A BARRIER-FREE ENVIRONMENT FOR THE ELDERLY AND THE HANDICAPPED

HEARINGS

BEFORE THE

SPECIAL COMMITTEE ON AGING
UNITED STATES SENATE

NINETY-SECOND CONGRESS

FIRST SESSION

PART 1—WASHINGTON, D.C.

OCTOBER 18, 1971

Printed for the use of the Special Committee on Aging

U.S. GOVERNMENT PRINTING OFFICE

70-555 O WASHINGTON : 1972

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 30 cents

SPECIAL COMMITTEE ON AGING

FRANK CHURCH, Idaho, *Chairman*

HARRISON A. WILLIAMS, Jr., New Jersey
ALAN BIBLE, Nevada
JENNINGS RANDOLPH, West Virginia
EDMUND S. MUSKIE, Maine
FRANK E. MOSS, Utah
EDWARD M. KENNEDY, Massachusetts
WALTER F. MONDALE, Minnesota
VANCE HARTKE, Indiana
CLAIBORNE PELL, Rhode Island
THOMAS F. EAGLETON, Missouri

HIRAM L. FONG, Hawaii
JACK MILLER, Iowa
CLIFFORD P. HANSEN, Wyoming
PAUL F. FANNIN, Arizona
EDWARD J. GURNEY, Florida
WILLIAM B. SAXBE, Ohio
EDWARD W. BROOKE, Massachusetts
CHARLES H. PERCY, Illinois
ROBERT T. STAFFORD, Vermont[1]

WILLIAM E. ORIOL, *Staff Director*
DAVID A. AFFELDT, *Counsel*
JOHN GUY MILLER, *Minority Staff Director*

Part 1. Washington, D.C., October 18, 1971.
Part 2. Washington, D.C., October 19, 1971.
Part 3. Washington, D.C., October 20, 1971.

---

[1] Senator Winston Prouty, Vermont, served as ranking minority member of the committee from September 1969, until his death September 10, 1971. Senator Robert T. Stafford, Vermont, was appointed to fill the vacancy on September 17, 1971.

CONTENTS

A BARRIER-FREE ENVIRONMENT FOR THE ELDERLY AND THE HANDICAPPED

MONDAY, OCTOBER 18, 1971

U.S. SENATE,
SPECIAL COMMITTEE ON AGING,
Washington, D.C.

The special committee met at 10 a.m., pursuant to notice, in room 1114, New Senate Office Building, Senator Frank Church, chairman, presiding.

Present: Senators Church, Fong, Percy, and Stafford.

Staff members present: William E. Oriol, staff director; Patricia Carter, professional staff; Bill Laughlin, professional staff; John Guy Miller, minority staff director; and Janet Neigh, clerk.

OPENING STATEMENT BY SENATOR FRANK CHURCH, CHAIRMAN

Senator CHURCH. This morning the U.S. Senate Special Committee on Aging begins an inquiry into "A Barrier-Free Environment for the Elderly and the Handicapped."

We will consider the impact of barriers—architectural and otherwise—upon older and handicapped Americans of today and tomorrow. We will evaluate the effectiveness of existing legislation in eliminating barriers, at least in structures or systems supported in some way by Federal funds. And we will attempt to arrive at some estimate of the costs—and the benefits—of building a barrier-free environment.

First, a word about "barriers."

I think we are familiar with the general meaning of that word, as used in recent years in conjunction with passage of the Architectural Barriers Act of 1968.

The Congress was concerned about buildings which, in one way or another, have limited usefulness to people who have varying degrees of disability. Most vividly, the image of a person in a wheelchair comes to mind. If he encounters one step in his dwelling or in a public building, he will need help in moving about. But, remove the barrier and he has the same access as do those without handicaps.

Less obviously, other persons face handicaps. An elderly person may give up all hope of using public transportation because of high bus steps or fear of escalators. A man with a respiratory or heart condition may be denied full freedom of worship because designers of his church built barriers into its structure. Remember, disability may be temporary, and it may occur fairly early in life. Thanks to modern means of rehabilitation, the return to full activity is occurring more and more for many persons—including combat veterans—who might have permanently been disabled.

But for the period in which they had a handicap, should they have been denied a resonable amount of mobility?

Barriers Other Than Architectural

Our working definition of "barriers" is not limited to architectural features of structures or transportation systems.

Distance can be a barrier, particularly for the elderly. Suburban growth, attractive as it is for many, causes increasing dependency upon automobiles. Yet, only about 42 percent of Americans of age 65 and up, have driving licenses. If public transportation systems fail to serve those who do not drive, they are, in effect, marooned in the midst of metropolitan areas, and even more so in rural areas.

And there are psychological barriers, too. If an institutionalized person feels that the institution is somehow "wrong" or "cold," he experiences a barrier to whatever benefit that institution was meant to provide to him.

We must ask, therefore, whether we are building a society which is off limits for increasing numbers of older and handicapped Americans.

This is a vital question, especially in view of the predictions that within the next 15 to 30 years we will build another America. Another way to say it is that before the year 2,000 we are likely to construct more dwellings and public buildings than we have in all our prior history.

Will many of these great works be off limits, or will they be open to full use?

The lives of the elderly and handicapped are burdened by the mistakes of the past. Buildings built 50 years ago, or even 5 years ago, remind us of those mistakes. Transit systems built today will affect us a half century from now. We have been more concerned with the structure than with the people who will use the facilities we build.

But can we write off certain segments of the population when—by serving those segments—we will also serve all others who will use the buildings and transit systems in the future? After all, innovations for the convenience of the elderly and disabled will also be of help to younger and more physically fit persons. Why should it be so difficult, for example, to get behind the wheel of an automobile? You don't have to be 78 years old to ask that question.

But even if we talked solely in the numbers of elderly and handicapped persons, we would have good reason for taking more action than we have in the past.

We can make accurate predictions regarding future increases in the numbers of elderly. The number of elderly, now about 20 million, will increase to 25 million in 1985 and 28 million in the year 2000. However, we cannot make accurate predictions about the number of handicapped. Estimates range from two-tenths of 1 percent to 12.5 percent of the total population, depending on what definition of "handicapped" is used. This range is increased even more when we consider people with temporary handicaps.

Many Facilities "Off-Limits" to Aged and Handicapped

We cannot accurately assess the impact of barriers on the life styles of the elderly and handicapped because many of those most greatly affected by these barriers withdraw from the mainstream of life. We do know that the impact of a barrier-filled environment can be

devastating. We do know that people daily are denied equal social rights because buildings, transportation systems and sidewalks and streets are, as I have said before, "off limits."

For the next 3 days, we will learn what it is like to be old or handicapped; we will ask whether schools of architecture can do more; we will look at the role of the Federal Government in encouraging the development of a barrier-free environment. We are here to ask questions and hear suggestions for improvement. What is perhaps most important is the gathering of professional associations, elderly and handicapped advocates, representatives of Federal departments, and academicians and legislators to work together in seeking the solutions, together.

We are pleased to have a very distinguished panel of witnesses this morning. I am going to turn to them in a moment, but, first of all, I want to defer to Senator Percy, who has just arrived, and ask him if he has any preliminary statement he would like to make.

STATEMENT OF SENATOR CHARLES H. PERCY

Senator PERCY. Only this, Mr. Chairman: I agree with you that we have a fine panel this morning. I would like to commend you for these hearings. I think they are most appropriate and highly necessary and desirable. I spent 25 years in industry and I was rather pleased to learn that without any congressional effort at all, I think our company had one of the highest levels of the employment of handicapped of any company in America. About 5 percent of our 12,000 people were physically handicapped.

We found through many, many years of experience that they were the most conscientious producers of the highest quality work, and it gave a sense of responsibility to many of our employees to help them. We found that architectural changes were highly desirable in facilitating their work.

I have just been to the dedication last week of the Rehabilitation Center in Chicago, which will be the finest research, teaching, and care facility in the world for the handicapped. And I think it has one of the most dedicated boards and staffs. Its medical director, Dr. Henry Betts, is, I think, one of the most gifted people in this field.

Here people of all ages are being taken and rehabilitated. At the dedication, I mentioned that 90 percent of their rehabilitation depends on their desire to help themselves, and the 10 percent can be attributed to help. The will and determination of individuals to overcome these handicaps is essential, but society can help.

These hearings can help a great deal in removing barriers which exist simply because we are unthinking in the way we go about designing our buildings. I commend you, Mr. Chairman, for focusing attention on this problem. I think it is a very appropriate question for this very important Senate committee to take up for hearings in the next few days.

Thank you.

Senator CHURCH. Thank you very much, Senator Percy.

Senator Fong, do you have an opening statement?

Senator FONG. I have no opening statement.

Senator CHURCH. Are there any remarks you would like to make?

Senator FONG. Nothing other than I am very happy to have this hearing.

Senator CHURCH. Thank you very much.

Our first witness this morning is Leon A. Pastalan, an associate professor in the department of architecture, and a research sociologist in the Institute of Gerontology, University of Michigan. He is accompanied by Paul Windley, a doctoral student in architecture at the University of Michigan.

Gentlemen, if you will proceed in whatever way you have planned, we will take your testimony. There may be questions intervening, but we will move along down the panel so that every one will have an opportunity to make a short initial statement and then we will open the discussion up for panelists to exchange questions and talk back and forth.

We will just proceed as comes easiest and try to get as much accomplished as we can during the morning.

Mr. Pastalan, please.

STATEMENT OF LEON A. PASTALAN, ASSOCIATE PROFESSOR, DEPARTMENT OF ARCHITECTURE, RESEARCH SOCIOLOGIST, INSTITUTE OF GERONTOLOGY, UNIVERSITY OF MICHIGAN; ACCOMPANIED BY PAUL WINDLEY, DOCTORAL STUDENT, UNIVERSITY OF MICHIGAN

Mr. PASTALAN. I think in the interest of time I will read my statement.

Much of my research teaching and service activity is directed toward the study of environmental barriers and facilitators which may have major impact on the effectiveness of the aging person to function optimally in his home, neighborhood, and community. My purpose for appearing before the U.S. Senate Special Committee on Aging is to describe a research project carried out under my direction during the past year that may have some relevance to the problems that various environmental barriers pose for physically disabled and elderly people.

The purpose of this study was to explore the feasibility of constructing a simulation model which would enable a designer to duplicate relevant environmental experiences of an elderly population which suffer from sensory deficits. Such an approach would seem to be an effective tool in terms of better assessing the nature of environmental barriers which the elderly and other physically vulnerable people face daily in their homes, neighborhoods, and communities, and hence possibly lead to significant changes in design concepts.

Since the organism can respond directly only to those aspects of the environment experienced through sense organs, age changes in sensory and perceptual mechanisms effect very real environmental changes in the world in which the aging individual lives.

There has been an impressive accumulation of literature regarding the relationship between age-related sensory decrements environmental experiences and behavior. For instance, age and visual acuity has been examined by a large number of investigators including Slataper (1950), Walton (1950), Hofstetter (1944, 1954), Morgan (1958), Geldard and Crokett (1930), and Crouch (1967). Color, vision and aging

by Obi (1950), Kleemeier (1952), Gilbert (1957), and Fisher, R. F. (1968). Olefactory sensitivity by Vashide (1940), Mesolella (1934), Douek (1967), Moncrief and Smith (1951). Cutaneous sensations among the aged (specifically touch) have been explored by Ronge (1943), Birren and Schapiro (1950), and Chapman (1944) among others. Finally presbycusis has received attention from Morrisett (1950), Kleemeier and Justiss (1955), Hilger et al. (1956) and Farr (1967) and many others.

Appliances Simulate Aging

Because of the availability of this kind of basic data it was possible to simulate certain types of sensory decrements such as increased opacity of the lens, increased rigidity of the middle ear or presbycusis and diminished tactile and olfactory sensitivity by mechanical means. Sets of simple mechanical appliances such as specially coated lenses, ear plugs, a masking device to decrease olfaction and a fixative to temporarily desensitize the tactile sense were developed and assembled.

Four doctoral students in architecture specializing in environmental problems of the elderly wore these appliances for approximately 1 hour a day over a period of more than 6 months in three standardized settings—a dwelling unit, a multipurpose center and a shopping center. Each of the participants kept an ongoing written account of their experiences for the duration of the study.

This exploratory study, and I might underline that word "exploratory" has a number of highly significant implications. It has suggested for instance, that (1) sensory decrements can effectively constrain a person from freely using buildings and facilities as presently designed and that the concept of environmental barriers should be expanded to include the problem of appropriate environmental stimulation. While it is apparently impossible to forestall age-related sensory losses, this study intimates that through consciously programed environmental stimuli, the environment could be made to function as a support network and mitigate the consequences of sensory losses, (2) the model has proved to be a very powerful training and experience device for designers and others who work with physically vulnerable people, (3) it holds great promise as a new research tool since it makes it possible for the researcher to be the experimenter and subject simultaneously. Also it examined the total situation rather than testing relationships between a limited number of variables.

Additional study is needed to: (1) Field test design concepts regarding the organization of environmental stimulus factors as a way of more firmly establishing the relationship of environmental barriers to total design; (2) further refine the precision of the simulation appliances; and (3) further develop the potential this simulation model has for teaching or training purposes.

That concludes my statement.

Senator Church. Mr. Pastalan, as I understand it, you have used two devices for this purpose. One has been a specially designed pair of eye glasses. Another has been earplugs that tend to simulate the loss of hearing, particularly in the high frequencies, and the third has been a kind of—what would you call it—a kind of glue? It feels like glue that you apply to the fingertips, which tends to dull the sensory reaction or feeling you get in the fingertips.

I wonder, since the other Senators, I don't think, have seen the devices, could you bring them up here so they could examine them. You see we are all in the middle range. You note by the glasses we wear, we are just in the middle range of our failing faculties here and I think the Senators might be interested in putting on these glasses which do simulate the problems of failing eyesight in later years.

For those of you in the audience who haven't seen them, you can see from here the opaqueness of the glass and if you put them on everything tends to blur out and the sharp outline disappears and the glare is much more noticeable than it is without them.

These are the earplugs that tend to defect particularly the higher ranges. I am told that commonly happens to people as they grow older.

Senator FONG. What do you do with these?

Senator CHURCH. Those are placed in the ears. Do you want to try them to simulate what happens as you get older and your hearing begins to fade.

Now, do you notice any difference?

Senator FONG. Yes.

Senator CHURCH. This has been used on the fingers. I put some on mine and I notice in dealing with papers up here I feel like I have gloves on.

Mr. Windley, do you have anything you would like to add in connection with this? Why don't you go ahead with your statement and we may have questions for the two of you.

STATEMENT OF PAUL WINDLEY, DOCTORAL STUDENT, UNIVERSITY OF MICHIGAN

Mr. WINDLEY. I am originally a native of Idaho and am presently a candidate for the——

Senator CHURCH. Did you say Idaho? [Laughter.] Suddenly this makes your testimony especially interesting to me. When did you leave Idaho?

Mr. WINDLEY. I left Idaho some 5 years ago.

Senator CHURCH. You have been at the University of Michigan since that time?

Mr. WINDLEY. I had an interim in Colorado.

Senator CHURCH. Fine.

Mr. WINDLEY. In addition to being a candidate for the doctor of architecture degree at the University of Michigan, I also hold a traineeship with the Institute of Gerontology. This past year, three other designers and I have been directly involved in the investigation Dr. Pastalan has just described. My remarks this morning concern two main impressions gained from this research.

First, what it felt like to empathize with older people through the aid of the empathic model; and second, what impact these experiences had on my personal philosophy of environmental design. Many of the experiences on which I will comment are not mine alone, but also those of my colleagues.

The initial wearing of the lenses and earplugs required considerable adaptation time. Adding some 40 years to one's life in terms of sensory decrement all at once argues a strong case for empathy. Although I am sure we shared to an extent many of the social situations experienced by older people, for example, bumping into others, walking too slow, constantly asking people to repeat what they just said, and calling attention to ourselves because of our appearance, I was most cognizant of those experiences connected directly with getting along in the designed environment.

Outdoors, the big problem for me was negotiating with automobile traffic. It took considerable faith and courage just to cross the street without glancing out the side of the lens to see if anything was coming. It was difficult to discriminate colors on traffic lights, signs, or to recognize familiar faces at a distance. Colors, both inside and outside of buildings, tended to fade, particularly the cool colors of green and blue. Differentiations between ground and sky were also difficult to make. Glare from smooth surfaces such as cars and sidewalks tended to wash out most of the detail in surrounding objects.

Within buildings there was frequently not enough light to be able to tell a riser from a tread on a set of stairs. In many buildings there was a lack of contrasting colors to help discriminate walls from floor and ceiling. There was difficulty in distinguishing glass doors from windows. In addition was the difficulty in eye recovery when moving from darkness to light and from light to darkness.

The greatest impact in terms of hearing loss was in feelings of insecurity resulting from uncertain sounds. Noises from down the hall sounded much like noises only a few feet away, and most voices at a distance were difficult to identify.

In general we found ourselves acting much like older people do: walking close to the walls for support, increasing the use of the tactile senses as a substitute for hearing and visual loss, feeling the need for redundant cueing in the environment, and a general decrease in the speed of doing even the simplest of tasks.

The most significant impact of these experiences on my own personal design philosophy lies with the concept of intervention. If older people are more sensitive to variation in their physical environment than younger populations, why not intervene in the aging process and increase for a time their independence by designing their environment differently, such that it can be coped with more easily.

Intervention by design sounds like a rather logical consideration, but for most architects it is a new concept. Instead of relying on intuition and guesswork alone to guide design decisions, research methodologics like the empathic model enable us to quantify and even predict with accuracy the kind of behavior we can expect from designing the environment one way or another. This awareness makes research in architecture an immediate must.

Thank you.

Senator CHURCH. Paul, the only possible danger in your presentation and that of Dr. Pastalan this morning is that it might be regarded

by some as sort of a stunt or making light of the problems of the elderly which is, of course, just the opposite of what you intend. But I think that it is true that most people don't understand the physiological effects of the aging and they don't tend to be aware of it until it happens to them.

Younger people tend to be indifferent and they are frequently the ones who are designing the buildings and doing the active creative work for the society.

Now, you have experienced what it is like to be an old man by wearing the glasses and the earplugs and actually going through it so that you have advanced the experience by 40 years in your own case. Very few designers will wear the glasses or the earplugs or will go through an experiment of this kind.

My question is, how do we make them sensitive to the problems of the aging? How do we make them aware of the various kinds of architectural barriers that they, just as a matter of habit, work into their ordinary planning because of the general ignorance of the problems that face the aging or their indifference to them?

I can't see us spreading glasses and earplugs around to all the young architects in all the different schools and yet, obviously, an effort of that scope is going to be necessary if the upcoming architects are going to be aware of these problems and are going to design buildings with an eye toward eliminating the problems that you have mentioned.

What is the answer?

Mr. WINDLEY. I am not sure that anything immediate can bring about education of that magnitude. I think over the next few years, however, awareness of these problems is going to have to be a dual process. That is, the people who hire architects should be made aware through wide publication that this kind of information and techniques for gathering it can be obtained, and should insist that the architect secure this information at an early stage in the design process. In addition, architecture schools should become research oriented in addition to being a direct applied science. This does not exist in the profession at this time to any great extent.

Senator CHURCH. Well, are there any schools of architecture other than Michigan conducting experiments of this kind, to your knowledge?

Mr. WINDLEY. I think there is one other university, the University of Southern California.

Senator CHURCH. Do you know of others, Dr. Pastalan?

Mr. PASTALAN. Michigan and USC are the two I am most familiar with. There is some effort going on at the University of Oregon, although I am not terribly familiar with their program.

Senator CHURCH. At best it is very spotty?

Mr. PASTALAN. Very, very spotty, right.

Senator CHURCH. Are you undertaking to document your findings and to write them up to make them generally available to other schools of architecture?

Mr. PASTALAN. Yes; I think one of the points I made in the testimony was that the simulation model seems to be a very powerful training or teaching device and what we would like to do in the future is to refine this and to develop this particular approach.

As I say, it is rather an exploratory approach at the moment. We would like to develop it so it is an effective teaching device. I think

frequently, if you go about the countryside with a pair of spectacles it becomes a spectacle of another kind really and I think that we really need to be systematic about it and serious about how these kinds of simulations can effectively train people to be better designers.

The Shock of Sensory Deprivation

One of the problems that we had, for instance, and I guess we really did anticipate it, was the immediate shock value of putting these sensory blunting devices on. I think that has a certain kind of value, an instant empathy.

In the long run we wanted to not only experience the shock of sensory deprivation, as far as designing is concerned, but for a long period of time experience a particular setting. This is why we selected three settings and we stayed with them for a considerable period of time.

Each of the people in the experiment spent about an hour a day in each of these settings, so over time they got over the shock of the deprivation and started looking at the environment in terms of how they might reorganize some of these special arrangements such as lighting and color and so on.

So I think it is really a long process. It can't be done in a weekend workshop, but you can start there. It needs to have development and it must be sustained.

Senator Church. We have become such a youth conscious country that our tendency is not to face up to the problems of physical disabilities of the aging. We don't like to talk about it. Even older people feel embarrassed about it simply because of the prevailing attitudes. And I know that if I take these opaque glasses and put them on and a picture were taken of me with these glasses on and published, I am certain we would get a raft of letters, many of them from elderly people, complaining that somehow I was ridiculing them.

Mr. Pastalan. Yes, sir.

Senator Church. This is the problem of the elderly and this is the sort of hangup I think we have to get over if we are to deal effectively with these problems.

Did you find in your experiment, Mr. Windley, that the use of glass—we use so much glass in modern construction, walls of glass—that this was a barrier, a hazard?

Mr. Windley. Yes, there are really two main impressions that one gets from glass the way we use it in buildings today. One is the glare.

Senator Church. The glare is one problem?

Mr. Windley. Yes, the whole issue of glare from both artificial to uncontrolled natural lighting. The other issue is being able to discriminate between glass and what is nothing, or what is air.

Senator Church. Part is glare and part is the transparency?

Mr. Windley. That's right.

Senator Church. Yet if the glass were tinted both problems might be eliminated?

Mr. Windley. Yes, partially.

Senator Church. Or at least ameliorated?

Mr. Windley. Yes.

Senator Church. Senator Fong, do you have any questions?

Senator Fong. Yes. The builders will probably take notice of these things more when they find they have been sued. Take, for example,

a man walks through a glass door and he is suing because he didn't see the door.

Now, I think with more and more of that kind of thing coming up probably the architect will pay a little more attention to using materials so that the elderly can see, or those that are defective in vision can see such things.

Have you anything to compensate for that, that is, have the same utilitarian use of glass and yet tell the elderly that this is glass? Have you such a material?

Mr. WINDLEY. I know of no substitute material that would provide that at this point. There is a variety of styles in glass doors. Those with hardware panels that cut the door in half, that frame the door, and provide some means to discriminate it from a window prove useful, but some of the more modern doors, using structural glass with no hardware at all produces problems. I know of no other material that can be used.

Senator FONG. How widespread is the knowledge to businessmen that the elderly are really deficient in their five senses?

Dr. PASTALAN. I tend to think it is not very well known at all, Senator.

Senator FONG. Even to architects, I presume?

Mr. PASTALAN. Yes, sir, I think, if I may get a plug in here for one of my favorite things these days, and that is, it seems to me that what we really do need in terms of when we construct buildings, we need to incorporate as part of the building cost, cost for evaluating the way that building functions. Not only in terms of its technology, in other words, does it hold up, is the air conditioning, circulation, et cetera, functioning properly, but I think also we have to look at how does that building function for the users.

NEED FOR EVALUATION OF BUILDINGS

I think the only way we can really develop factual knowledge by which wise building decisions and design decisions can be made is by an accumulation of this kind of information so that essentially every time we build a building it becomes a kind of laboratory, some basis where we can gather information and learn from our mistakes and successes.

It seems to me right now nobody takes responsibility for evaluating the building. The architect in terms of doing the evaluation, if he is going to do it, has to do it on his own. His fee isn't for that function. It is for designing the building. The builder has another need and other requirements and somehow the whole area of research, evaluation, falls between these two areas.

We really need to do something about addressing ourselves to looking at the business of construction costs, including some form of user evaluation.

Senator FONG. The builders build a building for profit. If the businessman could be told he would make more profit by building a building that could be used by the elderly more readily than he would if it was not designed for them, probably they would look at it from a profit motive and ask for that kind of advice?

Mr. PASTALAN. I am sure and it would also be available.

Senator FONG. I think it was Somerset Maugham who said money is like a sixth sense, without which you cannot completely use the other five senses.

So, if you tell them that the other five senses are deteriorating and if they want to make money they had better look into this, they probably will pay more attention to utilitarian buildings to take care of the needs of the elderly.

How do you expect to educate the businessman? He probably would be the primary user of this knowledge. He is the businessman that builds the homes and he is the one who builds the building, builds the stores outside of our Federal buildings.

Mr. PASTALAN. I think that certainly the role of education is an important one. We can do a certain amount of it in terms of making everyone involved in the building industry aware of given problems, but perhaps the most compelling dimension to this educational process would be the proposition that there would be some sort of requirement that when you construct a given building you will lay aside as part of the construction cost so much money for the evaluation of it and in that way I think people become aware of it in a very real and probably in its best sense.

Senator FONG. At what stage would you say there is sufficient deterioration so that we should focus on this problem of taking care of the needs of those above a certain age? What age would you say that would be?

Mr. PASTALAN. The longer I work in this area the more impressed I am by the tremendous variability there is within the age group. If I were to say flatly that past 65 we ought to start looking at this group as one that needs environmental support, I would be remiss as a scientist.

There is probably just as much variability within the group, say, from 65 to 100-plus as there is between 65 and 25. That is the variability of the human organism is amazing and I think that just because you are 65 or 75 doesn't mean you can't function effectively.

One of the points that we are trying to make here with the model is that it doesn't mean that you are going to see the world as you see it through those glasses when you reach your 75th birthday or 85th birthday or 105th birthday, but I think in terms of the aging process what we tried to simulate in this lens is what ophthalmologists told us, it is a natural process. It will occur if you live long enough.

Sometimes it is 60 or 55 and sometimes it doesn't occur until well over 100, but the point is at some point in one's life something like what you are seeing through that lens will occur.

Senator FONG. To awaken the builder would you give one general statement and say there are probably 50 million Americans who would profit by designing buildings that will take care of some of the deficiencies that the older Americans are undergoing? Could you make a statement like that? Fifty million, 30 million?

Mr. PASTALAN. I would say millions, I am not sure exactly how many. It might be, as a matter of fact, in the area of 30 million. It could well be.

Senator FONG. That is a big consumer group.

Mr. PASTALAN. It certainly is.

Senator FONG. That will awaken the businessman to his profits. Thank you.

Senator CHURCH. Thank you, Senator Fong.

Senator Percy.

Senator PERCY. Mr. Chairman, I have just one question, but I think we are going to end up to be our best witnesses. I strongly believe that Senator Fong has a good point, that we really should not look at this as a problem just of the aging. I don't have to have these glasses at all to obscure my vision because I have my own eye problems. I am farsighted in one eye and nearsighted in the other, and I have had to adjust for years. I am not so sure whether we know what the effect on younger people is of having the average child look at television 5 hours a day since the age of one or two, and I am not so sure that we are not going to have to think in terms of the sight deterioration much earlier in life than we used to think of failing sight in later life.

I notice more and more young people—maybe they read a lot more—but more and more young people are using glasses now than there ever seemed to be before.

Senator CHURCH. Consider the noise factor, too. The loud rock music, what effect that may have, on failing hearing at 22.

Senator PERCY. I think there is no question but what that causes an obstruction of hearing. I don't have to personally use this earplug at all to empathize with those who can't hear. I had the same experience that I find millions of other young people had, when I came out of the service I couldn't hear as well as when I went in. I finally went to a hearing doctor, and he asked me what I did in the service.

Well, for 3 years I spent time around airplane engines as a gunnery officer in the Navy Air Corps. Well, he said "what has happened is that you have destroyed all your upper ranges. You have been subjecting yourself to this noise for 3 years and you simply can't hear high frequencies anymore."

So, I don't need these earplugs at all. I have my own hearing aid glasses right here.

I couldn't hear a thing in the Senate when I first came here. I would have to move all over the floor to hear the debate and I became one of the strongest advocates of architectural and other changes in the U.S. Senate. We now have not only a girl page in the Senate, but we have hearing assistance aides down there for those of us who can't hear as well.

Senator CHURCH. Senator, now that you can hear, would you like to go back to the old system? [Laughter.]

Senator PERCY. Even if I don't agree with what is being said, I want to hear it all. But I think we have made a very important architectural change.

I used to usher in a theater, and we had the back row always reserved for the hard of hearing. I don't know of theaters anymore that provide hearing assistance, but many people would benefit by it if we had. That theater 30 years ago had hearing assistance for many of the people who came there. They weren't all older people. Some younger people used that assistance.

I tend to think that Senator Fong is right. We are not just talking about the 65 and older. I am not quite ready for Social Security, but I need assistance and help.

I notice also the number of people who have accidents, who are prone to accidents. We must look at the effects of sight and hearing difficulties on traffic problems, and at the number of traffic accidents we have. There is a large number of handicapped veterans coming back from Vietnam, we have had over 300,000 casualties, and those aren't older people; they are younger people who will be handicapped all their lives.

HELP ALL WHO ARE HANDICAPPED

So we need to help not just the aging. We must help all those American who are really more accident prone, who live in a more dangerous society, a more dangerous world than we live in. I think these hearings have a much more universal application.

That was a long preamble to my one question.

Dr. Pastalan, how are you getting financing for your work? Are there any Federal funds available to you? Where are the funds coming from?

Mr. PASTALAN. For this particular exploratory stage, the Rackham Graduate School at the University of Michigan supported us in that phase and they are now expecting that I shall seek funds elsewhere and we are now in the process of searching for funding sources.

Senator PERCY. Thank you.

Senator CHURCH. Thank you very much, Senator Percy.

Senator Stafford.

Senator STAFFORD. Mr. Chairman, I have no questions at this time.

Senator CHURCH. We thank you for being with us today. Senator Stafford is the newest member of the committee.

I suppose that as we move along the personal experience will keep coming to mind. As Senator Percy said, we don't want to spend the morning testifying.

Senator PERCY. It is like a revival meeting. [Laughter.]

Senator CHURCH. From the podium here. [Laughter.] I had an experience. I have had an experience in my own home with the glass partition. I have a modern home with a glass partition that runs the whole length of the living room and opens out onto the porch. The first time that my father-in-law came to visit—he being an older man—we had our first accident with that glass door. He walked into it one morning. I was sitting out on the porch and he walked into it coming out. He didn't see the door. I thought it was because of his age.

Two days later he was sitting out on the porch and I walked into the door, from which you can draw whatever conclusion you would like. [Laughter.] But we found then a number of people walking into that partition and we finally draped it, but when the drapes were pulled back that was not adequate. We finally had to put a decal on the door to draw attention to the fact that it was either closed or open.

This, I think, demonstrates that in your own household you may have need for architectural modifications that you normally associate only with public facilities.

All right. Our next panelist is Doris Wright. I will tell you about her as soon as I put on my glasses. [Laughter.] She is a social planner from the American City Corp., Columbia, Md.

Doris, we are very happy to have you with us.

STATEMENT OF DORIS WRIGHT, SOCIAL PLANNER, THE AMERICAN CITY CORP., COLUMBIA, MD.

Mrs. WRIGHT. Mr. Chairman, I hope I can bring into focus for you the staggering task before us—that of rebuilding old communities and building new ones in which all people can live in dignity and with purpose and meaning. In my judgment, there are two areas of concern for which criteria must be established for building new and renewing communities, if we are to substantially reduce the social problems and contribute to the quality of life of people. The primary concern for this hearing is building barrier-free communities, but another concern which cannot be separated from this is the accessibility of social services. The social services in any community can contribute to the ability of individuals to live active and productive lives. Physical barriers to these services can destroy the opportunity to use them. Both of these affect the lives of everyone of us—able or disabled, young or old, rich or poor, black or white.

When Congress passed legislation, known as title VII of the Housing and Urban Development Act of 1970, it made substantial commitment to new town development and to improving the patterns of renewing existing cities. This major legislation marked the evolution of a national growth policy and has great implication for social change. The aim of this legislation is to assist the developer in using his resources more productively in new town development and for building new towns in town. In exchange for which, the developer agrees to meet social and environmental objectives. Although this legislation can have substantial influence in planning well-balanced communities, it does not provide sufficient criteria for planning for social development, or adequate requirements to insure a barrier-free environment. I hope the following will illustrate the necessity of new legislation that will do both.

There are literally hundreds of new towns now on the drawing boards or under consideration across the Nation—all sizes and all kinds. Two truly new towns exist: Reston, Va., and Columbia, Md., and many small communities are emerging all over the country. New towns that have received commitments under title VII legislation include Jonathan, Minn.; St. Charles Communities, Md.; Park Forest South, Ill.; Flower Mound New Town, Tex.; Maumelle, Ark.; and Cedar-Riverside, Minn. New community proposals are being announced everywhere. Soul City, N.C., has submitted a proposal. New York State has 5 serious public new town proposals and 3 private ones. Utah, Mississippi, and Ohio all have new towns underway and title VII applications pending. The National Association for the Advancement of Colored People has announced plans to develop a community for 80,000 people in DuPage County, Ill. Detroit's Nonprofit Metropolitan Fund, Inc., the Minnesota Experimental City Authority, Memphis/Shelby County, Tenn., and the Tennessee Valley Authority are each preparing proposals.

BARRIER-FREE COMMUNITIES PROVIDE NEW LIFE

These evidences of widespread efforts in new city building provide an exciting prospect for the ability of this new trend to influence the lives of people. New towns can provide a new way of life for all people, and could have particular effect on those who are elderly or physically

handicapped. If we consider the population of these two groups, there is urgent reason to undertake a serious effort to insure barrier-free communities in which they can be active and independent. If we add to that number, the safety of every man, woman, and child, the effort would seem to be mandatory.

There are about 20 million people, or 10 percent of the total population, in the United States who are over 65 years of age. There has been, since 1900, an annual average net gain of 300,000 population in this age group. By 1980 it is projected that there will be 24.5 million over 65, and 40 years from now, when the World War II "baby-boom" becomes the "senior citizen boom" it is estimated there will be 55 million Americans 65 years of age or older. About 15 percent of all Americans have permanent disability of some kind. Of these, there are at least 12 million, or 6 percent of the population who have extremely limited mobility. Many of these are excluded from work and leisure activities and from services they desparately need because of environmental barriers. These figures give you an idea of the millions of people that are adversely affected by their physical surroundings. Let me break them down further so you can see the trends and their implications for the future.

Today, one-third of all people over 65 years of age live in deteriorating cores of cities. By legislating to renew these cities, we are potentially affecting the lives of these 7½ million people. Here is a chance to retain and even revitalize the human resources that these older people have by providing housing options for them and by eliminating physical barriers, thus, increasing the probability of their remaining independent and active.

In 1850, 65 percent of the energy produced gross national product was by manpower. In 1970 only 1 percent was produced that way. In 1900, 75 percent of those over 65 were in the labor force. In 1970 only about 1 percent of them were working. By the end of this century, people will be spending one-fourth of their lives in retirement. No longer are retirement and leisure activities limited to the wealthy. Implications from these facts are that our economy both needs and will have the older population as consumers rather than producers. The more older persons can be active, the more consumable goods they will use, and the more independent they are the less tax money will be needed to care for them. We should recognize that often physical barriers keep older people from "living" and force them into isolated and lonely lives that result in serious dependency.

Although 30 percent of all elderly have an income at or below the poverty level, about 30 percent have incomes over $6,000 a year (nearly all tax exempt) which, for single persons or even a couple, is enough to maintain a comfortable household. In addition to these, 10 percent have incomes about $10,000 a year, also largely tax exempt. These figures imply that there is a $40 billion market almost untapped—and one that will probably continue to be untapped until new attitudes are developed and the needs of older people are considered in the physical and social planning of new and renewing communities. Besides this consumer market, the volunteer contributions of elderly people can be substantial. The potential for the increased productivity of a community, if we eliminate physical barriers for older people and facilitate their community participation is evident when we examine the facts.

Safe Conditions Good for Everyone

Figures about the population of handicapped people are not so easily acquired and I am not sure that it matters. Communities that plan for the safety and convenience of physically limited people will more nearly satisfy the needs of all. I am convinced that very few physically handicapped people in our country would be excluded from a normal life in a community, if that community were rid of architectural and attitudinal barriers. A great many things are designed and built certain ways only because they have always been done that way. Where 35 architectural groups were asked by Dr. Timothy Nugent why bathroom doors in houses were 16 inches or 18 inches or at the most 20 inches wide, none of them had an answer. So Dr. Nugent had someone search for it. The answer seems to be, basically, that because furniture was not moved in or out of bathrooms, the size of the doorways seemed unimportant. Over the years no one has questioned this, so bathroom doors remain narrow—too narrow for wheelchairs. I am afraid we have unfounded assumptions about many other physical designs, and the result has been confinement and loneliness for many elderly and handicapped people. Developers, like most of us, are not always conscious of their failings. I work for the most "people conscious" developer in the world, I think, but we have failed to build a barrier free city—up until now. We conducted a seminar on this subject last April and found that our guests in wheelchairs could not get into our guest houses without being carried, that the bathroom doors were too narrow for them to get through, and the architecturally beautiful doors to our office building were too heavy for them to open. They made us vividly aware that the curbs are not ramped in our new city, that public telephones and drinking fountains are too high to use, that spots of beauty like the plaza are impossible for them to visit on their own, and there were many more inhibiting features brought to our attention. It was pointed out to me that all of these barriers not only prohibit a percentage of our population from living a full life, but are also barriers and hazards for everyone.

The developer of Columbia is now engaged in a concerted effort to identify previously unrecognized barriers. The American City Corp. (a subsidiary of the Rouse Co.) is participating in a study to develop a total concept and design for building barrier free communities. Owen Brown Village, the next village being planned in Columbia, is the first stage of this effort. The following is a statement of intent from Robert Moss, project director for Owen Brown Village:

> It is the intent of Howard Research and Development (HRD), a subsidiary of the Rouse Company, the developer of Columbia, to incorporate into Columbia's next village, standards of land development which would permit physically handicapped and elderly people to be free from the numerous barriers typically encountered in pedestrian circulation. Specifically, HRD intends to incorporate such standards into the design and development of its own property as well as making the sale of land to other developers conditional to the application of such standards.
>
> In addition, HRD intends in its next village, to make every effort feasible to remove those obstacles that handicapped and elderly people typically encounter in buildings.
>
> To this end, HRD has, through the assistance of the American City Corporation, joined with the staff of the President's Commission for Employment of the Handicapped in formulating standards for site development and building design so as to bring about what may become the nation's first barrier free community on a substantial scale.

This is a beginning for one developer. Others may follow, but what we need is a national effort by all builders. Good legislation that will include standards for the elimination of basic physical barriers, and that will fund research and experimentation for developing new and creative methods of building barrier-free environments, is the most feasible and effective way to insure that this national effort is undertaken.

Thank you.

Senator CHURCH. Wouldn't it be accurate to say that Columbia is a kind of test tube community?

Mrs. WRIGHT. Yes.

Senator CHURCH. And in its original design a great effort was made to accommodate older people and to eliminate the kind of barriers that commonly exist in most communities; isn't that so?

Mrs. WRIGHT. No; I really don't think it is, necessarily. In fact, I would say we almost made a policy decision not to consider elderly people for one reason, we did not want to build another Leisure World type of community. We wanted elderly people to be able to be integrated in the total community. So we didn't consider an in between, which we now are doing. We found out that didn't work either.

Senator CHURCH. I see, so the new addition that you are planning, the Owen Brown Village, will include consideration for the elderly and the elimination of many of the barriers that you find present difficulties in Columbia itself?

Mrs. WRIGHT. Yes.

Senator CHURCH. What provisions are you making for crossing heavily congested streets, if you have such thing in Columbia?

Mrs. WRIGHT. Yes; we have such things. We have a walkway system across or under all major highways in Columbia and neither of them is accessible to people in wheelchairs, as Mr. Lassen will readily testify.

So, we are now trying to reconsider and see what kind of walkways should be across it. There are walkways either under or over every major highway.

Senator CHURCH. The ones you have designed and installed use steps rather than inclines?

Mrs. WRIGHT. No; the ones underneath are ramps, but not so a wheelchair can get over them. Somebody that is elderly or slow moving or slightly limited, could.

Senator CHURCH. Are you getting any special help from any Federal agencies in laying out the new Owen Brown Village?

Mrs. WRIGHT. We are now working with the President's Committee on Employment of the Handicapped and with groups relating to the elderly.

Senator CHURCH. Does the fact that you must develop new standards for the Owen Brown Village suggest that the standards in compliance with the Architectural Barriers Act are inadequate?

Mrs. WRIGHT. Yes; very much so. I think Columbia is real testimony for that. Peter Lassen went through Columbia with me in his wheelchair and there was a list of maybe 80 or 90 things that were obviously not conducive for his living in Columbia.

Senator CHURCH. Well, it does show how little attention we have given to this, doesn't it, in the past?

Mrs. WRIGHT. Very much so. Because as I stated, the company I work for, I think, is the most "people conscious" company in the world as far as building cities and yet, it was not in our thoughts when we built Columbia to begin with.

Senator CHURCH. It is really only by experience—you are learning by your actual experience, aren't you, not because of any accumulated knowledge in this field. You are just picking your way and learning as you go.

Mrs. WRIGHT. True. Very true.

Senator CHURCH. Senator Fong, do you have any questions?

Senator FONG. How large would be your barrier free city?

A BARRIER-FREE VILLAGE

Mrs. WRIGHT. Columbia itself will be approximately 110,000 people. There will probably be seven villages in Columbia. Owen Brown Village is the fifth village to be built and if we succeed in making it barrier free we will probably make the rest of the villages barrier free.

I don't think we will ever build another village that is not as free of barriers as possible. So this, with four villages well under way or nearly completed, means that we have three villages yet to go. So that you might estimate we will have villages for maybe 40,000 people.

Senator FONG. You have four villages that are completed?

Mrs. WRIGHT. Well, they are well on their way.

Senator FONG. One will be barrier free?

Mrs. WRIGHT. No; the fifth one is in the planning stage so we are not too late to make the fifth one barrier free.

Senator FONG. Four are not?

Mrs. WRIGHT. Except for what we might go back and redo.

Senator FONG. Do you find that by building a barrier free village that the cost is very much different?

Mrs. WRIGHT. We don't know yet. We are hoping it is less. There are things that are telling us it may be less to do.

Senator FONG. I hope you find it less because then you will encourage a lot of people to follow you.

Mrs. WRIGHT. Yes.

Senator FONG. When do you think you will have that village completed?

Mrs. WRIGHT. In 2 years there will be enough of it completed to begin to find out how good it is.

Senator FONG. That is the only barrier free city that has been contemplated?

Mrs. WRIGHT. I don't know of any others.

Senator FONG. What about the help that has been given by the Federal Government to help in the designing of new cities? Is there any help from that source to help you?

Mrs. WRIGHT. None. In HUD's standards for title VII, there is nothing on handicapped in it, as far as I know that relates to criteria that handicapped might need in a city. We are hoping that gets changed.

Senator FONG. Many of the innovations that you will put in this barrier free city actually will be very useful to anyone who is not handicapped. Like, for example, wider doors to the bathroom and railings so that we won't fall and slip and things like that?

Mrs. WRIGHT. Yes; I think if you plan a city with someone in mind who is in a wheelchair, it would be better for everybody. As Pete and I went through Columbia, we found out things that were inhibiting him also would trip somebody else or a woman in high heels would catch the heels or a child also couldn't reach the telephone.

So that everything if we had eleminated those barriers, an able-bodied person would have been benefited too.

Senator FONG. So by catering to the deficient, you will be catering to the efficient?

Mrs. WRIGHT. I don't think there is any doubt that is true.

Senator FONG. I would like to compliment you for this new program.

Mrs. WRIGHT. Thank you.

Senator CHURCH. When you learn all your lessons, why don't you prepare a pamphlet and submit it to HUD?

Mrs. WRIGHT. We are hoping to do that before we learn all our lessons.

Senator CHURCH. You might educate the Government on this subject, because it seems to me you are getting closer to it than any other community.

Mrs. WRIGHT. We hope so.

Senator CHURCH. Senator Percy.

Senator PERCY. Would you comment on the transportation service that is being provided? Is there any special transportation provided, for instance, for the elderly to go shopping?

Mrs. WRIGHT. No; we had to build ramps for the minibus. Actually we are just really beginning to deal with it. We found out that there are many things we probably could do in transportation so that elderly and handicapped people could use it. Right now they cannot. Elderly people have a struggle to step up into the minibus and there isn't even a ramp at the stop as of right now. We hope there will be in the new buildings and at the other stops.

Senator PERCY. What sort of educational program do you carry on to carry this message through and help sell the concept?

EDUCATIONAL PROGRAM

Mrs. WRIGHT. Senator Percy, until last April, when we conducted a seminar on barrier free design, we had done nothing; and I stumbled into that in a way. I had met people who interested me in the fact that we were doing nothing about barriers in Columbia and found out we had a lot of learning to do in our own company and nobody had answers. So we began to search to find answers from all over.

We are now beginning a very serious effort to really learn all there is to know and how to help educate others and that is right where we are. We hope 2 years from now I can give you a more positive answer.

Senator PERCY. Lastly, what are the principal barriers erected in front of you as to why this is not a feasible and practical program, is it the cost?

Mrs. WRIGHT. I think it is habit. I really think it is tradition and habit. I think builders and architects and planners have habitually done something from a long way back and it has never been brought to their attention. It is like the narrow bathroom door. Nobody asked the question, so nobody offered to change the standards. Not because they couldn't or wouldn't, but there are just hundreds of things that aren't changed because nobody has really questioned them.

Senator PERCY. Thank you very much, indeed.

Senator CHURCH. Thank you for your testimony.

Our next witness is M. Powell Lawton, psychologist and director of behavioral research of the Philadelphia Geriatric Center.

STATEMENT OF M. POWELL LAWTON, DIRECTOR, BEHAVIORAL RESEARCH, PHILADELPHIA GERIATRIC CENTER

Mr. LAWTON. Mr. Chairman, Senators, and ladies and gentlemen, like Dr. Pastalan, I am speaking to you partly out of my research work in the social aspects of aging and partly out of my wider concern for planning an environment for people of all ages. This world seems to be designed for the average person. Most of us can react quickly, such as spreading our arms to counterbalance us or finding a surface to break our fall if we trip over a threshold.

On a larger scale, if we have the misfortune to live some miles from a doctor, we can hop in our car in the same time it would take to walk several blocks to the office. For average people these adoptive behaviors occur pretty effortlessly and we may not even know it when broken street lights are replaced less often or are finally abandoned and die, or when the public buslines run less frequently and also die.

Sadly enough, it is exactly the nonaverage man who most needs the conveniences and who at the same time is least able to exert his influence to continue their existence.

The magnitude of the problem of disabled people of all ages is easy to underestimate. However, let us take just a few available facts. In 1969, according to the National Health Survey, 23 million persons had some degree of activity limitation due to chronic disease or disability. Temporary disability reaches through the entire population, as seen in the fact that 49 million people were injured in accidents in the same period. During that year of 1969, going a little further, we see that 1⅔ billion days of restricted activity were reported due to acute conditions among noninstitutionalized people.

While we cannot calculate exactly how these limitations may affect the ability of the individual to manipulate his physical environment, it is clear that any of us is vulnerable.

While we must recognize our particular responsibility to 23 million disabled Americans, let us also remember that most facilities designed to benefit the disabled will benefit all of us—not a new thought, but one worth repeating. I would, however, like to extend this thought beyond attempts to deal with the architectural barriers of the individual building or dwelling unit.

PLANNING FOR THE FUTURE

Planning for the future goes far beyond houses or even developments. Already our first generation suburbs are aging, and major communities are being built in farmlands farther and farther from the cores of cities. The elderly and handicapped who once could at least live in relatively close and safe proximity to basic shopping, social, and medical resources, are increasingly faced with choosing between unattractive alternatives.

Those who stay in urban areas with low housing costs are likely to be separated from access to stores, recreational opportunities, educational facilities, social relationships, and many supportive medical and social services by virtue of the physical insecurity that pervades so many of these areas.

On the other hand, moving farther out from the center of a town or city inevitably brings with it insurmountable problems of access to the same resources because of the greater distances.

Remedies for 23 million disabled are, fortunately, measures which would benefit most of us, "average" or not. The most effective remedy would be the authority and funds to plan on a regional basis for easy access to public transportation, the apportioning of hospitals, medical practice, social agencies, shopping and recreational facilities for maximum utilization by all segments of society, and specialized living facilities placed in optimum physical relationship to the concentration of older people and others who need them.

I look upon recent local exclusionary land use practices with great alarm. In the long run, they hurt not only those excluded, but those whose short-term view sees themselves as benefiting by exclusion. Federal power may have to be used to insure that housing for the elderly and handicapped be included in every locality; that it be located near resource centers; that the architectural features now included in some federally funded buildings are included in privately financed building, and that human concern for free and safe movement be fostered through training programs for planners, administrators, builders, designers, architects, and public servants.

This latter concern for training leads me to mention some recent relevant information from a national survey of housing for the elderly and handicapped that is now in progress at the Philadelphia Geriatric Center. I was able to take an early look at some of our data for the purpose of this hearing, and the most striking observation that came up is that while all environments, of course, serve the elderly, including many with physical handicaps, there were relatively few younger disabled people being served.

We looked at 40 public housing sites and these served an average of about five handicapped people under the age of 62. We also looked at twenty 202 sites; that is, the lower middle income housing limited to older people. These 202 sites themselves served a total of seven disabled people under the age of 62—seven people in a total of 20 different environments.

Analysis of the responses of managers of these projects indicates first, that the usual architectural concessions to disability are approved and accepted as a normal part of the housing environment. However, there is a tendency for the manager to feel that the architecture will do the job. Even among those housing environments having handicapped younger people fully 75 percent of the managers devoted no time at all to their unique problems and could think of no services provided particularly to help the younger handicapped.

Thus, the human element in the system may be identified as a focal point in helping to reduce isolation from life sustaining and life enriching resources. Management training programs in federally sponsored housing should include consideration of ways staff can actively

help integrate the disabled people into the life of the housing community and assist them in utilizing better the physical setting that is provided.

For sponsor and administrative personnel, training might well emphasize means of providing a better outreach to raise the level of utilization of these facilities by younger disabled people.

Thus, it takes a combination of good structure and knowledgable people responsible for the use of the structure to produce a favorable environment for the realization of life goals. It should be plain that specialization in problems of the elderly and handicapped is desperately needed, particularly in the Government offices such as HUD where social planning, physical design, administrative leadership, and creative day-to-day overseeing of life in these environments is performed.

HUD Staff Cutback

I am very concerned about the recent announcement of a major cutback in Washington HUD staff. This is a time when expertise and advocacy require augmentation, not retrenchment. And it is our elderly and handicapped that will suffer particularly if this happens.

Finally, it is clear that the problems identified here can only grow as the life span of disabled people increases and as the simpler forms of naturally occurring community prove no longer serviceable. While Federal action in overseeing planning and sponsoring educational programs is necessary, their ultimate goal should be arousal of the interest of local government and private groups in building and programing for all.

Thank you, Senator.

Senator Church. Thank you very much, Mr. Lawton. When you testified on housing needs of the elderly before our Subcommittee on Housing last August, you said that there is a 99.9 percent total absence of social research within HUD generally.

Is that still the situation even with the White House Conference on Aging about to take place?

Mr. Lawton. As far as I know that is still true. At the time I made that statement, we had someone look into research explicitly concerning with aging and the handicapped and we located one project that was being funded by HUD to an outside source. I have not heard of any since then. There has been a recent publication by the Administration on Aging listing Federal expenditures in aging. I had better not try to quote the amount shown for research in againg under HUD, but it was less than a million dollars, which, of course, in the total picture, is infinitesimal.

Senator Church. If so little attention is being given to this kind of research, how can HUD possibly implement the Architectural Barriers Act?

Mr. Lawton. I don't like to sound like a broken record here, having said this before, but I do feel that HUD is in a very curious position of looking for other Government agencies to do its work. There have luckily been half a dozen people who have found other sources of funding, such as ours from the Administration on Aging, so that these needs are perhaps in a small way being met now. However, in order for HUD to have the investment in improving the life style of these people, I feel very strongly that they must do it themselves. They must put in their own money and develop their own line of expertise at all levels.

Senator CHURCH. Well, it seems to me, just reflecting on it, and without pretending to have any expertise in the field, that there are a great many buildings constructed nowadays with Federal funding that show precious little consideration for human needs, quite apart from the special needs of the handicapped or the elderly.

MANY AIRPORTS LOADED WITH BARRIERS

Take, for example, the vast amount of Federal money being invested in air terminal facilities all over the country. These facilities seem to me to be designed by people who are taking it out on the air passengers. They must have a special grievance against them the way these terminals are designed. It is incredible. Not only are they architectural monstrosities with maybe the exception of Dulles terminal, which seems to be the exception to the rule, they are built with endless tenticles that extend in all directions so that sometimes it is necessary for a passenger to have to walk a mile or a mile and a half to get from one plane to another.

I don't know how we could go about creating more of a barrier infested airport situation if we made that our express objective, than we have managed to do in the so-called modern terminals that have been constructed.

These monstrosities just sprawl along the edges of our airports all across the land.

Well, that was not in the nature of a question, that was in the nature of a soapbox talk.

Senator Fong.

Senator FONG. How would you get HUD to really go into this problem?

Mr. LAWTON. Well, we could take the instance just brought up by Senator Church. One possibility might be to demand that where Federal funds are used in construction that there be some investigation of the explicit needs of people with limited mobility for the proposed structure that is being built.

Now what has happened with many of our housing plans for the elderly is that some of these features have been built in, as mandated by the Federal Government. These features have been adopted as things that one should do; the thing that is wrong is that this becomes the end of thinking in the area. The desirable features are repeated endlessly without regard to further evaluation. It seems to me that the Government should require and provide funds for the behavioral assessment of needs, on the one hand, and building performance, on the other, where Federal money is given to a builder.

Senator FONG. When you say where Federal money is being given to the builder, in the building of low-cost housing for the handicapped, the only money that is being given there, I think, is in a matter of interest payments; is that correct?

Mr. LAWTON. Well, low-cost public housing is a direct grant to a local authority. There are a number of other Federal programs with interest relief to the builder.

Senator FONG. You have all kinds of programs. You have one for those that have very small incomes and they are not handicapped and then you have housing for the elderly. Now, would you require

the Federal Government to go into those buildings where the elderly are not involved, only those who have a certain income who can qualify, would you force the Government to put in these things?

You see the problem is that wherever you get into a low-cost housing program, such as the 235 program, they will hold you down in construction costs and they say you can only put so much money in an apartment.

For example, I had a church group that wanted to build, but the cost was so high that it was impossible for them to build. They had to reduce the cost down to a certain amount and when they were forced to reduce it down to that amount they can't do much. They have no leeway. Would you insist in a case like that that these features be put in?

Mr. LAWTON. I would do all I could to look for other sources of cutting the cost, if that became the primary consideration; yes. I just feel that a cost accounting approach to building for human needs can never get us to the point of serving the people who need it most.

Senator FONG. You are advocating more subsidy by the Government?

Mr. LAWTON. I am.

Senator FONG. Thank you.

Senator CHURCH. Senator Percy.

Senator PERCY. Just one question, Mr. Lawton. Have you conducted any special studies on—or could you comment on, the relationship that might exist between physical barriers for the elderly and psychological problems that the elderly have, their whole makeup and attitude toward life; their inner feeling toward life itself?

PHYSICAL BARRIERS REDUCE SOCIAL ACTIVITIES

Mr. LAWTON. Well, yes; I have conducted some of this research and there have been a number of other people who have, also. The very striking thing that one finds is that a great many types of well being on the part of the older person are directly related to his physical distance from whatever it is that is going to give him satisfaction.

One can predict almost exactly how much social companionship a person may have depending on how many other older people are near him. One can predict how often he will use a senior center by knowing the distance from the senior center.

These are among the clearest findings. As far as morale goes, the same thing tends to be true to a certain extent.

Apparently what closeness to other people and closeness to resources does with one's inner feeling of well-being is to give a person more degrees of freedom to pick and choose these resources as he wishes.

In other words, a person who wishes very much to be sociable is going to have very low morale if he lives great distances from other people or from relatives.

Putting him closer to other people and facilities gives him freer rein to exercise his choice.

Senator PERCY. I would like to just verify what you are saying. We have some senior centers right here in Washington, D.C., which Dr. Arthur Flemming and I visited 2 weeks ago. The participants contribute 25 cents toward their own lunch, and they get a hot lunch that is worth $1.65. The whole idea is having some place to come to, having

some place to dress up for, other people to dress up for. And as Mrs. Green said to me, when someone doesn't come to our group we get on the phone and call them up and say, "Come on down." If the "absentee" says "I am not feeling well." Mrs. Green will say, "Come down here anyway you will feel better down here than sitting up there alone." The person comes down and pretty soon feels much better.

One person said that because of this lunch program her medical expenses have decreased. She is less prone to take medicine and doesn't need it as much. A better assistance for her is companionship. That is what she needed. She wanted to be needed and wanted to be missed and have something to do and someone to see.

Many of these programs that look on the surface expensive are much less expensive than heavy medical costs, such as care for a person in bed. What does it cost to take care of a person in bed? In a hospital it is quite expensive. Psychologically speaking, I think these centers remove many barriers which hurt older people. The centers give them an opportunity they couldn't have otherwise, and society comes out way ahead in many ways. People have something to live for.

Do you have any studies to give us to convince those who would say we can't afford to spend this kind of money? If you can prove a good return on investment, if we can put this in hard terms—not the compassionate human terms that it should be put in, but sometimes you have to put it in terms that will make it sell—this would be helpful.

Psychological Barriers Equal Physical Barriers

Mr. Lawton. I do feel that we have some hard data that will support the idea as there being such a thing as a life enriching environment. We can demonstrate what the components of this kind of environment are, which certainly include communal meals, where necessary. One of the difficulties that one runs into in designing such programs is this all-important factor of distance, and the distance may be psychological. An extraordinary number of older people are locked into the inner city areas where their locomotion may not be hampered necessarily by an in-dwelling handicap, but by fear of moving about.

Again, this is a barrier to need fulfillment that I think we all have to be aware of in planning for the future. The psychological barriers to free movement are at least equal to the physical barriers.

Senator Church. You come from the Philadelphia Geriatric Center and it has been pointed up to me that recently that center converted one or two family structures for use by the elderly.

Were barriers removed in the conversion and at what cost, can you tell us?

Mr. Lawton. Well, I have to report that barriers still exist and that this limits the sort of person who can be accommodated in our houses. These houses are older Philadelphia rowhouses in the immediate environs of our institution. With a limited number thus far available and a long list of people wanting them, we made the decision to first serve the very large number of people who were able physically to manipulate these structures, not really knowing how to attack the problem of remodeling.

Certainly your question identifies an area of extreme need in dealing with the handicapped population, that is, that new structures are not the only problem. We have millions of older structures which can and will be used and we need a technology to apply to these.

Senator CHURCH. Well, I see by the clock that we have to move on, as much as I would like to tarry. We are just halfway through our witness list here.

Our next panelist is Mr. Peter Lassen, handicapped consumer.

Mr. Lassen is from Washington, D.C.

Mr. LASSEN. I am a native Californian, but I live here now.

Senator CHURCH. You live here now.

Mr. LASSEN. Yes.

STATEMENT OF PETER LASSEN, FORMER EXECUTIVE DIRECTOR OF THE PARALYZED VETERANS OF AMERICA; MEMBER OF THE BOARD OF THE NATIONAL PARAPLEGIA FOUNDATION

Mr. Chairman, and Senators, to the person with mobility problems, the barriers by design, the so-called architectural barriers, are some of the most frustrating, humiliating, and demoralizing areas of daily living. Frustrating because he knows that he will probably be unable to employ his skills—due simply to a stair; humiliating, because he will not be able to fully partake in community life—he will be walled out by design; and demoralizing because he cannot be sure that society gives a damn. We are living in an age where the Washington Metro is still trying to find reasons why the new subway need not or cannot be made barrier free; where curb cuts on public streets are the exception rather than the rule; and where an accessible building in Albuquerque, N. Mex., receives national acclamation in the "handicapped press." Even the three keystones of American democracy—the Declaration of Independence, the Bill of Rights, and the Constitution—cannot be seen by anyone but the most able bodied.

Federal law now provides direction for making public facilities accessible. But is it effective? The "where feasible" clause leaves a very wide loophole; there are no provisions for enforcement of the statute; regulations do not provide for accessibility in multifamily dwellings of less than four living units; and there are no statutory incentives for renovating buildings built prior to the passage of Public Law 90-480.*

I would also like to say a few words here about transportation. The barrier-free law specifically excludes rolling stock—subway trains and the like—from required accessibility to the aged and handicapped.

A recent national conference on homebound employment found that 50 percent of the approximately 1 million homebound, handicapped Americans are unemployed simply for the lack of adequate transportation. Typically, the less affluent are more dependent on public transportation.

Over 100 million Americans have no driver's license. Of these people, 20 million are over the age of 65. One can quickly see that the aged-poor are twice jinxed; and that the crippled-aged-poor have little chance at all.

Daily therapy is necessary for many thousands of handicapped persons. Yet, rehabilitation is impossible for them because of lack of transportation. So the answer to the problem has been to institutionalize these people, often at the expense of the taxpayer, in our hospitals, nursing homes, and old folk's homes.

---

*See app. 1, p. 47, Public Law 90-480.

For those handicapped who are able to find access to public transportation, many are refused passage solely because of their handicap. Rail and air travel are the safest means of travel; yet, some rail companies and airlines still refuse to carry them. Other public transport companies have no plan to make their accommodations accessible to them and therefore, provide effective but unspoken barriers to the handicapped and aged.

I would like to submit, for the record, material to support this.*

Public laws should be strongly directive while still providing for individuality and flexibility. The barrier free law is indeed imperfect. It could be strengthened by providing renovation loans to insure accessibility; by providing more stringent enforcement procedures; and by directing that all local building codes include provisions for full usability. But the private sector must also be involved. Insurance companies could provide reduced premiums for barrier-free buildings. I have no doubt that accident claims would be reduced due to the improved design.

Architects and engineers must also be taught to extend their design concepts. Though we usually consider what will go into a building as far as equipment, heating and air conditioning is concerned, and consideration is given to some functions, that is, whether the building is an office building, library, or apartment building, we seldom look at the total population who will use it or will be served by it. What we must do is get away from the outdated view of "standard man"; that is, that we are building for the median of our population who are the average of society; if you will, the top of the statistician's "Bell Shaped Curve."

We must redirect our design thinking toward the individual who is at the extremes of the curve. The idea, also taken from the mathematicians, requires the use of the lowest possible common denominator in designing our systems. Mindful of as many of man's physical variations as possible, it requires that we build to insure usability by all—at anytime required or desired. It requires building into our facilities, a flexibility so that no matter how a man may be limited, he may still use public areas.

The description of the common denominator is somewhat more difficult. But certainly, when designing our facilities we can be assured that if the handicapped can use them, the able bodied can also use them—and probably to a better advantage.

Kinds of Handicaps Are Numerous

The task of describing the non-able-bodied—the handicapped, if you will—who are affected by barriers is not a simple matter. A listing of them would be endless; and would have to include the various permanent disability categories—paraplegics, the blind, the aged, cardiac cases, and so forth. But a list must also include the less obvious groups—such as pregnant women, mothers with baby carriages, anyone carrying heavy packages, temporary disabilities like broken bones, invisible disabilities such as respiratory difficulties, and so forth. In other words, we could say, for instance, that all public facilities must accommodate the handicapped, including (but not limited to) persons

*Retained in committee files.

in wheelchairs, the blind, amputees, the mentally subnormal and all others. By choosing these, all others should also have full and easy access.

For complete access to community life, most of us who have permanent mobility limitations have learned that, to get around, we must be relegated to a demeaning position of helplessness—we must be carried onto a bus or up a flight of stairs—either this or be a "shutout" from society. There can be no doubt that neither of these positions can be tolerated for long. And yet, it is true that we have indeed tolerated them for a long, long time. Thank you.

Senator CHURCH. Thank you very much, Mr. Lassen. Two things came to mind during your testimony. I have to rely on my memory for this and it might be imperfect, it often is. But if I recall correctly, on my first visit to Washington, which was in 1938, when I came for the first time to look at the National Capital, the guide showed us the ramp that had been built alongside the Capitol and his explanation of the ramp was that it had been built in order that the President could be wheeled into the Capitol building in his wheelchair.

And now, of course, the ramp serves all handicapped people.

But if that were the case, there is something in that story. It took a handicapped President to get a ramp.

Mr. LASSEN. You are exactly right. It did indeed take that.

Senator CHURCH. And up until that time everybody else who was handicapped just wasn't thought of at all.

Mr. LASSEN. You should know, too, Senator Church, that inside the Capitol there are some rather sharp ramps. Again this was put in for President Roosevelt and yet little thinking is done as to how a person like myself can get up and down those. It is good for an aided person, but not an individual who gets himself around.

Senator CHURCH. If you don't happen to have a secret service man to push the wheelchair it is a little difficult to get up them.

Mr. LASSEN. Exactly.

Senator CHURCH. The other thought that came to mind is where you said, "Insurance companies could provide reduced premiums for barrier free buildings." That is an interesting suggestion. I noticed last year Allstate Insurance began advertising that it would reduce its premiums 10 percent, I think, if automobile manufacturers would be less beauty conscious in their design and provide a bumper that could withstand a 5 mile an hour impact.

It must have had quite an effect on Detroit because this year the combined force of that advertisement, and governmental pressures have finally caused the automobile industry to actually design such a bumper and if you notice on television, it is their proudest achievement. You see the bumper from top and bottom in action at impacts of 5 miles an hour and I think Allstate has reduced its premium for automobiles that meet that standard.

So you might get the same thing in building design.

Mr. LASSEN. I would hope so.

If I may, Senator, I would like to comment, you asked a question as to how HUD can implement the architectural barriers law. I received in my office just recently Engineering News Record (September 23, 1971), which we receive every week and in there is an article entitled "HUD Establishes Acoustics Controls for Housing." This also involves your earlier comments on deafness, and yours, Senator Percy.

It says here, "That very likely this will raise the cost of family housing and buildings altogether," however they expect to implement this without exception.

Now if we can do that with acoustic, I think we can also do that with architectural barriers.

Senator CHURCH. Did you have any trouble getting into this building today?

Mr. LASSEN. Only parking. [Laughter.]

Senator CHURCH. Well, that is a barrier that can never be removed. I am afraid it just continues to get worse.

Senator Percy, do you have any questions?

Senator PERCY. Just one. It is a technical point. I wonder if we have a gap in the law here. The national law covering our construction requires that there be facilities for the handicapped in the buildings and the facilities. I don't think it has any provision requiring help for the handicapped in connection with the rolling stock, for the cars themselves.

ADAPT ROLLING STOCK FOR WHEELCHAIRS

I have a bill, S. 1591, which requires that any transit companies receiving Federal funds must take into account the handicapped. They must adapt their rolling stock or cars to help the handicapped who need assistance in getting into the car, out of the car, and so forth.

In other words, the bill is quite clear in specifying the kinds of things we need now, but can you tell me in technical terms what kind of help can we provide for the rolling stock itself?

Mr. LASSEN. Well, we can provide, for instance, level access into the rolling stock, into the cars themselves. It is very easy to do with a minimum distance between the car and the platform. We, who are in wheel chairs, also need a little extra space. I noticed last week when I flew in from Cincinnati, that the airplane was not accessible to me, and I had to be carried back and forth. Of course, this is demeaning to be handled like baggage, and it is also dangerous.

The problem in the aircraft, was not that the seats were bad, the problem was that the aisles weren't wide enough.

Getting back to the subway cars, we need wide enough aisles; we need spaces for the handicapped to sit. If I am in a wheelchair I would like a clear space rather than to transfer over to the seat. We need audible and visual signs for warning, things along that line.

Senator PERCY. Senator Church, I would suggest that you and I and other members of the committee send a letter to Metro right away and ask if the decision has been made. This is the time to do that. We don't have to wait for my particular bill to become law. We can urge these modifications as the right thing to do, whether or not we have a law later.

Senator CHURCH. I agree with you, Senator.

Senator PERCY. Maybe our able staff would draw up such a letter for us.

Senator CHURCH. I think we have witnesses from the Metro on Wednesday and that would be a good time to put it to them.

Senator PERCY. And also we can urge reduced fares for those over 65 during nonrush hours as we were finally successful in getting for the D.C. Transit system.

Thank you. That is all.

Senator CHURCH. Our next witness is Cecilia O'Neil, past president of the National Retired Teachers Association.

Senator PERCY. May I particularly express my pleasure at Cecilia O'Neil's being here? I have had the great pleasure of working with her in Chicago, at a wonderful convention there, and she is just a tremendously dedicated person in this field.

STATEMENT OF CECILIA O'NEIL, PAST PRESIDENT, NATIONAL RETIRED TEACHERS ASSOCIATION

Miss O'NEIL. May I return the compliment? Your speech was one of the finest ever given at our meetings.

Senator PERCY. I have listened enough to Senator Church.

Senator CHURCH. I want to join in welcoming you here this morning, Miss O'Neil.

Miss O'NEIL. Thank you, Senator Church.

Mr. Chairman, when we speak of barriers to the mobility of older persons, we must not confine ourselves solely to the question of transportation. Mobility means much more than movement from one city or State to another. We often hear recited the statistic that less than 1 percent of Americans over the age of 65 crossed a State line last year.

Now, although this fact, of itself, may seem startling, even shocking, it does not indicate the real crux of the problem. We should not be so concerned with measurable distances. We need, rather, to concern ourselves with the almost intangible and certainly immeasurable movement of withdrawal and resulting status of social isolation which so often accompanies the latter years of the aging process.

My point, Mr. Chairman, is that while mechanics are, of course, an important part of the overall problem, there is a psychological aspect as well.

Sadly, mechanical or physical barriers to mobility often begin right in the home because they have been designed into the dwelling. It has been observed, and perhaps not inaccurately, that most buildings are designed for custodians and insurance companies. Private homes also suffer from poor design features if we look at them from the point of view of an older person. For example: grab bars should be placed in bathrooms; kitchen cabinets should be within easy reach; lighting on stairways should be especially good; handles should be levered rather than rounded; railings should be placed in strategic locations; and overhead light fixtures should be "pulldown" types so that bulbs can be easily changed.

DESIGN FOR THE EXTREME—EVERYONE BENEFITS

Features such as these were incorporated into a model home constructed 10 years ago in conjunction with the 1961 White House Conference on Aging. The home, called appropriately "Freedom House," was toured by a large number of younger persons as well as the elderly.

Surprisingly, the younger visitors did not feel inconvenienced by the specialized features; on the contrary, they expressed a belief that such features would be helpful to them even though they were in their physical prime.

Where, then, is the resistance to such design innovations. The answer must lie in the timeworn concept of gearing for the "average"—whether it be in television or architecture. If, on the other hand, we were to design for the extreme, say an older person confined to a wheelchair, then everyone else could be accommodated and almost all physical barriers to both the elderly and the handicapped would be removed.

Society, as it designs our physical and cultural environment, must recognize the severe limitations imposed on the ability of many of the elderly to walk, climb steps, stand, see, hear, or even open doors.

A very fine start in this direction has been made in my own State of California. The Bay Area Rapid Transit System—known familiarly as BART—has provided wall railings and elevators in many of its stations; special gates so the elderly and handicapped do not have to move within a crowd; extra wide doors and aisles; extra large seats that can be rotated.

Earlier I mentioned the importance of psychological barriers. These are sometimes difficult to distinguish from physical ones. For instance, much of the public-type housing for elderly people provides little more than lonely compartmentalized dwelling spaces. The elderly are separated—they are segregated—from other age groups and often, through lack of attractive and functional community facilities, from each other.

The fact is that we have been laboring under the historic illusion that elderly people wish to spend their later years off in some secluded spot where they are free to sit in reflective solitude. This not-so-subtle psychological message that they are no longer wanted by society is reinforced in the mind of the older person every step of the way.

Can you imagine how the person with an arthritic hip must feel when he tries to board a bus; how a cataract sufferer must feel when he attempts to read direction signs; how the hard of hearing listen on most public telephones? How many steps are usually placed in front of our libraries? They may look nice, but for many of us they are just like a brick wall across our path.

I could go on at great length, Mr. Chairman, if we but had the time. For instance, I have not made mention of that significant percentage of elderly who live in inner cities under virtual "house arrest" because of crime, inadequate and too costly public transit, and the closing of neighborhood foodstores, and drugstores, and a host of other factors.

I simply cannot stress strongly enough just how critical and central to the entire life style of the elderly person is the question of mobility.

Mr. Chairman, there are numerous personnel experiences I would like to tell you about, but I realize my time has expired. Hopefully, I will be able to relate some of these later this morning during the discussion period. Therefore, I should like to close now with a quotation from the President's Task Force on Aging: I quote:

> It is as important for the Nation to develop or have developed special transportation arrangements for older persons as it is for the Nation to meet their income, health, and other needs.

I thank you.

Senator CHURCH. Thank you very much, Miss O'Neil. I think you score a very important point when you say that the specially designed "Freedom House" was so well accepted by younger visitors at the last White House Conference on Aging.

No Need To Segregate Elderly

The point you make is that there is no need to especially design houses for the elderly and segregate the elderly into those particular houses, but that if we just generally design our houses and buildings to take care of the needs of the elderly they would be most acceptable and even more convenient for younger people as well.

Miss O'Neil. Yes, that is true.

Senator Church. It is just that we have been designing with the average fully abled, physically able, person in mind at the best years of his life, so to speak, and not designing with the needs of the elderly and the handicapped in mind. And we might just as easily and readily do it. And it is not likely to be more costly.

Miss O'Neil. Not at all.

Senator Church. And then the facility would have general utility for all people; isn't that correct?

Miss O'Neil. And today you are using swag lamps. In the early days when I was a child we used to pull the chandeliers down and clean them and rolled them up to the ceiling. Today what is more popular in the home, all of you people are using swag lamps so that you may have more comfortable reading. I use that as an example.

Senator Church. I think of myself standing on top of a rickety stepladder trying to get at the ceiling lamps in my home and wondering why the house was designed that way.

Miss O'Neil. I was so glad to hear what you said about airports, because you put Federal money into those airports and there is no reason we can't say to the Federal Government: "Why don't you mandate some of these improvements?"

I go from one airport to another, from a little tiny one you land out in the field and have to carry your baggage 300 or 400 feet, to one more modern but which doesn't have a covered entrance to and from the plane, to the beautiful ones in which you have to walk miles, or you travel on escalators or belts or ride a truck to get to your landing.

Travel—A Two-Way Street

I have made one rule and that is in traveling at my age and as much as I travel, I limit myself to the baggage that is to be put on the belt and plane. I carry only a purse. You will never see me with a package. I want to travel in safety. I think it is a two-way street. We older people need to conform and do things that will make traveling more safe and to use the fine things that are offered to us by private industry and by Government.

Senator Church. Thank you very much.

Senator Percy, do you have any questions?

Senator Percy. Yes.

Miss O'Neil, you mentioned the problem of buses and the large step up of that bus. I know that older people are somewhat hesitant to even get in a line where people are lined up behind them waiting to get up. And if they need the strength to pull themselves up then it is a big step to get up. This is a real barrier to them.

But it is also a barrier to the handicapped at any age, even to young people, little tiny children. Wouldn't this again be a sort of universal problem, so that if we helped the elderly, we would be helping virtually everyone?

Miss O'NEIL. I understand that Mr. Volpe has already ordered buses similar to the ones used in London which they say are the best. The bus comes up to the curb and you step on and you have only a small step inside the bus to go into your compartment.

Senator PERCY. Mr. Chairman, I would like to comment also on the problem of crime barriers and violence as they affect the elderly and the handicapped.

We live in a society where some people seem to have absolutely no moral compunction whatever in certain areas. There is terrible brutality and violence in American society and a willingness to take advantage of the disadvantaged, particularly the elderly and certainly the handicapped.

I was struck by what you said about the confines of the elderly. Last week I accompanied Floyd Hyde, the Assistant Secretary of HUD, to Chicago to visit 1 square mile of Woodlawn where we have had 1,600 fires in a year. There we have 400 abandoned apartment buildings, 2,000 empty apartments there. We stopped at a house and saw an elderly woman, and I asked her what kind of problem has this created in the neighborhood. She said, "When it gets dusk, that is when I come up my steps here and I never get out until it is light again." She literally is imprisoned.

I wonder if that same condition isn't true of the physically handicapped who simply won't risk going out. Here again, the problem of crime is directly related to the whole well-being of our society.

1971 WHITE HOUSE CONFERENCE ON AGING

I have one question to ask you with respect to the upcoming White House Conference on the Aging. I spent, as you know, several hours with the President, Dr. Flemming and others who are working on that, but we want to assure that whatever recommendations come out of that conference are not put away for another 10 years.

You have had the advantage of engaging in the 1961 Conference. You know the stirrings that went on and the interest and the excitment and the reports that were made.

Have you seen great progress as a result of all those reports and that particular conference? Would you have anything to say about what we should do in the future in the next decade as a result of the 1971 Conference?

Miss O'NEIL. I would make two statements to answer your question. One is that I would say that we had 500 resolutions come out of the 1961 Conference and perhaps 100 of them were implemented and the other 400 are still just as good today and could be needed.

I would look forward to the 1971 White House Conference coming up with fewer resolutions, more inclusive, and with the proviso of "This is priority, this is No. 1, this is No. 2. This can be done in 1971, this in 1972, and 1973, and it is to be funded out of such and such fund."

I think fewer resolutions and with a source of financial background offered would be a much better scheme. I am quite sure after Mr. Flemming's experience in 1961 that you couldn't have a better chairman than you had with Mr. Flemming. I think he would look forward and see that we all are going to enjoy the 1971 White House Conference.

The other statement I would make is I think our geriatric centers

are going to have so much to contribute to the White House Conference, particularly I speak for the geriatric center at USC that our two groups are funding and Federal money is in there too and why shouldn't they take up the problems and try to find the cause of aging. Why shouldn't they have some remedies to offer?

Senator PERCY. Miss O'Neil, if I could just ask one last question: You indicated in your testimony you have had numerous personal experiences with barriers, but that time did not permit you in the testimony to enumerate. Would you like to take the time to mention one or two?

Miss O'NEIL. Well, I came out of a meeting in a nearby city in California, and there was a pouring storm. I had been there to talk to municipal employees about retirement and the city manager and another person said they would get me to the Greyhound bus. They were in the passenger seat and I was in the second row. They reached out and opened the door and I reached down and put my foot on a step. But I couldn't reach the sidewalk. I tried first with the right leg and then the left leg and it didn't work and I said I am not able to get out.

They jumped out and came around and the truth was I had to jump and land on two feet. They helped me. A little later on when I had a "thank you" note they said that was the minibus used to take children to playgrounds.

So there the city discovered they had a very serious hazard if anybody else had to open the door. There was a tiny step and that was all.

But in traveling though, I have never had any unhappy experiences on airplanes because I think I have two simple rules. One, not to carry any packages and two, I go early enough so I am there in time to transfer from one line to another. I ask the girl who makes up my tickets, give me 1½ to 2 hours in every large airport that I go into so that I have plenty of time to walk. I have only used a chair once and that was because the day in Chicago with President Nixon I had 3 minutes to make my plane and somebody said, "Hop a chair" and they pushed me through the crowd and I got on the plane and that is the only time I have ever used a chair.

Senator PERCY. Mr. Chairman, I, regrettably at 12:30, am scheduled to be at the Statler Hilton for a conference which I shouldn't miss, but I do want to express my deep appreciation to the members of this very distinguished panel and to assure the remaining two members that I will read with great interest their remarks in the transcript when it is completed.

I am sorry we didn't get to you before I had to leave.

Thank you very much indeed, particularly Miss O'Neil.

Senator CHURCH. Thank you, Senator. Before you leave, I think in view of your remarks about the problem of crime and its impact on the elderly, that I should mention on October 26 and 29 in our hearing on housing that we are planning, there will be a panel to discuss this very aspect of the problem of the impact of crime in our cities on the lives of the elderly.

Thank you very much, Miss O'Neil.

We will now move on to Quinton Wells, the Assistant Commissioner for Technical and Credit Standards Housing Production and Mortgage Credit, Department of Housing and Urban Development.

STATEMENT OF QUINTON R. WELLS, ASSISTANT COMMISSIONER FOR TECHNICAL AND CREDIT STANDARDS, HOUSING PRODUCTION AND MORTGAGE CREDIT, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Mr. WELLS. Mr. Chairman, members of the committee, I am pleased to be here today to represent the Department of Housing and Urban Development before this committee, and to present testimony on the implementation of Public Law 90–480 in the programs of the Department. Public Law 90–480[1] by definition exempts privately owned residential structures. The act applies to federally aided public housing and to other buildings and facilities constructed, leased, or financed by grant loan from the United States.

Accordingly, mandatory standards for accessibility by the handicapped have not been applied to mortgage insurance programs for family housing. However, as I will explain later, we have under other authority, applied similar standards to FHA insurer housing for the elderly.

For our low-rent public housing program the publication, "Low-Rent Housing Preconstruction Handbook," requires compliance with specifications contained in "American Standards Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped, No. A117.1," approved by the American Standards Association Inc.—now the American National Standards Institute.

The standards of A117.1 apply to construction and alteration of structures which meet any of the following criteria:

(*a*) Any residential structure which, in whole or in part, is intended for occupancy by the physically handicapped or by the elderly;

(*b*) Any elevator residential structures;

(*c*) Any residential structure which contains 25 or more housing units; and

(*d*) Any public areas of residential structures and of nondwelling facilities (community, management and maintenance space), whether such nondwelling facilities are in separate structures or included within residential structures.

The standards of A117.1 are not applicable to:

(*a*) Any portion of a residential structure or its grounds which need not, because of its intended use, be made accessible to, or usable by, the public or physically handicapped persons;

(*b*) The upper floors of a nonelevator structure;

(*c*) The alteration of an existing building if the alteration does not involve the installation of, or work on, existing stairs, doors, doorways, elevators, toilets, entrances, drinking fountains, floors, telephone locations, curbs, or parking areas; and

(*d*) The alternation of an existing structure, to which application of the standards is not structurally feasible.

Instructions for college housing programs are contained in the "College Housing Project Development Handbook." They require that the architect/engineer comply with the American standard specification, A117.1[2] for all college housing projects, both publicly

[1] See app. 1, p. 47, Public Law 90–480.
[2] See app. 5, p. 59, U.S.A. standard A117.1–1961.

and privately owned. For student union, dining, infirmary, and other nonhousing projects, compliance with A117.1 is required as covered under General Service Administration regulations,—part 101–17.700, subchapter D, chapter 101 of title 41 of the Code of Federal Regulation.

Procedures under the neighborhood facilities program and the open space land program require compliance with standard A117.1 in the same manner as nonhousing facilities for college housing programs.

Although we have stated that the provisions of Public Law 90–480 have exempted the mortgage insurance programs of the Department, these programs have not been ignored. In 1966 prior to the enactment of Public Law 90–480, the Department had issued standards for elderly housing mortgage insurance programs. These standards, titled "Minimum Property Standards—Housing for the Elderly With Special Provisions for the Handicapped," HUD PG–46, were extended to all of the elderly housing programs of the Department in May 1970.

In our "Minimum Property Standards for the Elderly", American standard specification A117.1 is prominently referenced as a guide, and a source of useful material to aid our field offices in their review of proposed projects. Compliance with A117.1 is mandatory for those portions dealing with access to the building.

In addition, subjects not covered by the specification are covered by the text of our own standards. For example, we have required that the fixtures in bathrooms of at least 10 percent of the living units shall be arranged, and space provided, to permit access and use by a person in a wheelchair.

Interior hall widths for these units are also increased. Handrails are required in hallways. Grab bars are recommended in all bathrooms, in addition to the 10 percent of the units in which they are required. We require greater doorway widths and lesser ramp and stair slopes than in our other housing programs. This permits easier access for people in wheelchairs or on crutches. In our mortgage insurance programs for elderly housing, our financial assistance extends to the provision of nursing and medical facilities and occupational and physical therapy spaces.

Nursing Homes

For nursing home programs, our minimum property standards are considerably more stringent than for all other programs, for here we are dealing with people in need of special care. In these standards we require hall widths and door openings that not only accommodate wheelchairs, but that will permit passage of hospital beds.

Although we are not aware of any special difficulties in implementing Public Law 90–480 in our programs, we of course recognize that these programs succeed in reaching only a part of the elderly and handicapped, who are in need of better and safer housing.

This concludes my formal statement. On behalf of Secretary Romney, I want to thank you for your invitation and the opportunity to testify at this hearing.

Senator Church. Mr. Wells, you started your testimony by referring to the Architectural Barriers Act. That act applies to public buildings only; does it not?

Mr. WELLS. Yes, sir.

Senator CHURCH. No Federal buildings. Do you know how many waivers the Secretary has granted in connection with the Architectural Barriers Act?

Mr. WELLS. To my knowledge he has not granted any. There have been no requests.

Senator CHURCH. Does this Act apply just prospectively, that is, to new buildings being constructed?

Mr .WELLS. To new buildings being constructed or remodeling older buildings when we are changing the stairs and things of this sort so it can apply.

Senator CHURCH. Does your Department review all of these plans?

Mr. WELLS. Yes, sir. That is, in the field. We don't in Washington, of course.

Senator CHURCH. Is a certification required from HUD that plans comply with the Architectural Barriers Act? Is that certification required before construction can begin?

Mr. WELLS. Certification from whom, sir?

Senator CHURCH. From HUD?

Mr. WELLS. Certifying to whom? We review the plans to see tha they apply.

Senator CHURCH. And is your consent required? Do you certify that the plans are adequate or may the building be built without a certification from you that the plans are acceptable?

Mr. WELLS. No; the plans have to be accepted by HUD as adequate. I don't believe there is a separate certification outlining the access to the handicapped.

Senator CHURCH. The act applies just to the buildings themselves. One of the problems is that there is no overall planning. You can build a good building and then the walk outside can be designed in such a way that an older person can't get on or off the bus. The only example we have this morning of an attempt at overall planning has to do with the new addition to Columbia.

Mr. WELLS. We do cover all of the site planning within the boundaries of the project itself, which would include the walks in connection with this project, but not the public walks that you have spoken of in Columbia.

Senator CHURCH. You emphasize regulation A117.1 as being featured in a number of projects financed through the Federal Government, through FHA, low-rent public housing being one, and mentioned also in connection with college housing and again in connection with FHA-insured housing for the elderly.

These standards, were they made up by HUD or were they just adopted by HUD?

Mr. WELLS. They were adopted by HUD. They were formed by the American National Standards Institutes.

Senator CHURCH. How do you know these standards are adequate? You just accepted them because they were available. Are you collecting information or attempting to determine from your own experience what standards ought to apply?

Mr. WELLS. HUD did have a good deal to do with cooperating in the developing of the standards. It was felt that they were complete and adequate at the time. Naturally it is something that we need to always

keep studying. As has been said today, there is greater lack of knowledge than there is specific knowledge in this field at this time.

Senator CHURCH. Well, I should think that that is so and that you would want to constantly review the standards in view of your experience and improve them.

Has HUD funded projects designed solely for the handicapped?

Mr. WELLS. Yes, sir; I believe we have about five at this time which have been solely for the handicapped.

Senator CHURCH. Do you think it is wise to segregate the handicapped into their own individual projects?

Mr. WELLS. Well, of course you know there is a lot of divided opinion on this. I would not think it is something that we are encouraging, but when there are those who want such a project we don't feel that we should prohibit it.

Senator CHURCH. I should think there is much to be said for just general designs that are laid out to accommodate the needs of the aging and the handicapped and that we would also better serve other people as a result.

I have no further questions. Thank you, Mr. Wells.

Our last witness today is Walter Meisen, the Assistant Commissioner of the Office of Construction Management of the General Services Administration.

STATEMENT OF WALTER A. MEISEN, ASSISTANT COMMISSIONER, OFFICE OF CONSTRUCTION MANAGEMENT, PUBLIC BUILDINGS SERVICE, GENERAL SERVICES ADMINISTRATION

Mr. MEISEN. Mr. Chairman and member of the committee, my name is Walter Meisen and I am Assistant Commissioner of Construction Management, Public Buildings Service, General Services Administration.

It is a privilege to appear before the commitee this morning as a representative of Robert L. Kunzig, the Administrator of General Services, and to present his views on "A barrier free environment to the elderly and the handicapped."

Specifically, I would like to discuss Public Law 90–480,[1] the Architectural Barriers Act of 1968.

This act, approved on August 12, 1968, authorized the Administrator of General Services, in consultation with the Secretary of Health, Education, and Welfare, to prescribe standards for the design, construction, and alteration of nonresidential and nonmilitary buildings funded by the Federal Government to assure that they are accessible to, and usable by, the physically handicapped. The act covers buildings owned by the Federal Government, leased by the Federal Government, or financed in whole or part by a Federal grant or loan if the building is subject to standards for design, construction, or alteration issued under authority of the law authorizing the grant or loan.

The act also authorizes the Administrator to modify or waive the standards, on a case by case basis, upon application made by the head of the Department, agency, or instrumentality of the United States concerned, provided such a waiver is clearly necessary; and to conduct such surveys and investigation as he deems necessary to assure compliance with the standards.

[1] See app. 1, p. 47, Public Law 90–480.

The act accords similar authority to the Secretary of Housing and Urban Development for residential buildings, and to the Secretary of Defense for military facilities.

Prior to enactment of Public Law 90–480, the General Services Administration had, for sometime, been providing for the physically handicapped in the design and construction of its own Federal buildings, and strongly supported passage of the act in testimony before the Congress.

Pursuant to the act, regulations were issued (Federal Property Management Regulations, subpart 101–17.7 entitled "Accommodations for the Physically Handicapped") * which prescribe the "American Standard Specification for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped" as the applicable standard. These regulations became effective September 3, 1969.

Public Law 90–480 was amended by Public Law 91–205 (approved March 5, 1970) making the act, and the standards prescribed by the Administrator, applicable to facilities constructed under authority of the National Capital Transportation Act of 1960, the National Capital Transportation Act of 1965, or title III of the Washington Metropolitan Area Transit Regulation Compact—the Washington "Metro."

Conveniences Are Negligible Cost Factor

The American standard specification for making buildings and fa cilities accessible to and usable by the physically handicapped prescribes a grade level or ramped entrance to each building; an elevator large enough to accommodate a wheel chair for multistory buildings; entrances, doors, and toilet stalls of sufficient width to accommodate wheelchairs; grab bars on toilet stalls; appropriate dimension and location for drinking fountains, public telephones and similar accessories so that they can be used by a person in a wheelchair; and identification, safety, and warning devices that can be detected by the deaf and the blind.

Our experience indicates that these requirements are a negligible factor in the cost of new construction, and improve accessibility and usability of the facility not only to the handicapped individual, but also to individuals without handicaps.

In addition to the General Services Administration, there are some 30 other Federal departments, agencies, and instrumentalities which have construction authority, leasing authority, or which provide grants or loans for the construction of facilities subject to the act and to the regulations issued by the Administrator.

Since the act has been in effect for 3 years and the regulations for 2 years, the administration felt that the time was appropriate for an investigation to determine the effectiveness of the act, and how each Federal agency having construction authority, leasing authority and authority of providing construction grants and loans, was carrying out its responsibilities. Consequently, on July 28 of this year, he sent a letter to the head of each of these agencies requesting the following information:

(a) A building-by-building tabulation, for each building subject to section 2 of the act, indicating its name, location, current status (that

*See app. 1, p. 49, "Accommodations for the Physically Handicapped."

is whether under design, under construction, or lease) whether the standards are applicable, and if it now conforms or will conform to the standards.

(b) The internal safeguards which each agency had established to assure compliance.

(c) The criteria relative to design for the handicapped being promulgated by each agency to grantees and borrowers, the source of the criteria, and the manner in which it is being disseminated.

Results of the survey are not yet available, since responses have not yet been received from all of the agencies, particularly those administering a large number of grants and loans, and we will also need some time to analyze the replies. It is quite possible that this survey may point to the need for changes in the existing law, or new legislation.

However, I am not prepared at this time to say what this might be. We expect that the survey will be completed and the results analyzed within 90 days, and I would respectfully request at that time to submit an additional statement to the committee on this subject.

Renewed Awareness of Needs and Responsibilities

The survey has already served one very useful purpose. It has given all of the Federal agencies a renewed awareness of the needs of the handicapped, and of their responsibilities to them under the act. It has also indicated to them that the General Services Administration intends to see to it that they are kept aware of their responsibility and assure compliance with the standards.

I have also been asked to give our Administrator's views to the committee as to the magnitude of the problems of designing for the aging and the handicapped. First of all, it is Mr. Kunzig's view that we should have a completely barrier-free environment to the handicapped and the aging. Public Law 90–480 will, we believe, go a long way toward achieving this, insofar as Federal construction is concerned, and many States have similar legislation pertaining to State and local government funded buildings. However, there are still three areas of concern.

First, we believe there is still need for education on the part of the public, and in particular on the part of those responsible for the design of buildings and the manufacture of building components. Most of what is contained in the American standard specification for making buildings and facilities accessible to and usable by the physically handicapped is nothing more than good, commonsense, architectural design, and planning.

However, for too many years design professionals have been conditioned to design for the "average man." He is 6 feet tall, right handed, 20–20 vision, is about 30 years old, isn't overweight, and is in perfect health. Yet, very, very few of us fit into this mold.

What the American standard specification does is to extend design parameters to include those portions of the population who don't fit into this mold. This makes good sense from a design standpoint since it makes facilities more responsive to the needs of the user, and creates buildings which are designed for real people. Many more design professionals, as well as manufacturers of products and accessories which go into buildings, need to get this message.

Second, although Public Law 90–480 and the implementing regulations require that alterations made the existing buildings comply with the standards, there are, and will continue to be for many years, many old buildings, both public and private, which were built prior to development of standards for design for the handicapped, and are still in use, and which have entrance steps, no elevators, doors too narrow for wheelchairs, and no provisions for the handicapped or aging.

Except where extensive funds are provided for the renovation of such facilities, this problem will remain with us for a long time.

Transportation—A Pressing Problem

Perhaps the most pressing and immediate need at the present time, however, and one which we feel should be tackled next by those concerned with the needs of the aging and the handicapped is the problem of transportation although we have, I believe, been quite successful in meeting the needs of the aging and the handicapped in the design of individual buildings, a handicapped person who works in a Federal building, for example, often finds it extremely difficult to get from his home to his office. If he is confined to a wheelchair, he can't get on a bus. If he is blind or has an ambulatory impairment, he often has to rely on other people to help him get to work.

Public Law 91–205 requires that the Washington "Metro" now under construction, comply with the standard established by our Administrator, and officials of the Washington Metropolitan Area Transit Authority have assured us that they intend to comply. However, at this time we have not been furnished with specific information as to their progress.

We believe that a great deal more attention needs to be paid to the needs of the aging and the handicapped with regard to public transportation. I would, however, expect that the representative of the Department of Transportation would have a great deal more to say on this subject.

This concludes my prepared statement, Mr. Chairman. It was a pleasure to appear before you today, and I would be happy to answer any questions.

Senator Church. The first question I have, Mr. Meisen, is the same one I addressed to Quinton Wells. How many waivers has the GSA granted under the Architectural Barriers Act?

Mr. Meisen. No waiver has been granted, sir.

Senator Church. Now, in your testimony, in connection with the coverage of the act, you mentioned the kinds of requirements imposed by the American standard. You mentioned among them:

> A grade level or ramped entrance to each building; an elevator large enough to accommodate a wheelchair for multistory buildings; entrances, doors, and toilet stalls of sufficient width to accommodate wheelchairs; grab bars on toilet stalls; appropriate dimension and location for drinking fountains, public telephones and similar accessories so that they can be used by a person in a wheelchair; and identification, safety, and warning devices that can be detected by the deaf and the blind. Our experience indicates that these requirements are a negligible factor in the cost of new construction, and improve accessibility and usability of the facility not only to the handicapped individual, but also to individuals without handicaps.

Is this standard a sufficient one in the light of the testimony that we heard this morning, particularly that from Dr. Pastalan and Mr. Windley, which would indicate that there are many other considerations besides the width of the door into a toilet stall or a grade level entrance to a building, that ought to be taken into account, for example, architectural design, the particular hazard that glass might give, the importance of painting a wall a different color from the floor, to help people whose perspective is failing, the color or scheme on stairs to make it more evident where the step begins and so on.

Now all of these things relate just as much to use, accessibility, and safety as the door widths and the other physical features that are now imposed in the standard.

What about these other considerations?

More Should Be Done by GSA

Mr. Meisen. Mr. Chairman, there is no question that more can be and should be done. The GSA is in a somewhat more enviable position in that we control much of the design that goes into public Federal buildings, and as such, a number of the recommendations of the doctor have already been carried out.

We, for example, always install transoms across full height glass to differentiate them from doorways and we are now using color to differentiate risers from treads. I am sure there is much more that we can learn from what the doctor is experimenting with. It was the first time I was aware—and I am an architect myself—of the difficulty in differentiating between wall, ceilings, and floor. I can see why that would be.

This is, of course, a serious problem. I think all of the previous witnesses might agree, however, that if only those requirements of the standard were applied to all buildings we would be so far ahead of where we are right now that the additional changes we could make would be minimal. They would be just making it a little more amenable.

But certainly they would be accessible now. That would be a big starting point. I don't think the GSA will ever stop looking for things to do that will help improve it further.

Senator Church. Do you control the design of post offices under the new arrangement?

Mr. Meisen. We did. We don't under the new Postal Service Act, sir.

Senator Church. Probably more people use post offices than any other Federal facility, wouldn't you think?

Postal Facilities Made Available to Handicapped

Mr. Meisen. There is no question. More money was spent by GSA in making postal facilities available to the handicapped than any other building because there are more of them, and it was more urgent that they be able to get to those facilities than anywhere else, that and Social Security payment centers.

We think that is a big area that remains to be covered. I would expect the GSA would continue to enforce the regulation to the extent we can in that area.

But I think there is a need for another look at whether we have the authority.

Senator CHURCH. I think so, too. I think we had better look into that and determine what the Postal Service itself is doing and whether the law should be modified in such a way as to give GSA oversight in this area.

Mr. MEISEN. I think it is unclear at the present time, that is correct, sir. I might add that a number of gentlemen have pointed out the need for the design professionals to have more of an awareness. This is a very serious problem and I am not sure how to overcome this.

Very normally, it is considered an impingement on a design professional as something he has to do so he does everything else and then to the extent he can, he meets the bare minimum of the law, the 12 percent ramp or the 8 percent ramp, and tries to fudge it a little because it is a difficulty to him.

And it is not an easy problem to overcome. Just promulgating regulations doesn't do it. It makes them have to do it. We have a training program for architects and engineers and that is currently under revision.

One of the items we are including in that now is that the new architect, the trainees that come on board with GSA are going to spend 1 day in a wheelchair in a building that is supposed to be accessible to the handicapped so they think of it more as something that they want to do rather than something they are made to do.

We think that maybe just 1 day going about the duties of their normal work in a wheelchair will make them more receptive to wanting to do as much, if not more, than the regulations stipulate.

Senator CHURCH. That is a very good idea and I commend you for it. Why don't you extend the experiment some and include the glasses and the ear stoppers and these other devices and give your architects a real idea of what it might be like?

Mr. MEISEN. I think it would be very helpful. I think it might very well be. It is the first time I have known of the existence of such glasses. I would be very receptive to getting together with the doctor to see how we might arrange that.

Senator CHURCH. I think it might be a useful experiment particularly with your architects.

Mr. MEISEN. I think so.

Senator CHURCH. I was interested in your statement that accessibility requirements set up under the standard for accessibility are a negligible factor in the cost of new construction and improved accessibility and usability of the facility, not only to the handicapped, but to individuals without handicaps, that they are a negligible addition to cost.

I can see that that might be true. I wonder if what we are really talking about are not major modifications in design but simply building the doorway wide enough, and I suppose it isn't much more costly to build a wider doorway than a narrow one and hand rails and so forth.

Mr. MEISEN. Fortunately office buildings have requirements that already, to a great part, meet the needs of the handicapped. It is not like the three story row house, for example, where to put in an elevator

would greatly increase the cost. An office building has to have elevators for movement of freight and large numbers of people. The doors are normally 36 inches made to facilitate furniture.

With some thought of access and some thought to the reasonable scattering for facilities for the handicapped we think that we wouldn't need any extra money to provide it.

Senator CHURCH. It is just a question of good design rather than adding materially to the cost?

Mr. MEISEN. That is correct. Of course, the Metro problem gives us another problem altogether. I know, for example, since we have been trying every means at our disposal to get compliance from them, money is a very serious element.

This folder represents the correspondence we had with Metro.

Senator CHURCH. Why is it you can't get the information required by law from Metro?

THE LAW REQUIRES ELEVATORS

Mr. MEISEN. We got that to the point of writing saying, "We want to know if you will provide elevators and we interpret the law to require elevators and we expect you will put in elevators."

Their reply was some four pages long and we think that in that reply they have said they will put in elevators. [Laughter.] But I think their difficulty is finding the equipment. The equipment has not been manufactured that will allow an inclined access in this station and many stations are under a street and can't use a vertical elevator.

Senator CHURCH. They are building it now. Can't you see the plans?

Mr. MEISEN. They have indicated that in a majority of cases an inclinator, elevator, or platform that follows the route of the escalator will be necessary and in all such cases we have required and they have installed extra space to install such an inclinator as soon as it can be developed and they are working on the development of such an inclinator at this time. We feel that they have made the necessary physical facilities to do so.

Senator CHURCH. Would it be a moving platform?

Mr. MEISEN. Yes, it would go down a ramp rather than vertical. It would function just as an elevator would. Initially they had indicated that they felt that an escalator would be sufficient and there was some training with someone in a wheelchair who would use it.

Senator CHURCH. What do you think about that, Mr. Lassen?

Mr. LASSEN. Well, I personally have caused quite a "ruckus" by using escalators. But I would guarantee you that it is dangerous and most wheelchair people cannot do it. Also I expect that the insurance laws rule against this type of acrobatics. Generally, it is impossible except for the most skilled person in the wheelchair. I am lucky to have been trained by the VA very well.

Mr. MEISEN. I think it is probably a nerve-shattering experience if you go backward.

Mr. LASSEN. Yes, it is.

Mr. MEISEN. At any rate, it appears that they will comply, and of course GSA plans to do all they can to insure they will. I do know money is a problem. There were no funds allocated for such a facility and so they are struggling and there is no doubt that the assistance

of many of the societies represented here are going to be needed to help get additional funds at that time for the installation of this equipment.

Senator CHURCH. Well, I know your problem in that respect is helped by the smooth and even flow of funds by the Congress for it.

Mr. MEISEN. We hope that also will be rendered shortly.

Senator CHURCH. Now, we promised you an opportunity to discuss this matter back and forth and here we are at 10 minutes to 1 and instead of withholding questions until all of you have testified, Senators did as they normally do, they couldn't restrain themselves, the chairman included, and consequently we have asked our questions all through the morning. But if anyone here would like to comment on any other testimony or like to make any suggestion that may have been prompted by testimony given this morning, please feel free to speak up now.

Mr. LASSEN. I would just like to mention it is my feeling that the American Standards specifications are not as good as they could be or should be. They were reaffirmed last year by a group who had worked on them originally, but they did need some revision. I think they need updating. They are 10 years old.

We have discovered—we who live with them have discovered—that there are some problems which are not covered, and I would like to see them redone. I understand that the American Standard Committee is considering redoing them eventually.

Senator CHURCH. Perhaps this hearing will help to prod that process along.

Mr. LASSEN. I hope so.

Senator CHURCH. I hope so too.

Is there any other comment or question or suggestion from any member of the panel?

If not, I want to thank you all for coming, for your contributions, and those of you who have summarized your written statements should know that your full statement will appear in the record as though it had been read.

We appreciate very much your participation in this hearing and I thank you also for your patience in sitting at the table so long. That demonstrates that none of us is faced with any problem of endurance as it may affect the elderly.

Thank you very much. The hearing is adjourned and tomorrow we will have our second hearing on this general question, followed by a concluding hearing on Wednesday.

(Whereupon, at 12:55 p.m., the special committee was recessed to reconvene Tuesday, October 19, 1971.)

APPENDIXES

Appendix I

ITEM 1. TEXT: "ARCHITECTURAL BARRIERS ACT" OF 1968

Public Law 90-480
90th Congress, S. 222
August 12, 1968

An Act

To insure that certain buildings financed with Federal funds are so designed and constructed as to be accessible to the physically handicapped.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, as used in this Act, the term "building" means any building or facility (other than (A) a privately owned residential structure and (B) any building or facility on a military installation designed and constructed primarily for use by able bodied military personnel) the intended use for which either will require that such building or facility be accessible to the public, or may result in the employment or residence therein of physically handicapped persons, which building or facility is— Public buildings. Accessibility to physically handicapped. 82 STAT. 718

(1) to be constructed or altered by or on behalf of the United States; 82 STAT. 719

(2) to be leased in whole or in part by the United States after the date of enactment of this Act after construction or alteration in accordance with plans and specifications of the United States; or

(3) to be financed in whole or in part by a grant or a loan made by the United States after the date of enactment of this Act if such building or facility is subject to standards for design, construction, or alteration issued under authority of the law authorizing such grant or loan.

SEC. 2. The Administrator of General Services, in consultation with the Secretary of Health, Education, and Welfare, is authorized to prescribe such standards for the design, construction, and alteration of buildings (other than residential structures subject to this Act and buildings, structures, and facilities of the Department of Defense subject to this Act) as may be necessary to insure that physically handicapped persons will have ready access to, and use of, such buildings. Standards.

SEC. 3. The Secretary of Housing and Urban Development, in consultation with the Secretary of Health, Education, and Welfare, is authorized to prescribe such standards for the design, construction, and alteration of buildings which are residential structures subject to this Act as may be necessary to insure that physically handicapped persons will have ready access to, and use of, such buildings.

SEC. 4. The Secretary of Defense, in consultation with the Secretary of Health, Education, and Welfare, is authorized to prescribe such standards for the design, construction, and alteration of buildings, structures, and facilities of the Department of Defense subject to this Act as may be necessary to insure that physically handicapped persons will have ready access to, and use of, such buildings.

SEC. 5. Every building designed, constructed, or altered after the effective date of a standard issued under this Act which is applicable to such building, shall be designed, constructed, or altered in accordance with such standard. Applicability.

SEC. 6. The Administrator of General Services, with respect to standards issued under section 2 of this Act, and the Secretary of Housing and Urban Development, with respect to standards issued under section 3 of this Act, and the Secretary of Defense with respect to standards issued under section 4 of this Act, is authorized—

(1) to modify or waive any such standard, on a case-by-case basis, upon application made by the head of the department, agency, or instrumentality of the United States concerned, and Waiver.

upon a determination by the Administrator or Secretary, as the case may be, that such modification or waiver is clearly necessary, and

Surveys and investigations.

(2) to conduct such surveys and investigations as he deems necessary to insure compliance with such standards.

Approved August 12, 1968.

HOUSE REPORTS: No. 1532 accompanying H. R. 6589 (Comm. on Public Works) and No. 1787 (Comm. of Conference).
SENATE REPORT No. 538 (Comm. on Public Works).
CONGRESSIONAL RECORD:
Vol. 113 (1967): Aug. 25, considered and passed Senate.
Vol. 114 (1968): June 17, considered and passed House, amended, in lieu of H. R. 6589.
July 26, House agreed to conference report.
July 29, Senate agreed to conference report.

ITEM 2. EXCERPTS FORM THE FEDERAL REGISTER: AUGUST 8, 1969; MARCH 20, 1970; JULY 8, 1970

FEDERAL PROPERTY MANAGEMENT REGULATIONS
(AMENDMENT D-30, JULY 1970)

SUBPART 101-17.7 ACCOMMODATIONS FOR THE PHYSICALLY HANDICAPPED

Subpart 101-17.7—Accommodations for the Physically Handicapped

§ 101-17.700 Scope.

This subpart prescribes standards for the design, construction, and alteration of buildings to ensure that physically handicapped persons will have ready access to, and use of, such buildings; and recordkeeping requirements related thereto.

§ 101-17.701 Authority and applicability.

This subpart implements Public Law 90-480, approved August 12, 1968, as amended by Public Law 91-205, approved March 5, 1970. The standards prescribed apply to all Federal agencies and instrumentalities, and to non-Federal organizations to the extent provided in the Act.

§ 101-17.702 Definitions.

The following definitions shall apply to this Subpart 101-17.7:

(a) "Building" means any building or facility (other than (a) residential structures; (b) buildings, structures, and facilities of the Department of Defense; and (c) any other building or facility on a military reservation designed and constructed primarily for use by able-bodied military personnel) the intended use for which either will require that such building or facility be accessible to the public or may result in the employment therein of physically handicapped persons, which is to be:

(1) Constructed or altered by or on behalf of the United States;

(2) Leased in whole or in part by the United States after August 12, 1968, if constructed or altered in accordance with plans and specifications of the United States;

(3) Financed in whole or in part by a grant or a loan made by the United States after August 12, 1968, if such building or facility is subject to standards for design, construction, or alteration issued under authority of the law authorizing such grant or loan; or

(4) Constructed under authority of the National Capital Transportation Act of 1960, the Natinal Capital Transportation Act of 1965, or title III of the Washington Metropolitan Area Transit Regulation Compact.

(b) "Alteration" means repairing, improving, remodeling, extending, or otherwise changing a building.

§ 101-17.703 Standards.

Except as otherwise provided in § 101-17.704, every building designed, constructed, or altered after September 2, 1969, shall be designed, constructed, or altered in accordance with the minimum standards contained in the "American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped, Number A117.1—1961," approved by the American Standards Association, Inc. (subsequently changed to American National Standards Institute, Inc.).

§ 101-17.704 Exceptions.

The standards established in § 101-17.703 shall not apply to:

(a) The design, construction, or alteration of any portion of a building which need not, because of its intended use, be made accessible to, or usable by, the public or by physically handicapped persons;

(b) The alteration of an existing building if the alteration does not involve the installation of, or work on, existing stairs, doors, elevators, toilets, entrances, drinking fountains, floors, telephone locations, curbs, parking areas, or any other facilities susceptible of installation or improvements to accommodate the physically handicapped;

(c) The alteration of an existing building, or of such portions thereof, to which application of the standards is not structurally possible; and

(d) The construction or alteration of a building for which bids have already been solicited or plans and specifications have been completed or substantially completed on or before September 2, 1969, provided, however, that any building defined in § 101-17.702(a)(4) shall be designed, constructed, or altered in accordance with the standards prescribed in § 101-17.703 regardless of design status or bid solicitation as of September 2, 1969.

PART 101–17 CONSTRUCTION AND ALTERATION OF PUBLIC BUILDINGS

§ 101–17.705 Waiver or modification of standards.

The applicability of the standards set forth in this subpart may be modified or waived on a case-by-case basis, upon application to GSA made by the head of the department, agency, or instrumentality of the United States concerned, only if the Administrator of General Services determines that such waiver or modification is clearly necessary.

§ 101–17.706 Recordkeeping.

The administering agency's file on each contract or grant for the design, construction, or alteration of a building as defined in § 101–17.702 shall be documented with a statement either: (a) that the standards are applicable to and have been or will be incorporated in the design, the construction, or the alteration, as the case may be; (b) that the grant has been or will be made subject to a requirement that the standards will be incorporated in the design, the construction, or the alteration, as the case may be; (c) that the standards have been waived by the Administrator of General Services (in which event the justification for waiver shall be stated); (d) that the project is within one of the exceptions set out in § 101–17.704 (the specific exception being identified); or (e) such other statements as may be appropriate with respect to application of the standards to the contract or grant. The head of each agency shall be responsible for implementing the file documentation requirement by regulation or other appropriate means. The documentation shall be made available to the Administrator of General Services upon request.

(END OF PART)

Appendix II

THE PRESIDENT'S COMMITTEE ON
EMPLOYMENT OF THE HANDICAPPED,
Washington, D.C., October 26, 1971.

DEAR SENATOR CHURCH: Thank you for your invitation to submit a statement for the record as part of your study of "A Barrier-Free Environment for the Elderly and the Handicapped."

Architectural barriers surround our environment because of an invalid assumption on the part of the design professions that their design criteria meet the needs of a majority of the population. They design for persons with average dimensions, average powers, senses, limitations, and adaptability. Unfortunately, the specific characteristics attributed to this mythical person are not possessed by all of our population. The non-average population, numbering in the millions, cannot adapt readily to average design.

Within the next 30 years, we are told, there will be as much new construction in this country as there has been during the past 300 years. As things are going, all but a small percentage of this huge undertaking will be unsympathetic to the needs of many handicapped and elderly persons. This tells us the urgency to evolve a reevaluation of the human characteristics underlying design criteria. This description must emphasize extremes over averages. Given such criteria there should be little doubt that our designers, who are creative and ingenious, will come up with acceptable design solutions.

If we can have designs for the halt and the lame—in other words, the extremes of performance,—or, failing that, if we can at least include a recognition of these needs in our design criteria, whether or not we are capable of satisfying them in every instance, we will better serve both the "average" man and the handicapped or elderly person.

To accomplish this aim, and to bring about an increased awareness among the design community of the problem of environmental barriers, the President's Committee has established a Committee on Barrier Free Design, with represenstatives from national associations of designers: American Institute of Architects, Industrial Designers Society of America, American Institute of Interior Designers, American Society of Landscape Architects, American Institute of Planners, and National Society of Professional Engineers. This Committee is committed to the encouragement of the principles of barrier free design in the physical environment, whether in architecture, transportation, housing, or recreation.

The Committee's goal for the Bicentennial Year, 1976, is to try to achieve a barrier-free America, a social and moral goal which is truly a prerequisite to independence for millions of our citizens. To accomplish this end the Committee is encouraging modification of existing State legislation relating to accessibility of public buildings. A recent survey indicates that legislation in many States is weakened by lack of enforcement provisions, restricted application with obvious loopholes, and lack of a clearly defined administering agency.

The President's Committee and the National Eastern Seal Society for Crippled Children and Adults sponsored in 1961 the compilation of the specifications, "Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped." This standard, approved by the American National Standards Institute (then known as American Standards Association), was primarily intended for public buildings, and as a result emphasis during the 1960's was placed upon efforts to make all publicly funded buildings accessible.

There now exists the very obvious need to extend the principle of accessibility to all public use buildings, or to buildings which the public have a legitimate right to enter and use. Several States already have amended original legislation to expand the definition of "public building" according to this meaning, and other States are in the process of following suit.

Federal legislation relating to accessibility, Public Law 90–480, is also lacking in some respects. A glaring example is housing. Under the interpretation of this law an estimated 99 percent of the housing construction in this country is excluded from its provisions. It must be remembered that the provisions apply only to publicly owned housing, and that privately owned residential structures, even those built with mortgage assistance or insurance from the Federal Government, are excluded.

Even the best of housing presents problems to the handicapped and elderly. Relatively few apartment projects have convenient features for them. While many live in substandard houses, rural shacks or slum tenements, even those who live in good homes—sometimes luxurious homes—are apt to face handicapping features in the design.

A large percentage of these persons live in poverty. While the housing available to most of the poor is a national disgrace, its effect on people with physical limitations is especially tragic. Ironically enough, the hazards and hardships of slum life often cause such physical and mental deterioration that persons who could have maintained themselves independently in decent housing have to instead receive costly institutional care.

Today, most disabled and elderly people live not as they want to but as they have to. As a result, they are often confined to their homes and dependent upon others for aid in their daily living.

The vastly expanded programs of low cost housing which are needed to eliminate our slums and ghettos can also benefit the disabled if proper specifications are written into the provisions of the legislation. The housing planned for the hundreds of new towns which are on the drawing boards, or the model cities projects, housing developments and high-rise complexes need to include the needs of the handicapped and elderly if they are to have the freedom of choice in housing that others enjoy. It remains imperative for communities to include these people in their planning and to stimulate local housing authorities to building housing which is accessible to all.

A concern within the area of housing for the handicapped and elderly is the question of integration versus segregation. Should all efforts be directed to special housing for the handicapped, so that they are all confined in the same projects, or should they be dispersed throughout the community, finding the stimulation and challenge that comes with diversified contacts? Too frequently this question until now has been answered by expediency rather than by the fruits of social research.

Although lack of suitable transportation is one of the most serious problems faced by the handicapped and aging, there are no standard specifications that could make it more accessible. There are no Federal, State or local requirements for accessible public transportation systems. One exception is a 1970 amendment by Congress to Public Law 90–480 which would make the Washington, D.C. subway system, now under construction, accessible to persons with physical limitations.

Consequently, the severely limited, if they attempt to be mobile, must depend upon the private automobile or expensive taxi service. Public transit vehicles are practically out of the question: The steps from curb to entrance are too high to cope with on buses, and subway entrances lead to long flights of stairs that present unsurmountable obstacles.

A ray of hope is contained in the revised Urban Mass Transportation Assistance Act, which declares it to be national policy that the handicapped and elderly have the same right as other persons to utilize mass transportation facilities and services, and calls for special efforts in the planning and design of mass transportation to make such facilities available to the handicapped.

This pronouncement, however, must be backed up by legislative directive to compel Government agencies to design programs and research projects that can contribute substantially to the transportation problems of the handicapped and elderly. To depend on a pious commitment to achieve these ends is to deny the vast void on the part of bureaucrats during nearly two hundred years to meet this issue squarely.

The range of recreational opportunities for the handicapped and elderly is minimal. Frequently they have to resort to illegal and nuisance means to experience a semblance of social interaction, such as loitering around bus and train depots simply as an alternate to the gloom and depression of their rooms.

The need for recreation for all persons is a goal which is merely struggling to achieve national attention. Too often, however, it is not policy, but thoughtlessly designed facilities, that exclude the handicapped and elderly from participation in recreational activities. The several Federal Government agencies now responsible for developing recreational areas could chart a course for State and local park developers if they engaged in further research to define criteria and detail specifications for making exterior space more accessible to all.

Our Government has spent many years and billions of dollars on programs to enhance the status of the handicapped and elderly. Accomplishment of this worthy goal cannot be met piecemeal. All facets of living must be taken into consideration when services and programs are fashioned for our citizens, and certainly the physical environment which can make or break one's destiny should receive proportionate attention when planning for their welfare.

Sincerely,

HAROLD RUSSELL,
Chairman.

Appendix III

JOINT STATEMENT OF EDWARD NEWMAN, COMMISSIONER, REHABILITATION SERVICES ADMINISTRATION, AND JOHN B. MARTIN, COMMISSIONER, ADMINISTRATION ON AGING, SOCIAL AND REHABILITATION SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

We appreciate the invitation of the Special Committee on Aging to prepare a statement for inclusion in the record of the Hearings on "A Barrier-Free Environment for the Elderly and the Handicapped".

Although practitioners in rehabilitation—and the disabled themselves—had long been concerned with the problems of an accessible environment, a Federal effort directed towards resolution of this problem dates from May 23, 1957. On that date, the late Mr. Hugo Deffner of Oklahoma City arrived at the Departmental Auditorium on Constitution Avenue to accept an award as "Handicapped American of the Year," a presentation made in conjunction with the Annual Meeting of the President's Committee on Employment of the Handicapped.

Mr. Deffner's selection for the award was based in part on his efforts to make buildings accessible, yet he had to be carried into the Auditorium to receive his award because of the steps and the lack of an elevator.

The irony of this situation led the President's Committee to appoint an ad hoc group to study the problem and come up with recommendations directed towards its solution. From this initiative, the Veterans Administration, the American Standards Institute (now known as the United States of America Standards Institute), the National Society for Crippled Children and Adults, the President's Committee, and the Rehabilitation Services Administration (then Office of Vocational Rehabilitation) began development of specifications for essential features of buildings that could remove architectural barriers. Field testing of the developing standards was made at the University of Illinois by the disabled students there. Finally, on October 31, 1961, the American Standard Specifications for Making Buildings Accessible to, and usable by, the Physically Handicapped were issued by the American Standards Institute and distributed throughout the country.

Through special demonstration projects funded jointly by the Rehabilitation Services Administration and the National Society for Crippled Children and Adults many States and local communities established working committees and other special efforts to identify and deal with architectural barriers. A model law and ordinance were developed which helped to focus the attention of State and local leaders on the issue.

Grants were made by the Rehabilitation Services Administration to several colleges and universities to develop ways to make their facilities more accessible to disabled students and facilities.

In November 1965, the National Society for Crippled Children and Adults sponsored a National Institute on Architectural Barriers attended by a cross section of national and State leaders, including community planners, architects, rehabilitation experts, educators and other business and professional leaders.

The State of Hawaii took the lead following the national institute in holding a State conference on this subject in November 1966.

Through the efforts of the local affiliates of the President's Committee and the National Society for Crippled Children and Adults, local government units and builders were urged to apply the ASA Standards to structures in their localities and States. The effectiveness of this effort is seen in the fact that some 30 States had laws regarding architectural barriers before there were any Federal statutory requirements.

Crystalizing Federal efforts toward eliminating architectural barriers was the work of the National Commission on Architectural Barriers to Rehabilitation of the Handicapped which was established by an Amendment to the Vocational Rehabilitation Act in 1965. Appointed in April 1966, the Commission

brought together fifteen outstanding leaders in the several fields concerned with architectural barriers and rehabilitation who devoted two years to study of the problems, including site visits and hearings in different parts of the country.

The National Commission on Architectural Barriers, and its report, "Design for All Americans," was important in developing information and interest and in marshalling resources to apply to the problem. The Commission made clear that its report was but a milestone on the road of what must be a continuing process. Foremost of the Commission's recommendations was the enactment of Federal legislation requiring that all new buildings which are intended for use by the public be designed to accommodate the elderly and handicapped if any Federal funds are to be used in the construction.

The Commission's concern with Federal legislation meshed with and supported Congressional activities which had been underway for a number of months. Growing out of the leadership and interest of the late Honorable E. L. Bartlett, Senator from Alaska, and the Honorable Charles E. Bennett, Congressman from Florida, P.L. 90–480 leading with architectural barriers became effective August 12, 1968. Going beyond the concept of buildings used by the public, P.L. 90–480 specifies that Federally-funded buildings used by the public, or in which a disabled person may be employed or may reside, must be built according to standards developed by the Secretary of Housing and Urban Development in conjunction with the Secretary of Health, Education, and Welfare. Few exceptions are allowed, principally buildings for the sole use of the military, or privately owned dwellings.

The problem of architectural barriers yet remains and activity continues on many fronts directed toward resolving and eliminating this problem. Consideration of some of the other recommendations of the Commission shows how much has been accomplished, and how much remains to be done. For example, a recent report of the President's Committee on Employment of the Handicapped shows that 48 States, through legislation or executive directive, had some requirements relating to accessibility of State buildings to be used by the public. In too many cases, however, the intent is diluted by issuance of routine waivers, or by not having an enforcement mechanism built in.

Some progress can be reported in regard to the changing of building codes to require accessibility of buildings used by the public such as stores and shops, another of the Commission's recommendations. Particularly noteworthy are the codes of New York State and Minneapolis, Minnesota. However, the surface has only been scratched in this regard.

Concurrent to the efforts toward eliminating architectural barriers to access to buildings and other facilities has come growing awareness of other environmental barriers that block full realization by each disabled person of his or her potential or which limit activity of the aged just as surely as if they were in jail. Chief of these are in transportation facilities and housing.

One study in New Jersey concluded that up to 50 per cent of the disabled persons who had been rehabilitated by the State vocational rehabilitation agency were subsequently unemployed because they could not get to and from work. A sizable number of severely disabled persons are working only by spending an inordinate portion of their income on personalized transportation such as taxis. These are the fortunate ones, whose earning power enables them to pay such high commuting charges. For most of the severely disabled, and most of the aged living on fixed incomes, taxis and the like are impossible alternatives.

Although the Congress has provided for special housing help for the elderly and disabled in the National Housing Act, the Act remains to be fully implemented by community and organization initiatives. Housing presents particular problems just now being fully understood. Accessibility and the required features are, of course, a must. But one housing project for the aged and disabled in Seattle, funded in part by the Department of Housing and Urban Development, has made clear an additional requirement: personal services, available to assist the disabled person as required.

Unlike accessibility and transportation, housing related service needs vary somewhat between the aged and the younger handicapped because of varying interests and views. Housing goes beyond transportation and accessibility to structures in that it shapes a total atmosphere of living.

The best solution to design of building for full use by all citizens is to design accessibility before initiation of construction. Studies of the cost of accessibility show that proper design incorporated from the beginning adds no more than 1 percent to the cost of a building.

Clearly, architects and city planners are the key to accessibility. In recognition of this, the American Institute of Architecture, in cooperation with the Rehabili-

tation Services Administration, and other Federal agencies (HUD, GSA, and other parts of HEW), conducted two day workshops in each of ten cities across the country. In all, 1,113 persons participated, including 670 architects and engineers. All panelists at all sessions emphasized the need for education of the designer, the builder, the financier, and the general public.

Continuing educational activities in regard to the various barriers to a full life for the disabled is being conducted by the Committee on Barrier-Free Design of the President's Committee on Employment of the Handicapped, and the State and local counterparts of the President's Committee. A widely circulated newsletter records progress and remaining needs.

Two films have been very effective in presenting the problems and solutions to architectural barriers. One, "Sound the Trumpets," was filmed by the Minnesota Society for Crippled Children and Adults, and is available from that organization at 2004 Lyndale Avenue South, Minneapolis, Minnesota 55405. Shown at each of the 10 regional architectural barriers conferences of the American Institute of Architects, "Sound the Trumpets" was cited in the report of the meetings for its effectiveness.

A second film, "Beating the Averages," was initially shown at the National Citizens Conference on Rehabilitation of the Disabled and Disadvantaged, June 24–29, 1969. "Beating the Averages," narrated by Raymond Burr, has had wide usage, and is available from the National Audiovisual Center, Washington, D.C. 20409.

The White House Conference on Aging, scheduled for meetings in Washington beginning November 28 of this year, has transportation and housing needs of the aged among the nine topics isolated for special study. Technical Committees have been at work during the past year developing data from counterpart committees in each State. The work of the White House Conference will produce information of signal importance on these topics.

The Gerontological Society has received a grant under title IV of the Older Americans Act of 1965, as amended, for a project the purpose of which is said to be to:

Identify and describe the issues and problems in developing and implementing housing policies for older persons;

Influence the design of facilities for older persons through direct work with practicing architects and designers as well as through curriculum changes in schools of architecture and behavior;

Identify and examine critically the significant issues and the methods for evaluating the behavioral and adaptational consequences of different physical environments for the aged;

Study the process by which the results of such environmental evaluation becomes policy;

Identify key issues in the patterns and design of housing for older persons.

The initial phase of the project is a meeting of national scope, scheduled for December 18–21 in Puerto Rico, which will involve outstanding leaders in the fields of aging and environment to identify the information most useful and relevant to national policy and legislation. It will also identify the information that is still needed to form the basis of sound policy-action decisions in housing for the aged. Following the national conference, a series of regional and local conferences will be directed to developing maximum impact on current and future housing policy and design.

The General Services Administration, in cooperation with other Federal agencies administering Federal direct or grant-assisted construction programs, currently is making a check to determine the effectiveness of Federal legislation mandating accessible public buildings in the case of structures designed after September 1969, when design standards were issued.

This brief summary of some of the activities directed to the problems of environmental barriers facing the disabled and aged serves to indicate how much has been done and how much more remains. More importantly, this activity, continuing over the years and involving literally thousands of citizens, epitomizes the best in service delivery—cooperative efforts by Federal agencies, the voluntary sector, State and local groups, professionals from many fields, and the aged and disabled themselves.

Enclosed are several publications representative of past and continuing activities relating to environmental barriers which you may wish to include or excerpt.*

*Retained in committee files.

Appendix IV

UNITED STATES DEPARTMENT OF THE INTERIOR,
Washington, D.C., November 1, 1971.

DEAR MR. CHAIRMAN: Thank you for your notice concerning your study of "A Barrier-Free Environment for the Elderly and Handicapped."

There are some 30 million acres of land within the National Park System much of which is wilderness, rugged or otherwise inaccessible to the park visitors, especially the aged and handicapped visitors.

Of the lands which are reasonably accessible, we want them to be enjoyed by all the park visitors. To this end we have constructed campgrounds, trails, overlooks, visitor centers and many other visitor facilities; in so doing we have given careful consideration to the aged and handicapped visitors as is somewhat indicated in the enclosed* booklet "Guide to the National Parks and Monuments for Handicapped Tourists." You will be interested in knowing that the booklet is now being updated and will show several additional facilities; it should be available for distribution in about 6 months. Recognizing that such a large number of the park visitors are aged and/or handicapped, you may be assured that we shall certainly give their needs every consideration in all of our development planning.

We know of no further legislation which would be recommended in the interests of promoting more or better facilities within the National Park Service for the aged and/or handicapped.

We appreciate your courtesy in giving us the opportunity to comment on this matter.

Sincerely yours,

LAWRENCE C. HEDLEY,
Assistant Director.

*Retained in committee files.

Appendix V

AMERICAN NATIONAL STANDARDS INSTITUTE, INC.,
New York, N.Y., November 5, 1971.

DEAR SENATOR CHURCH: In your recent notice of Committee on Aging Hearings on the problem of a barrier free environment for the elderly and handicapped, you requested comments on three specific points.

The American National Standards Institute is the national coordinating organization concerned with the development and promulgation of voluntary national standards and is, therefore, not in a position to respond directly to the three points on which comments were requested. We would however, like to point out that we have promulgated an American National Standard A117.1–1961 "Specification for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped," which is direct concern to the committee's study. A copy of this standard is enclosed for your information.

For your further information, this standard has been referenced by the Department of Housing and Urban Development in low rent housing programs, as well as by the General Service Administration for the design of Federal Buildings. While there is no consistent pattern, we understand that a number of state and local building requirements reference or have under consideration the A117.1 standard.

We trust that this information will be of interest and use to your committee. ANSI will be pleased to provide additional information which may be required.

Sincerely,

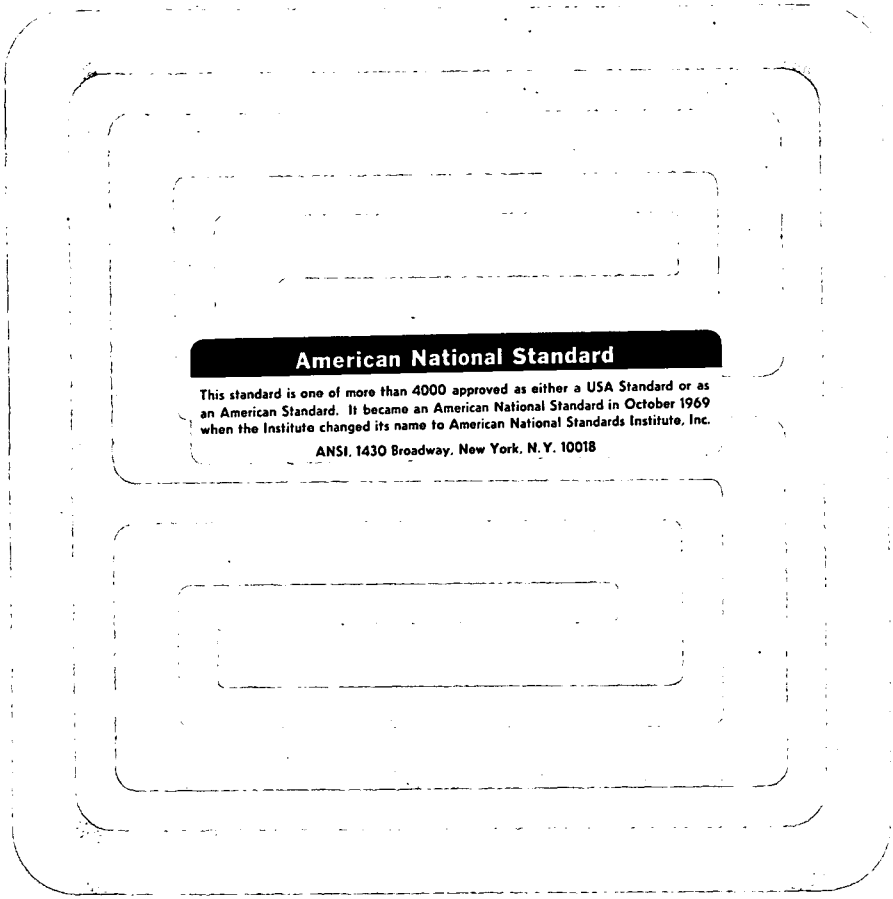
DONALD L. PEYTON,
Managing Director.

Enclosure.

USAS
A117.1-1961

USA Standard

Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped



Approved October 31, 1961
Sponsors: National Society for Crippled Children and Adults
The President's Committee on Employment of the Physically Handicapped

USA Standard

A USA Standard implies a consensus of those substantially concerned with its scope and provisions. A USA Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of a USA Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. USA Standards are subject to periodic review and users are cautioned to obtain the latest editions. Producers of goods made in conformity with a USA Standard are encouraged to state on their own responsibility in advertising, promotion material, or on tags or labels, that the goods are produced in conformity with particular USA Standards.

This USA Standard is one of nearly 3000 standards approved as American Standards by the American Standards Association. On August 24, 1966, the ASA was reconstituted as the United States of America Standards Institute. Standards approved as American Standards are now designated USA Standards. There is no change in their index identification or technical content.

Published by

United States of America Standards Institute

10 East 40th Street, New York, N. Y. 10016

Universal Decimal Classification 725/728:302.6:614.8

Printed in USA

HS5C871/225

Foreword

(This Foreword is not a part of American Standard*Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped, A117.1-1961.)

Approximately one out of seven people in our nation has a permanent physical disability. This segment of our population represents human resources of inestimable value and is of great economic significance to the entire nation.

The most common design and construction of buildings and facilities cause problems for the physically handicapped that lessen the social and economic gains now evident in the rehabilitation of these individuals. These architectural barriers make it very difficult to project the physically handicapped into normal situations of education, recreation, and employment.

In May, 1959, the ASA, acting on the request of The President's Committee on Employment of the Physically Handicapped, called a general conference of those groups vitally interested in the problem. This conference recommended the initiation of a project, and this recommendation was subsequently approved by the Construction Standards Board. The President's Committee on Employment of the Physically Handicapped and the National Society for Crippled Children and Adults were designated as co-sponsors, and the latter agreed to assume the secretariat.

This standard supplements other American Standards*relating to various aspects of buildings and facilities. Its specifications, which are the result of extended and careful consideration of available knowledge and experience on this subject, are intended to present minimum requirements. They are recommended for use in the construction of all buildings and facilities and for adoption and enforcement by administrative authorities, so that those individuals with permanent physical disabilities might pursue their interests and aspirations, develop their talents, and exercise their skills.

The ASA Sectional Committee on Facilities in Public Buildings for Persons with Physical Handicaps, A117, which developed this standard, had the following personnel at the time of approval.

LEON CHATELAIN, JR, *Chairman* — T. J. NUGENT, *Secretary*

Organization Represented	*Name of Representative*
AFL-CIO	WALTER MASON
American Foundation for the Blind	ARTHUR VOORHEES
American Hospital Association	MARGARET E. PETERS
American Hotel Association	JAKE FASSETT
American Institute of Architects	CLINTON H. COWGILL F. CUTHBERT SALMON CHRISTINE F. SALMON *(Alt)*
American Municipal Association	BARNET LIEBERMAN LEO GOLDSTEIN *(Alt)*
American Occupational Therapy Association	MARJORIE FISH
American Physical Therapy Association	LUCY BLAIR
American Society of Landscape Architects	CAMPBELL E. MILLER
The American Society of Mechanical Engineers	JOSEPH W. DEGEN
American Society of Safety Engineers	THOMAS J. BERK
American Vocational Association	CHARLES W. SYLVESTER, M.D.
Associated General Contractors of America	WILLIAM F. LOTZ BURT L. KNOWLES *(Alt)*
Association of Casualty and Surety Companies	ROBERT HAGOPIAN JAMES C. ROUMAS *(Alt)*
Construction Specifications Institute	EDWIN A. WEED CLEMONS J. POIESZ *(Alt)*
Federal Housing Administration	WILLIAM J. O'CONNOR
General Services Administration	J. ROWLAND SNYDER
Industrial Home for the Blind	HERBERT RUSALEM, M.D. HAROLD RICHTERMAN *(Alt)*
Industrial Medical Association	KENNETH C. PEACOCK, M.D.
Indoor Sports Clubs, Inc	ARVELLA M. SANDER
Institute for the Crippled and Disabled	ROBERT MCAFEE WALTER S. NEFF, M.D. *(Alt)*

*All American Standards are now designated USA Standards.

Organization Represented	*Name of Representative*
National Bureau of Standards	*(Representation vacant)*
National Congress of Organizations for the Physically Handicapped	Elmer Josephs
National Council of Churches	Rev. Francis F. Fisher
National Council of Schoolhouse Construction	John L. Cameron
	E. J. Braun *(Alt)*
National Elevator Manufacturing Industry	D. J. Matheson
National Paraplegia Foundation	Eugene Auryansen
National Rehabilitation Association	Edward Stiles
National Safety Council	Robert L. Jenkins
National Society for Crippled Children and Adults	Leon Chatelain, Jr
	John B. Kemp
	D. W. Roberts, M.D.
	Jayne Shover
	Theron H. Butterworth *(Alt)*
Paralyzed Veterans of America, Inc	Robert P. Meier
	Robert Classon *(Alt)*
Paraplegics Manufacturing Company	Dwight D. Guilfoil, Jr
	Harry Bendsten *(Alt)*
Plumbing Fixture Manufacturers Association	Russell W. Smith
The President's Committee on Employment of the Physically Handicapped	K. Vernon Banta
	Major General Melvin J. Maas, USMCR (ret)
Society of Industrial Realtors	Frank D. Garibaldi
Telephone Group	J. M. Standring, Jr
United Cerebral Palsy Associations, Inc	Harry Lyons
U. S. Conference of Mayors	Harry R. Betters
U. S. Department of Health, Education and Welfare	
Bureau of State Services	Howard Spence
Children's Bureau	Clara M. Arrington
	Georgia Perkins, M.D. *(Alt)*
Division of Accident Prevention	Eugene L. Lehr
Division of Hospital and Medical Facilities	August F. Hoenack
	Peter N. Jensen *(Alt)*
Office of Education	Romaine P. Mackie
Office of Vocational Rehabilitation	Philip Kliegер, M.D.
U. S. Department of Labor	
Bureau of Employment Security	Hendrick D. Mugaas
	Melvin R. Bergstrom *(Alt)*
Bureau of Labor Standards	Sheldon W. Homan
	William G. Griffin *(Alt)*
U. S. Veterans Administration	H. D. York
University of Illinois Rehabilitation Center	T. J. Nugent

The personnel of the steering committee is as follows:

K. Vernon Banta
Leon Chatelain, Jr
Clinton H. Cowgill
Philip A. Kliegер
T. J. Nugent
Jayne Shover
H. Dwight York

Contents

USA Standard Specifications for

Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped

1. Scope and Purpose

1.1 Scope

1.1.1 This standard applies to all buildings and facilities used by the public. It applies to temporary or emergency conditions as well as permanent conditions. It does not apply to private residences.

1.1.2 This standard is concerned with non-ambulatory disabilities, semi-ambulatory disabilities, sight disabilities, hearing disabilities, disabilities of incoordination, and aging.[1]

1.2 Purpose. This standard is intended to make all buildings and facilities used by the public accessible to, and functional for, the physically handicapped, to, through, and within their doors, without loss of function, space, or facility where the general public is concerned. It supplements existing American Standards,* and reflects great concern for safety of life and limb. In cases of practical difficulty, unnecessary hardship, or extreme differences, administrative authorities may grant exceptions from the literal requirements of this standard or permit the use of other methods or materials, but only when it is clearly evident that equivalent facilitation and protection are thereby secured.

2. Definitions

2.1 Non-ambulatory Disabilities. Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheelchairs.

2.2 Semi-ambulatory Disabilities. Impairments that cause individuals to walk with difficulty or insecurity. Individuals using braces or crutches, amputees, arthritics, spastics, and those with pulmonary and cardiac ills may be semi-ambulatory.

2.3 Sight Disabilities. Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

2.4 Hearing Disabilities. Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.

2.5 Disabilities of Incoordination. Faulty coordination or palsy from brain, spinal, or peripheral nerve injury.

2.6 Aging. Those manifestations of the aging processes that significantly reduce mobility, flexibility, coordination, and perceptiveness but are not accounted for in the aforementioned categories.

2.7 Standard. When this term appears in small letters and is not preceded by the word "American," it is descriptive and does not refer to an American Standard* approved by ASA; for example, a "standard" wheelchair is one characterized as standard by the manufacturers.

2.8 Fixed Turning Radius, Wheel to Wheel. The tracking of the caster wheels and large wheels of a wheelchair when pivoting on a spot.

2.9 Fixed Turning Radius, Front Structure to Rear Structure. The turning radius of a wheelchair, left front-foot platform to right rear wheel, or right front-foot platform to left rear wheel, when pivoting on a spot.

2.10 Involved (Involvement). A portion or portions of the human anatomy or physiology, or both, that have a loss or impairment of normal function as a result of genesis, trauma, disease, inflammation, or degeneration.

2.11 Ramps, Ramps with Gradients. Because the term "ramp" has a multitude of meanings and uses, its use in this text is clearly defined as ramps with gradients (or ramps with slopes) that deviate from what would otherwise be considered the normal level. An exterior ramp, as distinguished from a "walk," would be considered an appendage to a building leading to a level above or below existing ground level. As such, a ramp shall meet certain requirements similar to those imposed upon stairs.

2.12 Walk, Walks. Because the terms "walk" and "walks" have a multitude of meanings and uses, their use in this text is clearly defined as a predetermined, prepared-surface, exterior pathway leading to or from a building or facility, or from one exterior area to another, placed on the existing ground level

[1] See definitions in Section 2.

*All American Standards are now designated USA Standards.

and not deviating from the level of the existing ground immediately adjacent.

2.13 Appropriate Number. As used in this text, appropriate number means the number of a specific item that would be necessary, in accord with the purpose and function of a building or facility, to accommodate individuals with specific disabilities in proportion to the anticipated number of individuals with disabilities who would use a particular building or facility.

EXAMPLE: Although these specifications shall apply to all buildings and facilities used by the public, the numerical need for a specific item would differ, for example, between a major transportation terminal, where many individuals with diverse disabilities would be continually coming and going, an office building or factory, where varying numbers of individuals with disabilities of varying manifestations (in many instances, very large numbers) might be employed or have reason for frequent visits, a school or church, where the number of individuals may be fixed and activities more definitive, and the many other buildings and facilities dedicated to specific functions and purposes.

NOTE: Disabilities are specific and where the individual has been properly evaluated and properly oriented and where architectural barriers have been eliminated, a specific disability does not constitute a handicap. It should be emphasized that more and more of those physically disabled are becoming *participants*, rather than spectators, in the fullest meaning of the word.

3. General Principles and Considerations

3.1 Wheelchair Specifications. The collapsible-model wheelchair of tubular metal construction with plastic upholstery for back and seat is most commonly used. The standard model of all manufacturers falls within the following limits, which were used as the basis of consideration:

(1) Length: 42 inches
(2) Width, when open: 25 inches
(3) Height of seat from floor: 19½ inches
(4) Height of armrest from floor: 29 inches
(5) Height of pushed handles (rear) from floor: 36 inches
(6) Width, when collapsed: 11 inches

3.2 The Functioning of a Wheelchair

3.2.1 The fixed turning radius of a standard wheelchair, wheel to wheel, is 18 inches. The fixed turning radius, front structure to rear structure, is 31.5 inches.

3.2.2 The average turning space required (180 and 360 degrees) is 60 x 60 inches.

NOTE: Actually, a turning space that is longer than it is wide, specifically, 63 x 56 inches, is more workable and desirable. In an area with two open ends, such as might be the case in a corridor, a minimum of 54 inches between two walls would permit a 360-degree turn.

3.2.3 A minimum width of 60 inches is required for two individuals in wheelchairs to pass each other.

3.3 The Adult Individual Functioning in a Wheelchair[2]

3.3.1 The average unilateral vertical reach is 60 inches and ranges from 54 inches to 78 inches.

3.3.2 The average horizontal working (table) reach is 30.8 inches and ranges from 28.5 inches to 33.2 inches.

3.3.3 The bilateral horizontal reach, both arms extended to each side, shoulder high, ranges from 54 inches to 71 inches and averages 64.5 inches.

3.3.4 An individual reaching diagonally, as would be required in using a wall-mounted dial telephone or towel dispenser, would make the average reach (on the wall) 48 inches from the floor.

3.4 The Individual Functioning on Crutches[3]

3.4.1 On the average, individuals 5 feet 6 inches tall require an average of 31 inches between crutch tips in the normally accepted gaits.[4]

3.4.2 On the average, individuals 6 feet 0 inches tall require an average of 32.5 inches between crutch tips in the normally accepted gaits.[4]

4. Site Development[5]

4.1 Grading. The grading of ground, even contrary to existing topography, so that it attains a level with a normal entrance will make a facility accessible to individuals with physical disabilities.

---

[2] Extremely small, large, strong, or weak and involved individuals could fall outside the ranges in 3.3.1, 3.3.2, 3.3.3, and their reach could differ from the figure given in 3.3.4. However, these reaches were determined using a large number of individuals who were functionally trained, with a wide range in individual size and involvement.

[3] Most individuals ambulating on braces or crutches, or both, or on canes are able to manipulate within the specifications prescribed for wheelchairs, although doors present quite a problem at times. However, attention is called to the fact that a crutch tip extending laterally from an individual is not obvious to others in heavily trafficked areas, certainly not as obvious or protective as a wheelchair and is, therefore, a source of vulnerability.

[4] Some cerebral palsied individuals, and some severe arthritics, would be extreme exceptions to 3.4.1 and 3.4.2.

[5] Site development is the most effective means to resolve the problems created by topography, definitive architectural designs or concepts, water table, existing streets, and atypical problems, singularly or collectively, so that aggress, ingress, and egress to buildings by physically disabled can be facilitated while preserving the desired design and effect of the architecture.

4.2 Walks

4.2.1 Public walks should be at least 48 inches wide and should have a gradient not greater than 5 percent.[6]

4.2.2 Such walks shall be of a continuing common surface, not interrupted by steps or abrupt changes in level.

4.2.3 Wherever walks cross other walks, driveways, or parking lots they should blend to a common level.[7]

NOTE: 4.1 and 4.2, separately or collectively, are greatly aided by terracing, retaining walls, and winding walks allowing for more gradual incline, thereby making almost any building accessible to individuals with permanent physical disabilities, while contributing to its esthetic qualities.

4.2.4 A walk shall have a level platform at the top which is at least 5 feet by 5 feet, if a door swings out onto the platform or toward the walk. This platform shall extend at least 1 foot beyond each side of the doorway.

4.2.5 A walk shall have a level platform at least 3 feet deep and 5 feet wide, if the door does not swing onto the platform or toward the walk. This platform shall extend at least 1 foot beyond each side of the doorway.

4.3 Parking Lots

4.3.1 Spaces that are accessible and approximate to the facility should be set aside and identified for use by individuals with physical disabilities.

4.3.2 A parking space open on one side, allowing room for individuals in wheelchairs or individuals on braces and crutches to get in and out of an automobile onto a level surface, suitable for wheeling and walking, is adequate.

4.3.3 Parking spaces for individuals with physical disabilities when placed between two conventional diagonal or head-on parking spaces should be 12 feet wide.

4.3.4 Care in planning should be exercised so that individuals in wheelchairs and individuals using braces and crutches are not compelled to wheel or walk behind parked cars.

4.3.5 Consideration should be given the distribution of spaces for use by the disabled in accordance with the frequency and persistency of parking needs.

4.3.6 Walks shall be in conformity with 4.2.

5. Buildings

5.1 Ramps with Gradients. Where ramps with gradients are necessary or desired, they shall conform to the following specifications:

5.1.1 A ramp shall not have a slope greater than 1 foot rise in 12 feet, or 8.33 percent, or 4 degrees 50 minutes.

5.1.2 A ramp shall have handrails on at least one side, and preferably two sides, that are 32 inches in height, measured from the surface of the ramp, that are smooth, that extend 1 foot beyond the top and bottom of the ramp, and that otherwise conform with American Standard*Safety Code for Floor and Wall Openings, Railings, and Toe Boards, A12-1932.

NOTE 1: Where codes specify handrails to be of heights other than 32 inches, it is recommended that two sets of handrails be installed to serve all people. Where major traffic is predominantly children, particularly physically disabled children, extra care should be exercised in the placement of handrails, in accordance with the nature of the facility and the age group or groups being serviced.

NOTE 2: Care should be taken that the extension of the handrail is not in itself a hazard. The extension may be made on the side of a continuing wall.

5.1.3 A ramp shall have a surface that is nonslip.

5.1.4 A ramp shall have a level platform at the top which is at least 5 feet by 5 feet, if a door swings out onto the platform or toward the ramp. This platform shall extend at least 1 foot beyond each side of the doorway.

5.1.5 A ramp shall have a level platform at least 3 feet deep and 5 feet wide, if the door does not swing onto the platform or toward the ramp. This platform shall extend at least 1 foot beyond each side of the doorway.

5.1.6 Each ramp shall have at least 6 feet of straight clearance at the bottom.

5.1.7 Ramps shall have level platforms at 30-foot intervals for purposes of rest and safety and shall have level platforms wherever they turn.

[6] It is essential that the gradient of walks and driveways be less than that prescribed for ramps, since walks would be void of handrails and curbs and would be considerably longer and more vulnerable to the elements. Walks of near maximum grade and considerable length should have level areas at intervals for purposes of rest and safety. Walks or driveways should have a nonslip surface.

[7] This specification does not require the elimination of curbs, which, particularly if they occur at regular intersections, are a distinct safety feature for all of the handicapped, particularly the blind. The preferred method of meeting the specification is to have the walk incline to the level of the street. However, at principal intersections, it is vitally important that the curb run parallel to the street, up to the point where the walk is inclined, at which point the curb would turn in and gradually meet the level of the walk at its highest point. A less preferred method would be to gradually bring the surface of the driveway or street to the level of the walk. The disadvantage of this method is that a blind person would not know when he has left the protection of a walk and entered the hazards of a street or driveway.

*All American Standards are now designated USA Standards.

5.2 Entrances

5.2.1 At least one primary entrance to each building shall be usable by individuals in wheelchairs.

NOTE: Because entrances also serve as exits, some being particularly important in case of an emergency, and because the proximity of such exits to all parts of buildings and facilities, in accordance with their design and function, is essential (see 112 and 2000 through 2031 of American Standard* Building Exits Code, A9.1-1953) it is preferable that all or most entrances (exits) should be accessible to, and usable by, individuals in wheelchairs and individuals with other forms of physical disability herein applicable.

5.2.2 At least one entrance usable by individuals in wheelchairs shall be on a level that would make the elevators accessible.

5.3 Doors and Doorways

5.3.1 Doors shall have a clear opening of no less than 32 inches when open and shall be operable by a single effort.

NOTE 1: Two-leaf doors are not usable by those with disabilities defined in 2.1, 2.2, and 2.5 unless they operate by a single effort, or unless one of the two leaves meets the requirement of 5.3.1.

NOTE 2: It is recommended that all doors have kick plates extending from the bottom of the door to at least 16 inches from the floor, or be made of a material and finish that would safely withstand the abuse they might receive from canes, crutches, wheelchair foot-platforms, or wheelchair wheels.

5.3.2 The floor on the inside and outside of each doorway shall be level for a distance of 5 feet from the door in the direction the door swings and shall extend 1 foot beyond each side of the door.

5.3.3 Sharp inclines and abrupt changes in level shall be avoided at doorsills. As much as possible, thresholds shall be flush with the floor.

NOTE 1: Care should be taken in the selection, placement, and setting of door closers so that they do not prevent the use of doors by the physically disabled. Time-delay door closers are recommended.

NOTE 2: Automatic doors that otherwise conform to 5.3.1, 5.3.2, and 5.3.3 are very satisfactory.

NOTE 3: These specifications apply both to exterior and interior doors and doorways.

5.4 Stairs. Stairs shall conform to American Standard A9.1-1953, with the following additional considerations:

5.4.1 Steps in stairs that might require use by those with disabilities defined in 2.2 and 2.5 or by the aged shall not have abrupt (square) nosing. (See Fig. 1.)

NOTE: Individuals with restrictions in the knee, ankle, or hip, with artificial legs, long leg braces, or comparable conditions cannot, without great difficulty and hazard, use steps with nosing as illustrated in Fig. 1a, but can safely and with minimum difficulty use steps with nosing as illustrated in Fig. 1b.

*All American Standards are now designated USA Standards.

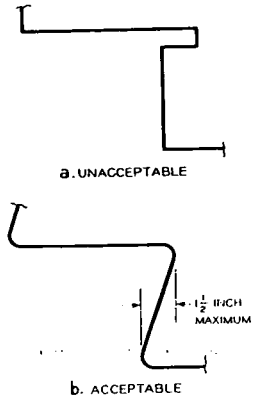


Fig. 1
Steps

5.4.2 Stairs shall have handrails 32 inches high as measured from the tread at the face of the riser.

NOTE: Where codes specify handrails to be at heights other than 32 inches, it is recommended that two sets of handrails be installed to serve all people. Where traffic is predominantly children, particularly physically disabled children, extra care should be exercised in the placement of handrails in accordance with the nature of the facility and the age group or groups being serviced. Dual handrails may be necessary.

5.4.3 Stairs shall have at least one handrail that extends at least 18 inches beyond the top step and beyond the bottom step.

NOTE: Care should be taken that the extension of the handrails is not in itself a hazard. The extension may be made on the side of a continuing wall.

5.4.4 Steps should, wherever possible, and in conformation with existing step formulas, have risers that do not exceed 7 inches.

5.5 Floors

5.5.1 Floors shall have a surface that is nonslip.

5.5.2 Floors on a given story shall be of a common level throughout or be connected by a ramp in accord with 5.1.1 through 5.1.6, inclusive.

EXAMPLE 1: There shall not be a difference between the level of the floor of a corridor and the level of the floor of the toilet rooms.

EXAMPLE 2: There should not be a difference between the level of the floor of a corridor and the level of a meeting room, dining room, or any other room, unless proper ramps are provided.

5.6 Toilet Rooms. It is essential that an appropriate number[8] of toilet rooms, in accordance with the nature and use of a specific building or facility, be made accessible to, and usable by, the physically handicapped.

5.6.1 Toilet rooms shall have space to allow traffic of individuals in wheelchairs, in accordance with 3.1, 3.2, and 3.3.

5.6.2 Toilet rooms shall have at least one toilet stall that—

(1) Is 3 feet wide

(2) Is at least 4 feet 8 inches, preferably 5 feet, deep

(3) Has a door (where doors are used) that is 32 inches wide and swings out

(4) Has handrails on each side, 33 inches high and parallel to the floor, 1½ inches in outside diameter, with 1½ inches clearance between rail and wall, and fastened securely at ends and center

(5) Has a water closet with the seat 20 inches from the floor

NOTE: The design and mounting of the water closet is of considerable importance. A wall-mounted water closet with a narrow understructure that recedes sharply is most desirable. If a floor-mounted water closet must be used, it should not have a front that is wide and perpendicular to the floor at the front of the seat. The bowl should be shallow at the front of the seat and turn backward more than downward to allow the individual in a wheelchair to get close to the water closet with the seat of the wheelchair.

5.6.3 Toilet rooms shall have lavatories with narrow aprons, which when mounted at standard height are usable by individuals in wheelchairs; or shall have lavatories mounted higher, when particular designs demand, so that they are usable by individuals in wheelchairs.

NOTE: It is important that drain pipes and hot-water pipes under a lavatory be covered or insulated so that a wheelchair individual without sensation will not burn himself.

5.6.4 Some mirrors and shelves shall be provided above lavatories at a height as low as possible and no higher than 40 inches above the floor, measured from the top of the shelf and the bottom of the mirror.

5.6.5 Toilet rooms for men shall have wall-mounted urinals with the opening of the basin 19 inches from the floor, or shall have floor-mounted urinals that are on level with the main floor of the toilet room.

5.6.6 Toilet rooms shall have an appropriate number[8] of towel racks, towel dispensers, and other dispensers and disposal units mounted no higher than 40 inches from the floor.

5.7 Water Fountains. An appropriate number[8] of water fountains or other water-dispensing means shall be accessible to, and usable by, the physically disabled.

5.7.1 Water fountains or coolers shall have up-front spouts and controls.

5.7.2 Water fountains or coolers shall be hand-operated or hand- and foot-operated. (See also American Standard Specifications for Drinking Fountains, Z4.2-1942.)

NOTE 1: Conventional floor-mounted water coolers can be serviceable to individuals in wheelchairs if a small fountain is mounted on the side of the cooler 30 inches above the floor.

NOTE 2: Wall-mounted, hand-operated coolers of the latest design, manufactured by many companies, can serve the able-bodied and the physically disabled equally well when the cooler is mounted with the basin 36 inches from the floor.

NOTE 3: Fully recessed water fountains are not recommended.

NOTE 4: Water fountains should not be set into an alcove unless the alcove is wider than a wheelchair. (See 3.1.)

5.8 Public Telephones. An appropriate number[8] of public telephones should be made accessible to, and usable by, the physically disabled.

NOTE: The conventional public telephone booth is not usable by most physically disabled individuals. There are many ways in which public telephones can be made accessible and usable. It is recommended that architects and builders confer with the telephone company in the planning of the building or facility.

5.8.1 Such telephones should be placed so that the dial and the handset can be reached by individuals in wheelchairs, in accordance with 3.3.

5.8.2 An appropriate number[8] of public telephones should be equipped for those with hearing disabilities and so identified with instructions for use.

NOTE: Such telephones can be used by everyone.

5.9 Elevators. In a multiple-story building, elevators are essential to the successful functioning of physically disabled individuals. They shall conform to the following requirements:

5.9.1 Elevators shall be accessible to, and usable by, the physically disabled on the level that they use to enter the building, and at all levels normally used by the general public.

5.9.2 Elevators shall allow for traffic by wheelchairs, in accordance with 3.1, 3.2, 3.3 and 5.3.

5.10 Controls. Switches and controls for light, heat, ventilation, windows, draperies, fire alarms, and all similar controls of frequent or essential use, shall be placed within the reach of individuals in wheelchairs. (See 3.3.)

[8] See 2.13.

5.11 Identification. Appropriate identification of specific facilities within a building used by the public is particularly essential to the blind.

5.11.1 Raised letters or numbers shall be used to identify rooms or offices.

5.11.2 Such identification should be placed on the wall, to the right or left of the door, at a height between 4 feet 6 inches and 5 feet 6 inches, measured from the floor, and preferably at 5 feet.

5.11.3 Doors that are not intended for normal use, and that might prove dangerous if a blind person were to exit or enter by them, should be made quickly identifiable to the touch by knurling the door handle or knob. (See Fig. 2.)*

EXAMPLE: Such doors might lead to loading platforms, boiler rooms, stages, fire escapes, etc.

5.12 Warning Signals

5.12.1 Audible warning signals shall be accompanied by simultaneous visual signals for the benefit of those with hearing disabilities.

5.12.2 Visual signals shall be accompanied by simultaneous audible signals for the benefit of the blind.

5.13 Hazards. Every effort shall be exercised to obviate hazards to individuals with physical disabilities.

5.13.1 Access panels or manholes in floors, walks, and walls can be extremely hazardous, particularly when in use, and should be avoided.

5.13.2 When manholes or access panels are open and in use, or when an open excavation exists on a site, particularly when it is approximate to normal pedestrian traffic, barricades shall be placed on all open sides, at least 8 feet from the hazard, and warning devices shall be installed in accord with 5.12.2.

5.13.3 Low-hanging door closers that remain within the opening of a doorway when the door is open, or that protrude hazardously into regular corridors or traffic ways when the door is closed, shall be avoided.

5.13.4 Low-hanging signs, ceiling lights, and similar objects or signs and fixtures that protrude into regular corridors or traffic ways shall be avoided. A minimum height of 7 feet, measured from the floor, is recommended.

*Knurling may also be accomplished by the use of an acceptable plastic, abrasive coating.

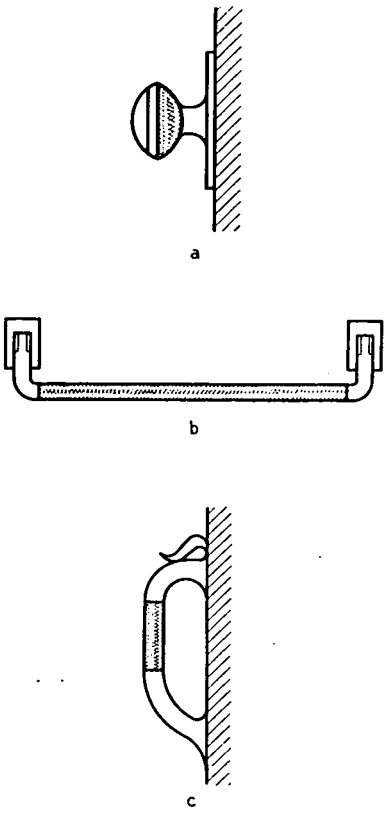


Fig. 2
Knurled Door Handles and Knobs

5.13.5 Lighting on ramps shall be in accord with 1201, 1202, 1203, and 1204 of American Standard* A9.1-1953.

5.13.6 Exit signs shall be in accord with 1205 of American Standard*A9.1-1953, except as modified by 5.11 of this standard.

*All American Standards are now designated USA Standards

American National Standards

The standard in this booklet is one of nearly 4,000 standards approved to date by the American National Standards Institute, formerly the USA Standards Institute.

The Standards Institute provides the machinery for creating voluntary standards. It serves to eliminate duplication of standards activities and to weld conflicting standards into single, nationally accepted standards under the designation "American National Standards."

Each standard represents general agreement among maker, seller, and user groups as to the best current practice with regard to some specific problem. Thus the completed standards cut across the whole fabric of production, distribution, and consumption of goods and services. American National Standards, by reason of Institute procedures, reflect a national consensus of manufacturers, consumers, and scientific, technical, and professional organizations, and governmental agencies. The completed standards are used widely by industry and commerce and often by municipal, state, and federal governments.

The Standards Institute, under whose auspices this work is being done, is the United States clearinghouse and coordinating body for standards activity on the national level. It is a federation of trade associations, technical societies, professional groups, and consumer organizations. Some 1,000 companies are affiliated with the Institute as company members.

The American National Standards Institute is the United States member of the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the Pan American Standards Commission (COPANT). Through these channels American industry makes its position felt on the international level. American National Standards are on file in the libraries of the national standards bodies of more than 50 countries.

For a free list of all American National Standards, write:

American National Standards Institute, Inc

1430 Broadway **New York, N. Y. 10018**