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ABSTRACT

This resource presents the functional effects of chronic disabilities in order to aid those persons who must plan environments usable by persons with disabilities. The guide does not concern architectural accessibility per se, but rather discusses designing the worksite to be usable by a disabled person. In the guide, drawings are provided for office (worksite 1) and factory (worksite 2) settings for each of the following disabilities: difficulty in interpreting information; limitation of sight; limitation of hearing; limitation of speech; susceptibility to fainting, dizziness, and seizures; incoordination; limitation of stamina; difficulty in moving head; limitation of sensation; difficulty in lifting and reaching with arms; difficulty in handling and fingering; inability to use upper extremities; difficulty in sitting; difficulty in using lower extremities; and poor balance. Guidelines are given for making the worksite usable by persons with each of these limitations. The guide also includes a bibliography and a list of suppliers of products mentioned in the guide. (KC)

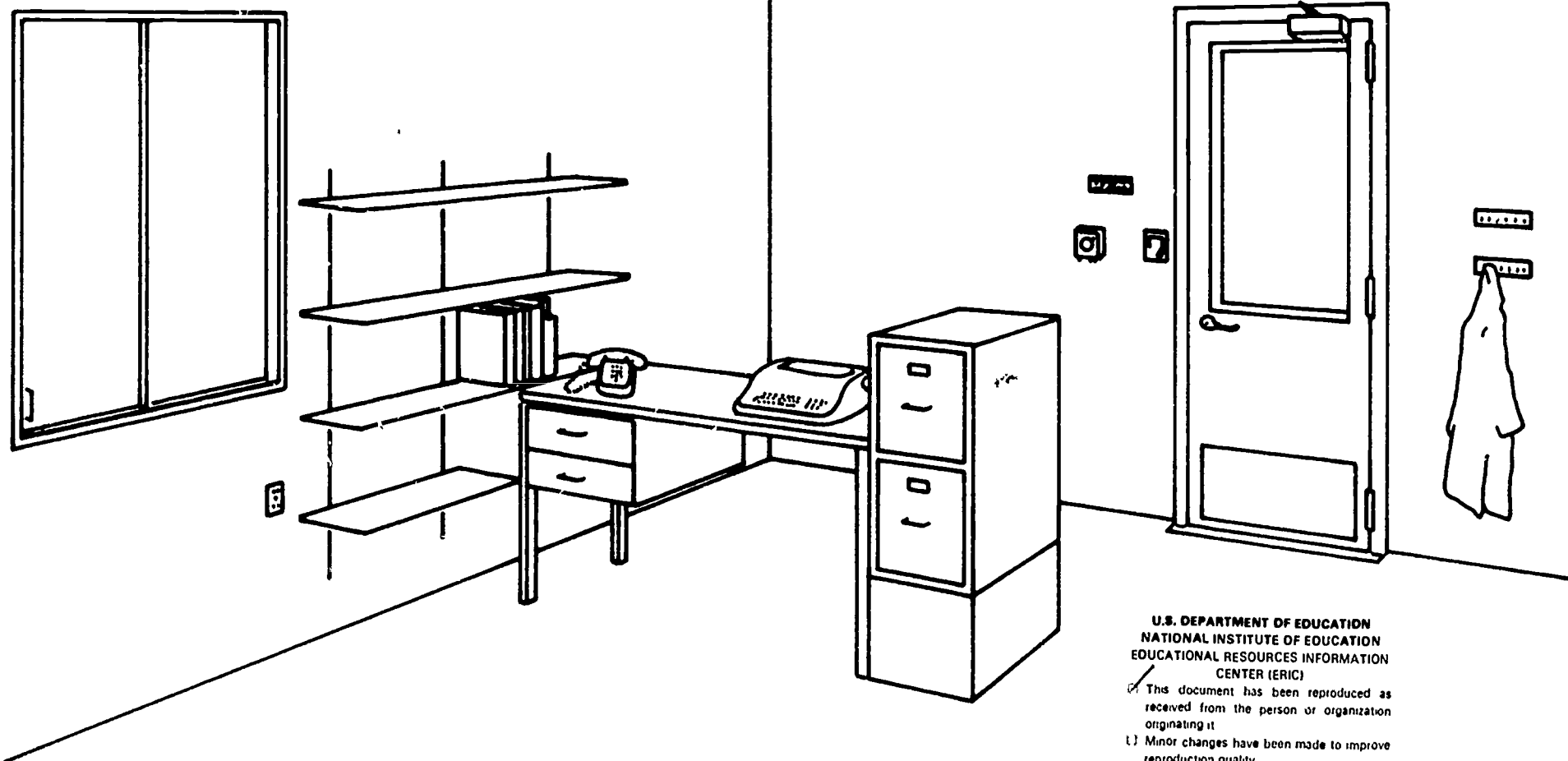
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THE WORKSITE

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DESIGNING FOR FUNCTIONAL LIMITATIONS

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Many individuals of diverse backgrounds have contributed invaluable personal knowledge and insight to the development of this resource. They have demonstrated their commitment to the independence of disabled persons by offering their time and expertise. The ultimate usefulness of this resource owes much to their efforts.

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INTRODUCTION

This resource is a presentation of the functional effects of chronic disabilities. Knowledge of these effects is essential in planning environments usable by persons with disabilities.

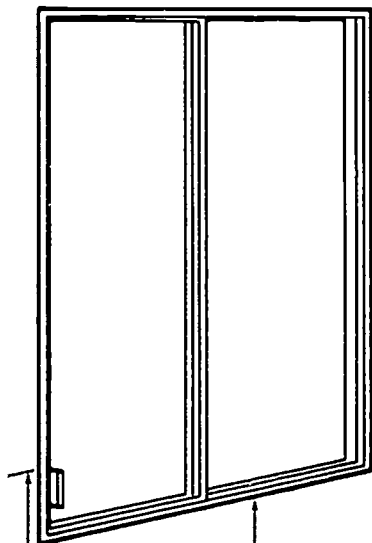
This resource does not concern architectural accessibility per se. Many excellent publications are available on this subject; some are listed in the Bibliography. Designing for Functional Limitations deals instead with "usability". An accessible building in which a disabled person cannot function independently is as much a barrier as an inaccessible building. Few resources offer information on how to maximize the abilities of the disabled person beyond accessibility in the work environment.

The illustrations which follow, and the accompanying text, have been designed to help in planning functional environments most sensitive to the abilities and limitations of disabled persons. WORKSITE 1 and WORKSITE 2 illustrations may appear to be common work environments. They are: WORKSITE 1 is an office-type setting, and WORKSITE 2 is a more industrial setting. Added to these illustrations are guidelines for worksite design which can aid not only a large percentage of disabled employees, but also non-disabled employees. As some worksites may be a combination of an office and industrial setting, it is recommended that both Worksite 1 and Worksite 2 guidelines be used to plan modifications to a specific site. Guidelines noted on pages 5 and 7 have been compiled from resources listed on the reverse side of each page.

WALLS

USE SLIP-RESISTANT, NON-GLARE SURFACES
AVOID ROUGH SURFACES AND PROTRUDING OBJECTS
AVOID TOTAL SOUND ABSORPTION

SLIDING WINDOWS PREFERRED



WINDOW CONTROLS
20-54" (508-1372mm)
MAX. OPERATING FORCE
5 LB (22.2 N)

18-48"
(457-1219mm)

23.5-35"
(598-889mm)

9-12" (227-305mm)
MAX. SHELF HEIGHT
63" (1600mm)

LOCATE BULKIEST OBJECTS
ON LEVEL WITH DESK

16.5" MIN.
(419mm)

TELEPHONES
RECEIVER WITH VOLUME CONTROL
HANDSET CORD 36" (914mm) MIN.

29-38"
(737-965mm)

WORK STATION

AVOID CENTER DRAWERS
24" (610mm) MIN. KNEE WELL WIDTH
AVOID SHARP EDGES AND CORNERS
NON-GLARE LIGHTING TO MINIMIZE FATIGUE

SEATING

ADJUSTABLE HEIGHT AND SUPPORT FOR LOWER BACK
(FEET SHOULD REST ON FLOOR OR OTHER SUPPORT)

INTERIOR SIGNS

LOCATE NEAR DOOR FRAME ON LATCH SIDE
LABEL USABLE FACILITIES WITH ♿ SYMBOL

LETTERING

LIGHT-ON-DARK PREFERRED
0.625-1" (16-25mm) HELVETICA TYPE (ALL CAPS)
RAISED 0.03" (1mm)
MAY BE ACCOMPANIED BY BRAILLE
SIGN HEIGHT 54-66" (1372-1676mm)

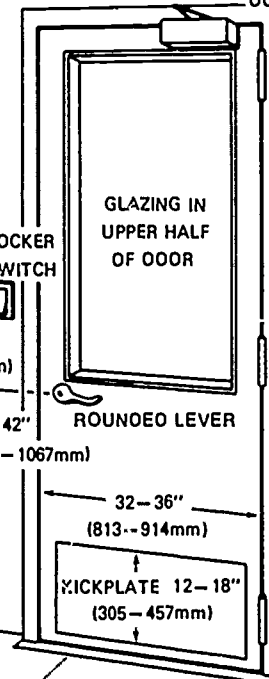
DIAL THERMOSTAT
36-48"
(914-1219mm)

EMERGENCY

FLASHING VISUAL ALARM (less than 5 Hz)
8000 Hz AUDIOITORY ALARM (120 db max.)

DOOR CLOSER RESISTANCE

5-15 LB (22.2-66.7 N)
pref, adjustable
or automatic



DOORS

CLEAR SPACE ON BOTH SIDES OF DOOR
SIDE-HUNG PREFERRED TO SLIDING TYPE
DOOR SHOULD OPEN INTO LOWER TRAFFIC AREA
GLASS SHOULD HAVE DECALS AT FACE HEIGHT
0.5" (13mm) MAX. THRESHOLD

STORAGE CABINETS

DRAWERS WITH ROLLERS FOR EASY OPERATION
U-SHAPED HANDES: 4" x 1.5" (102mm x 38mm)
DRAWERS SHOULD BE OPERABLE WITH ONE HAND

FLOORS

NON-ABSORBENT MATERIALS IN WARM, DARK COLORS
AVOID COLOR CONTRAST EXCEPT TO DENOTE LEVEL CHANGE
AVOID SCULPTURED TEXTURES OR CHANGES IN DIRECTION OF GRAIN
THIN, HEAVY-DUTY UNPADEED LOOP PILE CARPETING PREFERRED
CARPETING SHOULD BE FIRMLY FIXED TO FLOOR

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

WILL AID ABLE-BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

CONSIDERATIONS FOR MORE SPECIFIC FUNCTIONAL LIMITATIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

WORKSITE 1

Specifications on the reverse side are based on body measurements of the "average adult." Extremes of size and weight may require adjustment of some specifications. Further explanations of these guidelines may be found in the following resources, from which all specifications have been compiled:

CABINETS, DRAWERS, FILES

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 3a, 3b
Goldsmith, Designing for the Disabled, 245-251, 315
Mace, An Illustrated Handbook of the North Carolina State Building Code, 117
Steinfeld, Barrier-Free Design for the Elderly and Disabled, 111

CLOTHES HOOKS

Goldsmith, Designing for the Disabled, 314
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 115
Veterans Administration, Handbook for Design: Specially Adapted Housing, 43

DOORS AND HARDWARE

Cary, How to Create Interiors for the Disabled, 24-31
Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 26, 30
Duncan, Gish, Mulholland, Townsend, Environmental Modifications for the Visually Impaired: A Handbook, 444
Goldsmith, Designing for the Disabled, 185-190
Harkness, Groom, Building Without Barriers for the Disabled, 31-33
Mace, An Illustrated Handbook of the North Carolina State Building Code, 34, 35, 39, 40; and Accessibility Modifications, 21-25
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 117, 77-80
Steinfeld, Barrier-Free Design for the Elderly and Disabled, 100-103, 76
Veterans Administration, Handbook for Design: Specially Adapted Housing, 34-37

ELECTRICAL OUTLETS

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 3b
Goldsmith, Designing for the Disabled, 212-213
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 110, 118
Veterans Administration, Handbook for Design: Specially Adapted Housing, 41

EQUIPMENT CONTROLS

Bazar, Ergonomics in Rehabilitation Engineering, 55-71
Steinfeld, Barrier-Free Design for the Elderly and the Disabled, 111

FIRE ALARMS/EXTINGUISHERS

Harkness, Groom, Building Without Barriers for the Disabled, 16, 18
Mace, An Illustrated Handbook of the North Carolina State Building Code, 85
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 112, 125
Steinfeld, Barrier-Free Design for the Elderly and the Disabled, 72

FLOORS

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 26
Duncan, Gish, Mulholland, Townsend, Environmental Modifications for the Visually Impaired: A Handbook, 444-445
Goldsmith, Designing for the Disabled, 196-197
Harkness, Groom, Building Without Barriers for the Disabled, 16, 34
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 75

INTERIOR SIGNS

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 28, 29, 3b
Duncan, Gish, Mulholland, Townsend, Environmental Modifications for the Visually Impaired: A Handbook, 444-447
Harkness, Groom, Building Without Barriers for the Disabled, 16-18
Mace, An Illustrated Handbook of the North Carolina State Building Code, 84-85
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 112-113

SHELVES

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 3a, 3b
Goldsmith, Designing for the Disabled, 123-126
Mace, An Illustrated Handbook of the North Carolina State Building Code, 117
National Academy of Science, Accessibility: An Approach to the Development of Design Criteria, C12-C15
Veterans Administration, Handbook for Design: Specially Adapted Housing, 43

TABLES, DESKS, WORK STATIONS

Austin, Resources Handbook for Barrier-Free Design, 79
Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 3a, 3b
Grandjean, Fitting the Task to the Man
Harkness, Groom, Building Without Barriers for the Disabled, 36
Mace, An Illustrated Handbook of the North Carolina State Building Code, 92-93
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 115
Trombly, Scott, Occupational Therapy for Physical Dysfunction, 391-392

TELEPHONES

Cary, How to Create Interiors for the Disabled, 110
Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 26, 3a
Goldsmith, Designing for the Disabled, 214
Mace, An Illustrated Handbook of the North Carolina State Building Code, 114-115
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 109, 125
Veterans Administration, Handbook for Design: Specially Adapted Housing, 41

THERMOSTAT

Mace, An Illustrated Handbook of the North Carolina State Building Code, 84-85
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 111

WALLS

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 26
Harkness, Groom, Building Without Barriers for the Disabled, 16

WALL SWITCHES

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 3b
Goldsmith, Designing for the Disabled, 211
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 111
U.S. Department of Housing and Urban Development, Barrier-Free Site Design, 17
Veterans Administration, Handbook for Design: Specially Adapted Housing, 40

WINDOWS AND CONTROLS

Diffrient, Tilley, Bardagjy, Humanscale 1/2/3, 3a
Goldsmith, Designing for the Disabled, 178-180
Ohio Governor's Committee on Employment of the Handicapped, Access for All, 111, 124
Steinfeld, Barrier-Free Design for the Elderly and the Disabled, 106
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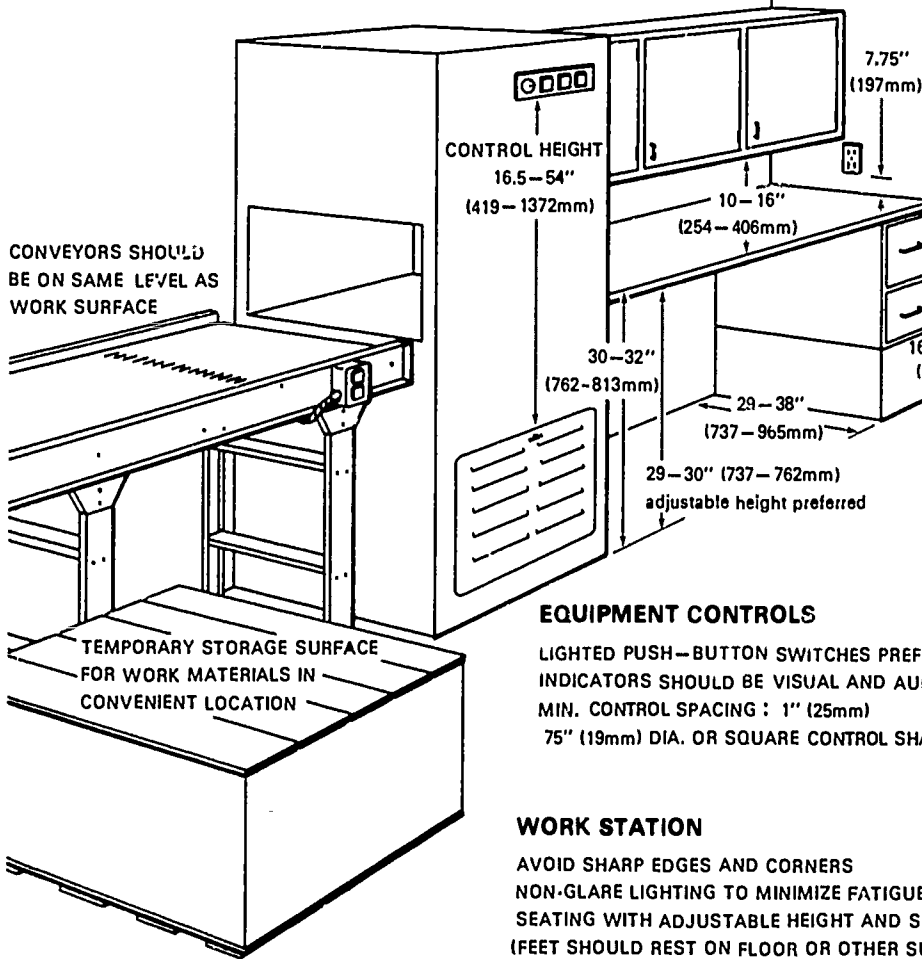
WALLS

USE SLIP-RESISTANT NON-GLARE SURFACES
AVOID ROUGH SURFACES AND PROTRUDING OBJECTS
AVOID TOTAL SOUND ABSORPTION

STORAGE CABINETS

CABINET HEIGHT 63" MAX. (1600mm)
U-SHAPED HANDLES: 4" x 1.5" (102mm x 38mm)
HANDLES SHOULD BE OPERABLE WITH ONE HAND

CONVEYORS SHOULD
BE ON SAME LEVEL AS
WORK SURFACE



INTERIOR SIGNS

LOCATE NEAR DOOR FRAME ON LATCH SIDE
LABEL USABLE FACILITIES WITH ♿ SYMBOL

LETTERING

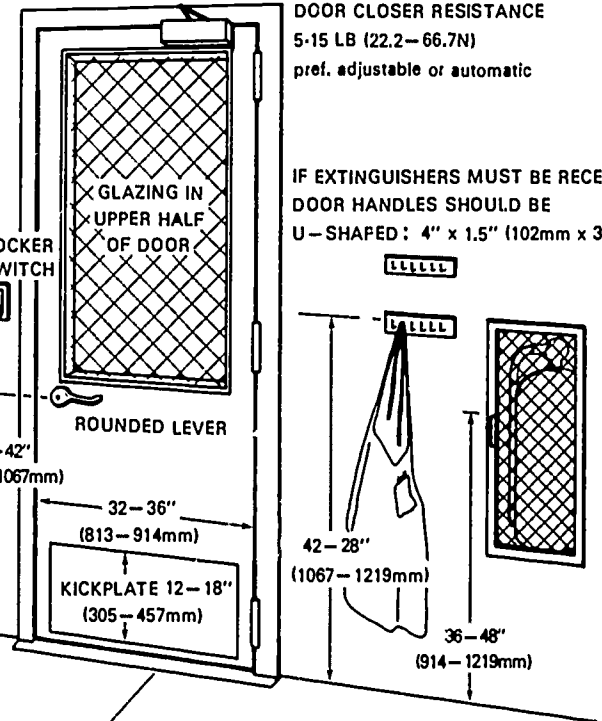
LIGHT-ON-DARK PREFERRED
0.625-1" (16-25mm) HELVETICA TYPE (ALL CAPS)
RAISED 0.03" (1mm)
MAY BE ACCOMPANIED BY BRAILLE

FLASHING VISUAL ALARM (less than 5 Hz)
8000 Hz AUDITORY ALARM (120 db max.)

EMERGENCY

DOOR CLOSER RESISTANCE
5-15 LB (22.2-66.7N)
pref. adjustable or automatic

IF EXTINGUISHERS MUST BE RECESSED,
DOOR HANDLES SHOULD BE
U-SHAPED: 4" x 1.5" (102mm x 38mm)



TELEPHONES

RECEIVER WITH VOLUME CONTROL
HANDSET CORD 36" (914mm) MIN.

EQUIPMENT CONTROLS

LIGHTED PUSH-BUTTON SWITCHES PREFERRED
INDICATORS SHOULD BE VISUAL AND AUDITORY
MIN. CONTROL SPACING: 1" (25mm)
75" (19mm) DIA. OR SQUARE CONTROL SHAPE

WORK STATION

AVOID SHARP EDGES AND CORNERS
NON-GLARE LIGHTING TO MINIMIZE FATIGUE
SEATING WITH ADJUSTABLE HEIGHT AND SUPPORT FOR LOWER BACK
(FEET SHOULD REST ON FLOOR OR OTHER SUPPORT)

DOORS

60" (1524mm) CLEAR SPACE ON BOTH SIDES OF DOOR
SIDE-HUNG PREFERRED TO SLIDING TYPE
DOOR SHOULD OPEN INTO LOWER TRAFFIC AREA
GLASS SHOULD HAVE DECALS AT FACE HEIGHT
0.5" (13mm) MAX. THRESHOLD

FLOORS

NON-ABSORBENT MATERIALS IN WARM, DARK COLORS
AVOID COLOR CONTRAST EXCEPT TO DENOTE LEVEL CHANGE
AVOID PATTERNS OR EXCESSIVE TEXTURES
FLOOR COVERING FIRMLY FIXED TO FLOOR

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

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 Steinfeld, Barrier-Free Design for the Elderly and the Disabled, 106
 Veterans Administration, Handbook for Design: Specially Adapted Housing, 38

HOW TO USE THIS RESOURCE

The following is an example of how DESIGNING FOR FUNCTIONAL LIMITATIONS can be used.

Paul has applied for the job of information receptionist at a large government office. He has a high school diploma and some college experience. Paul has cerebral palsy. He is qualified for the job, but he and his prospective employer feel that some modifications to the worksite may help. The job requires access to a large directory of employees which must be accessed quickly for visitors seeking a specific office or telephone number. There is considerable use of the telephone involved, and verbal assistance must occasionally be given to visitors.

Paul and his prospective employer have reviewed WORKSITE 1 and 2 illustrations on pages 5 and 7 to check for any major barriers in the general work environment. It is noted that the most serious barriers have already been removed, but door knobs will have to be replaced with levers.

They then reviewed further modifications as illustrated for functional limitations on pages 13 through 74. On the reverse side of each illustration are listed any disabilities which may require the modifications printed in dark over the WORKSITE illustration. Although Paul has cerebral palsy, he has no difficulty in interpreting information, no limitation of speech, no incoordination, or difficulty in moving his head; therefore, these modifications were not considered. His functional limitations which may affect job performance include poor balance, difficulty in using lower extremities, and difficulty in handling and fingering. The illustrations for these limitations (pp. 41, 39, 33, 73, 71, 65) suggested modifications which could help Paul be more independent at work.

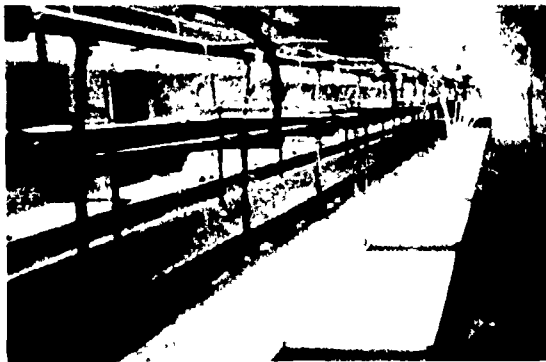
Handle assists can be placed at the desk to aid him in sitting down and rising from the chair. The stool at the worksite can be replaced with one having full arms and a backrest. Quick access to the office directory is done with the aid of a microfilm viewer and a microfilm version of the directory. The viewer controls can be converted to push-button operation. A headset receiver will make use of the telephone easier. Paul and his employer agree that these modifications will be useful and cost-effective for this job/client match. In this situation, WORKSITE 1 was used. However, had the job required it, WORKSITE 2 illustrations might also have been helpful.

Counselors and evaluators will find DESIGNING FOR FUNCTIONAL LIMITATIONS helpful in job planning with their clients. Employers can use it in planning affirmative action programs. Designers and engineers, as well as students of these professions, can use it to plan environments and products more suitable for use by able and disabled consumers alike. DESIGNING FOR FUNCTIONAL LIMITATIONS is a workbook, not a textbook. It is offered in looseleaf format to encourage additions, notes, and convenient use. Your comments on its usefulness to you are welcome.

Guidelines presented in this resource should be freely adapted to the requirements of the worker and the worksite. Pictured below are actual worksites modified for disabled workers. In each case, the ideas of the worker, the employer, and the counselor were integrated to develop a more productive setting for disabled and non-disabled workers.

Photos by Innovative Services Unit,
Vocational Rehabilitation Division,
Portland, Oregon

Photos by Job Development Laboratory
The George Washington University
Washington, D.C.



Preparation line at fish processing plant modified for reach-impaired person.

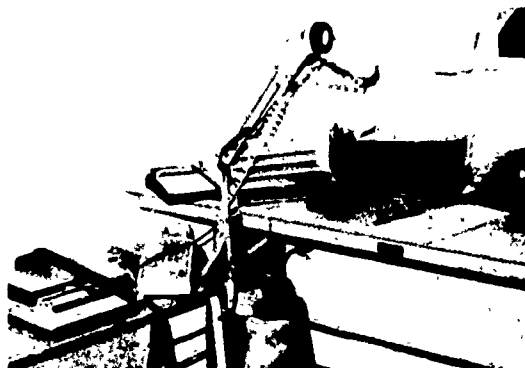


Telephone survey clerk desk modified for worker with muscular dystrophy.



Dental technician site modified for worker with spinal cord injury.

19



Home worksite for insurance claims adjuster with spinal cord injury.

MODIFICATIONS TO WORKSITE 1

THE FUNCTIONAL LIMITATIONS

All disabilities, regardless of severity, can be functionally described as some combination of the following limitations:

Difficulty in interpreting information p. 13
 Limitation of sight p. 15
 Limitation of hearing p. 17
 Limitation of speech p. 19
 Susceptibility to fainting, dizziness, seizures p. 21
 Incoordination p. 23
 Limitation of stamina p. 25.
 Difficulty in moving head p. 27
 Limitation of sensation p. 29
 Difficulty in lifting and reaching with arms p. 31
 Difficulty in handling and fingering p. 33
 Inability to use upper extremities p. 35
 Difficulty in sitting p. 37
 Difficulty in using lower extremities p. 39
 Poor balance p. 41

In the following pages, the WORKSITE illustration is presented with additional guidelines for each of the above limitations.

This resource is intended to be used as a framework for planning the environment in cooperation with the disabled person, who knows his or her abilities best. Design suggestions for each limitation should be examined and evaluated with the specific environment and individual in mind. Use this resource as a guide to planning modifications for everyone concerned, and the result will be a more productive environment for disabled and non-disabled as well.

**LOCATE LABELS, INSTRUCTIONS CLOSE TO REFERRED ITEM
USE SIMPLE WORDS, SYMBOLS AND/OR NUMBERS**

**DEFINE WORK ROUTINE AND TASK SEQUENCE CLEARLY
MINIMIZE NOISE, CLUTTER, AND OTHER DISTRACTIONS
ARRANGE MATERIALS IN ORDER OF USE**

DIFFICULTY IN INTERPRETING INFORMATION

Persons with this limitation have limited understanding of spoken or written information. Approximately 7% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cerebral Palsy
- Cerebrovascular Accidents (Stroke)
- Mental Retardation

23

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Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

**ILLUMINATE SIGNS WELL
USE SIMPLE WORDS, SYMBOLS AND/OR NUMBERS**

**BOOKSTAND OR VIDEO READING AID
FOR EASIER READING.**



**ENLARGED "TOUCHTONE" BUTTONS
AUDIBLE INDICATOR FOR MULTIPLE PHONE LINES**



ILLUMINATED MAGNIFIER

**ROUGH-TEXTURED LEVERS INDICATE
EMERGENCY EXIT *ONLY***

**DOORS TO HAZARDOUS AREAS
SHOULD BE KEPT LOCKED**



**ENTRANCE INDICATORS
2" x 1/8" (50 x 3mm) APPLIED STRIPS WITH 1/2" (13mm) SPACING
OR
1/8" (3mm) GROOVES IN SURFACE WITH 2" (50mm) SPACING**

**AVOID CONSTANT RELOCATION OF MATERIALS
USE BLACK FELT-TIP PENS FOR MAXIMUM LEGIBILITY
OR SENSORY PEN FOR WRITING OR DRAWING RAISED LINES
"TALKING" CALCULATOR FOR AUDIBLE COMPUTATION**

**MINIMIZE NOISE FOR BETTER COMMUNICATION
CONTRAST FURNITURE, DOORWAYS, ETC. WITH SURROUNDINGS BY COLOR AND BRIGHTNESS
MINIMIZE CLUTTER; DO NOT REMOVE ALL "LANDMARKS" (FURNITURE, PARTITIONS) FOR NAVIGATION**

MITIGATION OF SIGHT

ERIC
Full Text Provided by ERIC
TS LESS THAN 1% OF U.S. POPULATION

LIMITATION OF SIGHT

Persons with this limitation include those who cannot read newspaper-sized print, are legally blind (20/200), have vision field defect of 10% or less, or have hemianopsia (one-sided vision). Less than 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

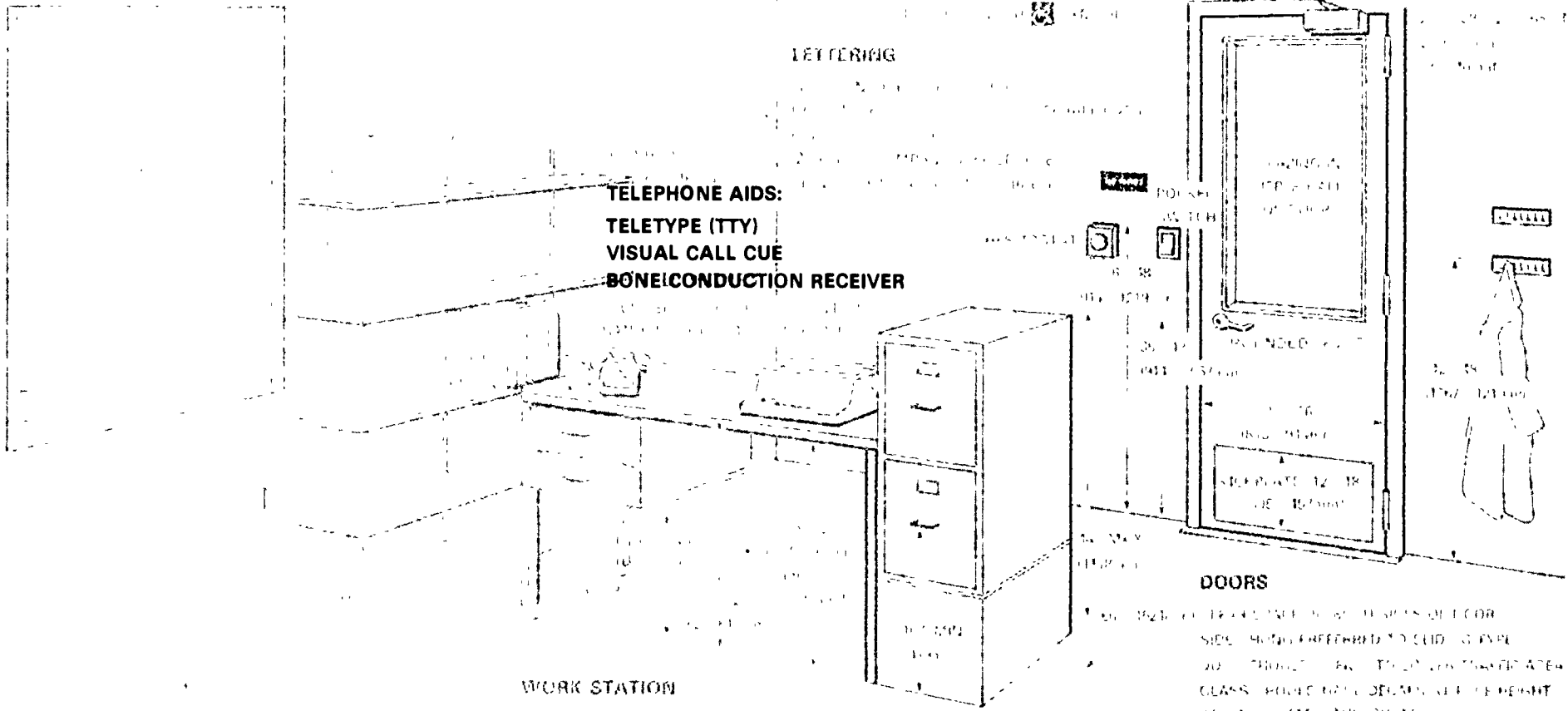
This limitation may be experienced by persons having any of the following disabilities:

Arthritis (Steroid Implications)	Trauma
Cancer	Tunnel Vision
Cataracts	
Cerebral Palsy	
Cerebrovascular Accidents (Hemianopsia)	
Congenital or Traumatic Blindness	
Diabetes Retinopathy	
Glaucoma	
Retina Degeneration	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BOOK STANDS
 BRAILLE COMMUNICATION SYSTEMS
 ILLUMINATED MAGNIFIERS
 LEVER DOOR HANDLES
 SENSORY PENS
 "TALKING" CALCULATOR
 TELEPHONE AIDS
 VIDEO READING AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.



TELEPHONE AIDS:
TELETYPE (TTY)
VISUAL CALL CUE
BONE CONDUCTION RECEIVER

WORK STATION

FACE WORKSTATION TOWARD CO-WORKERS AND OFFICE TRAFFIC FOR FACE-TO-FACE COMMUNICATION

SEATING

STORAGE CABINETS

DOORS

VISUAL INDICATOR IF WORKER MUST ANSWER DOOR

CLEAR WRITTEN INSTRUCTIONS TO MINIMIZE NEED FOR VERBAL ASSISTANCE

THESE TRANSPARENT OVERLAYS SUGGEST IMPROVEMENTS TO WORKSITES WHICH
 WOULD BE MOST BENEFICIAL TO EMPLOYEES WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.
MITIGATION OF HEARING VISUAL LIMITATIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

LIMITATION OF HEARING

Persons with this limitation cannot understand usable speech with or without amplification. Approximately 3% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Agenesis of the Pinna
- Brain Damage
- Cancer
- Complications of Other Diseases
- Congenital or Traumatic Loss
- Otosclerosis

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- TELEPHONE AIDS
- TELEPHONE AIDS FOR NON-VERBAL PERSONS (TTY)

33

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Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

MINIMIZE NOISE FOR BETTER COMMUNICATION

**TELETYPE (TTY) FOR NON-VERBAL
TELEPHONE COMMUNICATION**

**SPEECH COMPRESSOR/RECORDER FOR CLEARER RECORDED SPEECH
COMMUNICATOR OR SPEECH SYNTHESIZER AVAILABLE FOR NON-VERBAL PERSONS**

**FACE WORKSTATION TOWARD CO-WORKERS
AND OFFICE TRAFFIC FOR FACE-TO-FACE COMMUNICATION**

CLEAR WRITTEN INSTRUCTIONS TO MINIMIZE NEED FOR VERBAL ASSISTANCE

LIMITATION OF SPEECH

Persons with this limitation have slow and/or indistinct speech, or use non-verbal communication. Approximately 4% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Brain Damage
- Cancer
- Cerebral Palsy
- Cerebrovascular Accidents (Stroke)
- Hearing Disorders

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- SPEECH COMPRESSOR/RECORDERS
- SPEECH SYNTHESIZERS, COMMUNICATORS
- TELEPHONE AIDS FOR NON-VERBAL PERSONS (TTY)

37

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Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

WALLS

SUDDEN NOISES OR FLASHING LIGHTS
MAY BRING ON SEIZURES

INTERIOR SIGNS

LETTERING

TELEPHONES

BAR OR HANDLE ASSISTS
FIRMLY ANCHORED WHEREVER
ADDED SUPPORT IS NEEDED

WORK STATION

AVOID SECLUDED WORKSTATIONS
AVOID NEED FOR BENDING DOWN TO REACH OR LIFT

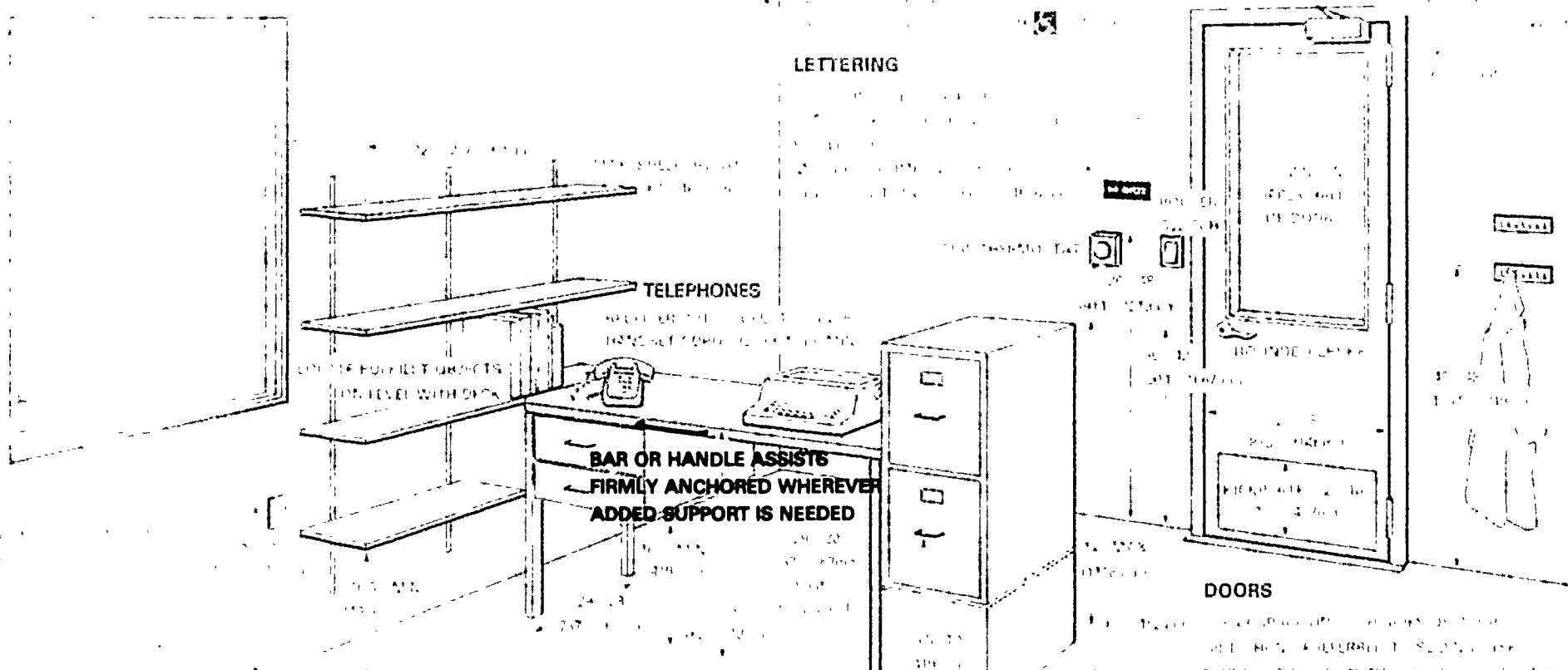
SEATING

STORAGE CABINETS

WHEELED CART OR OTHER AID FOR CARRYING MATERIALS

DOORS

EMERGENCY



LEVEL OF PHYSICAL EXERTION SHOULD NOT VARY GREATLY FROM DAY TO DAY

NOTE: IF THIS LIMITATION CANNOT BE CONTROLLED BY MEDICATION, AVOID TASKS IN WHICH THIS LIMITATION MIGHT JEOPARDIZE THE SAFETY OF OTHERS

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

WILL BE AIDABLE BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

SCEPTIBILITY TO FAINTING, DIZZINESS, SEIZURES

WORKSITE 1

SUSCEPTIBILITY TO FAINTING, DIZZINESS, SEIZURES

Persons with this limitation experience inducible or spontaneous fainting, dizziness, and/or seizures. Approximately 2% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cardiac Conditions
- Cerebral Palsy
- Epilepsy

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- BAR OR HANDLE ASSISTS
- WHEELED CARTS, SHOULDER BAGS, CARRYING AIDS

41

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Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

EASIER DOCUMENT ACCESS
USING BOOKSTAND,
MICROFILM VIEWER,
OR READING MACHINE
(SEE "CONTROLS" AT RIGHT)



TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER
ENLARGED "TOUCHTONE" BUTTONS



CONTROLS SHOULD BE LARGE AND WELL-SPACED
AVOID FINE CONTROL ADJUSTMENTS

BAR OR HANDLE ASSISTS
FIRMLY ANCHORED WHEREVER
ADDED STABILITY IS NEEDED

ELECTRIC, SELF-CORRECTING,
AUTO-RETURN TYPEWRITER
WITH KEYGUARD TO INCREASE
ACCURACY AND STABILITY
AND PAPER ROLL

CASSETTE TAPE RECORDER FOR
MESSAGES, MEMOS, DICTATION, ETC.

LIP AROUND EDGE OF WORK SURFACE TO KEEP MATERIALS FROM FALLING
KEEP WORK SURFACE AS CLEAR AS POSSIBLE
TOOLS AND MATERIALS SHOULD BE HEAVY AND DURABLE
MINIMIZE NEED FOR LONG REACH, STRETCHING UP, BENDING DOWN
USE BOLTS, CLAMPS, OR NON-SLIP MATS TO STABILIZE MATERIALS

INCOORDINATION

Persons with this limitation experience lack of control in placing or directing their extremities (spasticity). Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Ataxia
 Cerebral Palsy
 Cerebrovascular Accidents
 Hemiplegia
 Multiple Sclerosis
 Parkinson's Disease

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BAR OR HANDLE ASSISTS
 BOOKSTANDS
 CASSETTE TAPE RECORDERS
 MICROFILM VIEWERS
 NON-SLIP MATS

READING MACHINES
 TELEPHONE AIDS
 TYPEWRITERS
 TYPEWRITER KEYGUARDS, PAPER ROLLS

45

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Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

**AVOID EXTREMELY DRY AIR, EXTREME OR ABRUPT TEMPERATURE CHANGE
AVOID SMOKE, DUST, FUMES**

**BULKY OBJECTS SHOULD BE
SLID RATHER THAN LIFTED**

**TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER**

**AVOID SLICK SURFACES WHICH MAY BE USED FOR SUPPORT
USE BOLTS, CLAMPS, OR NON-SLIP MATS TO STABILIZE MATERIALS IN USE**

**MINIMIZE EMOTIONAL STRESS
AVOID FREQUENT CHANGES IN WORK SCHEDULE OR LEVEL OF PHYSICAL EXERTION
MINIMIZE (DO NOT ELIMINATE) REQUIREMENTS OF MOBILITY, REACH, LIFTING (MECHANICAL REACHERS, WHEELED CARTS MAY BE USED)**

MITIGATION OF STAMINA

IS APPROX. 3% OF U.S. POPULATION

WORKSITE 1

LIMITATION OF STAMINA

Persons with this limitation experience shortness of breath and/or abnormal elevation of blood pressure due to mild physical exertion. Approximately 3% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Asthma	Multiple Sclerosis
Arthritis	Muscular Dystrophy
Cardiac Conditions	Myasthenia Gravis
Cerebral Palsy	Parkinson's Disease
Cerebrovascular Accidents (Stroke)	Renal Disease
Chronic Bronchitis	Scoliosis/Lordosis/Kyphosis
Cystic Fibrosis	Spinal Cord Injury
Emphysema	Tuberculosis
Hypertension	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

NON-SLIP MATS
TELEPHONE AIDS

43

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Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

WALLS

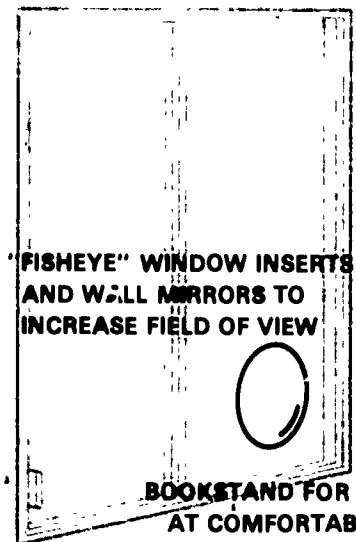
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VISUAL WARNINGS WITHIN FIELD OF VIEW

EMERGENCY 

INTERIOR SIGNS

LETTERING

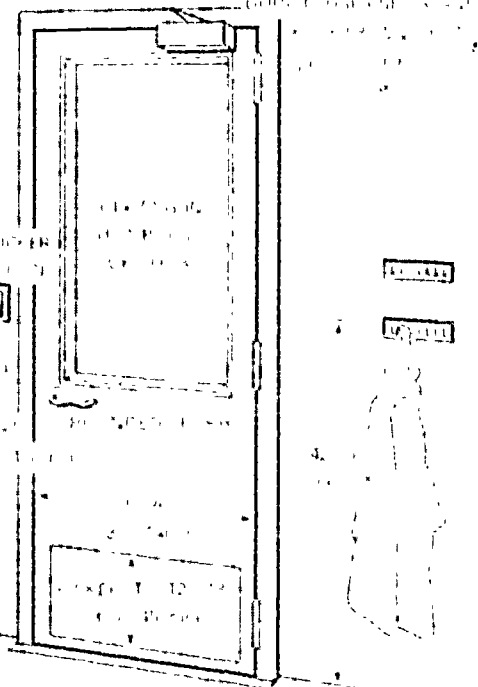


"FISHEYE" WINDOW INSERTS AND WALL MIRRORS TO INCREASE FIELD OF VIEW

BOOKSTAND FOR HOLDING DOCUMENTS AT COMFORTABLE READING ANGLE

**TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER**

TYPEWRITER TILTED FOR BETTER VIEW OF COPY WORK



DOORS

...
...
...

WORK STATION

...
...
...

STORAGE CABINETS

FACE WORKSTATION TOWARD CO-WORKERS AND OFFICE TRAFFIC FOR EASIER COMMUNICATION
...
...
...
AVOID DRAWERS DEEPER THAN 12" (305mm)

SEATING

...
...

RECLINING SWIVEL CHAIR FOR WIDER FIELD OF VIEW

FLOORS

...
...
...

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH WILL AIDABLE BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS. **FIGURES IN MOVING HEAD** CONDITIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

WORKSITE 1

DIFFICULTY IN MOVING HEAD

Persons with this limitation cannot easily look up, down, and/or to the side. Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Arthritis
- Cerebral Palsy
- Contractures due to Burns
- Muscular Dystrophy
- Neck Brace Wearers
- Parkinson's Disease
- Torticollis

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- BOOKSTANDS
- "FISHEYE" WINDOW INSERTS AND WALL MIRRORS
- TELEPHONE AIDS

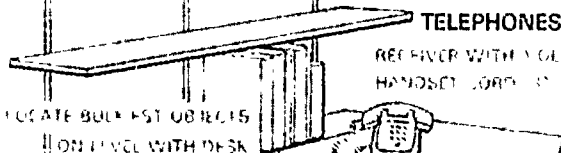
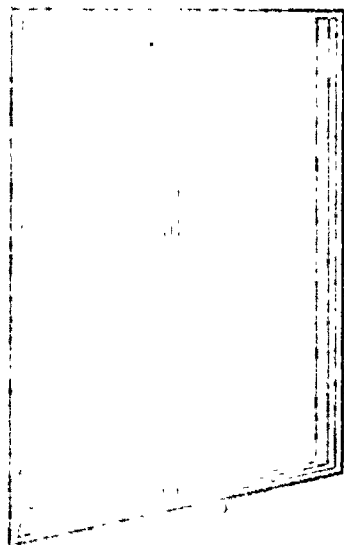
53

54

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

WALLS

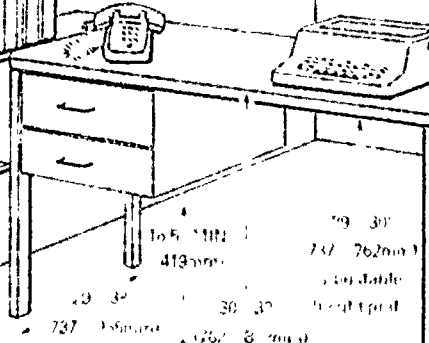
USE FIRE RESISTANT, NON-Glare SURFACES
 AVOID REFLECTIVE SURFACES AND REFLECTIVE GLASS
 AVOID TOTAL SOUND ABSORPTION



TELEPHONES

RECEIVER WITH VOLUME CONTROL
 HANDSET CORD 49 IN. MIN.

LOCATE BULKIEST OBJECTS
 ON LEVEL WITH DESK



WORK STATION

AVOID CENTER DRAWERS
 24\"/>

SEATING

ADJUSTABLE HEIGHT AND SUPPORT FOR LOWER BACK
 (FEET SHOULD REST ON FLOOR OR OTHER SUPPORT)
AVOID SITTING FOR LONG PERIODS OF TIME

INTERIOR SIGNS

LOCATE NEAR DOOR FROM EXIT LATCH SIDE
 LABEL USAGE FACILITIES WITH ♿ SYMBOL

LETTERING

LETTERING DARK PREFERRED
 1/2\"/>

DOOR THERMOSTAT



36 48
 (914 1219mm)

ROCKER SWITCH



36 42
 (914 1067mm)

ROUND LEVER

32 36
 (813 914mm)

KICKPLATE 12' 13'
 (305 357mm)

44\"/>
 (1118mm)

DOORS

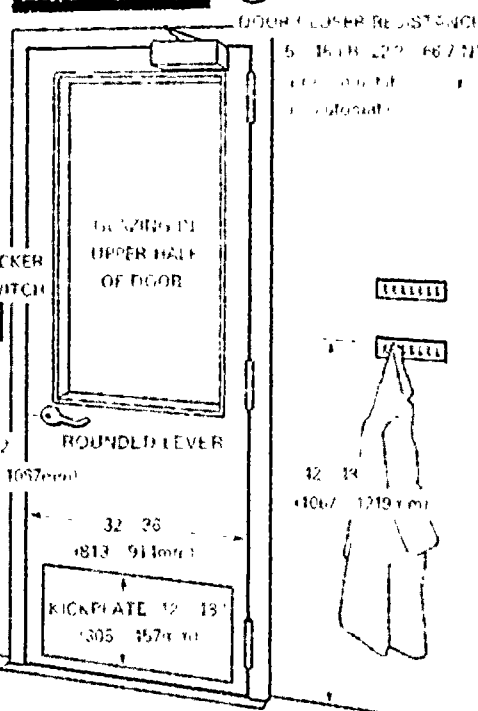
15.4\"/>
 CLEAR SPACE ON BOTH SIDES OF DOOR
 SIDE HINGING PREFERRED TO SLIDING TYPE
 DOOR SHOULD OPEN INTO LOWER TRAFFIC AREA
 GLASS SHOULD HAVE DECALS AT FACE HEIGHT
 0\"/>

STORAGE CABINETS

DRAWERS WITH ROLLERS FOR EASY OPERATION
 U-SHAPED HANDLES 4\"/>

**STORAGE FOR HAZARDOUS MATERIALS, SHARP OBJECTS, ETC.
 SHOULD BE CLEARLY LABELLED**

EMERGENCY



FLOORING

USE LIGHT, MEDIUM DARK COLORS
 AVOID REFLECTIVE LEVEL CHANGE
 AVOID SHARP EDGES, DIRECTION OF GRAIN
 CARPETING PREFERRED
 AVOID CARPET TENDRIPS

**AVOID FLOOR OUTLETS, PHONE TERMINALS, OR
 OTHER PROJECTIONS**

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH
 WILL BE USEFUL TO ALL BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

REPRODUCTION OF THIS ILLUSTRATION IS PROHIBITED WITHOUT PERMISSION OF THE U.S. GOVERNMENT.

APPROXIMATELY 1% OF U.S. POPULATION

LIMITATION OF SENSATION

Persons with this limitation have impaired nerve reception (heat, touch, pain, pressure) in various parts of the body. Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cerebrovascular Accidents (Stroke)
- Spinal Cord Injury
- Trauma

57

000 58

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

WALLS

RELEVANT SIGNS

LEVERING

EMERGENCY

**DOOR CLOSER RESISTANCE:
2 LB (8.9 N) MAX.**

AVOID LIP ON SHELF EDGE

36" (914mm)

**TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER**

**DUPLICATE TACTILE SIGNAGE 30" (762mm)
ABOVE FLOOR IF NEEDED**

33" (914mm)

OR SWITCH EXTENSION

36" (914mm)

**OBJECTS GREATER THAN 2 LBS (0.9Kg)
SHOULD BE SLID RATHER THAN LIFTED**

**ELECTRIC SELF-CORRECTING,
AUTO-RETURN TYPEWRITER
(HANDREST MAY ALSO HELP)**

29" (737mm) MAX.

DOORS

WORK STATION

STORAGE CABINETS

**ARRANGE MATERIALS WITHIN 18" (457mm) REACH IF POSSIBLE
DESK-TOP FILES AND ORGANIZERS FOR BETTER USE OF SPACE**

SEATING

AVOID DRAWERS DEEPER THAN 12" (305mm)

AVOID CABINETS WITH DOORS THAT HINGE UP OR DOWN

MECHANICAL "REACHERS" CAN AID IN OPERATION OF DOORS, FILES, WINDOWS, OTHER CONTROLS, AS WELL AS IN ACCESS TO MATERIALS

OPERATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

WILL AID ABLE-BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

DIFFICULTY IN LIFTING AND REACHING WITH ARMS

WORKSITE 1

DIFFICULTY IN LIFTING AND REACHING WITH ARMS

Persons with this limitation experience decreased mobility, range of motion, and/or strength in their upper extremities. Approximately 6% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cardiac Conditions
- Cerebral Palsy
- Congenital Deformities
- Multiple Sclerosis
- Muscular Dystrophy
- Spinal Cord Injury

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- LIGHT SWITCH EXTENSIONS
- MECHANICAL "REACHERS"
- OPEN DESK-TOP FILES AND STORAGE
- TYPEWRITERS

ci

m-0

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Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

**EASIER DOCUMENT ACCESS
USING BOOKSTAND,
MICROFILM VIEWER,
OR READING MACHINE
(SEE "CONTROLS" AT RIGHT)**



**PEN/PENCIL
THROUGH RUBBER BALL OR
HARD FOAM FOR EASIER GRASP**



**TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER
ENLARGED "TOUCHTONE" BUTTONS**

**ELECTRIC SELF-CORRECTING,
AUTO-RETURN TYPEWRITER
WITH KEYGUARD FOR GREATER
HAND SUPPORT AND ACCURACY
AND PAPER ROLL**

**CONTROLS:
OPTIMUM OPERATING FORCE: 3/4 LB (3.2 N)
PROVIDE AUDITORY/VISUAL FEEDBACK
AVOID SLICK, UNTEXTURED SURFACES
AVOID NEED FOR TWISTING MOTION
PUSH-BUTTON OR ROCKER PREF. TO LEVER OR KNOB**

**CASSETTE TAPE RECORDER FOR
MESSAGES, MEMOS, DICTATION, ETC.**

**AVOID DRAWERS DEEPER THAN 12" (305mm)
OPEN DESK-TOP STORAGE PREFERABLE**

**BULKY OBJECTS SHOULD BE SLID RATHER THAN LIFTED
USE SLICK SURFACES FOR EASIER MOVEMENT OF MATERIALS
USE BOLTS, CLAMPS, OR NON-SLIP MATS WHERE STABILITY IS NEEDED**

DIFFICULTY IN HANDLING AND FINGERING

Persons with this limitation experience decreased mobility, range of motion, and/or strength in their hands. Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Amputations	Muscular Dystrophy
Arthritis	Myasthenia Gravis
Bilateral Hemiparetic	Parkinson's Disease
Cardiac Disorders	Polymyositis
Cerebral Palsy	Severe Burns
Cerebrovascular Accidents (Stroke)	Spinal Cord Injury
Congenital Deformities	Syringomyelia
Dupuytren's Contracture	
Multiple Sclerosis	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BOOKSTANDS	READING MACHINES
CASSETTE TAPE RECORDERS	TELEPHONE AIDS
MICROFILM VIEWERS	TYPEWRITERS
NON-SLIP MATS	TYPEWRITER KEYGUARDS, PAPER ROLLS
OPEN DESK-TOP FILES AND STORAGE	

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

WALLS

INTERIOR SIGNS

LETTERING

EMERGENCY

TELEPHONE AIDS:

**SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER**

**EASIER DOCUMENT ACCESS
USING BOOKSTAND,
MICROFILM VIEWER,
OR READING MACHINE
SEE "CONTROLS" AT RIGHT**

CONTROLS:

**USE PUSH-BUTTON OR ROCKER TYPE
PROVIDE AUDITORY/VISUAL FEEDBACK
AVOID SLICK, UNTEXTURED SURFACES**

**ELECTRIC, SELF-CORRECTING,
AUTO-RETURN TYPEWRITER
WITH PAPER ROLL**

**CASSETTE TAPE RECORDER FOR
MESSAGES, MEMOS, DICTATION, ETC.**

DOORS

**SLICK WORK SURFACE FOR
EASIER MOVEMENT OF MATERIALS**

STORAGE CABINETS

**WORK SURFACE SHOULD BE RAISED OR LOWERED
FOR WORKING WITH FEET OR MOUTHSTICK**

**DRAWERS SHOULD BE FULL WIDTH AND
OPEN DESK-TOP FILES AND STORAGE**

SEATING

OPEN DESK-TOP FILES AND STORAGE

FLOORS

**PERSONS WITH THIS LIMITATION MAY COMPENSATE THROUGH USE OF A MOUTHSTICK, THEIR FEET, OR ELECTRO-MECHANICAL AIDS.
ENVIRONMENTAL CONTROL SYSTEMS ARE AVAILABLE FOR OPERATION OF TELEPHONE, DOOR, LIGHTING, OR OTHER ELECTRICAL APPLIANCES.**

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

WILL AID ABLE-BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

ABILITY TO USE UPPER EXTREMITIES

WORKSITE 1

APPROX. 2% OF U.S. POPULATION

INABILITY TO USE UPPER EXTREMITIES

Persons with this limitation experience complete paralysis, severe incoordination, or loss of upper extremities. Approximately 2% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Amputations
- Arthritis
- Cerebral Palsy
- Congenital Deformities
- Polio
- Spinal Cord Injury

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- BOOKSTANDS
- CASSETTE TAPE RECORDERS
- DOOR OPENERS
- ENVIRONMENTAL CONTROLS
- MICROFILM VIEWERS

- OPEN DESK-TOP FILES AND STORAGE
- READING MACHINES
- SOUND-OPERATED AND OTHER REMOTE SWITCHES
- TELEPHONE AIDS
- TYPEWRITERS
- TYPEWRITER KEYGUARDS, PAPER ROLLS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.



**BULKY OBJECTS SHOULD BE
SLID RATHER THAN LIFTED**

WORK STATION

CLOSET CABINET

MINIMIZE NEED FOR REACHING UP OR BENDING DOWN

SEATING

**SEATING WITH FULL ARMS AND BACKREST, STABLE BASE
SEAT BELTS AND/OR CUSHIONS FOR ADDED STABILITY**

ERIC
Full Text Provided by ERIC

DIFFICULTY IN SITTING

IS APPROX. 5% OF U.S. POPULATION

PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

DIFFICULTY IN SITTING

Persons with this limitation experience lack of strength, restriction of motion, and/or lack of trunk control in bending, turning, or balance. Approximately 5% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

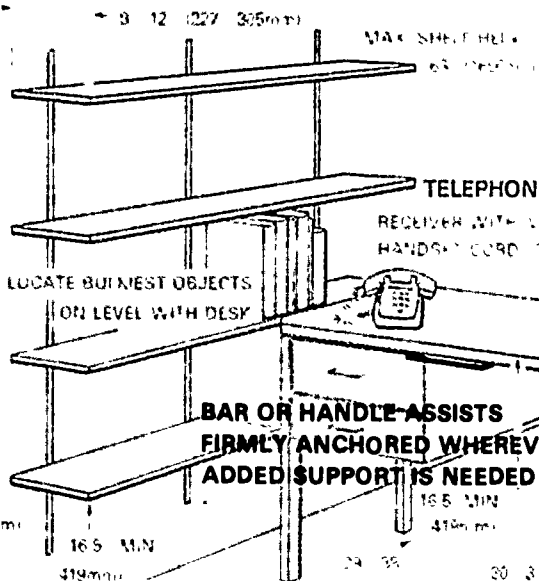
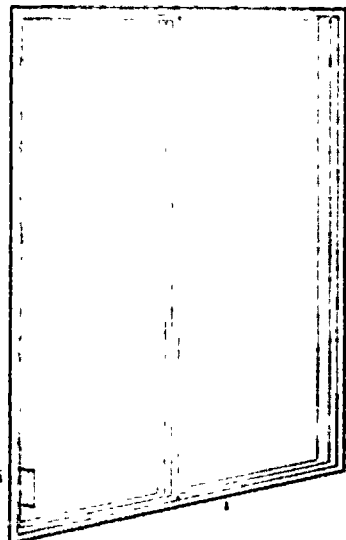
This limitation may be experienced by persons having any of the following disabilities:

- Arthritis of the Spine or Hips
- Congenital Deformities
- Scoliosis/Kyphosis/Lordosis
- Spinal Cord Injury

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

WALLS

AVOID REFLECTIVE SURFACES
 AVOID BOUNCING SOUND OFF WALLS
 AVOID ACoustic SOUND ABSORPTION



**BAR OR HANDLE-ASSISTS
 FIRMLY ANCHORED WHEREVER
 ADDED SUPPORT IS NEEDED**

WORK STATION

AVOID CENTER DRAWERS
 24 INCH MIN AREA BELOW
 AVOID SHARP EDGES AT CORNERS
 NON GLARE LIGHTING TO MINIMIZE

SEATING

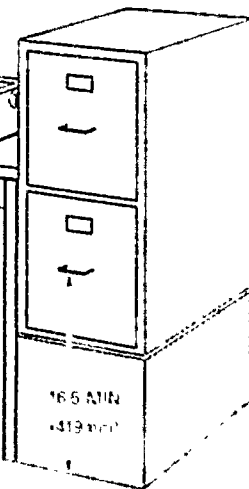
ADJUSTABLE HEIGHT AND SUPPORT FOR LOWER BACK
 FEET SHOULD REST ON FLOOR OR OTHER SUPPORT
**SEATING WITH FULL ARMS AND BACKREST (SWIVEL, CASTER BASE MAY AID SOME PERSONS)
 OR RIGID - ASSIST CHAIR**

INTERIOR SIGNS

USE HIGH CONTRAST
 HIGH VISIBILITY
 18 INCH MIN

LETTERING

USE HIGH CONTRAST
 HIGH VISIBILITY
 ALL CAPS

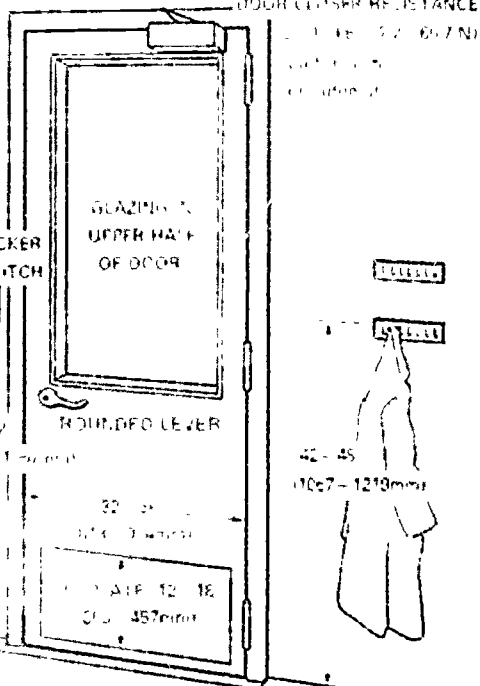


STORAGE CABINETS

PROVIDE CONVENIENT STORAGE FOR WALKING AIDS AT WORKSTATION
 U-SHAPED HANDLES 4 x 15 102mm x 38mm
 DRAWERS SHOULD BE OPERABLE WITH ONE HAND

**SHOULDER BAG, CRUTCH BAG, OR OTHER AID
 FOR CARRYING MATERIALS**

EMERGENCY



DOORS

CLEAR SPACE ON BOTH SIDES OF DOOR
 SIDE HINGE PREFERRED TO SLIDING TYPE
 DOORS SHOULD OPEN INTO LOWER TRAFFIC AREA
 GLASS SHOULD HAVE DECALS AT FACE HEIGHT
 35 120mm MAX THRESHOLD

FLOORS

AVOID SHARP EDGES
 AVOID DARK COLORS
 AVOID SHARP EDGES
 MINUTE FIBER CHANGE
 AVOID SHARP EDGES
 CHANGES IN DIRECTION OF GRAIN
 CARPETING SHOULD BE FIRM EXCEPT FOR OUR

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH WILL AID ABLE-BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS

FACILITY IN USING LOWER EXTREMITIES

NOTE:
 FOR PERSONS USING WHEELCHAIRS AT THE WORKSITE AID.
 NO FURTHER MODIFICATIONS ARE NECESSARY TO WORKSITE 1

DIFFICULTY IN USING LOWER EXTREMITIES

Persons with this limitation experience slowness of gait, impairment of kneeling, rising, walking, standing, and/or stair-climbing. Approximately 4% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Arthritis	Parkinson's Disease
Cancer	Spina Bifida
Cardiac Disorders	Spinal Cord Injury
Cerebral Palsy	
Cerebrovascular Accidents (Stroke)	
Congenital Deformities	
Hemophilia	
Multiple Sclerosis	
Muscular Dystrophy	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BAR OR HANDLE ASSISTS
 CANE/CRUTCH STORAGE CLIPS
 RISING-ASSIST CHAIRS
 WHEELED CARTS, SHOULDER BAGS, CARRYING AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

**BAR OR HANDLE ASSISTS
FIRMLY ANCHORED WHEREVER
ADDED SUPPORT IS NEEDED**

OPTIMUM CONTROL ACTIVATING FORCE: 2 LB (8.9N)

EMERGENCY

DOORS

STORAGE CABINETS

**AVOID SLICK SURFACES WHICH MAY BE USED FOR SUPPORT.
MINIMIZE NEED FOR REACHING UP OR BENDING DOWN:**

AVOID DRAWERS DEEPER THAN 12" (305mm)

**ALLOW AMPLE, UNCLUTTERED AISLE SPACE
MINIMIZE NEED FOR STANDING, WALKING, CARRYING**

SEATING WITH FULL ARMS AND BACKREST, STABLE BASE

POOR BALANCE

Persons with this limitation find it difficult or impossible to maintain balance when moving or when stationary (standing, walking, rising, stair climbing). Approximately 2% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Amputations

Ataxia

Cerebral Palsy

Cerebrovascular Accidents (Stroke)

Deafness

Dystonia Musculorum Deformans

Multiple Sclerosis

Muscular Dystrophy

Parkinson's Disease

Spinal Cord Injury

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BAR OR HANDLE ASSISTS

WHEELED CARTS, SHOULDER BAGS, CARRYING AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

MODIFICATIONS TO WORKSITE 2

THE FUNCTIONAL LIMITATIONS

All disabilities, regardless of severity, can be functionally described as some combination of the following limitations:

Difficulty in interpreting information p. 45
Limitation of sight p. 47
Limitation of hearing p. 49
Limitation of speech p. 51
Susceptibility to fainting, dizziness, seizures p. 53
Incoordination p. 55
Limitation of stamina p. 57
Difficulty in moving head p. 59
Limitation of sensation p. 61
Difficulty in lifting and reaching with arms p. 63
Difficulty in handling and fingering p. 65
Inability to use upper extremities p. 67
Difficulty in sitting p. 69
Difficulty in using lower extremities p. 71
Poor balance p. 73

In the following pages, the WORKSITE illustration is presented with additional guidelines for each of the above limitations.

This resource is intended to be used as a framework for planning the environment in cooperation with the disabled person, who knows his or her abilities best. Design suggestions for each limitation should be examined and evaluated with the specific environment and individual in mind. Use this resource as a guide to planning modifications for everyone concerned, and the result will be a more productive environment for disabled and non-disabled as well.

WALLS

MINIMIZE NOISE FOR BETTER COMMUNICATION

STORAGE CABINETS

INTERIOR SIGNS

LOCALIZATION OF WORKSTATIONS
EASE OF ACCESS TO TOOLS AND MATERIALS

LABEL HAZARDOUS AREAS CLEARLY
USE SIMPLE WORDS, SYMBOLS, AND/OR NUMBERS

LOCATE LABELS, INSTRUCTIONS CLOSE TO REFERRED ITEM

EMERGENCY

ARRANGE MATERIALS IN ORDER OF USE

FIXTURES, GUIDES, JIGS TO HELP POSITION WORK AND TO ELIMINATE ERRORS IN PRODUCTION OR TASK SEQUENCE

TELEPHONES

DOORS

EQUIPMENT CONTROLS

HIGHEST PUSH-BUTTONS WITH RED PREDICTION INDICATOR SHOULD BE AT EAR AND AUDITORY LEVEL
CONTROL SEALS SHOULD BE AT EAR LEVEL
CONTROL SEALS SHOULD BE COVERED

AVOID CONTROLS WITH COMPLEX FUNCTIONS

WORK STATION

AVOID SHARP EDGES AND CORNERS
NON-SLIP SURFACING TO MINIMIZE FALLOUT
WORKING SURFACE SHOULD BE ADJUSTABLE HEIGHT AND SUPPORT FOR LOWER BACK
FEET SHOULD REST ON FLOOR OR OTHER SUPPORT

AVOID ISOLATED WORKSTATION

DEFINE WORK ROUTINE AND TASK SEQUENCE CLEARLY

FLOORS

NON-ABSORBENT MATERIALS IN WARM DARK COLORS
AVOID COLOR CONTRASTS TO REDUCE GLARE
AVOID BATTERIES FOR ELECTRICAL TOOLS
FLOOR COVERING SHOULD BE FLAT TO FLOOR

MINIMIZE NOISE, CLUTTER, AND OTHER DISTRACTIONS

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

WILL AID ABLE BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS

FACULTY IN INTERPRETING INFORMATION

FOR MORE INFORMATION, CONTACT THE NATIONAL CENTER FOR ACCESSIBILITY ON TRANSPARENT OVERLAYS.

WORKSITE 2

DIFFICULTY IN INTERPRETING INFORMATION

Persons with this limitation have limited understanding of spoken or written information. Approximately 7% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cerebral Palsy
- Cerebrovascular Accidents (Stroke)
- Mental Retardation

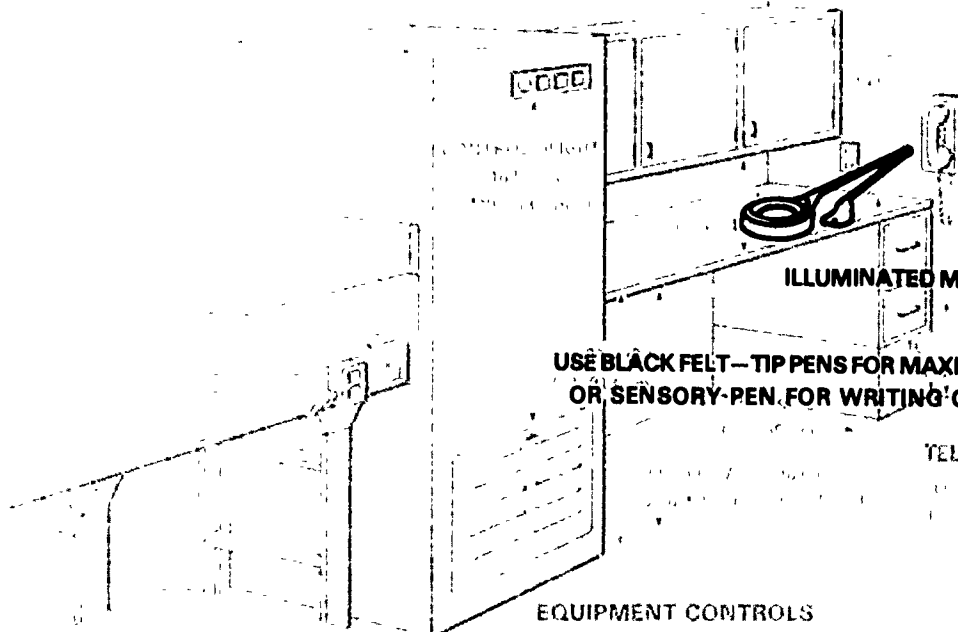
Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

MINIMIZE NOISE FOR BETTER COMMUNICATION

STORAGE CABINETS

ILLUMINATE SIGNS WELL

USE SIMPLE WORDS, SYMBOLS, AND/OR NUMBERS



AUDIBLE INDICATOR FOR MULTIPLE PHONE LINES

ILLUMINATED MAGNIFIER

USE BLACK FELT-TIP PENS FOR MAXIMUM LEGIBILITY OR SENSORY-PEN FOR WRITING OR DRAWING RAISED LINES

TELEPHONES

ROUGH-TEXTURED LEVERS INDICATE EMERGENCY EXIT ONLY

DOORS TO HAZARDOUS AREAS SHOULD BE KEPT LOCKED



AVOID CONSTANT RELOCATION OF MATERIALS

EQUIPMENT CONTROLS

ENTRANCE INDICATORS

2" x 1/8" (50 x 3mm) APPLIED STRIPS WITH 1/2" (13mm) SPACING

OR

1/8" (3mm) GROOVES IN SURFACE WITH 2" (50mm) SPACING

CONTROLS SHOULD BE WELL-SPACED AND CONTRASTED

TEXTURED CONTROL INDICATORS SHOULD BE NEXT TO CONTROL NOT ON IT

AVOID BLINKING LIGHTS

AVOID TOUCH-SENSITIVE SWITCHES

CONTRAST FURNITURE, DOORWAYS, ETC. WITH SURROUNDINGS BY COLOR AND BRIGHTNESS

MINIMIZE CLUTTER, DO NOT REMOVE ALL "LANDMARKS" (FURNITURE, PARTITIONS) FOR NAVIGATION

CONSIDERATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH WILL AID ABLE, BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS

AVOIDATION OF SIGHT

LIMITATION OF SIGHT

Persons with this limitation include those who cannot read newspaper-sized print, are legally blind (20/200), have vision field defect of 10% or less, or have hemianopsia (one-sided vision). Less than 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

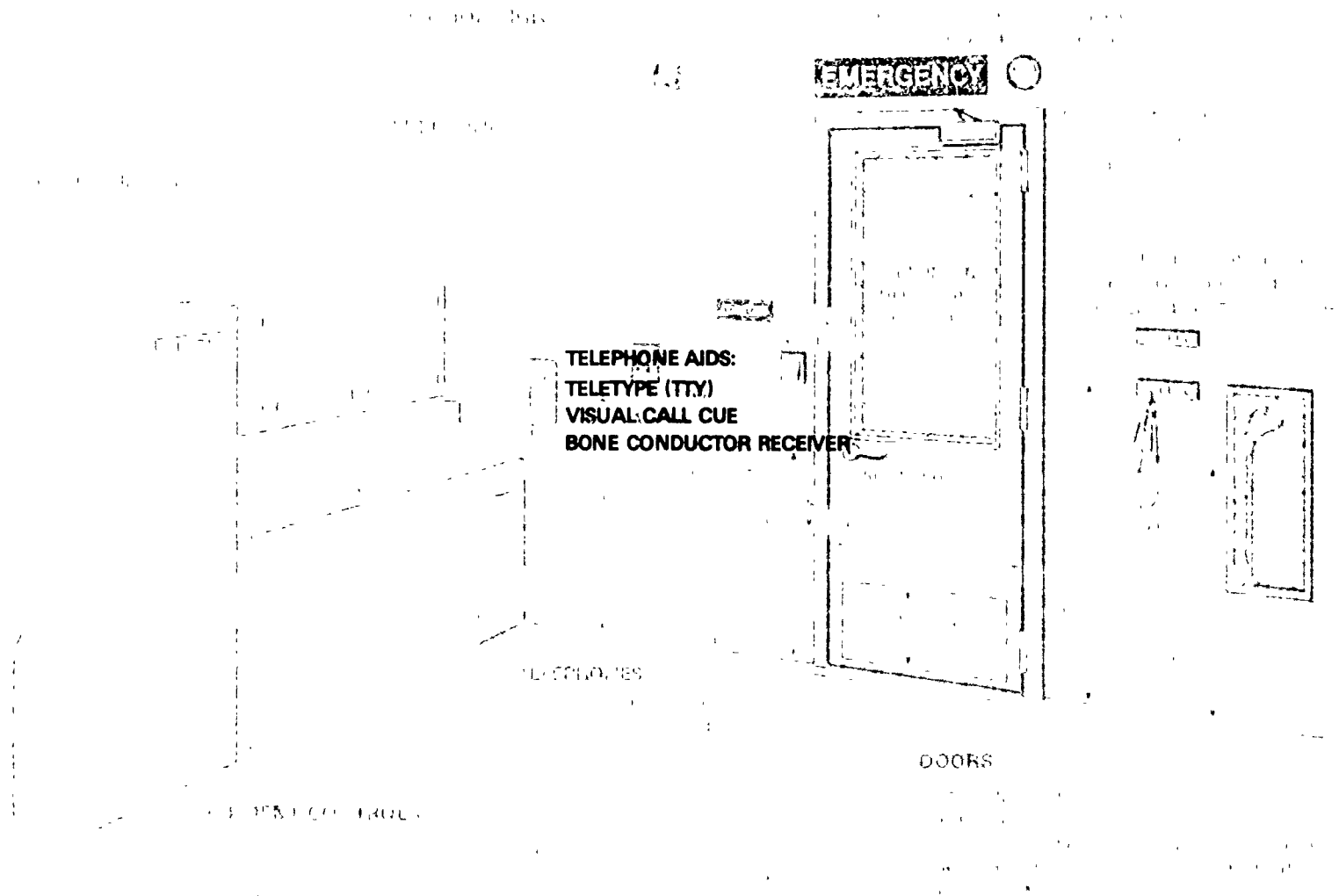
This limitation may be experienced by persons having any of the following disabilities:

Arthritis (Steroid Implications)	Trauma
Cancer	Tunnel Vision
Cataracts	
Cerebral Palsy	
Cerebrovascular Accidents (Hemianopsia)	
Congenital or Traumatic Blindness	
Diabetes Retinopathy	
Glaucoma	
Retina Degeneration	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BOOK STANDS
 BRAILLE COMMUNICATION SYSTEMS
 ILLUMINATED MAGNIFIERS
 LEVER DOOR HANDLES
 SENSORY PENS
 "TALKING" CALCULATOR
 TELEPHONE AIDS
 VIDEO READING AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.



VISUAL CONTROL FEEDBACK AND ALARMS

CONTROL

FLOORS

FACE WORKSTATION TOWARD CO-WORKERS FOR FACE-TO-FACE COMMUNICATION

CLEAR WRITTEN INSTRUCTIONS TO MINIMIZE NEED FOR VERBAL ASSISTANCE WORKSITES WHICH

ACCOMMODATION OF PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS
 ALL LIMITATIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

LIMITATION OF HEARING

Persons with this limitation cannot understand usable speech with or without amplification. Approximately 3% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Agenesis of the Pinna
- Brain Damage
- Cancer
- Complications of Other Diseases
- Congenital or Traumatic Loss
- Otosclerosis

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- TELEPHONE AIDS
- TELEPHONE AIDS FOR NON-VERBAL PERSONS (TTY)

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

MINIMIZE NOISE FOR BETTER COMMUNICATION

STORAGE CABINETS

TELEPHONE

EMERGENCY

**TELETYPE (TTY) FOR NON-VERBAL
TELEPHONE CONVERSATION**

**SPEECH SYNTHESIZER OR COMMUNICATOR FOR
NON-VERBAL PERSONS**

TELEPHONE'S

EQUIPMENT CONTROLS

DOORS

WORKSTATION

FLOORS

**FACE WORKSTATION TOWARD CO-WORKERS FOR FACE-TO-FACE COMMUNICATION
CLEAR WRITTEN INSTRUCTIONS TO MINIMIZE NEED FOR VERBAL ASSISTANCE**

SPECIFIC ALLEYS ON THIS CONSTRUCTION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

WILL BE ABLE TO EMPLOY AS MANY PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

IMITATION OF SPEECH

ADDITIONAL CAPTIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS

WORKSITE 2

LIMITATION OF SPEECH

Persons with this limitation have slow and/or indistinct speech, or use non-verbal communication. Approximately 4% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Brain Damage
- Cancer
- Cerebral Palsy
- Cerebrovascular Accidents (Stroke)
- Hearing Disorders

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- SPEECH COMPRESSOR/RECORDERS
- SPEECH SYNTHESIZERS, COMMUNICATORS
- TELEPHONE AIDS FOR NON-VERBAL PERSONS (TTY)

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

INTERIOR SIGNS

LETTERING

STORAGE CABINETS

EMERGENCY

**SUDDEN NOISES OR FLASHING LIGHTS
MAY BRING ON SEIZURES**

**BAR OR HANDLE ASSISTS FIRMLY ANCHORED
WHEREVER ADDED STABILITY IS NEEDED**

TELEPHONES

DOORS

EQUIPMENT CONTROLS

**AVOID NEED FOR BENDING DOWN
TO REACH OR LIFT**

**WHEELED CART OR OTHER AID
FOR CARRYING MATERIALS**

USE "DEADMAN" SWITCHES

WORK STATION

AVOID SECLUDED WORKSTATIONS

FLOORS

LEVEL OF PHYSICAL EXERTION SHOULD NOT VARY GREATLY FROM DAY TO DAY

NOTE: IF THIS LIMITATION CANNOT BE CONTROLLED BY MEDICATION, AVOID TASKS IN WHICH THIS LIMITATION MIGHT JEOPARDIZE THE SAFETY OF OTHERS

**SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH
WILL AID ABLE-BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS**

SCEPTIBILITY TO FAINTING, DIZZINESS, SEIZURES

WORKSITE 2

SUSCEPTIBILITY TO FAINTING, DIZZINESS, SEIZURES

Persons with this limitation experience inducible or spontaneous fainting, dizziness, and/or seizures. Approximately 2% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cardiac Conditions
- Cerebral Palsy
- Epilepsy

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- BAR OR HANDLE ASSISTS
- WHEELED CARTS, SHOULDER BAGS, CARRYING AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

STORAGE CABINETS

TELEPHONE

TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER
ENLARGED "TOUCHTONE" BUTTONS

BAR OR HANDLE ASSISTS FIRMLY ANCHORED
WHEREVER ADDED SUPPORT IS NEEDED

USE FIXTURES, GUIDES, NON-SLIP MATS TO STABILIZE MATERIALS

TOOLS AND MATERIALS
SHOULD BE HEAVY AND DURABLE

CONTROLS SHOULD BE WELL-SPACED
GUARDS ON CONTROLS TO AVOID ACCIDENTAL ACTIVATION
AVOID SIMULTANEOUS CONTROL FUNCTIONS
AVOID FINE CONTROL ADJUSTMENTS
AVOID TOUCH-SENSITIVE CONTROLS

KEEP WORKSURFACE AS CLEAR AS POSSIBLE
UP ON EDGE OF WORKSURFACE TO KEEP MATERIALS FROM FALLING
MINIMIZE NEED FOR LONG REACH, STRETCHING UP, BENDING DOWN

INCOORDINATION

Persons with this limitation experience lack of control in placing or directing their extremities (spasticity). Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Ataxia
 Cerebral Palsy
 Cerebrovascular Accidents
 Hemiplegia
 Multiple Sclerosis
 Parkinson's Disease

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BAR OR HANDLE ASSISTS
 BOOKSTANDS
 CASSETTE TAPE RECORDERS
 MICROFILM VIEWERS
 NON-SLIP MATS

READING MACHINES
 TELEPHONE AIDS
 TYPEWRITERS
 TYPEWRITER KEYGUARDS, PAPER ROLLS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

**AVOID EXTREMELY DRY AIR, EXTREME OR ABRUPT TEMPERATURE CHANGE:
AVOID SMOKE, DUST, FUMES**

**TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER**

EMERGENCY



DOORS

**BULKY OBJECTS SHOULD BE
SLID RATHER THAN LIFTED**

MAX. ACTIVATING FORCE: 2 LB (8.9 N)

WORKSTATION

**MINIMIZE STRETCHING, KNEELING, BENDING DOWN
AVOID SLICK SURFACES WHICH MAY BE USED FOR SUPPORT
USE BOLTS, CLAMPS, FIXTURES, OR NON-SLIP MATS TO STABILIZE MATERIALS IN USE**

FLOORS

**USE HIGH-CONTRAST MATERIALS FOR MARKING
AVOID COLOR CONTRAST DEFLECTING LIGHTS
AVOID SLIP, TRIP, OR FALL HAZARDS**

MINIMIZE EMOTIONAL STRESS

AVOID FREQUENT CHANGES IN WORK SCHEDULE OR LEVEL OF PHYSICAL EXERTION

**MINIMIZE (DO NOT ELIMINATE) REQUIREMENTS OF MOBILITY, REACH, LIFTING (MECHANICAL REACHERS, WHEELED CARTS MAY BE USED)
WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.**

MITIGATION OF STAMINA

ALL LIMITATIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

WORKSITE 2

LIMITATION OF STAMINA

Persons with this limitation experience shortness of breath and/or abnormal elevation of blood pressure due to mild physical exertion. Approximately 3% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Asthma	Multiple Sclerosis
Arthritis	Muscular Dystrophy
Cardiac Conditions	Myasthenia Gravis
Cerebral Palsy	Parkinson's Disease
Cerebrovascular Accidents (Stroke)	Renal Disease
Chronic Bronchitis	Scoliosis/Lordosis/Kyphosis
Cystic Fibrosis	Spinal Cord Injury
Emphysema	Tuberculosis
Hypertension	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

NON-SLIP MATS
TELEPHONE AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

WALLS

INTERIOR WALLS

VISUAL WARNINGS WITHIN FIELD OF VIEW

EMERGENCY

"FISHEYE" WINDOW INSERTS AND
WALL MIRRORS TO INCREASE FIELD OF VIEW



STORAGE

TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER

WORKSTANDS TO LOCATE MATERIALS
WITHIN COMFORTABLE VIEW

AVOID DRAWERS, STORAGE DEEPER THAN 12" (305mm)
MINIMIZE REACH UP, DOWN, OR BEHIND

TELEPHONES

FLOORS

CONSOLIDATE CONTROLS, INFORMATION DISPLAYS

35-54" (875-1372mm) ABOVE FLOOR

AVOID SIMULTANEOUS CONTROLS

FLOORS

RECLINING SWIVEL SEATING FOR WIDER FIELD OF VIEW

FACE WORKSTATION TOWARD CO-WORKERS FOR FACE-TO-FACE COMMUNICATION

FACILITY IN MOVING HEAD

ERIC
Full Text Provided by ERIC
S APPROX. 1% OF U.S. POPULATION

WORKSITE 2

DIFFICULTY IN MOVING HEAD

Persons with this limitation cannot easily look up, down, and/or to the side. Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

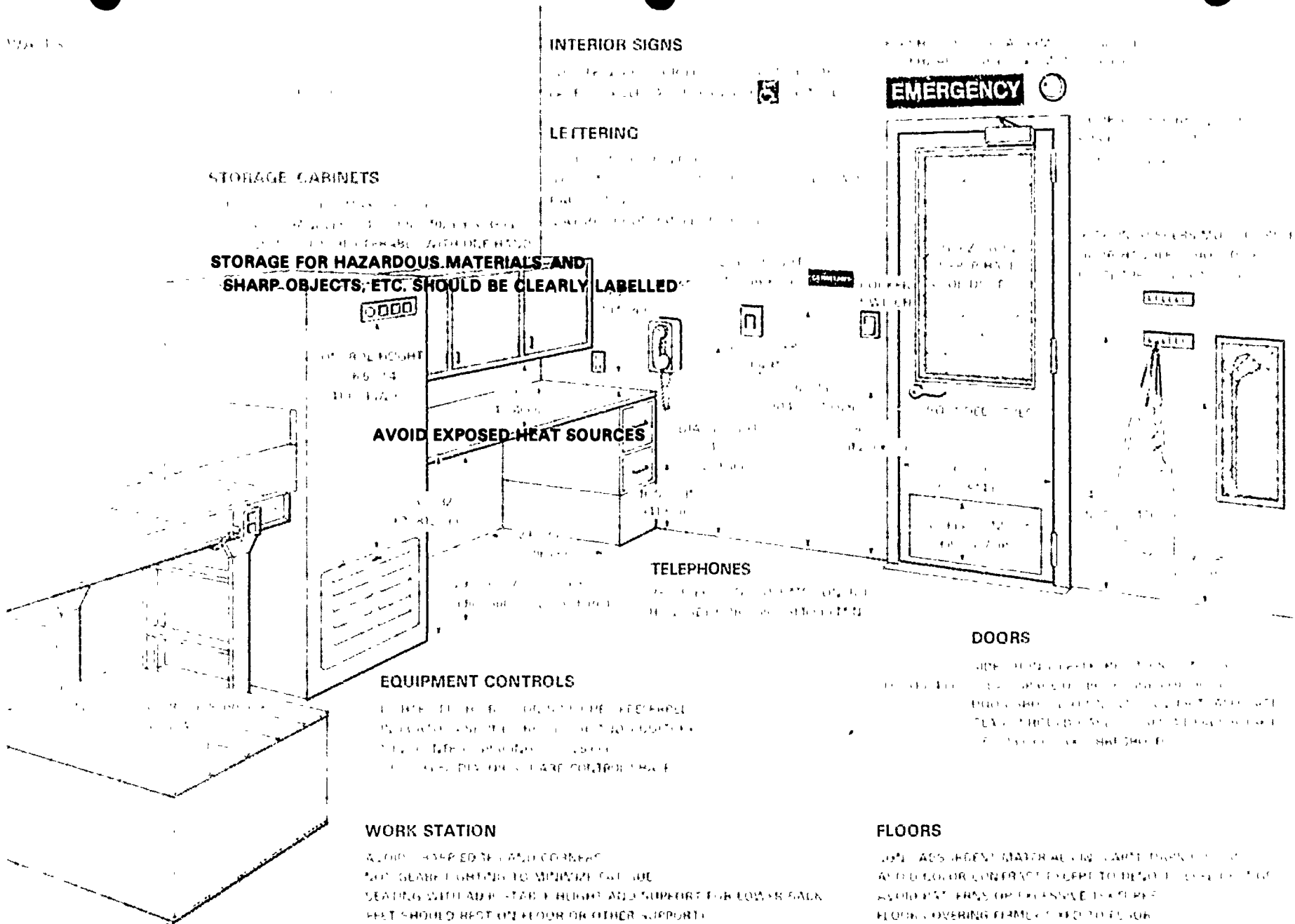
This limitation may be experienced by persons having any of the following disabilities:

- Arthritis
- Cerebral Palsy
- Contractures due to Burns
- Muscular Dystrophy
- Neck Brace Wearers
- Parkinson's Disease
- Torticollis

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- BOOKSTANDS
- "FISHEYE" WINDOW INSERTS AND WALL MIRRORS
- TELEPHONE AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.



STORAGE CABINETS

STORAGE FOR HAZARDOUS MATERIALS AND SHARP OBJECTS, ETC. SHOULD BE CLEARLY LABELLED

AVOID EXPOSED HEAT SOURCES

EQUIPMENT CONTROLS

CONTROLS SHOULD BE EASILY REACHABLE
AND CLEARLY LABELED TO MINIMIZE ERROR
SEATING WITH ADEQUATE BACK AND SUPPORT FOR LOWER BACK
FEET SHOULD REST ON FLOOR OR OTHER SUPPORT

WORK STATION

ALWAYS KEEP FEET AND ANKLES
AND KNEES LIGHTLY TO MINIMIZE FATIGUE
SEATING WITH ADEQUATE BACK AND SUPPORT FOR LOWER BACK
FEET SHOULD REST ON FLOOR OR OTHER SUPPORT

AVOID SITTING FOR LONG PERIODS OF TIME WITHOUT BREAK

INTERIOR SIGNS

LETTERING

TELEPHONES

DOORS

FLOORS

DO NOT ADD HEAVY MATERIAL ON FLOOR
AVOID COLOR CONTRAST EXCEPT TO BE AWARE OF
ADDITIONAL RISKS OR OBSTACLES TO SAFE
FLOOR COVERING FIRMLY ATTACHED TO FLOOR

AVOID FLOOR OUTLETS, PHONE TERMINALS, OTHER PROJECTIONS

SPECIFICATIONS ON THIS ILLUSTRATION SUGGEST IMPROVEMENTS TO WORKSITES WHICH

AID ABLE BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

MITIGATION OF SENSATION

ERGONOMIC LIMITATIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

TS APPROX. 1% OF U.S. POPULATION

LIMITATION OF SENSATION

Persons with this limitation have impaired nerve reception (heat, touch, pain, pressure) in various parts of the body. Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cerebrovascular Accidents (Stroke)
- Spinal Cord Injury
- Trauma

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

AVOID CABINETS WITH DOORS THAT HINGE UP OR DOWN

LETTERING

**DOOR, CLOSER, RESISTANCE:
2 LB (8.9 N) MAX.**

**DUPLICATE TACTILE SIGNAGE 30" (762mm)
ABOVE FLOOR IF NEEDED**

**TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER**

36" (914mm)

36" (914mm) OR SWITCH EXTENSION

**AVOID DRAWERS
DEEPER THAN 12" (305mm)**

36" (914mm)

36" (914mm)

29" (737mm)
MAX.

EQUIPMENT CONTROLS

**OBJECTS GREATER THAN 2 LBS (0.9Kg)
SHOULD BE SLID RATHER THAN LIFTED**

WORK STATION

FLOORS

ARRANGE MATERIALS WITHIN 18" (457mm) REACH IF POSSIBLE

MECHANICAL REACHERS CAN AID IN OPERATION OF DOORS, FILES, WINDOWS, OTHER CONTROLS, AS WELL AS IN ACCESS TO MATERIALS

AID ABLE, BODIED AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS.

FACULTY IN LIFTING AND REACHING WITH ARMS

WORKSITE 2

DIFFICULTY IN LIFTING AND REACHING WITH ARMS

Persons with this limitation experience decreased mobility, range of motion, and/or strength in their upper extremities. Approximately 6% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Cardiac Conditions
- Cerebral Palsy
- Congenital Deformities
- Multiple Sclerosis
- Muscular Dystrophy
- Spinal Cord Injury

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- LIGHT SWITCH EXTENSIONS
- MECHANICAL "REACHERS"
- OPEN DESK-TOP FILES AND STORAGE
- TYPEWRITERS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

AVOID LATCHES ON STORAGE CABINETS

**TELEPHONE AIDS:
SPEAKERPHONE
HEADSET RECEIVER
ADJUSTABLE ARM FOR RECEIVER**

**ϕ
PEN/PENCIL THROUGH RUBBER BALL
OR HARD FOAM FOR EASIER GRASP**

TOOL STANDS/HOLDERS MAKE GRASP EASIER

**BULKY OBJECTS SHOULD BE SLID
RATHER THAN LIFTED**

**PUSH—BUTTON OR ROCKER TYPE PREF. TO LEVER OR KNOB
OPTIMUM OPERATING FORCE: 3/4 LB (3.2 N)
AVOID NEED FOR ROTATING MOTION
AVOID SLICK, UNTEXTURED CONTROL SURFACES**

**USE SLICK WORKSURFACES FOR EASIER MOVEMENT OF MATERIALS
USE BOLTS, CLAMPS, OR NON—SLIP MATS WHERE STABILITY IS NEEDED**

DIFFICULTY IN HANDLING AND FINGERING

Persons with this limitation experience decreased mobility, range of motion, and/or strength in their hands. Approximately 1% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

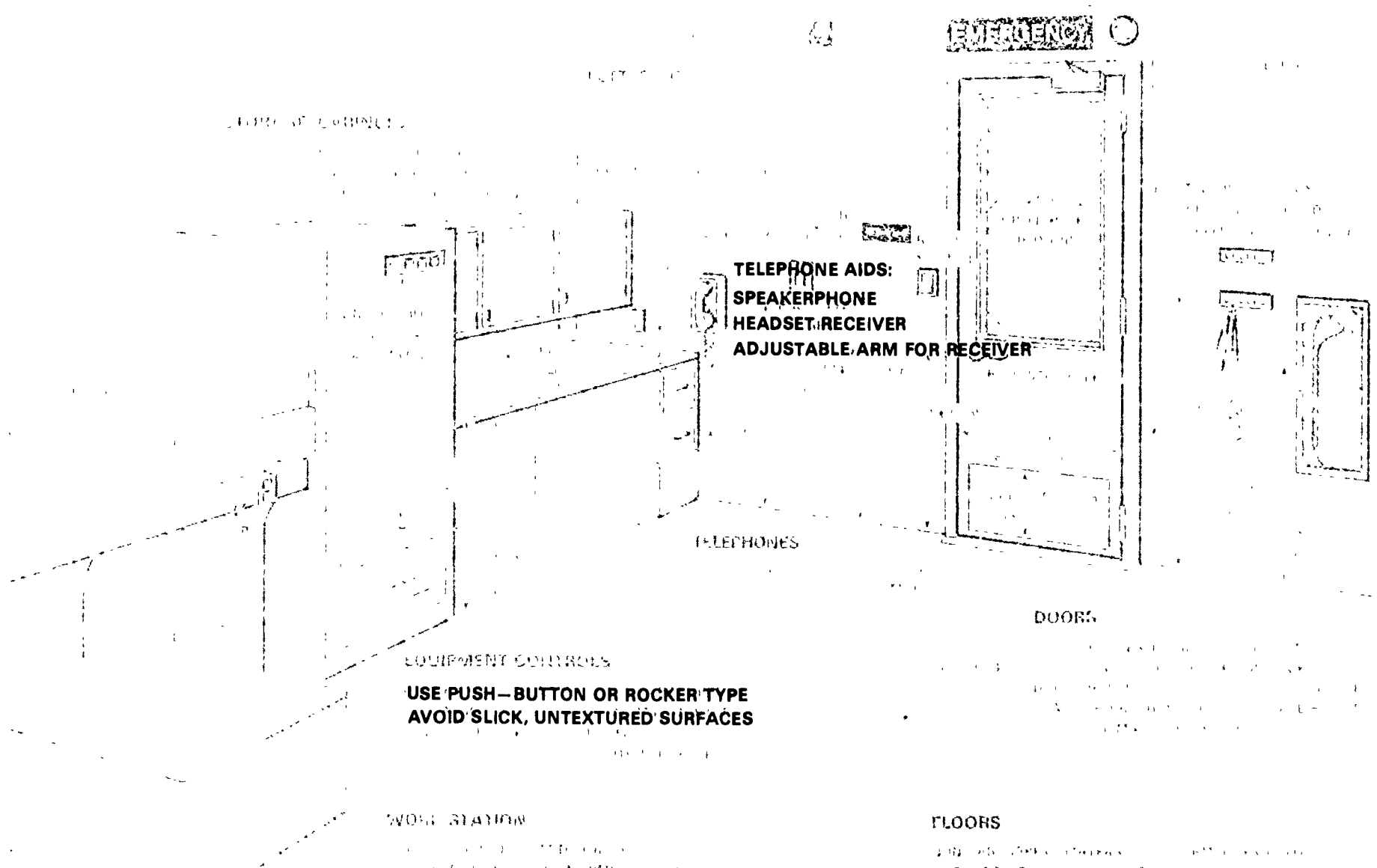
This limitation may be experienced by persons having any of the following disabilities:

Amputations	Muscular Dystrophy
Arthritis	Myasthenia Gravis
Bilateral Hemiparetic	Parkinson's Disease
Cardiac Disorders	Polymyositis
Cerebral Palsy	Severe Burns
Cerebrovascular Accidents (Stroke)	Spinal Cord Injury
Congenital Deformities	Syringomyelia
Dupuytren's Contracture	
Multiple Sclerosis	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BOOKSTANDS	READING MACHINES
CASSETTE TAPE RECORDERS	TELEPHONE AIDS
MICROFILM VIEWERS	TYPEWRITERS
NON-SLIP MATS	TYPEWRITER KEYGUARDS, PAPER ROLLS
OPEN DESK-TOP FILES AND STORAGE	

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.



TELEPHONE AIDS:
SPEAKERPHONE
HEADSET/RECEIVER
ADJUSTABLE ARM FOR RECEIVER

USE PUSH-BUTTON OR ROCKER TYPE
AVOID SLICK, UNTEXTURED SURFACES

WORKSURFACE SHOULD BE RAISED OR LOWERED FOR WORKING WITH FEET OR MOUTHSTICK
USE SLICK SURFACES FOR EASIER MOVEMENT OF MATERIALS

PERSONS WITH THIS LIMITATION MAY COMPENSATE THROUGH USE OF A MOUTHSTICK, THEIR FEET, OR ELECTRO-MECHANICAL AIDS
ENVIRONMENTAL CONTROL SYSTEMS ARE AVAILABLE FOR OPERATION OF TELEPHONE, DOOR, LIGHTING, OR OTHER ELECTRICAL APPLIANCES
ADJUSTABLE WORKSURFACES AS WELL AS PERSONS WITH SENSORY OR LOWER EXTREMITY LIMITATIONS

ABILITY TO USE UPPER EXTREMITIES

WORKSITE 2

INABILITY TO USE UPPER EXTREMITIES

Persons with this limitation experience complete paralysis, severe incoordination, or loss of upper extremities. Approximately 2% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Amputations
- Arthritis
- Cerebral Palsy
- Congenital Deformities
- Polio
- Spinal Cord Injury

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

- BOOKSTANDS
- CASSETTE TAPE RECORDERS
- DOOR OPENERS
- ENVIRONMENTAL CONTROLS
- MICROFILM VIEWERS

- OPEN DESK-TOP FILES AND STORAGE
- READING MACHINES
- SOUND-OPERATED AND OTHER REMOTE SWITCHES
- TELEPHONE AIDS
- TYPEWRITERS
- TYPEWRITER KEYGUARDS, PAPER ROLLS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

**BULKY OBJECTS SHOULD BE
SLID RATHER THAN LIFTED**

MINIMIZE NEED FOR REACHING UP OR BENDING DOWN

**SEATING WITH FULL ARMS AND BACKREST, STABLE BASE
SEAT BELTS AND/OR CUSHIONS FOR ADDED STABILITY**

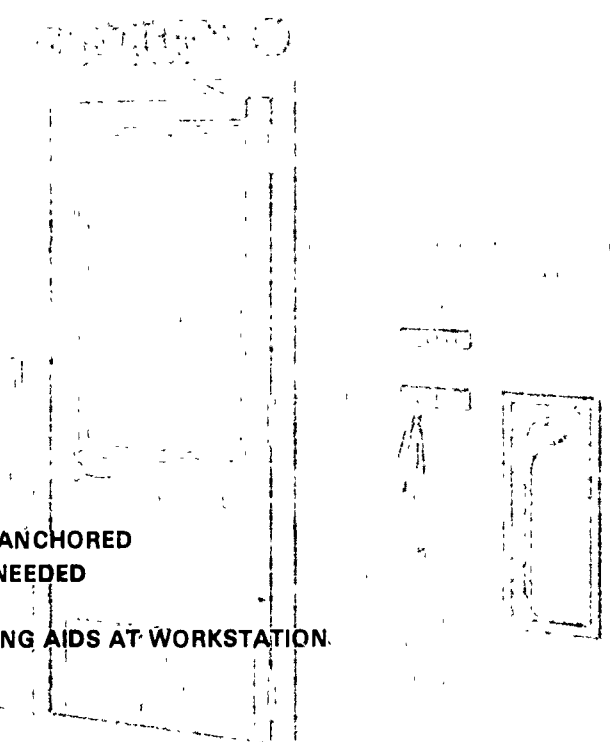
DIFFICULTY IN SITTING

Persons with this limitation experience lack of strength, restriction of motion, and/or lack of trunk control in bending, turning, or balance. Approximately 5% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

- Arthritis of the Spine or Hips
- Congenital Deformities
- Scoliosis/Kyphosis/Lordosis
- Spinal Cord Injury

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.



→ **BAR OR HANDLE ASSISTS FIRMLY ANCHORED
 WHEREVER ADDED SUPPORT IS NEEDED**
PROVIDE CONVENIENT STORAGE FOR WALKING AIDS AT WORKSTATION.

**SHOULDER BAG, CRUTCH BAG,
 OR OTHER AID FOR CARRYING MATERIALS**

**AVOID NEED FOR CARRYING HEAVY
 OBJECTS (INHIBITS POSTURE)**

AVOID CONTROLS REQUIRING BOTH HANDS

NOTE:
**FOR PERSONS USING WHEELCHAIRS RATHER THAN WALKING AIDS,
 NO FURTHER MODIFICATIONS ARE NECESSARY TO WORKSITE 2**

**SEATING WITH FULL ARMS AND BACKREST
 (SWIVEL, CASTER BASE MAY AID SOME PERSONS) OR RISING—ASSIST CHAIR**

DIFFICULTY IN USING LOWER EXTREMITIES

Persons with this limitation experience slowness of gait, impairment of kneeling, rising, walking, standing, and/or stair-climbing. Approximately 4% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Arthritis	Parkinson's Disease
Cancer	Spina Bifida
Cardiac Disorders	Spinal Cord Injury
Cerebral Palsy	
Cerebrovascular Accidents (Stroke)	
Congenital Deformities	
Hemophilia	
Multiple Sclerosis	
Muscular Dystrophy	

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BAR OR HANDLE ASSISTS
 CANE/CRUTCH STORAGE CLIPS
 RISING-ASSIST CHAIRS
 WHEELED CARTS, SHOULDER BAGS, CARRYING AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

INTERIOR SIGNS

EMERGENCY

EMERGENCY

LETTERING

STORAGE CABINETS

AVOID SLICK SURFACES WHICH MAY BE USED FOR SUPPORT

BAR OR HANDLE ASSISTS
FIRMLY ANCHORED WHEREVER
ADDED SUPPORT IS NEEDED

AVOID DRAWERS DEEPER THAN 12" (305mm)

TELEPHONES

EQUIPMENT CONTROLS

OPTIMUM ACTIVATING FORCE: 2LB (8.9N)

WORK STATION

MINIMIZE NEED FOR STANDING, WALKING, CARRYING

MINIMIZE NEED FOR REACHING UP OR BENDING DOWN

SEATING WITH FULL ARMS AND BACKREST, STABLE BASE

DOORS

FLOORS

ALLOW AMPLE, UNCLUTTERED AISLE SPACE

STATIONARY WORKSTATIONS SHOULD SUGGEST IMPROVEMENTS TO WORKSITES WHICH

ARE ACCESSIBLE TO PERSONS WITH PHYSICAL, COGNITIVE, OR BALANCE

OR BALANCE

IF SPECIFIC FUNCTIONAL LIMITATIONS ARE DESCRIBED ON TRANSPARENT OVERLAYS.

IS APPROX. 2% OF U.S. POPULATION

POOR BALANCE

Persons with this limitation find it difficult or impossible to maintain balance when moving or when stationary (standing, walking, rising, stair climbing). Approximately 2% of the U.S. population is affected to some degree (National Academy of Sciences, 1976).

This limitation may be experienced by persons having any of the following disabilities:

Amputations

Ataxia

Cerebral Palsy

Cerebrovascular Accidents (Stroke)

Deafness

Dystonia Musculorum Deformans

Multiple Sclerosis

Muscular Dystrophy

Parkinson's Disease

Spinal Cord Injury

Aids suggested on the illustration below have been used by persons having this limitation. No endorsement of specific products is intended. The reader is encouraged to obtain further information from suppliers listed in the appendix under the following product headings:

BAR OR HANDLE ASSISTS

WHEELED CARTS, SHOULDER BAGS, CARRYING AIDS

Further modifications to WORKSITE 1 for persons having this limitation are suggested on the illustration. Each one should be selected, amended, or rejected according to the expressed needs of the individual and the job.

PRODUCT SUPPLIER INFORMATION

SPECIFIC PRODUCT INFORMATION CONCERNING AIDS AND DEVICES MENTIONED IN THIS RESOURCE CAN BE OBTAINED FROM THESE SUPPLIERS:

BAR OR HANDLE ASSISTERS

Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 G.E. Miller, 484 S. Broadway, Yonkers, NY 10705
 Lumex, Inc., 100 Spence St., Bay Shore, NY 11706
 Tubular Specialties Manufacturing, Inc., 8119 South Beach St.,
 P.O. Box 71527 Florence Branch, Los Angeles, CA 90001

BOOKSTANDS

Abbey Medical Equipment 800-421-1170
 APARCO, Inc., 215 A Street, Boston, MA 02210
 FashionAble, Rocky Hill, NJ 08553
 Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 G.E. Miller, 484 S. Broadway, Yonkers, NY 10705
 Maddak, Inc., Pequannock, NJ 07440

BRILLE COMMUNICATION SYSTEMS

Elinfa, Inc., Suite 1114, 1725 "K" St., N.W., Washington, D.C. 20006

CANE/CRUTCH STORAGE CLIPS

Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 Maddak, Inc., Pequannock, NJ 07440

CASSETTE TAPE RECORDERS

Grundig 2050 Stenorette (uses only Grundig Cassettes),
 GRUNDIG International, Ltd, Newlands Park, London SE26 5NQ
 Panasonic RQ-212DAS Recorder, Matsushita Electric Corp. of America,
 1 Panasonic Way, Secaucus, NJ 07094
 Sony TC-205 Recorder, Sony Corp. of America, 9 West 57th St.,
 New York, NY 10019

COMMUNICATION AIDS FOR NON-VERBAL PERSONS

Prentke Romich Co., RD2, Box 191, Shreve, Ohio 44676
 Telesensory Systems, Inc., 3408 Hillview Ave., P.O. Box 10099,
 Palo Alto, CA 94304
 "VIP" and "Talking Pocket", Automated Data Systems, Inc.,
 P.O. Box 4062, Madison, WI 53711
 Zygo Industries, Inc., P.O. Box 1008, Portland, OR 97207

DOOR OPENERS

LCN Closers, Railroad Ave., Princeton, IL 61356
 Overhead Door Corp., 6250 LBJ Freeway, Dallas, TX 75204
 Power Access Corp., 96 Birch Ave., Little Silver, NJ 07739
 Prentke Romich Co., RD 2, Box 191, Shreve, Ohio 44676
 Securitron Magnalock Corp., P.O. Box 49875, Los Angeles, CA 90049
 The Stanley Works, Farmington, CT 06032

ENVIRONMENTAL CONTROLS

BARD/CARBA, Div. of C.R. Bard, Inc., 731 Central Ave.,
 Murray Hill, NJ 07974
 Down East Manufacturing Co., 44 Bucknam Road, Falmouth, ME 04105
 Fidelity Electronics, Ltd, 5245 Diversey Ave., Chicago, IL 60639
 Maddak, Inc., Pequannock, NJ 07440
 Possum, Inc., East Coast Division, P.O. Box 451, Midwood Station,
 Brooklyn, NY 11230
 Prentke Romich Co., RD2, Box 191, Shreve, Ohio 44676
 Technical Aids to Independence, 12 Hyde Rd., Bloomfield, NJ 07003

"FISHEYE" WINDOW INSERTS AND WALL MIRRORS

Miles Kimball Co., 41 West 8th Ave., Oshkosh, WI 54901
 "Lensor" #40740, The Gallery, Wallins Corners Road,
 Amsterdam, NY 12010
 The Highsmith Co., Inc., P.O. Box 25, Highway 106 East,
 Fort Atkinson, WI 53538

ILLUMINATED MAGNIFIERS

Atlantic Office Supply Co., Inc., 4907 Annapolis Road,
 Bladensburg, MD 20710
 Luxo Lamp Corp., Purdy Ave., Port Chester, NY 10573
 Vision Systems Division, The EdnaLite Corp., Ande Building,
 Peekskill, NY 10566

LEVER DOOR HANDLES

Schlage Locks, 2401 Bayshore Blvd., San Francisco, CA 94119

LIGHT SWITCH EXTENSIONS

Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 Maddak, Inc., Pequannock, NJ 07440

MECHANICAL "REACHERS"

FashionAble, Rocky Hill, NJ 08553
 Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 G.E. Miller, 484 S. Broadway, Yonkers, NY 10705
 Maddak, Inc., Pequannock, NJ 07440

MICROFILM VIEWERS

Devoke Co., 3783 Fabian Way, P.O. Box 10011, Palo Alto, CA 94303
 NCR, 365 South Oak, West Salem, WI 53405
 The Dietzgen Corp., 250 West Willie Road, Des Plaines, IL 60016

NON-SLIP MATS

"Dycem", Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 "Vikem", Maddak, Inc., Pequannock, NJ 07440

ONE-HAND TYPEWRITERS

Typewriting Institute for the Handicapped, 3102 West Augusta Ave.,
 Phoenix, AZ 85021

OPEN DESK-TOP FILES AND STORAGE

Atlantic Office Supply, Inc., 4907 Annapolis Road,
 Bladensburg, MD 20710
 The Highsmith Co., Inc., P.O. Box 25, Highway 106 East,
 Port Atkinson, WI 53538
 Wilson-Jones, 6150 W. Touhy Ave., Chicago, IL 60648

READING MACHINES

The Ealing Corp., 22 Pleasant St., South Natick, MA 01760

RISING-ASSIST CHAIR

Economy Easy-Lift Chair, American Stair-Glide Corp.,
 4001 East 138th St., Grandview, MO 64030
 Vela Catapult Seat #S-1560, Maddak, Inc., Pequannock, NJ 07440
 Levo Stand-Up Wheelchair, American Stair-Glide Corp., 4001 E.
 138th St., Grandview, MO 64030

SENSORY PENS

Mechstat, Inc., 830 N.E. Loop 410, Suite 210, San Antonio, TX 78209
 Raised Line Drawing Kit, American Foundation for the Blind,
 15 West 16th St., NYC, NY 10011

SOUND-OPERATED AND OTHER REMOTE SWITCHES

Lewis & Conger, 39-25 Skillman Ave., Long Island, NY 11104
 Markline, P.O. Box 1750S, Waltham, MA 02154
 Vibralite Products, Inc., 83 S. Highland Ave., Ossining, NY 10562

SPEECH COMPRESSOR/RECORDERS

A-7 Speech Controller, Variable Speech Control Corp., 185 Berry
 St., San Francisco, CA 94107
 Lexicon Varispeech II, Lexicon, Inc., 60 Turner St.,
 Waltham, MA 02154
 Superscope C-104 Portable Cassette Recorder, Superscope, Inc.,
 20525 Nordhoff St., Chatsworth, CA 91311

SPEECH SYNTHESIZERS, COMMUNICATORS

Phonic Mirror Handi Voice, HC Electronics, Inc., 250 Camino Alto,
 Mill Valley, CA 94941
 Canon Communicator, Telesensory Systems, Inc., 3408 Hillview Ave.,
 P.O. Box 10099, Palo Alto, CA 94304

TABLES/HEIGHT-ADJUSTABLE

Fleetwood, 25 E. Washington Street, Zeeland, MI 49464
 Intimus Designs, 8410 E. Roosevelt, Scottsdale, AZ 85257
 Rudd International Corp., 1066 31st St. NW, Washington, D.C. 20001

"TALKING" CALCULATOR

"Speech Plus", Telesensory Systems, Inc., 1889 Page Mill Road,
 Palo Alto, CA 94304

TELEPHONE AIDS

local Bell System representatives
 Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 Lewis & Conger, 39-25 Skillman Ave., Long Island, NY 11104
 Maddak, Inc., Pequannock, NJ 07440
 Markline, P.O. Box 1750S, Waltham, MA 02154

TELEPHONE AIDS FOR NON-VERBAL PERSONS (TTY)

Micon MCM, Micon Industries, 252 Oak St., Oakland, CA 94607
 Porta-tel, Specialized Systems, Inc., 215 South Highway 101,
 Suite 203, Solana Beach, CA 92075

TYPEWRITER KEYGUARDS, PAPER ROLLS

Fred Sammons, Inc., Box 32, Brookfield, IL 60513
 IBM Office Products Division, One Gateway Center Plaza,
 Newton Corner, Ma. (or local IBM representative)
 Olympia USA, Inc., Rt. 22, Somerville, NJ 08876

TYPEWRITERS

IBM Correcting Selectric II, IBM Office Products Division, One
 Gateway Center Plaza, Newton Corner, MA
 Olympia USA, Inc., Rt. 22, Somerville, NJ 08876
 Smith-Corona Sterling Electric 12, SCM, Consumer Products Division,
 299 Park Ave., NY, NY 10017

VIDEO READING AIDS

Apollo Lasers, Inc., 6357 Arizona Circle, Los Angeles, CA 90045
 Visualtek, 1610 26th Street, Santa Monica, CA 90404

WHEELED CARTS, SHOULDER BAGS, CARRYING AIDS

Atlantic Office Supply Co., Inc., 4907 Annapolis Road,
 Bladensburg, MD 20710
 Chesley Industries, Inc., 20775 Chesley Dr., Farmington, MI 48024
 FashionAble, Rocky Hill, NJ 08553
 G.E. Miller, 484 S. Broadway, Yonkers, NY 10705
 Global Equipment Co., 6556 Hemlock Drive, Hempstead, NY 11550
 Maddak, Inc., Pequannock, NJ 07440

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Job Development Laboratory

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