to those who need them; (2) civil penalties; and (3) damages for the original complainant, several other people with hearing impairments who have reported that they were not accommodated, and any others who may have had similar experiences. Trial is scheduled for July 5, 1994.

Pinnock v. International House of Pancakes (IHOP), California -- Upon notice by the Federal district court that the constitutionality of a Federal law was being challenged, the Department intervened in this case to defend the constitutionality of title III of the ADA. The suit had been filed by a private individual asserting that the California pancake restaurant had failed to undertake readily achievable barrier removal and to provide auxiliary aids and services. The court adopted the Department's views and upheld title III's constitutionality. The defendant has appealed the court's ruling.

Ongoing Lawsuits

Posner v. Central Synagogue, New York -- In a private lawsuit involving alleged discrimination by a nursery school, the Department intervened, upon notice by the Federal district court, to defend the constitutionality of the exemption for religious organizations under title III of the ADA. The court has not yet issued a ruling.

2. Consent decrees

Some litigation is resolved at the time that the suit is filed or afterwards by means of a negotiated consent decree. Consent decrees are monitored and enforced by the Federal court in which they are entered.

Title III

U.S. v. Allright Colorado, Inc., Colorado -- The Department entered into a consent decree resolving its lawsuit against Allright Colorado, a company that owns or operates over 100 parking lot facilities in Denver. Under the agreement, Allright will add well over 400 accessible parking spaces to its facilities and will instruct parking attendants to monitor the slots and ticket cars that are improperly parked in accessible spaces. Allright paid a \$20,000 civil penalty to the United States because of the alleged delay in moving toward compliance.

U.S. v. Venture Stores, Inc., Illinois -- The Department entered into a consent decree resolving its lawsuit against Venture Stores, Inc., a St. Louis, Missouri, firm that operates more than 90 discount department stores in eight states. Venture agreed to modify its policy of permitting only customers with drivers' licenses to pay for merchandise with a personal check, and will now permit individuals who do not drive because of a disability to pay by check if they have a non-driver state ID card. Venture also agreed to make payments to four individual complainants.

3. Amicus briefs

The Department files briefs in selected ADA cases in which it is not a party in order to guide courts in interpreting the ADA properly.

Title II

Kinney v. Yerusolim, Pennsylvania -- In agreement with an amicus brief filed by the Department of Justice, the U.S. Court of Appeals for the Third Circuit ruled that the ADA requires cities to install curb ramps when they resurface streets. This title II lawsuit was brought against the city of Philadelphia by a group of people with mobility impairments.

Lakes Region Consumer Advisory Board v. City of Laconia, New Hampshire -- The City of Laconia denied the Lakes Region Consumer Advisory Board's application for a permit to operate a facility providing services to persons with mental illness. The Advisory Board sued, alleging that the denial violated title II of the ADA and section 504 of the Rehabilitation Act. The Department filed an amicus brief supporting the Advisory Board's position that zoning decisions are subject to review under title II of the ADA and section 504 of the Rehabilitation Act. No ruling has yet been issued.

Medical Society of New Jersey v. New Jersey State Board of Medical Examiners, New Jersey -- The Medical Society of New Jersey filed suit challenging certain questions on the State medical board's application for renewal of medical licenses. The Department filed an amicus brief arguing that broad questions pertaining to a history of psychiatric illness or a history of drug or alcohol abuse, not drawn to focus on current impairments of a physician's fitness to practice medicine, are discriminatory under title II of the ADA. In a procedural ruling, the Federal district

court agreed that a licensing process that places greater burdens on individuals because of positive responses to the challenged questions would likely violate title II.

Galloway v. Superior Court of the District of Columbia, District of Columbia -- A blind individual filed a lawsuit in Federal district court charging that the District of Columbia Superior Court's policy of categorically excluding blind persons from jury service violates title II of the ADA and section 504 of the Rehabilitation Act of 1973. The Federal district court judge agreed, and awarded the plaintiff \$30,000 in damages. The Department of Justice argued in support of the plaintiff's view that compensatory damages are available remedies under both the ADA and section 504.

Livingston v. Guice, North Carolina -- A person who uses a wheelchair filed a lawsuit in Federal district court against the State of North Carolina and a State court judge charging that they had violated title II of the ADA by preventing her from entering a courtroom through the only accessible entrance known to her. The Department argued in an amicus brief that States may be sued for damages under title II. The court has not yet issued a ruling.

Rosenthal v. State Board of Law Examiners, New York -- A law school graduate with learning disabilities filed a lawsuit charging that the New York State Board of Law Examiners had refused to make reasonable adjustments in its procedures to give her an equal opportunity to pass the State bar exam. In settling the case the State Board agreed to let her take the exam in a separate room, take twice the usual amount of time, and have the assistance of a person to transcribe her answers onto the multiple choice answer sheet. During the litigation the Department of Justice filed an amicus brief arguing that both title II and

Amicus Briefs

title III of the ADA require reasonable modifications in policies, practices, and procedures when necessary to avoid discrimination in testing.

Title III

Cohen v. Boston University, Massachusetts -- A person who has Tourette Syndrome filed a lawsuit against Boston University charging that it violated title III of the ADA by refusing to readmit her to its graduate school of social work because of her disability. The Department filed a brief in support of the plaintiff arguing that the court should not grant summary judgment for the University, because facts concerning the University's actions remain in dispute. The court has not yet issued a decision.

B. Formal settlement agreements

The Department has resolved a number of cases without filing a lawsuit by means of formal written settlement agreements.

Title II

Philadelphia, Pennsylvania -- The City of Philadelphia entered an agreement resolving a complaint alleging that emergency medical technicians (EMT's) of the Philadelphia Fire Department had refused to assist an individual when they learned that he had HIV. The City agreed to conduct mandatory training of the Department's 2,300 EMT's and firefighters regarding universal precautions to prevent the transmission of HIV/AIDS, as well as to provide HIV/AIDS sensitivity training. The City will also develop and publicize a written policy stating that individuals with disabilities shall be given the opportunity to benefit fully from its emergency medical services. The policy will include disciplinary measures for any individual

who fails to follow the City's guidelines. In addition, the City will provide \$10,000 in compensatory damages and a written apology to the individual denied services.

Hickman County, Kentucky -- Hickman County agreed to develop a compliance plan to provide access to the services, programs, and activities conducted in its courthouse, thus resolving a complaint alleging that a man using a wheelchair was unable to enter the circuit clerk's office to renew his driver's license because the doors were too narrow.

Van Buren County, Arkansas -- Van Buren County agreed to relocate County court activities to an accessible site upon request; develop a self-evaluation and a transition plan; adopt a grievance procedure; and place public notices of its nondiscrimination policy and responsibilities under the ADA on County bulletin boards and in local newspapers.

Harris County (Houston), Texas -- Harris County agreed to make all of the programs offered in each of its 106 courtrooms and jury assembly rooms accessible, to furnish the auxiliary aids necessary to achieve effective communication in all of the county's programs, and to provide staff training.

Scott County, Arkansas -- Scott County agreed to renovate the county courthouse in order to make it readily accessible to individuals with disabilities. Specifically, the county agreed to renovate the courthouse's entrances, restrooms, door hardware, and drinking fountains.

City of Fargo, North Dakota -- The City of Fargo agreed to resolve complaints against its sports stadium and general entertainment facility, the Fargodome. The City will adopt a formal policy

Formal Settlement Agreements

that provides for ticket prices for individuals with disabilities who need special seating to attend events in the Fargodome that are equivalent to ticket prices charged to others. The City also agreed to publicize its new policy, appoint an ADA coordinator for the Fargodome, develop an ADA grievance procedure, and conduct an evaluation of its policies and practices as required by title II.

Norwood, Ohio -- The City of Norwood agreed to develop a written plan and timetable for making the services, programs, and activities offered at the Norwood City Hall accessible for persons with mobility impairments; submit architectural plans to the Department for review if the City determines that structural changes are needed; and make the agreement available to the public.

Madison County, Florida -- The Board of Commissioners of Madison County agreed to install an elevator, widen doors, renovate toilet facilities and water fountains, and install appropriate signage to make its programs at the Madison County Courthouse accessible for persons with mobility impairments. The County also will submit an interim plan for making its programs accessible until the renovations are completed.

Pinellas County, Florida -- The Sixth Judicial District of Florida entered into an agreement requiring the courts in that district to establish a written policy on providing qualified interpreters for participants, including parties, witnesses, jurors, and spectators, who are deaf or hard of hearing; secure the services of a qualified interpreter when necessary to ensure effective communication; notify the public about the policy; and inform and instruct all appropriate district court officials to comply with the policy.

Salt Lake City, Utah -- The complaint alleged that a State district court in Salt Lake City disqualified or otherwise excluded from jury service individuals who are deaf unless they bring their own interpreters. The agreement with the Utah State Administrative Office of the Courts committed the courts in Utah to provide appropriate auxiliary aids and services, including qualified interpreters, when necessary to provide an individual with a disability an opportunity to serve as a juror. The agency will establish a written policy on jury duty and the provision of interpreting services; notify the public about the new policy; inform and instruct all appropriate district court officials to adhere to the policy; and conduct at least four regional training seminars.

Clearwater, Florida -- The complaint alleged that the police department had failed to provide an interpreter in the arrest of an individual who is deaf. The Clearwater police department agreed to establish and publicize a written policy for providing interpreters whenever necessary for effective communication.

Paulding County, Ohio -- In response to a complaint that the county courtroom was inaccessible to individuals with mobility impairments, the County board of commissioners agreed to relocate court activities to an accessible site upon request, if the request is made in a reasonable period of time before the scheduled court date. The County board also agreed to publicize its new policy.

Formal Settlement Agreements

Title III

Educational Testing Service, New York, New York -- The Educational Testing Service (ETS) and the College Entrance Examination Board agreed to provide additional opportunities for students with disabilities to take the new version of the Scholastic Assessment Text (SAT-I) in the spring of 1994. Students had complained that the testing schedule set up by ETS and the College Board prevented students with disabilities from taking the SAT-I in May or June 1994 even though virtually all other students were given those opportunities. Approximately 2,600 students with disabilities took an old version of the SAT in March 1994. Under the agreement, ETS will notify them of the opportunity to cancel those scores and take the new SAT-I in June 1994.

Motorcycle Mechanics Institute, Phoenix, Arizona -- A Phoenix trade school agreed to pay \$16,000 to an individual with a vision impairment who had been denied admission to the program. The school also agreed to change its policy of requiring persons with disabilities to submit additional documentation regarding their career goals and proof of employability.

Omaha Zoological Society, Omaha, Nebraska -- The Omaha Zoological Society, a nonprofit corporation that operates and manages the Henry Doorly Zoo, Lied Jungle indoor rainforest, and its Treetops Restaurant, agreed to remove architectural barriers and to provide auxiliary aids and services. Under the agreement the Society will install a wheelchair lift in the Treetops Restaurant; continue to make electric scooters available to persons with mobility impairments to provide access to the Jungle floor path; remove barriers on the Jungle's path; and make modifications to restrooms. In addition, the society will provide a

variety of auxiliary aids and services, including audiotape recordings of the Lied Jungle Trial Guide and information about the rainforest contained on signs located throughout the jungle. Staff will be available to serve as guides to visitors with visual impairments upon request.

Empire State Building, New York, New York -- The owners and operators of the Empire State Building agreed to take wide-ranging measures to ensure access to public areas of the building. The agreement mandates changes to the lobby, entrance, observation decks, restrooms and telephones, but does not cover any privately leased office space in the building. The complaint alleged that the Empire State Building was operating in violation of the ADA because its owners and operators failed to remove architectural barriers where such removal was readily achievable.

Formal Settlement Agreements

Emerald Lanes, Greenwood, South Carolina -- The owners of Emerald Lanes, a bowling center, agreed to construct a ramp and a new door at the front entrance; build a new, accessible unisex restroom and vestibule leading to it; and add accessible parking. The agreement resolved a complaint from an individual who uses a wheelchair for mobility who could not watch his children participate in a bowling league and banquet because the facility was inaccessible.

Marquee Video, Lacey, Washington -- Marquee Video of Lacey, Washington, agreed to modify its policy of permitting only customers with drivers' licenses to rent videotapes and videotape players. It will now permit people who do not drive because of a disability to rent videotapes and tape players if they have a non-driver State ID card.

Sardi's Restaurant, New York, New York --
Sardi's Restaurant in New York City agreed to resolve a complaint that the restaurant's restrooms were inaccessible for persons who use wheelchairs or other mobility devices. Sardi's will install an accessible unisex restroom and signage indicating the location of the restroom.

Quality Hotel Downtown, Washington, D.C. --
Staff of the Quality Hotel Downtown in Washington, D.C., had not permitted a guest to use a motorized scooter as a mobility device to get to his room. The hotel agreed to pay the complainant \$10,000 in damages and to train all employees on the requirements of the ADA.

**Formal
Settlement
Agreements**

Inter-Continental Hotel, New York, New York --
The Department entered a wide-ranging formal settlement agreement with the Inter-Continental Hotel in midtown New York, a member of a chain of prestigious hotels in major cities. The hotel will make numerous changes to its 691-room facility and procedures over the next five years, including removing physical barriers in public areas such as the front entrance, lobby, and ballroom, as well as in 21 guest rooms; providing television decoders, telephone handset amplifiers, visual smoke alarms, and visual door knock and telephone indicators in 35 guest rooms; making elevator modifications to provide access for persons with vision impairments; and modifying reservation and room assignment policies to ensure that accessible rooms are made available to those who request them.

Municipal Credit Union, New York, New York --
A branch office of the Municipal Credit Union in New York City was inaccessible to people with mobility impairments. The Credit Union agreed

to install a ramp at the entrance, to notify its customers of the ramp, to post appropriate signs, and to instruct the staff to provide assistance when requested by an individual with a disability.

C. Other settlements

The Department resolves numerous cases without litigation or a formal settlement agreement. In some instances, the public accommodation or commercial facility promptly agrees to take the necessary actions to achieve compliance. In others, extensive negotiations are required. Following are some examples of what has been accomplished through informal settlements.

Title II

Access to facilities

- A Missouri county agreed to install an elevator and make other structural modifications to make its courthouse accessible. In the interim, it will provide alternative means for providing services to individuals with disabilities.
- A Tennessee city agreed to move all city meetings from the inaccessible second floor of the town hall to the city's accessible library. It also built ramps at two entrances to the town hall and remodeled restrooms in the town hall and library.
- Various cities and towns in the East and Midwest agreed to install elevators in their city halls/courthouses and to undertake other structural actions, such as adding ramps and remodeling restrooms and entrances, or to make these buildings accessible by moving their programs (e.g., town meetings and services) to alternative accessible locations.

- A Washington county installed an intercom on the first floor of its courthouse annex so that persons can contact offices located on the second floor when they need to have the services provided on the first floor.
- A New England town agreed to build a roof over the ramp leading to its 150-year-old town hall to ensure that the ramp does not become blocked by snow.
- A small town in Oklahoma agreed to formulate and enforce a written policy prohibiting the misuse of accessible parking spaces at its town hall by nondisabled town officials.
- In Iowa, a board of elections agreed to move a polling place to an accessible location.

Effective communication

- A western State department of corrections agreed to provide a sign language interpreter for a deaf inmate's parole hearing.
- A Michigan State district court agreed to provide an assistive listening device for an upcoming court date for an individual who is hard of hearing.
- A city in Texas agreed to provide additional microphones during city council meetings to ensure more effective communication with persons who have hearing impairments.
- A committee of bar examiners of a west coast State agreed to allow a severely visually impaired individual to use a personal computer with a high resolution monitor to take the bar exam.

Policies and procedures

- A Texas police department agreed to change its policies and procedures on public contact after an individual with severe physical disabilities was treated in a demeaning manner at the scene of an automobile accident.

The police officer involved received a reprimand and was required to attend sensitivity training.

- A State board of law examiners agreed to allow an individual extra time (time and one-half over two days) to take the State bar examination as an accommodation for his learning disability.

- A west coast State board of behavioral science examiners agreed to provide extra time (time and one-half) for an individual with a learning disability taking the oral examination for licensed clinical social worker.

- An Arizona police department agreed to allow an individual with a mobility impairment to use his motorscooter on roads and sidewalks within city limits anywhere that conventional wheelchairs are allowed.
- A State department of corrections agreed to relocate an inmate with a disability to a facility 400 miles closer to his mother's home so that his mother could visit him and monitor his medical condition.
- Two midwest State prisons agreed to modify security and visitation procedures to allow wives with disabilities to visit their inmate husbands.
- A county in Washington State agreed to include individuals with disabilities in developing its self-evaluation and transition plans.

Other Settlements

- A Pennsylvania county court agreed to provide accommodations for an individual with a learning disability, including daily transcripts and extra time to ask questions, during court proceedings.

Employment

- A Tennessee county agreed to separate its medical and personnel records, as required by the ADA.
- A city in Illinois agreed to reinstate an individual with epilepsy to his position as custodian.

Title III

Access to facilities

Other Settlements

- A Louisiana fast food restaurant, a Texas grocery store, a health care facility, a shopping mall, an Oregon shopping center, and a retirement community have all agreed to provide accessible parking in their parking lots. The grocery store and shopping center also agreed to install the curb ramps that a person who uses a wheelchair needs to get from the parking lot to the front door.
- Two other fast food restaurants agreed to relocate their accessible parking spaces to make them closer to the front door.
- A California convenience store of a well-known franchise agreed to make three of its checkout aisles, including one express lane, accessible for people who use mobility devices.
- A Utah bank, an Illinois bowling center, an office building, and a Maryland cable television company have all agreed to install ramps to make their entrances accessible for people who use mobility devices. The bowling center, office building, and cable TV company also agreed to provide accessible parking in their parking lots.
- A credit union agreed to lower an ATM machine to make it accessible for persons who use wheelchairs.
- An Illinois bank agreed to install automatic doors at its front entrance to make it easier for people with visual, manual, and mobility impairments to gain access.
- A health club agreed to install a lift to enable a wheelchair user to participate in an arthritis rehabilitation program in the club's swimming pool.
- A national retail chain agreed to provide accessible parking at its stores nationwide, and a major rental car company agreed to provide accessible parking at a major metropolitan airport and to institute valet parking service when needed by customers with disabilities.
- A 12-theater complex in Colorado agreed to provide additional seating throughout its theaters for people who use wheelchairs.
- A California department store agreed to make its restrooms and fitting rooms accessible for people with manual or mobility impairments, to lower the height of its public telephones and drinking fountains to make them accessible for people who use wheelchairs, and to upgrade its elevators and install signage to make the store accessible for people who have vision impairments.

- A motel in Louisiana agreed to provide accessible parking, to make its front desk and lobby restrooms accessible, and to make six guest rooms accessible for guests with mobility impairments, including converting to roll-in showers in two of the rooms.
- A Louisiana steamboat company agreed to improve accessibility for passengers with mobility impairments on two of its boats. It eliminated access barriers in its dining and entertainment areas and made its restrooms accessible.
- Organizers of the Mississippi Delta Blues Festival, which draws some 10,000 to 20,000 spectators each year, took a number of steps to make its parking, seating, restrooms, and festival grounds accessible for people with disabilities when the 1993 festival was held in Greenville, Mississippi.
- A baseball stadium agreed to make its ticket counters, seating, restrooms, and concessions accessible for people who have mobility impairments.
- A hospital agreed to change its policy of providing sign language interpreters only for patients and not for family members. It provided an interpreter for a man who is deaf so that he could attend his wife's Lamaze classes and serve as her coach during the birth of their child.
- Several movie theaters in Florida have agreed to provide assistive listening devices for patrons who have hearing impairments.
- A famous entertainer, who was performing in New York, allowed a man with a hearing impairment to move closer to the stage so that he could read the entertainer's lips during the concert and provided him with printed lyrics for all of the songs to be performed.
- An Arizona hotel agreed to purchase additional TDD's and closed-captioning decoders and to implement a better system for responding to guests with hearing impairments who request the use of this equipment during their stay in the hotel.

Other Settlements

Effective communication

- A variety of public accommodations, including a practicing attorney in California, a midwife service, a psychiatric hospital in New York, a famous entertainer, an alcohol and drug counseling program in Washington, D.C., and a program to reduce domestic violence in Colorado, have agreed to provide sign language interpreters to communicate effectively with clients who are deaf or hard of hearing.

Policies and procedures

- A North Carolina mortgage company agreed to pay damages to a complainant who alleged that the company rejected his application for refinancing his mortgage loan because of his disability. The mortgage company paid to the complainant direct expenses that were sustained as a result of refinancing his mortgage elsewhere, and other damages, with a total payment of \$6,000.
- A national rental car company revised its policy relating to cash qualifications for rental car customers. Previously, customers who did not have credit cards could only rent a car with cash if they had a verifiable em-

ployment history. A person with a disability who was unemployed due to the disability, and who did not have a credit card, was denied service altogether. Now customers may complete a written application that includes disability-related income as an alternative to employment information.

- A Texas movie theater that had prevented a woman from bringing a box of cookies into the theater for her diabetic child agreed to modify its policy against outside food and beverages by making an exception in the case of medical necessity.
- A bar in Illinois agreed to modify its policy of refusing to serve alcohol to customers who appear to be drunk based on the way they walk. A customer who has Parkinson's disease had been refused service because staff assumed he was drunk due to his unsteady gait associated with his disability.
- A drugstore chain agreed to modify its policy against permitting animals in its stores by making an exception in the case of service animals such as guide dogs.
- A famous restaurant in New York City that had turned away a customer who was wearing sneakers due to a mobility impairment agreed to modify its dress code by making an exception when necessary to provide service to a person with a disability.
- A Nevada hotel agreed to offer its barrier-free rooms at the same rate as its other rooms, including at those times when promotional or special rates are offered.

Other Settlements

D. Investigations

The Department is currently investigating over 900 complaints against public accommodations and commercial facilities under title III.

In addition, the Department is currently investigating nearly 800 complaints against units of State and local government under title II. Seven other Federal agencies are also investigating title II complaints and may refer cases to the Department of Justice for litigation.

The Department also has a number of investigations underway under title I against public employers. (Enforcement of title I against private employers is handled by the EEOC.)

II. Certification of State and Local Building Codes

The ADA authorizes the Department to certify State or local laws or building codes that meet or exceed the ADA's accessibility requirements. This is a voluntary program in which States and localities can choose to participate. In a jurisdiction whose law or code has been certified, when a new public accommodation or other commercial facility is built, or an existing facility is altered or expanded, compliance with the local regulations will give the building owner and other responsible parties rebuttable evidence of compliance with the ADA if the building's accessibility is later challenged under the ADA.

On May 20, 1993, the Department of Justice issued its first response to a request for certification of a state accessibility code. The letter to the State of Washington provided a side-by-side analysis of the State's standards and the ADA standards as a means of providing technical

assistance to the State in identifying minor areas of discrepancy. It was not a formal preliminary determination of equivalency or nonequivalency with the Federal accessibility standards.

Other requests for certification have been received from the City of New York, the State of New Mexico, the State of Utah, and the State of Florida.

The Department has also responded to a request for technical assistance from the State of New Hampshire and is reviewing requests for technical assistance from the Council of American Building Officials (CABO) on behalf of the American National Standards Institute (ANSI) A117.1 committee, the Building Officials and Code Administrators International (BOCA), and the National Parking Association.

III. Technical Assistance

The ADA requires the Department of Justice to provide technical assistance to entities and individuals with rights and responsibilities under the ADA. The Department encourages voluntary compliance by providing education and technical assistance to business, industry, government, and members of the general public through a variety of means.

ADA telephone information line

The Department of Justice now provides toll-free "800" service for both voice and TDD callers who have questions about title II and title III of the ADA, including the Standards for Accessible Design. Under its expanded hours of operations, operators may be reached from 11:00

a.m. to 5:00 p.m. (EDT), Monday through Friday (except Thursdays, 1:00 p.m. to 5:00 p.m.). The system has been upgraded to accommodate a larger number of callers simultaneously and to provide Spanish language service. Callers may hear recorded information and order materials at any time, day or night. The information line numbers are:

Nationwide

1-800-514-0301 (voice)

1-800-514-0383 (TDD)

Washington, D.C., area

202-514-0301 (voice)

202-514-0383 (TDD)

Grants

ADA technical assistance grants are awarded primarily to target specialized information to specific audiences. To date, \$6.5 million in grant funds have been awarded for ADA technical assistance projects to 30 organizations.

Publications

Copies of the Department of Justice's regulations for titles II and III of the ADA, the ADA Questions and Answers booklet, the ADA Handbook (limited quantities available), and information about the Department's technical assistance grant program can be obtained by calling the telephone number listed above or writing to the address listed below. These materials are available in standard print, large print, Braille, audio-tape, and computer disk.

U.S. Department of Justice
Civil Rights Division
Public Access Section
Post Office Box 66738
Washington, D.C. 20035-6738

These materials are also available through the Department of Justice's ADA electronic bulletin board at 202-514-6193.

Copies of the Department of Justice's Technical Assistance Manuals for titles II and III can be obtained by subscription from the Government Printing Office. The subscription for the Title II Manual, which includes annual supplements through 1996, costs \$24. The subscription for the Title III Manual with supplements through 1996 costs \$25. Call the ADA information line to obtain an order form.

Copies of legal documents and settlement agreements mentioned in this publication can be obtained by writing to:

Freedom of Information/Privacy Act
Branch
Room 7337
Civil Rights Division
U.S. Department of Justice
Washington, D.C. 20530

IV. Other Sources of ADA Information

The Equal Employment Opportunity Commission offers technical assistance to the public concerning title I of the ADA.

For ordering documents
1-800-669-3362 (voice)
1-800-800-3302 (TDD)

For questions
1-800-669-4000 (voice)
TDD: use relay service

The U.S. Department of Transportation offers technical assistance to the public concerning the public transportation provisions of title II and title III of the ADA.

ADA documents and general questions
202-366-1656 (voice)
202-366-2979 (TDD)

ADA legal questions
202-366-9306 (voice)
202-755-7687 (TDD)

Nat'l Easter Seal Society
"Project Action" grant
202-347-3066 (voice)
202-347-7385 (TDD)

Air Carrier Act questions
202-376-6406 (voice)

The Federal Communications Commission offers technical assistance to the public concerning title IV.

ADA documents and general questions
202-632-7260 (voice)
TDD: use relay service

ADA legal questions
202-634-1808 (voice)
202-632-6999 (TDD)

Hearing Aid Compatibility
Act (HACA) questions
202-634-7150 (voice)
TDD: use relay service

The U.S. Architectural and Transportation Barriers Compliance Board, or "Access Board," offers technical assistance to the public on the ADA Accessibility Guidelines.

ADA documents and questions
800-872-2253 (voice & TDD)
202-272-5434 (voice)
202-272-5449 (TDD)

The National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education has funded Disability and Business Technical Assistance Centers (DBTAC's) in ten regions of the country to provide technical assistance to the public concerning title I, title II, and title III of the ADA.

ADA technical assistance
(800) 949-4232 (voice & TDD)

V. How to File Complaints

Title I

Complaints about violations of title I (employment) by units of State and local government or by private employers should be filed with --

Equal Employment Opportunity Commission
Program Development and Technical Assistance Division
Office of Program Operations
1801 "L" Street, N.W.
Washington, D.C. 20507

Title II

Complaints about violations of title II by units of State and local government should be filed with --

U.S. Department of Justice
Civil Rights Division
Coordination and Review Section
Post Office Box 66118
Washington, D.C. 20035-6118

Title III

Complaints about violations of title III by public accommodations and commercial facilities should be filed with --

U.S. Department of Justice
Civil Rights Division
Public Access Section
Post Office Box 66738
Washington, D.C. 20035-6738

This status report was prepared by the Public Access Section, Civil Rights Division, U.S. Department of Justice. Updates of this report will be produced quarterly.
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586-7644

THE WHITE HOUSE
WASHINGTON

DOMESTIC POLICY COUNCIL

	AGENCY	PHONE #
President		
Vice-President		
The Honorable Donna Shalala	HHS	690-7000
The Honorable Janet Reno	Justice	514-2001
The Honorable Robert Reich	Labor	219-8274
The Honorable Lloyd Bentsen	Treasury	622-1100
The Honorable Jesse Brown	Veterans Affrs	535-8616
The Honorable Bruce Babbitt	Interior	208-7351
The Honorable Richard Riley	Education	401-1181
The Honorable Henry Cisneros	HUD	708-2713
The Honorable Mike Espy	Agriculture	720-3631
The Honorable Federico Pena	Transportation	366-1100
The Honorable Ron Brown	Commerce	482-4233
The Honorable Hazel O'Leary	Energy	586-0900
The Honorable Carol Browner	EPA	260-4700
The Honorable Leon Panetta	OMB	395-4840
The Honorable Laura Tyson	CEA	395-5042
The Honorable Carol H. Rasco	DPC	456-2216
The Honorable Robert Rubin	NEC	456-2174
The Honorable Eli Segal	NSC	456-6444
The Honorable Lee Brown	Drug Policy	467-9840
The Honorable Kristine Gabbia	AIDS	632-1090
Patsy Fleming		

mk:7/8/93

2112

* 273-6771 Under Secretary for Benefits 810 Vermont Avenue NW 20420
x 456 5310 221 OEOB

FDIC 632-1215
898-6974

632-1096 (FAX)

898-3500
Barron

750 17th St NW Suite 1060
20503

LP 708-0940

5 Senior Policy Adviser,

6 219-9475

working group FAX 202-219-618

LP

6055

4636

205-9252

205-9252

311/713-0263

14835 Nichols, Shirley DOL 5219-6195
03352 Vogel, John Commerce 301/712-2199475
1543

09820 Heumann, Judith E. ED 205-5465-

16449 Davis, Marilyn A. HUD 708-0940
Asst Secy Admin

Parks, Larry Commerce 1192-4233

Tristram, Elsie WH 456-5370

25891 Voss, Nancy ACT 606-5000
606-4812 x307

Barrett, Adara DIC 2736771
898-6974 VA

July 26
Merrill
711-
6

Kathleen Aterno	EPA	Fax: 260-0835 260-4600
Andrew Barrer	Aids Office	Fax: 632-1096 632-1090
Benjamin Burrell	DOJ	Fax: 307-1915 616-2995
Marilyn Davis	HUD	Fax: 619-8129 708-0940
Lila Farazian	Energy	Fax: 586-3862 586-4494
Melvin Fowler	Interior	Fax: 208-3430 208-3455
Ida Hernandez	Treasury	Fax: 622-2427 622-1500
Judy Heumann	Education	Fax: 205-9252 205-5465
Elgie Holstein	NEC	Fax: 456-2223 456-5370
Patricia McMahon	NDCP	Fax: 395-6708 395-6706
Paul Miller	Consumer Affairs	Fax:
Joyce Brown-Moore	Education	
Howard Moses	Education	Fax: 205-9252 205-5465
Larry Parks	Commerce	Fax: 482-4636 482-6055
Pamela Pelcovits	Transporta- tion	Fax: 366-9371 366-5981
Lawrence Roffee	ATBC	Fax: 272-5447 272-5434
Liz Savage	DOJ	Fax: 514-0293 514-2151
John Vail	DOJ	Fax: 514-5501 514-1778

Withdrawal/Redaction Marker

Clinton Library

DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
003. list	List for Meeting in Room 472; RE: Personally Identifiable Information [partial] (1 page)	08/18/1994	b(6)

COLLECTION:

Clinton Presidential Records
Domestic Policy Council
Diana Fortuna
OA/Box Number: 12029

FOLDER TITLE:

Disability Accommodations - Working Group

2007-0143-F
db4494

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P1 National Security Classified Information [(a)(1) of the PRA]
- P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
- P3 Release would violate a Federal statute [(a)(3) of the PRA]
- P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).

RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

- b(1) National security classified information [(b)(1) of the FOIA]
- b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
- b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
- b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
- b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
- b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

PLEASE CLEAR THE BELOW NAMED INDIVIDUALS FROM 2:00PM - 3:30PM ON
AUGUST 18, 1994 FOR A MEETING IN ROOM 472 OEOB:

DATES OF BIRTH

ATERNO, Kathleen
BURRELL, Benjamin
DAVIS, Marilyn
DOVE, Andrea
FOWLER, Melvin
HERNANDEZ, Ida
HEUMANN, Judy
MOSES, Howard
PARKS, Larry
PELCOVITS, Pamela
ROFFEE, Lawrence
SAVAGE, Liz
VAIL, John
VOGEL, John
VOSS, Nancy
WILCHER, Shirley
WODATCH, John

[REDACTED]

(b)(6)

[003]

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Jim King (Dir) (Michael Grant)

FAX

Attending (RSVP)

Clearance

✓ Andrew Barrer

Aids
Office

Fax: 632-1096
632-1090

WH pass

Marilyn Davis

HUD

Fax: 619-8129
708-0940

Melvin Fowler

Interior

Fax: 208-3430
208-3455

[004]

Judy Heumann

Education

Fax: 205-9252
205-5465

(Accompanied by Andrea Dove)
Elgie Holstein

NEC

(b)(6)
Fax: 456-2223
456-5370

WH pass

✓ Larry Parks

Commerce

Fax: 482-4636
482-6055

John Vogel

VA

Fax: 275-3591
273-6761

✓ Nancy Voss

NCS

Fax: 606-5182
606-5000, x309

✓ Shirley Wilcher

DOL

Fax: 219-6195
219-9475

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DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
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005. note	Handwritten paper; RE: Personally Identifiable Information [partial] (1 page)	00/00/0000	b(6)
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dc Hernandez Treasury 622-1066
Fax 622-2427

Director of Management Operations
1500 Pennsylvania NW
Washington, DC 20220
Room 1212

DOB

(b)(6)

[005]

(Point of management
head to send
labor unions + ADA)

Building accommodates

Personnel --

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006. list	RE: Personally Identifiable Information [partial] (1 page)	00/00/0000	b(6)

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Diana Fortuna
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- b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
- b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

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**The White House
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To: ^{11W} IDA HERNANDEZ

FAX No: 622-2427

From: STAN HERR FAX No: 456-7028

Phone: 456-5570

Date: AUG. 12, 1994

Pages (Including cover): 2

Comments: You have been appointed to
REPRESENT THE DEPARTMENT OF TREASURY
ON THE FEDERAL DISABILITIES ACCOMMO-
DATIONS WORKING GROUP. William

(622-2330)
W. DINKELACKER'S NAME HAS ALSO BEEN
SUBMITTED AS A REPRESENTATIVE. Will you
both be REPRESENTING TREASURY? PLEASE
CONFIRM.

delzille §504

Charge -- compliance
Number of Civil Rights --
Per Palcovich

11:30

**The White House
Washington**

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To: DISTRIBUTION LIST

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From: STAN S. HERR

Phone: 202/456-5570

Date: August 9

Pages (Including cover): 4

Comments: _____

THE WHITE HOUSE
WASHINGTON

August 9, 1994

MEMORANDUM FOR FEDERAL DISABILITY ACCOMMODATIONS WORKING GROUP

FROM: Stanley S. Herr
Domestic Policy Council *SSH*

SUBJECT: Meeting Notice for Federal Disability
Accommodations Working Group

On August 18th, the Federal Disability Accommodations Working Group of the DPC will meet in Room 472 of the Old Executive Office Building, from 2:00-3:30. The charge to this working group is outlined in the attached memorandum of July 26th. This notice will confirm the telephone message that I today left with you or your office.

We are delighted that your department or agency has designated you to join this working group. If you have not yet confirmed your attendance, please contact me at phone: 456-5570 or fax: 456-7028 and provide me with your date of birth for purposes of White House clearance. Thank you.

Attachment

Andrew Barrer	Aids Office	Fax: 632-1096 632-1090
Marilyn Davis	HUD	Fax: 619-8129 708-0940
Melvin Fowler	Interior	Fax: 208-3430 208-3455
Judy Heumann	Education	Fax: 205-9252 205-5465
Elgie Holstein	NEC	Fax: 456-2223 456-5370
Larry Parks	Commerce	Fax: 482-4636 482-6055
John Vogel	VA	Fax: 275-3591 273-6761
Nancy Voss	NCS	Fax: 606-5182 606-5000, x309
Shirley Wilcher	DOL	Fax: 219-6195 219-9475

THE WHITE HOUSE

WASHINGTON

July 26, 1994

MEMORANDUM FOR DOMESTIC POLICY COUNCIL

FROM: Carol H. Rasco, Assistant to the President for
Domestic Policy *CHR*

SUBJECT: Disability Issues Working Group

At yesterday's meeting of the DPC, we agreed to convene a working group on disability law compliance issues with a view to the Federal government setting an example and high standard for accessibility and workplace accommodations. Some of the topics that would fall within the purview of this working group would be assistive technology, eliminating disincentives to hiring qualified employees with disabilities, making information produced by the government available in accessible formats, and related topics in accommodating persons with disabilities as our co-workers and our customers.

You are invited to designate someone from your department or agency to join this working group. Please have that person's name submitted to Stanley Herr on my staff [phone: 456-5570 or fax: 456-7028]. I look forward to working with you on this issue of importance to the Administration and to the one in seven Americans who have disabilities.

DOMESTIC POLICY COUNCIL

AGENCY

PHONE

FAX

President

Vice President

The Honorable Lloyd Bentsen-----Treasury-----622-1100----622-0073
The Honorable Janet Reno-----Justice-----514-2001----514-0468
The Honorable Bruce Babbitt-----Interior-----208-7351----208-6956
The Honorable Mike Espy-----Agriculture-----720-3631----720-5437
The Honorable Ron Brown-----Commerce-----482-4233----482-4576
The Honorable Robert Reich-----Labor-----219-8274----219-7659
The Honorable Donna Shalala-----HHS-----690-7000----690-7595
The Honorable Henry Cisneros-----HUD-----708-2713----619-8365
The Honorable Federico Pena-----Transportation--366-1100----366-3956
The Honorable Hazel O'Leary-----Energy-----586-6210----586-7644
The Honorable Richard Riley-----Education-----401-1181----401-2098
The Honorable Jesse Brown-----Veterans Affrs--273-5400----273-4877
The Honorable Leon Panetta-----OMB-----456-6797----456-2883
The Honorable Lee Brown-----Drug Policy-----395-6700----395-6708
The Honorable Laura Tyson-----CEA-----395-5042----395-6947
The Honorable Robert Rubin-----NEC-----456-2174----456-2878
The Honorable Carol Rasco-----DPC-----456-2216----456-2878
The Honorable Eli Segal-----CNCS-----606-5000----606-4928
The Honorable Carol Browner-----EPA-----260-4700----260-0279
The Honorable Patsy Fleming-----Aids Office-----690-5471----690-7560

DOMESTIC POLICY COUNCIL

AGENCY

PHONE

FAX

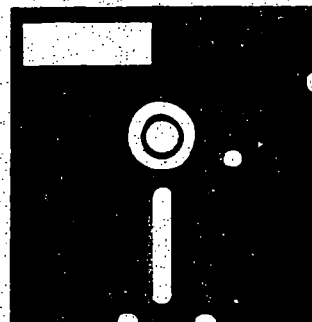
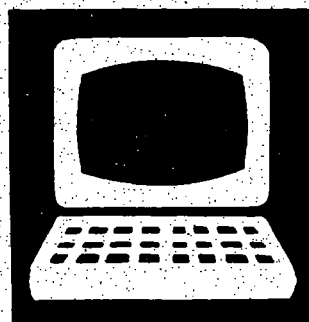
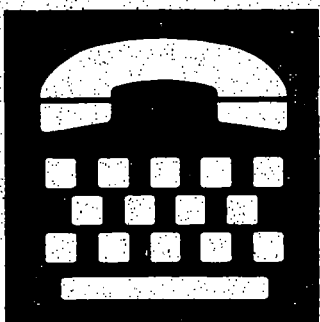
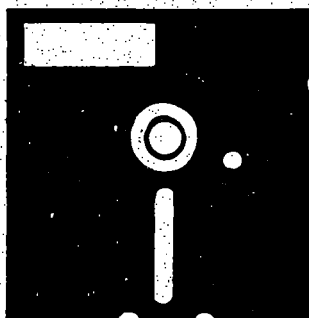
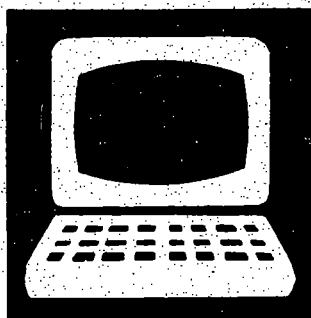
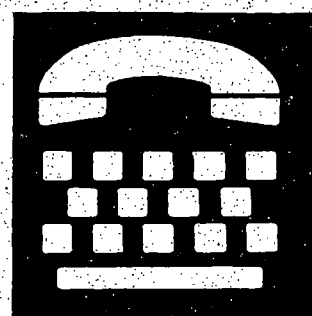
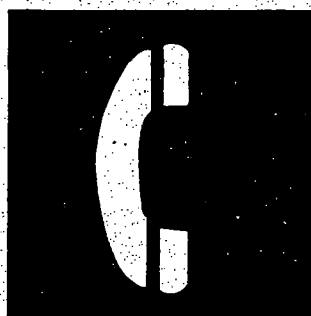
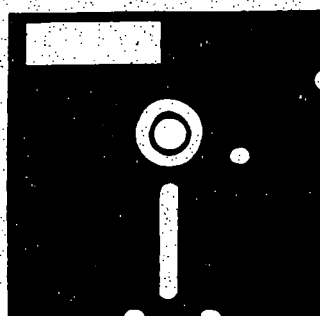
President

Vice President

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Managing Information Resources for Accessibility

December 1991



U.S. General Services Administration
Information Resources Management Service

Managing Information Resources for Accessibility has been prepared by the Clearinghouse on Computer Accommodation (COCA) of the Information Resources Management Service (IRMS), General Services Administration (GSA). This handbook presents guidance to Federal managers and other personnel who are unfamiliar with the policy and practice of information accessibility to accommodate users with disabilities and provide for their effective access to information resources. Issues reviewed represent "lessons learned" by agencies and GSA's Clearinghouse on Computer Accommodation.

COCA staff invite comments and contributions to the guide. In addition, COCA can be contacted to arrange demonstrations of accommodation solutions at their technical resource center. COCA is also available to assist managers with technical advice and assistance during acquisition planning.

The COCA staff may be reached on 202-501-4906 (voice) or 202-501-2010 (TDD) or via mail at GSA, Susan A. Brummel, Director, Clearinghouse on Computer Accommodation, Room 2022, KGDO, 18th & F Streets, NW, Washington, DC 20405.



Thomas J. Buckholtz
Commissioner
Information Resources Management
Service
U.S. General Services Administration



Judith A. Parks
Assistant Commissioner
Office of GSA Information Resources
Management
U.S. General Services Administration



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PREFACE

GSA's Information Resources Management (IRM) Service is working with other agencies to provide information environments that are accessible by people with disabilities. Some people with limited hearing, vision, or mobility require enhancements to existing information technology in order to effectively use work-related information or public information services. The Federal government in its role as a major employer and information technology consumer is using its "buying power" in the marketplace to communicate to industry its policy to acquire information technology products and services that are usable by people with disabilities. This policy is based on two recent laws, Pub.L. 99-506 and Pub.L. 100-542. These laws address the requirement that the acquisition and management of Federal Information Processing (FIP) resources be conducted in a manner that ensures access to computer and telecommunications products and services by employees with disabilities and citizens with disabilities accessing public information services. The implementing regulations for these laws are contained in the Federal Information Resources Management Regulation (FIRMR), 41 CFR Chapter 201.

This handbook discusses how to integrate information accessibility into the overall IRM process. By making the evolving information systems and services of the Federal government readily usable by people with disabilities, both the individual and the Federal government benefit significantly. Individuals with disabilities are afforded equivalent rights and opportunities. Agencies benefit significantly from the ability to recruit and retain quality employees and the ability to effectively interact with all clients, including those with disabilities.

The statutory requirements of the Federal government to accommodate people with disabilities are now complemented by similar responsibilities nationwide due to the enactment of the Americans with Disabilities Act in 1990. Although several industry trends, such as the graphical user interface, have inadvertently threatened continued use of computers by blind individuals, the growing national commitment to accessibility is likely to ensure that the initial speech output limitations of these designs are overcome and accessibility will prevail.

Continued commitment is required to overcome remaining obstacles to access. The availability of cost-effective enhancements to support most individual access requirements currently exceeds effective utilization. GSA's Clearinghouse on Computer Accommodation together with agencies' own technical support programs are assisting managers to become familiar with accessibility management procedures, products, and services that accommodate the information resource needs of people with disabilities.

Targeted Audience

The primary audience for this publication is IRM managers and program managers in the Federal government who want to understand how to respond to accessibility needs of Federal personnel and the public. The handbook consists of four parts: 1) introduction to information accessibility 2) how to incorporate accessibility into agency practice 3) the types of accommodation products available to achieve access and 4) appendices. The appendices add a level of detail that will be needed primarily by personnel responsible for integrating access practices into technical support services.

There are a number of other individuals who may find this handbook useful. After reading the main body of the document, specific appendices may have more applicability to certain groups of readers:

- **People with disabilities** - Federal employees with disabilities need to be aware of the requirements for accessible information resources in the Federal government. Appendix J may be useful when identifying potential accommodation solutions or sources. Individuals with newly acquired disabilities may find the accommodation resources and information section (Appendices C, D, and E) helpful in identifying resources for assistance.
- **Procurement officials** - The text of the statutes and applicable Federal Information Resources Management Regulation (FIRMR) excerpts are provided in appendices F, G, H, and I. Procurement officials involved in drafting requests for proposals for information processing equipment and services may be particularly interested in Appendix B which contains possible proposal elements that may be adapted to meet the agency's need.
- **Personnel and Equal Employment Opportunity professionals** - It is critical for personnel and EEO specialists to be acquainted with the range of information technology accommodations possible so they can help managers understand how qualified people with disabilities can do the job when provided with the appropriate tools. After reading the body of the document, the appendices focusing on accommodation resources and information (Appendices C, D, and E) may also be helpful.
- **Information processing industry professionals** - Industry professionals who are informed on the needs and considerations for accessible information environments within the Federal government are in a position to become catalysts for better accessibility in the future. As the Americans with Disabilities Act (ADA) places similar accommodation requirements upon the private sector, those industry professionals capable of meeting accessibility requirements in the Federal government will be able to respond to the needs from within their own companies and the expanding market created by ADA.

Duplication

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I. Accessibility in the Evolving Information Environment

A. Federal Requirements for Accessibility

When information environments accommodate people with limitations of vision, hearing, or mobility, they are afforded equal opportunities to become proficient users of information resources. Federal agencies are responding to their mission level responsibility to ensure that evolving information environments are accessible to current and prospective employees with disabilities and citizens with disabilities who need to access Federal offices and public information services. By establishing accessible information environments, agencies also promote productivity, job retention of employees who develop disabilities, and the introduction of innovative interfaces to enhance access to information by all users.

This accessibility policy is based on two laws, the 1986 Reauthorization of the Rehabilitation Act of 1973 (Pub.L. 99-506, Section 508) and the Telecommunications Accessibility Enhancement Act of 1988 (Pub.L. 100-542). These statutes have been implemented in the Federal Information Resources Management Regulation (FIRMR) promulgated by GSA. The FIRMR requires that agencies identify computer and telecommunications accessibility requirements for current and prospective employees and public information services and address the functional aspects of these requirements in solicitation documents and when subscribing to telecommunications services. (See Appendices F, G, H, and I for text of the laws, regulations, and bulletins).

These laws do not represent a radical new direction for agencies, but serve to reinforce through a strong IRM focus, the existing mission requirements under the Rehabilitation Act of 1973. This Act requires federally conducted or federally sponsored programs to be accessible to persons with disabilities and mandates that management policies must not discriminate in the hiring, placement, and advancement of persons with disabilities. In 1986, Congress amended this legislation and added Section 508 on electronic equipment to make more explicit the importance of information technology to meet mission responsibilities for accessibility to Federal programs and facilities. The second statute, the Telecommunications Accessibility Enhancement Act, mandates a proactive approach within the government to advancing accessibility to the Federal telecommunications system by hearing impaired and speech impaired individuals.

The Americans with Disabilities Act of 1990 (ADA) has adapted and extended many of the existing responsibilities of the Rehabilitation Act for implementation outside the Federal government. The law requires barrier-free access to places that serve the public, such as theaters, restaurants, and museums. State and local government services, transportation, and telecommunications services must also be accessible. Discrimination on the basis of disability in private sector employment is also prohibited. As implementation of ADA begins, accessibility to information resources represents just one important area where Federal departments can demonstrate to the private sector successful implementation strategies and the benefits of accessibility policies.

B. How People with Disabilities Access Information Resources

People with limitations of vision, hearing, or mobility are ensured full access and integration to information resources at a level equivalent to people without disabilities when automated information environments offer the flexibility they need. This flexibility can be achieved in most information environments through off the shelf "drop in" or "add on" hardware and software enhancements that modify the common keyboard input and monitor output interactions familiar to most computer users. When a common keyboard requires too much dexterity, coordination or effort from an individual it can be replaced or enhanced so that less effort is required. In addition to being more user responsive, this input capability may also offer portability, speech input, or a wireless connection to the computer. If a person can not use a monitor without undue effort and visual strain, the display contents are magnified or replaced with synthesized speech.

Organizations already expect this kind of flexibility as they routinely add firmware boards with specialized modems, terminal emulation, memory, or fax capabilities to personal computers. Having become aware of the need to accommodate people with disabilities and the availability of flexible "drop in" or "add on" products to do so, agency acquisitions are now being planned to ensure continued integration of the access capabilities needed in the information systems purchased. Many of these access products represent maturing technologies that are beneficial to all users such as speech input/output and enhanced monitor and keyboard capabilities. Braille displays and printers are an exception, being used almost exclusively by blind individuals. The following examples highlight how people with specific requirements for accessing and using information technology are readily accommodated in evolving information environments.

The primary limitation experienced by a blind individual using a computer is the inability to benefit from the visual feedback presented on the screen. This access limitation is overcome by adding software and a peripheral device to provide usable feedback in the form of synthesized speech or refreshable braille. Many blind individuals have a strong preference to receive memos, correspondence, and reports electronically by disk, electronic mail (E-mail), or LAN service. Optical character readers configured to support speech would typically be used when documents are received in printed form only. An inexpensive pocket computer consisting of a 7-key braille input keypad and synthesized speech output is frequently used by braille users at meetings to take notes, prepare summary documents, and complement the office-based computer. Because there is no monitor requirement, true portability has been readily achieved.

Many blind individuals are also early and avid users of CD-ROM technology. As more and more volumes of documentation and reference material become available on CD-ROM disks, this technology represents a cost and availability breakthrough to the print barrier experienced by blind people. Using CD-ROM technology, documents can be searched efficiently. When a desired section is located, it can be skimmed at a fast rate of speech output or reviewed at a slower rate for thorough analysis.

Blind individuals may also be eager to adopt voice mail into their office routines. Messages can then be retrieved independently instead of relying upon others. Bulletin boards, on-line services, and telephone-based information services are also highly valued and utilized. These information services provide ease of access to desired information that is complete, concise, and available independently.

Individuals with limitations of hand strength or the ability to execute the fine movements necessary for writing or manipulating printed documents also experience unnecessary constraints when material is not available in electronic form. Accessing documentation for computer application programs on screen via diskette can be much easier and efficient than manipulating manuals and turning pages.

Many keyboard enhancement packages such as keyboard macros and word prediction are used extensively by persons with mobility limitations. Although these techniques offer benefit to almost all users, people with mobility impairments have become early adopters and avid users of these technologies. The appropriate alternative keyboard can compensate for the limited usefulness of more common keyboards. Miniature and expanded keyboards represent two examples of alternative keyboards. In many instances combining several input strategies yields the greatest returns. An alternative keyboard coupled with the use of keyboard macros or word prediction software can result in a significant productivity increase for many people with mobility impairments affecting their arms or hands.

Because individuals with severe mobility impairments are also early users of speech recognition, one solution approach might combine speech recognition with keyboard macros and related keyboard enhancements. The success of this approach depends on the ability to emulate through speech and macros any keystroke, keystroke combination, or mouse control available to other individuals in the same environment. When keyboard commands are executed using speech input, users can access bulletin board systems and other information networks, in addition to controlling their local computer.

Deaf individuals experience few difficulties with printed documents, but are at a disadvantage if information is only presented auditorily, either through live presentation or voice-only telecommunications. Deaf individuals are adversely impacted when organizations fail to provide available alternatives to standard telephones, such as Telecommunications Devices for the Deaf (TDDs). A TDD is a telecommunications device that has a typewriter style keyboard, a readout display, and a phone line connector or an acoustic coupler for a standard telephone handset. TDD users type and read messages over the telephone lines rather than talk and listen like hearing telephone users. TDD compatible modems can also be added to personal computers to enable them to send and receive TDD calls.

Many hard of hearing individuals are able to use a standard telephone set if it has been equipped with a device to provide amplification. Handsets with amplification devices built in can be used to replace the standard handset. Individuals with a speech impairment that permits clear speech, but at a greatly reduced volume, may also benefit from an adapted telephone set. A telephone handset that amplifies the speaker's voice can be added to many phones to replace the standard handset.

Some deaf individuals may also be non-vocal or not have clearly understandable speech. Communication needs within an office can be addressed through a variety of means including handwritten communications, typing to each other using a computer, E-mail, sign language interpreters, and co-workers use of American Sign Language. Communication with other offices may require use of TDDs, E-mail, and fax. Offices equipped with TDDs could be called directly and the exchange would resemble the interactive chat mode of E-mail as the two parties take turns typing their messages. Offices without TDDs could be reached through TDD relay services. Relay operators equipped with TDDs or TDD-compatible computers, relay the typed and spoken messages in the appropriate mode to the sending and receiving parties (see Appendix D for information on the Federal Information Relay Service). A deaf individual could also call a TDD-compatible bulletin board or an automated information service that supports both voice and text output.

This is just a small sampling of information system capabilities employed by people with disabilities today. As the examples have demonstrated, essential job functions can be readily performed when access to needed information resources and telecommunication services is provided. Many of the previous difficulties associated with the physical aspects of handwriting or turning pages are also eliminated with electronic-based information. In addition, electronic information exchange provides a "disability transparent" means of communication. E-mail messages do not reveal, nor does it matter, whether the sender happens to have a disability in

one or more areas such as hearing, speech, vision, or mobility. Identifying and providing the appropriate tools to accommodate people's needs is fundamental to achieving accessibility. More information on the full range of accommodation solutions possible may be found in Section III: Overview of Accommodation Solutions.

C. How Organizations Benefit from Accessible Information Environments

As implementation of the accessibility statutes proceeds, agencies are discovering that effective utilization of accommodation tools promotes productivity and ensures access to work-related and public information. Organizations benefit significantly from the ability to recruit and retain quality employees and the ability to effectively interact with all clients, including those with disabilities.

Agency experiences with accommodation solutions that incorporate maturing technologies such as speech synthesis, speech recognition, or document scanning, also provide an effective means for evaluating near-term applications with potential benefit to all users. Many employees in hands busy, eyes busy, or noisy environments can benefit today from flexible interface alternatives that have already been adopted by people with disabilities. Accommodation tools and practices are also being employed to minimize or prevent the visual fatigue and repetitive motion injuries associated with keyboard-intensive environments. As the workforce ages, accessible information environments will support the requirements of people who develop age-related limitations of vision, hearing, or mobility. As planning by Federal agencies increasingly reflects the total information environment, including electronic interfaces with the public and other agencies, accessibility represents a solid foundation to maximizing the value of the evolving information systems.

As a major buyer of information technology, the Federal government is stimulating industry to respond to its accessibility requirement. It is anticipated that the marketplace pull to readily accessible information systems will become even stronger as businesses and state governments implement plans for accessible environments in response to the Americans with Disabilities Act.

II. Accessibility as a Sound IRM Practice

A. Adopting Accessibility as a Sound IRM Practice

Identifying how the functions of an organization and the activities of its people can be augmented by electronic information tools has become an important responsibility for managers and information resource planners. Responding to these needs ensures that the information tools acquired will advance agency missions and the information proficiency levels of its workforce. For people whose disabling condition(s) make them more reliant upon information resources, responsiveness to their needs ensures that their skills are effectively utilized by the organization. Pub.L. 99-506, Section 508 (Appendix F) addresses this mission level requirement. The intent of the law is to:

- Ensure that people with disabilities can access and use the same data bases and application programs as other people;
- Ensure that people with disabilities shall be supported in manipulating data and related information resources to attain equivalent end results as other people;
- Ensure that when electronic office equipment is part of a telecommunications system, that people with disabilities can transmit and receive messages in a manner that supports their disability-related needs and provides the capability to communicate with other users of the system.

Pub.L. 100-542 (see Appendix F) serves to reinforce and make more explicit agency responsibilities to ensure telecommunications access to current and future services by people with hearing or speech impairments. In response to the requirements of this law, GSA also established the Federal Information Relay Service (FIRS) to accommodate the communication needs between users of Telecommunications Device for the Deaf (TDD) and users with access to standard telephones only (Appendix D). Federal offices equipped with both telephones and TDDs are able to initiate and receive TDD calls independent of FIRS. The U.S. Government TDD directory and new building signage identifying public use TDDs (Appendix D) represent two additional statutory-based activities designed to ensure that deaf and hearing people have access to the tools they need to communicate with one another.

The Federal Information Resource Management Regulation (FIRMR) (Appendix G), and related FIRMR Bulletins C-8 and C-10 (Appendix H) implement Pub.L. 99-506 and Pub.L. 100-542. The electronic equipment and telecommunications systems referred to in these statutes are equivalent to the Federal Information Processing (FIP) resources defined in the FIRMR. The FIRMR requires that agencies provide FIP resource accessibility to individuals with disabilities. Accessibility to FIP resources is achieved by the acquisition and application of information technology that readily accommodates the functional limitations of people with disabilities. The agency designated senior official (DSO) is primarily responsible for ensuring FIP resource accessibility. GSA has instituted a procedure to advise agencies to follow its accessibility regulations when granting delegations of procurement authority for information technology resources. GSA's procurement management review program also targets agency compliance with accessibility regulations as a review subject.

Accessibility is becoming integral to IRM, in a manner similar to security planning. Examples of activities include: incorporating access requirements into internal IRM policies and the 5-Year IRM Plan, developing agency procurement vehicles that include accessibility, integrating accessibility practices into end-user support services, and hosting accessible technology fairs.

As the establishment of accessible information environments becomes an important agency goal, IRM provides agencies with a tool to: 1) recruit the most qualified applicants, 2) better utilize the skills of current employees, and 3) improve the delivery of information services to all citizens. This approach ensures that people with disabilities receive equivalent and integrated information services, equipment, training, and technical support as people without disabilities. It also ensures that citizens with disabilities will be able to access automated public information services that are being developed by agencies. Today, people become "handicapped" primarily by environments that are unresponsive and inflexible to their needs and not by their differing levels of vision, hearing, or mobility functioning.

B. Establishing Accessibility Support Services

User support centers and other technical support services are broadening their functions to include accessibility. The goal is to ensure full access, integration, and continuity of support to people with disabilities using information resources. This includes both employees and citizens. Individual(s) responsible for these support services may want to consider the following activities when integrating access into their support programs:

Listen to User Needs

Assess Needs - Conduct a survey to determine unmet needs of agency personnel who could benefit from accommodation tools. Consider several means of contacting users including IRM newsletters and questionnaires on electronic bulletin boards. Avoid undue emphasis on disability identification which may inadvertently exclude users such as those with age-related vision problems who could benefit from screen magnification.

Inventory Accommodation Tools - Develop and maintain an inventory of accommodation products and techniques being used by employees with disabilities. Accommodation tools used to provide public access to information resources should also be identified. An inventory is a useful starting point for determining needs when upgrading existing hardware or software or preparing to procure a new system.

Know the Technology

Develop Access Skills - Spend time with current users of accommodation tools and learn their techniques. Visit and network with technical counterparts in other agencies who are providing accommodation services. Participate in access training and conferences. Become familiar with popular access hardware and software configurations, skills and documentation needed for troubleshooting with users.

Develop Industry Resources - Become familiar with resources for product information or demonstration of computer and telecommunications access products (Appendices C, D, E, and J). When visiting information technology shows, inquire how accessibility has been provided within the products, systems, and services.

Show the Way

Advertise Access - Highlight new accessibility services available through IRM in agency publications and electronic communication resources.

Conduct Consultations - Assist managers and employees to identify needed tools and sources of supply. Use integrated requirements contracts that include accessibility when available.

Demonstrate Technology - Include accommodation technology in agency sponsored technology shows to increase agency awareness of the tools readily available for providing accessibility. Purchase representative examples of common accommodation solutions for demonstration in the agency's user support center.

Cultivate Integration and Innovation

Participate in Procurements - Assist procurement teams by providing the accommodation skills needed to address accessibility requirements in agency Requests for Proposals (RFPs). Invite participation by a knowledgeable person with a disability to the procurement review team that reads RFPs prior to their release. Accessibility related items that others may overlook may be more easily identified by a review team member who has a disability (Appendices A and B).

Beta Testing - When beta testing a technical solution, either hardware or software, include people with disabilities on the test team. People using accommodation equipment to access the system may find small problems and areas of concern prior to other users since they are interfacing with the system differently.

Automate Information Services - Provide assistance during planning and installation of agency systems that help direct or handle incoming phone calls. This will ensure that the systems can be effectively used by employees and citizens with disabilities. Deaf individuals can be readily accommodated by ensuring that the recorded spoken information is also provided in text form in a manner accessible by a TDD.

GSA's Clearinghouse on Computer Accommodation (COCA) provides assistance to agencies in all aspects of accessibility management, from demonstration of enhancement capabilities in their demonstration center to briefings that assist agencies establish their own support capabilities. COCA also hosts meetings with agency counterparts and conducts workshops. Appendix C provides a listing of other Federal government resources.

C. Acquisition Planning for Accessibility

In the past, few resources were available to managers who felt unprepared to respond to information access needs reported by employees with disabilities. Although cost-effective enhancements to meet most access requirements were available, their existence was not well known and utilization was poor. Today, IRM is responding to the need to ensure that people with disabilities have equal opportunities to access and become proficient users of information resources. The responsibility is outlined in the FIRMR (Appendix G). The IRM commitment to action is being expressed primarily through the establishment of internal policy, access support services, and procurement vehicles to ensure integrated access.

Integrated procurements that include accessibility products and services represent the most desired approach for ensuring the full access, integration, and continuity of support required by agencies and the employees they are accommodating. As strategies for acquiring information technology increasingly emphasize the need for software and hardware portability, interoperability, and off the shelf availability, access products provide real examples of these qualities and the benefits obtained.

Throughout an acquisition, beginning with the needs assessment and requirements analysis, the accommodation needs of people with disabilities should be addressed. Functional specifications for alternative input and output capabilities need to be developed. If available, an inventory of current accommodation equipment being used in the agency would facilitate this process. The functional specifications developed should enable the vendors to decide how to best provide the capabilities needed. There are many combinations of commercially available hardware, firmware, and software that can be proposed by the prospective vendors. Using this process of functional specification, the needs of most current and future employees can be effectively met through the specific indefinite quantity and indefinite delivery line item offerings of the contract. Any "technology refreshment" clauses in integrated procurements should be inclusive of accommodation products and services. In this manner, integrated contracts can be readily responsive to the majority of current and anticipated accommodation needs. When an individual's needs cannot be effectively met by the products offered on the contract, the individual should have the opportunity to waive the line item product(s) offered and purchase the product(s) needed through the multiple schedule award or open market. In preparation for supporting an individual in this situation, a contract provision should be included to obtain consultation services to identify and implement an appropriate accommodation. IRM commitment to the integrated approach outlined above will ensure that the accessibility, tools, technical support, and training needs of current and prospective employees with disabilities will be accommodated in the new information environment being planned.

Acquiring access tools for an individual must be done in a timely manner. If the agency has implemented an integrated contract that includes accommodation products and services, the individual should participate in the decision concerning which specific items offered through the contract should be ordered to meet their needs. If there is a functional reason why only one specific product can be used and it is not available through an agency contract, a specific make or model justification is needed for the procurement. Even though there may be several accommodation solutions that are generically the same, such as large print display software or hardware, the small differences in the various products can be extremely important to the individual. Many of the accommodation specific products available are being offered through multiple distributors. Calling the product manufacturer directly may be the easiest way to determine the vendors servicing each specific geographical area. Determining several distributors of a product will be helpful in obtaining several price quotations on the item. Different distributors may also offer different levels of service for the same product. In a few cases, a specific item may be available only from the manufacturer. It is then necessary to write a justification for the sole source procurement just as it would be for a non-accommodation item. There are several accommodation products listed on the GSA Multiple Awards Schedules. In many agencies, it is a simpler process to purchase items from the Multiple Awards Schedule. Many of the accommodation vendors are also 8(a) vendors or qualify as a Small or Disadvantaged Business.

This process of identification and provision of tools should be repeated whenever specific needs change. These needs may arise due to new job responsibilities, a change in the condition necessitating an accommodation, or a change in the technology available. If accommodation products are being acquired to augment an existing workstation, or the workstation is being purchased through a different vendor than the accommodation vendor, there are technical considerations that should be reviewed prior to making the purchase. This is true also if several different accommodation products are being purchased to function together on the same workstation. Appendix A contains specific technical considerations that need to be taken into account prior to acquiring accommodation products.

Additional Considerations

Training, documentation, and maintenance needs must also be taken into consideration. Appropriate training and documentation contributes significantly to the user's productivity with the new products.

Training

Training may be as simple as having the vendor install the equipment and showing the end-user and their on-site support personnel how to use the equipment, or how to get started in the tutorial if one is provided. More in-depth training may also be required depending on the nature of both the application systems and the accommodation solution being used. During the acquisition planning stage, it should be determined if any training is included in the purchase price, and if that alone will be sufficient or if additional training will be needed. The training considerations included in Section III may be helpful. In integrated contracts including accessibility, the training needs of users with disabilities should be fully incorporated into the overall training plan. Additional training line items may be required to provide for training specific to the accommodation products being used. In addition, the integrated contract should be clear that physical access to the training facility is also a requirement.

Documentation

Providing accessible documentation may include providing documentation in braille, large print, cassette tape, or on diskette. During the acquisition planning process it may be possible to determine the preference of the individual if the acquisition is for an individual or a specific group of individuals. In integrated contracts including accessibility, the documentation needs of people with disabilities should be fully incorporated with the overall documentation requirements. A clause may be included to require the vendor to furnish documentation in the appropriate accessible format upon request. The agency may want to require all vendors replying to the specific request for proposal to submit samples of their accessible documentation. Rather than requiring potential vendors to provide all forms of documentation, some agencies have been asking only for documentation on an ASCII disk. The benefit of requiring documentation in ASCII format is that it can then be readily converted into braille or large print as needed in a minimum amount of time for a reasonable cost. There are several service providers and organizations that specialize in producing braille and/or large print documents. By starting with an ASCII disk rather than printed material that needs to be transcribed, agencies realize a significant savings on alternative format production costs. A combination of document formats may also be preferred in some cases. For example, some braille users may want only the introductory sections of documentation and any tables of frequently used commands produced in braille and the remainder of the documentation available on diskette.

Maintenance

Maintenance of the accommodation products is often forgotten until a product fails. As with the other considerations, maintenance needs to be thought of during the acquisition process, rather than as an afterthought. For many individuals using accommodation products, the entire system becomes unusable to them if their accommodation product fails. Additionally, the individual may be the only person in their area using a specific product so that sharing of resources may not be a viable alternative as it often is for non-accommodation equipment. What type of maintenance agreement is needed may depend on the nature of the job responsibilities the individual has, the location of the equipment, the number of other individuals in the area using similar equipment, and the vendor responsiveness when repairs are needed. In some cases, on-site maintenance may be preferred while in other situations it may be preferable to send the equipment to the vendor for repair. If accommodation equipment is being used for a critical function within the group, purchasing backup equipment may be an option to consider. Integrated contracts including several levels of maintenance services such as: 1) 4 hour response, on-site, 2) 24 hour repair or replace, on-site, and 3) 48 hour return, depot maintenance, should offer the same options for accommodation products.

III. Overview of Accommodation Solutions

A. Introduction

In preparation for a visit to an agency's accessibility support office or COCA, discussion between the manager and employee should focus on the employee's description of information access problems encountered on the job. Areas of accommodation consideration should include: 1) difficulties associated with collection, review, preparation, storage and retrieval of information, 2) difficulties with phone usage, and 3) accessibility to all information tools and systems currently available in the office or anticipated. Individual consultation is necessary to identify appropriate accommodation solutions. There is no single "best" solution for all people who are blind, or have low vision, or a mobility impairment. The functional requirements of an accommodation are determined by the nature of the job and how the individual will be using information resources.

A wide array of accommodation add-ons are available to meet the diversity of needs of end users with disabilities. Choosing the optimal combination of add-ons requires exposure to the range of possibilities and review of how each could augment the work process. After defining the tasks to be accomplished by an individual user and the anticipated functional problems associated with completing those tasks using standard equipment, vendors should be contacted to review specific descriptions, features, and capabilities of the tools that might best resolve the problem(s). Most of the accommodations currently in use have been developed for the PC environment. A number of solutions are being successfully used within Local Area Network (LAN) configurations and in terminal emulation modes to both mainframe and mini systems using a variety of operating system platforms.

Successful solutions are most readily achieved with a team approach that includes the supervisor, the end user and a technical support person. Additional accessibility topics less directly related to information processing technologies that managers and employees should discuss include: 1) difficulties with participation in discussions and meetings, 2) additional assistance needed or currently provided through readers, personal assistants, or interpreters, and 3) architectural or physical barriers at the worksite.

A brief description of some tools frequently used by end users with disabilities follows. The review is organized by the functional limitations of vision, hearing, and mobility impairment. A more in-depth discussion of many of the topics introduced here is in Appendix A: Technical Considerations in Product Selection. To assist in identifying and locating vendors of computer and telecommunication accessibility products, a listing of accommodation equipment manufacturers is included as Appendix J.

B. Accommodating Users with Visual Impairments

Low Vision

The term "low vision" covers a broad range of possible conditions and types of visual impairment. The solutions offered below may be of benefit to some individuals with low vision, but not to everyone. The individual to be accommodated must be included in any product decision since no one else can see the world in exactly the same way they see it through their eyes.

- **Glare Protection Screen** - Minimizes visual fatigue associated with glare on the monitor.
- **Large Monitor with High Resolution (19"- 25")** - Increases character size in proportion to monitor dimensions and provides a crisp, sharp image.

- **Magnified display of computer screen** - Either software or hardware solutions exist to present the images on the computer in a larger format. Character size can be increased approximately 2-16 times. (For additional technical information see Appendix A)
- **Magnified display of hard-copy material** - Hardware exists that will magnify any item placed under a special camera. Documents, drawings, phone messages, etc. can be seen enlarged on a special monitor. (see Appendix A)
- **Large print production** - Several software packages are available that will print large, bold text on either a dot matrix or a laser printer.
- **Copy machine with enlarging and reducing capability** - Provides enlarged print copies for persons with impaired vision that find magnification helpful and small print copies for persons with visual impairments such as tunnel vision which narrowly restricts the field of view.
- **Color and contrast selection** - Systems or applications which allow the individual user to choose the color combination and level of screen brightness to be displayed.
- **Keyboard orientation aids** - A raised dot or bleb can be added to certain keys such as the home row keys or the number five on the numeric keypad to give a tactile orientation to the keyboard to augment visual orientation.
- **Other keyboard aids** - Adhesive backed keycap labels can be purchased and applied to the standard keyboard that have very large, bold letters. These labels can be purchased in either white on black background or black on white background.

Blind

For those users with very limited or no usable vision, accommodation options include refreshable braille display devices, synthesized speech output, optical character recognition, and braille print embossers. A common misconception among sighted users is that braille is always the best solution for blind users. Only about 10 percent of the adult blind population in the U.S. can read braille. Typically, users who have lost their vision later in life tend to rely on speech output as their access strategy rather than braille. Potential equipment add-ons for blind users are briefly reviewed below.

- **Speech synthesizer** - A hardware device used in conjunction with a screen reader to convert screen contents into spoken words by using synthetic speech. (For additional technical information see Appendix A)
- **Screen reader software** - Software package that allows the individual to read the screen by directing the screen contents to a speech synthesizer. The individual can choose to listen to the information appearing on the screen by the letter, word, line, entire screen, etc. (see Appendix A)
- **Braille printer/embosser** - Several braille printers are available to provide hard-copy braille documents. (see Appendix A)
- **Braille translation software and firmware** - Before a standard word processing document can be printed on a braille printer, it must be converted into the proper format. Both software and firmware exists that will perform this translation function. (see Appendix A)
- **Refreshable braille** - A device with a row of braille cells that change to reflect what is being presented on the computer screen. The individual reads the screen contents using the dynamically changing braille display. (see Appendix A)
- **Braille note-taker** - Small, portable device that allows braille code entry for note-taking, editing and storage of information. (see Appendix A)

- **Braille input devices** - This refers not only to portable note-taking systems that can generate a file to be transferred to the PC, but also to other devices designed to be connected to the PC in place of the standard keyboard to provide for a braille input mechanism. In addition, there are software packages available that will configure a standard keyboard so it can be used for braille input. (see Appendix A)
- **Optical character recognition (OCR)** - Printed documents may be converted to speech output or written to a PC by use of an OCR configured to support use by a visually impaired person. Use of an OCR allows blind or low vision individuals to independently access many printed materials. (see Appendix A)
- **Keyboard enhancements** - A raised dot or bleb, or a braille marker can be added to the standard keycaps on selected keys such as the home row keys, control, or alt keys to provide tactile keyboard orientation. In addition, auditory status indicators for toggle keys, such as "shift lock" or "num lock," can often be provided by software.
- **Speech recognition** - Some blind computer users have begun to employ speech input systems to give voice commands and/or mouse movements instead of using the keystroke equivalent. This strategy is becoming increasingly useful with new applications employing pull-down menus that may be more difficult to access using speech output and keyboard commands alone. (see Appendix A)
- **Tactile output - non-braille** - Tactile output such as raised line drawings may be useful for some blind individuals. Several braille printers and wax jet printers have the capability of producing raised line drawings. There are also hand-held devices that use an array of vibrating pins to present a tactile outline of the characters or text under the viewing window of the device.
- **CD-ROM** - There are dictionaries, encyclopedias, and magazines currently available on a CD-ROM format. Even for braille readers, CD-ROM offers a more easily manipulated, non-bulky format for accessing this type of information. (see Appendix A)
- **Telephone light pen** - Blind individuals that use a multi-button phone set may have problems identifying which line is ringing, on hold, or not in use. A light pen is a device that will give an auditory signal when it is held next to the phoneset button that is lit or blinking.

C. Accommodating Users with Hearing Impairments

Although the general term "hearing impaired" is being used to include both deaf and hard of hearing individuals, the needs of these two groups may vary greatly. In general, deaf people depend more upon visual skills for communication and information from their environment while hard of hearing people try to enhance their usable hearing and still rely on auditory input more than visual input. This general difference drives many of the concerns and needs mentioned in this section. It is key that the individual participate in the process of identifying the accommodation solution to ensure it is the proper approach for that particular individual and their needs.

Many individuals that are hard of hearing can benefit from several of the devices available that provide amplification of standard auditory input. Both individuals with hearing aids and those who do not wear a hearing aid may benefit from use of amplification devices. It should be kept in mind that many deaf individuals also wear hearing aids. For these individuals, the hearing aid allows them to hear loud sounds, but not to discriminate speech regardless of the amount of amplification.

Many of the accommodations discussed for individuals who are deaf focus on the need for visual redundancy to augment what others hear auditorily. The supervisor should discuss with the hearing impaired employee what support structures or procedures may be necessary to perform the job. These discussions should focus on providing visual redundancy to accommodate the individual employee's communication needs relative to one-to-one communications, telephone calls, meetings, and training courses. Accommodation needs vary by the individual, the communication situation, and the job function to be performed.

Considerations:

- **Visual redundancy on computers** - Ensure that important information conveyed by beeps or speech during computer-related tasks are also displayed visually for the user unable to benefit from the auditory information. (For additional technical information see Appendix A)
- **Interpreter** - To accommodate hearing impaired people that communicate using American Sign Language or need an oral interpreter, professional interpreters are available on a contractual basis or may be hired by the agency. Hearing impaired individuals and their supervisors should develop a plan to ensure that interpreter services are available when necessary. Interpreters should be available on-site for interpreting at meetings, conferences, and training courses. (see Appendix A)
- **Hearing aid compatible phones** - When a person wearing a hearing aid attempts to use a telephone that is not hearing aid compatible, they often hear a very loud, high pitched squeal similar to the sound heard when a public address system exhibits a microphone feedback problem. This can be quite uncomfortable, and precludes using this telephone to carry on a conversation. Individuals with hearing aids should be provided with hearing aid compatible phones. The Hearing Aid Compatibility Act (Public Law 100-394) required that by August 1989, all essential telephones and all telephones manufactured in the U.S. or imported "provide internal means for effective use with hearing aids that are designed to be compatible with telephones which meet established technical standards for hearing aid compatibility." Some individuals that wear hearing aids may still need an additional phone amplification device.
- **Speech amplification - telephone** - For hard of hearing individuals, there are several methods of amplifying the speech being heard over a telephone. There are devices designed both for people who use a hearing aid and for those who do not use a hearing aid. Battery powered, portable handset amplifiers are available for calls made at other phones and on travel. (see Appendix A)
- **Speech amplification - meeting or conversation** - Portable speech amplification devices may be easily set up for use in a group meeting, training course, or lecture for a person who is hard of hearing. (see Appendix A)
- **TDD** - For an employee who cannot use an amplified telephone, a telecommunications device for the deaf (TDD) or TDD compatible device will be required to support work-related needs. A TDD permits a hearing impaired person to communicate over a standard telephone line with another TDD user or through a relay operator to reach a non-TDD user. The TDD enables the sender to type a message that is displayed as text for the receiving party to read rather than using auditory output like a standard phone. A personal computer can also be configured to function as a TDD by adding a special modem that supports both the PC code (ASCII) and the code used by most older TDDs (Baudot). A PC-based solution should reflect a user's requirements and allow call announcement and pickup without exiting other PC application programs. TDDs that support Baudot only are rapidly becoming obsolete technology as more TDDs that support both Baudot and ASCII are being produced and used. (see Appendix A)

- **TDD with refreshable braille display** - Deaf/blind individuals may need a specialized TDD that also has a refreshable braille display unit attached. Using this device, a deaf/blind individual and a sighted manager can communicate in a face-to-face situation. Both people would type their messages using the TDD keypad. What is typed on the TDD keypad is displayed on the TDD readout and on the refreshable braille display unit. This device also enables a deaf/blind individual to access the telephone system in the same way a standard TDD user would. Instead of reading the text displayed visually, the deaf/blind individual would read the refreshable braille display.
- **Signalling system** - For a person that is hard of hearing or deaf, the normal sounds and tones that alert one to take action, such as a phone ringing, may not be heard. A transmitter can be attached to a phone that will cause a light to be flashed or a personal alerting device to vibrate when the phone rings. Transmitters can be used to activate a visual signalling system for fire alarms and door buzzers in addition to telephones. For some individuals, tone ringer devices that convert the ring of telephones into a frequency range more easily heard are beneficial. (see Appendix A)
- **Federal Information Relay Service (FIRS)** - The General Services Administration provides a relay operator service to support government business calls between TDD and non-TDD conversing parties. The operator serves as an intermediary between the hearing impaired or speech impaired (TDD-equipped) caller in one direction and the non-TDD equipped caller in the other direction. This service is available to any federal employee as well as members of the public when calling a government office. Within the Washington, D.C. metropolitan area the number is (202) 708-9300 vTDD. Outside the Washington, D.C. area the number is (800) 877-8339 vTDD or FTS 458-9300. More information on this service is available in Appendix D.
- **Captioning** - Captioned videos provide the text equivalent of sounds and speech as they occur on the video. Any video-based media produced for instructional, training, or informational purposes either by the agency or for the agency should be captioned so the information presented is accessible to hearing-impaired viewers. When purchasing training tapes, permission should be obtained from the copyright holder to caption them if they are not already captioned. (see Appendix A)
- **Electronic mail** - Electronic mail presents few barriers to communication because it is essentially a visual process. Systems that provide for an interactive "chat" mode in addition to the non-interactive mail mode can greatly expand the communication possibilities for deaf or hard of hearing individuals. The chat mode may be a very viable alternative for many internal communications needs. The electronic mail system should include a feature that provides a visual indicator of message status.
- **Bulletin Board Systems (BBS)** - Access to bulletin board systems may be useful in addition to or to supplement access to electronic mail systems. Many BBS exist with information covering a wide variety of topics. A few BBS are accessible by the older Baudot only TDDs. Many more BBS are accessible using the newer TDDs with the ASCII option or the PC-based TDD compatible modems.
- **Fax** - Facsimile is the electronic transmission of letters and pictures over regular telephone lines. Sending computer generated information, hard copy documents or handwritten notes through a facsimile machine may provide a valuable alternative to telephone messaging in some situations. The non-interactive nature of fax communications makes it unsuitable as a substitute for providing TDD communication capabilities. Fax can serve as a technology supplement, to a TDD or TDD compatible device. The fax system used should provide all necessary status information and messages needed for completing the fax transmission in a visual manner. Fax machines that rely on the sender responding to tone or beep indicators are not acceptable for use by deaf or severely hard of hearing individuals. A PC fax card option may be a viable alternative to a stand-alone fax machine for individuals that typically transmit data that has been generated on a PC. A combination fax machine/telephone may also be an alternative to a stand-alone fax machine.

- **Pay phone TDD** - A pay phone TDD can be purchased or leased. Placed next to other pay phones, it ensures equivalent communications opportunities for visitors to the building who use TDDs. The TDD is in a closed case to protect it from vandalism. The case opens when a TDD is detected at the number that has been dialed. If the number being dialed is a voice and TDD number, a spoken message can be generated that informs the person answering the call that a TDD needs to be connected to respond to the caller.
- **Videoconferencing** - As videoconferencing becomes used more widely in the Federal government, the communication needs of deaf individuals should be taken into consideration. At the higher transmission rates used for videoconferencing, a sign language interpreter can still be understood on the receiving end. At lower speeds, movements blur and signs cannot be understood by the receiving individual.
- **Automated attendant systems** - If an agency or office is considering installing an automated information service with prerecorded voice messages, plans must be made for providing the same information in a text messaging mode that would support equivalent information access by TDD users. Either a single-line configuration designed to handle both hearing callers and TDD callers or two separate phone lines can be used. In either case, the number should be distinctly identified as being TDD accessible.

D. Accommodating Users with Mobility Impairments

There are a variety of accommodation solutions available for users with various degrees of mobility limitation. In addition to the actual computer or telecommunications access needs, the entire office environment should be reviewed for barriers to access. Some examples would include narrow aisles that do not allow wheelchair passage, workstation surfaces that are too high or low which may result in fatigue or render the work area inaccessible, or doors that are too heavy for the individual to open. Although many mobility impaired individuals are able to adequately determine which potential accommodation solutions would be most useful for them, others may need additional assistance. For individuals with severe mobility impairments, possibly compounded by muscle control problems or involuntary spastic movements, a professional evaluation of needs may be in order. In this case, a rehabilitation engineer or an occupational therapist may be able to provide assistance during product selection. Specific computer and telecommunications access strategies and products include:

- **Sequential keystroke input** - Software programs can be loaded that allow the user to enter keystrokes sequentially that others enter simultaneously and still achieve the same effect. For example CTRL-ALT-DEL keys are all held down together to perform a soft reboot on a PC. With this program running, CTRL is pressed, then ALT is pressed, then DEL is pressed and a soft reboot still occurs. (For additional technical information see Appendix A)
- **Key repeat rate control** - Programs exist that allow the individual PC user to adjust the sensitivity level of the keyboard or completely turn off the keystroke repeat function. (see Appendix A)
- **Keyboard macros** - Software and hardware solutions exist to allow a few keystrokes to be automatically translated into multiple keystrokes. Macros reduce the number of keystrokes needed to generate a word, phrase, or paragraph. For example, an individual's initials can be used to generate the entire signature block on the screen. (see Appendix A)
- **Alternative keyboards** - Several alternative keyboards exist that may be more easily used by various mobility impaired individuals. There are small versions of keyboards and large, expanded keyboards. There are also keyboards that are not physically connected to the PC it controls, but rely on infrared transmission to a receiver attached to the PC. The standard keyboard can also be re-mapped to be used as a right-handed or left-handed Dvorak keyboard for a person that types with a single hand. (see Appendix A)

- **Non-keyboard dependent input devices** - There are a variety of alternative input devices that allow keystrokes to be generated by various mechanisms and then transmitted as if generated by the keyboard. Examples are sip and puff systems, muscle switches, optical pointer devices, Morse code input systems, and eye scanning systems. (see Appendix A)
- **Word prediction packages** - Word prediction packages may be used in conjunction with many PC application packages, keyboard enhancement products, and alternative input mechanisms. Word prediction packages try to anticipate the next word the user will be typing and display a list of choices for the user. If the word desired is not on the list, the user selects the first character of the word and the selection list changes. Word prediction can significantly reduce the number of keystrokes the user must enter from either a keyboard or an alternative input device. Some packages will change the listing of words predicted based on the users past usage. Others have a set listing of selections and a pre-defined presentation order.
- **Speech recognition** - Speech input can be successfully used by many individuals that are unable to access the keyboard at all or have very limited access to the keyboard. Speech recognition may be used to either supplement or replace the use of a keyboard. (see Appendix A)
- **Robotic devices** - Voice activated robotic arm devices are available in conjunction with a work station. These units provide a severely mobility impaired user with voice control of the computer and the robotic arm to perform tasks such as loading diskettes, turning pages in a book, and answering the phone. Other environmental control systems may also be attached to this system to control the room lights, blinds, and other things in the office.
- **Mouse alternatives** - For programs dependent on mouse functions, there are often keyboard commands that can provide equivalent functions. The use of a trackball may also be a viable alternative to the large sweeping motions often needed for effective utilization of a mouse.
- **Keyguard** - A keyguard is a smooth surfaced template with holes corresponding to key locations. The keyguard is placed over a standard keyboard and promotes keyboard accuracy by stabilizing the user's hand movements and preventing inadvertent multiple keystrokes.
- **Optical character recognition** - Using an OCR to convert printed documents to an ASCII file may be quite useful. Many mobility impaired individuals are able to read a document on the PC with greater ease than handling a printed version of the document.
- **Speaker phone** - For individuals unable to easily pick up or hold a telephone handset, a speaker phone may be quite useful.
- **Gooseneck receiver holder** - For individuals in an office setting where a speaker phone would not be appropriate, a flexible gooseneck arm with a clamp to hold the phone receiver may be useful. Typically, a small device would be used in the handset cradle to perform the "off-hook" or "hang-up" function that happens when the handset is physically placed in the handset cradle.
- **Phone headset** - Some individuals may prefer to use a phone headset that is worn on the head with a small microphone positioned in front of the mouth. Unlike the gooseneck receiver holder mentioned above, this option usually tethers the user to their phone. For an individual unable to put on and remove the headset by themselves, this would decrease their independent movement around the office.
- **Speed dialing** - Many phone systems offer enhancements that allow a short one or two digit code to be used to dial a number. For an individual who has difficulty dialing, this can be quite helpful. Some phone sets can also be purchased that have a speed dial feature built into the phone set itself. A few are available that have voice activated speed dialing.

E. Areas of Unmet Accommodation Needs

Although there is a wide range of accommodation products readily available, there are still areas of unmet need where accessibility cannot be readily achieved. Hopefully, technology advances will be able to meet these needs in the near future. A few of these areas of unmet accommodation needs will be discussed briefly in the sections below.

General

One general trend in computer and technology advancements that continues to be a problem is that accessibility is addressed as an afterthought rather than being considered from the beginning in the design of products. Rapid advances leave accommodation practices in a "catch-up" role. In some cases, new products are developed that render current accommodation products useless in providing the accessibility required.

Graphical User Interface

One of the most discussed areas of unmet need affecting people with visual impairments is the growing use of the graphical user interface (GUI). Heralded by many as a way to make computers more "user-friendly," GUIs currently exhibit a design limitation that prevents their use by visually impaired individuals. The spoken output capability used by blind individuals for text-based screen contents is unavailable in graphic based applications. Within the Macintosh environment, a product does exist that will give speech output for the Macintosh icons at the operating system level. This speech output interface fails to work with graphic based applications, however, because there are so many icons it does not recognize and no ASCII equivalents which are needed to generate synthesized speech. Offices that are converting to graphic based word processing applications may be inadvertently creating an accessibility barrier within their agency.

In addition to the barriers being created for individuals with visual impairments, other barriers to general organizational use are also being created. Several products are available to enable a person to access certain databases or electronic mail systems by using a telephone to call-in, make the appropriate selections, and listen to the information as spoken output. Agencies exploring the use of this technology to improve access to government information sources by citizens may find they are also hampered by graphic based applications.

POSIX

Accommodation product development has not kept pace with the "add-ons" needed to be utilized with POSIX-compliant systems. Many people with disabilities are left with only one option. This option is to add the appropriate accommodation tools to a personal computer running a VT100 or VT220 emulation as an interface to the POSIX-compliant operating system. The problem is that not all the commands and keystrokes needed are available through these emulations. Better emulation solutions and accommodation products designed for POSIX-compliant operating systems are needed to fill the existing technology gap for people with disabilities.

Local Area Networks (LANs)

Even though many people using accommodation products are able to access and work within LAN environments, this is not true of all LANS. Many accommodation products have software that runs in a terminate-stay-resident (TSR) mode. On some LANs there are memory management problems between the accommodation TSRs and the LAN software. Other LANs will automatically terminate any TSR programs running when the workstation accesses the LAN. In addition to these potential software incompatibilities, there may also be conflicts between the LAN boards and some of the accommodation product boards. Often the board level conflicts can be resolved, but not always.

Telephone Status Indicators

For many years, blind individuals have had few difficulties in working with telephones. For those with multi-line sets, a specialized light probe could be used to determine which of the indicator lights was lit, and whether it was solidly lit or blinking. With the change to newer style phonesets, the smaller, red indicator lights are not detectable by the light probes. Several of the newer phone features, such as using a light emitting diode (LED) display to indicate that messages are waiting and to display the numbers to be called, are inaccessible to individuals who are blind or have low vision. Having auditory redundancy added for these features would be helpful.

F. End User Training Considerations and Options

Training is another key element of accommodation. Both the initial training with the new accommodation equipment and ongoing career development training should be taken into consideration. When new equipment has been procured, both the end user and the technical support personnel involved in the accommodation effort should receive training. The amount of training required varies with the individual and the technology employed. Training may range from computer-assisted tutorials to formal instruction. The support personnel should be almost as familiar with the accommodation hardware and software as the end users in order to provide good ongoing support. Training is also necessary for management personnel. The first line supervisor should be the primary focus of this training. The supervisor should have an appreciation of the accommodation taking place, the technology being utilized, and its relation to the other tasks in the office.

For the user just learning to use a personal computer, training in general PC use is needed in addition to the training focused on the accommodation equipment the individual will be using with their PC. Agency managers in charge of training should be prepared to include employees with disabilities in the standard training courses offered. The individual should have some training on their accommodation add-ons prior to training on new systems or applications. This preliminary training will allow the employees with disabilities to focus on the application training course itself rather than on the accommodation-related procedures.

If the training center does not offer adequate computer accessibility on their computer workstations, the training center will need to make arrangements for the accommodations used by the employee to be installed on the training center PC for the duration of the course. The training center should be prepared to answer questions about serial or parallel port availability, connector type (e.g. 25 pin male, or 9 pin female), and type of monitor (e.g. EGA, VGA, CGA, or monochrome). They should also be supportive of making the computer system available the day before the class is scheduled to begin so the necessary accommodation add-ons can be installed and tested. The course instructor should take a little time prior to the beginning of the course to become familiar with the rudimentary elements of the accommodation packages being used.

As with any training course for any non-disabled employee, the documentation and course notebook are an important part of the total training package. Every effort should be made to provide documentation to the user in the most useful format possible. Frequently requested formats may include braille, audio tape, large print, or ASCII diskette. When an individual registering for a course identifies their disability, they should be asked the format they prefer. The assumption should not be made that "all blind students will want braille" or that "all students with low vision will want large print." If video tapes are used for training, they should be available in a captioned format for use by hearing impaired individuals.

Additional ideas that may be useful for training center managers or managers preparing to send an employee with a disability to a training class are listed below.

For a student who is blind these ideas include:

- Have a reader or personal assistant with a blind person for the first morning of training to help orient the person to the keyboard, drive slot, etc.
- Put tactile dots on the keyboard that will be used in training to provide home row key orientation and any special keys the instructor will be directing the students to use during the course of training.
- If the training center does not offer adequate computer accessibility, have the computer support person for the area set up the employee's screen reader and synthesizer at the training center the day before training is due to begin.
- For braille readers, have any "cheat sheets," such as function key assignments, available in braille.
- For all class workbooks available in braille, the page numbers should reference the print page number.
- Instructors should be reminded to read aloud any instructions or material written on the board or on overheads used throughout the course.
- Many students that are blind may want to make an audio recording of the training for their own use. If contractor trainers are being used, they should be aware of this and not prevent the student from recording the course. Courses that involve materials requiring security safeguards would be an exception.
- The instructor or class coordinator should be prepared to give directions to the break area, restrooms, phones, etc. in a clear manner that does not depend on visual references such as, "the room with the blue door." Directions given stating the distance, or the number of doorways on the left or right would be more usable by a blind individual.

For individuals with low vision, the following ideas may be helpful:

- Large print display monitors would be a nice addition to any training center and provide a benefit to many students that may utilize the center. Both large print display of computer screen contents and large print display of hard copy materials would be useful.
- Large print keycap labels would be quite easy and inexpensive for a training center to add to one or more of their keyboards. Tactile dots on the keyboard are also useful to many students by giving a tactile orientation to the keyboard to supplement the visual orientation.
- Provide copies of transparencies, slides, or material normally printed on the board. Provide these in large print if possible.

For individuals who are deaf, the following suggestions have been given:

- Have an adequate number of sign language interpreters so they can be easily seen and have adequate time off between sessions.
- Prearrange for hearing impaired students to share notes taken in class by non-hearing impaired students. This may be facilitated by not grouping all the individuals with hearing impairments together. Sharing notes may also be facilitated by supplying the student designated as the note-taker with paper that produces a carbonless duplicate.

- Prior to giving verbal instructions, the instructor should be sure the deaf individual is looking at the interpreter. Flashing the room lights is a simple and effective means of getting everyone's attention.
- If verbal instructions given are lengthy or involve processes the student will then be asked to perform, such as a computer exercise, it may be difficult for the student to watch the interpreter and accurately record the instructions. Preparing instructions prior to the class and giving the student a printed copy would be helpful.
- The instructor or class coordinator should be prepared to give instructions to the students for the location of a public use TDD similar to giving hearing students the location of a pay phone.

For individuals who are hard of hearing the suggestions include:

- Have the classrooms equipped with an assistive listening system. These systems can be either permanently installed or portable.
- Be sure all the instructors understand assistive listening systems and know they must use the microphone for the system to work.
- Instructors should be careful not to talk to the class while their back is turned to the class, or obstruct their mouth with their hands, a pencil, etc. while they are talking. Many hard of hearing individuals depend on visual cues to aid in their understanding and need to see the instructors lips clearly.
- Instructors should clearly repeat any questions raised by the class participants prior to giving the answer to ensure everyone has heard the question. This is particularly true if the instructor is using an assistive listening device and the question was not spoken through the system microphone.
- Care should be taken to minimize unnecessary outside noise that might make hearing more difficult.

For mobility impaired individuals attending training, the suggestions include:

- Prearrange for mobility impaired students that would have trouble taking notes to share notes taken in class by another student. This may be facilitated by supplying the student designated as the note-taker with paper that produces a carbonless duplicate.
- Ensure there is adequate space in the classroom to accommodate a wheelchair or a scooter if the student uses either of these.
- Be sure all instructors know the location of the accessible restrooms nearest the classroom location and alternate locations if that facility is not available.

Other types of training:

- In addition to standard classroom training situations, people with disabilities may benefit from other types of training media. Training videotapes, audio cassette tapes, one-to-one training, and training centers that specifically focus on the training needs of people with disabilities may all be options to supplement traditional classroom training experiences. Which type of training is most appropriate is a decision that should be made jointly between the manager and the individual.

Considerations include:

- The nature of the material being taught.
 - Level of difficulty, length of the course, etc.
 - Is it on a topic that is routinely taught, such as PC application courses, or something unique, such as a particular piece of accommodation equipment?
- Is the training media accessible?
 - Are videotapes captioned for deaf and severely hard of hearing individuals?
 - Are audio cassettes indexed to make finding the proper section of the tape easier?
- Is the training being done for just one individual or for an entire group?

Although there are training centers that specifically focus on training individuals with a disability, managers should not assume this is the training of choice. In many cases, if the entire office is going to be receiving training for a new system, the individual with a disability would prefer to receive the same training as their co-workers. The training center performing the training for the office should make every effort to ensure the individual is properly accommodated and can attend the course with their co-workers. In addition, the standard training centers may be the only source for some of the courses needed by the individual.

In some cases, training that is designed specifically for people with disabilities will be the best alternative for the individual and the manager. If the standardly used training center is unable to accommodate the individual's needs, or does not offer the courses needed, specialized training may be the best alternative. Several specialized training centers exist that charge no more for their training courses than the standard training centers.

Management and supervisory training conducted by the agency should also include a component on accessibility and accommodation. In addition to general "sensitivity training," managers need to be aware of the range of possible computer and telecommunications accommodation solutions currently available. Federal government managers, employees, or groups of agency personnel that may want to see some of the computer and telecommunications solutions discussed in this handbook, can arrange for an informal demonstration at the COCA technical resource center. Please call COCA for more information or to arrange a consultation or demonstration. Hearing callers may call on FTS 241-4906 or commercial 202-501-4906. TDD callers may call on FTS 241-2010 or commercial 202-501-2010. Appendix C provides a listing of other Federal government resources.

APPENDIX A

TECHNICAL CONSIDERATIONS IN PRODUCT SELECTION

This appendix contains a more in-depth explanation of several of the solutions introduced in Section II, Overview of Accommodation Requirements. Although no document could fully cover every consideration or be fully up-to-date in the changing realm of products and options, this appendix represents a framework for narrowing the choice of solution options to a manageable size.

A. General Hardware Configuration and Software Compatibility Considerations

As with the purchase of any computer based hardware add-on or software package, there are several performance and positioning issues to consider prior to purchase to ensure that the newly acquired items will function with the system they are augmenting. This section highlights several of these general considerations. Additional considerations that are specific to the type of accommodation being made will be addressed in the sections on visual impairment, hearing impairment, and mobility impairment that follow.

General Hardware Configuration Considerations:

- Do the hardware solutions require a board slot in the computer or a serial or parallel connection? Is the proper connection available?
- If a board is used, does it present any compatibility problems with other boards in the PC? Other EGA or VGA boards? LAN boards? Terminal emulation boards? If an incompatibility exists, can the board interrupts or maps be changed?
- Is the speed of the PC and the board compatible? Some devices require at least an 80286 based PC, while others will not function properly on that PC platform.

General Software Compatibility Considerations:

- Will the software run with the existing monitor? EGA, CGA, VGA compatibility?
- How much RAM is used by the software? Is there enough RAM in the PC to run both the necessary application packages and the accommodation software at the *same time*?
- Can the software be loaded in extended memory?
- If a terminate-stay-resident accommodation software solution is used, does the LAN software leave it active, or does it override? Are there any memory management conflicts that need to be resolved?
- Will any terminal emulation software used allow the accommodation software to remain active?

Furniture and Space Considerations:

After the decision on equipment is made, determination of proper space for the equipment needs to be considered. Sufficient space must be available for workstation solutions that include a scanner, printer/embosser, and/or magnified display equipment. Some of these items are quite large. In some cases, they may interfere with the hanging storage bins often used with modular furniture. Placement of the equipment in a manner that allows efficient work flow is also of importance.

B. Selection Considerations for Visual Impairment

This section highlights considerations associated with the use of magnified display, screen reading systems, braille devices, optical character recognition, speech recognition, and combination solutions.

Magnified Display

After the user determines their information requirements, decisions can be made about enlarging information on the computer, enlarging hard-copy material, and making provision for simultaneous enlargement of both forms of information. Consideration should be given to both the nature of the information sources and the document production capabilities needed.

Magnified Display of Computer Screen

Considerations:

- **Level of magnification** - There are several software packages available that will enlarge the characters presented on the PC monitor from 2x to 8x. A few software packages provide levels of magnification up to 16x. There are also hardware based options that provide magnification levels from 2x to 16x. As the level of magnification used is increased, the numbers of characters that may be seen on the screen at any one time decreases.
 - Does the magnification package work in support of other PC application packages or is it a stand-alone large text word-processing package only?
 - As characters scroll off the screen, is it done a letter at a time or word at a time?
- **Font styles and choices** - In addition to the size of the character being presented, the actual formation of the character is important. Some packages offer font or style choices, others do not.
 - When looking at the enlarged character does it have a clean line or a staggered, stair-step appearance? Which format is easier to read by the visually impaired user?
 - Are the characters uniformly shaped and spaced?
 - How is the cursor presented? Is it easily found in a body of text or does it "get lost" easily? Various packages present the cursor as an enlarged bar, a blinking bar, an arrow or other special character taking the place of the letter at the cursor position, or a reverse video block with the letter in that position still visible.
- **Text or graphics or both** - In both the software and the hardware based products, configurations are possible that will support only text based information or text and graphics.
 - For text only packages, what does it do if it encounters graphics? Does it revert to normal 1x size for graphics? Or does it lock the program or do something else?
- **Color** - Some packages fully support color, others give the user limited color choices, and others will present information in black and white only, regardless of the colors selected in the application program being used.
 - Is color important to the user?
 - Are there any special considerations such as color perception problems, a preference for reverse video presentation, a need for high or low levels of contrast, or adjustments needed for brightness?
 - Will the color setting options of the enlargement package override application package color settings, conflict with them, or default to the application package color selections?

- **Screen review** - Many of the enlargement packages, both hardware and software, allow for a screen-review mode that gives the user the ability to “wander” around the screen without actually moving the application cursor. This is particularly important when using application packages that present a full screen of information, but do not allow the application cursor to be moved over the entire screen (e.g. instructional screens that keep the instructions “protected” and allow input and cursor movement in a small block).
 - How easy is it to move into the “review” mode?
 - How is the review mode controlled - by arrow keys, other keys, a mouse, etc.?
 - To review a large section of text, does the user need to constantly hold down a key or can the package continue scrolling across lines and move down the screen by itself?
 - As characters scroll off the screen is it done a letter at a time or a word at a time? Is it a smooth motion or a “jump” on the screen?
 - When exiting the review mode, is the user returned directly to the cursor position?
 - Does the review mode provide a means for the user to spatially orient the “window” of information currently being reviewed relative to the entire screen display?
- **Hardware configuration and software compatibility considerations**
 - See the “General Hardware Configuration and Software Compatibility Considerations” listed at the beginning of this appendix.
 - Can the screen output directed to a hardware enlargement product also be directed to a standard PC screen? Alternately or simultaneously? Is simultaneous presentation needed to help with system troubleshooting if problems are encountered?
 - Some software application programs do not use the system cursor, but write directly to the screen to increase the speed of the program. The actual system cursor is then “parked” off the screen. Some of the accommodation packages work by querying the system cursor for the last updated screen position. If this combination exists, then either the application program needs to be configurable to use the system cursor instead of the software cursor, or the accommodation package needs to be configurable to track the software cursor instead of the system cursor.

Magnified Display of Hard-Copy Material

Some of the considerations mentioned above, such as the level of magnification needed, the need for text or graphics to be magnified, and the need for color, apply when discussing the need to see existing print or hard-copy materials in an enlarged format.

Considerations:

- **Light requirements** - Some closed circuit magnification devices require more light be directed at the hard-copy than others. This can be an important consideration for an individual with a light sensitivity problem. The brightness and positioning of the room lights may also need to be taken into consideration.
- **Portability** - Several of the closed circuit magnification devices are quite large and not easily transportable. There are also a few small devices that can be used with a small screen when traveling and then attached to a larger screen in the office.

- **Orientation** - Some systems are able to “flip” or re-orient the image being magnified on the screen. This is helpful when reading materials that have different print orientation on the same page, such as a flier that is fully opened or a document that is too large and must be flipped and viewed in segments.
- **Reverse video** - Some systems are able to present the magnified image in reverse video so it is white letters on a black background rather than the more typical black letters on a white background. There is a strong preference for reverse video by some individuals.
- **Viewing table** - Some magnification systems provide a manual or an automatic viewing table or platform for the hard-copy materials to be placed on, others do not.
 - Does the platform have a way to secure the hard-copy materials?
 - Is manual movement too uneven and jerky to provide easy reading of the material in enlarged format?
 - For an automatic viewing table:
 - What are the control options available - joy stick? foot pedal? mouse?
 - Automatic return at the end of the line?
 - Variable speed adjustment for the rate of movement?
 - Ability to change the margins easily?

Enlargement of Computer Generated and Hard-Copy Material Combinations

Some magnification systems can be used for both viewing what is on the computer screen and for viewing hard-copy materials being magnified by a special camera. Some of these systems will allow the user to toggle back and forth between computer input and hard-copy input being seen on the same monitor. Other systems will allow input from both the computer and the magnification camera to be seen simultaneously in enlarged format on the same screen. This is referred to as “split-screen” mode.

Considerations:

- Does magnified hard-copy material need to be compared with magnified computer display information (e.g. reading a letter received and writing the reply)?
- Does the user prefer seeing the two outputs on the same screen or would two separate screens side-by-side be preferred?
- Can the entire screen be alternately set to computer generated enlargement and hard-copy enlargement?
- How easily can the mode of use be changed?
- In split-screen mode, can the user select how much of the screen is devoted to each, or is this preset?

Screen Reading Systems

Many visually impaired individuals can access the information shown on a computer screen by listening to the screen contents being spoken instead of reading the visual output being displayed. This screen reading capability typically consists of a combination of a speech synthesizer working together with a screen reader package. The screen reader portion of the system is the software that allows the individual to direct what portion of the screen should be sent to the synthesizer. The speech synthesizer is the hardware device that converts the ASCII character code of the selected words and paragraphs into spoken output. In most shared office settings, the individual using synthesized speech to access their computer will wear headphones to ensure privacy and minimize disruption.

Speech Synthesizer

Speech synthesizers differ primarily in voice quality, size, and price.

Considerations:

- **Speech quality** - Some speech synthesizers have a very monotone and mechanical sounding voice output while others have a more modulating and human sounding voice. Initially, the more human sounding voice may be more easily understood. Within a short period of time, however, the less human sounding speech synthesizers can also be readily understood by most listeners. The quality of speech output needed by the individual user is influenced by several factors.
 - How often and for what length of time is the person going to be using synthetic speech to access their computer each day?
 - How familiar is the information that the person will be listening to? Is it routine or does it cover a wide range of unfamiliar topics?
 - Does the individual have any hearing loss that would make a certain synthesizer or voice much more understandable than another?
- **Speech buffer** - Some synthesizers store a "buffer" of information before it speaks. In some cases this will result in several lines of text being spoken even after the "speech off" command has been given. For some individuals this does not pose a problem, for others, it is one of the primary considerations in their choice of synthesizers.
 - If the synthesizer buffers the text to be spoken, is there an option to allow the user to empty the buffer and have the speech output stopped quickly?
- **Speech rate** - Most speech synthesizers allow the user to change the speed of the spoken output by using their screen reader software. Some synthesizers have a broader range of possible speech speeds than others. For experienced users, being able to adjust the rate to a very fast pace enables them to auditorily scan a document rapidly as they listen for key words or phrases to indicate they have found the desired portion of text. To listen to the particular segment located by auditorily scanning, the rate of speech output is reduced.
- **Internal or external synthesizer** - Speech synthesizers may either be a board placed inside the PC (internal) or a separate piece of equipment cabled to the PC (external). The availability of a board slot for an internal speech synthesizer or the appropriate parallel or serial port for an external speech synthesizer may play a role in the final decision of which synthesizer should be purchased. There are some laptop PCs with internal speech boards available for individuals who need that level of portability.

- **Hardware configuration and software compatibility considerations**

- See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.

Screen Reader Software

In addition to the synthesizer considerations listed above, there are several factors to be considered when choosing the screen reader software that will direct output to the speech synthesizer. Since there are several screen reader packages to choose from, this can often be one of the toughest choices for a visually impaired computer user. Most of the commonly used screen reader packages being used in Federal government offices are packages that work with standard PC application software. In the past, many of the screen reader programs were self-contained word processing programs. These programs limited users in their ability to exchange information with their coworkers in an office setting. Now, there are many screen reader packages available that work in conjunction with PC application packages to give speech output. Many screen reader packages offer similar capabilities in terms of being able to direct output to the synthesizer letter at a time, word at a time, a specific line, or screen at a time. Although there may be differences in the actual features of each screen reader package, one of the biggest differences is in *how* these capabilities are controlled and accessed by the user through the speech control keys.

Considerations:

- **Application package being used** - One of the primary considerations in choosing a screen reader package is the application packages the screen reader package will be used with. In most Federal offices, everyone in the office is using the same application software so that files and information can be easily exchanged. In most cases, the individual with a disability will receive the greatest benefit from their accommodation software if they are able to continue to use the same application packages as their coworkers. Knowing the application packages being used will help determine which accommodation features are important. The screen reader package chosen should be the one that has the features necessary to allow it to work best with the application software being used in the office. Some of the things to know about the application packages are:
 - What keys on the keyboard are used to control the application package?
 - Is the application software word processing, spreadsheet, database, communications, terminal emulation, or a special program?
 - Are any of the application packages or systems interface packages graphic-based rather than text-based?
 - Screen reader packages work well with most text-based packages, but may not work at all with graphic-based packages. Some application packages allow the user to select text or graphics mode.
- **Synthesizers supported** - Not all screen readers will support all of the speech synthesizers currently available. Before purchasing the screen reader software, the user needs to know which synthesizer they anticipate using. Once this decision has been narrowed to one or two acceptable options, the screen reader manufacturer can easily confirm if their package will work with that particular synthesizer. The screen reader packages often have different files that must be installed in the setup process depending on which synthesizer it will be working with. This is similar to other PC software that needs to be properly configured to the type of printer being used with the software.

- **Speech control keys** - Another consideration is which keys are used to control output being sent to the speech synthesizer.
 - Are the function keys used for screen reader control?
 - Some packages use the function keys on the standard keyboard. This may cause some initial confusion if the application packages being used by the individual also use the same function keys. In most cases, the screen reader package gives the user the ability to remap the keys and develop alternatives to using the function keys. The drawback then is that the manual no longer matches the users' key combinations for commands. The screen reader packages also have methods to "share" the function keys with the application package. The user may have to hit a key that directs the screen reader application to ignore the next keystroke and pass it through to the application program. In essence, this option would just add a few keystrokes to execute application package commands, but otherwise not interfere.
 - Are standard keyboard keys other than the function keys used for screen reader control?
 - Several screen reader packages use special keystroke combinations from the standard keyboard to execute speech synthesizer controls. The user would need to learn the combinations needed to execute the functions they use most often.
 - Are the key combinations easy to perform or do they require awkward hand positioning?
 - Is an additional keyboard or control interface used for screen reader control?
 - Some screen reader packages use a special keypad that is attached to the computer in addition to the standard PC keyboard for controlling the output sent to the speech synthesizer. Users that are new to computers and have limited keyboarding skills often like this configuration because they feel it is "safe." They are comfortable making key selections from the add-on keypad because they know they are not going to inadvertently hit a stray key and destroy their data or cause a problem on the computer. For users that are good touch typists and comfortable with a keyboard, the need to remove a hand from the standard keyboard to control the speech output may slow them down and be a distraction. In addition, the external keypad will need a serial or parallel port for connection to the computer.
 - Are the key combinations easy to perform or do they require awkward hand positioning?
- **Review mode** - Most screen reader packages offer a way to review the screen contents without actually moving the PC cursor. This is particularly important on screens that have a portion "protected" and do not allow the PC cursor into that section of the screen. It is important to look at how easily one can switch back and forth between the PC cursor tracking mode and the review mode.
- **Reading windows** - Many of the screen reader packages have a method of setting up several reading "windows" that the user can control. These may be useful if there is a status line that the user may need to periodically check or a specific part of the screen that is used for error messages. In some cases, the window can be set up to speak its contents automatically whenever there is a change, such as an error message being displayed, or the insert on or caps on indicator showing on the screen. Sometimes, the user will want the window to be read only when directed by the user. One example is the cursor location given in many word processing packages. If the cursor location window was being read each time the window information changed, it would be read as each and every keystroke is entered and the cursor moves from position to position across the screen. If a user needs reading windows, a few things to look at are:
 - How easily can windows be defined?
 - How many different windows may be defined?

- How are the different windows accessed?
- Can some be read automatically and others read only on command?
- **Identification of attributes** - Most screen reader programs allow the user to choose whether they want things such as uppercase to be identified, punctuation to be read, blank lines to be read or skipped, line numbers to be read or not identified, etc. There are several ways different screen readers may choose to identify uppercase letters. Some screen readers actually direct the synthesizer to say "upper" and the letter, others have the synthesizer use a different tone of voice or pitch to identify uppercase from lowercase. The user needs to determine which method they prefer and its importance when weighed with other considerations. Some screen readers also use pitch variations to identify to the user when information is presented on the screen in reverse video or in specific colors. This may be important depending on how the application packages being used display special information on the screen such as identification of text to be underlined, italicized, or bold. This may also be important in determining how easily a spell checking program may be used.
- **Help mode** - When first learning any new package, easy access to a help function is quite useful.
 - Does the package have an on-line help function?
 - How detailed is the explanation of each of the screen reader functions and control of those functions?
 - How easy is it to access the help mode and then to return to the active mode or review mode?
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.

Explanatory Note:

- Since the screen reader is always used in conjunction with a speech synthesizer, it is easy for the individual first exploring these capabilities to fail to distinguish the performance of the speech synthesizer from the performance of the screen reader program. We often hear people comment they liked how screen reader A sounded better than screen reader B. When commenting about the voice output or quality, the individual is really focusing on which synthesizer is being used at the time, not the screen reader. In many cases, screen reader B may be able to direct output to the same preferred speech synthesizer as screen reader A. When looking at the screen reader package, the user needs to concentrate on how the output is directed to the synthesizer and the features available for customizing that interface to their needs, not the voice quality of the synthesizer that may be in use at the moment. Although it is difficult to initially separate these two distinct decisions, doing so will result in a more optimal solution for the user.

Braille Devices

Prior to beginning the more technical description of braille device alternatives, a short discussion of the use of braille may be helpful. As mentioned in Section II, although many people assume all blind individuals know braille and are proficient braille readers, this is not the case. Only about 10 percent of the adult blind population in the U.S. are braille readers. Many people who have lost their vision later in life may never learn to read braille or may never achieve a level of proficiency with braille that would enable them to easily access information in this format. Some medical conditions that may eventually contribute to blindness also cause

sensory deficits in the fingers that prohibit the individual from being able to discriminate the braille dots well enough to read brailled materials. For individuals who are proficient braille readers, braille still may not be the format of choice for all materials. For instance, a college level dictionary may require several bookshelves to store the numerous volumes of 3" binders once it has been printed in braille. Each page of printed text will roughly translate to three pages of braille printed text. Standard braille paper typically holds only 24 lines per page and 40 cells, or characters, per line.

Many people also do not realize that there is not a single version of braille. There are several different types of braille that are used depending on the subject matter being discussed. The Nemeth code braille used for mathematics is different from the braille used for standard text. Some individuals may be proficient in one of the braille codes, but not necessarily in them all.

Even when referring to the standardly used braille for reading text materials, the individual may prefer what is referred to as Grade II braille over Grade I braille. Grade I braille refers to a direct translation, letter for letter, of printed English text into a 6 dot braille character. Special braille characters are used to indicate capitalization and numbers. Grade II braille is a shorthand version of Grade I braille. Grade II uses contractions for commonly used letter combinations such as "tion" or "th." For example, the word "nation" is formed by using the letter "n" and "a" followed by the single cell contraction for "tion." In Grade II braille the letter combination "tion" would be represented by a single braille cell rather than by four braille cells. This is one simple example. Grade II braille translation rules are quite complex. In addition, braille text typically follows different formatting rules than printed text. For example, most braille paragraphs are indented only two spaces and no lines are skipped between paragraphs. These braille II contractions and format differences assist the user in reading faster and reducing the volume of printed braille output.

To further compound our discussion of braille, there is also a computer braille version and a newer 8 dot computer braille. Computer braille includes new braille symbols used to represent the special characters unique to the computer. For example, a computer generated carriage return is represented by two cells which indicate a "control M" which is the computer code for a carriage return. The 8 dot braille is gaining in popularity among braille reading computer users because it allows special character attributes such as uppercase or bold to be identified in the same cell as the letter itself. This is particularly popular with computer programmers working with programming languages that are case sensitive. The same word written in uppercase letters vs lowercase letters may not be understood by the computer at all or may actually execute a different command from what was intended.

Now that there is a basic understanding of a few of the issues and complexities involved when referring to braille, some of the technical considerations for braille output devices will be addressed.

Braille Printers/Embossers

Considerations:

- **Speed** - Speed of the print output is a primary consideration for many users and also one of the primary determinants of the price of the braille printer. Many of the printers considered to be a personal braille printer average 20-40 characters per second (cps). This is significantly lower than the speeds most computer users are accustomed to with standard text printers. There are also medium speed and high speed braille printers available. The price for printers that produce 120-170 cps is significantly higher than the personal braille printer. High speed braille printers are typically used in an in-house braille production site for a number of users or for individuals having a unique need for a large volume of material to be brailled on a consistent basis.

- **Print quality** - The formation of the braille character is different from printer to printer. Prior to purchasing a braille printer, a sample of text produced on that printer should be obtained for the user to review. Some braille readers may be more comfortable with the braille produced from one model than another.
- **Noise level** - Braille printers can be quite noisy and may be disruptive in some work settings if proper noise abatement is not planned. Many braille printers have a sound screen of some kind, but an additional noise hood may be useful.
- **Paper** - Braille printers usually use a heavier weight paper than standard printers. The heavier weight paper holds the dots longer, even after being read several times or put into a binder with other pages of print. There are several weights and sizes of braille paper available. When buying a braille printer, be sure to ask the proper size and weight of paper that should be used. Some braille printers can use standard weight form feed paper for draft printing. This lighter weight paper will not hold the dots for very long like the heavier weight braille paper. Using an improper weight of paper can cause some printers to jam. Another consideration with braille paper is that it is less easily obtained than standard printer paper. Some paper should be ordered when the printer is initially ordered and then proper stocks of braille paper should be kept on hand based on the usage level.
- **Portability** - Most braille printers are rather heavy and therefore, not very portable. There are a few smaller braille printers that may not be adequate for every day office use, but may offer a more portable solution for travel situations. There are also braille printers available that are designed to be easily packed for travel or shipment even though they are still rather heavy.
- **Printer buffer capacity** - Depending on the nature of the materials that will typically be printed on the braille printer, the size of the print buffer may be an issue. Most braille printers have a relatively small printer buffer. Many of the PCs in use today can send information at a much higher rate of speed than the printer can produce output. This may result in the printer being unable to print the entire document if it is lengthy. This problem can easily be solved by adding a printer buffer between the PC and the braille printer. The buffer would hold the printer file information and feed it to the braille printer as it is ready to accept it, just like it would work with a standard text printer.
- **Maintenance** - Braille printers, like any other mechanical device, can develop problems and should be covered by a maintenance contract. The return or repair policy should be looked at carefully to determine what type of maintenance is appropriate. The availability of a loaner printer and the estimated time for repair should be investigated since many facilities may have only the one braille printer available.
- **Printer status** - As with standard text printers, the printer status needs to be conveyed to the user and the user needs to be able to direct the printer to change the status (e.g. off line to on line, form feed, line feed).
 - How is the status communicated to the user? Braille, spoken message, tones?
 - How does the user change the status? Toggle switches, software direction, control keypad?
 - Are status messages displayed in a format a sighted user could also understand?
- **Graphic output** - Some braille printers are able to provide a tactile graphic drawing capability. These tactile graphics usually are rather simple line drawings without a great deal of detail. For some individuals, this feature may be important.
 - How easy is it to convert the printer from printing braille text to a tactile graphic?
 - How difficult is it to get the PC file into the proper format for producing a tactile graphic?

- **Connection to the PC** - Some braille printers allow either a parallel or a serial connection to the PC. Others are specifically one or the other, but do not allow the user a choice. Before purchasing the printer, it should be determined that the proper port needed is available on the PC. The proper cables with the correct connectors should also be purchased.
- **Other considerations** - Some individuals may need to have both a text printer and a braille printer attached to their PC. Many braille users have a text printer sharing the PC printer port with the braille printer using a switch box. This enables them to print text copy for dissemination to sighted individuals and braille copy for their own use.
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.

Braille Translation

Prior to a file being sent to the braille printer to be produced in braille, the file needs to be translated into braille.

Considerations:

- **File format** - Software braille translation packages typically need the file to be translated to be stored as an ASCII text file. Since most of the word processing packages used in offices today have the capability to save a file in ASCII format, this may not present any difficulties. Some braille translation packages are available that can translate files directly from the word processing format of several commercially available wordprocessing packages to braille without requiring the intermediate step of converting the file to an ASCII text file.
- **Software or hardware translation** - In the past, all braille translation was software-based. Now there is also a hardware-based option for braille translation. The hardware-based braille translation device may offer a relatively easy braille translation solution in both PC and non-PC computer environments.
- **Features** - Some braille translation packages offer a number of different options to customize the braille document printing. Depending on the types of documents being converted to braille, the individual may or may not need all the customization features offered. In some cases, purchasing a more limited, but easier to learn and use package may offer an advantage to the individual.
- **Document conversion and braille familiarity** - The choice of braille translation devices may depend on whether the person actually translating and producing the braille document is a braille reader or not. In some cases, the document is being produced in braille by a sighted, non-braille reader as a service of that organization serving clients that are braille readers. An example would be production of a braille version of a training manual or the program for an agency-wide meeting. The non-braille reader will not be familiar with all the complex rules for braille translation and will probably need a simple to use package that will produce acceptable Grade I and Grade II braille without significant user customization.
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.

Refreshable braille display

In addition to printed braille output, there is also the capability for a refreshable braille display of computer screen contents. The refreshable braille display consists of a row(s) of braille cells. Movable pins go up and down in each cell to change the dots used to form the changing braille characters. This capability allows a braille reader to access the information being displayed on the screen in a more dynamic manner than is possible by reading only printed braille output.

Considerations:

- **Number of cells** - Refreshable braille devices may be purchased in configurations ranging from 20 cells to 80 cells providing a dynamic window of screen contents that is 20, 40, or 80 characters long. Depending on the nature of the work being done, some individuals may need the full 80 cell display that would allow them to easily read across the entire computer screen without having to perform any additional manipulations. Other individuals may find a 20 or 40 cell braille display to be adequate. The price of refreshable braille displays rises appreciably as the number of braille cells is increased.
- **6 dot braille vs 8 dot braille** - In addition to determining the number of braille cells needed, the user must determine whether a 6 dot braille format or an 8 dot braille format is preferred. As mentioned previously, the 8 dot braille format may have several advantages for many individuals once they have adjusted to reading the new 8 dot format.
- **Cell formation** - The formation of the braille cell and how it is presented may be different on various brands of refreshable braille devices. This can be due to the way the pins move and change, the spacing of the pins, or the spacing of the cells. One device may form braille characters that may be easier for the user to read than another device.
- **Cursor location** - Refreshable braille devices vary in how the location of the application cursor is displayed. In some cases, the cell where the cursor is located is indicated by all dots being raised. This would then "hide" the letter being represented in that cell. In other cases, the cursor is indicated by the pins of that cell constantly going up and down. This allows the user to determine the letter in that cell and know the cursor location, but may contribute to earlier wear on the pins. With 8 dot braille, the cursor may be indicated by one of the additional 2 dots present.
- **Review mode** - Most refreshable braille displays give the user a capability to review the screen contents without having to actually move the application cursor. This is particularly needed when screens contain protected areas that do not allow the application cursor to be moved into a certain location. In many cases, screen status information may be in one of these protected areas and needs to be accessed. A review mode provides this capability and is also important when writing long documents. The user may need to read and review material already written before continuing the composition of new material.
 - How easy is it to move in and out of the review mode?
 - In non-protected areas of the screen, is there a mechanism for moving the application cursor to the area being reviewed at that point?

- **Redundant visual notification** - Many refreshable braille displays have a method of visually indicating the screen information being displayed in braille format on the refreshable braille display. This is particularly useful for any sighted individual that may need to review text with the individual using the refreshable braille display. The sighted individual then knows what information is being presented on the braille display and then can be sure they are both reading the same thing. The visual notification can take several forms. Some systems have an external device that will display in text format what is being displayed in braille. Others will indicate on the computer screen by reverse video or a blinking bar, the section of screen contents being displayed in braille on the refreshable braille display.
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.

Braille Input Devices

Some braille users may prefer braille for computer input. A few of the options available are discussed below:

- **Braille note-taker** - Small, portable devices are available that allow braille entry for taking notes. These devices have their own local storage and built-in text editors. Their input mechanism is a keyboard with six keys and a space bar which is used to enter either Grade I or Grade II braille. In many cases, the information entered may be reviewed auditorily by having it spoken using a built-in speech synthesizer, the file may be transferred to a PC to be edited, or the file may be sent to a braille printer for printing.
 - What size is the portable braille note-taker?
 - How heavy is it?
 - Does it have a battery or must it be connected to a power source? Is the battery rechargeable or replaceable? How long will the battery pack last? How is a low battery indicated?
 - Is there nonvolatile memory so files that have been saved are not lost during battery failure?
 - Can files from the PC be transferred to the note-taker device?
 - Can files from the note-taker device be transferred to the PC?
 - How easy is the file transfer mechanism?
 - How large is the file storage capacity on the note-taker? Is it on micro-cassette, floppy disk, internal hard disk, or random access memory?
 - Can the note-taker files be sent directly to a braille printer?
 - Does the device have built-in speech output capabilities?
 - Are there any other functions the device can perform in addition to note-taking? For example, some devices offer date, time, or calculator functions in addition to wordprocessing.

- **PC braille input devices** - In addition to the portable braille note-taking devices that can generate a file transfer to the PC, there are other braille input devices designed to be connected to the PC for direct input. These devices may either replace the standard PC keyboard or be attached to the PC in addition to the keyboard. In addition, there are software packages available that will configure a PC keyboard so it can be used for braille input. Once the software is activated, typically the home row keys become braille dots 1 and 4 and the space bar becomes the chord key. Some packages allow both Grade I and Grade II braille input in this manner. The software may be part of a package that is included with other braille devices, such as a refreshable braille display device, or may be purchased separately.
 - Can both the standard PC keyboard and the braille input device be active? How easy is it to switch back and forth between the two?
 - How is the device connected to the PC? serial port? keyboard connection? Is the proper port or connection available?
 - If the standard PC keyboard is being used for braille input, how easy is it to switch from braille input to standard QWERTY keyboard input?

Optical Character Recognition (OCR)

Many visually impaired individuals benefit from the use of optical character recognition to convert print documents into a format usable to them. In some cases, there are OCR systems that can convert directly from print to spoken output using a speech synthesizer. In other cases, the OCR can convert from print to a PC file that may be read using a screen reader package and speech synthesizer, or by using a refreshable braille display, or a large print display device. Once the print material has been converted to a standard PC file, the full range of accommodation tools can be used to give the individual the preferred mode of access to the information.

Considerations:

- **Quality of printed material to be scanned** - Some OCR devices will adequately recognize only letter quality printed text. Others are able to scan and recognize draft quality text or poor quality copies of reproduced materials. At this time, optical character recognition of handwritten materials is not commercially available.
- **Format of printed material to be scanned** - Some OCR devices can only scan and recognize materials on a standard sized page that is printed in portrait format. Other OCR devices can also recognize materials that are printed landscape or sideways on a page. There are also differences in how different scanning devices are able to handle multi-column text. Prior to deciding on an OCR device, a test scan and recognition of materials that are of the format and quality the user will typically be scanning should be done.
- **Stand-alone speech output** - Some OCR's can give speech output of the printed material without actually being connected to a PC at all.
 - Is there a need for speech output of printed text in a stand-alone mode vs through the PC?
- **Choice of scanners** - Some OCR devices are able to work with a number of different scanner platforms. Others are limited to one or two choices of possible scanners. If the department has already purchased scanners in the past and just needs to optimize the OCR capabilities for the individual, this may be a consideration.

- **User interface** - The OCR devices that are being marketed specifically for use by blind individuals have ensured that their user interface is not dependent on the user responding to visual cues on the scanner. Some of the OCR devices that are not specifically marketed to visually impaired users may also be usable, but this should be carefully examined prior to purchase. In addition, the OCR devices specifically marketed to visually impaired users usually have the user interface specifically designed to easily work with screen reader packages and speech synthesizers to give spoken output to the user.
- **Other considerations and questions that should be addressed include:**
 - Does the scanner have an automatic page feed for multi-paged documents?
 - How well can the scanner handle bound documents? Is the recognition satisfactory as the print nears the bound edge?
 - Can several pages be scanned before the recognition effort begins, or must each section or page be scanned and recognized before moving on? In some cases, the OCR devices that allow several pages to be scanned before recognition occurs can save the individual time by allowing them to go on to another task while the recognition is occurring.
 - How long does it take for a typical page to be scanned?
 - How long does it take for a typical page to be recognized?
 - How many pages can be scanned in one session? Is there a memory buffer limitation?
 - Is portability of the unit a factor?
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.

Speech Recognition

Speech recognition can be used by some blind computer users to augment either the regular computer keyboard or a braille input device. Typically, blind computer users are using the speech recognition to either make command selections from a pull-down menu or to give voice mouse commands. In many cases, mouse movements can be accomplished by using keyboard commands, but this is often slow and cumbersome. Speech recognition systems that allow the individual to speak the mouse commands and movements to be performed may offer an easier and more productive alternative to mouse control. For more information on speech recognition, see the section on accommodating individuals with mobility impairments in this appendix.

Considerations:

- Will the speech recognition package work well with the speech output, refreshable braille package, or other accommodation package also in use?
- How is feedback given to the visually impaired user that the desired command or movement has been executed?

CD-ROM

Although CD-ROM can be a very effective tool for visually impaired users, not all CD-ROMs are usable by individuals with visual impairments. Typically, the user will need to access the information using their accommodation tools such as speech output, large print, or refreshable braille.

Considerations:

- **Image file vs ASCII file** - Is the information stored as an image file or as an ASCII file? To be accessible by many visually impaired users, the ASCII file format is needed.
- **CD-ROM interface** - The user interface to access the files on the CD-ROM may also present problems for the visually impaired user. Some CD-ROM producers are using a graphical user interface (GUI) rather than an ASCII-based interface.
- **Text annotations** - Do any pictures presented on the CD-ROM have an ASCII text annotation explaining the information presented in the picture? Although this is not crucial in every case, it is a useful addition.
- **Graphic/text install option** - Does the CD-ROM interface offer an option during the install process that would give the user the choice to load a graphic interface or a text interface?

Combinations

Many visually impaired users may benefit greatly from using various combinations of the devices previously discussed in this section.

Combinations:

- **Large print and speech output** - Many individuals with low vision are able to read large format displays, but may not be able to read even this enlarged text over long periods of time without significant eye strain and fatigue. Adding speech output may significantly lengthen the time they could productively work on a given task. Many users will use speech output for reviewing material for content and switch to visual display for final editing or when the speech output is unclear or difficult to understand. For some individuals with a degenerative eye condition, it may be helpful to add speech output while there is still some degree of usable vision to help in the transition from dealing with the screen visually to dealing with it auditorily.
- **Speech and refreshable braille** - Many blind individuals may benefit from using a combination of speech output and a refreshable braille display. Speech may be the preferred means for reviewing text and the refreshable braille for doing the final edit or reviewing items such as acronyms that may not convert well to speech output. Others may find speech output the preferred mode in one application and refreshable braille in another. For instance, many programming languages use contracted words and numerous punctuation symbols that may be easier to understand using refreshable braille. On the other hand, word processing tasks may proceed more quickly using speech output rather than having to constantly switch hands from the keyboard to the braille display to type and review text.

The key to all the accommodation solutions discussed is to involve the individual user throughout the decision process.

C. Accommodating Users with Hearing Impairment

In general, deaf people depend more upon visual skills for communication and information from their environment while hard of hearing people try to enhance their usable hearing and still rely on auditory input more than visual input. It is key that the individual participate in the process of identifying the accommodation solution to ensure it is the proper approach for that particular individual and their needs.

Both hard of hearing individuals with hearing aids and those who do not wear a hearing aid may benefit from devices that provide amplification of standard auditory input. Depending on the cause of hearing loss, amplification devices may not help some hard of hearing individuals. Although many individuals with a hearing loss may be quite knowledgeable about the range of amplification devices available, there are others that may not be aware of these devices. This is especially true of older individuals who often consider their progressive hearing loss a part of the normal aging process and think there is nothing that can be done but to accept it and go on. The best way for a hard of hearing individual to determine which amplification devices may be of benefit to them is to actually try several of the devices if at all possible. If one amplification device does not provide sufficient amplification for the individual, a different device or a different style of device may still be of benefit. In many cases, consulting with a service center having expertise in assistive listening devices may be beneficial.

It should be kept in mind that many deaf individuals also wear hearing aids. For these individuals, the hearing aid allows them to hear loud sounds, but not to discriminate speech regardless of the amount of amplification.

Visual Redundancy of Auditory Information

Many of the accommodations discussed for individuals who are deaf focus on the need for visual redundancy to augment what others hear auditorily. Visual redundancy can be accomplished for computer tasks, telecommunications tasks, one-to-one communications and group meetings. Each of these areas will be discussed in this section on visual redundancy.

Computer

Most hearing impaired users currently do not experience significant difficulties with computer technology. Adding a means for visual redundancy of auditory signals like the computer beep will often decrease some of the frustrations that may occur working in a computer environment. Although a user with a hearing impairment would eventually determine that something is wrong from the lack of change on the visual display, it can be a frustrating experience. Likewise, hearing a long string of beeps until this realization is made may be frustrating to the coworkers in the office. Software is available for PCs that will either flash the screen or display the word BEEP where the cursor is located whenever the auditory beep is sounded by the PC speaker. For any offices using Macintosh computers, the ability to change the computer beep to a flashing bar on the screen is a built-in function of the operating system utilities.

Many Federal offices have large nonstandard application packages written and developed to specifically meet the needs of the agency. When new programs are being developed, redundant visual and auditory cues should be incorporated so that both visually impaired and hearing impaired individuals may fully use the systems.

Interpreter

To accommodate hearing impaired persons that communicate using American Sign Language or need an oral interpreter, professional interpreters are available on a contractual basis or may be hired by the agency. Many hearing individuals that can converse using sign language are not qualified to be sign language interpreters. This is a specialized skill requiring years of training. Arrangements for a certified sign language interpreter should be made for interpreting at meetings, conferences, and training courses. When arranging for interpreter services for a specific meeting or event the following questions will need to be answered before the interpreter service can provide a qualified interpreter.

Questions:

- What is the date, time, and location of the meeting?
- Who will they be interpreting for? Is it for one specific person or for a group of people? If it is for a group of deaf individuals, how many are expected?
- Which sign language is preferred? Many deaf individuals prefer American Sign Language, but some may prefer Signed English or a different version of sign language. Some deaf individuals do not know sign language, but rely on having an oral interpreter who will mouth the speakers' words and give additional visual cues to the deaf individual to assist with accurate lip reading. If interpreter services are being secured for an individual, they should be asked what version of sign language they prefer.
- What is the topic of the meeting? If it is a technical meeting, a sign language interpreter proficient in those signs pertinent to the topic will be needed.
- How long is the meeting? Sign language interpretation can be very tiring for the interpreter. If a meeting will exceed two hours, typically two interpreters are needed so they can take turns throughout the meeting.
- Will the interpreter be voicing for the deaf individual or only signing what is spoken? Some deaf individuals speak clearly and would rather speak for themselves. Others are non-vocal or do not feel they speak clearly enough in public situations and prefer that the interpreter voice what they sign.

Other interpreter related considerations that should be taken into account are:

- **Positioning** - In an auditorium, the interpreter should be positioned on the stage or platform close to the speaker. The deaf individuals watching the interpreter will be watching both the speaker for visual cues and the interpreter for the sign language interpretation. In a team meeting where several individuals will be talking, the interpreter should be positioned where the deaf individual can see the interpreter clearly and still be able to participate fully in the meeting.
- **Lighting** - Adequate lighting is essential for the interpreter to be seen clearly. This is particularly important to consider when overheads or slides are going to be used and room lighting turned down. A spotlight that can be directed on the interpreter may be a good option in this situation since the interpreter will need to be positioned where both the viewing screen and the interpreter can be seen.
- **Seating** - In an auditorium or a large meeting, seating in the front few rows should be reserved for individuals who need to watch the sign language interpreter. All the efforts to have an interpreter present will not accomplish the intended effect if the individuals who need the service are not able to clearly see the interpreter.

Signalling systems

For a person that is hard of hearing or deaf, the normal sounds and tones that alert us to take action, such as a phone ringing, may not be heard. Frequently, a TDD or TDD compatible device will be purchased without giving any thought to how the hearing impaired individual will be able to determine they have an incoming call. A non-auditory mechanism needs to be provided to alert the individual to telephone rings and other important sounds such as a door buzzer, fire alarm, or other emergency alarm. Several approaches should be considered when determining the best method of alerting a hard of hearing or deaf individual by a non-auditory mechanism.

Non-auditory alerts:

- **Flashing light** - Devices can be connected to a transmitter that directs a signal to a receiver that causes a light to flash on and off. The transmitters can be set to cause the light to flash in a different pattern for different devices so the individual knows what action is needed.

Considerations:

- Can the individual see the flashing light from anywhere they are likely to be in the office?
- **Vibrating personal alerting device** - An alternative to the flashing light that is more effective in some cases, is a vibrating personal alerting device. The personal alerting device can provide notification of several sounds through distinct indicator lights for the phone, door buzzer, and emergency alarms.

Considerations:

- One key disadvantage of using this device for emergency alarm signal notification is the limited range of the transmitters. Currently, many of the vibrating personal alerting devices have an effective range limitation of 100 feet from the transmitter to the receiver.
- What are the specific alerts that need to be activated?
- How many different alerts are there?
- Where is the device worn so the person feels the vibration? Some are designed to be worn on a belt or waistband. Others are designed to be worn on the wrist. Is it comfortable enough and unobtrusive enough that the individual will wear it on a consistent basis?
- What is the battery life? Does the device have a low battery indicator?
- **Beepers/pagers** - Many beepers commonly in use now have an option to have the beeper vibrate rather than emit an auditory signal. Beepers that also have the ability to display alpha characters in addition to numbers may offer significant advantages in augmenting other alerting systems or communications systems in the office. An alpha/numeric beeper with the vibrating option can be used for short messages about changes in meeting plans, building emergencies, etc.

Considerations:

- What is the range of the beeper?
- How quickly is the signal transmitted to the beeper from the time the message is initiated?
- How is the message initiated? via touch-tone telephone keypad? from a "message station" PC? through a special operator?
- Does the device have a low battery indicator?
- Will the beeper keep repeating the message until some action is taken by the user (e.g. pushing a button on the beeper) or is it given one time only?
- What is the limit on the message length?
- **Fire alarms** - A combination of several approaches may be necessary to provide deaf individuals adequate notification of emergency alarms. Possibilities include:
 - Many existing building fire alarm systems can be wired to transmit a signal to one of the vibrating personal alerting devices mentioned above. A transmitter might need to be connected to each fire alarm to give full coverage for the individual throughout the building since the range limitation of each transmitter is approximately 100 feet.

- Fire systems can be adapted to also generate a message to a beeper when the fire alarms are activated.
- There are fire alarm systems that meet the building code requirements for office buildings that add a strobe light to the existing fire system. These systems may address the need to alert any hearing impaired visitors to the building in addition to regular employees. Care should be taken to ensure the strobe lights can be seen from conference rooms, and other public access areas, not just the hallways.
- There are also smaller smoke alarms, similar to those used for home use, that have both the auditory signal and a strobe light. These may be placed in the office of hearing impaired employees to augment the building wide system, but should not be the sole method of alerting the individual to a fire in the building. By the time a local smoke alarm is activated, it may be too late to safely exit a large Federal building.

Auditory alerts:

- **Tone amplification** - For some hard of hearing individuals, a visual alerting system may not be necessary if the auditory input can be modified.

Considerations:

- **Frequency range** - Telephones can often be equipped with a tone ringer device that converts the normal ring of the phone into a frequency range more easily heard by the individual.
- **Tone intensity** - A device can be added that makes the ring significantly louder. The general office setting and the need to protect the hearing of others in the same office area needs to be considered prior to significantly amplifying a telephone ring.

Captioning

Videos are increasingly being used within the Federal government. Deaf and hard of hearing individuals are often unable to fully utilize or benefit from videos since videos often rely heavily on auditory information. Captioning videos makes this medium fully accessible to hearing impaired individuals. There are two types of captions: open captions and closed captions. The closed caption format provides an embedded signal with the printed words synchronized to the spoken dialogue. To project the embedded signal as captioned words on the screen, the video player must be connected to a telecaption decoder. Without the decoder, a closed captioned video looks just like a video that has not been captioned.

When open captioning is used, a telecaption decoder is not needed. The captioning is displayed any time the video is played. Open captioning ensures that videos are accessible to hearing impaired individuals from all video players. Any office that has access to a video player can show the video in a fully accessible format for hearing impaired individuals. In addition, if the viewing room is noisy, or portions of the auditory output from the video are unclear, then the captioning benefits all the viewers.

Any video-based media produced for instructional, training, or informational purposes either by an agency or for an agency should be captioned so the information presented is accessible to hearing-impaired viewers. There are several organizations available on a contract basis that will provide the expertise to either open caption or close caption videos. In addition, there are several PC based packages that enable the agency to open caption or close caption their own videos. When the video is first being planned, captioning should be discussed with the graphics department that will be performing the actual video filming. The composition of the shot may need to be changed slightly to ensure that no critical or key elements of the visual display will be lost when the captioning is overlaid on the bottom lines of the frame.

When the agency is purchasing videos, they should inquire about the availability of the video in a captioned format. When purchasing video tapes, it may be possible to obtain permission from the copyright holder to caption the videos if they are not available in a captioned format.

TDDs - Telecommunications Devices for the Deaf

TDD Units

Many deaf and speech impaired individuals use a TDD (telecommunications device for the deaf) to communicate over the telephone. A TDD is also used by many hard of hearing individuals that are not adequately accommodated by a telephone amplification device. A TDD permits a hearing impaired person to communicate over a standard telephone line with another TDD user or through a relay operator to reach a non-TDD user. The TDD displays a line of text for the person to read rather than using auditory output like a standard phone or a phone equipped with an amplification device. TDDs are also commonly referred to as TTYs, their older name. There is a fairly broad range of TDD and TDD compatible devices available.

Considerations:

- **ASCII and Baudot compatibility** - TDDs have traditionally used the older 5 bit, 45.5 baud Baudot code for communications. This code is significantly different from the PC ASCII code that many computer users in the Federal government are more familiar with using. Some TDDs are able to accept calls from both the older model Baudot only TDD and from the newer Baudot and ASCII TDDs or from personal computers sending at 300 Baud ASCII. TDDs that support Baudot only are rapidly becoming obsolete technology as more TDDs that support both Baudot and ASCII are being produced and used.
- **Display** - The LED display that is used to display the information being received on the TDD can be either a single line display or multi-line. Multi-line displays may offer 2 lines, 4 lines or even 25 lines. The lines may be from 20 characters to 80 characters on a line. The size of the display and the characters themselves can also be different from device to device. The nature of the work being done may indicate a need for a multi-line display. The amount of time spent using the TDD or a visual impairment may indicate the need for a large character display that works with the TDD.
- **Printer capability** - Some TDDs have a built-in printer. Many others have a printer port that will allow a TDD printer to be connected. The nature of the work and the need for taking notes during a conversation would help determine the need for a TDD printer. It is difficult to both read the LED display as it scrolls new information and take legible notes at the same time. If the individual is often receiving addresses or listings of information such as model numbers and pricing using their TDD, a printer may be needed.
- **Direct connect or acoustic coupler connection?** - Many TDDs may be used with a direct connect mode that allows the phone cable from the wall to be directly plugged into the TDD. Others have an acoustic coupler that the regular telephone handset is placed on when a call is received. Many TDDs, have options for both the direct connect and acoustic coupler methods of connection. Which connection method is used depends upon the preferences of the user and the office setting. If the phone is going to be used for both voice and TDD calls, then using the phone handset with the acoustic coupler is preferred. If the phone line is being used as a TDD only line, then the direct connect method may be preferred, but not always. For offices on a digital phone network, the phone network itself will need to be taken into consideration. Using a TDD through the acoustic coupler presents no problems. For a direct connection, either a digital to analog board may need to be added to the telephone system for that line or an analog line may need to be installed. Consult the agency telecommunications specialist on this issue.

- **Shared use or single person?** - Many TDDs in the Federal government are purchased for use by a single Federal employee who is a TDD user. Others are purchased by offices that need to be TDD accessible for public inquiries or inquiries from Federal employees that are TDD users. Examples are personnel offices, EEO offices, libraries, IG offices, and offices like the Clearinghouse on Computer Accommodation. If the TDD is going to be used by several people in an office then having a TDD that can operate on battery power may be important. The TDD could stay plugged in to charge the battery, but when a TDD call was received, anyone in the office could move the TDD to their desk and use it on battery mode.

Shared use considerations:

- Where will the TDD be positioned? Does everyone have adequate access to it? How close are all the phones or people that need to share the TDD?
 - Who will be responsible for ensuring it is charged and in working condition?
 - If a printer is needed, would an internal printer be easier to move and use than an external printer?
- **Rollover** - If a number is listed as either a TDD number or a voice and TDD number, consideration needs to be given to where that phone line "rolls" to when it is in use or not answered. If the line automatically transfers to a second line or to another office, that office will need a TDD to respond to incoming TDD calls.
 - **Portability** - For a deaf employee who travels extensively, a second portable unit may be needed. Some portable TDDs fit in the inside pocket of a man's suit jacket.

Considerations:

- How important is portability?
- How much travel does the individual do? Both local travel to other offices that do not have a TDD and travel out of town should be considered.
- Are both Baudot and ASCII capabilities needed? Some portable TDDs offer the ASCII option.
- Should a portable TDD be purchased for a specific individual or should several units be purchased for the agency and available for checkout on an as needed basis?

Personal Computer TDD Compatibility

A personal computer can also be configured to function as a TDD by adding a special PC/TDD modem that supports both the standard PC code (ASCII) and the code used by most TDDs (Baudot). Commonly used PC modems are not able to communicate with a Baudot only TDD. Since there are so many of the older Baudot only TDDs in use, one of the specialized modems that supports both Baudot and ASCII is needed.

Considerations:

- **PC availability** - Does the individual already have a PC?
- **Connection to the PC** - some TDD compatible modems are internal and use a board slot inside the PC. Others are external modems and require a serial port. Which method of connection is preferred?

- **Connection to the telephone system** - Both the internal and external modems require a connection to a telephone line to be operational. For offices using a digital phone network or those using electronic key phone sets, the phone network itself will need to be taken into consideration. For a direct connection, either a digital to analog board may need to be added to the telephone system for that line or an analog line may need to be installed. Consult the agency telecommunications specialist on this issue.
- **Other PC use** - In most cases, the PC is going to be used for other applications and not be a dedicated TDD.

Considerations:

- **Call notification** - How is the PC user notified when there is an incoming call? Some packages will make the screen flash to indicate an incoming call. Some will automatically switch the user to the TDD communication mode. Others rely on having an external signalling device installed between the phone line and the modem to alert the individual.
- **TDD to PC Application Switch** - If a PC application program is in use, how easy is it for the user to switch into the TDD communication mode? Some packages offer an easy "hot key" function that will quickly switch to the TDD communication mode and then allow the user to return to their application package where they were working when the call was received or initiated. Other packages require the user to save the file they are working in, exit the application package and then enter the TDD communication mode. In this case, there are optional memory management programs that could be added to the PC system to ease the transition between the application package and the TDD communication package. It would be up to the user to find, install, and configure the memory management solution to work with the TDD communications package.
- **Call volume and type** - How many calls are expected to be received each day? Will a high call volume interfere with using the PC application packages? Do the calls received require the individual to be looking up information on the PC in order to respond? In most packages, if the TDD call is left on hold or inactive for a long period, the modem will assume the call was interrupted or completed and break the connection.
- **Portability** - Does the lack of portability of a PC based solution cause a problem? Would the individual possibly need a standard TDD or portable TDD in addition to the PC based TDD communication capability?
- **Other Features** - PC based TDD communication packages and modems offer additional features that may be important to the user or the office installing the system. Some of these are:
 - **Auto-answer capability** - The PC can be configured to have the TDD compatible modem and software automatically answer calls when the user is away. The message given can be customized and changed as needed. The incoming callers can leave a message that is stored on the PC. Since the PC is being used for incoming message storage, a significantly larger volume of messages may be stored than with a standard TDD with auto-answer capabilities.
 - **Speed dialing** - Several of the packages offer a phone listing mechanism for automated dialing of outgoing calls.
 - **Speech output** - There is one TDD compatible modem that combines this capability with a mechanism for synthesized speech so the PC can be used to speak messages to a hearing caller using a standard voice phone. The hearing caller is able to reply to the hearing impaired individual using this modem device by using the touch tone pad of their telephone. The hearing caller may find using the touch tone pad of their telephone cumbersome for a long conversation. For some situations, this unique combination may be quite useful. This modem makes it possible for the PC user to initiate or accept calls from a TDD, a PC using ASCII communications, or a hearing caller using a standard touch tone telephone.

- **Remote message retrieval** - Some packages are able to provide the user with the capability to call in from a remote location and retrieve the messages stored on their PC by the TDD compatible software. For an individual doing extensive traveling, this may be a very important feature.
- **Call storage** - Several of the packages allow the contents of a call, both sides of the conversation, to be saved and printed.
- **Customized stored messages** - Several packages allow the user to create a message, such as their address, store it, and in the middle of a conversation with a TDD caller, retrieve and send that message to the caller. This can be very useful if the individual often gives the same information to many callers such as directions to the office, listings of information, or answers to commonly asked questions.
- **PC file use** - Some packages allow the user to transmit a PC ASCII file in the same manner as any customized stored messages created within the TDD communication software package.
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
 - Is the PC used for making large database searches or other similar tasks that occupy the PC for long periods of time in a mode that could not be interrupted for the user to accept an incoming call?
 - If the PC is used in a terminal emulation mode, how long can the user stay on a call before the emulation software would drop them?
 - Secure agencies - some of the secure agencies will not allow any modems, internal or external, to be connected to many of the PCs in the agency. In addition, tempesting requirements may present another barrier to using a TDD compatible modem.

Amplification

Speech Amplification for Telephones

There are several methods of amplifying the speech being heard over a telephone. There are devices designed both for people who use a hearing aid and for those who do not use a hearing aid.

- **Handset amplification** - The standard telephone handset can be replaced by a handset that has an amplification device. The amplification handset usually has a rotary dial for adjusting the amount of amplification needed.

Considerations:

- **Amplification level** - How much amplification is needed? Up to 30 db of amplification is available depending upon the specific handset chosen. Some amplification handsets require the user to press a button to boost the amplification to its highest levels. This is a safety feature to protect the hearing of a person that does not have a hearing impairment that may use that phone.
- **Telephone style** - What style of telephone will the device be used with? There are handsets available as replacements for the standard round handset (G style), or the newer square handset (K style), or the square with the electronic microscreen style handsets.

- **In-line amplification** - An alternative to using an amplification handset is to use an in-line amplification device. Most in-line amplification devices are small devices that plug in between the telephone base and the existing phone handset. An advantage of in-line amplifiers is that they add no weight to the telephone handset.

Considerations:

- **Amplification level** - How much amplification is needed? Volume increases up to 20 db are possible with an in-line amplification device. The volume can be adjusted by turning a control wheel located on the device.
- **Telephone style** - What style of telephone will the device be used with? Some in-line amplifiers are designed to work with specific types of telephone systems. Others are designed to be universal and work with all modular handset telephones, including the newer electronic type phones.
- **Power needs** - Is there an electric power outlet located conveniently? Most in-line amplification devices require connection to a standard AC power source.
- **Portable amplification devices** - Even though a telephone handset is small enough to be considered portable, there is an even smaller, more portable option available. It is a small battery powered device that fits over the receiver on the telephone handset. A stretch strap holds the device in place.

Considerations:

- **Amplification level** - What is the level of amplification needed? Portable devices can be used for up to 20 db of amplification.
- **Non-modular jack phones** - Does the individual need amplification for telephones that do not have a modular connection for the handset. Most public phones or phones in hotels do not have a modular connection that would allow a handset amplification device or an in-line amplification device to be connected. Office phones in some settings are also non-modular.
- **Specialized phones** - There are phones available that have been specifically designed for individuals with a hearing loss in the high frequency range. The individual selects the appropriate volume using a control button on the phone set. Having the amplification built into the body of the phone results in a lighter telephone handset than the handsets that have been modified to provide amplification.

Considerations:

- **Compatibility** - Will the phone work with the telephone system installed at the work site? Can the same features available to others in the office be accessed using this phone set?
- **Single site vs multiple sites** - Does the individual have the need for telephone amplification only at one location? If the individual may need to use several different telephones, a combination of a specialized phone at their primary worksite and one of the other amplification devices at the other sites may be useful.

Speech Amplification - Meeting or Conversation

There are several different speech amplification devices that can be used by hard of hearing individuals in either a meeting or lecture setting. The needs for the two settings differ based on the need to be hearing the information being spoken by a single person or the need to hear several different people in a more interactive conversation or discussion mode. The needs in different settings will be discussed first and then the different types of devices that can be used.

Settings:

- **One-to-one meeting** - Many hard of hearing individuals can understand the majority of a conversation in a one-to-one setting without the use of an amplification device if the speaker speaks clearly, faces the individual, does not restrict visibility of mouth movements by a mustache or their hands, does not look down while speaking, and there is a minimum of other background noise distractions. If the speaker turns away from the hard of hearing individual, looks down to read paperwork as they are talking, or has a tendency to mumble, an amplification device may help make conversations easier for the hard of hearing individual to fully understand. Even in situations where the speaker and the listener are able to communicate adequately, an assistive listening device may make conversations easier and less fatiguing for the hard of hearing individual.
- **Lecture setting** - The lecture setting exhibits the same potential problems in understanding what is spoken as the one-to-one setting, plus a few more. In a lecture setting the speaker is usually further away from the hard of hearing individual. This can significantly decrease the visual cues the individual has available to augment what they are hearing. In many cases, the lighting conditions are less than optimal for the hard of hearing individual to be able to clearly see the speakers lips and face. This is particularly true if an overhead projector or slides are being used.
- **Group meeting setting** - In a group meeting where several different people may be speaking in a more relaxed and spontaneous manner, additional difficulties are present. Since the meeting is spontaneous, the hard of hearing individual may have difficulty following who is actually speaking and miss quite a bit before they know which individual to be focusing on. In addition, it is not always possible to see each person clearly, especially if their remarks are being directed to someone in the opposite direction. There is also a high potential for distracting noises such as papers, people shifting, and side conversations taking place.

Types of Systems:

- **FM system** - Most FM systems basically consist of a transmitter and a receiver that work together. The transmitter connects to a microphone that a speaker would either wear, such as a lapel microphone, or have placed near them. The speaker's voice is broadcast as an FM radio signal to the receiver. The hard of hearing person with the receiver can use either a set of headphones similar to those used with a portable radio, or if they use a hearing aid, a neck loop that will transmit to the T-coil in their hearing aid.
- **Induction loop system** - A loop system consists of an amplifier that drives an audio signal and a loop of wiring that is typically around the perimeter area of the meeting room. A variety of microphones can be plugged into the amplifier depending on the setting of the meeting. The amplified audio signal creates an electromagnetic field within the area inside the loop. An individual who is wearing a hearing aid with a T-coil pickup receives the electromagnetic signal produced by the loop as long as the individual is within the loop. An individual without a hearing aid can wear a receiver and headphones to pickup the signal. The wiring loop can be either permanently installed in either the ceiling or around the seating area of a room on the floor. The loop can also be temporarily installed on an as needed basis if the system is going to be used rarely or in different rooms. If it is placed on the floor, it should be taped in place securely to ensure it does not pose a potential hazard for tripping people.

- **Infrared system** - An infrared system works using an infrared transmitted signal instead of a sound based signal. The number of infrared transmitters needed to adequately cover all areas of a room differs based on the size and shape of the room. Secure agencies are particularly interested in infrared systems instead of FM or loop systems that produce radio or audio signals. The individual needing amplification would use a receiver and neck loop or headset depending on whether they use a hearing aid or not.

Considerations:

- **Portability** - Several of these systems are small enough and simple enough to use to be highly portable.
 - Is the system being purchased for use in one room or several?
 - Does the need exist for a portable system that could be taken to a site for training classes? For instance, an individual using an FM system may take the system to a training class. The instructor would be given a small lapel microphone and FM transmitter to wear. The hearing impaired individual would wear the FM receiver. The transmitter and receiver units are small enough to easily fit in a suit pocket.
- **Group meetings vs one-to-one meetings**
 - In what type of setting does the individual spend most of their time?
 - What setting presents the most hearing difficulty for the individual?
- **Earphones vs Audio Loop** - Does the user prefer to wear earphones to hear the amplified sound? If so, what type (e.g. radio type, under the chin version, ear buds, etc.)? If the user wears a hearing aid, would they prefer the neck loop that will communicate to the T-coil in the hearing aid?
- **Meeting room usage** - If the system is being purchased primarily for providing access in a conference room or auditorium there are additional considerations:
 - Should the amplification system be wired directly into the existing PA system? Or should the speaker wear a small lapel microphone for the FM or loop system in addition to using the existing public address system?
 - How large is the room?
 - Are several adjacent rooms also going to be using amplification devices? If so, will this present any interference problems?
 - How many people will need amplification? How many have hearing aids with a T-coil?
 - Is technical support available for installing the system properly?

Other considerations:

- FM systems may experience interference from nearby radio transmissions.
- Since there are several frequencies that can be used by FM systems, two FM systems can be used in close proximity as long as they are using different frequencies.
- Loop systems are also susceptible to interference from radios and some types of electrical equipment such as metal detectors and some electric motors.
- FM and loop system transmissions are subject to being "over heard" and may not be appropriate for areas where the security of the information must be ensured (e.g. secure agencies, procurement offices, courtrooms, etc.).
- Infrared systems may not work well in rooms with a large amount of sunlight.

- Infrared systems depend on maintaining the "line of sight" from the emitter to the receiver.
- If several loop systems are setup near each other, there may be some spill-over of the signal transmitted to the loop system.

D. Accommodating Users with a Mobility Impairment

The general category of mobility impairment includes individuals with a wide range of mobility limitations and accommodation needs. This section will cover a variety of alternative input options. Many individuals with mobility impairments are able to clearly determine for themselves which alternatives will be most useful. Others may need the assistance of a rehabilitation engineering specialist to determine their needs. For some individuals, positioning of both themselves and their equipment plays a key role in its usefulness. In consultation with the individual, managers should determine whether additional assistance is needed in determining the optimal accommodation solution.

Keyboard Enhancements and Alternative Keyboards

There are several software packages that can make using a standard PC keyboard easier for a person with a mobility impairment. If an adequate accommodation cannot be made to the standard keyboard, there are several alternative keyboards that may be of benefit.

- **Sequential keystroke input** - Many of the popular software programs in use today have commands that require the user to depress more than one key at a time to execute the command. For an individual typing with a head stick or a mouth stick only a single key can be pressed at one time. An individual with functional use of only one hand, or the use of only a few fingers, may be able to execute some multiple keystroke commands, but not all of the required combinations. Software programs are available that will allow the user to enter the keystrokes in sequence, one after another, rather than simultaneously and still execute the command properly. For example CTRL-ALT-DEL keys are all held down together to perform a soft reboot on a PC. With the accommodation package running, CTRL is pressed, then ALT is pressed, then DEL is pressed and a soft reboot still occurs. This capability is often referred to as "sticky keys."

The same result may also be achieved by using a hardware solution instead of a software solution. There are several different hardware options available. A device can be added to many keyboards that will mechanically hold a key down for the user. The user would need to hit the keylatch again to release that key. There are also keyboards with this keylatch capability built in. Once the control, alt, or shift keys are pressed, they remain pressed until they are released. Another alternative available is a keyboard that has a switch setting that lets the user easily switch between the standard keyboard operating mode and a keylatched operating mode.

Considerations:

- **Automatic release of the "latched" key** - Does the key stay "latched" after the command is executed or does it automatically release? If it stays latched, that is an extra keystroke the user will need to execute to release the key and continue typing or entering the next command.
- **Single user or multiple user PC** - Is the PC used by only the individual needing the accommodation, or is it in a shared use environment?
 - How easily can the user move in and out of the "sticky" key mode?

- **Hardware configuration and software compatibility considerations**

- See the “General Hardware Configuration and Software Compatibility Considerations” listed at the beginning of this appendix.

- **Key repeat rate control** - Both hardware options and software options exist that allow the individual PC user to adjust the sensitivity level of either a standard or alternative keyboard or completely turn off the keystroke repeat function. This can be very useful for an individual who may be executing stray keystrokes accidentally when attempting to execute a desired keystroke. This is also a valuable aid to individuals who are not able to release a key fast enough after it is depressed to prevent characters from being repeated inadvertently.

Considerations:

- What is the range of sensitivity levels the user may chose from?
- Can adjustments be made easily?
- Can the key repeat be turned off completely?

- **Hardware configuration and software compatibility considerations**

- See the “General Hardware Configuration and Software Compatibility Considerations” listed at the beginning of this appendix.

- **Keyboard macros** - Software and hardware solutions exist to allow a few keystrokes to be automatically translated into multiple keystrokes that have been previously chosen. The reduction in the number of keystrokes that must be entered can be significant. Keyboard macros are a productivity improvement tool for anyone, but particularly for a person that has difficulty using a keyboard.

Considerations:

- While within an application, can macros be added or changed or must the user exit to the operating system level?
- Can multi-line macros be generated? For example, can a macro be used to generate a signature block?
- How long can the macro abbreviation be? Some packages limit the macro to being a single key, others allow a multikey abbreviation such as initials or acronyms. Many users prefer the multikey abbreviation due to the ease of remembering them.
- How many keystrokes can be generated with a single macro?
- Can the user display a listing of the macro abbreviations and the associated expanded word or phrase?
- How many macros can be stored and available?

- **Hardware configuration and software compatibility considerations**

- See the “General Hardware Configuration and Software Compatibility Considerations” listed at the beginning of this appendix.

- **Miniature keyboards** - Some individuals with limited mobility may find a smaller, more compact keyboard easier to use. Many individuals with a limited range of motion or functional use of only one hand may find a miniature keyboard useful. There is one version of a small keyboard that uses infrared control to eliminate the direct connection to the PC. It may be used to control the PC from several feet away.

Considerations:

- What is the keyboard layout? Is it the standard QWERTY layout or a different key configuration?

- How much pressure is needed to activate a keystroke?
 - Are the keys accessed by hand or using a special device such as a pointer or light pen?
 - Is there a built in method for sequential keystroke input?
 - How does the miniature keyboard attach to the PC? Does it plug into the standard keyboard port or does it use a serial port or a different specialized interface?
 - Is there any software that must also be loaded for the system to use this keyboard?
 - Are there any other special features? One keyboard allows different settings to be chosen for key sensitivity.
 - Can the user see the keys adequately? For an individual with low vision in addition to their mobility limitation, a miniature keyboard may help one problem and intensify another.
 - Are all of the function keys, cursor routing keys, and numeric keypad keys on the keyboard being replaced also available on the alternative keyboard?
 - **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
- **Expanded keyboards** - Individuals who have difficulty controlling their arm or hand movements, or those unable to accurately select keystrokes on the more commonly used keyboards, may find an expanded keyboard useful. Expanded keyboards are larger, oversized keyboards that give a much larger surface area for each key. This design improves accuracy for many individuals.
- Considerations:**
- What is the keyboard layout? Is it the standard QWERTY layout or a different key configuration? Can key assignments be changed if the layout is not acceptable?
 - Are all of the function keys, cursor routing keys, and numeric keypad keys on the keyboard being replaced also available on the expanded keyboard?
 - Is the entire area of each of the larger keys active? Can any part of the larger key be used to select that key or are there inactive or "dead" spots on the key?
 - Is there a built in method for sequential keystroke input?
 - How does the expanded keyboard attach to the PC? Does it plug into the standard keyboard port or does it use a serial port or a different specialized interface?
 - Is there any software that must also be loaded for the system to use this keyboard?
 - Can the user reach all of the keys on the keyboard?
 - Is a keyguard available for this keyboard if needed?
 - **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
- **Alternative keyboard layouts** - There are both hardware and software options available to remap the keyboard to a layout more optimized for a single handed keyer. The software options allow the user to choose between the standard QWERTY layout, right handed Dvorak, and left handed Dvorak layouts. Hardware solutions are available for either the two handed Dvorak, right handed Dvorak, or left handed Dvorak layouts.

Considerations:

- Is the user already familiar with the QWERTY layout? Do they want to relearn a new keyboard layout?
- Is the PC used by a single person or in a shared use setting?
- Does the software option also offer keycap covers to identify the new key designations once the Dvorak layout has been loaded?
- If the software option is used, how easy is it to switch between keyboard layouts?
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
- **Mouse alternatives** - A number of application packages in use today depend on mouse input for fully utilizing the program. Many users that may be unable to carry out the sweeping movements needed to control a mouse may be able to benefit from the mouse alternatives currently available. Some of the alternatives include:
 - **Keyboard equivalents** - Many programs that depend on the mouse also offer keyboard keystroke equivalents to accomplish mouse movements
 - **Trackballs** - A trackball is a stationary object that utilizes a ball that may be rolled with the fingers, palm of the hand, or foot to move the screen cursor. The trackball also has buttons to perform the click and drag functions associated with using a mouse. When selecting a trackball, attention should be given to the positioning and size of the buttons. Can the user easily and comfortably position the ball without inadvertently hitting the buttons?
 - **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.

Non-Keyboard Dependent Input Mechanisms

When a keyboard solution does not provide an optimal accommodation for the individual, there are several additional alternatives that may be considered. Keystroke equivalents are sent to the computer through these alternative devices. All methods for selecting keystrokes can be roughly broken into three types: direct selection, encoding, and scanning. A brief discussion of these approaches may be helpful to understanding the technical considerations associated with available products.

Direct selection refers to any method that allows the individual to choose a specific character, word, or phrase with a single selection. Most individuals may not be aware that using a standard keyboard is a direct select method. Speech recognition is an example of an alternative direct selection input method. The biggest advantage of direct selection over either encoding or scanning methods, is that it is often the quickest since each selection made results in an actual keystroke, word, or phrase being generated. Encoding and scanning systems are employed when an individual is unable to use direct selection techniques.

Encoding refers to a method where each keyboard character or phrase is assigned a unique pattern code. When this code is entered, the associated character is generated. An example of encoding is Morse code. Each character has a unique set of dots and dashes associated with it.

Scanning is a technique that presents groups of characters to the user on a display. As a cursor moves from one group to the next automatically, the user first selects the group needed, and then the character within that group. For each keystroke equivalent, two selections are required. A variety of switch inputs such as sip and puff, muscle switches, and eye-tracking systems can be used with scanning systems.

Speech Recognition

Speech input is a direct selection alternative that can be successfully used by many individuals that are unable to access the keyboard at all or have very limited use of the keyboard. As each word is spoken clearly and distinctly it is recognized and presented on the computer screen. There are both low-end and high-end speech recognition packages available. Currently, both the low-end and the high-end solutions require a distinct pause between each word spoken for the speech recognition to be accurate. Current technology does not support accurate recognition at a normal conversational rate of speech.

The low-end solutions have a limited vocabulary set and each word must be specifically "trained" by the individual user. Several of the speech recognition packages have predefined overlays of commands that support rapid vocabulary training for use with popular word processing, spreadsheet, and database application packages. Within the limit of the active vocabulary at one time, the user can add words and their associated keystrokes to the available vocabulary set. To make the functional vocabulary larger and run faster, some packages organize the vocabulary sets to correspond to the commands needed in a particular portion of the application. The speech recognition system operates faster since it does not compare speech patterns of words that will never be used in that application module. The vocabulary training consists of going through a menu of the words and speaking each word three or four times to build a voice pattern for that word. These systems can be very effectively used in situations where a small vocabulary is needed, such as entering inventory codes into a database or speaking the commands within an application package. The inventory codes could be spoken as digits and letters. In some cases, the speech input may be much more error free than keying long alphanumeric strings, regardless of whether the individual has a disability or not.

The high-end solution has a 30,000 word dictionary and the user can add other words and terms as needed. A user can successfully start using this system after specifically training only 10 to 40 words. The system continues to improve its match to the users' voice and "self-train" as the individual user speaks into the system and corrects the word selections the system displays. Commands, typically consisting of a phrase, can be added to the dictionary and entered verbally. On the high-end system, typing speeds up to 35 words per minute can be achieved by an experienced user who trained the system to their voice patterns.

Individuals with significantly altered, but consistent, speech patterns can successfully train the speech recognition system to their voice. This is true for both the low-end and the high-end speech recognition systems. Using the high-end system, the individual may have a significantly lower recognition rate initially to each word compared to the "standard" pronunciation dictionary. As the user makes corrections and continues to use the system, it will continue to self-train itself to their voice pattern just as it does with users with more easily understood voice patterns. Once trained, the speech recognition system can recognize the vocal commands of a user with a speech impairment with greater accuracy than individual listeners. The key to the successful use of the system is speech consistency. If an individual's voice changes significantly over the course of the day as they become fatigued, several speech recognition packages offer the capability of storing multiple voice patterns. As the error rate for one voice pattern becomes unacceptable, the user would switch to their second "fatigued" voice pattern.

Considerations:

- What application programs will the user be using? Does the speech recognition package have any predefined vocabulary overlays for the commands needed by the application packages?
- What size vocabulary is needed?
- How easy is it to add words to the vocabulary set?
- Will the package allow several speech recognition templates to be stored for more than one voice, or more than one user?
- Does the user have consistent speech?
- How quickly does the user's voice tire?
- Microphone considerations:
 - How much background noise can be present without adversely affecting the speech recognition?
 - Can the microphone be mounted so the user does not have to wear it or be tethered to the PC by a cord? Many wheelchair users that may not be able to independently put on and remove a headset microphone would like viable alternatives that will allow them freedom to leave the PC without assistance from another person. Is there a cordless microphone that can be used?
- Is there a voice command for turning the microphone on and off?
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
 - How much disk storage is needed by the software? How much is needed by other application packages?
 - Are the PC internal speeds and the speed needed by the speech recognition board compatible? What speed PC is required for the speech system to work? What is the maximum allowable PC speed at which the board functions properly? If the speech recognition board needs a slower clock speed than the PC normally runs at, can the PC clock speed be slowed down? Most PCs have a utility for doing this, although it may be difficult to find the specific command needed in the user's manual.

Other alternative inputs

There are several additional alternative input options for individuals that have voluntary muscle control over some part of their body. Some of these will be described below:

- **Morse code input**, an encoding system, utilizes Morse code with added features to make it more adaptable for use with a PC.

Considerations:

- **Mouse needs** - If the application is dependent on the use of a mouse, are there keystroke equivalents to accomplish mouse movements? If so, can the Morse code system execute these keystroke equivalents?

- **Switch input** - Some users are able to control two keys or switches with one key being for dots and the other for dashes. Others need a package that will allow both dots and dashes to be generated from a single key or switch.
 - Can a single key or dual key switch be used with the system?
 - Can keys on the PC keyboard be used as the input mechanism?
 - Has the Morse code set been expanded to include the extra keys on the PC keyboard? Does it have all the keys needed?
 - Does the package allow for macros to be added?
 - What input speeds can be achieved once the user has mastered the Morse code patterns?
 - How does the system handle code errors?
 - Is there a training component to the system to help the user master the Morse code?
 - **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
- **Infrared pointing devices** consist of a receiver, a reflector, and associated software that may be used in place of a keyboard. The individual points the reflector at a picture of the keyboard being overlaid on the computer screen by the software used with the pointing device. Each letter or word can be selected directly and then appears on the computer screen.

Considerations:

 - If the application packages being used are dependent on the use of a mouse, are there keystroke equivalents to accomplish mouse movements? If so, can infrared pointing systems execute these keystroke equivalents?
 - Can the size of the selection keyboard displayed on the screen be changed?
 - Is the amount of time the individual must stay focused on the desired key adjustable?
 - How is the pointer device attached or connected to the user?
 - **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
 - **Sip and puff systems** are one of the popular interfaces for scanning systems. Other types of interfaces that may be used with scanning systems include **muscle switches** and **joystick controls**. The choice of interface device depends primarily on the user and their preferred method of control. A sip and puff interface allows the user to scan with one action, such as sip, and select with the other action, such as puff. If the user is scanning a set of characters, they would sip to keep scanning, and then when they were at the character desired, puff to select the character. Many of the systems that can utilize a sip and puff interface allow the user to choose which action they want to be used for scanning and which for selection. Muscle switches employ the same principle with the voluntary tightening or loosening of a muscle being the scan or select controls. Switches can be set up for detecting eye blink, or eyebrow twitch in addition to other muscle movements such as hand or finger movements. Joystick controls may be used by an individual with adequate control of finger movement or can be controlled by chin movements.

Considerations:

- If the application packages are dependent on the use of a mouse, are there keystroke equivalents to accomplish mouse movements? If so, can the scanning interface chosen execute these keystroke equivalents?
- Can the scanning rate be adjusted?
- How is the user attached or connected to the interface device? Is the interface device attached to the computer? Can the user move away from the computer and come back to the interface without intervention from another person?
- How large is the scanner the user must see? How easily can it be repositioned?
- Can the groupings being presented be changed? How easily?
- Can macros be added to the system? Or can an additional macro package be used in conjunction with the scanning package?
- **Hardware configuration and software compatibility considerations**
 - See the "General Hardware Configuration and Software Compatibility Considerations" listed at the beginning of this appendix.
- **Eye scanning packages** are also now available that operate similar to a pointer system but do not require anything to be attached to or connected to the user. A camera focuses on the individual's eye and tracks the movements of the eye. As the person focuses on a screen of choices or a menu seen on a monitor, the system will display the selection on the PC screen. An individual that has no voluntary control of muscle movement at all, but can still focus their eyes, can control a computer.

APPENDIX B

POSSIBLE PROPOSAL ELEMENTS

This Appendix contains *possible* accessibility proposal elements. These clauses should be used only as a starting point for meeting an agency's accessibility requirements when developing a Request for Proposal (RFP). It is imperative that each agency develop their own requirements based upon the completion of a functional needs assessment of their users, including those with disabilities. (For more information on additional elements to be considered in developing a proposal, see Appendices E, G, and H of this handbook.)

1.0 Mandatory Requirements Section

In addition to the above requirements, the Contractor shall furnish system enhancements as described below to ensure that accessibility requirements are met for all current and prospective employees with disabilities in accordance with FIRM, 41 CFR Chapter 201 and FIRM Bulletins C-8 and C-10. The system enhancements (software, firmware, and hardware) offered shall support the minimum capabilities outlined below and shall be fully compatible with the proposed hardware configurations and Contractor supported software including systems, applications, and local area network software. In addition, any single enhancement or combination of enhancements(s) when enabled, must be compatible with all system operations and procedures that are available when the enhancement(s) is not enabled. If requested, the Contractor shall conduct a Live Test Demonstration prior to award of contract for the purpose of determining satisfactory performance of proposed software, firmware, and hardware access capabilities.

2.0 Functional Specifications - Input

2.1 Keyboard Enhancement

The Contractor shall provide, upon request, a system enhancement that supports any or all combinations of the following functions:

- a. Capability to execute multiple keystroke commands (e.g., "CTRL-C") serially rather than simultaneously.
- b. Capability to adjust the keyboard repeat tolerances or turn off the repeat function.
- c. Capability to emulate mouse input device movements from the keyboard.
- d. Capability to adjust the keyboard audible feedback or turn off the audible feedback.
- e. Capability of visual and/or auditory feedback on key status.

In addition the Contractor shall provide upon request the following keyboard enhancements:

- a. Keyboard guards to prevent inadvertent or multiple key depressions. A keyguard is a template with holes corresponding to the location of the keys.
- b. Keyboard tactile overlays to identify locations of home row keys and important non-standard location keys (e.g., ESC, ENTER, CTRL, and ALT).

2.2 Alternative Input Device

The Contractor shall provide a capability to augment or replace the proposed keyboard with commercially available alternative input devices. A minimum of three alternative input devices should be proposed as representative of the wide range of commercially available input devices that accommodate people unable to use standard keyboards. The salient characteristics required of each alternative input device are:

- a. Capability to emulate and transmit all valid keystroke combinations.
- b. Capability to be readily connectable to the proposed system through standard keyboard connection, serial or parallel port or cordless connection via infra-red receiver.

2.3 Voice Input System

The Contractor shall provide the capability to interact with the proposed workstation via voice recognition. The proposed voice input system must be a commercially available system and capable of meeting the following salient characteristics:

- a. Capability to use a spoken word or phrase to enable a command or string of commands at the operating system and application level.
- b. Provision of predefined vocabulary sets for commonly available applications programs.
- c. Capability to build user definable vocabulary sets.
- d. Capability to use a stand alone microphone or headset with attached microphone or remote cordless microphone.

3.0 Functional Specifications - Output

3.1 Large Print Output Display

The contractor shall provide a capability to support the following feature on the standard display monitor for desktop and portable (laptop) computers:

- a. Provide the capability to magnify text and/or graphics from two (2) to eight (8) times (minimum range) its normal size.

3.2 Speech Output System

The Contractor shall provide the necessary components (hardware, software, & firmware) to support the capability to synthesize voice output. The proposed speech output system shall be a commercially available system, compatible with the proposed workstation, and capable of meeting the following salient characteristics:

- a. Allow interactive auditory review in edit or read mode by character, word, line, definable window(s), and/or entire screen.
- b. Allow auditory review toggle on/off for punctuation, to include spaces.
- c. Allow auditory review toggle on/off speech while in edit or read mode.
- d. Auditory review includes a cursor locator command available at any time.
- e. Provide a feature that automatically "speaks" whenever a system message or error message is received.

- f. Support customization of the auditory review capability by the user to recognize the window and/or screen layouts of specific applications programs.
- g. Allow the user to adjust the rate and pitch of the voice output from the keyboard.
- h. Support for a functional headset adapter unit.

3.3 Braille Output System

The contractor shall provide a capability for generating Braille hard copy output (Grade I and/or Grade II) from a printer that is fully compatible with the provided hardware configuration. The following are salient characteristics of the required Braille printer:

- a. Minimum 40 characters per second printing speed.
- b. Minimum 40 characters (braille cells) per line.
- c. Minimum of 24 lines per page.
- d. Adjustable feed for 8.5 inch by 11.5 inch fanfold paper.

3.4 Notification Redundancy

The contractor provided workstation must be capable of modification/enhancement to support both visual and auditory notification of significant system activity (i.e., error notification) in all contractor supported environments including E-mail. The following are minimum requirements to meet this need:

- a. support a capability to notify the user of any significant system activity by
 - 1) the use of an auditory cue such as beep or speech and
 - 2) the use of a visual cue such as screen flash, or flashing message.
- b. Support a capability for user selection of auditory cue only, visual cue only, or both.

4.0 Manuals and Publications Section

4.1 ASCII or Grade II Braille Documentation

Within 30 days of receipt of a written request from the Government, the Contractor shall furnish copies of any document offered under this contract in either flat ASCII format (on machine-readable media compatible with proposed equipment) or in Grade II Braille hard-copy, as selected by the Government.

Braille hard-copy document(s) shall be prepared in accordance with English Braille (American Edition) and the Library of Congress Instruction Manual for Braille Transcribing. These references for Braille transcription are available from:

American Printing House for the Blind
1839 Frankfurt Avenue
Post Office Box 6085
Louisville, KY 40206
Telephone: 502-895-2405

- a. The Offerer need not obtain or produce Braille copies of documentation prior to the award of the contract except that a sample of at least ten pages of the Grade II Braille version of one of the offered documents shall be submitted with the proposal.

- b. The Offerer shall explain in his proposal what arrangements shall be made for production and delivery of both types of specialized documentation required over the life of the contract.
- c. The Contractor need not obtain or produce Braille copies of documentation prior to the receipt of an order from the Government requesting specific document(s). It is understood that certain documentation cannot be readily converted to Braille and that requirements stated herein apply to "words" and "numbers" in the documents to be provided.

5.0 Accommodation Substitutions/Enhancements

The Contractor shall include provisions for substituting accommodation hardware, firmware, and/or software which represents an advancement in technology with respect to that originally offered in the proposal. All substitutions must meet the salient characteristics of the original specification and be certified by the Government as a suitable replacement for or addition to the appropriate accommodation hardware, firmware, and/or software.

When the delivery of, or substitution of, such new hardware, software, and/or firmware is made without charge to the Government (e.g., a technological refreshment delivery), or as a planned part of this contract, (e.g., a planned upgrade), the appropriate manuals and publications shall be provided to all addressees affected by the change without charge to the Government, and in the quantities originally delivered.

6.0 Required Support For Future Needs

The Contractor shall provide systems engineers and/or other experts on an hourly call-in basis to advise and assist the Government in resolving any communications or interfacing problems that arise during the provision of any additional enhancement capabilities not addressed in the mandatory requirements section and to analyze the potential of future access capabilities that are determined by the Government to meet the access requirements of users with disabilities.

7.0 Training Overview

This section details the specific responsibilities of the Contractor for training during the life of the contract.

The contractor shall be responsible for training Government personnel, including those with disabilities, to productively use all hardware and software to be delivered. All training offered (system to end-user level) shall be made available throughout the life of the contract. A variety of instructional approaches shall be required, including on-site classroom and self-paced tutorial sessions.

All training courses and instructional materials must be accessible by individuals with disabilities. This may include but is not limited to: sign language or oral interpreters for hearing impaired persons, captioned video tape, braille or large print material for visually impaired persons, and satisfactory physical or architectural accommodations for mobility impaired persons.

Since many of the Government's end users may not be computer professionals, on-line training aids shall be provided. These training aids shall include the use of a functional help key (or an equivalent concept) along with adequate system messaging. The format of the screens must be accessible by commercially available screen reader packages for visually impaired users. The Contractor's training staff may include a combination of Contractor personnel and subcontracted trainers. The Contractor is encouraged to use commercially available courses as appropriate.

APPENDIX C

FEDERAL GOVERNMENT RESOURCES

This list of Federal government sector resources compiled by COCA is not a definitive list of all the government sector resources, but represents a growing collection of resources familiar to COCA. For more detailed information, each of the groups should be contacted directly. Agencies that have groups focusing on computer and telecommunications accommodations that would like their group listed in the next update to this section, please contact:

General Services Administration
Clearinghouse on Computer Accommodation
Code: KGDO; Room 2022
18th & F Sts, NW
Washington DC 20405
voice: 202-501-4906 or FTS 241-4906
TDD: 202-501-2010 or FTS 241-2010

APPENDIX C

FEDERAL GOVERNMENT RESOURCES

Architectural and Transportation Barriers Compliance Board (ATBCB)

ATBCB
1111 18th St., NW
Suite 501
Washington DC 20036-3894
202-653-7834 v/TDD

The ATBCB produces or distributes a variety of publications. These publications are available at no cost. Several publications are available in alternative formats such as braille, large type, cassette or diskette. A list of the publications available through ATBCB follows this resource listing.

Department of Commerce

Committee on Resources for Electronic Accessible Technology to End Users (CREATE)

U.S. Department of Commerce
14th and Constitution Avenue, N.W.
Room 6899
Washington, D.C. 20230
202-377-3201 voice
202-377-0270 TDD

The CREATE committee has representatives from various Commerce Department components or organizations supporting Commerce employees. The purpose of CREATE is to assure that opportunities to use computers to streamline work, to access databases, or to enhance career advancement potential are open to everyone, including those with vision, hearing, or mobility impairments; and assure that electronic technology in use at Commerce accommodates the functional needs of all individuals.

Department of Defense

Computer/Electronic Accommodations Program (CAP)

Defense Medical Systems Support Center
5109 Leesburg Pike
Suite 502
Falls Church, VA 22041-3201
703-756-8811 v/TDD
703-756-0978 TDD only

CAP serves DoD people with disabilities, supervisors, and managers, by providing: financial assistance for accommodations; expert assistance in making the electronic environment accessible to people with disabilities; and training and educational support.

Department of Justice (DoJ)

Civil Rights Division

Coordination and Review Section
Washington, DC 20530
202-307-2210 Voice
202-307-2678 TDD

The U.S. Department of Justice, Civil Rights Division, has published a series of Technical Assistance Guides (TAG) on a variety of disability related topics. Each TAG covers a specific topic and includes resource and reference information. The TAG series are available in standard print, large print, braille, cassette tape, and computer disk. A list of the TAGs published to date follows this resource listing.

**Department of Veterans Affairs
Handicapped Employees Microcomputer Support Program
Information Technology Center (ITC)**

MS: 205/022
810 Vermont Avenue
Washington, D.C. 20420
202-535-8920

The ITC provides assistance to Department of Veterans Affairs employees and to other Federal agencies. The Center offers classes, technical assistance and demonstrations of computer accommodation to microcomputer users.

Equal Employment Opportunity Commission (EEOC)

1801 L. Street, NW
Washington, DC 20507
voice: 202-663-4842
TDD: 202-663-4399

Provides guidance to Federal agencies on developing and implementing affirmative employment programs for hiring, placement, and advancement of people with disabilities. Adjudicates complaints on appeals to the Office of Review and Appeals. The EEOC also keeps statistics on the composition of the Federal workforce.

**General Services Administration
Clearinghouse On Computer Accommodation (COCA)**

Code: KGDO; Room 2022
18th & F Sts, NW
Washington DC 20405
voice: 202-501-4906 or FTS 241-4906
TDD: 202-501-2010 or FTS 241-2010

COCA is a demonstration and technical resource center in the Information Resources Management Service (IRMS) of the General Services Administration (GSA). COCA provides Federal managers and employees demonstrations of frequently used hardware/software, workstation furnishings, and telecommunications accessibility products to accommodate individuals with disabilities. COCA also responds to computer accommodation requests for general information and researches specific hardware/software and communications problems associated with an employee's accommodation requirements. In addition, COCA provides ongoing consultative/technical assistance to agencies during planning, acquisition, and installation of individual and agency-wide office automation systems.

**General Services Administration
Council on Accessible Technology (COAT)**

Office of GSA Information
Resources Management (KG)
18th & F Sts, NW
Washington DC 20405
voice: 202-501-3322
TDD: 202-501-2296
FAX: 202-208-7459

COAT is an interagency committee sponsored by the General Services Administration with representatives from many Federal departments and agencies. The goal of COAT is to advance the management and use of information technology to in turn advance the productivity and achievement of employees with disabilities.

National Council on Disability (NCOD)

800 Independence Avenue, SW
Suite 814
Washington, DC 20591
202-267-3846 voice
202-267-3232 TDD

The National Council on Disability (NCOD) is an independent federal agency comprised of 15 presidentially-appointed members who are confirmed by the Senate. NCOD is charged with the responsibility for providing leadership in the development of national disability policy. NCOD makes recommendations on issues of public policy which affect people with disabilities regardless of age, disability type, perceived employment potential, perceived economic needs, specific functional ability, status as a veteran, or other individual circumstances.

National Institute on Deafness and Other Communication Disorders (NIDCD)

Building 31
Room 1B-62
National Institutes of Health
9000 Rockville Pike
Bethesda, MD 20892
301-496-7243 voice
301-402-0252 TDD
301-402-0018 FAX

NIDCD conducts and supports research and training with respect to disorders of hearing and other communication processes.

Office of Personnel Management (OPM)

Selective Placement Program

Room 6336
1900 E. St., NW
Washington, DC 20415
202-606-0870
or Federal Job Information Line: 202-606-0591

A copy of the Directory of Coordinators for the Selective Placement Program can be obtained by calling or writing the OPM Selective Placement Program.

The President's Committee on Employment of People with Disabilities

1331 F. Street, NW
3rd Floor
Washington, DC 20004-1107
voice 202-376-6200
TDD 202-376-6205
FAX 202-376-6219

The President's Committee on Employment of People with Disabilities is a public-private partnership of national and state organizations and individuals working together to improve the lives of people with physical, mental, and sensory disabilities by increasing their opportunities for employment. The President's Committee publishes a variety of booklets and informational materials directed to employers, to rehabilitation professionals, to the general public, or to individuals with disabilities. They also sponsors a national resource and consultation service to help firms make individualized accommodations for employees with disabilities. People with disabilities, employers, and rehabilitation professionals can seek technical help for specific accommodation solutions (see Appendix E - Job Accommodation Network).

U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD PUBLICATIONS LIST

The ATBCB (Access Board) produces or distributes a variety of publications, available at no cost. To request copies, write the quantity you want beside each publication and clearly write your name and address in the space provided. If you want more than ten (10) copies of any single publication, send a letter explaining the planned distribution (e.g., conference for planners) and the anticipated audience.

The ATBCB is committed to providing, where feasible, these materials in formats for readers to use independently. Some are already available in a variety of alternative formats: B (Braille), LT (large type), CST (cassette), DIS (5 1/4" floppy disc in ASCII). Circle the format(s) you wish. Publications not marked will be reproduced soon in as many forms as possible, given their original formats. Priority is given to requests.

General Publication

- G2 - *Access America* newsletter. Published quarterly to provide information about the Access Board and its activities. To be added to the newsletter mailing list, check here _____ B, CST, DIS, LT
- G3 - *Access America: The Architectural Barriers Act and You*. Describes the Access Board and how to file complaints about inaccessible federally funded buildings and facilities. B, CST, DIS, LT
- G4 - *Annual Report to the President and Congress*. Report on Access Board activities for the previous fiscal year. B, CST, DIS, LT
- G5 - *Laws Concerning the ATBCB*. Contains the Architectural Barriers Act of 1968 (Public Law 90-480) and sections 502 (which established the ATBCB), 506, and 507 of the Rehabilitation Act of 1973. B, CST, DIS, LT
- G11 - *Symposium Presentation to the 20th Anniversary Celebration of the Architectural Barriers Act of 1968*. Report on symposium hosted by Disabled American Veterans in Washington, D.C., in August 1988. B, DIS, LT
- G10 - *Toward an Accessible Environment: Effective Research*. Describes seven exemplary federally refunded research projects on environmental accessibility. B, CST, LT

Architectural Access

- A3 - *Design Standards for Accessible Single-Toilet Rest Rooms*. To be used with the Uniform Federal Accessibility Standards, this design bulletin #1 provides recommendations for single toilet rest rooms to increase usability by those who make side transfers.
- A12 - *Ground and Floor Surface Treatments*. Describes characteristics of five interior and exterior surfaces that may pose hazards for persons with disabilities. B, CST, DIS, LT
- A13 - *Hand Anthropometrics*. The full report, including methodology and data, of a project to examine the use of various controls and operating mechanisms by individuals with arm, hand, and finger limitations (for recommendations from this project, order the publication below). CST

- A26 - *Hands-On Architecture*. Contains the Executive Summary and recommendations from the above project with suggested standards for specifying controls and operating mechanisms. B, DIS, LT
- A15 - *Orientation and Wayfinding*. Examines how pedestrians, like people with disabilities, experience problems and needs in wayfinding. CST
- A25 - *Transit Facility Design for Persons with Visual Impairments*. Combines recommendations from several research reports on signage, platform edge cuing, lighting, and slip resistant surfaces geared toward transit stations but partly applicable to other facility types. B, CST, LT
- A22 - *Visual Alarms*. Gives detailed recommendations on alarms for alerting persons with hearing impairments to emergencies, including flash rate, intensity, placement and cost estimates. B, CST, DIS, LT
- S4 - *Uniform Federal Accessibility Standards (UFAS)*. Design, construction and alteration standards for access to federally funded facilities (based on the ATBCB Minimum Guidelines and Requirements for Accessible Design). CST

Communication Access

- C1 - *Assistive Listening Systems*. Describes commercially available devices and systems for making public address and other types of communication systems more accessible to persons with hearing impairments. B, CST, DIS, LT
- C3 - *TDD: Final Report*. Describes a study of the needs of users of Telecommunication Devices for Deaf persons (TDD) for communication with and within the federal government. B, CST, DIS, LT
- C4 - *TDD: Appendix*. Appendix to the above report includes data on available equipment, a list of interviewees, discussion of methodology, and bibliography.

Transportation Access

- T4 - *Air Carrier Policies on Transport of Battery-Powered Wheelchairs*. Describes policies of major air carriers for transporting battery-powered wheelchairs, the section of the operating manual where it is codified, and constraints imposed by different types of aircraft. B, DIS, LT
- T19 - *Aircraft Stowage Procedures for Battery-Powered Wheelchairs*. Contains a detailed description of a procedure for safely stowing battery-powered wheelchairs on aircraft in conformance with Hazardous Materials regulations, based on successful practices of several domestic and foreign air carriers. B, DIS, LT
- T10 - *Guidelines for Aircraft Boarding Chairs*. Provides guidance to purchasers, designers, and manufacturers of boarding chairs, for the design or purchase of safer and more effective devices; also identifies elements of a proper training program. B, DIS, LT
- T13 - *Lifts and Wheelchair Securement*. Assists transportation providers and potential patrons plan services and select equipment to meet the needs of disabled persons; supplements UMTA-sponsored model safety specifications for lifts, ramps, and wheelchair securement on buses and paratransit vehicles. B, DIS, LT

T17 - *Mobility Aids Stowage*. Intended to help air carriers develop effective policies, procedures, and practices for safe stowage and return of mobility aids; synthesized from a broad cross-section of air carriers, the appendix contains a detailed procedure for stowing power wheelchairs and mobility aids which is available as a separate brochure, T19, described above. B, CST, DIS, LT

Name _____

Organization _____

Address _____

City _____ State _____ Zip _____

G8 - *Publications Checklist*. Additional copies of the ATBCB Publications Checklist can be obtained from:

ATBCB
1111 18th St., NW
Suite 501
Washington, DC 20036-3894
or call 202-653-7834 v/TDD

This list may be duplicated or reproduced. B, DIS, LT

DEPARTMENT OF JUSTICE TECHNICAL ASSISTANCE GUIDES (TAGs)

This is a list of Technical Assistance Guides (TAGs) available from the U.S. Department of Justice. These documents are available in alternate formats including audiotape, large print, braille, and computer disk. The TAGs can be obtained by contacting:

Coordination and Review Section
Civil Rights Division
U.S. Department of Justice
Washington, DC 20530
(202) 307-2210 Voice
(202) 307-2678 TDD

TAG-84-1: *Interpreter Referral Services*

This TAG lists interpreter referral service information, both for the greater Washington metropolitan area and nationally. In addition, information is provided about the National Center for Law and the Deaf (NCLD) Newsletter.

TAG-84-2: *Telecommunications Devices for Deaf Persons (TDDs)*

This TAG gives some background information on the basic function of TDDs and lists some of the businesses around the country that manufacture and sell them.

TAG-84-3: *Obtaining Tape Recorded or Braille Transcriptions of Documents for Use by Visually-Impaired Persons*

This TAG lists resources in the Washington metropolitan area for tape recording and Braille transcription. It also recommends that persons interested in obtaining similar information for other areas of the country should contact the Library of Congress' National Library Service for the Blind and Physically Handicapped.

TAG5-84-4: *Closed-Captioning*

This TAG gives basic information on closed and open-captioning and specifically discusses information about the National Park Services's captioning program and that of the National Captioning Institute.

TAG-84-5: *Sources of Information on Accessible Design, Disability Research, and the Provision of Services to Individuals with Handicaps*

This TAG provides Federal agencies with an annotated list of institutional sources in Washington, D.C., that either can provide technical assistance or have facilities for conducting research on accessible design, disability, and the provision of services to individuals with handicaps.

TAG-84-6: *Published Resources Concerning Section 504 of the Rehabilitation Act of 1973, as Amended and the Provision of Services to Individuals with Handicaps*

This TAG gives a partial listing of publications (directories, handbooks, legal reporting services, and newsletters), which concentrate in whole or in part on Section 504 issues.

TAG-85-1: *Access to Public Meetings*

This TAG provides information on steps that will enable hearing-impaired, visually-impaired and mobility-impaired persons to have access to public meetings. This TAG does not address the architectural accessibility of the facility in which the meeting is held.

- TAG-85-2: *Assistive Listening Devices (ALDs)***
This TAG provides information on special devices that can be used to improve communication with hearing-impaired persons. It discusses the problems ALD systems are intended to solve or ameliorate and the costs, advantages and disadvantages of different ALDs.
- TAG-85-3: *Access to Printed Information by Visually-Impaired Persons***
This TAG provides information on steps that will enable visually-impaired persons to have access to printed materials.
- TAG-86-1: *The President's Committee on Employment of People with Disabilities and Related Organizations***
This TAG provides recipients of Federal financial assistance and Federal agencies with information on employment of individuals with disabilities and other issues related to the implementation of Section 504 of the Rehabilitation Act of 1973, as amended.
- TAG-86-2: *Telephone Devices for Persons Who Are Hard-of-Hearing***
This TAG discusses technological devices that help persons who are hard-of-hearing effectively use the telephone.
- TAG-86-3: *Coverage of the Architectural Barriers Act of 1968, as amended (Barriers Act) and Section 504 of the Rehabilitation Act of 1973, as amended (Section 504)***
This TAG explains the requirements of the Barriers Act and Section 504 as they affect the accessibility of buildings for individuals with physical handicaps. This guide also provides information to assist recipients and Federal agencies in complying with the requirements of these statutes in light of their overlapping coverage.
- TAG-87-1: *Section 504 Transition Plan and Self-Evaluation Information***
This TAG provides Federal agencies with information to assist them in completing the transition plan and self-evaluation required by their regulations implementing Section 504 for federally conducted programs. This TAG provides information about these requirements as they affect the non-employment programs and activities of Federal agencies.
- TAG-87-2: *More Information About Telecommunication Devices for Deaf Persons (TDDs)***
In an earlier TAG, the Department explained the basic function of a TDD and provided a partial listing of TDD manufacturers in the United States. This TAG provides more detailed information about TDDs such as installation tips, directory listings of TDD numbers, cost range, ordering of TDDs, important features of TDD's and staff training to operate TDDs.
- TAG-87-3: *GSA's Clearinghouse on Computer Accommodation***
The purpose of this TAG is to provide Federal agencies with information about an important resource that may assist them to solve problems related to their use of office automation technologies by individuals with disabilities.
- TAG-87-4: *Open-Captioning of Videotapes***
The purpose of this TAG is to provide Federal agencies and recipients with an understanding of how open-captioning of videotapes can improve access to their programs and activities for hearing-impaired persons. This Guide also discusses how videotapes are open-captioned, and how open-captioning services are procured. Open-captioning of film is not addressed in this TAG. Closed-captioning was discussed in a previous TAG.

- TAG-87-5: *Architectural Accessibility Design Standards***
The purpose of this TAG is to explain design standards for architectural accessibility. Specifically, it provides information on their nature, examines how they are developed, changed, and imposed, and discusses the similarities and differences of the major design standards currently in use.
- TAG-88-1: *Ability Testing of Individuals with Physical Handicaps***
The purpose of this TAG is to provide Federal agencies with general information on some of the special considerations and modifications necessary to effectively test disabled individuals.
- TAG-88-2: *Telephone Relay Services for Persons Who Are Hearing-Impaired***
The purpose of this TAG is to provide Federal agencies with information about telephone relay services for hearing-impaired persons.
- TAG-88-3: *The President's Committee on Mental Retardation***
The purpose of this TAG is to provide Federal agencies with information on the President's Committee on Mental Retardation in addition to providing a partial list of the Committee's publications.
- TAG-88-4: *Audio Description for Visually-Impaired Persons***
The purpose of this TAG is to provide Federal agencies with an explanation of audio description, its benefits and some current uses for this service.
- TAG-88-5: *Corporate Resources Available to Assist Individuals with Disabilities***
The purpose of this TAG is to provide Federal agencies with information about the efforts of some corporations to assist individuals with handicaps directly and indirectly through programs of technical assistance, technology transfer and product development.
- TAG-88-6: *The National Library Service for the Blind and Physically Handicapped (NLS) of the Library of Congress***
The purpose of this TAG is to provide Federal agencies with information about the various services and programs available from this component of the Library of Congress that was established to provide materials to blind and physically handicapped individuals.
- TAG-88-7: *Open-Captioning of Film***
The purpose of this TAG is to provide Federal agencies with an understanding of how open-captioning of film can improve access for hearing-impaired individuals.
- TAG-88-8: *Accessibility Requirements in Buildings Leased by the Federal Government***
The purpose of this TAG is to provide Federal agencies with an explanation of the accessibility requirements affecting buildings that are leased by the Federal Government that are imposed by the Architectural Barriers Act of 1968, as amended and by section 504 of the Rehabilitation Act of 1973, as amended.
- TAG-88-9: *Directory of National Information Sources on Handicapping Conditions and Related Services***
The purpose of this TAG is to provide Federal agencies with information on this comprehensive resource directory available from the U.S. Department of Education.

- TAG-88-10: *Making Government Documents Available to Persons with Vision Impairments***
The purpose of this TAG is to assist Federal agencies in understanding and meeting their responsibility under section 504 of the Rehabilitation Act of 1973, as amended, to make Government documents accessible to persons with impaired vision by providing appropriate auxiliary aids including making the documents available in alternate formats.
- TAG-88-11: *Supplemental Information about the Section 504 Transition Plan Requirements***
The purpose of this TAG is to provide additional specific information about reviewing the facilities in which agency programs and activities are conducted.
- TAG-88-12: *Supplemental Information about the Section 504 Self-Evaluation Requirements***
The purpose of this TAG is to provide agencies with a Self-Evaluation Review Form that may assist them to organize and carry out self-evaluation efforts for their non-employment programs and activities.

APPENDIX D

FEDERAL AGENCY TDD NUMBER UPDATE

Federal Information Relay Service

The Telecommunications Accessibility Enhancement Act of 1988, Public Law 100-542, was signed into law on October 28, 1988. This law gave the General Services Administration (GSA) the authority to expand our national telecommunications system to assure that the Federal Telecommunications System is fully accessible to hearing-impaired and speech-impaired individuals. This function is provided by the Information Resources Management Service's Federal Information Relay Service (FIRS), which is located in the National Capital Region of the GSA. FIRS is a nationwide Federal relay system for users of Telecommunications Devices for the Deaf (TDDs).

Calls to the Federal Information Relay Service can be generated by either a hearing-impaired TDD user to a hearing user on a standard voice phone or vice versa. The operator will relay messages between the conversing parties - via the TDD in one direction and orally in the other direction - until the conversation has ended. The relay service is provided to process calls to or from a federal location, and can be generated by either a federal employee or a private citizen calling a federal agency, in any of the contiguous 48 states. GSA telephone regulations apply. Some examples of relay use might be a Federal employee conducting government business or calling a doctor. To allow federal employees ample time to complete official business, FIRS does not limit the duration of any official call placed over the FIRS. There is a three call limit each time a user contacts the FIRS. Users must provide the number/agency calling from and number/agency being called.

To place a call through the GSA Federal Information Relay Service call:

800-877-8339 U.S. nation-wide
or
202-708-9300 Washington, DC local area
or
FTS 458-9300

For additional information call:

TDD: 202-708-5985 or FTS 458-5985
Voice: 202-708-5936 or FTS 458-5936
FAX: 202-708-6205 or FTS 458-6205

Federal Agency TDD Number Directory

Another requirement of Public Law 100-542, is for GSA to assemble, publish, and maintain a directory of TDD numbers. An on-line directory of Federal TDD numbers is available through the FIRS Bulletin Board.

To access the FIRS Bulletin Board via TDD call:

800-877-8845 U.S. nation-wide
or
202-708-9320 Washington, DC local area
or
FTS 458-9320

To obtain a printed copy of the "U.S. Government TDD Directory" write:

Consumer Information Center
Public Document Distribution Center
Department 573X
Pueblo, CO 81009

To update a listing to the directory or add another TDD number please send the form on the following page to:

GSA Federal Information Relay Service
ATTN: Directory Corrections
7th & D Streets, SW
Room 6040
Washington, DC 20407

**FEDERAL AGENCY TDD DIRECTORY
DIRECTORY UPDATE FORM**

Agency Name _____

Department _____

Phone Number _____

(Circle One) TDD Voice v/TDD

Address _____

City _____

State _____ Zip _____

Hearing Impaired User (if any) _____

Comments _____

Please copy this form for additional entries

Mail to:

GSA Federal Information Relay Service
ATTN: Directory Corrections
7th & D St., SW
Room 6040
Washington, DC 20407

TDD LOGO FOR PUBLIC USE TDDs

Federal government agencies are required by FIRM Section 201-20.103-7 to display the TDD (Telecommunications Device for the Deaf) logo to indicate a public use TDD. A TDD is used by many hearing impaired and speech impaired individuals to communicate over the telephone. The following are some general guidelines for the placement of the TDD logo:

1. The logo should only be used to show where public TDD devices are located. The logo **should not** be used to indicate TDDs in private offices.
2. Where possible, the TDD logo should be displayed in a public area such as a lobby, along with appropriate directional signage to indicate its location(s).
3. Common locations for public TDD devices are building lobbies, personnel offices, EEO offices or at the guard desk. TDD logos should be prominently displayed in these areas.
4. A TDD can be obtained through a number of sources depending on your agency's policies. Many of the General Services Administration's (GSA) Purchase of Telephones and Services (POTS) programs offer several types of TDDs.
5. The building facility manager should be contacted for specific information regarding the proper placement of the TDD logo.

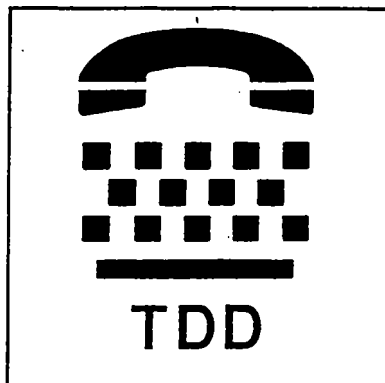
Federal government offices needing TDD logo ordering information should contact:

UNICOR
Federal Prison Industries, Inc.
320 1st St, NW
Washington, DC 20534
202-783-7035

General questions concerning public use TDDs in Federal offices should be directed to:

Tony Trenkle
U.S. General Services Administration
18th & F Sts, NW
Code: KAP Room 2239
Washington, DC 20405
202-501-4199

This is a reduced example of the TDD logo:



APPENDIX E

PUBLIC AND PRIVATE SECTOR RESOURCES

The following are representative public and private sector resources; the list is not intended to be exhaustive or complete. The annotation of v/TDD following a phone number indicates the number may be used by both hearing individuals or individuals using a telecommunications device for the deaf (TDD).

Abledata

Adaptive Equipment Center
Newington Children's Hospital
181 East Cedar Street
Newington, CT 06111
203-667-5405 v/TDD
800-344-5405 v/TDD

[funded by The National Institute on Disability and Rehabilitation Research, U.S. Department of Education]

1. Disability-related product database

Adult Loss of Hearing Association, Inc.

151 S. Tucson Blvd
Suite 242

Tucson, AZ 85716
602-795-6525 v/TDD

1. Support for hearing impaired individuals

Alexander Graham Bell Association for the Deaf

3417 Volta Place, NW
Washington, DC 20007-2778
202-337-5220 v/TDD

1. Public education advocacy for hearing impaired individuals

American Association of the Deaf-Blind

814 Thayer Avenue
Silver Spring, MD 20910
301-589-7279 v/TDD
301-587-1788 v/TDD

1. National consumer organization

American Council of the Blind, Inc. (ACB)

1155 15th St., NW
Suite 720
Washington, DC 20005
800-424-8666
202-467-5081
FAX 202-467-5085

1. Information resource for visually impaired individuals

American Foundation For The Blind

National Technology Center
15th West 16th Street
New York, NY 10011
212-620-2051

1. Research and development of consumer products for blind and visually impaired individuals
2. Evaluate products and publish reports
3. Information and referral database on assistive devices for blind and visually impaired individuals

American Printing House for the Blind, Inc. (APH)

P.O. Box 6085
Louisville, KY 40206-0085
502-895-2405

1. Instructional aids, tools, and supplies for visually impaired individuals

American Speech-Language-Hearing Association (ASHA)

10801 Rockville Pike
Rockville, MD 20852
301-897-5700 v/TDD
HELPLINE 800-638-8255 v/TDD

1. Provides information and assistance to people with communication disorders as well as to their families and friends.

Apple Computer, Inc.

Disability Solutions Group
20525 Mariani Avenue
Mail Stop: 36 SE
Cupertino, CA 95014
408-996-1010
408-974-7910

1. Apple works with key education, rehabilitation, and organizations nation-wide to identify the computer related needs of individuals with disabilities

Association for the Education and Rehabilitation of the Blind and Visually Impaired

206 N. Washington St.
Suite 320
Alexandria, VA 22314
703-548-1884

Association of Late-Deafened Adults (ALDA)

1027 Oakton
Evanston, IL 60202
312-604-4192 TDD

1. Focus on the unique problems of adults that become deaf late in life

AT&T Special Needs Center

2001 Route 46
Room 310
Parsippany, NJ 07054
800-233-1222 voice
800-833-3232 TDD

1. Telephone equipment center for people with hearing impairments or other disabilities

Baruch College

Computer Center for the Visually Impaired
17 Lexington Avenue
Box 515
New York, NY 10010
212-447-3070

1. Provide training on adaptive equipment and applications software for visually impaired individuals

Blinded Veterans Association

477 H Street, NW
Washington, DC 20001
202-371-8880

1. Provide assistance for blinded Veterans

Braille Institute of America, Inc.

741 North Vermont Avenue

Los Angeles, CA 90029

213-660-3880 (Library)

213-663-1111 (Institute)

1. School for the blind and visually impaired

Braille Research & Literacy

121 Beach Street

Boston, MA 02111

800-343-0095

1. Resource for more information on braille

The Carroll Center for the Blind

770 Centre Street

Newton, MA 02158

617-969-6200

1. Rehabilitation center for the legally blind

Center for Technology in Human Disabilities at the Maryland Rehabilitation Center

2301 Argonne Drive

Baltimore, MD 21218

301-554-3046

1. Empower individuals with disabilities to become more independent and productive through appropriate technologies

Chicago Lighthouse for the Blind

1850 W. Roosevelt Road

Chicago, IL 60608

312-666-1331

1. Provide evaluation of potential and assist in employment procedures for blind individuals

Columbia Lighthouse for the Blind

1421 P. Street, NW

Washington, DC 20005

202-462-2900

1. Provide rehabilitation and training to visually impaired clients

Computerized Books for the Blind

Research and Training Center on Rural Rehabilitation Services

33 Corbin Hall

University of Montana

Missoula, MT 59812

406-243-5481

1. Resource for obtaining books on diskette

Council of Citizens with Low Vision International

Riley Tower 2

Suite 2300

600 North Alabama Street

Indianapolis, IN 46204-1415

317-638-8822

800-733-2258

Deaf-Blind Service Center

2366 East Lake Ave E.

Suite 312

Seattle, WA 98102

206-323-9178 v/TDD

1. Information and referral, advocacy, and coordination of services

Deaftec.USA

International Deaf/Tek Inc.

P.O. Box 2431

Framingham, MA 01701-0404

508-620-1777 v/TDD

508-879-0410 v/TDD

508-872-9406 v/TDD

1. International electronic mail network for the deaf and hard of hearing

Direct Link

P.O. Box 1036

Solvang, CA 93463

805-688-1603

1. Information and referral service for any disability related questions

District of Columbia Association of Deaf Citizens

P.O. Box 76641

Washington, DC 20013-6641

202-966-2031 TDD (Pres. Hubert Anderson)

202-362-1999 voice (Bernard Sussman)

1. DC affiliate of the National Association of the Deaf

The Dole Foundation for Employment of People with Disabilities

1819 H Street, NW

Suite 850

Washington, DC 20006-3603

202-457-0318 v/TDD

202-457-0473 FAX

1. Provide information referral services that promote employment opportunities for people with disabilities by linking businesses, service providers, government agencies, and individuals to the National Disability Employment Network.

Fairfax Resource Center for the Hearing Impaired (FRCHI)

2724 Dorr Avenue

Fairfax, VA 22031

703-560-1977 v/TDD

1. FRCHI programs and services provide information and referral, advocacy, meeting space coordination, and community education.

Gallaudet University

Assistive Devices Facilities

800 Florida Ave., NE

Washington, DC 20002

202-651-5328

1. Provide demonstrations and evaluations of auditory and non-auditory assistive technology for deaf and hard of hearing individuals
2. Videotape and workbook on assistive devices also available

Helen Keller National Center for Deaf-Blind Youths and Adults

111 Middle Neck Road
Sand Point, NY 11050
516-944-8900 v/TDD

1. National research and training center, support services and training to individuals, seminars for professionals throughout the country

The High-Tech Center for the Disabled of the California Community Colleges

1109 Ninth Street
Sacramento, CA 95814
916-322-4636

1. Information on higher education and computer access for individuals with disabilities

IBM National Support Center for Persons with Disabilities

IBM Corporation
P.O. Box 2150-H6R01
Atlanta, GA 30301-2150
800-426-2133 voice
800-284-9482 TDD

1. Information and referral service for persons with disabilities

International Center for the Disabled (ICD)

340 East 24th Street
New York, NY 10010
212-679-0100

1. Rehabilitation center

In Touch, Inc.

1111 Third Ave. S.
Suite 30
Minneapolis, MN 55404
612-342-2066 v/TDD

1. Deaf Blind Services

Job Accommodation Network (JAN)

West Virginia University
809 Allen Hall
P.O. Box 6122
Morgantown, WV 26506-6122
800-JAN-PCEH v/TDD

1. Assist employees and employers with work environment accommodations

Kentucky Assistive Technology Services (KATS)

Jan Weber, Director
427 Versailles Road
Frankfort, KY 40601
502-564-4655

1. Assistance and information for people with disabilities in the state of Kentucky

Kentucky Department for the Blind
Assistive Technology Services Branch
Keith Creasy
1900 Brownsboro Road
Louisville, KY 40206
502-893-0211

1. Provide training and equipment in assistive technology for persons who are blind
2. Consultation and evaluation
3. Demonstration center of computer technology used by people with visual impairments
4. Computer bulletin board system for users of assistive technology services and devices

Lions World Services for the Blind
2811 Fair Park Blvd
Little Rock, AR 72204
501-664-7100
formerly Arkansas Enterprises for the Blind

1. Rehabilitation center for the adult blind

Mainstream, Inc.
1030 15th Street, NW
Washington, DC 20005
202-898-1400 v/TDD

1. Job placement service for people with disabilities

Maryland Corporate Partnership
1100 N. Eutaw Street
Suite 205
Baltimore, MD 21201
301-333-5300

1. Single point of contact for information concerning hiring persons with disabilities in the State of Maryland

National Association of the Deaf
814 Thayer Avenue
Silver Spring, MD 20910
301-587-1788 voice
301-587-1789 TDD

1. National consumer organization

National Captioning Institute (NCI)
5203 Leesburg Pike
Suite 1500
Falls Church, VA 22041
703-998-2400

1. Provide captioning of videos or movies
2. Source of caption decoder equipment
3. Sell equipment needed to caption videos

The National Captioning Institute (NCI)

545 5th Ave.

Suite 1403

New York, NY 10017

212-557-7011

1. Provide captioning of videos or movies

National Easter Seal Society

70 East Lake Street

Chicago, IL 60601

312-726-6200

1. Provide information and resources for assistance for people with disabilities
2. Assistive technology project to provide discounts on the purchase of certain computers
3. Loan project to assist people with disabilities in buying equipment

National Federation of the Blind (NFB)

1800 Johnson St.

Baltimore, MD 21230

301-659-9314

1. Information resource for visually impaired individuals

National Information Center on Deafness (NICD)

Gallaudet University

800 Florida Ave., NE

Washington, DC 20002-3695

202-651-5051 voice

202-651-5052 TDD

1. Collect, develop, and disseminate information on deafness, hearing loss, and organizations and services for deaf and hard of hearing people

National Library Service for the Blind and Physically Handicapped

Library of Congress

1291 Taylor Street, NW

Washington, DC 20542

202-707-5100

1. Provide books in braille and on cassette tape for eligible individuals

National Multiple Sclerosis Society

205 East 42nd St.

New York, NY 10017

212-986-3240

800-624-8236

1. Information resource for people with multiple sclerosis

National Organization on Disability (NOD)

910 16th St., NW

Suite 600

Washington, DC 20006

202-293-5960

1. Information resource on topics relevant to people with disabilities
2. Publish a quarterly report on the organizations program activities and current disability trends

National Rehabilitation Information Center (NARIC)

8455 Colesville Road

Suite 935

Silver Spring, MD 20910

800-346-2742 v/TDD

301-588-9284 v/TDD

1. Resource for research and referral information center dealing with disability rehabilitation and related issues

Paralyzed Veterans of America

801 18th St., NW

Washington, DC 20006

202-872-1300

1. Provide information and assistance to paralyzed Veterans

Perkins Project with Industry

Perkins School for the Blind

175 N. Beacon Street

Watertown, MA 02172

617-924-3434

1. Client intake and job match
2. Research visual components for the task
3. Match up the equipment to the demands of the job
4. Try to keep costs to a minimum
5. On-site training of clients and follow-up
6. Test equipment and software

Project on the Handicapped in Science

American Association for the Advancement of Science

Contact: Virginia Stern

1333 H Street, NW

Washington, DC 20005

202-326-6672

1. Clearinghouse for information on science and technology education for students and professionals with disabilities

Recording for the Blind

20 Roszel Road

Princeton, NJ 08540

609-452-0606

1. Record educational books for print-handicapped individuals

RESNA: The Association for the Advancement of Rehabilitation Technology

1101 Connecticut Avenue, NW

Suite 700

Washington, DC 20036

202-857-1199

1. An interdisciplinary association for the advancement of rehabilitation and assistive technologies
2. Referral to service providers

Registry of Interpreters for the Deaf, Inc. (RID)

8719 Colesville Road

Suite 310

Silver Spring, MD 20910

301-608-0050 v/TDD

1. Listing of interpreter services nationwide
2. Registry of certified interpreters

Self Help for Hard of Hearing People (SHHH)

7800 Wisconsin Ave.

Bethesda, MD 20814

301-657-2248 voice

301-657-2249 TDD

1. Self help education and support group for hearing impaired individuals

The Storer Computer Access Center

Cleveland Society for the Blind

1909 East 101 Street

Cleveland, OH 44106

216-791-8118

1. Provides wide range of services for blind or visually impaired individuals

Telecommunications for the Deaf, Inc. (TDI)

8719 Colesville Road

Suite 300

Silver Spring, MD 20910

301-589-3006 TDD

301-589-3786 voice

1. Advocacy organization
2. Annually publishes the TDI International Telephone Directory of TDD numbers

Tele-consumer Hotline

1910 K Street NW, Suite 610

Washington, DC 20006

800-332-1124 v/TDD

202-223-4371 v/TDD

1. Consumer information group primarily dealing with telecommunications

**Trace Research and Development Center on Communications, Control
and Computer Access for Handicapped Individuals**

University of Wisconsin-Madison

S151 Waisman Center

1500 Highland Avenue

Madison, WI 53706

608-262-6966 voice

608-263-5408 TDD

1. Research and development center for computer access for people with disabilities
2. Database of product information and resources

United Cerebral Palsy Association (UCP)

Community Services Division

1552 K St., NW

Suite 1112

Washington, DC 20005

202-842-1266

800-872-5827

1. Technology services information and referral

Virginia Association for the Deaf (VAD)

P.O. Box 692
Merrifield, VA 22116

Vision Foundation Inc.

818 Mt. Auburn St.
Watertown, MA 02172
617-926-4232

800-852-3029 (MA only)

1. Information and referral on the availability of large print materials, aids, and appliances for people with low vision

Volunteers For Visually Handicapped (VVH)

8720 Georgia Ave.
Suite 210
Silver Spring, MD 20910
301-589-0894

1. Programs and services for blind and visually impaired individuals in the Washington D.C. metropolitan area

Volunteers for Medical Engineering (VME)

Contact: John Staehlin
c/o UMBC—ITC
5202 Westland Blvd
Baltimore, MD 21227
301-455-6395

1. Volunteers applying engineering to solutions or problems for persons with disabilities

Western Blind Rehabilitation Center

Computer Training and Evaluation Center
Veterans Administration Hospital
3801 Miranda Avenue
Palo Alto, CA 94304
415-493-5000 ext. 4363

1. Rehabilitation services for legally blind Veterans

World Institute on Disability (WID)

510 Sixteenth Street
Suite 100
Oakland, CA 94612
415-763-4100 v/TDD
415-763-4109 FAX

1. A public policy center dedicated to the elimination of handicappism through the promotion of independence, equity of opportunity, and full participation of people with disabilities

STATUTORY AND REGULATORY INFORMATION

APPENDIX F APPLICABLE PUBLIC LAWS

The contents of two laws specifically addressing the requirements for computer and telecommunications accessibility within the Federal government are included in this section. The laws are:

P.L. 99-506, Section 508 - an Act to extend and improve the Rehabilitation Act of 1973

P.L. 100-542 - Telecommunications Accessibility Enhancement Act of 1988

PUBLIC LAW 99-506 - OCTOBER 21, 1986

100 STAT. 1807
99th Congress

An Act

To extend and improve the Rehabilitation Act of 1973.

Section 603. ELECTRONIC EQUIPMENT ACCESSIBILITY.

(a) **ELECTRONIC EQUIPMENT ACCESSIBILITY.** - Title V of the Act is amended by inserting after section 507 the following new section:

“ELECTRONIC EQUIPMENT ACCESSIBILITY

“Section 508. (a) (1) The Secretary, through the National Institute on Disability and Rehabilitation Research and the Administrator of the General Services, in consultation with the electronics industry, shall develop and establish guidelines for electronic equipment accessibility designed to insure that handicapped individuals may use electronic office equipment with or without special peripherals.

“(2) The guidelines established pursuant to paragraph (1) shall be applicable with respect to electronic equipment, whether purchased or leased.

“(3) The initial guidelines shall be established not later than October 1, 1987, and shall be periodically revised as technologies advance or change.

“(b) Beginning after September 30, 1988, the Administrator of General Services shall adopt guidelines for electronic equipment accessibility established under subsection (a) for Federal procurement of electronic equipment. Each agency shall comply with the guidelines adopted under this subsection.

“(c) For the purpose of this section, the term ‘special peripherals’ means a special needs aid that provides access to electronic equipment that is otherwise inaccessible to a handicapped individual.”

“(b) **CONFORMING AMENDMENT.** - The table of contents of the Act is amended by inserting after item “Sec. 507.” the following new item:

“Sec. 508. Electronic equipment accessibility.”

PUBLIC LAW 100-542 - OCT. 28, 1988

102 STAT. 2721
100th Congress

An Act

To expand our national telecommunications system for the benefit of the hearing-impaired and speech-impaired populations, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Telecommunications Accessibility Enhancement Act of 1988".

SEC. 2. DEFINITIONS.

As used in this Act -

(1) The term "TDD" means a Telecommunications Device for the Deaf, a machine which employs graphic communications in the transmission of coded signals through the nationwide telecommunications system.

(2) The term "Federal agency" has the meaning given such term by section 3(b) of the Federal Property and Administrative Services Act of 1949 (40 U.S.C. 472(b)).

SEC. 3. FEDERAL TELECOMMUNICATIONS SYSTEM REQUIREMENTS.

(a) **ACCESSIBILITY OF TELECOMMUNICATIONS SYSTEMS.** - The Administrator of General Services, after consultation with the Architectural and Transportation Barriers Compliance Board, the Interagency Committee on Computer Support of Handicapped Employees, the Federal Communications Commission, and affected Federal agencies, shall, by regulation, take such actions in accordance with this section as may be necessary to assure that the Federal telecommunications system is fully accessible to hearing-impaired and speech-impaired individuals, including Federal employees, for communications with and within Federal agencies.

(b) **SPECIFIC REQUIREMENT.** - In carrying out subsection (a), the Administrator shall-

(1) provide for the continuation of the existing Federal relay system for users of TDD's;

(2) within 90 days after the date of enactment of this Act, expand such relay system by employing at least one additional operator;

(3) within 180 days after such date of enactment-

(A) conduct, as part of the rulemaking proceeding required by subsection (a), an analysis of modifications to the Federal telecommunications system that the Administrator, in his discretion, determines to be necessary to achieve the objectives of subsection (a); and

(B) submit a report on the results of such analysis to each House of the Congress;

(4) within 180 days after completion of such analysis, prescribe the regulations required by subsection (a);

(5) assemble, publish, and maintain a directory of TDD and other devices used by Federal agencies to comply with such regulations, and publish, in Federal agency directories, access numbers of TDD's and such other devices; and

(6) after consultation with the Architectural and Transportation Barriers Compliance Board, adopt the design of a standard logo to signify the presence of a TDD or other device used by a Federal agency to comply with such regulations.

(c) CONGRESSIONAL OVERSIGHT. - The Administrator shall not prescribe the regulation required by subsection (a) before the end of the 90-day period beginning on the date the Administrator submits the report required by subsection (b)(3)(B).

SEC. 4. ADDITIONAL REQUIREMENTS.

(a) SUPPORT FOR RESEARCH. - The Administrator shall, in consultation with the Federal Communications Commission, seek to promote research by Federal agencies, State agencies, and private entities to reduce the cost and improve the capabilities of telecommunications devices and systems that provide accessibility to hearing-impaired and speech-impaired individuals.

(b) PLANNING TO ASSIMILATE TECHNOLOGICAL DEVELOPMENTS. - The Administrator, in planning future alterations to and modifications of the Federal telecommunications system, shall take into account results of the analysis required by section 3(b)(3) and any technological improvements in telecommunications devices and systems that provide accessibility to hearing-impaired and speech-impaired individuals.

SEC. 5. INQUIRY REGARDING INTERSTATE TDD RELAY SYSTEM.

The Federal Communications Commission shall, within 9 months after the date of enactment of this Act, complete its existing inquiry regarding an interstate relay system for users of TDD's.

SEC. 6. TDD INSTALLATION BY CONGRESS.

As soon as practicable, each House of the Congress shall establish a policy under which Members of the House of Representatives and the Senate, as the case may be, may obtain TDD's for use in communicating with hearing-impaired and speech-impaired individuals, and for the use of hearing-impaired and speech-impaired employees.

STATUTORY AND REGULATORY INFORMATION

APPENDIX G

FEDERAL INFORMATION RESOURCES MANAGEMENT REGULATIONS (FIRMR) EXCERPTS

Selected excerpts from the new FIRMR, 41 CFR Chapter 201, related to access to information technology by people with disabilities.

This regulation uses the umbrella term, Federal Information Processing (FIP) resources, to identify automatic data processing and telecommunications resources that are subject to GSA's exclusive procurement authority.

All text that is both bold and enclosed in square brackets represents emphasis that is our own. All text that is in bold without also being enclosed in square brackets reflects the printing emphasis in the original document.

For readers unfamiliar with the FIRMR, a brief excerpt concerning FIRMR applicability and scope has been included on the last page of this section.

The General Services Administration is now offering a subscription to the FIRMR and the Federal Acquisition Regulation (FAR) on CD-ROM. Each quarterly edition will also include other information resources management related publications. The CD-ROM disc and printed copies of the FIRMR and FAR are available from:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20401
202-783-3238

For general information (not ordering information) about the FIRMR CD-ROM contact:

Stewart Randall and Don Chiarella
IRMS Regulations Branch
General Services Administration
18th & F Streets, N.W.
Room 3224
Washington, D.C. 20405
Telephone 202-501-3194 or FTS 8-241-3194

APPENDIX G

FIRMR Excerpts

SUBCHAPTER C - MANAGEMENT AND USE OF FEDERAL INFORMATION PROCESSING (FIP) RESOURCES

201-17.001 Predominant Considerations

The policies prescribed in subchapter C are designed to promote success in the acquisition, management, and use of Federal Information Processing (FIP) resources by emphasizing the importance for agencies to-

- (a) Develop and annually revise, in coordination with budget activities, a 5-year plan to meet the agency's information technology needs;
- (b) Base requirements for FIP resources on agency mission, programs, and related information needs;
- (c) Consider the potential for deploying projected technological advances of FIP resources to enhance future performance of programs and operations in support of the agency mission;
- (d) Acquire FIP resources that result in the most advantageous alternative to the Government after consideration of-
 - (1) Sharing and reuse of existing FIP resources,
 - (2) Use of General Services Administration (GSA) services, and
 - (3) Acquisition of agency resources by contracting;
- (e) Establish responsibility through a designated senior official (DSO) when contracting for FIP resources under a delegation of GSA's exclusive procurement authority;
- (f) Assign an individual (such as a Trail Boss) responsible for coordinating programmatic, technical, and contracting functions when acquiring FIP resources;
- (g) Achieve full and open competition to the maximum extent practicable;
- (h) Acquire resources that comply with Federal standards;
- (i) Provide for security of resources, protection of information about individuals, continuity of operations, and national security and emergency preparedness;
- [(j) Provide individuals with disabilities (employees and others who use the agency's electronic office equipment) equivalent access to electronic office equipment;**
- (k) Provide telecommunications access to hearing and speech impaired individuals;]**
- (l) Review and evaluate existing resources and related management and acquisition activities on an ongoing basis; and
- (m) Replace outdated resources that are no longer the most advantageous alternative for satisfying the agency's requirements.

PART 201-18 - PLANNING AND BUDGETING

201-18.001 General.

(a) 44 U.S.C. 3506(c)(8) (the Paperwork Reduction Reauthorization Act of 1986) requires executive agencies to develop and annually revise a 5-year plan for meeting the agency's information technology needs.

(b) Office of Management and Budget (OMB) Circular No. A-130 requires executive agencies to establish multiyear strategic planning processes for acquiring and operating information technology that meet program and mission needs, reflect budget constraints, and form the basis for their budget requests.

(c) OMB Circular No. A-11 requires executive agencies to prepare and submit annual agency-wide "Major Information Technology Acquisition Plans."

(d) The Computer Security Act of 1987 (Pub. L. 100-235, 40 U.S.C. 759 Note) requires agencies to identify each FIP system that contains sensitive information and prepare a plan for the security and privacy of each such system.

[(e) Section 508 of the Rehabilitation Act Amendments of 1986 (Public Law 99-506) requires the Federal Government to adopt guidelines for electronic equipment accessibility designed to ensure that individuals with disabilities may use electronic office equipment. This Act requires that agencies comply with such guidelines. FIRMIR Bulletin C-8 provides guidance on planning for the FIP resources accommodation needs of individuals with disabilities.]

(f) The General Services Administration (GSA) helps agencies with their IRM planning by issuing handbooks, bulletins, and other guidance documents. IRM planning services are available, on a cost-reimbursable basis, through GSA's Office of Technical Assistance.

(g) GSA reviews agency IRM plans and the planning process as part of the Information Resources Procurement and Management Review Program described in part 201-22. Agencies' IRM planning is a factor in delegating procurement authority for FIP resources.

201-18.002 Policies.

(a) Agencies shall develop a 5-year plan for meeting the agency's information technology needs. This plan shall-

- (1) Reflect current and future program and mission needs;
- (2) Consider the potential for deploying projected technological advances of FIP resources to enhance future performance of programs and operations in support of the agency mission;
- (3) Consider FIP resources needed to meet the national security and emergency preparedness needs of the agency;
- (4) Reflect budget constraints;
- (5) Form the basis for the agency's budget requests to OMB;
- (6) Serve as the foundation for requirements analyses; and
- (7) Be updated as needed, but at least annually.

(b) Agencies shall ensure that the IRM planning process includes the participation of each of the agency's program areas, as well as those organizations responsible for IRM (including records management), contracting, and budget preparation.

[(c) Agencies shall adopt electronic equipment accessibility guidelines similar to those described in FIRMIR Bulletin C-8 and C-10 in their planning process.]

(d) Agencies shall ensure that acquisition of FIP resources is in accordance with the updated 5-year plan.

PART 201-20 - ACQUISITION

201-20.103-7 Accessibility requirements for individuals with disabilities.

[(a) Agencies shall provide equivalent access to electronic office equipment for individuals with disabilities (employees and others who use the agency's electronic office equipment) to the extent both present and future needs for such access are determined by the agency.

(b) Agencies shall provide telecommunications access to hearing and speech-impaired individuals to the extent both present and future needs for such access are identified in the requirements analysis. Telecommunications access for hearing and speech impaired individuals shall include education and training on the services and features of the GSA relay service.

(1) Agencies shall publish access numbers for TDD and TDD-related devices in telephone directories and provide such agency numbers to GSA for inclusion in the Federal TDD Directory.

(2) Agencies shall display in their buildings or offices the standard logo specified by GSA for indicating the presence of TDD or TDD-related equipment.

(c) Agencies shall consider the guidance contained in FIRMR Bulletins C-8 and C-10 on the subject of accessibility requirements for individuals with disabilities.]

Due to the importance of the timely provision of equipment for persons with disabilities, the FIRMR contains an exception to the policy on deviations from the FIRMR as follows:

201-3.401 Policy.

Deviations from the FIRMR shall be kept to a minimum consistent with the specific needs and statutory authorities of each agency. Individual and class deviations may be authorized by GSA's Commissioner, Information Resources Management Service, or the officials designated by the Commissioner for this purpose.

201-3.402 Exception.

[(a) For an acquisition limited solely to providing electronic office equipment accessibility for employees with disabilities, an individual deviation from the FIRMR may be authorized by the agency's DSO or the DSO's authorized representative. This deviation authority is limited to those FIRMR provisions that-

- (1) Are not specifically prescribed by statute or executive order;**
- (2) Do not change the level of procurement authority delegated from GSA to the agency; and**
- (3) Impede or obstruct the acquisition of technology for employees with disabilities.**

(b) A deviation authorized under paragraph (a) of this section may be granted immediately upon a written determination by the agency, identifying those FIRMR provisions impeding or obstructing the acquisition of technology for employees with disabilities. Agencies shall promptly provide a copy of each determination and deviation to: General Services Administration, Policy and Regulations Division (KMP), 18th & F Streets, NW., Washington, DC 20405.]

201-3.403 Procedures.

(a) The agency head or designee shall prescribe an agency procedure for the control of requests for deviations from the FIRMR. The procedure should include coordination with the agency DSO as appropriate. Agencies shall provide a copy of this procedure upon request to the address in 201-3.402(b).

(b) Each request shall explain the nature of and the reasons for the deviation.

(c) Agencies shall forward requests for deviations to the address in 201-3.402(b).

For readers unfamiliar with the FIRMR, the following excerpt concerning FIRMR applicability follows:

201-1.000 Scope of part.

This part prescribes the extent to which the Federal Information Resources Management Regulation (FIRMR) applies to the creation, maintenance, and use of Federal records and the acquisition, management, and use of Federal information processing (FIP) resources by Federal agencies. It also discusses the basic authority for the FIRMR.

201-1.002-1 Policy.

The FIRMR applies to-

- (a) The acquisition, management, and use of FIP resources by Federal agencies.
- (b) Any Federal agency solicitation or contract when either paragraph (b)(1), (b)(2), or (b)(3) applies:
 - (1) The solicitation or contract requires the delivery of FIP resources for use by a Federal agency or users designated by the agency.
 - (2) The solicitation or contract explicitly requires the use by the contractor of FIP resources that are not incidental to the performance of the contract. FIP resources acquired by a contractor are incidental to the performance of a contract when:
 - (i) None of the principal tasks of the contract depend directly on the use of the FIP resources; or
 - (ii) The requirements of the contract do not have the effect of substantially restricting the contractor's discretion in the acquisition and management of FIP resources, whether the use of FIP resources is or is not specifically stated in the contract.
 - (3) The solicitation or contract requires the performance of a service or the furnishing of a product that is performed or produced making significant use of FIP resources that are not incidental to the performance of the contract. Significant use of FIP resources means:
 - (i) The service or product of the contract could not reasonably be produced or performed without the use of FIP resources; and
 - (ii) The dollar value of FIP resources expended by the contractor to perform the service or furnish the product is expected to exceed \$500,000 or 20 percent of the estimated cost of the contract, whichever amount is lower.
- (c) The creation, maintenance, and use of records by Federal agencies.

STATUTORY AND REGULATORY INFORMATION

APPENDIX H ACCESS RELATED FIRMR BULLETINS

Two FIRMR Bulletins specifically address accommodation:

FIRMR Bulletin C-8: Information accessibility for employees with disabilities

FIRMR Bulletin C-10: Telecommunications accessibility for hearing and speech impaired individuals

Republication of these bulletins specifically regarding accommodation is in no way meant to imply that other sections of the FIRMR or other bulletins may be dismissed or ignored. Their inclusion in this document is only intended to make them easier to find and use as a reference.

For more information on the FIRMR and FIRMR Bulletins in general, or to obtain a copy of the FIRMR, contact the GSA Policy and Regulations Division:

General Services Administration
Code: KMPR
18th & F St., NW
Washington, DC 20405
202-501-3194
FTS 241-3194

GENERAL SERVICES ADMINISTRATION
Washington, DC 20405

FIRMR BULLETIN C-8

TO: Heads of Federal agencies

SUBJECT: Information accessibility for employees with disabilities

1. **Purpose.** This bulletin provides information and guidance regarding agencies' responsibility to meet the special Federal information processing (FIP) resource accommodation needs of individuals with disabilities.
2. **Expiration date.** This bulletin contains information of a continuing nature and will remain in effect until canceled.
3. **Contents.**

Topic	Paragraph
Related material	4
Information and assistance	5
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Acronyms	7
Public Law 99-506	8
COCA	9
General	10
Agency responsibilities	11
COCA services	12
Cancellation	13
Functional Specifications	Attachment A

4. Related material.

- a. FIRMR 201-18.001
- b. FIRMR 201-20.103-7
- c. GSA handbook, - "Managing End User Computing for Users with Disabilities"
- d. FIRMR Bulletin C-10 - "Telecommunications Accessibility for Hearing and Speech Impaired Individuals"

5. Information and assistance.

a. Technical

General Services Administration
Clearinghouse on Computer Accommodation (KGDO)
18th and F Streets, NW
Washington, DC 20405

Voice or TDD: FTS 241-4906 or 202-501-4906.

b. Policy

General Services Administration
Regulations Branch (KMPP)
18th and F Streets, NW
Washington, DC 20405

Telephone: FTS 241-3194 or (202) 501-3194.

6. Definitions.

“Computer accommodation” means the acquisition or modification of FIP resources to minimize the functional limitations of employees in order to promote productivity and to ensure access to work-related information resources.

“Information accessibility” means the application or configuration of FIP resources in a manner that accommodates the functional limitations of individuals with disabilities so as to promote productivity and provide access to work-related or public information resources.

“Handicapped individuals” or “individuals with disabilities” means qualified individuals with impairments, as cited in 29 CFR 1613.702(f), who can benefit from electronic office equipment accessibility.

“Special peripheral” is defined in Section 508 of Pub. L. 99-506 as “a special needs aid that provides access to electronic equipment that is otherwise inaccessible to a handicapped individual.”

7. Acronyms.

COCA	Clearinghouse on Computer Accommodation
DSO	Designated Senior Official
FIP	Federal Information Processing

8. **Public Law 99-506.** In 1986, Congress reauthorized the Rehabilitation Act of 1973, as amended (Pub. L. 99-506, 29 U.S.C. 794d). Section 508, as incorporated into the Act, mandates that guidelines be established to ensure that handicapped individuals may use electronic office equipment with or without special peripherals and that agencies comply with these guidelines in acquiring electronic equipment.

9. **COCA.** In 1985, GSA's Information Resources Management Service (IRMS) established an information resource center called COCA, to assist Federal agencies in providing information accessibility to individuals with disabilities.

10. General.

a. **Accessibility.** Workstations for Federal employees with sensory, cognitive, or mobility impairments may be equipped with special peripherals or software that provide access to computer technology, primarily microcomputers. This accessibility is a necessary link that enables handicapped employees to function efficiently and effectively on the job.

b. **Equivalent access.** Disabled individuals and non-disabled individuals should be provided equivalent access to electronic office equipment. FIP resources, particularly microcomputers, provide enhancement features, such as text enlarging and speech input and output, allowing disabled individuals to accomplish tasks previously impossible for them. For example, the inherent flexibility of microcomputers permits their adaptation to meet the specific needs of disabled individuals through the use of braille printers, spoken screen review, and keyboard replacement devices.

c. **Functional specifications.** Attachment A presents specifications that are organized by functional requirement into three categories: input, output and documentation. These specifications reflect the major areas that need to be considered during planning and acquisition.

d. **Accessibility alternatives.** Accessibility solutions range from third-party hardware and software add-ons, such as "layered" solutions, to hardware "built-ins" and operating system enhancements. Agencies should attempt to provide the same equipment to all of their employees, whether or not they are disabled. For that reason, "built-in" accessibility solutions are preferable to "layered" solutions. Layering involves adding layers of software between the end-user and the operating system or application software. While this often complex solution may have advantages, such as increased function and performance, it can also have serious disadvantages. Disadvantages include increased costs, greater difficulty in maintaining software updates at the operating system level, and increased costs to train employees to utilize dissimilar equipment at different sites within the agency. For these reasons, layering should be selected as an accessibility solution only after careful analysis of its merits relative to that of "built-in" solutions.

11. **Agency responsibilities.**

a. **DSO.** The agency DSO for Federal information processing resources is the individual primarily responsible for ensuring electronic office equipment accessibility for current or prospective employees with disabilities. This responsibility also includes providing access to Federal public information resources for individuals with disabilities. The DSO or an authorized representative should monitor progress toward achieving electronic equipment accessibility goals. The Federal Information Resources Management Review Program is one means of monitoring this progress.

b. **FIRMR requirement.** The FIRMR requires that agencies shall provide FIP resource accessibility to individuals with disabilities and that agencies consider the guidance contained in FIRMR bulletins concerning this subject. This action is essential to enable handicapped employees to perform as productive employees.

c. **Coordinated effort required.** Agency management and technical personnel need to work closely with contracting officials when contracting for new or additional FIP resources to ensure accessibility to FIP resources by individuals with disabilities. Acquisition, management and technical personnel should:

(1) Provide to contracting officials, for inclusion in the solicitation, an inventory and description of any accommodation hardware or software currently being used with the resources scheduled for replacement or modification.

(2) Specify the need for a plan from prospective offerors that ensures functionally equivalent or better access to and use of proposed replacement resources.

(3) Specify the need for technical assistance in resolving problems in providing computer accommodation resources.

(4) Specify the need for the Government to be permitted to install additional accommodation devices, peripherals, or software that may be acquired from a third party, without voiding the maintenance and warranty agreements of the contract, provided such devices or peripherals conform to the electrical specifications of the system and can be connected through standard expansion slots or peripheral ports.

(5) Develop functional specifications to meet the access needs of individuals with disabilities (see Attachment A).

d. **Consult GSA handbook.** Agency managers determining accommodation strategies for FIP resource accessibility should consult the GSA handbook "Managing End User Computing for Users with Disabilities" for guidance. This handbook is available from COCA.

12. **COCA services.** Upon request for assistance, COCA will:

a. Respond to requests for general information on frequently used hardware/software and workstation furnishings to accommodate individuals with disabilities.

b. Assist agencies with researching specific hardware, software and communications problems associated with an employee's computer accommodation requirements.

c. Provide on-going consultative/technical assistance to agencies during planning, acquisition, and installation of individual and agency wide office automation systems; and

d. Conduct workshops on computer accommodation procedures.

13. **Cancellation.** FIRMR Bulletins 42, 48, and 56 are canceled.

Original signed by:
Thomas J. Buckholtz
Commissioner
Information Resources
Management Service

FUNCTIONAL SPECIFICATIONS (Attachment A)

These specifications are organized by functional requirement into three categories: input, output and documentation. This organization reflects the major areas that need to be considered during planning and acquisition. The capabilities set forth in these specifications are currently available from industry in various degrees of functional adequacy, except for access to screen memory for translating bit-mapped graphic images.

GSA will update this attachment to keep pace with technological advances and to address other types of FIP resources.

1. **Input alternatives.** Access problems concerning the input interface to a microcomputer differ according to the type and severity of an employee's functional limitation. Some users with disabilities are capable of using a keyboard, if it can be modified slightly. Others require an alternative input strategy. The following is an overview of common input alternatives and other input functional requirements that should be considered:

a. **Multiple simultaneous operation.** Microcomputers have many commonly used functions that require simultaneous striking of multiple keys or buttons. Sequential activation control provides an alternative method of operation by enabling a user to depress keys or buttons one at a time to execute the same function.

b. **Input redundancy.** Some programs require a "mouse" or other fine motor control device for input. Some users with motor disabilities cannot operate these devices. An input redundancy feature permits the functions of these devices to be performed by the keyboard or other suitable alternative such as voice input.

c. **Alternative input devices.** The capability to connect an alternative input device can be made available to a user who is not able to use a modified standard keyboard. This feature supplements the keyboard and any other standard input system used. The alternative input capability consists of a port (serial, parallel, etc.) or connection capability allowing an accommodation aid to be connected to the system to augment or replace the keyboard. For example, an alternative input device, such as a switch, eye scan, or headtracking system, may be customized to provide the most effective method of input for a user while supporting transparent hardware emulation for standard input devices, such as the keyboard and the mouse.

d. **Key repeat.** A typical microcomputer generates repetitions of a character if the key for that character remains depressed. This is a problem for users without sufficient motor control. A key repeat feature can give a user control over the repeat start time and rate by allowing the timing parameters to be extended or the repeat function to be turned off.

e. **Toggle key status control.** Microcomputer toggle keys provide visual indications of whether they are on or off. A toggle key status feature provides an alternative, non-visual means of showing the on or off status of a toggle key.

f. **Keyboard orientation aids.** To orient a visually impaired user to a particular keyboard, a set of tactile overlays should be available to identify the most important keys. The tactile overlays can be in the form of keycap replacements or transparent sticky tape with unique symbols to identify the various keys.

g. **Keyguards.** To assist a motor-disabled user, a keyguard should be available to stabilize movements and help ensure that the correct keys are depressed. A keyguard is a keyboard template with holes corresponding to the location of the keys.

2. **Output alternatives.** Some users with disabilities need an alternative output to be able to functionally use FIP resources. The following is an overview of common output alternatives, and other output functional requirements, that should be considered:

a. **Auditory output.** The auditory output capability on current microcomputers is sufficient to beep and play music. However, some users with disabilities may require a speech capability. A speech synthesizer is required to generate speech on today's computers. The capability to support a speech synthesizer should continue to be available in future generations of computers, or this capability may be internalized through an upgrade of the computer's internal speaker. The speech capability should include user-adjustable volume control and a headset jack.

b. **Information redundancy.** Currently, several programs activate a speaker on the microcomputer to provide information to the user. Some programs do not have the capability to present this information visually to the hearing-impaired user. An information redundancy feature presents a visual equivalent of the auditory information provided.

c. **Monitor display.** The requirement to enhance text size, reproduce text orally or in braille, or modify display characteristics is crucial for some users with visual disabilities. To ensure that this access continues, the following capabilities are required:

(1) **Large print display.** There should be a means for enlarging a portion of the screen for a low-vision user. This process uses a window or similar mechanism allowing magnification to be controlled by a user. A user can invoke the large-print display capability from the keyboard or control pad for use in conjunction with any work-related applications software. If applications software includes graphics, enlargement of graphic displays should also be available.

(2) **Access to visually displayed information.** The capability to access the screen is necessary to support the speech or braille output requirement of many blind users. Currently, blind users are able to select and review the spoken or braille equivalent of text from any portion of the screen while using standard applications software. Third-party vendors should have access to the screen contents in a manner that can be translated and directed to any internal speech chip, a speech synthesizer on a serial or parallel port, or a braille display device. Information presented pictorially also needs to be available in such a manner that, as software sophistication improves, it may eventually be translated using alternative display systems.

(3) **Color presentation.** When colors must be distinguished in order to understand information on the display, color-blind end users should be provided with a means of selecting the colors to be displayed.

3. **Documentation.** Access to documentation for computer technology in a usable format should be provided for Federal employees with disabilities. Braille, large print, or ASCII disk equivalents of standard manuals are options to be considered.

GENERAL SERVICES ADMINISTRATION
Washington, DC 20405

FIRMR BULLETIN C-10

TO: Heads of Federal agencies

SUBJECT: Telecommunications accessibility for hearing and speech impaired individuals

1. **Purpose.** This bulletin provides guidelines for acquiring products and services that provide telecommunications accessibility for hearing and speech impaired individuals for communication with and within Federal agencies. This bulletin also provides general information regarding responsibilities for accommodating the needs of those with hearing and speech impairments.

2. **Expiration date.** This bulletin contains information of a continuing nature and will remain in effect until canceled.

3. Contents.

Topic	Paragraph
Related material	4
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GSA responsibilities and actions	10
Agency responsibilities	11
Cancellation	12
Federal Information Relay Service (FIRS)	Attachment A
Federal Telecommunications Devices for the Deaf (TDD) Directory	Attachment B
Agency Telecommunications Accessibility Planning	Attachment C

4. Related material.

- a. FIRMR 201-18.002
- b. FIRMR 201-20.103-7
- c. FIRMR Bulletin C-8

5. Information and assistance.

a. General inquiries about the contents of this bulletin or information concerning updates should be directed to:

General Services Administration
Regulations Branch (KMPR)
18th and F Streets, NW
Washington, DC 20405

Telephone: (202) 501-3194 or FTS 241-3194 (v).
(202) 501-0657 or FTS 241-0657 (tdd).

b. For technical advice and assistance regarding accommodation strategies for employees with disabilities, contact:

General Services Administration
Clearinghouse on Computer Accommodation
18th and F Streets, NW
Washington, DC 20405

Telephone: (202) 501-4906 or FTS 241-4906 (v/tdd).

c. The FIRS staff may be contacted regarding information on FIRS or the Federal TDD Directory at:

General Services Administration
Federal Information Relay Service (FIRS)
National Capital Region
7th and D Streets, SW
Washington, DC 20407

Telephone: (202) 708-6100 or FTS 458-6100 (v/tdd).

6. Acronyms.

ATBCB	Architectural and Transportation Barriers Compliance Board
COAT	Council on Accessibility Technology
COCA	Clearinghouse on Computer Accommodation
FIRS	Federal Information Relay Service
Pub. L.	Public Law
TDD	Telecommunications Device for the Deaf

7. Definition.

“Information accessibility” means the application or configuration of FIP resources in a manner that accommodates the functional limitations of individuals with disabilities so as to promote productivity and provide access to work-related or public information resources.

8. Background. The Telecommunications Accessibility Enhancement Act of 1988 (Pub. L. 100-542, 102 Stat. 2721) charged the General Services Administration (GSA) with assuring that the Federal telecommunications system be fully accessible to hearing and speech impaired individuals. Included among the provisions of this law is the requirement that GSA prescribe regulations to help assure such accessibility. In consultation with COAT, GSA has developed these guidelines as well as related regulatory provisions in the FIRMR to comply with this statutory mandate. This bulletin will be revised periodically to keep pace with technological advancements and as dictated by agency compliance with FIRMR policies and procedures.

9. General.

a. Individuals with hearing and speech impairments should be provided access to Federal telecommunications services and facilities. Technological advances, such as the TDD, make this possible. A TDD is a machine that uses typed input and output, usually with a visual text display, to enable individuals with hearing or speech impairments to communicate over a telecommunications network.

b. Technological advances for non-disabled individuals may have an even greater long-term effect on improving telecommunications accessibility for those with hearing and speech impairments. Such advances include electronic mail; facsimile; teleconferencing; LAN-based video imaging; text-based information services and messaging; and remote, real-time transcription/translation capabilities. Many of these services are available to agencies through FTS2000, GSA's long-distance telecommunications service. GSA's TDD relay service will also improve the ability of those with hearing and speech impairments to access Federal agencies. The flexibility inherent in these new telecommunications capabilities makes it possible to accommodate the special requirements of speech and hearing impaired individuals.

10. GSA responsibilities and actions.

a. In accordance with Pub. L. 100-542, GSA is required to:

(1) Assume responsibility for the operation of the pilot Federal telecommunications relay system operated by the Department of the Treasury and the Architectural and Transportation Barriers Compliance Board (ATBCB). Attachment A contains information on this system.

(2) Assemble, publish, and maintain a directory of TDD and other devices used by Federal agencies and publish access numbers for TDD's and other devices in Federal telephone directories. Attachment B contains information on the Federal TDD Directory.

(3) In consultation with the ATBCB, adopt the design of a standard logo to indicate the presence of TDD equipment in Federal buildings.

(4) Jointly with the FCC, promote research to reduce the cost and improve the capabilities of equipment for providing telecommunications accessibility for those with hearing and speech impairments.

(5) Consider technological improvements in telecommunications accessibility devices when planning future alterations and modifications to the Federal telecommunications system.

b. GSA solicitations for local telecommunications services or equipment will include specifications that require vendors to provide services or equipment to ensure accessibility for hearing and speech impaired individuals.

c. GSA's COCA staff will assist Federal agencies in identifying strategies to accommodate the telecommunications needs of their employees with disabilities.

11. Agency responsibilities. Agencies are responsible for:

a. Assessing telecommunications accessibility for individuals with hearing and speech impairments and developing specifications for solicitations. Attachment C provides guidance on how to fulfill these responsibilities.

b. Publishing access numbers for TDD and TDD-related devices in agency telephone directories and providing such numbers to GSA for inclusion in the Federal TDD Directory in accordance with the procedures in Attachment B of this bulletin.

c. Displaying in their buildings or offices the standard logo specified by GSA for indicating the presence of TDD or TDD-related equipment. In accordance with the Federal Acquisition Regulation, Part 8, the mandatory source of supply for standard logo signs is UNICOR, Federal Prison Industries, Inc. (FPI). Prior approval from FPI is required before using any other source of supply. Purchase Orders should be submitted to: UNICOR, Federal Prison Industries, Inc. 320 First Street, NW., Washington, DC 20534. (202) 724-8239.

12. Cancellation. FIRMR Bulletin 63 is canceled.

Original signed by:
Thomas J. Buckholtz
Commissioner
Information Resources
Management Service

FEDERAL INFORMATION RELAY SERVICE (FIRS)

(Attachment A)

1. **Background.** In 1986, the Federal TDD Relay Exchange Service was initiated as a pilot project of the ATBCB and the Department of the Treasury. Pub. L. 100-542 required that GSA assume responsibility for this pilot relay service. GSA began operation of its own relay system, called FIRS, on March 20, 1989. GSA has since expanded its relay system by adding additional operators and nationwide toll-free (800) service to allow individuals with hearing and speech impairments to communicate with and within the Federal Government.

2. **Description of service.** FIRS allows communication between hearing and non-hearing individuals through a GSA operator relaying messages between the two parties. The GSA operator uses a computer that is configured to accept incoming TDD calls to converse with hearing or speech impaired individuals and a telephone to converse with hearing individuals. At least one of the individuals whose message is being relayed must be conducting official business of the Federal Government. Hearing individuals may also originate calls over FIRS. The relay's operating hours are from 8 a.m. to 7 p.m. EST, Monday through Friday, except on Federal holidays. The local number for the TDD service is (202) 708-9300 (v/tdd). The nationwide number is (800) 877-8339 (v/tdd).

3. **Agency responsibilities.** Users of FIRS must assume certain responsibilities in order to assure the most efficient operation of the system. Future revisions of this bulletin and a brochure on the use of FIRS will explain these responsibilities.

4. **Information and assistance.** Information and assistance regarding the FIRS or how agencies might establish their own TDD relay systems should be addressed to:

General Services Administration
Federal Information Relay Service
National Capital Region
7th and D Streets, SW
Washington, DC 20407

Telephone (202) 708-6100 or FTS 458-6100 (v/tdd).

FEDERAL TDD DIRECTORY (Attachment B)

1. **Purpose.** The purpose of the Federal TDD directory is to provide a single source where access numbers can be found for all Federal agency TDD and TDD-related equipment.
2. **Description.** The directory will be published by GSA on a regular basis and will provide Federal agency TDD accessible numbers. It will also provide information on GSA's FIRS and other services provided for hearing and speech impaired individuals.
3. **GSA Responsibilities.** GSA will maintain and update the TDD directory. The directory will be made available electronically on a regular basis and periodically in paper form.
4. **Agency Responsibilities.** Agencies must:
 - a. Provide accurate and current TDD numbers to GSA to the address listed below on a regular basis for publishing in the Federal TDD directory. This may be facilitated by establishing an agency contact point for TDD number collection.
 - b. Publish TDD accessible numbers and other appropriate information in agency telephone directories.
5. **Information and assistance.** Information and assistance on issues dealing with the Federal TDD directory should be addressed to:

General Services Administration
Federal Information Relay Service
National Capital Region
7th and D Streets, SW
Washington, DC 20407

Telephone: (202) 708-6100 or FTS 458-6100 (v/tdd).

AGENCY TELECOMMUNICATIONS ACCESSIBILITY PLANNING (Attachment C)

1. **Assessing telecommunications accessibility.** Agency managers should be aware of the many different solutions for providing telecommunications accessibility for individuals with speech or hearing impairments. Accommodation needs vary by individual, communication situation, and functional job requirements. Interviews should be conducted with individual employees to identify and accommodate the employee's needs relative to one-on-one communications, telephone usage, travel, meetings, and training. Surveys may also be useful to determine how best to accommodate those with hearing and speech impairments who may need to communicate with the agency. The whole range of telecommunications and computer-based capabilities should be explored as both technologies are playing an increasingly important role as accommodation solutions for individuals in a wide variety of telecommunication situations. Agencies must also follow the applicable policies and procedures of FIRMR paragraphs 201-18.002(c) and 201-20.103-7(c).

2. **Accessibility solutions.** After a requirements analysis encompassing the needs of speech and hearing impaired individuals has been conducted, agencies should incorporate functional performance specifications into solicitations or take other action to satisfy identified requirements. Following are accessibility solutions that agencies may consider in their planning. GSA local service telecommunications contracts will contain specifications regarding TDD and TDD-related equipment and may also be referred to for guidance in this area.

a. **Public information services.** Individuals with speech and hearing impairments must be able to access agency information services. In the current environment, this requirement can be met with a TDD accessible telephone line and related end-user equipment (TDD or a microcomputer configured to support TDD access) at each office that has been established to respond to public inquiries. If the TDD number is not a dedicated line, the incoming call sequencing system must be able to acknowledge a TDD call, send a wait message to the caller, and accept the call in sequence. In addition, as agencies develop proposals for improving information services to the public, agency plans should include the telecommunications requirements of persons with speech and hearing impairments. For example, if an automated information service with prerecorded voice messages is being considered, plans must be made for providing the same information in a text messaging mode that would support equivalent information access by TDD users. This design flexibility would provide for access by hearing impaired individuals and would also benefit hearing individuals who prefer to access information visually through microcomputers rather than voice messages on the telephone. The text mode (electronic bulletin board) should be accessible through a dedicated line unless a single-line configuration is available that can distinguish between a human voice or machine-based inquiry and respond appropriately with audio or text response.

b. **Amplification.**

(1) A hearing impaired employee will usually know whether telephone amplification is beneficial and what type is most useful. Many hearing aids have a telephone setting that can amplify sound, if an appropriate handset is used. Vendors can provide a handset with the appropriate magnetic field intensity to be compatible with this type of hearing aid setting. Battery powered, portable handset amplifiers are also available for calls made at other phones and on travel. The amplifier can slip over the handset of most telephones. Speech impaired individuals may benefit from telephone handsets that amplify the volume of their voice.

(2) Portable telephone adapters can increase the magnetic field intensity of telephones that do not otherwise emit sufficient magnetic leakage to be picked up by the telephone switch of the hearing aid.

(3) The Hearing Aid Compatibility Act of 1988 (Pub. L. 100-394) requires that, with certain exceptions, all telephones, whether manufactured for use in the United States, or imported, "provide internal means for effective use with hearing aids that are designed to be compatible with telephones which meet established technical standards for hearing aid compatibility."

c. **Telecommunications devices for the deaf.** For an employee who cannot use an amplified telephone, a TDD will be required to support work-related needs. A TDD permits a hearing or speech impaired person to communicate over a standard telephone with another TDD user or through a relay operator to reach a non-TDD user. A standard microcomputer can be configured to function as a TDD through the addition of special hardware and software that supports Baudot, the code used by most TDD's. Enhancing a microcomputer to serve a TDD function is becoming a viable option. A computer-based solution should reflect a user's requirements and allow call announcement and pick-up without exiting other microcomputer application programs. Although still in wide use, TDDs that support Baudot only are considered obsolete technology.

d. **TDD relay service.** An agency with a large number of hearing or speech impaired employees or clients may elect to establish a TDD relay system for the agency's own use. A TDD relay system is a service which utilizes hearing operators to transmit TDD messages from hearing impaired individuals to hearing individuals. The GSA FIRS staff can provide advice on how to establish such a system.

e. **Signalling devices.** The sounds in the individual's work area that should be translated into non-auditory signals must be determined. Signalling devices can be installed that provide visual signals and/or vibrations to supplement the auditory signals of different sounds in a room, such as a telephone ringing, equipment malfunctioning, or a computer beeping a warning message. For some individuals, tone ringer devices that convert the ring of telephones into a frequency range more easily heard are beneficial. Paging capabilities provide a flexible means for sending text messages to a hearing impaired individual.

f. **Electronic mail.** Electronic mail presents no barrier to communication by speech impaired or hearing impaired individuals because it is a visual process only. Electronic mail systems should include a feature that provides an auditory and visual signal to announce an incoming call and the option for interactive conversation mode or messaging mode if the receiving party isn't available.

g. **Voice mail.** Voice mail may be a useful option for a TDD user who is able to speak. Spoken messages could be sent independent of a relay operator. Repeated telephone calls to reach a party are eliminated because such a system typically continues to place the call until the message is received. A voice mail message would be relayed to the hearing impaired individual in a manner similar to the way telephone messages are usually handled.

h. **Facsimile.** Sending hard copy documents or handwritten notes through a facsimile machine also provides a valuable alternative to telephone messaging for some communications situations. Facsimile (commonly referred to as fax) is the electronic transmission of letters and pictures over regular telephone lines. Fax systems should provide line status information in a visual manner (either text display or status lights) for feedback to individuals not able to benefit from auditory status information due to hearing loss or a noisy environment. A microcomputer card option may be a viable alternative to a stand-alone fax machine for individuals that usually need to transmit data that has been generated on a computer. A combination fax machine/telephone may also be an alternative to a stand-alone fax machine.

i. **On-site and remote interpreter services.** Professional sign language interpreters are available on a contractual basis to accommodate hearing impaired people who communicate using American Sign Language. Hearing impaired individuals and their supervisors should develop a plan to ensure that interpreter services are available when necessary. Currently, interpreters are required to be on-site when interpreting at meetings, conferences, and courses. The emergence of video-phones, teleconferencing and LAN-based video imaging capabilities may provide opportunities for more comprehensive and cost-effective remote interpreting services. This will be achieved when agencies are able to purchase commercially available teleconferencing equipment that supports the minimum scan rate necessary to transmit sign language.

j. **Augmentative communication devices.** Some individuals with speech impairments use augmentative communication devices. These devices are typically computer-based, portable, and include a speech output capability. Depending upon the individual's work-related requirements, a second communication device might be used with a recorded message to respond to incoming calls and alert the caller that a computer-based synthesized voice will be used during the conversation.

3. Information and assistance. Information and assistance requests dealing with telecommunications accessibility for hearing and speech impaired individuals should be addressed to:

General Services Administration
Clearinghouse on Computer Accommodation
18th and F Streets, NW
Washington, DC 20405

Telephone: (202) 501-4906 or FTS 241-4906 (v/tdd).

STATUTORY AND REGULATORY INFORMATION

APPENDIX I

CODE OF FEDERAL REGULATIONS ON REASONABLE ACCOMMODATION

Title 29, Section 1613.704

“a. An agency shall make reasonable accommodation to the known physical or mental limitations of a qualified applicant or employee unless the agency can demonstrate that the accommodation would impose an undue hardship on the operation of its program.

b. Reasonable accommodation may include, but shall not be limited to: 1) Making facilities readily accessible to and usable by handicapped persons; and 2) job restructuring, part-time or modified work schedules, acquisition or modification of equipment or devices, appropriate adjustment or modification of examinations, the provision of readers and interpreters, and other similar actions.

c. In determining pursuant to paragraph (a) of this section whether an accommodation would impose an undue hardship on the operation of the agency in question, factors to be considered include: 1) The overall size of the agency's program with respect to the number of employees, number and type of facilities, and size of budget; 2) the type of agency operation, including the composition and structure of the agency's work force; and 3) the nature and cost of the accommodation.”

APPENDIX J

REPRESENTATIVE ACCOMMODATION PRODUCTS

This list of computer and telecommunications based products compiled by COCA is not a definitive list of all computer and telecommunications accommodation hardware and software add-ons available in the marketplace. It is a growing collection of resources familiar to COCA. Inclusion of a product or service on this list in no way implies endorsement by the General Services Administration, the Clearinghouse on Computer Accommodation, or their employees.

Wherever possible we have indicated a range of prices for the products (or categories of products) offered by the various manufacturers. While we have made every effort to ensure that this information is accurate as of the date of publishing, users of this information should be aware that products and prices are subject to change, and that up-to-date information is best obtained directly from the manufacturers listed. Information on local distributors of these products should also be obtained directly from the manufacturer.

Manufacturers of computer or telecommunications accommodation hardware and software add-on products who wish to be included in this list, or who wish to update current information, are invited to submit product information, including prices, directly to COCA at the following address:

GSA
Clearinghouse on Computer Accommodation
Room 2022; Code: KGDO
18th & F Sts, NW
Washington DC 20405
202-501-4906 voice
202-501-2010 TDD

APPENDIX J

ACCOMMODATION PRODUCTS INDEX

I. INPUT

- A. Keyboard Alternatives and Enhancements
- B. Speech Recognition
- C. Optical Character Readers
- D. Braille Input Devices

II. OUTPUT

- A. Speech Output—screen-reading systems
- B. Enlarging Display and Hardcopy Output
- C. Braille Output—printer/embosser/translation/refreshable braille display
- D. Tactile Output—non-braille
- E. Small Text Display

III. TELECOMMUNICATIONS

- A. Telecommunication Devices for the Deaf (TDDs)
- B. TDD-compatible PC Modems
- C. Other Telecommunications Products
- D. Automated Attendant Systems with TDD Access

IV. OTHER

- A. Signaling Devices
- B. Robotic Devices

I. INPUT

A. Keyboard Alternatives and Enhancements

Ability Systems Corporation
1422 Arnold Ave.
Roslyn, PA 19001
215-657-4338

1. keyboard configuration software: KeyUp \$35
2. key scanner with sip and puff or joystick control \$29

Adaptive Communication Systems, Inc.
354 Hookstown Grade Road
Clinton, PA 15026
412-264-2288
800-247-3433

1. keyguards \$95
2. switches
3. keylocks

Affinity Micro Systems, Ltd.
1050 Walnut Street
Suite 425
Boulder, CO 80302
303-442-4840

1. keyboard macro package for the Macintosh: Tempo 2, Tempo 2+ \$150 - \$170

Alpha Software
1 North Ave.
Burlington, MA 01803
617-229-2924
617-272-3680

1. keyboard macros and pop-down menu system: Keyworks Advanced \$199

Applied Technology for Physically Impaired Persons (ATPI)
4960 Hamilton Ave.
Suite 201
San Jose, CA 95130
408-378-8006
FAX 408-971-6478

1. hands-free operation of systems by using voice commands or sip and puff commands to replace the keyboard, and head movement to replace mouse devices (works with PCs, Apple, Sun, HP, IBM workstations): PA-1 Prosthetic Adapter \$1,250 - \$6,995

Appoint
1332 Vendels Circle
Paso Robles, CA 93446
805-239-8976
800-448-1184

1. pen device that replaces the Macintosh mouse: MousePen Professional \$99

Arts Computer Products, Inc
121 Beach Street
Suite 400
Boston, MA 02111
617-482-8248

1. keyboard configuration software
2. keylock light indicators

Asahel Engineering
East 246th Main
Pullman, WA 99163
509-334-2226
FAX 509-332-3755

1. alternative switches \$300 - \$400

Berkeley Systems, Inc.
1700 Shattuck Avenue
Berkeley, CA 94709
415-540-5535
FAX 415-540-5115

1. on-screen keyboard for Macintosh: ScreenKeys \$50

Borland International
1800 Green Hills Road
Scotts Valley, CA 95066
408-438-8400

1. keyboard macro software: Superkey \$100

Boswell Industries Inc.
Suite 630
470 Granville St.
Vancouver, BC V6C 1V5
Canada
604-684-3629

1. phonetic computer keyboard that uses chord language syllables rather than letters \$2,500 US

Brown & Co., Inc.
Box 2443
South Hamilton, MA 01982
508-468-7464

1. foot pedal to achieve simultaneous one finger input of combined keystrokes \$80

Cape Software
P.O. Box 800
Harwich, MA 02645
508-432-2435

1. single-switch text processor with speech and word prediction output for the Macintosh: RotoTyper \$139

CE Software
1801 Industrial Circle
West Des Moines, IA 50265
515-224-1995

1. keyboard macro package for the Macintosh: QuicKeys \$150

Computability Corporation
40000 Grand River
Suite 109
Novi, MI 48375
313-477-6720
800-433-8872

I.A. Keyboard Alternatives and Enhancements

1. keyguards
2. membrane keyguard kit
3. switches
4. keyboard and mouse emulations
5. alternative CAD interfaces
6. miniature keyboards \$150
7. expanded keyboards \$295

CTech
P.O. Box 30
2 North William St.
Pearl River, NY 10965
914-735-7907

1. large print key overlay \$60

Data-Cal Corporation
531 E. Elliot Road
Suite 145
Chander, AZ 85225
800-223-0123
602-545-1234
FAX 602-545-8090

1. large print keycap overlays \$15
2. braille keycap overlays \$15

Designing Aids for Disabled Adults
249 Concord Ave.
Toronto, Ontario M6H 2P4
Canada
416-530-0038
FAX 416-530-4917

1. serial or parallel alternative input device
2. word prediction, macro and alternative entry program: Data Entry \$900

Don Johnston
Developmental Equipment
P.O. Box 639
Wauconda, IL 60084
708-526-2682
800-999-4660

1. keyguards
2. switches
3. alternative input using scanning or morse code
4. alternative keyboards for the Macintosh \$195 - \$275

DU-IT Control Systems Group, Inc.
8765 Township Road #513
Shreve, OH 44676
216-567-2906

1. computer work-station hardware adaption for high level spinal cord injured individuals including keyboard, mouse emulation, graphics, and environmental control: LIASON \$3,930 plus options
2. environmental control systems: DEUCE \$1,350 plus options
3. variety of switches such as sip and puff switches, body switches, single and dual paddle switches, rocking lever switches, etc.

EKEG Electronics Co., Ltd
P.O. Box 46199
Station G
Vancouver, BC
Canada V6R 4G5
604-273-4358

1. expanded keyboards for PCs, Macintosh and other computers \$750 - \$875
2. expanded keyboard mouse for the Macintosh: Macrat \$475
3. expanded keyboard mouse for IBM compatible PCs \$475
4. keyguards for the expanded keyboards \$50
5. interface box to convert alternative keyboards that use serial or parallel interfaces to plug into the keyboard port: Breakthru Box \$475
6. expanded numeric data entry keyboards \$250
7. miniature keyboards \$575

Extensions for Independence
555 Saturn Blvd.
Suite B-368
San Diego, CA 92154
619-423-7709
619-423-1748

1. disk loading tray \$18
2. mouthstick \$100
3. 2 mouthstick kit \$437
4. device that enables a mouthstick user to use the system mouse: Mouse X-Y helper \$435
5. printer paper loader device: Universal Paper Loader \$350

Fulcrum Computer Products
1147-A Allan Court
Healdsburg, CA 95448
707-433-0202

1. mouse and switch enhancements for IBM compatible PCs \$99

GenoVation, Inc.
17741 Mitchell, North
Irvine, CA 92714
714-833-3355

1. numeric keypad addition: Numerikeys \$80 - \$140
2. other custom keyboard additions \$150

Hooleon Corporation
Page Springs Road
P.O. Box 230
Cornville, AZ 86325
602-634-7515
800-937-1337

1. large print keytop labels for visually impaired \$22
2. keytop labels for one-handed user configurations \$22
3. home row key indicators
4. individual key lockouts
5. keyboard protectors
6. braille key overlays (set of 55)

IBM National Support Center for Persons with Disabilities
P.O. Box 2150
Atlanta, GA 30055
800-426-2133 Voice
800-284-9482 TDD

1. several software utilities: Access DOS free

Infogrip
812 North Boulevard
Baton Rouge, LA 70802
504-336-0033
FAX 504-336-0063

1. alternative chordic keyboard for IBM, Macintosh, and Unix: BAT \$495
2. miniature alternative chordic keyboard for IBM and Macintosh: miniBAT \$595

In Touch Systems
11 Westview Road
Spring Valley, NY 10977
914-354-7431

1. miniature keyboard for people with little or no hand/arm movement:
Magic Wand \$1,295
2. mouse option for use with MagicWand keyboard

ISCAN, Inc.
125 Cambridge Park Drive
P.O. Box 2076
Cambridge, MA 02238
617-868-5353

1. pointer system and alternative CAD/CAM data entry system: Optimouse \$995
2. eye tracking instrumentation: Eye-Slaved pointers \$10,000 - \$50,000

Itac Systems Inc.
3121 Benton Drive
Garland, TX 75042
800-533-4822
214-494-3073

1. trackball mouse emulation for two button or three button mouse \$169 - \$179

Key Tronic
P.O. Box 14687
Spokane, WA 99214
800-262-6006
509-928-8000

1. expanded and miniature keyboards \$89 - \$249

Kinetic Designs, Inc.
14231 Anatevka Lane, SE
Olalla, WA 98466
206-857-7943

1. keyboard configuration/accommodation software: Filch \$130
2. morse code input system: Morsek \$130

Kraft Systems
450 West California Avenue
Vista, CA 92083
619-724-7146

1. joystick alternative to the Macintosh mouse: QuickStick \$60

LC Technologies, Inc.
4415 Glenn Rose St.
Fairfax, VA 22032
703-425-7509

1. eye tracking computer input system: Eye-Gaze \$20,600 - \$25,000

Loyola High School
Rev. Bradley Murray, S.J.
500 Chestnut Ave.
Baltimore, MD 21204
301-323-1010

1. one finger keyboard input software: Sticky \$10

Maverick Software, Inc.
P.O. Box 998
Melrose, MA 02176
617-662-0856

1. keyboard macros: Key Swap \$200

McIntyre Computer Systems Division
22809 Shagbark
Birmingham, MI 48010
313-645-5090

1. Macintosh program for typing without a keyboard: WordWriter \$100
2. Macintosh mouse replacement for mobility impaired: LipStick \$250

Meeting the Challenge, Inc.
3630 Sinton Road
Suite 103
Colorado Springs, CO 80908
719-444-0252

1. Dvorak keyboard remapping software for single handed keyboard use:
Key-Ability \$98
2. keycap overlays for Dvorak keyboard \$13

Microsystems Software Inc.
600 Worcester Road
Suite B2
Framingham, MA 01701
508-626-8511
FAX 508-626-8515

1. keylock software: HandiSHIFT \$49
2. word prediction software: HandiWORD \$295
3. Morse code input system that includes keyboard macros: HandiCODE \$495
4. user definable matrices and macros for use with alternative input devices such as sip & puff, switches, or keyboard: HandiKEY \$495

MicroTouch Systems
55 Jonspin Road
Wilmington, MA 01887
508-694-9900
800-866-6873
FAX 508-694-9980

1. touch sensitive tablet that replaces the Macintosh or PC mouse: The UnMouse \$199

NanoPac, Inc.
4833 South Sheridan Road
Suite 402
Tulsa, OK 74145-5718
918-665-0329
FAX 918-665-1937

1. integrated computer system including word processor and environmental control system designed for various alternative inputs such as sip & puff, or muscle switch: CINTEX \$5,000 - \$9,000

Northgate Computer Systems
7075 Flying Cloud Drive
Eden Prairie, MN 55344
800-526-2446

1. keyboards with switch setting to change CTRL, ALT, and SHIFT to "sticky" keys for sequential vs. simultaneous multi-keystroke combinations: Omnikey 101, Omnikey 102, Ultra \$89 - \$129
2. keyboards with switch setting to change from QWERTY to DVORAK key layout: Omnikey 101, Omnikey 102, Ultra \$89 - \$129

National Institute for Rehabilitation Engineering
Box T
Hewitt, NJ 07421
201-853-6585
800-736-2216

1. one finger keyboard input software to allow sequential rather than simultaneous entry for multi-key combinations: UniKey \$30

nView
11835 Canon Boulevard
Newport News, VA 23606
804-873-1354
FAX 804-873-2153

1. infrared transmission, wireless, small footprint keyboard with built in single-key operation: Toteboard \$295

Pointer Systems
One Mill Street
Burlington, VT 05401
800-537-1562
802-658-3260

- | | |
|--|---------|
| 1. head pointing input system: FreeWheel | \$1,395 |
| 2. software based keyboard replacement program for use with mouse, trackball, joystick or single-switch input: FreeBoard | \$695 |
| 3. scanning based input system: Speed Scan | \$695 |
| 4. word prediction and phrase prediction software: 1 Key | \$295 |

Polytel Computer Products Corp.
1287 Hammerwood Ave.
Sunnyvale, CA 94089
408-745-1540
800-245-6655
FAX 408-745-6340

- | | |
|---|-------|
| 1. configurable membrane keyboard to augment functions of standard keyboard | \$195 |
|---|-------|

Prentke-Romich Company (PRC)
1022 Heyl Road
Wooster, OH 44691
216-262-1984
800-262-1984

- | | |
|---|--------------|
| 1. key guards | \$105 |
| 2. switches | |
| 3. alternate input devices | |
| 4. keyboard emulators | |
| 5. head pointing system to replace the Macintosh or IBM mouse and keyboard: Head Master | \$395 and up |

Productivity Software International, Inc.
211 E 43rd St.
New York, NY 10017-2188
212-818-1144
800-533-7587

- | | |
|---|---------------|
| 1. keyboard macro software: PRD+ | \$280 - \$480 |
| 2. keyboard reconfiguration (sticky keys): Peck | |

Regenesis Development Corporation
1046 Deep Cove Road
North Vancouver, BC
V7G 1S3
604-929-6663
FAX 604-927-3227

- | | |
|---|-------|
| 1. one finger keyboard input and suspend key repeat software: 1-Key | \$15 |
| 2. Morse code input system | \$150 |
| 3. scanning input system | \$150 |
| 4. breath switch | \$250 |
| 5. expanded keyboard | \$340 |

RoseSoft, Inc.
P.O. Box 70337
Bellevue, WA 98007
206-562-0225
FAX 206-562-9846

1. keyboard macro software: ProKey \$129

Sentient Systems Technology, Inc.
5001 Baum Boulevard
Pittsburgh, PA 15213
412-682-0144

1. eye-controlled input system: Eye-Typer \$3,495
2. alternative joystick, trackball and mouse: Dyna Vox \$3,995

Technical Aids and Systems for the Handicapped, Inc. (TASH)
70 Gibson Drive
Unit 12
Markham, Ontario
Canada L3R 4C2
416-475-2212

1. keyguards \$65
2. keylocks \$65
3. switches
4. various expanded keyboards
5. various miniature keyboards \$750 - \$1,275

Touchstone Technology Inc.
955 Buffalo Road
P.O. Box 24954
Rochester, NY 14624
716-235-8358

1. add-on numeric keypad with a serial interface: Touchstone 3 \$140
2. 35-key add-on keyboard for custom configurations: Touchstone 2 \$200
3. programmable terminal keypad: Touchstone 210 Mini-Terminal \$385

Trace R&D Center
S-151 Waisman Center
1500 Highland Avenue
Madison, WI 53705
608-262-6966 voice
608-263-5408 TDD

1. sequential keyboard input software: 1-finger \$23

T.S. Micro Tech Inc.
20818 Higgins Ct.
Torrance, CA 90501
213-787-1640
FAX 213-787-1647

1. add-on function keyboards \$100 - \$200

Typewriting Institute For The Handicapped
3102 West Augusta Avenue
Phoenix, AZ 85051
602-939-5344

1. one-handed keyboards for either the left or right hand \$825 - \$895

Unicorn Engineering, Inc.
5221 Central Ave.
Suite 205
Richmond, CA 94804
510-528-0670
800-899-6687

1. keyguards
2. expanded keyboard \$350
3. miniature keyboard \$250

WesTest Engineering Corporation
1470 North Main Street
Bountiful, Utah 84010
801-298-7100
FAX 801-292-7379

1. joystick or single, double or triple switch, computer control that replaces the standard keyboard for PCs or Macintosh: DARCI \$775

WordPerfect Corporation
288 West Center Street
Orem, Utah 84057
801-225-5000
800-451-5151
FAX 801-226-7877

1. adjustable keyboard delay software: Repeat Performance \$495

Words+, Incorporated
43700 17th St. West
Suite 202
P.O. Box 1229
Lancaster, CA 93584
805-949-8331

1. long range optical pointers \$1,495
2. Key Wiz \$695
3. Audscan II \$1,195
4. Equalizer \$1,195
5. Talking Screen \$1,195
6. EZ Keys \$1,195
7. Scanning WSKE \$695 - \$1,195
8. Morse Code WSKE \$695 - \$1,195
9. Expanded Keyboard Emulator \$1,195

Zofcom Incorporated
3962 Nelson Court
Palo Alto, CA 94306
415-858-2003
FAX 415-856-1396

1. tongue-operated intraoral keypad for controlling computers, telephones, or other electrical products: Zofcom Control System with TongueTouch Keypad \$4,500 - \$6,000
2. large button wireless keypad for controlling computers, telephones, and other devices: Zofcom Control System with SoftTouch Keypad \$4,500 - \$6,000

B. Speech Recognition

Articulate Systems, Inc.
600 West Cummings Office Park
Suite 4500
Woburn, MA 01801
800-443-7077
800-835-0440
617-935-5656

1. speech recognition for the Macintosh: Voice Navigator, Voice Navigator 2 \$795 - \$1,295
2. voice digitizer and playback package: Voice Link \$269

Command Corp. Inc.
3675 Crestwood Parkway
P.O. Box 956099
Duluth, GA 30136-9502
404-925-7950
FAX 404-925-7924

1. real-time CAD voice input system for PC workstations running DOS or UNIX: BUG System \$900
2. fully voice interactive product designed for use by people with disabilities

Dragon Systems, Inc.
Chapel Bridge Park
90 Bridge Street
Newton, MA 02158
617-965-5200

1. speech recognition system: Dragon Dictate \$9,000
2. speech recognition system: VoiceTyper \$3,555

IBM National Support Center for Persons with Disabilities
P.O. Box 2150
Atlanta, GA 30301-2150
800-426-2133 Voice
800-284-9482 TDD

1. speech recognition package: VoiceType \$3,200

Kurzweil Applied Intelligence
411 Waverly Oaks Road
Waltham, MA 02154
617-893-5151

1. speech recognition systems: Voice Reports \$12,900

MTI, Inc.
14711 NE 29th Place
Suite 245
Bellevue, WA 98007
206-881-1789

1. speech input system: Pronounce \$500

Scott Instruments Corporation
 1111 Willow Springs Drive
 Denton, TX 76205
 817-387-9514
 FAX 817-566-3174

- | | |
|---|---------|
| 1. speech recognition system for IBM PC compatibles: SIR Model 20 | \$1,495 |
|---|---------|

Speech Systems Incorporated
 18356 Oxnard Street
 Tarzana, CA 91356
 818-881-0885

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|------------------------------|--|
| 1. speech recognition system | |
|------------------------------|--|

Verbex Voice Systems
 1090 King Georges Post Road
 Edison, NJ 08863
 908-225-5225

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|---|-------------------|
| 1. voice recognition systems for PCs: Series 5000, Series 6000, Series 7000 | \$4,000 - \$9,000 |
|---|-------------------|

Voice Connection
 17835 Skypark Circle
 Suite C
 Irvine, CA 92714
 714-261-2366
 FAX 714-261-8563

- | | |
|--|---------------|
| 1. speech recognition system: Introvoice V, Introvoice VI | \$695 - \$895 |
| 2. standalone voice recognition system: Microvoice | \$1,495 |
| 3. speech recognition and word prediction combination: VoiceWord | \$300 |

Votan PC
 210 Hammond Ave.
 Fremont, CA 94539
 415-490-7600
 800-877-4756
 FAX 415-490-1648

- | | |
|---|---------|
| 1. speech recognition systems: Votan Voice Card | \$1,500 |
|---|---------|

C. Optical Character Readers

Adhoc Reading Systems, Inc.
 28 Brunswick Woods Drive
 East Brunswick, NJ 08816
 908-254-7300

- | | |
|--|---------|
| 1. menu driven scanner software designed for Truescan-based OCR systems: DocuRead IDB | \$695 |
| 2. menu driven scanner software plus full page hand scanner: DocuRead IDB + Handy Scan | \$1,390 |
| 3. computer based OCR system with flatbed scanner: DocuRead Expert | \$4,090 |
| 4. computer based OCR system with hand scanner: DocuRead with Handy Scan | \$4,990 |
| 5. transportable OCR system with speech and computer included: Boxer-Reader | \$7,699 |

Advanced Vision Research Inc.
2201 Qume Drive
San Jose, CA 95131
408-434-1115

1. text and graphics scanner \$1,000 - \$2,500

Arkenstone, Inc.
540 Wedell Drive
Suite 1
Sunnyvale, CA 94089
408-752-2200
800-444-745-4443
FAX 408-745-6739

1. OCR system: Arkenstone Reader Model E and Model S \$2,840 - \$3,835
2. OCR system: Arkenstone HOT Reader \$4,495
3. OCR system with hand held scanner: Arkenstone Hand Reader E/AT \$3,590

Arts Computer Products, Inc.
121 Beach Street
Suite 400
Boston, MA 02111
617-482-8248
1. OCR Systems

Asahel Engineering
East 246th Main
Pullman, WA 99163
509-334-2226
FAX 509-332-3755
1. OCR system

\$1,500

Level One Technologies, Inc.
Suite 1610
5201 Leesburg Pike
Falls Church, VA 22041
703-671-7500

1. OCR with speech output \$7,500 - \$12,000

TeleSensory Corporation
455 North Bernardo Avenue
P.O. Box 7455
Mountain View, CA 94039-7455
415-960-0920
800-227-8418 sales
800-537-3961 technical assistance
1. OCR with speech output interface: OsCaR

\$3,895

Truvel Corporation
520 Herndon Parkway
Herndon, VA 22070
703-742-9500
FAX 703-471-1165

- | | |
|--|----------|
| 1. text and graphics scanner (black and white) | \$5,000 |
| 2. ability to scan pages up to 12" x 18" (color) | \$10,000 |

Xerox Imaging Systems
185 Albany Street
Cambridge, MA 02139
800-343-0311
800-248-6550
617-864-4700

- | | |
|--|--------------------|
| 1. optional character scanner with speech output: Kurzweil Personal Reader (KPR) | \$7,950 - \$11,950 |
| 2. scanner and internal OCR card for PC: PC/KPR | \$3,695 - \$7,495 |

D. Braille Input Devices

American Printing House for the Blind
1839 Frankfurt Ave.
P.O. Box 6085
Louisville, KY 40206

- | | |
|--|-------|
| 1. portable braille note-taking device: Pocket Braille | \$898 |
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Blazie Engineering
3660 Mill Green Road
Street, MD 21154
301-879-4944
FAX 301-452-5752

- | | |
|--|-------|
| 1. braille note-taker and terminal: Braille 'n Speak | \$995 |
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Enabling Technologies Company
3102 S.E. Jay St.
Stuart, FL 34997
407-283-4817
FAX 407-220-2920

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|--|------|
| 1. software that converts standard keyboard into a braille entry device: BrailleKeys | \$50 |
|--|------|

Index Braille Printer Company
4420 Norledge
Kansas City, MO 64123
800-421-9775
816-483-3554

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|---|---------|
| 1. electronic 24 cell braille input and display: Notex 24 | \$5,000 |
| 2. electronic 40 cell braille input and display: Notex 40 | \$7,900 |

Robotron Access Products Inc.
1201 Braddock Place
#308
Alexandria, VA 22314
800-735-1031

- | | |
|--|---------|
| 1. enhanced portable braille note taking device: Eureka A4 | \$2,595 |
|--|---------|

TeleSensory Corporation
455 North Bernardo Avenue
P.O. Box 7455
Mountain View, CA 94039-7455
415-960-0920

800-227-8418 sales

800-537-3961 technical assistance

1. refreshable braille display with software that allows braille input from a PC keyboard: Navigator 40, Navigator 80 \$4,695 - \$14,995
2. portable braille notetaking device with speech and refreshable braille output: Braille Mate \$1,595

II. OUTPUT

A. Speech Output - screen-reading systems

Adaptive Communication Systems, Inc.
354 Hookstown Grade Road
Clinton, PA 15026
412-264-2288
800-247-3433

1. speech output to augment communication \$2,495

AICOM Company
1590 Oakland Road
Suite B 112
San Jose, CA 95131
408-453-8251
FAX 408-453-8255

1. speech synthesizer: Accent (7 models) \$395 - \$940

American Printing House for the Blind
1839 Frankfurt Ave.
P.O. Box 6085
Louisville, KY 40206
502-895-2405 phone or FAX

1. speech access system, screen reader and synthesizer combination: Speaqualizer \$810

Artic Technologies
55 Park Street
Suite #2
Troy, MI 48083
313-588-7370
FAX 313-588-2650

1. screen reading system, software and synthesizer combination: Business Vision, Artic Crystal \$895 - \$2,000
2. PC utility program accessible by speech output: Encore \$150 - \$195

Automated Functions, Inc.
6424 N. 28th Street
Arlington, VA 22207
703-536-7741

1. portable PC with built-in speech synthesizer: Lap Talker, LAP Talker Plus \$1,995 - \$2,395

Berkeley Systems, Inc.
1700 Shattuck Avenue
Berkeley, CA 94709
415-540-5535
FAX 415-540-5115

1. speech output program for the Macintosh: OutSPOKEN \$395

Blazie Engineering
3660 Mill Green Road
Street, MD 21154
301-879-4944
FAX 301-452-5752

1. braille note taker with speech output: Braille 'n Speak \$995
2. disk drive accessory for Braille 'n Speak \$495
3. screen reading software: Speak Sys \$150
4. foreign language addition of Speak Sys \$250

Centigram
91 E. Hasmond Drive
San Jose, CA 95134
408-944-0250

1. speech synthesizer: Call Text 5000, Prose 2020 \$3,225 - \$3,900

Computer Conversations, Inc.
6297 Worthington Rd. SW
Alexandria, OH 43001
614-924-2885

1. screen reading software: Verbal Operating System \$550
2. speech synthesizer board: Verbette Mark I \$250
3. pocket sized speech synthesizer with battery operation: Verbette Mark II \$399

CTech
P.O. Box 30
2 North William St.
Pearl River, NY 10965
914-735-7907

1. laptop computers with built in speech output \$2,500 - \$3,500

Digital Equipment Corporation
CSS Support
Continental Blvd
MS: MK 01
Marrimack, NH 03054
800-832-6277
603-884-8990

1. speech synthesizer: DECtalk \$4,400

Electronic Visual Aids Specialists (EVAS)

16 David Ave.

P.O. Box 371

Westerly, RI 02891

800-872-3827

401-596-3155

FAX 401-596-3979

1. one pound, self-contained synthesizer: Apollo \$795
2. desktop synthesizer: Jupiter \$795
3. internal half-card speech synthesizer: The PC Speech System
4. screen reader with up to 26 markers to monitor screen changes:
CompuSight Speech Systems \$795
5. Complete system for the individual user: CompuSight Adaptive Turnkey
System \$2,000

GW Micro

310 Racquet Drive

Fort Wayne, IN 46825

219-483-3625

1. screen reading software: Vocal-Eyes \$450
2. speech synthesizer: Sounding Board \$395
3. pop-up notetaker software designed to work with speech output:
Noteworthy \$69
4. pop-up calculator software designed to work with speech output:
Calcworthy \$49
5. laptop PC with built-in speech synthesis (4 models): Small Talk \$1,749 - \$3,195

Hear Say Inc.

307 76th Street

Brooklyn, NY 11209

718-836-0990

1. speech synthesis/speech recognition peripheral: Hearsay 1000 \$150

Henter-Joyce, Inc.

10901-C Roosevelt Blvd.

Suite 1200

St. Petersburg, FL 33716

813-576-5658

800-336-5658

FAX 813-577-0099

JAWS BBS 813-821-8099

1. screen reading software: JAWS \$495
2. forms writer program for blind or visually impaired individuals:
Form-Mate \$495
3. laptop computer with internal synthesizer and JAWS software:
Lap-JAWS \$3,120

HFK Software

68 Wells Road

Lincoln, MA 01773

617-259-0059

1. QWERTY family of speaking software \$99 - \$399

HumanWare, Inc.
6245 King Road, Suite P
Loomis, CA 95650
800-722-3393
916-652-7253

- | | |
|---|-------------------|
| 1. speech synthesizer: Keynote GOLD | \$2,795 - \$6,945 |
| 2. screen reader software: MasterTouch | \$495 |
| 3. screen reader Touch Tablet that works with MasterTouch to direct speech output bypassing any screen reader keyboard commands:
Master Touch Tablet | \$350 |

IBM National Support Center for Persons with Disabilities
P.O. Box 2150
Atlanta, GA 30055
800-426-2133 Voice
800-284-9482 TDD

- | | |
|--|---------------|
| 1. screen reader software: IBM Screen-Reader | \$650 - \$725 |
| 2. 3278 emulation screen reading software | |

Interface Systems International
P.O. Box 20415
Portland, OR 97220
503-665-0965 voice or FAX

- | | |
|--|--------------------|
| 1. screen reading software: ISOS—Interactive Speech Operating System | \$499 plus options |
| 2. user interface for Prodigy: ProSpeech | \$79 |

Kansys, Inc.
1016 Ohio Street
Lawrence, KS 66044
913-843-0351
800-279-4880

- | | |
|------------------------------------|-------|
| 1. screen reading software: Provox | \$295 |
|------------------------------------|-------|

Microsystems Software Inc.
600 Worcester Road, Suite B2
Framingham, MA 01701
508-626-8511
FAX 508-626-8515

- | | |
|---|-------|
| 1. pop-up speech window for augmentative communication software:
HandiCHAT | \$195 |
|---|-------|

Omnichron
1438 Oxford Avenue
Berkeley, CA 94709
415-540-6455

- | | |
|-------------------------------------|-------|
| 1. screen reading software: Flipper | \$395 |
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Personal Data Systems, Inc.
100 W. Rincon
Suite 103
Campbell, CA 95008
408-866-1126
FAX 408-866-1128

- | | |
|---------------------------------|-------|
| 1. screen reading system | |
| 2. speech synthesizer: Audapter | \$895 |

Raised Dot Computing
408 South Baldwin Street
Madison, WI 53703
608-257-9595

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|-------------------------------------|-------|
| 1. screen reading software: Flipper | \$400 |
| 2. speech synthesizer: Audapter | \$895 |

Robotron Access Products Inc.
1201 Braddock Place #308
Alexandria, VA 22314
703-683-5818
800-735-1031

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|---|---------|
| 1. braille note-taker with speech output: Eureka A4 | \$2,595 |
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Street Electronics Corporation
6420 Viareal
Carpinteria, CA 93103
805-684-4593

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|---------------------------------|-------|
| 1. speech synthesizer: Echo PC2 | \$100 |
|---------------------------------|-------|

Syntha-Voice Computers Inc.
1037A Levick St.
Philadelphia, PA 19111
416-578-0565
800-263-4540
FAX 416-578-0625

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|---|-------|
| 1. half-card internal speech-synthesizer: Syntha-voice Model I | \$695 |
| 2. portable speech synthesizer with rechargeable battery: Syntha-voice Model S | \$895 |
| 3. Screen reading software for use with Synthic-voice Model I and Model 5: Slimware | \$595 |

TeleSensory Corporation
455 North Bernardo Avenue
P.O. Box 7455
Mountain View, CA 94039-7455
415-960-0920
800-227-8418 sales

- | | |
|--|-----------------|
| 800-537-3961 technical assistance | |
| 1. screen reading software: SoftVert | \$495 |
| 2. speech-access software & Synthesizer: Personal Vert, VertPlus | \$995 - \$2,295 |
| 3. 3278 Vert screen reading software | \$795 |
| 4. pop-up utility software accessible by speech output: Attache | \$295 |

Visuaide 2000, Inc.
955 D/Assigny
Suite 143
Longuenal, Quebec
Canada, J4K 5C3
514-463-1717
FAX 514-463-0120

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|---|-------|
| 1. simplified reading system to automatically read files scanned using the Calera recognition system scanners | \$300 |
|---|-------|

Votrax International, Inc.
24027 Research Drive
Farmington Hills, MI 48335
313-442-0900
800-521-1350
FAX 313-442-0922

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|---|-------|
| 1. speech synthesizer: Personal Speech System | \$449 |
| 2. Type-'N-Talk | \$299 |

B. Enlarging Display and Hardcopy Output

AI Squared
1463 Hearst Drive, NE
Atlanta, GA 30319
404-233-7065

- | | |
|--|-------|
| 1. large print display software for text (2x to 16x): Zoomtext | \$495 |
| 2. large print display software for text and graphics: Zoomtext Plus | \$595 |
| 3. large print display (2x)—text and graphics: In Focus | \$149 |

Artic Technologies
55 Park Street
Suite #2
Troy, MI 48083
313-588-7370
FAX 313-588-2650

- | | |
|---|-------|
| 1. large print display software for text only: Artic Focus | \$550 |
| 2. large print display software for text and and graphics: Artic Focus Deluxe | \$795 |

Arts Computer Products, Inc
121 Beach Street
Suite 400
Boston, MA 02111
617-482-8248

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|--|-------|
| 1. large print display software | \$690 |
| 2. large printing program for dot matrix printer | \$180 |
| 3. large printing program for Macintosh printer | \$95 |

Berkeley Systems, Inc.
1700 Shattuck Avenue
Berkeley, CA 94709
415-540-5535
FAX 415-540-5115

- | | |
|--|------|
| 1. large print display software for the Macintosh: InLARGE | \$95 |
|--|------|

Computer Conversations, Inc.
6297 Worthington Rd. SW
Alexandria, OH 43001
614-924-2885

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|--------------------------------------|-------|
| 1. large print software: Verbal View | \$250 |
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CTech
P.O. Box 30
2 North William St.
Pearl River, NY 10965
914-735-7907

- | | |
|--|-------|
| 1. print up to 2½ inches tall on a dot matrix printer: TallTex | \$299 |
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Electronic Visual Aids Specialists (EVAS)

16 David Avenue

P.O. Box 371

Westerly, RI 02891

800-872-3827

401-596-3155

FAX 401-569-3979

1. large character display software: Lunar

\$295 - \$495

Florida New Concepts Marketing, Inc.

P.O. Box 261

Port Richey, FL 34673-0261

813-842-3231

800-456-7097

1. magnifying lens for computer monitor

\$190

General Business Machine Corporation

6053 Bristol Parkway

Culver City, CA 90230

800-228-3349

213-649-9199

FAX 213-649-9177

1. large print display software (2x-4x): MagniWORD

\$79

Good Ideas

175 Lowell St.

Andover, MA 01810

508-475-7238

1. large print (up to 1½ inches) and typesetting fonts for a dot matrix printer: Type-Set-It

\$395

HFK Software

68 Wells Road

Lincoln, MA 01773

617-259-0059

1. QWERTY Word Processor capable of producing large print on-screen and directing large print output to a laser jet compatible printer

HumanWare, Inc.

6245 King Rd.

Suite P

Loomis, CA 95650

800-722-3393

916-652-7253

1. portable closed circuit TV magnification device: Viewpoint
2. CCTV with color: ClearView

\$2,795

\$3,295

Independent Living Aids, Inc.

27 East Mall

Plainview, NY 11803-4404

516-752-8080

1. portable electronic magnifying system: LV-101

\$1,060 - \$1,785

Microsystems Software Inc.
600 Worcester Road
Suite B2
Framingham, MA 01701
508-626-8511
FAX 508-626-8515

1. large character display for windows and DOS (2x for text and graphics):
MAGIC \$79
2. large character display for windows and DOS (up to 8x for text and 2x
for graphics): MAGIC Deluxe \$195

National Institute for Rehabilitation Engineering
Box T
Hewitt, NJ 07421
201-853-6585
800-736-2216

1. large type word processing program - may be printed in standard or
large type \$40 - \$300

Optelec US, Inc.
P.O. Box 796
4 Liberty Way
Westford, MA 01886
800-828-1056
508-892-0707

1. large print software for text only: LP DOS \$495
2. large print software for text and graphics: LP DOS with EI-PCasso \$650
3. closed circuit television systems (black and white, color) \$2,695 - \$3,295

Seeing Technologies Inc.
7074 Brooklyn Blvd
Minneapolis, MN 55429
612-560-8080
800-362-3023
612-560-0063

1. large print display systems \$1,995 - \$2,695

SkiSoft Publishing Corp.
1644 Massachusetts Ave.
Suite 79
Lexington, MA 02173
617-863-1876
800-662-3622

1. program to make computer cursor big, bold, and blink at any rate: No-
Squint II \$50
2. wordprocessing program with text magnification and ability to print large
print hardcopy on a laser printer: Eye-Relief \$300

SoftCraft, Inc.
 16 N. Carroll St
 Suite 500
 Madison, WI 53703
 608-257-3300
 800-351-0500
 FAX 608-257-6733

- | | |
|--|-------|
| 1. font software for both laser and dot matrix printers that will allow print up to 72 points (approx 1 inch): Fancy Fonts | \$180 |
| 2. font addition to Fancy Fonts that will print the manual finger spelling alphabet | \$15 |
| 3. other assorted font styles also available | \$15 |

Syntha-Voice Computers Inc.
 1037A Levick St.
 Philadelphia, PA 19111
 416-578-0565
 800-263-4540
 FAX 416-578-0625

- | | |
|---|-------|
| 1. large print software for text and graphics up to 10x magnification: Panorama | \$595 |
| 2. large print software with only 2x and 3x magnification: Powerama Jr. | \$195 |
| 3. combination screen reading system and large print display up to 10x: Powerama | \$895 |
| 4. combination screen reading system and large print display up to 3x: Powerama Jr. | \$795 |

TeleSensory Corporation
 455 North Bernardo Avenue
 P.O. Box 7455
 Mountain View, CA 94039-7455
 415-960-0920
 800-227-8418 sales
 800-537-3961 technical assistance

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|--|-------------------|
| 1. CCTV/CCD large print display systems of hardcopy (color, black and white): Vantage, Voyager CCD, Voyager XL, Chroma CCD | \$2,295 - \$3,495 |
| 2. large print display of computer screen contents (color, black and white): SoftVista, Vista VGA, Vista 2, DP 11+ | \$595 - \$2,595 |
| 3. portable magnification system: MEVA | \$2,195 |

Tojek & Associates
 17355 Mierow Lane
 Brookfield, WI 53045
 414-784-4979

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|--|-------------------|
| 1. closed circuit TV systems in various configurations for magnification of computer screen contents and/or hardcopy materials, both black and white and color available | \$1,550 - \$2,995 |
| 2. minicam portable handheld magnification system | \$995 |

Worthington Data Solutions
 417A Ingalls St.
 Santa Cruz, CA 95060
 408-458-9938

- | | |
|---|-------|
| 1. large print (up to 2 inches) for dot matrix printer: FontTools | \$239 |
| 2. large print for dot matrix and laser jet printers: Lableright | \$279 |

C. Braille Output—printer/embosser/translation/refreshable braille display

American Thermoform Corporation
2311 Travers Avenue
City of Commerce, CA 90040
213-723-9021

- | | |
|--|----------|
| 1. braille and text printer: Ohtsuki | \$4,695 |
| 2. moderate speed (60 cps) braille printer: Braillo 60 | \$4,695 |
| 3. moderate speed (90 cps) braille printer: Braillo 90 | \$4,695 |
| 4. moderate speed (140 cps) interpoint braille printer: Resus | \$15,995 |
| 5. moderate speed (200 cps) interpoint braille printer: Braillo 200 | \$36,995 |
| 6. high speed (1200 pages/hr), interpoint braille printer: Braillo 400 S | \$76,995 |

Arts Computer Products, Inc
121 Beach Street
Suite 400
Boston, MA 02111
617-482-8248

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|--|-----------------|
| 1. daisy wheel printer that converts to a braille printer: Duran Dots | \$1,695 |
| 2. braille translation software: PC Braille | \$495 - \$3,500 |
| 3. Word Perfect file conversion for braille output retaining WP format:
WP Soft | \$180 |

Blazie Engineering
3660 Mill Green Road
Street, MD 21154
301-879-4944
FAX 301-452-5752

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|---|---------|
| 1. portable braille note-taker with 20 cell braille display: Personal Touch | \$5,500 |
| 2. small braille printer that uses 8½ x 11 paper (15 cps): Braille Blazer | \$1,745 |

Duxbury Systems, Inc.
435 King Street
P.O. Box 1504
Littleton, MA 01460
508-486-9766
FAX 508-486-9712

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|--|--------------|
| 1. braille translation software: Duxbury | \$420 and up |
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Enabling Technologies Company
3102 S.E. Jay St.
Stuart, FL 34997
407-283-4817
FAX 407-220-2920

- | | |
|--|---------------------|
| 1. personal capacity braille printers: Romeo RB-20, Romeo RB-40 | \$2,995 - \$3,795 |
| 2. transportable desk top interpoint braille printer (80 cps): Braille Bookmaker | \$9,995 |
| 3. production capacity braille printers: Marathon (200 cps), TED-600 (450 cps, interpoint) | \$12,950 - \$37,500 |

Electronic Visual Aids Specialists (EVAS)

16 David Ave.

P.O. Box 371

Westerly, RI 02891

800-872-3827

401-596-3155

FAX 401-596-3979

1. braille printers: Index (50 cps) and others

\$2,995 and up

GW Micro

310 Racquet Drive

Fort Wayne, IN 46825

219-483-3625

1. braille translation software: Braille-Talk

\$195

HumanWare, Inc.

6245 King Rd.

Suite P

Loomis, CA 95650

800-722-3393

916-652-7253

1. refreshable braille screen review system: KeyBraille 200, Keybraille 360
2. refreshable braille screen review system with 83 braille cells: ALVA 43, ALVA 83
3. braille and typed text from a Perkins Brailier: Braille-n-Print
4. braille printers: Romeo RB 20 (20 cps), Romeo RB 40 (40 cps)
5. medium speed braille printer (80 cps, interpoint): Bookmaker
6. medium speed braille printer (200 cps): Marathon
7. hardware braille translation: Ransley Braille Interface

\$4,995 - \$6,995

\$8,995 - \$14,495

\$995

\$2,995 - \$3,795

\$9,995

\$12,995

\$995

Index Braille Printer Company

4420 Norledge

Kansas City, MO 64123

800-421-9775

816-483-3554

1. refreshable braille screen review systems: Braillex IB80
2. braille embosser (50 cps): Index Basic
3. braille embosser, interpoint (100 cps): Everest Interpoint

\$13,995

\$2,995

\$9,995

Intelligent Information Technologies

Box 5002

Station A

1408 W. University

Champagne, IL 61825-5002

217-359-7933

1. braille translation software designed for sighted braille transcribers (dots appear on-screen for editing)

\$135

Kansys, Inc.

1016 Ohio Street

Lawrence, KS 66044

913-843-0351

800-279-4880

1. braille translation software: TurboBraille
2. memory resident braille translator: Autobraille

\$249

\$195

Raised Dot Computing
408 South Baldwin Street
Madison, WI 53703
608-257-9595

1. braille translation software: Hot Dots \$350

Roudley Associates, Inc.
P.O. Box 608
Owings Mills, MD 21117
301-363-0834

1. braille translation software: NFBTrans \$395

TeleSensory Corporation
455 North Bernardo Avenue
P.O. Box 7455
Mountain View, CA 94039-7455
415-960-0920
800-227-8418 sales

800-537-3961 technical assistance

1. refreshable braille display: Navigator 40, Navigator 80 \$4,695 - \$14,995
2. portable braille notetaking device with speech and refreshable braille output: Braille Mate \$1,595
3. braille and typed text from a Perkins Brailier: MPrint \$995
4. braille printer: Versapoint (40 cps) \$3,795
5. communication device for deaf/blind individuals for both face-to-face communications and telephone communications: TeleBraille II \$5,500

D. Tactile Output - non-braille

Berkeley Systems, Inc.
1700 Shattuck Avenue
Berkeley, CA 94709
415-540-5535
FAX 415-540-5115

1. tactile array of vibrating pins to show any part of the MacIntosh screen under the mouse: inTOUCH \$395

TeleSensory Corporation
455 North Bernardo Avenue
P.O. Box 7455
Mountain View, CA 94039-7455
415-960-0920
800-227-8418 sales

800-537-3961 technical assistance

1. Computer screen output to vibrating pins: Optacon II \$3,395
2. software to allow graphics to be produced on a VersaPoint braille embosser: VersaPoint Graphics \$195

E. Small Text Display

Reflection Technology
230 Second Ave.
Waltham, MA 02154
617-890-5905
FAX 617-890-5918

1. ultra-miniature virtual display: PC Private Eye \$795

III. TELECOMMUNICATIONS

A. Telecommunication Devices for the Deaf (TDDs)

American Communication Corporation

180 Roberts Street

Est Hartford, CT 06108

203-289-3491 v/TDD

1. TDD: LUV I

\$149 - \$309

AT&T Special Needs Center

2001 Route 46

Suite 310

Parsippany, NJ 07054

800-233-1222 voice

800-833-3232 TDD

1. TDD: Model 2700

\$250 - \$280

2. portable TDD: Model 2930

\$400

Enabling Technologies Company

3102 S.E. Jay St.

Stuart, FL 34997

407-283-4817

FAX 407-220-2920

1. communications system for deaf/blind braille readers that uses an Ultratec SuperPrint modem connected to a Romeo braille printer: InfoTouch

Krown Research Inc.

129 Sheldon St.

El Segundo, CA 90245

213-322-3202 v/TDD

800-833-4968 v/TDD

1. variety of TDD models: PV Jr. series, MP 20 series, Porta Printer IV, Memory Printer DX

\$219 - \$600

TeleSensory Corporation

455 North Bernardo Avenue

P.O. Box 7455

Mountain View, CA 94039-7455

415-960-0920

800-227-8418 sales

800-537-3961 technical assistance

1. TDD device with refreshable braille display for deaf/blind individuals: TeleBraille II

\$5,500

Trident Technologies

1200 Summer Street

Stamford, CT 06905

203-325-2500 voice

203-967-8250 TDD

FAX 203-327-3072

1. 25 line screen TDD: PCT Table Top

\$549

Ultratec Inc.
450 Science Drive
Madison, WI 53711
608-273-0707 v/TDD
800-482-2424
FAX 608-238-3008

1. variety of TDDs: MiniCom, SuperCom, Superprint, Miniprint II \$159 - \$595
2. TDD with large print display attachment
3. very small, portable TDD: Ultratec Compact \$289
4. TDD attachment in a secured compartment for use with existing pay phones

B. TDD-compatible PC Modems

IBM National Support Center for Persons with Disabilities
P.O. Box 2150
Atlanta, GA 30301-2150
800-426-2133 voice
800-284-9482 TDD

1. internal modem and software that accepts Baudot or ASCII calls, has built in speech output and can convert tones from touch-tone phone keypad to text: IBM Phone Communicator \$600

Krown Research Inc.
129 Sheldon St.
El Segundo, CA 90245
213-322-3202 v/TDD
800-833-4968 v/TDD

1. external modem that accepts both Baudot and ASCII calls \$349

Microflip, Inc.
11213 Petsworth Lane
Glenn Dale, MD 20769
301-262-6020 voice
301-262-1629 TDD

1. internal modem and software that accepts both Baudot and ASCII calls and alerts the PC user that there is an incoming call: FullTalk, FastTalk \$349

Phone-TTY, Inc.
202 Lexington Ave.
Hackensack, NJ 07601
201-489-7889 voice
201-489-7890 TDD
201-489-7891 FAX
201-489-3323 Computer Bulletin Board

1. external modem that accepts both Baudot and ASCII calls: CM-4 \$350

Ultratec Inc.
450 Science Drive
Madison, WI 53711
608-273-0707 v/TDD
800-482-2424
FAX 608-238-3008

1. external modem that accepts both Baudot and ASCII calls: Intel-Modem

C. Other Telecommunications Products

ACS Communications
250 Technology Circle
Scotts Valley, CA 95066
800-538-0742
408-438-3883

1. lightweight telephone headsets with earphone and microphone:
Dynamite 1200, Dynamite 2000 \$43 - \$64

Ameriphone
5192 Bolsa Ave.
#5
Huntington Beach, CA 92649
714-897-0808
800-874-3005
FAX 714-897-4703

1. remote control speakerphone \$499
2. phone amplifier \$30

AT&T Special Needs Center
2001 Route 46
Suite 310
Parsippany, NJ 07054
800-233-1222 voice
800-833-3232 TDD

1. hearing amplification handsets \$25 - \$36
2. speech amplification handsets \$25 - \$36
3. TDD acoustic coupler adapters \$34
4. speaker phones

Auditory Display Inc.
162 Schoolhouse Lane
Mt. Laurel, NJ 08054
609-234-4446

1. telephone tone receiver that converts touch tone phone keypad tones to text: TE98 Telephone Tone Receiver \$169 - \$275

Baylor Biomedical Services
2625 Elm St.
#102
Dallas, TX 75226
214-820-2176
800-365-1890
FAX 214-820-3390

1. infrared controlled speakerphone: BBS Infrared Phone \$395
2. infrared control for multi-line business phone: BBS Multi-line Office Telephone Controller

EKEG Electronics Co., Ltd
P.O. Box 46199
Station G
Vancouver, BC
Canada V6R 4G5
604-273-4358

1. speaker phones with expanded dialing keypads and speed dial: EKT 10, EKT 32 \$375 - \$475

Extensions for Independence
555 Saturn Blvd.
Suite B-368
San Diego, CA 92154
619-423-7709
619-423-1748

1. independent telephone operation for people with no use of their hands:
Universal Telephone Adapter \$106

HEIDICO Inc.
1226 Westfield Ave.
Reno, NV 89509
702-324-7104

1. answering machine that accepts both voice and TDD messages \$300
2. device to join two or more TDDs without using a phone line: InterTalk \$80

Hello Direct
140 Great Oaks Blvd.
San Jose, CA 95119-1347
800-444-3556
FAX 408-972-8155

1. cordless telephone headset \$400

Walker Equipment Corporation
P.O. Box 829
Highway 151 South
Ringgold, GA 30736
800-426-3738
404-935-2600

1. phone with an adjustable, frequency-shaping feature for enhancing the high-frequency tones: Walker Clarity Phone \$149
2. hearing amplification handsets for various phone systems

D. Automated Attendant Systems with TDD Access

Dirad Technology Inc.
21 Aviation Road
Albany, NY 12205
518-438-6000
800-933-4723

1. automated attendant systems with TDD access \$5,000 - \$20,000

InterVoice
17811 Waterview Parkway
Dallas, TX 75252
214-497-8738
FAX 214-497-8905

1. automated attendant systems with TDD access 25,000 - \$70,000

Microlog Corporation
20270 Goldenrod Lane
Germantown, MD 20876
301-428-3227
800-926-3227
FAX 301-972-6208

1. automated attendant systems with TDD access \$13,000 - \$60,000

IV. OTHER

A. Signaling Devices

Ameriphone
5192 Bolsa Ave.
#5

Huntington Beach, CA 92649
714-897-0808
800-874-3005
FAX 714-897-4703

1. call alert device for signaling incoming telephone calls \$35
2. super phone ringer with frequency control \$35

AT&T Special Needs Center
2001 Route 46
Suite 310

Parsippany, NJ 07054
800-233-1222 Voice
800-833-3232 TDD

1. variable volume, altered frequency ringer device for the telephone ring:
Tone Ringer \$30
2. converter for changing the electronic ringer of some phones to a
traditional bell ring: Auxillary Bell Ringer \$35
3. call alert device that flashes a light on and off to signal a call:
Signal Man \$40

IBM National Support Center for Persons with Disabilities
P.O. Box 2150
Atlanta, GA 30301-2150
800-426-2133 voice
800-284-9482 TDD

1. software that provides visual on-screen notification each time the PC
sounds an audio tone: Access DOS free

Metriplex Systems
25 First Street
Cambridge, MA 02141
617-494-9393

1. PC-based paging system with alpha-numeric message capabilities \$195 - \$295

Microsystems Software Inc.
600 Worcester Road
Suite B
Framingham, MA 01701
508-626-8511
FAX 508-626-8515

1. software that provides visual on-screen message each time the PC
sounds an audio beep: SeeBeep \$20

Phone-TTY, Inc.
202 Lexington Ave.
Hackensack, NJ 07601
201-489-7889 voice
201-489-7890 TDD
FAX 201-489-7891

201-489-3323 Computer Bulletin Board

1. variety of signaling systems for phone, loud noise, fire, door buzzer, etc.

\$30 - \$94

Quest Electronics
510 S. Worthington St.
Oconomowoc, WI 53066
414-567-9101 v/TDD
800-245-0779 v/TDD

1. signaling device: Silent Page

\$378 and up

Silent Call Corporation
P.O. Box 868
Clarkston, MI 48347-0868
313-391-1710 voice
313-391-1799 TDD

1. personal alert system that monitors up to 5 different devices and signals the person by vibrating and a visual indicator showing which device is sending the signal: Silent Call Personal Alert System
2. similar system designed for use by a deaf/blind individual: Vibra-Call

\$245 and up

\$355 and up

Sonic Alert
1750 W. Hamlin Road
Rochester Hills, MI 48309
313-656-3110 v/TDD
FAX 313-656-8347

1. signaling system that monitors several different devices and gives a vibrating and visual alert to the person wearing the receiver: Sonic Alert

\$20-\$450

Ultratec Inc.
450 Science Drive
Madison, WI 53711
608-273-0707 v/TDD
800-482-2424
FAX 608-238-3008

1. signaling device that will turn a light on and off when the sound it is monitoring for occurs: Watchman
2. signaling system that monitors several different devices and gives a vibrating and visual alert to the person wearing the receiver: Ultratec Super Signal System

\$60

\$100

Whelen Engineering Company
Route 145
Winthrop Road
Chester, CT 06412-0684
203-526-9504
800-637-8762
FAX 203-526-4078

1. visual signal fire alarms that meet the building code standards for business buildings: VSA Strobelight

\$130

B. Robotic Devices

Regenesis Development Corporation
1046 Deep Cove Road
North Vancouver, BC
V7G 1S3
604-929-6663
FAX 604-927-3227

1. workstation with robotic arm that can be controlled by voice, keyboard access, single or dual switch, morse code, or row scanning input \$25,000

APPENDIX K

REGISTRATION FORM

Managing Information Resources For Accessibility

(Please print or type all responses)

Mail completed forms to:

General Services Administration
Clearinghouse on Computer Accommodation
18th & F Streets, NW
Room 2022; Code: KGDO
Washington, DC 20405

Name: _____

Agency: _____

Address: _____

City: _____ State: _____ Zip: _____

Mailstop: _____

Phone: _____

Please send me updates to publication: Yes: _____ No: _____

Comments: _____

Transportation
Office of Sec.
• Workforce diversity
• Workshops --
psychologist
Job coaching
BA MEd

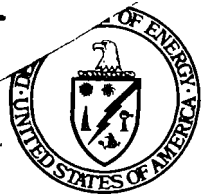
Gallaudet --
40 profoundly deaf
sign - language
Verd Transportation -- concern

Radisson Plaza Hotel
at Mark Center

5000 Seminary Road, Alexandria, Virginia 22311
(703) 845-1010

Distribution:

TO: Kathy McKiernan
TO: David B. Anderson
TO: Keith O. Boykin
TO: Jeffrey L. Eller
TO: Ernest D. Gibble
TO: Jonathan P. Gill
TO: Kukis, Heidi
TO: Joseph W. Cerrell
TO: Payne, Julia M.
TO: Lisa Mortman
TO: Rica F. Rodman
TO: Jessamyn Sarmiento
TO: Joshua Silverman
TO: Richard Strauss
TO: Lorraine A. Voles
TO: Dawn A. Alexander
TO: David Dreyer
TO: Richard L. Siewert
TO: Jason M. Solomon
TO: Steven A. Cohen
TO: David Leavy
TO: Chad H. Griffin
TO: Rahm Emanuel
TO: Carola McGiffert
TO: Jonathan M. Prince
TO: Patricia A. Enright
TO: Lorraine McHugh
TO: Elizabeth A. Bernstein
TO: Virginia M. Terzano
TO: Arthur L. Jones
TO: Jeremy M. Gaines
TO: Julia Moffett
TO: Heather Beckel
TO: Amanda Crumley
TO: Patricia A. McHugh
TO: Stephen B. Silverman
TO: Joan Baggett
TO: Sharon Kennedy
TO: Susan Brophy
TO: Steve Ricchetti
TO: Kathleen L. O'Neill
TO: Gordon Li
TO: Katherine L. Darwin
TO: Paul Meyer
TO: Ann F. Walker
TO: Donald A. Baer

**Department of Energy**

Washington, DC 20585

AUG 10 1994

Ms. Carol H. Rasco
Assistant to the President
for Domestic Policy
The White House
1600 Pennsylvania Avenue
Washington, DC 20500

Dear Ms. Rasco:

Thank you for your letter dated July 26, 1994. The Department of Energy would be delighted to participate on the Disability Issues Working Group.

I would like to submit the name of Ms. Lila Farazian to be on the Working Group. She is the Disability Coordinator for the Special Employment and Employee Development Division. This Division is tasked with overseeing recruiting and training opportunities at the Department-wide level with a strong commitment to ensuring diversity and equal opportunity. Ms. Farazian has an extensive background in working with disability issues which include: Schedule A classifications, interviewing, and conducting management and employee training classes. I believe that Ms. Farazian would be a valuable addition to this team in helping to establish the Federal government as a model of customer service and accessibility.

If you have any further questions, please feel free to contact me at the Department of Energy on (202) 586-5610, or contact Ms. Lila Farazian on (202) 586-4494 or TDD# (202) 586-5654. Again, thank you for your interest in the Department of Energy.

Sincerely,

A handwritten signature in dark ink, appearing to read "Timothy M. Dirks", is written over the typed name.

Timothy M. Dirks
Deputy Assistant Secretary
for Human Resources



Farayan

FAX

686-3862

MC Nely

855-1000 — ☐

TDD 586-56

THE WHITE HOUSE
OFFICE OF DOMESTIC POLICY

CAROL H. RASCO
Assistant to the President for Domestic Policy

To: Stan

Draft response for POTUS
and forward to CHR by: _____

Draft response for CHR by: _____

Please reply directly to the writer
(copy to CHR) by: _____

Please advise by: _____

Let's discuss: _____

For your information: _____

Reply using form code: _____

File: _____

Send copy to (original to CHR): _____

Schedule ? : ☐ Accept ☐ Pending ☐ Regret

Designee to attend: _____

Remarks: _____

U.S. Department of Labor

Employment Standards Administration
Office of Federal Contract
Compliance Programs
Washington, D.C. 20210



AUG 4 1988

Ms. Carol H. Rasco
Assistant to the President
for Domestic Policy
The White House
Washington, D.C. 20500

Dear Ms. Rasco: *Carol*

Per your July 26 request to the Department of Labor, I have been designated to participate on the Disability Issues Working Group.

Please communicate the meeting date to my secretary, Dorothy Watson, who may be reached at 202/219-9475 or FAX 202/219-6195.

Sincerely,

Shirley J. Wilcher
Shirley J. Wilcher
Deputy Assistant Secretary
for Federal Contract Compliance Programs

It was a pleasure meeting you!

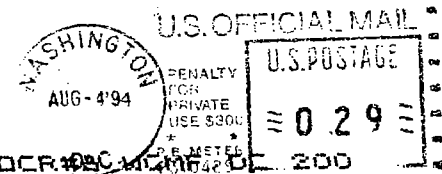
U.S. Department of Labor

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**Ms. Carol H. Rasco
Assistant to the President
for Domestic Policy
The White House
Washington, D.C. 20500**



—
List of DPC —
Doubtless (sum
mark good

DE -- Andy Heumann

Comme - Larry Pink

NEC -- L.J.
(ask Sylvester Hottel)

E X E C U T I V E O F F I C E O F T H E P R E S I D E N T

12-Jul-1994 11:56pm

TO: Stanley S. Herr

FROM: Carol H. Rasco
 Economic and Domestic Policy

SUBJECT: RE: misc

I am very willing to speak to Bobby, it is just that Thursday and Friday until I leave for Boston are getting very packed. Please get Bobby's number to Pat Romani telling her I have asked that it be on my schedule as a note to do on Thursday.

On the disabilities appointees meeting, you are right I meant agency activity surrounding the ADA celebration and certainly a meeting later on in-depth ADA matters. It sounds like you have it all lined up very well.

Amber Melen

As to the July 25 full DPC meeting I like your outline. I think instead of Roz making calls or us doing a memo you should make the calls....call Pena's chief of staff and Nancy McFadden in Justice *O-of-Town* telling both that I am out of town, asked you to call them to see if there is anyone else with whom you should speak regarding this request for Pena/Reno to discuss these matters. If the principals cannot be there see whom they wish to have represent them to make these presentations, they are also welcome to bring extra(s) to help even if they are coming. I think you should as you described have Riley primed and it might not hurt to have a few others primed as you see fit.

Thanks.

366

Rox Lopez -

514-4195

Ken Kinsell

366-5555

E X E C U T I V E O F F I C E O F T H E P R E S I D E N T

12-Jul-1994 04:21pm

TO: Carol H. Rasco

FROM: Stanley S. Herr
Domestic Policy Council

CC: Rosalyn A. Miller

SUBJECT: DPC meeting on July 25th

To briefly elaborate, Janet Reno is the logical person to kick-off the presentation about ADA and what we as an Administration are doing to secure disability rights in general. She could also briefly layout the the now 20 year plus responsibilities and experience under the Rehabilitation Act's Sec. 501 (fed govt affirmative action in hiring and advancement of employees with disabilities), sec. 503 (prohibition of such discrimination by any contractors receiving contracts over \$2500), and sec. 504 (requiring nondiscrim and reasonable accommodations by federally assisted programs).

This then grabs the attention of all DPC members since each agency has to be mindful of those Rehab Act requirements, and sets the stage for saying the underlying concepts of such legislation and reasonable accommodation and undue burden have been around for over two decades. Now they've been extended to the private sector in the last 4 years as well as state and local govt under ADA.

On ADA implementation, the only other cabinet agency with direct implementation is DOT. Sec. Pena has an Assistant Sec. Frank Kruesi that I know is up to speed in their ADA accomplishments and problems encountered since he sent me a 22 page memo on that subject on June 3rd.

I think we should ask someone to also talk to the array of questions of the federal government as a model employer in terms of disability accommodations, and some of the questions posed by hiring and advancing civil servants and others with disabilities. I would imagine that Sec. Riley could take part in such a discussion, since I understand that Gov. Kunin has addressed some of those issues with OMB and Judy Heumann has raised and could brief the Sec. on this in the time before the meeting.

With someone (Mike Lux or Ann Stock) describing the ADA event and its unprecedented size, and general discussion around ADA, 501, 503, and 504 challenges and accomplishments, it should fill up an agenda nicely.

THE WHITE HOUSE

WASHINGTON

SECOND INTERAGENCY MEETING ON ADA IMPLEMENTATION
June 7, 1994

AGENDA

- | | |
|---|---------------------------------|
| 1. Welcome and Introductions | Stan Herr |
| 2. Department of Transportation status report | Frank Kruesi
Donald Trilling |
| 3. Department of Justice update on public
relations strategy | Liz Savage
John Wodatch |
| 4. EEOC update on announcement strategy | Phil Calkins |
| 5. Small Business Administration | Barney Singer |
| 6. Closing and Next Steps | |

To : Frank Kruesi, Liz Savage, Barney Singer, Donald Trilling & John Wodatch

From: Stan Herr

Date: July 20, 1994

Re: Followup to our June 7th meeting

Barney sent me copies of the Small Business Advocate which has an item on page 3 concerning the expanded ADA coverage. He asked me to share it with you.

By now, I trust you are all aware of the South Lawn event on the ADA being moved to July 27th due to the Israeli-Jordanian talks here. Over 4000 invitations have gone out.

John informed us yesterday of an event on Monday, July 25th at the Martin Luther King library in which the Attorney General will be presenting ADA materials to libraries around the country. He indicated that details would follow so that I could advise the participants in our disability appointee group of time as well as exact venue.

As most of you also know by now, the DPC will focus on ADA anniversary and implementation issues at its July 25th meeting with Attorney General Reno and Secretary Pena among the presenters.

If there are other events I should be aware of in your agencies, please advise. Thanks.

Enclosure

Clinton Presidential Records Digital Records Marker

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THE SMALL BUSINESS ADVOCATE

United States
Small Business
Administration
Office of Advocacy

June 1994
Vol. 13, No. 6

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Congress

Chief Counsel Reports to Congress on Procurement Reform

In a May 23 report prepared for the House and Senate Small Business Committees, Chief Counsel for Advocacy Jere Glover outlined small business concerns about and opposition to a number of procurement reform measures. The report was intended to reflect the concerns of the small business community rather than the views of the U.S. Small Business Administration or the administration, and carried the support of the Small Business Legislative Council, National Small Business United and the National Association for the Self-Employed.

"Few would disagree that our procurement system is too complex, absurdly slow and frequently ineffective," Glover said in the report. "However, the zeal to reform

must be tempered with adequate consideration for the concerns of the small business community. It took many years to instill sufficient checks and balances within the federal procurement process to encourage competition and increase opportunities for small, minority- and women-owned firms. Some of these checks and balances are now seen as impediments to streamlining the procurement process."

The chief counsel urged Congress to consider a number of concerns in their deliberations, including the following:

Simplified Acquisition Threshold

— A critical component of the reform legislation focuses on increasing the small purchase threshold

Continued on page 6

Senate Approves Interstate Banking Legislation

Interstate banking and branching took another step closer to becoming a reality on April 26 when the Senate passed legislation permitting banks to extend their operations across the country. The House of Representatives passed similar legislation (H.R. 3841) on March 22.

The bills, both entitled the Interstate Banking Efficiency Act of 1994, are currently in conference committee. Congress is expected to pass final legislation before its summer recess in August.

The issue of interstate banking

and branching has been a controversial topic for several years. Many view the extension of banking rights as an infringement of states' rights. Others view it as a continuation of the evolution of the banking industry, in which vast intrastate banking systems already exist, as in, for example, California, New York and North Carolina.

For small businesses, the issue is even less clear. In its report, *Interstate Banking: Benefits and Risks of Removing Regulatory Restrictions* (GAO/GGD-94-26), released

Continued on page 5

THE WHITE HOUSE

WASHINGTON

To : Frank Kruesi, Liz Savage, Barney Singer, Donald Trilling & John Wodatch

From: Stan Herr

Date: July 20, 1994

Re: Followup to our June 7th meeting

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If there are other events I should be aware of in your agencies, please advise. Thanks.

Enclosure