VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

AND ACCESS TO THE HANDICAPPED:

A CASE STUDY

by

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INTRODUCTION

In 1967 a government report indicated that more than twelve percent of the United States population had some chronic illness or physical impairment that was severe enough to limit their activity (President's Committee, 1967). In numbers this amounted to over 22,200,000 people, of which eighteen million were limited in the amount of major activity which they were able to perform. These handicapped were being joined by an estimated two-hundred seventy thousand persons each year including a rapidly increasing number of aged persons and an estimated forty-nine million temporarily handicapped. It has been estimated that by 1980 for every able-bodied person there will also be one person with a physical disability, chronic illness, or who is over age sixty-five. What was the primary problem which prevented this vast number of handicapped and aged from fully participating in United States Society? The lack of access to private and public buildings due to the existence of architectural barriers.

In testifying before a Senate Committee a handicapped veteran, Peter Lassen, explained the problem:

> . . . 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 to simply a stair; in community life-he will be walled out by design; and demoraliing because he cannot be sure society gives a damn. For complete

> access to community life, most of us who have permanent mobility limitations have learned that, to get around, we must be carried onto a bus or up a flight of stairs-either this or be "shut out" form society. (U. S. Congress, 1972:26)

Clearly then "public" buildings were not accessible to all of the public. The handicapped could not use a telephone, mail a letter, shop with a friend, or participate in any one of a thousand other typical activities due to stairs, narrow doorways, or lack of other facilities within buildings used by the public. Donald Fearn (1966:26) found that public cultural and recreational buildings, such as schools, tended to have the most barriers. He stated:

> The buildings with the most barriers are those we usually think of when we say 'If the handicapped person can't work, at least he has the advantage of having time to make use of the recreational and cultural opportunities in the community.' We find that these are the exact buildings that have the most barriers.

His study also found that retail stores tended to have fewer barriers, a phenomenon he attributed to the profit motive.

American society is becoming more aware that the handicapped are citizens; they pay taxes; they comprise a significant potential work force; and that they have the same aspirations, needs, and desires as every other person.

> The insensitivity of the American people to the inequities of the society to the minorities within it has awakened a new understanding of the handicapped person and the barriers he faces in all walks of his daily life.
>
> Unfortunately, there are still many barriers for many handicapped people.
>
> Barriers that exclude or hinder the handicapped person from benefiting from public schools.
>
> Barriers which exclude them from public buildings.
>
> Barriers which exclude them from equal employment opportunities.
>
> Barriers of law which interfere with their lives.
>
> These barriers are more subtle than the overt prejudice which has been addressed against other minority groups. Nobody

> is against the handicapped. The values of our society inhibit us from expressing our open feelings about handicapped people. Yet, our actions and our institutions show a clear pattern of considering handicapped people as those surplus members of our society who are to be hidden out of sight or isolated in special schools and institutions so that they do not interact with the average citizen of our society. We all too often have administered these programs from a paternalistic, charitable, it helped the "poor" handicapped outcast. These obsolete attitudes are slowly being replaced by a societal awareness that the 44 million handicapped American adults and children have a right to expect all the benefits due any citizen of this nation. (National Advisory, 1974:4)

None-the-less the handicapped have been denied access to buildings used by the public due to thoughtlessness on the part of architects, administrators, and other persons responsible for the design and erection of public buildings.

Excessive costs have often been suggested as a limiting factor in providing for accessibility. However, one study showed that the cost for providing for the removal of architectural barriers, if anticipated during the original planning and construction phases or during major renovation of a building, was less than one percent of the total construction costs (Baker, 1968). The lack of proper planning in the facility design stages were apparently due to the existence of an apathetic and/or uninformed public. Therefore, part of the solution to the access problem lies in increasing public awareness of the need to remove architectural barriers from buildings used by the public (National Commission, 1967).

Since 1961 the Easter Seal Society had as a major thrust the removal of architectural barriers from both public and private buildings. This thrust was supported in part by Federal and state legislation. The Commonwealth of Virginia has had a statute requiring public

buildings to be barrier free and accessible to the handicapped since 1970. This statute has been applicable to public schools, such as Virginia Polytechnic Institute and State University, since 1972.

Virginia Polytechnic Institute and State University was founded in the 1870's and most of the campus buildings were completed prior to the enactment of the 1970 law. As a consequence many buildings of the University were constructed with architectural barriers which prevent full utilization of the facilities by the handicapped.

NEED FOR THE STUDY

A study of the problem of architectural barriers and access at Virginia Polytechnic Institute and State University was defensible from several points. One of these being the general lack of knowledge about the problem of architectural barriers. A National Commission on Architectural Barriers (1967) reported that ". . . there has been so little serious study and fact gathering that all current estimates of the problem must inevitably understate it." With reference to providing increased public information the report continued, "School administrators and board leaders and other community leaders who are involved in planning school facilities [should] receive special orientation." Further, the facilities of the University had never been surveyed for architectural barriers to determine if the handicapped could avail themselves of Virginia's largest and most comprehensive four year educational opportunity. Prior to this study no independent agent had recorded recommendations for relieving the architectural barriers within the facilities to permit their utilization by the handicapped.

T. Marshall Hahn, Jr., President of Virginia Polytechnic Institute and State University from 1962 to 1975, in an address at the University's Centennial program on April 19, 1973 stated that:

> As all of us are aware, greater emphasis must be focused on the need for improving the quality of life. . . . Also, we must find means for all of our citizens to share in that improved quality of life. The disadvantaged, the returning veterans, the elderly, all must be brought into the mainstream of our economy and our society. . . . I firmly believe there remains an opportunity of extraordinary dimensions for this University, building on the strong foundations developed over a century of service. I am convinced there still exists the public confidence in the institution as the people's University, the 'can do' University to make possible the necessary support. . . . Also, I would endorse strongly the recommendation [by the Task Force for Innovation in Instruction] that the University intensify it's efforts to include in the resident student body many who have not been included in the past. For the benefit of society, and to enrich the educational experiences of all students, such efforts should include the disadvantaged, the elderly, returning veterans, housewives, and the handicapped, as well as those in mid-career who seek to redirect their professional lives. (Hahn, 1973:3)

In addition to this highest level administrative support the Faculty Senate at Virginia Polytechnic Institute and State University passed a resolution, FS-75-4 (see Appendix G), in support of the removal of architectural barriers to the physically and sensorially handicapped. In support of this resolution, Alan Sheppard, a Senator from the College of Education, commented:

> Since the majority of buildings on this campus are already built the <u>first problem</u> is to determine what might be done to make accessible and functional existing buildings which are now inaccessible. The second task (probably the simpler of the two) is to recommend improved standards for design and construction of new buildings and facilities that will be erected in the future. (Sheppard, 1975:1; see Appendix H)

Virginia Polytechnic Institute and State University is a rapidly growing university. The institution has grown from approximately

five thousand students in 1962 to over eighteen thousand in 1975. In the same period forty new degree programs and ten new academic departments were established. Considering the indications of an international, national and University concern for the problem of access for the handicapped, and the rapid growth of the institution, it seemed only logical to examine the facilities for architectural and site barriers which would interfere with full participation at Virginia Polytechnic Institute and State University by the handicapped.

STATEMENT OF THE PROBLEM

Historically the problem of public apathy plagued the efforts to remove needless architectural barriers from buildings used by the public. In spite of a concentrated effort since 1961 by government, voluntary agencies, and private citizens the progress toward barrier removal had not been as significant as anticipated. There has been an absence of study concerning the problem of architectural barriers, consequently the current significance and scope of the problem can not be known with accuracy (National Society, 1962).

In 1961 the Easter Seal Society and the American Standard Association (now American National Standards Institute, Inc., or ANSI) developed appropriate standards for the construction of barrier free buildings. Several state and Federal actions were precipitated by these Standards and the publicity campaign which accompanied their instroduction. Virginia was slow to adopt legislation requiring barrier free architecture but since 1970 has had a statute. Also the Eleventh World Congress on Rehabilitation of the Disabled established a Symbol of

Access. This symbol is awarded and displayed in structures which meet a minimum standard of access. The Symbol of Access standards were derived from the ANSI Standards. An architectural survey and study of Virginia Polytechnic Institute and State University would determine if the University properly complied with either the standards established by the Virginia statute or other appropriate standards of access. The study would also fulfill a need recognized by the University's administration and faculty.

RESEARCH QUESTIONS

The purpose of this study was to examine the problem of access and the handicapped at Virginia Polytechnic Institute and State University through the answering of four research questions. The questions to be answered within this study were:

1. What was the current status of the problem of architectural barriers within the facilities of Virginia Polytechnic Institute and State University?

2. What was the extent of the activity, either proposed or in progress, for relieving the existing architectural barriers within Virginia Polytechnic Institute and State University?

3. What was the extent of activity designed to prevent architectural barriers in future construction of University facilities?

4. What were the activities or programs which would be appropriate to provide for the removal of architectural barriers within current and future facilities of Virginia Polytechnic Institute and State University?

BASIC ASSUMPTIONS

Several assumptions were basic to this study. The most fundamental being that the handicapped should have access to all public buildings. Virginia Polytechnic Institute and State University is a public institution founded in the land grant legislation which established the principle of public higher education. Because the University is a public institution, in both fact and tradition, it has a responsibility to be certain that the campus is assessible to all who may wish to use it.

The first step in making the campus accessible would be to inventory or assess the current status of the access problem at the University. A case study would be an appropriate method of obtaining this assessment.

LIMITATIONS

This was a study of a single, unique, school system, Virginia Polytechnic Institute and State University, and therefore the results of this study may not be generalizable to another education system. The survey process and recommendations may have value as guidelines in surveying and modifying facilities of a type similar to those at Virginia Polytechnic Institute and State University.

Much of the data concerning the current state of the problem and the plans, projects, and activities of the future were developed through interviews with students, administrators, faculty, and staff at Virginia Polytechnic Institute and State University. Consequently

this data may be flawed by the fault of memory or other human weaknesses.

The research method utilized in this study was the case study approach. The case study frequently requires a subjective assessment of events by the researcher. While, in this instance, the researcher consciously refrained from allowing personal preferences and judgements from entering the study and utilized a jury of experts to provide unbiased validation of the results, some subjectivity is undoubtedly present. These limitations were not considered so restrictive as to prevent the accomplishment of the goals of the study.

DEFINITION OF TERMS

Access: A building or site is accessible when a handicapped person can independently, and with reasonable effort, approach, enter, and conduct business within the building or upon the site. Criteria and standards for access are variable upon the elements of architectural barriers, nature of business to be conducted, and time.

Aged: Person exceeding sixty-five years of age.

Ambulatory: Related to walking. A person referred to as ambulatorily handicapped has difficulty walking. See handicapped parts (a), (b), (f), (g).

Architectural Barriers: Those elements of architectural design or building construction which prevents a handicapped person from entering and conducting business within a given building independently and with reasonable effort.

Handicapped: For the purposes of this study, the term "physically handicapped persons" or "handicapped" shall mean persons with:

(a) Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheelchairs;

(b) Impairments that cause individuals to walk with difficulty or insecurity;

(c) Manual impairments which cause individuals difficulty in completing tasks requiring the use of the hands;

(d) Total blindness or impairments affecting sight to the extent that the individuals functioning in public areas are insecure or exposed to dangers;

(e) Deafness, hearing, or speaking handicaps that might make persons insecure in public areas because they are unable to communicate or hear warning signals;

(f) Faulty coordination or palsy from brain, spinal, or peripheral nerve injury; or

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

M: Mean.

Manual: Related to hands. A person referred to as manually handicapped has difficulty performing tasks requiring use of the hands.

Ramp: Means a smooth, hard, prepared, sloped surface joining two distinct levels.

Residential Type Sanitary Facility: Toilet rooms which are arranged and fixtured in the manner typical of a private residence. Usually this means a single toilet without an enclosing water closet and the absence of a urinal.

Standard(s): When capitalized this word is in reference to the U.S.A. Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped. When this term appears in small letters it is descriptive only.

Tactile: Relating to or perceptible through the sense of touch.

Temporarily Handicapped: Persons who through temporary disability such as illness, fracture, or pregnancy have mobility or other problems similar to those who are permanently handicapped (see handicapped).

University: When capitalized this word is in reference to Virginia Polytechnic Institute and State University, Blacksburg, Virginia. When this term appears in small letters it is descriptive only.

Walk: Means a smooth, hard, prepared surface of concrete, bituminous concrete, brick, or similar materials with ground immediately adjacent at the same level.

ORGANIZATION OF THE DISSERTATION

Chapter 1 has presented the background relative to the problem, stated the problem, presented basic assumptions and limitations, and defined terms as they are operationally used within the study.

The succeeding chapters are organized in the following manner:

Chapter 2 contains a review of literature designed to develop

the historical, legal, and social perspectives to the problem of access, to provide information for establishing standards from which the architectural survey was done, and to develop information descriptive of Virginia Polytechnic Institute and State University.

Chapter 3 outlines the methods and materials which were utilized in developing data for reaching conclusions based upon the study.

Chapter 4 contains the discussion and summary of the data gathered by the research methods.

Chapter 5 contains the summary, conclusion, recommendations of the study, and implications for further research.

Chapter 2

REVIEW OF LITERATURE

The purpose of this study was to examine the problem of access and the handicapped at Virginia Polytechnic Institute and State University by answering the four research questions developed in Chapter 1. A review of current literature was conducted to serve three purposes in relation to the study. First to provide a historical, legal, and social perspective to the problem of architectural barriers to the handicapped. Secondly, to seek information for establishing standards which would be appropriate for an inventory of the architectural barriers at Virginia Polytechnic Institute and State University. Third to develop information providing a description of Virginia Polytechnic Institute and State University.

HISTORICAL, LEGAL, AND SOCIAL PERSPECTIVE

At the dawn of the 1920's the "progressive" United States of America had yet to demonstrate a national concern for the welfare of its handicapped citizens. The social status of the handicapped was so low that many families considered it a disgrace to have a handicapped family member. The handicapped themselves were cloistered in their homes out of public view or faced a life of institutional care (National Society, 1961). Few treatment, rehabilitation, and employment opportunities existed for the handicapped. A 1924 national survey

determined that only nine thousand beds existed in health facilities to serve an estimated half-million crippled children and adults. Additionally, many of these nine thousand beds represented institutional care. State, public, and private schools combined, offered accomodations for only 6,225 handicapped students. In 1928, interviews with six hundred employers from all across the United States, indicated that only twenty-five percent of them would not discriminate in hiring the handicapped (National Society, 1961). In spite of this social situation the conscience of the United States had begun to react to the needs of its handicapped citizens.

The National Society for Crippled Children was founded by Edgar F. Allen in 1921. Allen had come to realize the inadequate state of both knowledge and facilities for the handicapped through the death of his son. Concentrating in his own community, Allen conducted a campaign which resulted in the establishment of a hospital for crippled children. Recognizing the existence of similar needs in other communities he founded the National Society for Crippled Children. The National Society soon embraced other locally active groups and by 1929 had chapters established in twenty-three states.

The National Society's primary focus in its formative years was toward establishing programs for the rehabilitation of the handicapped. The National Society lobbied for state and National legislation, provided public information, and helped establish voluntary and tax supported rehabilitation programs. The National Society for Crippled Children continued to grow and eventually divided into two separate organizations. These were the International Society for the

Welfare of Cripples, which had responsibility for fostering new societies abroad, and The National Society for Crippled Children and Adults, which had responsibility for expanding care for the crippled children and adults in the United States. This latter organization, in order to obtain funds for its rapidly expanding programs, began the Easter Seal Campaign in 1934. The Easter Seal Campaign lead to the establishment of the Easter Seal Society.

The Easter Seal Society was established as a unifying agent among the various independent voluntary societies serving the handicapped. Since 1934 it has grown to become the largest voluntary agency serving the handicapped. The Society provides consulting and coordinating services in such areas as treatment, research, organization, education, and fund raising. Each of the local societies which belong to the Easter Seal Society retain a strong local autonomy while benefiting from the Easter Seal Society's National program supported by Easter Seal campaigns.

One of the first indications of Federal concern for the handicapped was demonstrated by the Veterans Administration after World War II. Twenty-five hundred paraplegics had survived combat wounds in World War II and needed rehabilitation programs. When these rehabilitation programs were established it soon became evident that civilian paraplegics outnumbered those injured in the military service. Thus a national concern for the welfare of the handicapped was born.

In 1947 President Truman established a committee to study methods of promoting jobs for the handicapped. Funding for this committee was initially provided by the Bureau of Employment Security, however, in

1949 the Committee received Congressional authorization. The President's Committee on Employment of the Handicapped had as its membership representatives of over six hundred public organizations, and included individuals representing the interests of business, civic handicapped, labor, media, industry, medical, religious, veteran, women, rehabilitation, and other groups. The Committee's purpose was to:

> . . . promote development of the handicapped by creating a nationwide interest in rehabilitation and employment of these citizens and by obtaining and maintaining cooperation from all public and private groups in the field (President's, 1967).

It was the President's Committee on Employment of the Handicapped and the National Easter Seal Society which in the late 1950's began the process of bringing the problem of architectural barriers and the handicapped into national focus.

In 1961 the National Society launched an all out assault on the architectural barriers encountered in buildings used by the public. They recognized that architectural barriers represented the major obstacle between the crippled and full community participation. A $20,000 Easter Seal research project was initiated at the University of Illinois in co-operation with the Office of Vocational Rehabilitation, American Institute of Architects, and nearly forty other organizations. The purpose of this project was to set national standards which prevent the handicapped from entering and using buildings. These activities culminated in the 1961 U. S. A. Standard (now ANSI), published as the Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped (see Appendix A). While

the Standards readily meet with the wide approval, it should be noted that they were listed as minimum standards and that some organizations recommended slightly different specifications.

In conjunction with establishment of the ANSI Standards the National Society, in 1962, began a program of nationwide architectural surveys to determine the extent of architectural barriers in existing public buildings. Under the direction of the national leadership state and community groups conducted surveys and inventories of such barriers as stairways, narrow doorways, telephone booths, and restroom facilities. During the three year period of the surveys, programs for increasing public awareness of the problem and community action to eliminate architectural barriers were also begun. The National Society organized community groups who worked to demonstrate the necessity of removing architectural barriers to the handicapped from buildings used by the public. During 1961 and 1962 twenty-two states formed state-wide architectural barriers committees, however no committee was established in Virginia. The General Services Administration issued orders that consideration of the ANSI Standards shall be incorporated into all future Federal buildings.

Through the next five years state governments made some progress in making public buildings accessible to the handicapped. Such state efforts were apparent by the passage of thirty-three statutory requirements. These statutes were passed by legislative resolution in five states, by changes in building codes of two states, and by executive order in three states. The ANSI Standard was the basis for most of

the new state laws and regulations. The specifications from the ANSI Standard were adopted in toto in six states and by reference in eight states. An additional fifteen states based their laws upon ANSI Standards (National Commission, 1967).

In May of 1966 President Johnson established the National Commission on Architectural Barriers. At the time of the appointments to the Commission he stated:

> . . . research has provided us with some of the standards to make buildings and facilities more accessible to the handicapped. We must now put this information to practical use by eliminating architectural barriers from existing buildings and preventing them in the vast amount of public and private construction which lies ahead (Chatelain, 1966:4).

The Commission was assigned the task of presenting a "state of art" report concerning architectural barriers to the handicapped to the President and to the Congress before January 1, 1968. The Commission worked closely with the President's Committee on Employment of the Handicapped, Rehabilitation Services Administration, General Services Administration, and many voluntary agencies. There were several major activities undertaken to develop the information for use within the report. These included special meetings; public hearings; special studies, including a comprehensive study of state and local programs by the National League of Cities; a study of architects attitudes and actions by the American Institute of Architects; and a public opinion poll.

The National Commission on Architectural Barriers found that while progress in the removal of architectural barriers to the handicapped had been made, the progress was not as significant as either

anticipated or hoped for. A quote from the Commission report reads:

> Despite achievements, and the hard work of thousands of citizens which made them possible, the handicapped are still barred from most places they want to go, and the majority of Americans remain unaware of the problem. During field visits, the Commission found that the very places most used by the public were often the ones least accessible to the aged and handicapped (National Commission, 1967:8).

The Commission also concluded that while individual states had made progress enacting legislation designed to remove architectural barriers most of the laws and regulations enacted "lacked teeth".

> Laws are effective, however, only when they are specific and strong. . . . Although forty-four states governments have now passed laws or resolutions or taken other official action which puts them on record as being sympathetic to the problems of the aged and handicapped, there is no reason anyone needs to know about or pay attention to these official actions (National Commission, 1967:9).

Further, the study undertaken by the National League of Cities showed that:

1. Six states clearly expressed the need for accessibility by using ANSI Standards but the effectiveness of the laws in three of these states was reduced by using terms such as "in so far as possible" and "to the extent deemed feasible".

2. Only nine states had clear cut enforcement provisions and none of these nine were among the six states mentioned in number one above. No state had both strong law and strong enforcement provisions.

3. Almost all the state laws were applicable only to new public buildings, only three states with laws applicable to all public buildings and only three others with laws applicable to new private buildings.

4. Only four states had modified their building code to accomodate the ANSI Standard.

5. In very few of the cities or metropolitan counties had improvement of accessibility for the handicapped been found. Out of 651 cities and counties with a population in excess of fifty thousand, 138 reported some kind of program but only fourteen had amended ordinances or building codes to allow for the ANSI Standard. The remaining 124 actions consisted primarily of resolutions or statements by the city councils or other officials.

6. The two most often cited reasons for the lack of local programs were that the local officials did not see an apparent need for action and there were no legal requirements to provide for architectural barrier removal.

The latter comment supports the Commission's conclusion that political subdivisions tend to favor enactment of state legislation directed toward the elimination of architectural barriers to the handicapped.

The Commission further found that the Federal government had not made the hoped for progress either. The General Services Administration, which had supported the ANSI Standards when conceived, had made the most significant progress of any Federal agency toward removal of architectural barriers to the handicapped. But lacking the support of law, GSA's progress had been slow. Other Federal agencies had been alerted to the problem of architectural barriers and had received the ANSI Standard, but new buildings continued to be constructed with unnecessary architectural barriers and major renovations continued to leave existing barriers untouched.

The problem of slow or no progress was partly a result of what the Commission's report termed a "sensitivity gap". Public opinion polls conducted by the National League of Cities indicated that seven out of ten persons were aware of the physical obstacles that impede the mobility of the handicapped, but sixty-four percent said that they had given the problem little or no thought. As previously indicated forty percent of the city officials and thirty percent of the county officials mentioned that "lack of apparent need" was the primary reason that the officials had taken little action at the local level. Potential public support for civic action to remove architectural barriers appeared rather high with sixty-three percent favoring the use of tax dollars in support of such action.

The report indicated that sensitivity of architects was also surprisingly low. Sixty percent of the 709 architects responding to the study indicated that they were familiar with the terms "architectural barriers" and "barrier free design", however, only 251 of the architects were acquainted with the ANSI Standards and only 143 of this number had used these specifications in their designs. About sixty percent of the architects indicated that professional journals and other publications were the source of most of their information on architectural barriers. Very few respondents indicated that their professional education provided adequate exposure to this area. As of 1967 no school of architecture gave special attention to the problems of access as an element of architectural design. (National Commission, 1967)

Since 1967 several architectural programs have made efforts to sensitize their students to the problems of the handicapped. Projects to increase awareness included the development of special appliances to simulate aging by reducing the sensitivity of the senses and the students spending time in a wheelchair either in their daily routine or in a specially constructed barriers course. In addition to these mechanical experiments in sensitizing, schools and professional associations seemed to become generally more aware of the need for designing architecture for all people not meerly the "average person". Henry Saltzman, President of Pratt Institute commented on this philosophical change. He indicated that Pratt's School of Architecture, was striving to:

> Graduate architects who are equipped by attitude, experience, and study to translate their social awareness into physical design. . . . Our chief interest is to enable each student to lift his eyes from the drawing board, and to look at and understand his fellow creatures (U. S. Congress, 1972:85).

The American Institute of Architects (AIA) had developed an information program designed to keep practicing and would be architects informed of progress dealing with the concept of accessibility. Further efforts by the AIA developed a construction guide based on the ANSI Standards but in "architectural language".

There was a developing tendency to delegate the responsibility for the perserverance of the architectural barriers problems to the professional architect. The AIA established a task force to determine:

> . . . the reasons why the ASA (ANSI) Standards have not been implemented and to explore and test one or more means for reaching the architect and others who effect building decisions with concepts and usable materials which can be translated into decisions for barrier free architecture (National Commission, 1967:Appendix V).

The task force, in working toward this goal, contracted with Walter Gerson and Associates to conduct an attitude survey among architects, educators, builders, and building financiers. The survey consisted of "54 geographically and climatically distributed interviews". These interviews were followed by conferences and task force meetings. There were four conclusions reached by the task force:

1. There is good understanding of the concept and desirability of barrier free architecture by the architects, but not by their clients or other members of the building community.

2. There is little understanding of the true characteristics of the population by all members of the building community.

3. There is a great need for concise instructional and reference materials--principally a guide to design--addressed to architects.

4. There is a great need for encouraging client acceptance of barrier free design, both as a matter of public responsibility and as a service to the real market, through a development of a climate of concern and understanding (National Commission, 1967:Appendix V). The findings of the AIA study and the study conducted by the National League of Cities were conflicting. It is the researcher's opinion that construction of an educational facility is a team effort between the building committee and the architect. Within the team the architect would be expected to be informed and lend expertise to the educational representatives, but to place the entire responsibility for the elimination of architectural barriers in his hands would be a neglect of the responsibility with which the educational representatives were charged.

This opinion is supported by the National Commission on Architectural Barriers statement that "The most common causes of inaccessibility are due entirely to the failure to think of the needs of the handicapped at the design and planning stage".

The Commission, through the National League, also investigated the costs of converting buildings to make them accessible by the handicapped. The National League found that while the provision of special and additional fixtures, features, or space within buildings used by the handicapped would increase the cost of the building, the amount of the increase would be relatively small. A cost analysis of a sample of typical buildings indicated that the cost of accessibility would be less than one percent of total construction costs unless an elevator must be added to the structure. The costs of removing architectural barriers during major renovations was found to be equally low.

In giving consideration as to why the problem of architectural barriers continued to exist the Commission concluded that the results of both voluntary and official action would remain minimal until the public became better informed about the problem. Those public groups cited for special attention included architects, manufacturers and suppliers of building material, and building code groups. Secondly, the Commission determined that voluntary action alone was not of sufficient force to bring about the needed changes. The removal of the architectural barriers to the handicapped had to be supported by comprehensive, enforceable State and/or Federal laws.

The ANSI Standards also received criticism from the Commission. The Commission pointed out that these Standards were incomplete in as

much as they ignored areas such as residential housing and transportation systems. Finally, the Commission expressed a concern for the lack of study and data development around the problem of architectural barriers to the handicapped. It expressed its concern by the statement that: "In brief, there has been so little serious study and fact gathering that all current estimates of the extent and seriousness of the problem must inevitably understate it" (National Commission, 1967:11).

The Commission's final report (1967) contained eight pages of recommendations which were condensed into these six priorities for action:

> 1. Enactment of Federal legislation requiring that all new public buildings and facilities which are intended for use by the public must be designed to accomodate the elderly and the handicapped if any Federal funds are used in their construction.
> 2. Issuance of an executive order to apply accessibility standards to new construction and directing all Federal agencies to plan and budget for feasible changes in their existing buildings and facilities.
> 3. Enactment or revision of state legislation to require that state and local buildings constructed with public funds meet accessibility standards and to include strong enforcement provisions.
> 4. Revision of all building codes so that industries, shops, and other privately owned structures used by the public will be built for accessibility in the future and so that, when existing buildings are renovated, feasible improvements in accessibility will be made.
> 5. Assignment of responsibility and resources to specific units of Federal, state, and local governments to administer the accessibility legislation, to conduct and/or support research and demonstrations, and to work with voluntary professional, business and industrial organizations to the end that all buildings and facilities used by the people of every community will be readily accessible to handicapped people.
> 6. Expansion of public and privately supported education and information programs so that no longer, merely through thoughtlessness, will millions of citizens be unable to use buildings, parks, and other facilities. (National Commission, 1967:3)

In partial fulfillment of these recommendations Congress enacted

Public Law 90-480 (see Appendix C) which authorized Federal agencies to require that construction funded wholely or in part by Federal funds be built to standards which would allow accessibility to the physically handicapped. Additionally, since 1968 there had been a significant increase in U. S. Government information publications concerning the handicapped. Also, since the publication of the Commission's report, several state laws were revised and for the first time a state law was established in Virginia (See Appendix F). Many of the legal revisions, and the Virginia law, made one small but critical alteration in their terminology. This was the changing of the words "public building" to the words "buildings used by the public". In several instances this change brought the private sector under state mandate to incorporate barrier free architecture in their building designs for the first time.

In 1971 the Special Committee on the Aging of the United States Senate held hearing concerning a barrier free environment for the elderly and the handicapped. These hearings concentrated on the housing and mass transportation aspects of the problem. It was evident from the questioning that the Senators were aware of Public Law 90-480 and expected it to be applied to any system using Federal funds (U. S. Congress, 1972).

The Special Committee on Aging held hearings for three days. During the course of these hearings some interesting points were made which are applicable to the problem of architectural barriers in buildings and which supported the conclusions of the 1968 Commission report. The first involved the San Francisco Bay Area Rapid Transit

District or BART. The initial planning for the BART system omitted the consideration of architectural barriers to the handicapped and the aged. This lack of planning was a result of the BART Board of Directors seeing no apparent need for action and not foreseeing the problems of the handicapped in using the BART System. Simple oversight such as this in the planning stages of construction is a primary factor preventing the elimination of architectural barriers from facilities used by the public. The Architectural Barriers Committee of the Easter Seal Society secured alterations in the BART System and ultimately a California law based on the ANSI Standards. These changes were the result of providing information to the BART Board of Directors and the state legislators about the problem. This activity illustrated that the "sensitivity gap" could be closed if the proper information was placed with officials who would act.

In testifying at these hearings Timothy Nugent, Director of the Rehabilitation Education Center at the University of Illinois made remarks which were directed toward concern for effective state legislation:

> Unfortunately, too many people, out of fear or unfamiliarity, and this is not uncommon, the fear of new things, put the word "feasible" into legislation but they did not define who was to make the judgement of feasibility, or what the criteria for feasibility would be. This has allowed people to dodge this issue in many instances (U. S. Congress, 1972:182).

It must be obvious that the inclusion of this type of wording in state legislation makes the legislation difficult to enforce. A written statement from Edward Newman, Commissioner of the Rehabilitation Services Administration noted that:

> . . . a recent report of the President's Committee on Employment of the Handicapped recently reported that forty-eight states, through legislation or executive directive, had some requirements relating to assessibility of State buildings to be used by the public. In too many cases, however, the intent is diluted by issuance of routing waivers, or by not having enforcement mechanism built in (U. S. Congress, 1972:54).

Baker (1968) suggested that adding features to buildings to facilitate access by the handicapped would not appreciably add to the total building cost. In support of the study Walter A Meisen, Assistant Commissioner, Office of Construction Management, Public Buildings, General Service Administration testified that:

> Our experience indicated that these requirements [reference to ANSI Standards] 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 handicap (U. S. Congress, 1972:39).

In summarizing the proceedings of the Special Committee on Aging, the Chairman, Senator Frank Church, made these observations:

> . . . for the past three days of hearings, that we are now concluding, one point which has been made again and again, whether we are dealing with vehicles, dealing with building designs, whatever, is that improvements in the designs for the elderly and handicapped tend to benefit all other age groups. They do not impose any impediment for the physically able. They are generally acceptable for the use of all (U. S. Congress, 1972:185).

ESTABLISHMENT OF STANDARDS

A second purpose of the literature search was to make a determination of standards which would be appropriate for inventoring the architectural barriers at Virginia Polytechnic Institute and State University. The ANSI Standards 117.1-1961 Specifications for Making Buildings and Facilities Accessible to and Usable by the Physically

Handicapped would form the basic guidelines. These standards have been criticized in two respects. First that they are not readily applicable to transportation systems. As this study concentrated on public buildings these criticisms were not valid. Currently the ANSI Standards are being reviewed and updated to further clarify the Standard's specifications and expand their application to private residences, transportation systems, and other additional public areas.

In addition to the ANSI Standards other standards have been developed. In conjunction with the Virginia State Law, the Division of Engineering and Buildings, Office of Administration, of the Governor's office has published design standards applicable to all state owned buildings (see Appendix B). As Virginia Polytechnic Institute and State University is under these standards, they received consideration in development of the instrument used to conduct the survey within this study. It should be noted, however, that in many cases the Virginia Standards are ambiguous in their wording. Further, one must recognize that the primary purpose of this survey was to determine the accessibility of buildings to the handicapped, not to determine if they complied with state regulations.

The President's Committee on Employment of the Handicapped and the Easter Seal Society has been awarding a Symbol of Access to buildings which met certain architectural criteria. This is an international symbol adopted by the Eleventh World Congress on Rehabilitation of the Disabled which met in 1969. The Symbol identifies those buildings which are accessible to the handicapped. The architectural criteria established for the Symbol of Access were based on the ANSI Standard

but also gave consideration to the time a handicapped person must spend within the building while conducting his business. For example, a school would be required to provide accessible restroom facilities while a fast food business would not. The awarding of this Symbol to the appropriate facilities at Virginia Polytechnic Institute and State University would indicate to the handicapped which buildings they could enter and utilize.

In addition to the above standards, several states have individually established standards for their use. Many of these state standards use parts of the ANSI Standards but have often expanded them considerably. Among the state standards reviewed were those for the states of New Mexico, South Carolina, Massachusetts, and Michigan. These standards and specifications can be generalized to have been of a "cook book" nature similar to the ANSI Standards.

Other discussions of suitable standards for the removal of architectural barriers to the handicapped occurred frequently in the literature. Most notable among these was a study conducted by the State of New York which resulted in the monograph, Making Facilities Accessible to the Physically Handicapped. This monograph suggested several criteria for use in higher education facilities and includes several types of facilities ignored in the ANSI Standards such as lecture halls, cafeterias, science laboratories, and auditoriums. The monograph, Barrier Free Site Design, published by the U. S. Department of Housing and Urban Development clarified site orientated specifications and recommended site standards.

DESCRIPTION OF VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

While this study represents a case study of a single university the procedures and instruments would be applicable to studies of universities of similar size and character. Also some description of Virginia Polytechnic Institute and State University, the subject of the study is appropriate; therefore, a short description of the University follows.

Virginia Polytechnic Institute and State University is Virginia's landgrant university. Established at Blacksburg, Virginia, in 1872 as Virginia Agricultural and Mechanical College, the University has grown to become the largest four year institution in the State of Virginia. Since the founding, twelve presidents have served the University. The current President, William E. Lavery, was inagurated in 1975.

Virginia Polytechnic Institute and State University has a strong military tradition. Early in the history of the institution a Corps of Cadets was established and required military training became an integral part of the University's character. The College never became a totally military school but did retain a strong military flavor until 1964. Because of this tradition during the period from 1780 to 1964 few students were in attendance at the University who were not both male and able bodied. Women were first admitted to the University in 1923 but by 1963 comprised less than five percent of the total student body. Since 1963 the co-ed population has increased to a current level of nearly forty percent (Robertson, 1972).

The University campus covers approximately 2300 acres and includes a University airport, farms, and experimental plots. The physical plant includes twenty-nine major academic buildings among a total of eighty-seven campus structures.

While Virginia Polytechnic Institute and State University has grown to become Virginia's largest university it is not, in the national context, a large school. Total enrollment in the fall of 1974 was approximately 17,400 students with fifteen thousand being undergraduate and 2,400 being graduate. The graduate enrollment has been increasing at a rate of five to six percent for a number of years. Predictions for the 1975-76 school year were for a total of eighteen thousand students and, in fact, 18,477 were in attendance during the fall quarter. Virginia Polytechnic Institute and State University is a large residential campus with approximately eight thousand of the student body housed in several University dormitories (Lavery, 1975).

Bachelor Degrees are currently offered in seven academic colleges: Agriculture, Architecture, Arts and Sciences, Business, Education, Engineering, and Home Economics. Masters Degrees are offered in sixty-seven areas and Doctoral Degrees in forty-three areas. The University is accredited by Southern Association of Colleges and Secondary Schools. At the 1975 June Commencement the University awarded 3,934 Baccalaureate Degrees, 815 Masters Degrees, and 153 Doctoral Degrees. In addition to the academic programs, the University participates in research, extension, and adult education projects. The University financial statement for the fiscal year ending on June 30, 1975 is shown in Table I (Lavery, 1975).

Table I

Virginia Polytechnic Institute and State University

Finances for the Fiscal Year Ended June 30, 1975

TABLE I

INSTRUCTION, RESEARCH, AND EXTENSION
CONSOLIDATED FINANCIAL STATEMENT

For the Fiscal Year Ended June 30, 1975

INCOME:	Total Amount
Educational and General	
State Appropriations	$45,068,307
Student Fees	10,701,849
Endowment Income	20,964
Gifts and Grants	3,870,363
Organized Activities	774,073
Sales and Services	39,903
Extension and Public Services	1,394,025
Federal Grants	12,963,519
Other	699,414
Total Educational and General	75,532,417
Auxillary Enterprise	17,830,016
Non-Educational	586,682
Local Funds	2,455,705
TOTAL INCOME	96,404,820
EXPENDITURES:	
Educational and General	
General Administrative Offices	1,994,230
Student Services	1,998,978
General Institutional	229,576
Instruction and Departmental Research	24,712,363
Organized Activities Related to Educational Departments	913,172
Organized Research	18,089,225
Extension and Public Services	17,387,169
Libraries	2,959,012
Operation and Maintenance of Physical Plant	6,149,619
Total Educational and General	74,433,344
Auxiliary Enterprises	15,975,571
Non-Educational	1,274,553
Local Funds	2,092,705
TOTAL EXPENDITURES	93,776,173
Restricted Fund Balance Carried Forward	2,628,647
TOTAL EXPENDITURES AND RESTRICTED FUND BALANCE	$96,404,820

Since 1965 Virginia Polytechnic Institute and State University has had a Directional Plan of Development which outlines the growth pattern of the University. This plan was revised in 1968 and 1972.

The directional plan outlined the growth parameters and priorities for institutional site and facilities. The University enrollment was anticipated to be twenty thousand students by 1980. An additional 2.2 million gross square feet of new construction was planned to be added to five million square feet available in 1973. This facility and site growth was organized into three bienniums. The 1972-1974 biennium designated a total of $59,795,808 in capital outlays for twenty-one facility and site changes. These changes were:

1. Addition to central refrigeration plant.
2. Addition to central control and monitoring system.
3. Expansion of steam and hot water lines.
4. Addition of cold water distribution lines.
5. Expansion of the classroom bell and cable T.V. system.
6. Additional auditorium to McBryde Hall.
7. Additional three floors to Whittemore Hall.
8. Renovation and Addition to Memorial Gymnasium.
9. Renovation and addition to Newman Library.
10. Addition of a new wing to Derring Hall.
11. New architectural building.
12. Addition of two floors to Davidson Hall and renovation of existing structure.
13. New college of Business Administration Building.
14. New Animal Science Building.

15. New College of Education Building.
16. Addition of two floors to Wallace Hall.
17. New College of Arts and Sciences Building.
18. New Bookstore.
19. Renovation of Patton Hall.
20. Purchase of two land tracts.
21. Site improvements including landscape work, illumination, street realignment through campus.

The 1974-1976 biennium designated a total of $29,069,100 in capital outlays for a total of ten facility and site changes. Included in these changes were:

1. New central refrigeration plant and water lines and additions to electrical distribution system.
2. Site additions and improvements.
3. New College of Arts and Sciences Building including the razing of Sandy and Price Halls (Mathematics and Applied Sciences).
4. Addition of two floors to Holden Hall and renovation of the existing structure.
5. Renovation of Norris Hall.
6. Addition and renovation of Randolph Hall.
7. Renovation of Burrus Hall Auditorium.
8. Renovation of the Hutcheson, Smyth, Agnew, Saunders Complex.
9. New College of Arts and Sciences Building (Religion, Foreign Language, Psychology, Philosophy).

The 1976-1978 biennium designated a total of $28,008,855 in capital outlays for a total of eight facility and site changes. Those changes were:

1. Addition to central refrigeration plant.
2. Site additions and improvements.
3. Renovation of Pamplin Hall.
4. Renovation of Robeson Hall.
5. New College of Arts and Sciences Building (Performing Arts).
6. Renovation of Bio-chemistry and Nutrition Building.
7. New Health and Physical Education Building.
8. Two divisional libraries.

Site improvements over those six years included the creation of three pedestrian activity centers or nodes. One node was to be created by the closing of College Avenue and the development of a plaza in the area between the Bookstore, Donaldson Brown, Newman Library and Squires Student Center. A second node would be in the plaza near Cowgill Hall. The third was planned for the quadrangle surrounded by the Hutcheson, Smyth, Sietz, Agnew, Saunders complex and Price and Sandy Halls. Those activity centers were designed as pedestrian gathering points and intersections on the campus.

The Drill Field area would be retained in its current state but vehicle traffic would be re-routed to flow past the ends of the drill field instead of around as in current practice. Also the entrance to campus would be refocused from the Mall area to the Southgate Drive area off of the Route 460 by-pass. Campus parking areas would be permanently established and paved. The campus would be landscaped to

create a more visually appealing atmosphere. This six year directional plan would create the building space required for the anticipated twenty thousand students and concurrently develop the campus site to carry the increased pedestrian and vehicular loads this enrollment growth would cause. Due to economic difficulties the six year plan has been significantly extended in time.

SUMMARY

The recent history of architectural barriers and the handicapped can be divided into three areas. The first involves the development of appropriate architectural standards by the Easter Seal Society and the Presidents Committee on Employment of the Handicapped. These were published in 1961 by the American National Standard Institute. The Standards and the publicity campaign which accompanied their introduction initiated the national program for removal of architectural barriers to the handicapped.

The second major thrust occured in 1966 with the establishment of a Presidential Commission on Architectural Barriers. The Commission's "state of art" report published in 1968 indicated that the large voluntary effort expanded since 1961 had not caused a significant reduction in the problem. In spite of many state laws establishing standards for public building construction, these laws were ineffective due to qualifying language and lack of enforcement provisions. A study conducted by the National League of Cities for the Commission further indicated that architects, builders, educators, and suppliers

lacked the sensitivity which would facilitate the removal of architectural barriers. Since the commissions report significant progress on this problem has been made both at the Federal level and in Virginia. This progress was indicated by the passage of stronger legislation and the increase in government information concerning architectural barriers and access.

The third major action occured in 1971 when the U. S. Senate established a Special Committee on Aging. This committee held hearings for three days and heard testimony from Federal agency heads, architectural educators, special interest groups, and other experts and interested parties. Much of what was developed within the hearings was in support of the findings of the 1967 Commission. Particularly interesting was the testimony of several deans from architectural schools, including Henry Saltzman of the Pratt Institute, who described many of the special programs which were developing a new sensitivity in aspiring architects. These programs were developed to encourage the architects to create designs for use by handicapped as well as the average person.

Since 1961, several architectural standards have been developed. It was concluded by the researcher that the most appropriate for use in this study would be the Virginia Standard and the standards for the Symbol of Access which are derived from the ANSI Standards. Where facilities were not clearly treated in these two basic guides, standards were developed from the remaining literature.

It has been stated that access means three things:

1. ease of entrance
2. access to all floors
3. usable washrooms

In the simplest sense these are the criteria for access, however many buildings, both public and private, are constructed without consideration of even these three basic criteria. One reason for this omission lies in public apathy and thoughtlessness. In spite of concentrated effort by various voluntary groups and governmental agencies, the problem of architectural barriers as a result of public and professional apathy remain with us.

Chapter 3

METHOD AND MATERIALS

This chapter develops the rationale for the research design used in this investigation. Following the discussion of the research design is the discussion of the development of the various methods and materials used to implement the design and the data analysis process.

DESIGN

The type of research undertaken within this study was descriptive in nature concentrating on Virginia Polytechnic Institute and State University and the problem of architectural barriers to the handicapped. The purpose of this study was to:

1. Determine the current status of the problem of architectural barriers within the facilities of Virginia Polytechnic Institute and State University.

2. Determine the extent of the activity, either, proposed or in progress, for relieving the existing architectural barriers within Virginia Polytechnic Institute and State University.

3. Determine the extent of activity, which is designed to prevent architectural barriers in future construction of University facilities.

4. To make recommendations concerning the type of activity which would be appropriate to provide for the removal of architectural

barriers within current and future facilities of Virginia Polytechnic Institute and State University.

The purpose of any research design lies in the dual roles of answering research questions and controlling variance. In this instance the concern for control of variance was not considered an important factor of the research design. This investigation was considered to be problem centered research in which the primary concern was the study of architectural barriers at a single university. The specific structure of the research design utilized was the case study (N=1). The value of the case study methodology in situations where intersubject variability is low or where the universal relationships between subjects is questionable is well documented (Dukes, 1965). Variability and universal relationships are, of course, lowest in a single case (N=1), consequently there was no intent within this study to generalize to other populations or comparable institutions.

Statistically a sample of N=1(df=0) clearly provides a major limitation upon the study. Larger samples (N>1) are normally used when possible and practical in order to provide generalizable conclusions. However, as already pointed out there was no need to generalize to a second population as the total concern of this study was to provide a description of a particular subject, in this case Virginia Polytechnic Institute and State University and access to the handicapped. In actual practice the generalization to a second population from a particular group alwsys involves a non-statistical measure of confidence that the sample is representative. The potential that the sample is not representative is always present and consequently inappropriate generaliza-

tion and assumptions are possible in any study. In the case study approach particular care must be exercised since there is no satisfactory estimate of the range or variability of the characteristics being investigated.

The case study method is recognized as a less quanitative and objective process than experimental research. While the researcher must refrain from destroying the meaning of the facts by applying preconceived standards, the diagnosis and synthesis of the various data developed in the study will often require a subjective assessment of events. The element of personal judgement can not be wholly absent in either selecting the case nor in assembling the data. Hillway (1964) has stated:

> This tends to keep the case study method of research from being wholly scientific. No doubt new and more objective techniques will be developed as time goes on; meanwhile, the method has proved so productive that its weaknesses need not prevent its use if the investigator exercises due discretion. As a matter of fact, it has in recent years been more and more widely employed in certain fields, such as education, and with marked success. If nothing else, the use of the case history can decrease the tendency to misinterpret statistical data. The relationship of isolated factors often can be seen more clearly through intensive case study than through mere quantitative analysis. . . the case study, especially when used in conjunction with a quantitative survey, often draws attention to information that cannot be obtained successfully in any other way and thus can be justified scientifically. (Hillway, 1964: 244-245).

The researcher assumed that the case study method would develop the data needed to answer the research questions posed in the study. Specific procedures were established within the case study format to develop the data for answering the questions. These procedures included:

1. Development of an architectural survey form and the sub-

sequent application of the form to the fifty-one academic and administrative buildings on the University's main campus.

2. Development of a questionnaire designed to obtain input from handicapped students and staff. The questionnaire was mailed to fifty-four handicapped students and staff with twenty-seven responding. The questionnaire was supplemented by seven formal and several informal personal interviews with handicapped persons on campus.

3. Personal interviews with six members of the University administrative staff.

Each of these procedures made a unique contribution to the total perspective of the problem of access at the University.

DEVELOPMENT OF THE ARCHITECTURAL SURVEY INSTRUMENT

The first purpose of the study, determination of the current status of the problem of architectural barriers within the facilities of Virginia Polytechnic Institute and State University, was satisfied by the development of an architectural survey form. This form was applied to fifty-one campus buildings to inventory the architectural barriers they contained.

Several existing architectural survey forms were examined and in general were found to lack the amount of specificity necessary to make the survey form useful for establishing recommendations relating to building or site alteration. The format of the architectural survey form in general use by the Easter Seal Society was adopted but with the specific questions developed by the researcher from the review of literature.

Most of the specific questions and specifications on the Architectural Survey Form were derived from the ANSI Standards and the Virginia Division of Engineering and Buildings Standards. When these two documents did not adequately describe the existing conditions, specific questions for those conditions were derived from the review of literature. The Architectural Survey Form was revised several times before the final format and set of questions was fixed. A copy of the survey form and related illustrations is in Appendix K.

COLLECTION OF DATA FROM THE ARCHITECTURAL SURVEY INSTRUMENT

The researcher applied the Architectural Survey Form to survey fifty-one academic and administrative buildings on the University's main campus. Omitted from the survey were buildings devoted to materials storage and staff service such as central stores and the University farms. Dormitories were also omitted from the survey as it was considered that the orientation of an architectural survey in residential structures would be of a different nature than an architectural survey of the academic and administrative buildings. If the survey goal is to make the University campus barrier free then each of the academic and administrative buildings would need to be accessible. This would not be true for dormitories. Here the goal of an architectural survey would be to gain data which would lead to the selection of a particular dormitory and floor to be converted for use by the handicapped, not for the total revision of all the dormitory facilities.

The first section of the survey form is in reference to the site. The site data do not refer to the University site in general but

describes the characteristics of the site between the designated parking area and entrance which were designated in questions one and eleven on the individual survey forms.

The parking areas were selected on the basis of accessibility to the building about to be surveyed. The parking areas are designated by a code number and description of the parking area. The code number may be referenced on the map of the University in Appendix J.

The building entrance surveyed on each form was selected on the basis of being the most accessible. If each building entrance appeared to have similar accessibility the most commonly used entrance was described on the survey form.

In some cases several examples of a building feature would exist while the survey form allowed for the inspection of a single case. The most common features of this kind being classrooms, stairways, laboratories, and sanitary facilities. In these instances a representative sample of the feature was selected within the building being surveyed and examined using the form. Also in some instances the specific feature described on the survey form did not exist in a building and so a similar feature was surveyed using the form. For example, reading rooms were often surveyed using the areas of the form designated for libraries. If these substitutions were made they are noted in Table III. The "not applicable" notation for any response usually indicates that the feature described in the question did not exist in that particular building.

The time required to perform the survey in any particular building varied with the size of the building and the complexity of its

interior arrangement. A complex building normally would require an hour and a half whereas a simple building might require as little as thirty minutes.

Burruss Hall and Henderson infirmary are two buildings with new and old sections. In Burruss the front section of the building is older while the rear section is a newer, more modern addition. In Henderson the non-medical section is much older and virtually separate from the newer medical section of the building. For the purpose of this study these two buildings were considered as four, each section being considered as a separate building. Therefore, while forty-nine buildings were actually surveyed there were fifty-one survey forms completed and the terminology of this text will refer to fifty-one buildings being surveyed. The data collected through the architectural survey form are summarized in Tables II and III.

The University's general site features were surveyed by the researcher and analyzed from notes made during the survey. The general site features were also studied by examining various site plans available in the University planning office and Architectural library.

DEVELOPMENT OF THE INTERVIEWS AND QUESTIONNAIRES FOR HANDICAPPED STUDENTS AND STAFF

The researcher assumed that the handicapped students and staff would provide an important perspective upon the problem of access at the University. A questionnaire was developed by the researcher to obtain responses from the University's handicapped in these areas:

1. The type of handicap the respondent had,

2. the types of access problems the respondent was having at the University, and
3. recommendations or suggestions the respondent may have for making the University more accessible.

A sample of the questionnaire is in Appendix M and the data collected are summarized in Table IV.

To supplement the questionnaire, personal and telephone interviews were conducted with students and staff. In seven of the interviews questionnaire topics were used as general guidelines but the interview process invariably lead to discussions of a wide range of topics relating to the handicapped and access at the University.

COLLECTION OF THE DATA FROM THE INTERVIEWS AND QUESTIONNAIRES FOR HANDICAPPED STUDENTS AND STAFF

There was some difficulty obtaining names and other information concerning handicapped students or staff. After discussions with persons in admissions and records, the graduate office, the local voluntary agencies, and the University Security Office, it was found that the single collection of records of the University's handicapped were at the University Security Office. These records were in the form of a list of persons who had requested a special handicapped parking decal. This list had certain limitations in that members of the University staff or persons who were blind, deaf, or manually handicapped would normally not benefit from having this special handicapped parking decal and probably would not apply for it. The researcher suspected and it was confirmed that the handicapped

persons appearing on the Security Office list would consist primarily of ambulatory handicapped students.

The special handicapped parking decal is issued by the University Security Office upon recommendation of the Student Health Service. The University Security Office was reluctant to release the names of these handicapped persons to the researcher without approval of the Student Health Service. The Student Health Service, in turn, was reluctant to release the names of the handicapped persons due to a fear of compromising the confidentiality of medical records. A process was ultimately arranged by which the University Security Office released the list of names to the Student Health Service who in turn mailed the questionnaire to the handicapped listed. The total number of handicapped decals issued by the University Security Office through January 15, 1976 was 154, 54 of which were currently active. A total of twenty-seven persons responded to the first and follow-up mailings of the questionnaire. This is a response rate of fifty percent. Three of the returned questionnaires were incompletely filled out and not fully useful. The remaining responses were used to provide insight into the problems of the handicapped with respect to access at Virginia Polytechnic Institute and State University.

In three cases follow-up telephone or personal interviews were conducted as a result of the responses to the questionnaire. Additionally four formal interviews were conducted with persons not appearing on the list provided by the University Security Office using the questionnaire as an interview guide. The purpose of these interviews was to discuss access problems with physically handicapped persons who were

not reached by the questionnaire. Additionally, numerous less structured interviews were conducted with permanently and temporarily handicapped persons as they were encountered on the University campus by the researcher. Among those interviewed were persons with visual handicaps, with heart conditions, persons permanently confined to crutches, and several persons with temporary handicaps.

DEVELOPMENT OF INTERVIEWS WITH ADMINISTRATIVE STAFF

Various administrative staff members at the University are in critical positions of influence effecting progress toward the solution of the problem of access at Virginia Polytechnic Institute and State University. Personal interviews were conducted with six of these administrative persons. These were:

1. The Vice-president for Administration - This person is involved in most fiscal decisions at the University. He also is in charge of the Department of Buildings and Grounds and is a member of the University Building Committee.

2. Director of Buildings and Grounds - This person is in charge of the day to day operation of the University facilities. He also assures that the construction and site development conforms to the University Directional Plan of Development. He is a member of the University Building Committee.

3. Supervisor of Physical Plant Planning - This person is responsible for the site development of the University campus. He also supervises locally developed building modifications and works with the hired architect in major building construction. He is a

member of the Ad Hoc Committee for the Removal of Architectural Barriers to the Handicapped.

4. The Director of the Office of Safety and Health - This person is responsible for the safety of the University personnel and for the administration of the Virginia and National Occupational Safety and Health Laws.

5. The Dean of the School of Architecture at Virginia Polytechnic Institute and State University - As this school is an integral part of the University, a review of the architectural program is a part of a comprehensive overview of architectural barriers and the University. The Dean is a member of the University Building Committee.

6. The University Affirmative Action Officer - This person is responsible for non-discriminatory personnel and student policy and practices.

In each case interview questions were prepared in advance by the researcher and in each case the scope of the interviews far exceeded the limits of the prepared questions. For the convenience of the researcher some interviews were tape recorded. The data gathered through these interviews are summarized and combined to present an overall view of the administrative perspective to the problem of the handicapped, access, and Virginia Polytechnic Institute and State University. A summary of the information which resulted from these interviews and those with the handicapped is summarized in Table V.

ANALYSIS OF DATA

The results of the architectural survey for each building inspected are listed in Tables II and III. These data are summarized and discussed in Chapter 4.

The data from the questionnaire are presented in Chapter 4 along with a presentation of the data from the interviews with handicapped students and staff. The data resulting from the interviews with administrative staff are also analyzed in Chapter 4. The data gathered through the interviews and the architectural survey instrument were utilized in the development of a synthesis and overview of access problems within the University as perceived by the researcher.

Once the data were gathered and synthesized, which pictured the current state of the access problem at the University, then recommendations were made to indicate changes and activities which would assist in solving the problem. Two types of recommendations are outlined. The first recommendations are those which could be implemented by policy decisions, are non-physical in nature, and which involve attitude changes more than monetary investment. The second set of recommendations consist of physical modifications of the University's buildings or site. These recommendations appear in Chapter 5.

During the course of the data gathering process an Ad Hoc Committee for the Removal of Architectural Barriers to the Handicapped was formed as a result of Faculty Senate Resolution FS-75-4. The committee had the following membership characteristics:

1. Chairman - faculty member in education who specialized in

the needs of the handicapped.

2. Member - faculty member in architecture who is ambulatorily handicapped.
3. Member - faculty member in architecture with a special interest in design for the handicapped.
4. Member - graduate student in architecture who is ambulatorily handicapped.
5. Member - graduate student in education who is partially sighted.
6. Member - supervisor of Physical Plant Planning who is an engineer.

This Ad Hoc Committee was utilized as a "Jury of Experts" to review the data and validate the preliminary recommendations of the study. The committee members were provided copies of all materials prior to a joint meeting. The meeting lasted approximately two hours at which the researcher presented a verbal summary of the study and discussed the findings and recommendations. The jury validated all of the researchers recommendations and offered seven recommendations of their own. In addition to directly treating the data and recommendations the Jury of Experts made several suggestions concerning the content and arrangement of this text. Individual members of the jury assisted the study by providing several personal observations and comments to the researcher. The Committee's comments and recommendations are incorporated into the body of this final report. In addition to this "official jury" several recommendations were discussed with various

members of the University community on an informal basis. This final report was provided to the Ad Hoc Committee for use as they saw fit.

Chapter 4

DISCUSSION OF DATA

The purpose of this study was to examine the problem of access and the handicapped at Virginia Polytechnic Institute and State University. Three basic methods were used to develop data around this problem. These were:

1. An architectural survey of fifty-one academic and administrative buildings on the University's main campus using the survey form developed within the study. This survey was combined with a survey of general site characteristics.

2. A questionnaire completed by University students and staff who were handicapped. The data gathered through this questionnaire was combined with data gathered through personal interviews with handicapped students and staff.

3. Personal interviews with various University administrative staff.

This chapter discusses each of these data sources and their unique contribution to the total perspective of the problem of access at the University.

RESULTS OF ARCHITECTURAL SURVEY

Bibliographical Data

The bibliographical data section of the survey form was designed to develop a brief description of the building being surveyed. Some facts of interest were noted from the bibliographical data. First was the predominance of the architectural firm of Carneal and Johnston as the campus architects. This firm designed twenty-seven of the fifty-one buildings surveyed and nearly all the buildings from the mid-1920's to the mid-1960's. This firm also designed a similar proportion of the campus buildings which were not surveyed for architectural barriers.

The age of Virginia Polytechnic Institute and State University was told in the construction dates of its buildings. The oldest building on the University campus was Solitude which was constructed as a residence in 1859. The oldest existing building originally designed for the University's use was Lane Hall, constructed in 1888. The newest building of those surveyed was the Bookstore on which construction was completed in 1975. The construction of the Bookstore was immediately preceded by a complete renovation and addition to the Memorial Gymnasium in 1975 and the building of McBryde Hall in 1971 and 1972.

The combined square footage of all the buildings surveyed, excluding Lane Stadium, was 2,898,895 and the average (mean) of the fifty buildings was 57,987. The total initial cost of the buildings was $44,808,737 and the average initial cost was $1,120,218. The largest structure surveyed was Lane Stadium. The largest and most

expensive building surveyed was Derring Hall.

Site

The extremes of the University campus are approximately seven-eights of a mile apart. The distance between extreme points required approximately twelve to fiteen minutes walking time. The University site is situated on rolling terrain. The size of the campus, distance between buildings, and the frequent variations in grade each effected movement on the University site.

As previously mentioned the University site had several changes in grade. These grade changes were circumvented by the frequent use of exterior steps. Most of the University's pedestrian walkways had one or more staircases located upon their length. As an example, consider the primary walkway from the rear of Davidson Hall to McBryde Hall (reference AA on University map, Appendix J). This walk had four staircases which vary from four to eight steps. There were no ramps on the University campus which were not directly related to a building entrance. It was also noted that few of the exterior staircases had handrails.

Further investigation determined that the streets and walks did not blend to a common level at any point on the campus. In three locations there were steep asphalt "fills" to allow service vehicles to move over the curb onto the walks but there were no curb cuts nor ramps designed for pedestrian use. Further it would be difficult to design curb cuts for the University campus. Most of the walkways were directly adjacent to the street. This characteristic would

require curb cuts to penetrate these walkways for approximately five feet. The problem is further compounded by the frequent use of eight inch curbs which would require longer curb cuts or ramps than a normal six inch curb. Therefore, in several cases, curb cuts would need to be installed parallel with the walkway and enclosed by protective rails. A partial solution to the space problem would be to use ramps at crosswalks. Normally curb ramps protrude into the roadway and are a hazard to vehicular traffic. The University has allowed on-the-street parking on most campus roadways, but at the point of pedestrian crosswalks, parking is not allowed. At these crosswalks, a ramp might be installed which projected into the roadway but was protected from roadway traffic by the curbside parking area.

A similar situation existed in most parking areas. No parking area had curb cuts allowing movement from the parking area surface to that of the adjacent pedestrian walkways. In several parking areas, such as numbers nine, eighteen, twenty-four, thirty-three, and thirty-four, the surface was gravel and some of the walks leading from these parking areas were also gravel. Parking areas eighteen and thirty-three were sites of future building construction and were considered temporary. The remaining parking areas were permanent.

Parking was a severe problem on the Virginia Polytechnic Institute and State University campus. The University Planning Office reported a total of 11,865 parking spaces on the campus, thirty-seven percent of which were used at any point in time on an average weekday. However, the close-in parking areas bounded by Price's Fork Road,

Greenhouse Road, and Kent-Stanger Street received ninety-five percent utilization (Carneal and Johnston:1972). This made it very difficult for anyone to locate an empty, close-in, parking space on the University campus.

The handicapped parking decal issued by the Security Office allowed handicapped persons to park in any parking area on the campus including those areas normally designated for staff use only. With the exception of two spaces near Cowgill Hall, there were no parking spaces found on campus specifically designated for use by the handicapped. The fact that close-in parking lots received very heavy use plus the fact that there were no parking spaces in those lots specifically for handicapped use, appeared to reduce the effectiveness of the special handicapped parking decal. Persons with handicapped Virginia state license plates, designated HP, were allowed free parking in metered areas on the campus. These metered areas were confined to one side of the Mall and parts of College and Kent Avenues.

Facilities

Most of the University facilities were constructed prior to 1962. This was true for thirty-three of the fifty-one buildings surveyed in this study. As most of the awareness for the needs of the handicapped developed after 1962, few of the campus buildings constructed prior to that date fully considered the aspects of accessibility for the handicapped. Also, prior to 1962 the University's student body was, for the most part, male and able bodied not requiring special architectural consideration.

Seven of the buildings surveyed were converted private residences: These were:

1. Building 276, currently used for office space.
2. Parts of Greenhouse, currently used for classrooms and laboratory space.
3. Home Management House, currently used as office space.
4. Henderson Infirmary, non-medical, currently used as classroom and office space.
5. Price House, currently used as office space.
6. Center for the Study of Public Choice, currently used for office space.
7. Solitude, currently used for some classroom meetings.

These buildings, along with the pre-1930 campus buildings such as Lane Hall, Performing Arts Building, Sandy Hall, Price Hall, Patton Hall, and the Architecture Annex, were the least accessible structures on the University campus. Generally, a building's accessibility increased as its construction became newer. It should be noted however that this increased accessibility was of a general nature and not due to special consideration of the needs of the handicapped.

The Bookstore, Memorial Gymnasium, and McBryde Hall represented the most recent construction of the University campus. These buildings also represented the most conscious effort to construct buildings accessible to the handicapped. However, in each of the above cases several poorly designed features reduced the building's accessibility. For example, each of these buildings had ramps provided at one entrance but the ramps were between fifty-four and sixty feet long without

landings or rest stops. In the case of the Bookstore and Memorial Gymnasium, the ramps also lacked handrails.

Sanitary facilities in each of these buildings did have water closets designed for handicapped use. Unfortunately, these water closets did not exist in every sanitary facility nor on each level of the building. Further, none of the sanitary facilities had mirrors, towel dispensers, or other accessories which had been lowered to make them more convenient for use by the handicapped. None of the sanitary facilities which contained water closets designed for handicapped use were marked by signs or symbols indicated their location.

In each of the three buildings some elements of accessible architectural design were negated by local infringement. The Bookstore was an excellent example of this characteristic. The original building design provided for a usable entrance by means of a ramp. However, upon entering the building one was immediately confronted with turnstiles installed by the Bookstore management to control pedestrian traffic. Entry into the main sales area through the turnstiles was impossible by wheelchair and would be difficult for a person with any type of ambulatory handicap. Also, several of the checkout aisles in the bookstore were very narrow, in some cases being as little as twenty-two inches wide, making exiting equally difficult. Displays and display cases were placed too close together making movement between them difficult. This was especially true of the sales area on the lower level.

Two levels of the Bookstore were found to be accessible only by stairs. These were the central sales area and the sales area for

graphical supplies on the lower level. The elevator which serves the lower and upper sales area and the administrative offices was marked for employees only, as were the sanitary facilities.

The Memorial Gymnasium was entered, by means of a ramp, into the lowest of three levels. An elevator provided access to the second and third level of the new addition but was found not to serve the fourth level in the older section of the building. On the second level movement from the elevator to the sanitary facilities, playing surface of the two large gymnasiums, or observation decks for the swimming pool, gymnastics, and handball areas was interrupted by a flight of stairs. Because of these stairs the only common surface path from the locker rooms, which were on the lower level, to the gymnasium on the second level was to proceed outside the building and up the outside pedestrian walk to a rear entrance which entered at grade on the second level.

The only areas which were interiorly accessible from the locker room were the gymnastics room, swimming pool, handball courts, golf range, and weight room. The archery practice room was accessible only by steps.

The locker room areas were reasonably accessible but the shower stalls designed for use by the handicapped had several deviations from the standard design. Also the special shower stalls were frequently used for the storage of maintainance equipment.

All factors considered, McBryde Hall was found to be the most accessible building on the University campus. However, one incongruent

element was the location of the ramped entrance. Located on the south-west corner of the building, the entrance was located as far as possible from any parking area. Also, while McBryde Hall had several sanitary facilities with water closets designed for use by the handicapped none of these facilities were marked. Therefore locating usable facilities would require searching through each of the sanitary facilities in the building until one of the usable ones was found. Signs should have been installed at the entrances of usable facilities in order to identify them. The lecture hall seating in McBryde Hall's small lecture room was difficult to use. The seats were awkward to be seated in and the aisles between the rows of seats were only thirteen inches wide. These two factors would make it difficult for a person who is ambulatorily handicapped to use the lecture hall seats. The above three buildings, Bookstore, Memorial Gymnasium, and McBryde Hall have been analyzed to illustrate how persistent the problem of access was even when there has been obvious awareness and development of design considerations on the part of the persons responsible for the building's construction.

In addition to these three specific examples other aspects of the access problem at the University can be generalized from the data summarized in Tables II and III. Beginning with building entrances, thirty-three University buildings did not have ground level entrances. Twenty-three of those thirty-three entrances had a single threshold step between ground level and entrance level. The threshold steps were normally two to four inches high and located immediately exterior of the doorways.

Forty-nine of the campus buildings surveyed had more than one level or floor. Twenty-eight of these buildings had elevators serving most of the levels but only eight of the twenty-eight elevators were designated as public elevators. Several of the non-public freight elevators had heavy, vertically opening doors. The vertical movement of the elevator doors combined with their weight made them difficult to lift open or pull closed.

A person who is blind would encounter several architectural problems on the University campus. There was no tactile information found at any point surveyed on the University campus. Normal room signs were found installed in a variety of locations such as above or on doors, or on walls at points other than specified. In several buildings room identification was painted. Only a single building, the Anaerobe Laboratory, had room signs which would be useful tactilely and which were located in the specified place. In addition to the lack of tactile information, many hallways had numerous obstructions creating hazards to the blind. The most commonly recurring were:

1. Ashtrays or waste containers placed in the hallway.
2. Fire extinguishers which were not recessed into the wall.
3. Drinking fountains which were not recessed in the wall. This was indicated as the most hazardous interior condition by one blind interviewee.
4. Coat hooks which lined the hallways in several buildings.
5. Frequent use of hallways for storage of equipment and materials.

These conditions created obstructive hazards to the blind.

In terms of the site the biggest problem concerned the exterior steps. These steps lacked warning devices on their approach which would indicate to the blind that steps existed on the walkway. Further, most exterior staircases lacked handrails which help indicate the number of steps and the slope of the staircase.

The deaf also lacked design consideration. With the exception of the nuclear reactor there were no points on campus where visual and audible signals were combined. No campus telephones had amplification for the hard of hearing.

Except as noted in the cases of the Bookstore, Memorial Gymnasium, and McBryde Hall, the survey found no sanitary facilities on the campus with water closets designed for use by the handicapped. This problem was compounded by narrow twenty-two and one-half inch doors on the typical standard water closet. These narrow doors make it virtually impossible for these water closets to be used by a person confined to a wheelchair. In addition to the narrow doors, the water closets themselves were usually too narrow to use, averaging only a little over thirty-one inches in width. The accessories in the sanitary facilities were often inconviently located for use by the handicapped.

Most classrooms were equipped with fixed chair/desk combinations. Tables in libraries and dining areas were normally twenty-nine inches from the underside of the upper surface to the floor. Tables often had two to six inch aprons extending downward and recessed approximately four inches from the table's edge. Laboratory work stations frequently

lacked knee space. These factors mean that persons confined to a wheelchair would normally need to bring a writing, reading, or working surface with them or make do with awkward room furnishings.

The safety items in several of the laboratories were not well located. Items such as fire blankets or fire extinguishers were often placed in corners or obstructed in ways which would prevent prompt utilization by a handicapped person. Safety showers had sills up to six inches high. Several buildings lacked fire alarms or other provisions for communicating emergency signals.

These were some consistent architectural barriers in the campus buildings. The survey data are combined and summarized in Table II. The data for individual buildings are located in Table III. Review of the data will illustrate specific examples of the generalizations outlined above.

RESULTS OF THE QUESTIONNAIRE AND INTERVIEWS INVOLVING HANDICAPPED STUDENTS AND STAFF

As a result of the questionnaire and interviews with the University's handicapped, some estimates were made concerning the characteristics of the University's handicapped population. There appeared to be approximately forty persons at the University with permanent ambulatory handicaps. The researcher did not encounter a handicapped person who was in full-time confinement to a wheelchair nor any person who was deaf or had a handicapping speech defect. One person was located with a total loss of sight and one other person who was partially sighted. One person was located who was manually handicapped.

Table II

Summary of Architectural Survey Data

TABLE II

Name of Building Fifty-one Academic and Administrative Buildings

Primary Purpose of Building Education/Research

Date of Initial Construction of Building Varied from 1859 to 1975

Architect Carneal and Johnston, Richmond, Virginia, designed 27 of the 49 buildings surveyed and is the predominate campus architect.

Approximate Square Feet M=57,987 Approximate Cost M=$1,120,218

Name of Person Conducting the Survey All facilities by Robert Carlson

Site Development	YES	NA	NO
A. Parking			
1. Location/description of parking area: _____			
2. Are spaces in the parking areas reserved for the handicapped and so indicated by signs?	1	0	50
3. What is the width of the handicapped parking space or in the absence of same, what is the width of normal parking space?	M=9.7'		
4. Is the surface of the parking area smooth hard?	34	0	17
B. Walks			
5. Is the parking area and the walk at the same level or are ramps provided between the walks and parking area?	35	0	16
6. Are the walks most commonly used for movement from the parking area to the building entrance at least 48" wide?	42	0	9
7. Do the walks most commonly used for movement from the parking area to the building entrance have a gradient of 5% (or 2°50', 20-1) or less?	48	0	3
8. Do the walks most commonly used for movement from the parking area to the building entrance have a continuous common surface uninterrupted by steps or abrupt changes in level?	41	0	10
9. Are there gratings, manholes, breaks, or similar obstructions or defects in the walk?	12	0	39
If yes, specify defects: _____			

TABLE II (continued)

	YES	NA	NO
C. Entrance			
10. Is any building entrance at ground level or if not is a ramp provided for the handicapped? . . .	17	1	33
11. Location/description of building entrance: _____			
_____			
_____			
12. What is the overall length of the ramp, if provided?		45	
13. What is the overall height of the ramp, if provided?		45	
14. Is there a level of approach to the base of the ramp at least 72" in length?	6	45	0
15. Is the ramp covered, heated or otherwise protected from accumulations of ice or snow?	1	45	5
16. Does the ramp conform to the specifications in the attached drawing? Note slope, surface, run lengths, landings, handrails, curbs	0	45	6
If no, underline non-conforming elements.			
Comment: _____			
17. Is there a level platform or area at the building entrance at least 60" long and extending at least 12" on each side of the doorway?	40	1	10
18. How many steps between the parking area and building entrance?	M=11		
19. Do exterior steps conform to these specifications: Max. rise 6", Min. tread 14", non-skid surface, handrails on both sides 32" above the step surface?	1	34	16
If no, underline non-conforming elements.			
Comment: _____			
20. Is there a threshold step at the building entrance?	23	1	27
Buildings			
A. Doorway (reference to Site, C. Entrance, item 9 above)			
21. What is the width of the entrance doorway as measured between the narrowest points with the door open?	M=33.8"		
22. Is the threshold plate less than 3/4" in height and shaped as to permit access?	43	1	7
23. If two doors are used, is the space between the inner and outer door at least 78" in length? . . .	9	33	8
24. Is the door(s) automatic?	0	1	50
B. Access to All Levels			
25. Does the building have more than one level or floor?	49	0	2

TABLE II (continued)

	YES	NA	NO
26. Are there interior stairs between the entrance and the primary corridor?	8	1	42
27. Do the interior stairs conform to the specifications in the attached drawing? Note rise, tread, surface, nosings, handrail, handrail extensions	2	2	47
If no, underline non-conforming elements.			
Comment: _____			
28. If the building is on one or more levels separated by one or more stairs are alternate provisions of access always available (elevators, ramps, alternate routes)?	23	1	27
If yes, please describe: _____			
29. Is an elevator available?	28	0	23
30. Does the elevator serve all levels or floors? . .	20	23	8
31. Is the elevator public?	8	23	20
32. Is the elevator accessible from the entrance? . .	24	23	4
33. Does the elevator conform to these specifications: self-leveling, cab 61" by 66" min., all controls 54" or less from the floor?	15	23	13
If no, underline non-conforming elements?			
Comment: _____			
34. Does the elevator have tactile instructions or information?	0	23	28
35. Do the doors of the elevator have a sensing device to prevent closing while entering or exiting the elevator?	13	23	15
C. General Building Features			
36. What is the width of the primary corridors at their narrowest point?	M=63.4"		
37. Are there projections into the corridor which would be hazardous to the blind (drinking fountains, doors, signs, etc.)?	50	1	0
If yes, describe the hazards: _____			
38. Are most interior doors at least 32" wide?	43	0	8
39. Are most door handles located less than 42" from the floor?	51	0	0
40. Do door handles, knobs, and bars on doors to high risk areas (stairs, boiler rooms, etc.) have a surface as specified in the attached drawing? . .	0	0	51
41. Are rooms identified by a sign placed on the wall as specified in the attached drawing?	1	0	50
42. Do floors have a non-skid finish?	43	0	8

TABLE II (continued)

	YES	NA	NO
43. Is at least one public telephone on each floor located outside a booth with a dial between 36" and 48" from the floor?	1	30	20
44. Do any public telephones have amplification controls for the hard of hearing?	0	30	21
45. Do public telephones have tactile instructions or information?	0	30	21
46. Are warning signals both visual and audible? . . .	1	0	50
47. Are public switches and controls mounted 42" to 48" from the floor surface?	14	0	37
48. Do public switches and controls have tactile instructions or information?	0	0	51
49. Does at least one drinking fountain on each floor level have its upper surface less than 36" from the floor?	2	5	44
50. Is the drinking fountain's controls hand operated?	44	7	0
D. Sanitary Facilities			
51. What is the width of the entrance doorway measured between its narrowest points with the door open? .	M=29.9"		
52. Does at least one facility on each floor, for each sex, have a water closet designed for use by the handicapped?	0	1	50
53. Is this water closet located as far from the entrance of the facility as practicable?	3	1	47
54. Does any water closet conform to the specifications in the attached drawing? Note direction of door openings, closet length, width, seat height, other dimensions, handrails	3	1	47
If no, underline non-conforming elements.			
Comment: M Standard Water Closet Doors=22.5"			
55. What are the dimensions of the facilities' standard water closet? Width M=31.8" Length M=54.6" Seat Height M=16.1"			
56. Does the facility have an open area of at least 60" X 60"?	30	10	11
57. Are urinal openings for wall mounted urinals located no more than 19" from the floor or for floor mounted urinals level with the facilities main floor?	3	11	37
58. Is at least one towel dispenser, mirror, and other available accessories located less than 40" from the floor?	0	2	49
59. Does at least one sink have lever type water controls instead of knobs?	7	1	43
60. Does this sink or any other have a clear space underneath of at least 26" as measured from its lowest part to the floor?	40	1	10

TABLE II (continued)

	YES	NA	NO
61. Are the hot water inlet pipes under this sink or any other insulated to prevent contact by a handicapped person?	1	5	45
E. Classrooms			
62. Do most classrooms contain furnishings usable by the handicapped (rigid chair/desk combinations are not usable, classrooms should have one moveable or accessible table or desk with 30" underside clearance)?	1	23	27
63. Are most classroom furnishings arranged for access?	19	21	11
If no, specify defects: _____			
F. Lecture Halls/Auditoriums (Total=19)			
64. If no fixed seating; are accessible, level, areas provided for the handicapped?	3	16	0
65. If fixed seating; are accessible, level, areas provided for the handicapped?	14	3	2
66. If fixed seating, what is the width of the aisle between rows?	M=22.2"		
67. Is the main entrance aisle(s) free of steps? . . .	9	0	10
68. Can the handicapped move onto the stage without assistance?	0	9	10
69. Are tables or other usable writing surfaces provided in lecture halls for use by the handicapped?	3	3	13
G. Laboratories (Total=28)			
70. Are at least 1% of the laboratory work stations accessible to the handicapped?	24	0	4
71. Does any accessible work station conform to the specifications 30" minimum underside clearance; 28" knee opening; outlets, fixtures, equipment within 29" of the front edge of the work station?	5	2	21
If no, underline non-conforming elements.			
Comment: _____			
H. Libraries (Total=22)			
72. Are public aisles at least 40" wide?	12	0	10
73. Are at least 1% of the library tables accessible to the handicapped?.	17	33	2
74. Does any accessible table have an underside clearance of at least 30" with aprons less than 2"?	0	3	19
I. Student Commons/Cafeterias (Total=13)			
75. Do the handicapped have direct, public, access to the area?	10	0	3
76. Is the underside table clearance at least 30" with aprons less than 2"?	1	2	10

TABLE II (continued)

	YES	NA	NO
77. Are the controls of vending machines located between 36" and 48" from the floor?	4	2	7
78. Are the aisles at least 66" wide?	6	1	6
79. Are tray slides located between 32" and 36" from the floor?	5	6	2
80. Are aisles between tray slides and control railings at least 32"?	4	9	0
81. Are self-service beverage faucets of the type which allows the glass to remain on the counter while being filled?	4	5	4
J. Physical Education (PE=1,Other Locker/shower=1)			
82. Are the recreational areas accessible to the handicapped?	0	1	1
If no, specify non-accessible areas: _____			
83. Are at least 1% of the lockers accessible to the handicapped?	2	0	0
84. Are showers accessible to the handicapped?	2	0	0
85. Does any accessible shower conform to the specifications: 36" by 36", seats 19" in height, grab rails, controls 42" or less from the floor, shower head 48" to 54" from the floor, threshold less than 2" in height?	0	0	2
If no, underline non-conforming elements.			
Comment: _____			
86. Additional comments:			

Table III

Summary of Architectural Data for Each Building Surveyed

TABLE III

▼ indicates YES response to the question referenced.

● indicates NO response to the question referenced.

BLANK indicates NOT APPLICABLE to the question referenced.

◆ indicates SEE MISCELLANEOUS NOTES concerning the question referenced.

◉ indicates NO (SEE MISCELLANEOUS NOTES) concerning the question referenced.

INDIVIDUAL BUILDINGS

Questions referenced from the survey form / Description of feature	Agnew Hall	Anaerobe Lab.	Architecture Anx.	Biochem & Nutr.	Bookstore	Building 276	Burruss (New Sec.)	Burruss (Old Sec.)	C. For Pub. Choice	J. Cheatham Hall	Coliseum	Cowgill Hall	Davidson Hall	Derring Hall	Dietrick D. Hall	D.B. Cont. Ed. Ctr.	Food Sci. & Tech.	Greenhouses	Henderson (Med.)	Henderson (N-Med.)	Holden Hall	Home Mgt. House	Hutcheson Hall	Lane Hall	Lane Stadium	McBride Hall	Memorial Chapel	Memorial Gymn.	Newman Library	Norris Hall	Owens D. Hall	Pamplin Hall	Patton Hall	Perf. Arts Bldg.	Price Hall	Price House	Randolph Hall	Rector Field Hs.	Robenson Hall	Sandy Hall	Saunders Hall	Security Bldg.	Seitz Hall	Schultz D. Hall	Smyth Hall	Squires Stud. Ctr.	Solitude	Vet. Sci. Center	Wallace Hall	Whittemore Hall	Williams Hall
SA. PARKING																																																			
1-Parking Lot Location	29	38	1	25	6	◆	17	16	36	24	13	20	32	33	23	2	34	22	3	7	17	35	27	7	12	9	8	14	8	17	5	31	15	9	29	11	17	21	31	28	29	10	29	4	27	7	37	38	26	18	31
2-HP Parking Spaces	●	●	●	●	●	●	●	●	●	●	●	▼	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3-Space Width (ft)	12	◆	◆	9.5	9	◆	9.5	◆	9 8	◆	◆	◆	8.5	◆	9	9.5	8.8	◆	◆	◆	9.5	◆	9	◆	◆	◆	9	9	9	9.5	8.5	9.5	9.5	◆	1 2	◆	9.5	◆	9.5	9	12	◆	12	◆	9	◆	◆	◆	11.5	◆	9.5
4-Smooth/Hard Surface	▼	▼	●	▼	▼	●	▼	▼	●	●	▼	●	▼	●	▼	▼	●	●	▼	▼	▼	●	▼	▼	●	●	▼	▼	▼	▼	▼	▼	▼	●	▼	●	▼	●	▼	▼	▼	●	▼	●	▼	▼	●	▼	▼	▼	▼
SB. WALKS																																																			
5-Walk & Lot at Grade	●	▼	▼	●	●	▼	▼	●	●	●	●	▼	●	▼	●	●	▼	▼	●	●	●	●	▼	●	▼	●	●	●	●	●	▼	●	●	▼	▼	▼	●	●	▼	▼	●	▼	●	▼	●	▼	●	●	●	▼
6-Walk 48" Wide Min.	▼	▼	▼	▼	▼	●	▼	▼	●	▼	▼	●	▼	▼	▼	▼			▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	●	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼
7-Walk Slope 5% Max.	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼
8-Steps on Walk	▼	●	▼	▼	▼	▼	▼	●	●	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	●	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	●	▼	▼	▼	▼	▼	▼	▼
9-Defects in Walk	●	●	◉	●	◆	●	●	●		●	●	●	●	◆	●	●	◉	◆	◉	◆	●	◆	▼	◆	◆	●	●	●	●	●	◆	●	●	●	●	●	●	●	●	●	◆	▼	◆	◉	●	●	●	●	◆	●
SC. ENTRANCE																																																		
10-At Grade or Ramped	●	●	●	●	▼	◉	●	●	▼	●	●	▼	▼	▼	●	▼	▼	▼	●	●	●	●	●	●	▼	▼	●	▼	●	●	▼	●	●	●	●	●	●	●	◉	●	●	●	▼	▼	●	●		●	▼	▼	▼
11-Location of Ent.	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
12-Length of Ramp (ft)					60										3									64		60		3.5									18														
13-Height of Ramp (ft)					4.5										.3									5		4		.4									1														
14-72" Ramp Approch					▼										▼									▼		▼		▼									▼														
15-Ramp Protected					●										▼									●		●		●									●														
16-Ramp Conforms					◉										◉									◉		◉		◉									◉														
17-Doorway Plateform	▼	▼		▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	●	▼	▼	▼	▼		◉	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	●	●	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼
18-No. Exterior Steps	0	0	0	4	11	◆	0	24	0	0	0	0	0	0	6	0	0	0	2	2	0	4	0	1	0	5	32	0	10	0	9	0	0	15	0	5	0	0	4	4	0	9	0	2	0	0	0	0	0	0	0
19-Ext. Steps Conform				◉	▼			◉							◉				◉	◉		◉		◆		◉	◉		◉		◉			●		◉			◉	◉		◉		◉							
20-Threshold Step	▼	▼	▼	●	●	●	▼	●	●	▼	●	●	●	●	●	●	●	●	●	▼	●	▼	▼		●	●	●	●	▼	●	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	●	●	▼	▼	▼	▼	●	●	●
BA. DOORWAY																																																		
21-Doorway Width (in)	21	34	28	30	◆	31	30	32	34	33	47	33	36	36	33	35	28	35	35	30	35	35	30	33	72	38	37	33	35	31	39	36	33	27	33	31	35	34	36	35	35	33	40	30	30	33	40	35	30	33	34

TABLE III (continued)

▼ indicates YES response to the question referenced.

● indicates NO response to the question referenced.

BLANK indicates NOT APPLICABLE to the question referenced.

◆ indicates SEE MISCELLANEOUS NOTES concerning the question referenced.

◉ indicates NO (SEE MISCELLANEOUS NOTES) concerning the question referenced.

Questions referenced from the survey form / Description of feature	Agnew Hall	Anaerobe Lab.	Architecture Anx.	Biochem & Nutr.	Bookstore	Building 276	Burruss (New Sec.)	Burruss (Old Sec.)	C. For Pub. Choice	J. Cheatham Hall	Coliseum	Cowgill Hall	Davidson Hall	Derring Hall	Dietrick D. Hall	D.B. Cont. Ed. Ctr.	Food Sci. & Tech.	Greenhouses	Henderson (Med.)	Henderson (N-Med.)	Holden Hall	Home Mgt. House	Hutcheson Hall	Lane Hall	Lane Stadium	McBride Hall	Memorial Chapel	Memorial Gymn.	Newman Library	Norris Hall	Owens D. Hall	Pamplin Hall	Patton Hall	Perf. Arts Blg.	Price Hall	Price House	Randolph Hall	Rector Field Hs.	Robenson Hall	Sandy Hall	Saunders Hall	Security Blg.	Seitz Hall	Schultz D. Hall	Smyth Hall	Squires Stud. Ctr.	Solitude	Vet. Sci. Center	Wallace Hall	Whittemore Hall	Williams Hall
22-3/4" Threshold Plt.	▼	●	▼	▼	▼	●	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	◉		▼	▼	▼	▼	▼	▼	▼	▼	●	▼	●	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
23-78" Space Btwn. Drs				▼		●	▼		▼				▼	▼		●		▼		▼	●						▼	▼	▼	▼					●	●							●	●					
24- Automatic Doors	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	◉	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BB. ACCESS ALL LEVELS																																																		
25-Blg. Multi-level	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	◆	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼
26-Int. Stairs at Ent.	●	●	▼	●	●	●	●	▼	●	●	●	●	●	●	●	●	●	●	●	●	●	◆	●		●	▼	●	●	●	●	●	▼	▼	●	●	●	●	●	●	▼	●	●	▼	●	●	●	●	●	●	●	●
27-Int. Stairs Conform	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	●	◉	◉	◉	◉	◉	◉	◉	◉	◉	◆	◉	◆	◉	◉	◉	◉	◉	◉	◉		◉	◉	◉		◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
28-Alternate Access	◉	◆	●	◆	◉	●	◉	◆	●	◆	◉	◆	◆	◆	◉	◉	◉	◆	●	●	◆	●	◆	●	◆	◆	◆	◆	●	◆	◆	◉	●	◆	◉	◆	●	◆	●	●	◆	◉		◆	●	◆	◉	◆	◆	◉	◆
29-Elevator Available	●	▼	●	▼	▼	●	●	▼	●	▼	▼	▼	▼	▼	▼	●	●	▼	●	●	●	▼	●	▼	▼	●	▼	▼	▼	▼	●	●	▼	●	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
30-Elv. to All Levels		▼		▼	●			●		▼	●	▼	▼	▼	◆			▼				▼		●	▼		◉	▼	▼	●	◉					▼		▼		▼	▼		▼		▼	◆		▼
31-Elevator Public		▼		●	●			▼		●	●	▼	●	▼	●	▼			●			●		●	▼	●		▼	●		●	●					●		●		●	●		▼		●	●		●
32-Elv. Acc. From Ent.		▼		▼	▼		●		▼	▼	▼	▼	▼	◉	▼			▼				▼		●	▼	▼	▼	▼	▼	▼	▼	▼					▼		▼		●	▼		▼		▼	▼		▼
33-Elevator Conforms		▼		▼	▼		◉		▼	▼	▼	▼	◉	◉	◆			▼				◉		●	▼	▼	▼	▼	◉	●	▼						▼		▼		●	◉		▼		◉	▼		◉
34-Tactile Inst. in El		●		●	●		●		●	●	●	●	●	●	●			●				●		●	●	●	●	●	●								●		●		●	●		●		●	●		●
35-Auto. Doors in Elv.		▼		◉	▼		▼		▼	◉	▼	◉	▼	●	▼			●				●		●	▼	▼	▼	▼	▼	●	◉	●					◉		●		●	●		▼		●	◉		●
BC. GEN. BLG. FEATURES																																																		
36-Corridor Width (ft)	4.3	6	5	5.7	3	3	6.5	2.8	2.8	6.8	5.9	5	2	7	2.8	6	8	3.8	4.2	3.8	4.2	2.5	6.2	3	3	.8	8	15	6.5	6.5	6	6	6.5	4	3	3.5	5.6		7	3.4	3.8	7	6.5	14	4.9		3	4.8	7	11	5
37-Projections in Corr	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	▼	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆	▼	◆	◆	◆	▼	◆	◆	◆	◆	◆
38-Int. Doors 32" Min.	●	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	●	▼	▼	●	▼	●	▼	●	▼	●	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	●	▼	◆	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
39-Handles 42" High	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼		▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
40-Warning Handles	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●
41-Room Identification	●	▼	●	●	●	●	●	●	●	◉	◉	●	●	●	●	◉	●	●	◉	●	●	●	●	●	●	◉	●	●	●	●	◉	●	●	●	●	●	●	●		●	●	◉	●	●	●	●	●	●	●	●	●
42-Floors Non-Skid	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	●	▼	▼	●	▼	▼	▼	●	●	▼	▼	▼	▼	●	▼	▼	●	▼	▼	▼	▼	▼	●	▼	▼	▼	▼		●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
43-Pub. Telephone Acc.					●		●	●			●	●	●	●	●	●		●	●				●		●	●		●	●				●				▼					●		●			●	●	
44-Phone Amplification					●		●	●			●	●	●	●	●	●		●	●				●		●	●		●	●				●				●					●		●			●	●	

TABLE III (continued)

▼ indicates YES response to the question referenced.

● indicates NO response to the question referenced.

BLANK indicates NOT APPLICABLE to the question referenced.

◆ indicates SEE MISCELLANEOUS NOTES concerning the question referenced.

◉ indicates NO (SEE MISCELLANEOUS NOTES) concerning the question referenced.

INDIVIDUAL BUILDINGS

Questions referenced from the survey form / Description of feature	Agnew Hall	Anaerobe Lab.	Architecture Anx.	Biochem & Nutr.	Bookstore	Building 276	Burruss (New Sec.)	Burruss (Old Sec.)	C. For Pub. Choice	J. Cheatham Hall	Coliseum	Cowgill Hall	Davidson Hall	Derring Hall	Dietrick D. Hall	D.B. Cont. Ed. Ctr.	Food Sci. & Tech.	Greenhouses	Henderson (Med.)	Henderson (N-Med.)	Holden Hall	Home Mgt. House	Hutcheson Hall	Lane Hall	Lane Stadium	McBride Hall	Memorial Chapel	Memorial Gymn.	Newman Library	Norris Hall	Owens D. Hall	Pamplin Hall	Patton Hall	Perf. Arts Blg.	Price Hall	Price House	Randolph Hall	Rector Field Hs.	Robenson Hall	Sandy Hall	Saunders Hall	Security Hall	Seitz Hall	Schultz D. Hall	Smyth Hall	Squires Stud. Ctr.	Solitude	Vet. Sci. Center	Wallace Hall	Whittemore Hall	Williams Hall
45-Tactile Info.-Phone					●		●	●			●	●	●	●	●	●	●		●	●			●		●	●		●	●			●			●						●		●		●		●	●
46-Visual/Audible Sig.	●			●	●		●			●	◆	●	●	●	●	●		●		●						●	●	●		●	●		●		●	◆	●	●	●	●		●	●	▼	●		●	●
47-Pub. Switch 42"-48"	▼	●	●	▼	▼	▼	●	●	●	●	●	●	●	●	●	●	●	▼	▼	●	▼	●	●		●	●	●	●	▼	●	●	▼		●	●	●	▼	●	●	●	●	●	▼	●			●	▼
48-Tact. Info.-Switchs	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
49-Drinking Ft, 36" Mx	●	●	●	●	●		●	◆	●	●	●	●	●	●	◆	●	●	●	●		●	●		●		●	●	●	●	●	●	●	●	▼	▼	●	●		●	●	●	●		●	●	●	●	●
50-Dr. Ft. Manual Opr.	▼	▼	▼	▼	▼		▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼		▼	▼		▼		▼	▼	●	▼	▼	▼	▼		▼	▼	▼	▼	▼		▼	▼	▼	▼		▼		▼	▼
BD. SANITARY FACILITY					◆																																	◆									
51-Ent. Door Width (in	27	28	30	29	30	23	29	29	28	29	34	33	28	28	34	30	25	30	35	32	32	31	32	40	32	33	30	33	28	30	37	28	35	23	27	29	28	34	29	29	33		34	29	29	29		34	29	35	30
52-HP Water Closet	◉	●	●	●	◉	●	●	●	●	●	●	●	●	●	●	●	●	●	●	◉	●	◉	●	◉	●	●	◉	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
53-Water Cl. Location					▼																					▼		▼																								
54-Water Cl. Conforms	◉	◉	◉	◉	▼	●	◉	●	◉	◉	●	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◆	●	◆	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉		◉	◉	◉	◉	◉	◉	◉	◉
55-Water Cl. Size	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
56-60"X60" Open Area	●	▼	▼	▼	▼	●	▼	●	●	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	●	▼	▼	▼	▼		▼	▼	▼	▼	●	▼	▼	▼
57-Urinal Mt. 19" Max.	●	●	●	●	●	●	●	▼		●	●	●	●	●	●	●					●		●	▼	●	●		●	●	●	●	●	●	●		▼	●	●	●			●	●	●	●		●	●	●	▼
58-Accessories 40" Max	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
59-Lever Controls	●	●	▼	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	▼	●	●	▼	●	▼	●	●	●	▼	●	▼	●	●		●	●	●	●	●	▼	●	●	●
60-Sink 26" Clearance	▼	▼	▼	●	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	●	●	▼	▼	▼	▼	▼	▼	▼	▼	●	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼		●	▼	●	▼	▼	▼	▼	▼
61-Hot Pipes Insulated	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	▼	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●		●	●	●	●
BE. CLASSROOMS								◆																																		◆								
62-Useable Furnishings			●	●				●	▼		●	●	●		●		●			●		●	▼		●		●		●		●	●	●		●	●	●		●		●					●	●	●
63-Arranged for Access			◆	▼					▼	◉		▼	◉	◉		◉	▼			◆		●	◉		◆		▼		▼		▼	●	▼		▼	●	▼		▼		▼		◉				▼	▼	●
BF. LECTURE HALLS/AUD.										◆	◆																															◆								
64-No Fs, Level Areas											▼															◆		◆						▼															◆	
65-Fs, Level Areas				▼				▼			▼		▼			▼									◆	▼	▼			▼		▼							▼		▼		▼					▼		▼	
66-Fs, Asile Width (in				16				20			22		12			30									14	23	17			14		22					20		16		16				24				22	

TABLE III (continued)

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Questions referenced from the survey form / Description of feature	Agnew Hall	Anaerobe Lab.	Architecture Anx.	Biochem & Nutr.	Bookstore	Building 276	Burruss (New Sec.)	Burruss (Old Sec.)	C. For Pub. Choice	J. Cheatham Hall	Coliseum	Cowgill Hall	Davidson Hall	Derring Hall	Dietrick D. Hall	D.B. Cont. Ed. Ctr.	Food Sci. & Tech.	Greenhouses	Henderson (Med.)	Henderson (N-Med.)	Holden Hall	Home Mgt. House	Hutcheson Hall	Lane Hall	Lane Stadium	McBride Hall	Memorial Chapel	Memorial Gymn.	Newman Library	Norris Hall	Owens D. Hall	Pamplin Hall	Patton Hall	Perf. Arts Blg.	Price Hall	Price House	Randolph Hall	Rector Field Hs.	Robenson Hall	Sandy Hall	Saunders Hall	Security Blg.	Seitz Hall	Schultz D. Hall	Smyth Hall	Squires Stud. Ctr.	Solitude	Vet. Sci. Center	Wallace Hall	Whittemore Hall	Williams Hall
67-Asile Free of Steps			▼			▼		◉	▼	●				▼								●	●	●		●		▼				●		▼	●						●			●			
68-Access to Stage			●			●								●									●	▼				●	●			●		●									●				
69-Writing Surf. Avail			▼			●				●				●									▼				▼	●	●			●		●									●				
BG. LABORATORIES		◆								◆	◆				◆		◆	◆		◆			◆			◆	◆		◆	◆	◆											◆	◆			◆		
70-1% Work Sta. Avail.		▼	▼	▼				▼		◆	▼	▼			●	▼		▼	◉				◆			▼	▼		◆	◆	▼		▼		▼		▼		▼		▼	●		▼	▼	▼		
71-Work Sta. Conform		▼	◉	◉				●		▼	◉	◉			●			◉	◉		◉		●			▼	▼		●		◉		●		◆		▼		●		◆	◉	◉			
BH. LIBRARIES	◆	◆									◆				◆			◆			◆				◆								◆									◆		◆			◆		
72-40" Asiles	▼	●	▼	●				▼		●	▼	◉			●			●	▼		▼				●	●				▼			▼		●	●							▼		▼		
73-1% Tables Access.	▼	●	▼	▼				▼		▼	▼	▼			▼			▼	▼		▼				●	▼				▼					▼	●							▼		▼		
74-Acc. Table 30" Clr.	●	●	●	●						●	●	●			●			●	●		●				●	●				●						●								●		●		
BI. STUDENT COMMONS													◆			◆												◆					◆											◆				
75-Direct Access								▼					●	▼		▼												▼					▼											▼		▼		
76-Acc. Table 30" Clr.													●	●														●					●											●		●		
77-Vend. Cont. 36"-48"			●					●					▼	●			●																												●		◆	●	
78-66" Asiles								▼					●	●		▼												▼					●											▼		●		
79-Tray Slides 32"-36"													●	●														●					●											●				
80-Serving Asile 32"Mn																												●					●											●				
81-Self-Serve Faucets								▼					●															●					●											▼		●		
BJ. PHYSICAL EDUCAT.																																																	
82-Rec. Areas Access.																											◉																							
83-1% Lockers Access.								▼																			▼																							
84-Showers Access.																											▼																							
85-Showers Conform								◉																			◉																							

INDIVIDUAL BUILDINGS

TABLE III (continued)

MISCELLANEOUS NOTES

QUESTIONS REFERENCES	NOTES
Anaerobe Laboratory:	
3.	Parking spaces are unmarked.
11.	The building entrance surveyed is located on the East side of the Laboratory.
27.	The handrail and handrail extensions of the interior stairs do not conform.
28.	An elevator is available as an alternate means of access. This building is connected to the Veterinary Science Center.
37.	Laboratory carts project into the corridor and present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 32" Length: 56" Seat Height: 17"
Agnew Hall:	
11.	The building entrance surveyed is located on the North side of the building facing Price Hall.
27.	The handrails of the interior stairs do not conform and existing handrails are 37" high.
28.	An alternate means of access is available where Agnew Hall is attached to Seitz Hall on the third floor, four steps intervene.
37.	Ash trays project into the corridor and present a hazard to the blind.
52.	There is not one sanitary facility for each sex on each floor.
54.	The closet length, width, and handrails of the water closets do not conform.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
55.	The dimensions of the facilities standard water closet are: Width: 34" Length: 46" Seat Height: 16"
H.	The Animal Science Library was surveyed.
Architecture Annex:	
3.	Parking spaces are unmarked.
9.	The walks are gravel.
11.	The building entrances surveyed are located on the North and South sides of the building. Entrances are identical.
27.	The handrail and handrail extensions of the interior stairs do not conform. Handrail is 33" high.
37.	Drinking fountains, fire extinguishers, and furnishings project into the corridor and present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform.
55.	The dimensions of the facilities' standard water closet are: Width: 30" Length: 54" Seat Height: 16"
63.	There are steps leading into some classrooms.
G.	The Planning Room was surveyed.
71.	The tables, height 29", of the work stations do not conform.
H.	The Reading Room was surveyed.
Biochem and Nutrition:	
11.	The building entrance surveyed is located on the North/East side of the building facing Julian Cheatham Hall.
19.	Exterior steps have no handrails.
27.	Interior stairs do not have handrails continuous on both sides.
28.	A freight elevator is available as an alternate means of access.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
35.	Elevator doors are heavy and open vertically, therefore, are difficult to lift open or close.
37.	Drinking fountains, ash trays, fire extinguishers, coat hooks, and vending machines project into the corridor and present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform.
55.	The dimensions of the facilities' standard water closet are: Width: 32" Length: 56" Seat Height: 16"
71.	Some work stations do conform to specifications.
Bookstore:	
9.	Bicycle rack obstructs sidewalk.
11.	The building entrance surveyed is located on the North/West side of the building.
16.	The run lengths, handrails, and curbs of the ramp do not conform.
21.	Entrance doorway is 30". Turnstiles inside prevent access to sales area, width-16". Some check out aisles might be used, width varies from 22" to 39".
27.	The nosings and handrail extensions of the interior stairs do not conform.
28.	An elevator serves three of the four levels. Internal ramps to various levels of uppersales area are 10°. Some levels in lower sales area accessible only by stairs.
37.	Typical sales area with randomly arranged displays which would be hazardous to the blind. Several aisles between displays were as narrow as 25".
D.	Sanitary facilities are not public, employees only.
52.	Some water closets available for handicapped, but not in every sanitary facility nor on every level.
55.	The dimensions of the facilities' standard water closet are: Width: 33" Length: 58" Seat Height: 16"

TABLE III (continued)

QUESTIONS REFERENCES	NOTES
Building 276:	
1.	Street parking on Greenhouse Road.
3.	Horizontal parking spaces.
10.	Building has a porch, one step up from ground level.
11.	The building entrance surveyed is located on the North/East side facing Greenhouse Road.
18.	See 10 above.
27.	The rise, nosings, handrail, handrail extensions of the interior steps do not conform. Handrail on one side only, step rise is 8".
37.	Furnishings project into the corridor and present a hazard to the blind.
55.	The dimensions of the facilities' standard water closet are: Width: 48" Length: 39" Seat Height: 16"
Burruss Hall (New, rear section):	
11.	The building entrance surveyed is located on the North/East corner of the building, rear most entrance facing Pamplin Hall.
27.	The nosings of the interior steps do not conform.
28.	An elevator is available in the old section. Intervening stairs between new and old sections on ground level restrict use of this alternate means of access.
37.	Drinking fountains, ash trays, fire extinguishers, vending machines, and radiator project into the corridor and present a hazard to the blind.
54.	The direction of door openings, width, and handrails of the water closets do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 31" Length: 56" Seat Height: 16"

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
Burruss Hall (Old, front section):	
3.	Horizontal parking spaces.
11.	The building entrance surveyed is located on the South/East side of the building facing drill field.
19.	Exterior steps have no handrails.
27.	The surface, nosings, handrail, and handrail extensions of the interior steps do not conform. Handrails vary 32" to 38".
28.	New and old Burruss are connected on second and third levels. Intervening stairs on first level. Access to the old section possible by entering new section, going through the auditorium using sloped main aisles, and exiting at the second level floor level of the old section and using elevator for movement to first or third levels. Auditorium doors are usually locked.
33.	The elevator cab is smaller than 61" by 66".
37.	Drinking fountains, ash trays, and fire extinguishers project into the corridor and present a hazard to the blind.
49.	Some drinking fountains are excessively alcoved.
54.	The direction of door openings, closet length, width, handrails, and other dimensions of the water closet do not conform. Water closets can not be approached by wheelchair.
55.	The dimensions of the facilities' standard water closet are: Width: 22" Length: 52" Seat Height: 16"
Center for the Study of Public Choice:	
9.	The walk is brick.
11.	The building entrance surveyed is located on the South/East side of the building facing parking area.
27.	The nosings, handrail, and handrail extensions of the interior stairs do not conform. Handrail is 38" high.
37.	Ash trays, fire extinguishers, and furnishings project into the corridor and present a hazard to the blind.

TABLE III (continued)

QUESTIONS REFERENCES	NOTES
54.	The sanitary facilities are residential type.
55.	The dimensions of the facilities' standard water closet are: Width: NA Length: NA Seat Height: NA
Julian Cheatham Hall:	
3.	Parking spaces are unmarked.
11.	The building entrance surveyed is located on the South/East side of the building facing the parking area.
27.	Interior stairs do not have handrails continuous on both sides.
28.	An elevator (keyed) is available as an alternate means of access.
37.	Ash trays and furnishings project into the corridor and present a hazard to the blind.
41.	Room identification signs are usually located on the doors.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities standard water closet are: Width: 34" Length: 56" Seat Height: 16"
63.	Tables in classrooms have insufficient underside clearance.
H.	The Reading Room was surveyed.
I.	The Faculty Lounge was surveyed.
85.	The showers do not conform to specifications in the seat, shower head height, and the threshold height.
Coliseum:	
3.	Horizontal parking spaces.
11.	The building entrance surveyed is located on the East side of the building facing access road.

TABLE III (continued)

QUESTIONS REFERENED	NOTES
27.	Interior stairs do not have handrails continuous on both sides.
28.	A freight elevator, which serves all areas except the spectator balcony, is available as an alternate means of access.
35.	Elevator doors open vertically, are heavy, therefore, are difficult to lift open or close.
37.	Trash cans, fire extinguishers project into the corridor and present a hazard to the blind.
41.	Usually painted.
43.	All telephones in public areas are in booths.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 31" Length: 58" Seat Height: 16"
F.	The main arena was surveyed.
67.	Seating area steps are steeply inclined, would be difficult to climb for persons with ambulatory handicaps.
Cowgill Hall:	
3.	Parking spaces are unmarked.
11.	The entrance surveyed is located on the East side of the building at ground level, walk from parking area.
27.	The nosings, handrail, and handrail extensions of the interior stairs do not conform.
28.	An elevator is available as an alternate means of access.
37.	Ash trays, fire extinguishers, project storage, and raw material storage project into the corridor and present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform. Water closet door is 22" wide.

TABLE III (continued)

QUESTIONS REFERENCES — NOTES

55. The dimensions of the facilities' standard water closet are: Width: 34" Length: 56" seat Height: 16"

F. The Gallery was surveyed.

70. Most laboratory stations are constructed by students into assigned spaces. Most work stations are crowded to close for accessibility.

Davidson Hall:

11. The building entrance surveyed is located on the North/West side of the building facing the parking area.

27. The surface, handrail, and handrail extensions of the interior stairs do not conform. Handrails vary from 32" to 36" and the non-skid tread is worn.

28. A freight elevator is available as an alternate means of access to some levels. For entry and access, Davidson Hall should be considered in three parts. Part I being the North/East section fronting on Lot #15. This part has a single step (curb) between Lot #15 and the entrance. This section has a freight elevator serving all levels. The center section (Part II) adjoins Part I and is fully accessible through Part I. Part III is the South/East most part of Davidson and fronts on the drill field circle (Parking Area #13). Part II and III connect at the lower level of Part III, however three steps are in each corridor. Entry to Part III from outside would be through the main entrance at Lot #3. There are two steps (curb and threshold). Entry is into the lowest of Part III's four levels. No elevator serves Part III.

30. Elevator does not serve Part III as discussed above.

35. Elevator doors open vertically, are heavy, therefore are difficult to lift open or close.

37. Drinking fountains, ash trays, fire extinguishers, and litter project into the corridor and present a hazard to the blind.

54. The width, handrails, and other dimensions of the water closets do not conform. Water closet door is 27" wide.

55. The dimensions of the facilities' standard water closet are: Width: 30" Length: 56" Seat Height: 17"

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
63.	Classroom is crowded and the furniture is in jumbled order.
71.	Work stations do not have knee openings.
G.	A Chemistry Laboratory was surveyed.
H.	The Reading Room/Lounge was surveyed.
Derring Hall:	
3.	Parking spaces are unmarked.
9.	The walks are gravel.
11.	The two building entrances surveyed are located on the North/West side, facing the parking area.
27.	The handrail extensions of the interior stairs do not conform.
28.	An elevator is available as an alternate means of access. Outside entrances are available to the first three levels.
33.	The elevator cab is smaller than 61" by 66".
37.	Drinking fountains, ash trays, fire extinguishers, coat hooks, and furnishings project into the corridor and present a nazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 31" Length: 56" Seat Height: 16"
63.	Classroom is crowded and the furniture is in jumbled order.
G.	The Learning Center-Education was surveyed.
71.	Work stations have an underside clearance of 28".
72.	Responses under Library are the same for both the Education and Geology Libraries.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES

Dietrick Dining Hall:

11. The building entrance surveyed is located on the South/East side of the building facing the Coliseum.

19. Exterior steps have no handrails.

27. Interior stairs handrail is 34" high.

28. A freight elevator in the food preparation area is available as an alternate means of access.

32. The freight elevator is accessible on lower floor only via loading dock area.

33. The elevator cab is 48" by 66".

37. Ash trays, furnishings, and crowd control devices project into the corridors and present a hazard to the blind.

54. The width, handrails, and other dimensions of the water closets do not conform. Water closet door is 25" wide.

55. The dimensions of the facilities' standard water closet are: Width: 34" Length: 60" Seat Height: 16"

I. The snack bar was surveyed.

Donaldson Brown Center:

11. The building entrance surveyed is located on the North/East side of the building. Right hand door has a ramp for going over threshold step. This door is normally locked.

16. The handrails and curbs of the ramp do not conform.

27. Interior stairs do not have handrails continuous on both sides.

28. Three elevators are available as alternate means of access.

30. Single elevator in hallway to left of check-in desk may be used to by-pass in-hall steps between older and newer sections of building.

33. The elevator cab is 84" by 48".

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
37.	Ash trays, fire extinguishers, furniture, and maid carts project into the corridor and present a hazard to the blind.
41.	Room identification signs are usually located on the doors.
49.	Some drinking fountains are excessively alcoved.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform. Water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 30" Length: 58" Seat Height: 16"
63.	Tables in meeting rooms are 25" from the floor to the apron and are not usable by the handicapped.
I.	The snack bar was surveyed.
Food Science and Technology:	
9.	There are no walks, parking lot adjoins entrance. Questions 5 to 10 are in reference to this parking lot.
11.	The building entrance surveyed is located on the East side of the building facing the parking area.
27.	The handrails and handrail extensions of the interior stairs do not conform. Handrail is 36" high.
28.	A second floor entrance on the North side of the building is available as an alternate means of access, two steps.
37.	Ash trays, fire extinguishers, coat hooks, and furnishings project into the corridor and present a hazard to the blind.
54.	The direction of door openings, handrails, and other dimensions of the water closet do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 53" Length: 88" Seat Height: 15"
H.	The Conference Room was surveyed.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
Greenhouses:	
3.	Parking spaces are unmarked.
9.	There are no walks, parking lot adjoins the entrance. Questions 5 to 10 are in reference to this parking lot.
11.	The building entrance surveyed is located on the West side of the building, near the parking lot.
27.	The handrails and handrail extensions of the interior steps do not conform. All facilities are on one level except for a single laboratory in the basement.
28.	An alternate means of access to the classrooms and sanitary facilities is available through the Greenhouse complex.
37.	Drinking fountains, storage cabinets, coat hooks, and vending machines project into the corridor and present a hazard to the blind.
54.	There are no water closets which conform to specifications.
55.	The dimensions of the facilities standard water closet are: Width: NA Length: NA Seat Height: NA
G.	A greenhouse was surveyed.
71.	The main greenhouse complex (work station) is paved and ramped.
Henderson Infirmary (Medical):	
3.	Horizontal parking spaces.
9.	There are no walks, the parking lot adjoins the entrance. Questions 5 to 10 are in reference to this parking lot.
11.	The building entrance surveyed is located on the North/East corner of the Infirmary facing the parking area.
19.	The tread and handrails of the exterior steps do not conform.
27.	The handrails and handrail extensions of the interior stairs do not conform. Handrail is 27" high, handrails are not continuous on both sides.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
28.	A freight elevator is available as an alternate means of access.
37.	Drinking fountains, furnishings, and service carts project into the corridor and present a hazard to the blind.
41.	Room identification signs are usually located above the door.
54.	The handrails and other dimensions of the water closet do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 68" Length: 47" Seat Height: 15"
I.	The waiting room was surveyed.
Henderson Infirmary (non-medical):	
3.	Horizontal parking spaces.
9.	The walks are gravel.
11.	The building entrance surveyed is located on the North side of the building facing Main Street.
19.	Exterior steps have no handrails.
27.	Interior stairs have handrails on one side only.
28.	An elevator available in the Infirmary and the Infirmary section is connected to the non-medical section.
37.	Ash trays and fire extinguishers project into the corridor and present a hazard to the blind.
52.	There are no sanitary facilities for each sex on each floor.
54.	The sanitary facilities are residential type.
55.	The dimensions of the facilities' standard water closet are: Width: 26" Length: 46" Seat Height: 17"
G.	A construction laboratory was surveyed.
71.	Work stations have a 24" knee opening.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
H.	The Reading Room was surveyed.
Holden Hall:	
11.	The building entrance surveyed is located on the North side of the building at the East end.
27.	The handrails and handrail extensions of the interior stairs do not conform. Handrail is 34" high and are on one side only.
37.	Ash trays, drinking fountains, fire extinguishers, coat hooks, radiators, and furnishings project into the corridors and present a hazard to the blind.
41.	Room identification signs are usually located on the door.
52.	There are no sanitary facilities for each sex on each floor.
54.	The direction of door openings, width, handrails, and other demensions of the water closets do not conform. Water closet door is 26" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 31" Length: 45" Seat Height: 16"
57.	Floor mounted urinals are not level with the facilities' main floor.
63.	Several classrooms use conference tables, most with 29" or less clearance.
G.	The Language/Music Learning Laboratory was surveyed.
70.	Laboratory stations have fixed seats and narrow 22" aisles. Side shields prevent operation of station from aisles.
Home Management House:	
9.	The walk is broken up in places.
11.	The building entrance surveyed is located on the North side of the building.
19.	The tread of the exterior steps does not conform. Exterior

TABLE III (continued)

QUESTIONS REFERENCED	NOTES

steps have no handrails.

27. The handrails and handrail extensions of the interior stairs do not conform.

37. Doors and furnishings project into the corridor and present a hazard to the blind.

52. There are no sanitary facilities for each sex on each floor.

54. The sanitary facilities are residential type.

55. The dimensions of the facilities' standard water closet are: Width: NA Length: NA Seat Height: NA

Hutcheson Hall:

9. There are no walks. The parking lot adjoins the entrance. Questions 5 to 10 are in reference to the parking lot.

11. The building entrance surveyed is located on the East end of the building, double doors face parking area.

26. Interior stairs can be passed by using the freight elevator.

27. The handrails and handrail extensions of the interior stairs do not conform. Handrail is 37" high and are not on both sides.

28. A freight elevator provides an alternate means of access to the ground level and upper four floors.

33. The elevator cab is 55" by 50", controls-69" at mid panel.

37. Ash trays, fire extinguishers, coat hooks, and stand pipes project into the corridor and present a hazard to the blind.

54. The width, handrails, and other dimensions of the water closets do not conform. The water closet door is 23" wide.

55. The dimensions of the facilities' standard water closet are: Width: 28" Length: 54" Seat Height: 15"

57. Floor mounted urinals are not level with the facilities' main floor.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
G.	The Statistics Laboratory was surveyed.
71.	Graduate study carrels have 27" doors, 27" tables.
H.	The Statistics Library was surveyed.
Lane Hall:	
9.	The walk is broken up in places.
11.	The building entrance(s) surveyed was the main entrance(s). Each entrance serves sections which are not always interconnected.
19.	There is one exterior step onto the porch.
27.	The surface, handrails, and handrail extensions of the interior stairs do not conform. Handrail is 35" high and the non-skid surface is worn.
37.	Drinking fountains, coat hooks, ash trays, vending machines, and stairways project into the corridor and present a hazard to the blind.
52.	There is not one sanitary facility for each sex on each floor.
54.	The width and handrails of the water closets do not conform. There are no doors on the men's water closet.
55.	The dimensions of the facilities' standard water closet are: Width: 30" Length: 36" Seat Height: 17"
63.	Classrooms are used for ROTC only and there are no handicapped in the program.
Lane Stadium:	
9.	The walks are gravel.
11.	The building entrance surveyed was the gate adjoining the parking area located on the North side near the bleachers.
25.	The press box was not available for inspection.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
27.	The rise, handrails, and handrail extensions of the interior stairs do not conform. The stadium steps have a very deep angle.
33.	The elevator was secured for the winter, therefore, unavailable to check for specifications.
37.	Telephone booths and support columns project into the corridor and present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 32" Length: 58" Seat Height: 16"
McBryde Hall:	
11.	The building entrance surveyed is located on the South/West corner of the building facing Patton Hall (ramp to lower level).
16.	The run lengths, landings, and curbs of the ramp do not conform. The lengths are 54" with a rough stone wall, minus a curb.
19.	Exterior steps have no handrails.
27.	Interior step. Handrail is 36" high.
28.	An elevator is available as an alternate means of access.
37.	Trash cans project into the corridor and present a hazard to the blind.
41.	Room identification signs are located above the door.
52.	There are handicapped sanitary closets on two of six floors.
54.	Some water closets are available for the handicapped, but not in every sanitary facility nor on every level. Standard water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 26" Length: 58" Seat Height: 16"

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
63.	Most tables provided in the classrooms have less than 30" underside clearance.
64.	There is a secondary lecture hall: Fixed seating 13" between seats. Level areas provided. No writing surfaces provided.
G.	The Geography Laboratory was surveyed.
70.	Computer Center: Work stations are too low and some areas would be difficult to reach.
71.	Work stations have less than the 30" minimum underside clearance.
Memorial Chapel:	
11.	The building entrance surveyed is located on the South/West side facing the Drill Field.
19.	Exterior steps do not have handrails on both sides.
27.	The nosings of the interior stairs do not conform.
37.	Chairs are placed on the walkway and present a hazard to the blind.
54.	The direction of door openings, handrails, and other dimensions of the water closets do not conform. Water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 36" Length: 54" Seat Height: 16"
Memorial Gymnasium:	
11.	The building entrance surveyed is located on the North/East side of the building facing Eggleston Dormitory.
16.	The run lengths, handrails, and curbs of the ramp do not conform.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
27.	Some interior stairs conform.
28.	An elevator and a ground level entrance on the South/East side of the building are available as alternate means of access.
30.	The elevator will not serve the fourth floor of old building (front section).
37.	Ash trays and fire extinguishers project into the corridors and present a hazard to the blind.
52.	Some water closets are available for the handicapped but not in every sanitary facility, nor on every level.
54.	The standard water closet doors are 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 34" Length: 56" Seat Height: 16"
H.	The study carrels were surveyed.
82.	There are four steps in second floor corridor between the elevator and the basketball courts and handball/pool/gymnastics observation areas. This area can be reached via a ground level building entrance South/East side (See #25). Archery practice areas requires the negotiation of at least five steps for access.
Newman Library:	
11.	The building entrance surveyed is located on the South/West side of the building facing the Drill Field. There are turnstiles in the main entrance, width-16".
19.	Exterior steps have no handrails.
27.	The nosings, handrails, and handrail extensions of the interior steps do not conform. Handrails vary 32" to 34" in height.
28.	A freight elevator is available as an alternate means of access. The rare book library in the basement is not accessible except by stairs.
35.	The elevator doors open vertically, are heavy, therefore are difficult to lift open or close.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
37.	Fire extinguishers, furnishings, and reference shelves project into the corridors and present a hazard to the blind.
54.	The direction of door openings, width, and handrails of the water closets do not conform.
55.	The dimensions of the facilities' standard water closet are: Width: 31" Length: 56" Seat Height: 17"
Norris Hall:	
11.	The building entrance surveyed is located on the West side of the building facing Burruss Hall.
27.	The handrails and handrail extensions of the interior stairs do not conform. Handrail is 35" high.
28.	A freight elevator is available as an alternate means of access.
33.	The elevator cab is 54" by 66", 60" from floor to center of control panel.
37.	Ash trays, fire extinguishers, and coat hooks project into the corridors and present a hazard to the blind.
41.	Room identification signs are usually located on the door.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform. Water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 31" Length: 56" Seat Height: 17"
64.	The lecture hall has some steps prior to every entrance.
G.	The Sanitary Engineering Laboratory was surveyed.
71.	Work stations have no knee spaces.
Owens Dining Hall:	
9.	The walks are gravel.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
11.	The building entrance surveyed is located on the South/West corner of the building facing the parking areas.
16.	The handrails and curbs of the ramp do not conform.
19.	The tread and handrails of the exterior steps do not conform.
27.	Interior stairs have no handrail.
37.	Drinking fountains, ash trays, and furnishings project into the corridors and present a hazard to the blind.
54.	The direction of door openings, handrails, and other dimensions of the water closet do not conform. Water closet door is 25" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 36" Length: 56" Seat Height: 16"
G.	The art work area was surveyed.
70.	Art Gallery is in basement level, four interior steps down.
I.	The main dining room was surveyed.
75.	Owens Dining Hall has four dining areas. Most accessible is "C" room located in the South/West corner of the building. Main entry to the dining area has narrow crowd control aisles. A side door is ramped for entry but is usually locked.
Pamplin Hall:	
11.	The building entrance surveyed is located on the North/West side of the building (rear, West most entry).
27.	The handrail extensions of the interior stairs do not conform.
28.	A freight elevator is available as an alternate means of access to most levels.
30.	Lecture hall requires negotiation of three steps for access.
35.	Elevator doors open vertically and are heavy, therefore, are difficult to lift open or close.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
37.	Drinking fountains, ash trays, fire extinguishers, coat hooks, and vending machines project into the corridors and present a hazard to the blind.
41.	Room identification signs are usually painted above the door.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform. Water closet door is 20" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 30" Length: 55" Seat Height: 16"
63.	Some tables are provided but aisles are too narrow for access.
Patton Hall:	
11.	The building entrance surveyed is located on the South/East side of the building.
26.	There are nineteen steps inside the main entrance. The learning resources and E. E. Machinery Laboratory entrances are prior to interior steps.
27.	Interior steps do not have handrail extensions.
28.	The rear entrance enters the second level, four exterior steps and steps on all approaching walkways.
37.	Drinking fountains, ash trays, coat hooks, and fire extinguishers project into the corridors and present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 24" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 34" Length: 52" Seat Height: 16"
57.	The floor mounted urinals are not level with the facilities main floor.
G.	The E. E. Machinery Laboratory was surveyed.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
70. Study Skills Laboratory:	
	Open spaces. Desks and tables under 30" clear. Some study carrels under 30" clear.
71. Work stations have tables 32" high with 6" aprons.	
Performing Arts Building:	
3. Parking spaces are unmarked.	
11. The building entrance surveyed is located on the South/East side of the building, facing the parking area.	
27. The surface, nosings, handrails, and handrail extensions of the interior stairs do not conform. The basement steps, to practice rooms, have no handrails.	
28. An alternate means of access is available to the basement from outside entrances, each with several steps.	
37. Furniture, fire extinguishers, storage boxes, and coat hooks project into the corridors and present a hazard to the blind.	
52. There are no sanitary facilities for each sex on each floor.	
54. The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Some sanitary facilities are residential type.	
55. The dimensions of the facilities' standard water closet are: Width: 43" Length: 42" Seat Height: 16"	
63. The classroom furniture is in jumbled order.	
G. The practice rooms were surveyed.	
70. The practice rooms are a sound proof room usually with a piano. All are in the basement which requires some negotiation of steps.	

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
Price Hall:	
11.	The building entrance surveyed is located on the South/West side of the building facing the parking area.
27.	Interior stairs have handrails on one side only.
37.	Coat hooks and fire extinguishers project into the corridors and present a hazard to the blind.
41.	Room identification signs are usually painted on the door.
54.	The direction of door openings, handrails, and other dimensions of the water closet do not conform. Water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 40" Length: 54" Seat Height: 16"
62.	Classrooms do not have a usable table with 30" underside clearance.
G.	The Entomology Laboratory was surveyed.
71.	Work stations have 24" knee openings.
Price House:	
3.	Parking spaces are unmarked.
11.	The building entrance surveyed is located on the South/East side of the building, entrance from Turner Street.
19.	Exterior steps have step tread of 11" and handrail on one side-34" high.
27.	The nosings of the interior stairs do not conform.
37.	Heat registers project into the corridor and present a hazard to the blind.
52.	There are no sanitary facilities for each sex on each floor.
54.	The sanitary facilities are residential type.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES

55. The dimensions of the facilities' standard water closet are: Width: 44" Length: 57" Seat Height: 16"

Randolph Hall:

11. The building entrance surveyed is located on the North/East end of the building, entrance facing Turner Street.

27. Interior stairs handrail varies 32" to 37" and are not continuous.

28. A freight elevator is available as an alternate means of access. The single door entrance on the North/West side has a small ramp. This door is sometimes locked. The freight elevator opens into the laboratories at the lowest level (ground). Access through this and various other laboratories to most parts of the lowest level.

35. Elevator doors open vertically and are heavy, therefore, are difficult to lift open or close.

37. Drinking fountains, ash trays, and fire extinguishers project into the corridors and present a hazard to the blind.

41. Room identification signs are usually located on the doors.

54. The direction of door openings, width, handrails, and other dimensions do not conform. Water closet door is 24" wide.

55. The dimensions of the facilities' standard water closet are: Width: 35" Length: 60" Seat Height: 16"

71. Most work stations have no knee openings.

H. The Reading Room was surveyed.

I. The Student Lounge was surveyed.

Rector Field House:

3. Parking spaces are unmarked.

11. The building entrance surveyed is located at the rear side of the building (North/West entrance) facing the parking area.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
38.	There is a 4" threshold step at all interior doors.
41.	Room identification signs are usually painted over the doorway.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 34" Length: 56" Seat Height: 16"
Robeson Hall:	
10.	Ramp provided into machine shop through which lower floor can be reached. This ramp is described by answers 10-15.
11.	The building entrance surveyed is located at the rear of the building, Southwest entrance North/West side.
16.	The ramp does not conform to slope, handrails, and curbs.
19.	The tread and handrails of the exterior steps do not conform. Steps have no handrails.
27.	The handrails and handrail extensions of the interior stairs do not conform. Handrail is 34" high.
28.	A freight elevator is available as an alternate means of access.
33.	The elevator is unlighted.
35.	The elevator doors open vertically and are heavy, therefore, are difficult to lift open or close.
37.	Ash trays, fire extinguishers, and coat hooks project into the corridors which present a hazard to the blind.
41.	Room identification signs are usually painted.
46.	Warning of reactor operation is only signal with both audible and visual warning.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 22" wide.

TABLE III (continued)

QUESTIONS REFERENCED — NOTES

55. The dimensions of the facilities' standard water closet are: Width: 32" Length: 55" Seat Height: 17"

63. There is an open space at the front of the classroom which is accessible.

G. The Undergraduate Physics Laboratory was surveyed.

71. Work stations have an underside clearance of 26".

85. Emergency shower has 6" sill and 36" wide entrance.

Sandy Hall:

11. The building entrance surveyed is located on the North/East side of the building facing the Drill Field.

19. The tread and handrails of the exterior steps do not conform. Handrails 32" above the step surface.

27. The surface and nosings of the interior steps do not conform. Non-skid surface is worn or absent.

37. Drinking fountains, ash trays, and fire extinguishers project into the corridor and present a hazard to the blind.

41. Room identification signs are usually located on the door.

52. There is not one sanitary facility for each sex on each floor.

54. The width, handrails, and other dimensions of the water closet do not conform. Water closet door is 24" wide.

55. The dimensions of the facilities' standard water closet are: Width: 34" Length: 52" Seat Height: 16"

Saunders Hall:

11. The building entrance surveyed is located at the East side of the building facing Hutcheson Hall.

27. Interior stairs do not have handrails continuous on both sides. Existing handrail is 34" high.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
30.	A freight elevator opens in private laboratories at every level. It could be used but would require co-ordination to assure that facilities would be unlocked.
33.	The elevator does not conform in that all controls are not 54" or less from the floor.
37.	Ash trays, fire extinguishers, and coat hooks project into the corridor and present a hazard to the blind.
52.	There is no sanitary facility for each sex on each floor.
54.	The width, handrails, and other dimensions of the water closets do not conform. Water closet door is 22" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 34" Length: 48" Seat Height: 16"
71.	Work stations have a 28" knee opening.
Security Building:	
3.	Parking spaces are unmarked.
9.	There are no walks, a parking lot adjoins entrance. Question 5 to 10 are in reference to this parking lot.
11.	The building entrance surveyed is located on the South/West side of the building facing the parking area.
19.	Exterior steps have a tread of 12", with handrail 35" high.
37.	Drinking fountains and ash trays project into the corridor and present a hazard to the blind.
D.	There are no public sanitary facilities.
54.	There are no public sanitary facilities.
55.	The dimensions of the facilities' standard water closet are: Width: NA Length: NA Seat Height: NA

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
Seitz Hall:	
9.	The walk is broken up in places along the North side of the building facing Price Hall.
11.	The entrance surveyed was the main entrance.
27.	Interior stairs have handrails 34" high and the non-skid surface worn.
28.	A freight elevator is available as an alternate means of access.
33.	The elevators lowest control is 54" high. Controls must be held to move elevator.
37.	Drinking fountains, ash trays, fire extinguishers, and coat hooks project into the corridors and present a hazard to the blind.
52.	There is not one sanitary facility for each sex on each floor.
54.	The closet length, handrails, and other dimensions of the water closets do not conform. Water closet door is 24" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 37" Length: 48" Seat Height: 17"
62.	Classrooms do not contain one accessible table or desk with 30" underside clearance.
70.	The shop areas are generally accessible although some work stations do not conform to the specifications in #62.
71.	Work stations in the Drafting Laboratory conform - others have low tables.
Shultz Dining Hall:	
3.	Parking spaces are unmarked.
9.	There are no walks out of the parking area.
11.	The building entrance surveyed is located on the South/West side of Shultz facing Lane Hall.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
19.	The handrails of the exterior steps do not conform.
27.	The handrails and handrail extensions of the interior steps do not conform.
28.	A freight elevator is available as an alternate means of access. There is an entrance at ground level but no walks to it. The freight elevator may be used to move from the upper to ground level-located in the food preparation area.
33.	The elevator cab is 56" by 79".
37.	Drinking fountains, trash cans, ash trays, bulletin board, and furnishings project into the corridor and present a hazard to the blind.
43.	All of the telephones are in booths.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform.
55.	The dimensions of the facilities' standard water closet are: Width: 30" Length: 58" Seat Height: 17"
I.	The snack bar area was surveyed.
Smyth Hall:	
9.	There are no walks, parking lot adjoins entrance. Questions 5 to 10 are in reference to this parking lot.
11.	The building entrance surveyed is located at the rear of the building, East end of Hutcheson Hall. All entrances to Smyth Hall have stairs, however Smyth Hall and Hutcheson Hall are connected on most levels.
27.	Interior stair handrail is 34" high.
28.	The fourth floor and the basement are accessible only by stairs.
29.	An elevator for floors 1-3 is available in Hutcheson Hall.
37.	Drinking fountains, ash trays, fire extinguishers, coat hooks, and stand pipes project into the corridors and present a hazard to the blind.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
54.	The width, handrails, and other dimensions of the water closet do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 29" Length: 46" Seat Height: 16"
63.	Classrooms are crowded with no defined aisles or clear spaces.
G.	The Soils Laboratory was surveyed.
71.	Work stations have no knee openings and the underside clearance is 29".
Squires Student Center:	
3.	Parking is horizontal.
11.	The building entrance surveyed is located on the North/West side of the building facing the Mall area.
27.	Interior stairs do not have handrails continuous on both sides.
28.	An elevator located near the Craft Shop is available as an alternate means of access.
33.	The elevator cab is 44" by 72".
37.	Ash trays and furnishings project into the corridors and present a hazard to the blind.
43.	All telephone booths are not accessible as they are too small for entry.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform.
55.	The dimensions of the facilities' standard water closet are: Width: 33" Length: 56" Seat Height: 16"
E.	A meeting room was surveyed.
F.	The main auditorium was surveyed.
G.	The Photo Dark Room was surveyed.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
71.	Work stations in the Photo Dark Room are usable, but 22" door prevents access.
H.	The Browsing Room was surveyed.
77.	Vending machines surveyed are located in the self-service area.
Solitude:	
3.	Parking spaces are unmarked.
11.	The building entrance surveyed is located on the North/East side of the building.
26.	Interior information is estimated. The facility was secured during the survey.
27.	The nosings and handrail extensions of the interior stairs do not conform.
Veterinary Science Center:	
3.	Parking spaces are unmarked.
11.	The building entrance surveyed is located on the North side of the building.
27.	Interior stairs do not have handrails continuous on both sides.
28.	A freight elevator is available as an alternate means of access. This building is connected to the Anaerobe Laboratory.
33.	The elevator cab is 46" by 58" with 58" from center of the control panel to the floor.
37.	Items stored in the corridors present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 31" Length: 56" Seat Height: 16"

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
71.	Work stations do not have 28" knee openings.
Whittemore Hall:	
3.	Parking spaces are unmarked.
9.	The walks are gravel from Lot #19 to the building.
11.	Two building entrances were surveyed. They are located at the North/East side of the building facing Lot #19 and North/West side of the building adjacent to Lot #20.
27.	Interior stairs do not have handrails continuous on both sides. Handrail is 36" high.
29.	Elevator shafts have been installed, but no elevators.
37.	Drinking fountains, ash trays, and coat hooks project into the corridors and present a hazard to the blind.
41.	Room identification signs are usually located on the doors.
54.	The direction of door openings, width, handrails, and other dimensions of the water closet do not conform. Water closet door is 23" wide.
55.	The dimensions of the facilities' standard water closet are: Width: 32" Length: 58" Seat Height: 16"
G.	The Electronics Laboratory was surveyed.
71.	Work stations underside clearance varies from 27" to 32".
H.	The Conference Room was surveyed.
Williams Hall:	
11.	The building entrance is located on the North/West side of the building facing Pamplin Hall.
27.	Interior stairs do not have handrails continuous on both sides.
28.	Freight elevators are available as an alternate means of access.

TABLE III (continued)

QUESTIONS REFERENCED	NOTES
33.	Elevator control height does not conform.
35.	Elevator doors open vertically and are heavy, therefore are difficult to lift open or close.
37.	Drinking fountains, ash trays, fire extinguishers, and coat hooks project into the corridors and present a hazard to the blind.
54.	The direction of door openings, width, handrails, and other dimensions of the water closets do not conform. Water closet door is 22" wide.
55:	The dimensions of the facilities' standard water closet are: Width: 29" Length: 56" Seat Height: 16"

Some persons with handicaps who responded to the questionnaire or were included in the interviews were persons with heart conditions, skin conditions, aging factors and poor coordination.

Several persons with temporary handicaps responded to the questionnaire and/or were interviewed. These temporary handicaps invariably involved broken, sprained, or otherwise injured limbs. The average length of time for being handicapped for those persons who were permanently handicapped was ten and one-half years. The average length of time for being temporarily handicapped was between three and four weeks. Only two respondents had received training, other than physical therapy, for coping with their handicaps.

Nearly all of the persons contacted through the questionnaire had ambulatory handicaps, and therefore the focus of the comments in response to questions four, five, and six primarily dealt with relief from these types of handicaps. Parking was the predominate concern. As shown in Table IV, seventy percent of the questionnaire respondents made some comment concerning the parking situation at the University. Currently, there is no alternative to automotive transportation at Virginia Polytechnic Institute and State University. As previously discussed, close-in parking spaces specifically for handicapped use were found to be non-existent. Closely related to the respondents concern about adequate parking was the third most often mentioned problem, the physical size of the campus. The distance across the University campus was too great to be covered by a handicapped person in the ten minutes allowed between classes. The alternative would be to use an automobile but again there are no parking areas reserved

Table IV

Summary of Response to Questionnaire Concerning the Access of Virginia Polytechnic Institute and State University to the Handicapped

TABLE IV

1. Indicate which description below best describes your handicap.

0	A.	Confined to wheelchair
20	B.	Difficulty in walking
0	C.	Blind
0	D.	Deafness or speaking handicap
1	E.	Poor coordination
1	F.	Problems due to age
4	G.	Temporary handicap.

2. How long have you been handicapped? (If temporary, given an estimate as to how many months the handicap interfered with your normal activity) M Permanent = 10.5 years; M Temporary = 3.2 years

3. Did you receive special training, other than physical therapy, for dealing with your handicap? Yes 2 No 24

4. Considering the factors of (A) access, (B) your handicap, and (C) V.P.I. & S.U., what has caused you the greatest problem? Please list the most significant factor first and the least significant factor fifth.

   A. Parking and parking related (70%)
   B. Exterior/interior steps (54%)
   C. Size of the campus (39%)
   D. Walk condition including proper cleaning (27%)
   E. Absence or condition of stair railings (23%)
   F. Slick floors (15%)
   G. Standing in lines (12%)

5. Giving consideration that there is virtually no money available at this time, what are some suggestions you would make to the University administration to increase V.P.I. & S.U. accessibility to handicapped persons? (Policies, architectural and site changes, etc.)

   A. Parking space provided for handicapped (50%).
   B. Class scheduling and scheduling related (23%).
   C. Install and/or repair stair railings (16%).
   D. Single comments:
      a. Removal of turnstiles in Newman Library and Bookstore.
      b. Allow use of parking meters by persons with handicap decal.
      c. Remodel Patton Hall to increase access.
      d. Make doors easier to open.

6. Giving consideration that if a reasonable budget were available to make some architectural or site changes in the University

TABLE IV (continued)

facilities, what are some changes you would suggest?

A. Installation of elevators in several buildings (46%).
B. Installation of ramps to by-pass campus steps and provide entrance to buildings (27%).
C. Installation of curb cuts (12%).
D. Installation of automatic doors (12%).
E. Pave parking areas and several walks (8%).
F. Single comment: Remodel restrooms to increase access and usability.

7. Have you personally worked out some method of circumventing existing architectural and site barriers at the University? What are they?

A. Use of freight elevators (12%).
B. Use of special parking decal (12%).
C. Not going to class or other (8%).

for the handicapped. The interviewees also frequently mentioned concern about the parking problem and the campus size.

Suggested solutions to these two related conditions varied. The obvious and most often mentioned being the establishment of close-in parking spaces specifically designated for handicapped use. Other suggestions included creation of new parking lots, scheduling of classes for handicapped in buildings which were closer together, and leaving classroom doors unlocked so that it would be unnecessary to disturb the class when arriving late.

The second problem most often mentioned by the respondents and interviewees was in reference to interior and exterior steps. The emphasis of these comments was on the quanity of steps on the campus. Suggestions for solving the problem included grading and installation of ramps, installation of curb cuts, class scheduling to assure that the handicapped were in classes meeting on ground level, and the installation of elevators. The blind persons considered exterior steps their primary difficulty with the site. The specific problem was the lack of warning of the existence of steps, causing a tripping hazard. One proposed solution was the texturing of the walkway before and after a flight of exterior steps.

The fourth most often mentioned problem concerned the condition of the campus walks. Respondents mentioned the existence of icy, muddy, gravel, or broken walkways. In most cases the solution suggested was to pave and repair the walks and the related parking areas.

The respondents fifth most often mentioned problem concerned the lack of stair railings on exterior staircases. A related comment

noted the poor condition of some interior stair railings. Solutions offered included the installation of exterior railings, the sanding and refinishing of some interior railings (direct reference to Price Hall in one case), and the requests not to wax and polish interior handrails.

Other items discussed by the questionnair's respondents and the handicapped who were interviewed included the access problems caused by the existence of the turnstiles in Newman Library and the Bookstore, slick floor surfaces, hard to open doors, and a general lack of tactile information on the University campus. Recommended solutions were as varied as the problems.

To determine if some of the handicapped might have developed a unique solution to access related problems, they were asked if they had worked out some method of circumventing existing architectural or site barriers. Two comments were worthy of noting. First, some persons indicated that their solution was not to go to classes, meetings or other activities, and in one instance the Health Service because of the difficulty of moving across the campus or finding parking space. The second comment criticized custodial workers for "hasseling" the person when they used freight elevators.

In summary, the predominant concern of the University's handicapped was parking. This primary problem was followed by concern over the numerous exterior and interior steps and their lack of proper handrails. The questionnaire and interview data are summarized in Table IV and part one of Table V.

Table V

List of Quotations, Paraphrased Comments, and Information Developed From Interviews With Students and Staff

TABLE V

RESPONSES FROM THE HANDICAPPED

1. The University should "designate a minimum number of handicapped spots in each lot".

2. "Allow places to park around campus for handicapped. . . and then enforce those regulations".

3. The reserved parking space behind Cowgill Hall usually has some non-handicapped person using it.

4. "Parking stickers aren't worth a damn, if parking space is [not] available".

5. Student parking areas are to remotely located.

6. "I really would like to see parking facilities for off-campus students at the Infirmary. The meters on College Avenue and the Mall don't hold enough money for the time it sometimes takes at the infirmary. If you leave to put in more money, your name gets called to see a doctor and you're gone and then you lose your place in line. Sometimes I've just left when I needed to see a doctor and went back another day, if at all."

7. Some special parking should be designated for the handicapped at special events on campus.

8. Parking lots need to be paved as do several walks.

9. I have problems getting to class, the campus is so big.

10. "It's a long way to walk."

11. Sidewalks should be kept clear of mud, snow and ice.

12. Curb ramps need to be installed at crosswalks.

13. "Lots of stairs."

14. The staircases should be better constructed, they are difficult to ascend and descend.

15. There are no handrails on stairs.

16. It is unnerving to be walking the campus and unexpectedly encounter a set of steps (comment from a blind person).

17. There is a need for the blind to be escorted around campus to become orientated and to select routes.

TABLE V (continued)

RESPONSES FROM THE HANDICAPPED

18. Floors are slick when wet, rugs should be placed inside entrances.

19. Ramps are needed to circumvent campus steps and building entrances which are not at grade.

20. Newman Library, Dietrick Dining Hall, Patton Hall, and the Bookstore entrances are not fully accessible.

21. "There are too many stairs."

22. Some buildings need elevators.

23. Elevators need to be marked for handicapped use.

24. "I use service elevators, however, receive a hassle even when I explain."

25. Freight elevator doors should be motorized.

26. Replace or repair several interior bannisters "I pick up a splinter at least once a week".

27. Some doors are difficult to open.

28. Staircase bannisters should not be waxed.

29. I have run into water coolers in hallways (comment from a blind person).

30. The restrooms need to be equipped for the handicapped.

31. Classes with handicapped students should be scheduled for the ground floor.

32. It was embarrassing to disturb a class by arriving late and finding the classroom door locked.

33. Special scheduling of classes or taped lectures should be provided for handicapped use.

34. "I hope that our governor will realize the necessity of appropriating the long needed funds [for] this and other worthwhile projects."

TABLE V (continued)

RESPONSES FROM ADMINISTRATIVE STAFF

35. There is no policy relating to access and the handicapped at Virginia Polytechnic Institute and State University.

36. The concept of "reasonable accomodation" guides the policy for providing an accessible, safe, workplace for employees.

37. "You don't have the problem here because there are not that many here. . . [it may be that] there's not that many here because we got the problem."

38. There is no administrative committee or other body who have the specific responsibility for assisting the handicapped.

39. Researcher's interview comment: In observing the campus it did not appear that the idea of the handicapped and access was any kind of focal point of attention before the Ad Hoc Committee was established. "I think that's true see, the campus up until some time ago was a military orientation." We have only "recently become more a University as such".

40. The University has no architectural plan for removing existing barriers from the campus.

41. The University officers plan from the manual provided by the Division of Engineering and Buildings.

42. The Division of Engineering and Buildings review the building plans of the University.

43. "The real legal responsibility of the thing lies with the architect. That's who we rely on because that's what we hire him for, to make sure that buildings meet all state codes and this, as far as we're concerned, is a state code."

44. Buildings complied with all applicable standards when the final drawings were completed.

45. Researcher's interview question: How does a building like the Bookstore get built after the effective date of the state law? "That I can't answer."

46. It is possible that the Division of Engineering and Buildings have so many specifications to review that the one's for the handicapped are overlooked.

47. The inspector attached to the University is responsible for seeing that the construction company complies with the architectural specifications.

TABLE V (continued)

RESPONSES FROM ADMINISTRATIVE STAFF

48. Money is limited.

49. Capital outlays are funded for specific projects.

50. "Anything over ten thousand dollars has to be submitted and approved by the General Assembly."

51. No money has been available for this type of project. The current budget has no money specifically reserved for making the campus accessible to the handicapped.

52. "Our present master plan, which was done three years ago, is out of date because we simply will not get the kinds of resources to put up the kinds of buildings [the plan] envisioned."

53. The University master plan is the responsibility of the University Building Committee.

54. There are no Federal guidelines relating to employment for the handicapped. It would not be practical to establish local policies until such guidelines are established.

55. Handicapped workers are actively recruited.

56. Workers are selected on the basis of ability to do a job.

57. "I think the biggest problem a handicapped person would have on this campus is getting around, the sheer size of it."

58. Reserved parking may not be an answer. The police spend most of their time writing tickets now, and people still park illegally.

59. It has been determined that it is impractical to install left hand desks in classrooms, as a right handed person forced to use a left handed desk would have difficulty coping where a left handed person forced to use a right hand desk is used to coping with awkward classroom furnishings.

60. The Architecture Department is not permitted, by law, to become involved in campus design.

61. The space crunch is overriding all other concerns right now. "We're fifty to sixty million dollars short of space needs and the State Legislature isn't going to fund anything near that. . . How can you serve one priority over another when we're in that kind of situation?"

TABLE V (continued)

RESPONSES FROM ADMINISTRATIVE STAFF

62. "This is the first time I considered that we may have responsibility for the handicapped."

63. "It's really hard to get the public institutions to set down some priorities."

64. ". . . it's hard, really, to see the State of Virginia saying that every one of our Universities are going to be equipped for the handicapped no matter what it costs." . . . I can see where they take one university and provide the handicapped a place to go.

RESULTS OF INTERVIEWS WITH ADMINISTRATIVE STAFF

The interviews with the administrative staff are summarized in the second part of Table V. These interviews provided some insights into the University's fiscal structure as it related to the site and facilities. There were two major funds which effect site and facility development at the University, Operation and Maintenance and Capital Expenditures. Virginia Polytechnic Institute and State University is a public University without a large endowment or gift fund. Approximately fifty percent of the University's total operational funds and virtually all of the capital funds come from appropriations by the state legislature. As can be seen in Table I the total operational funds expended in the 1974-1975 fiscal year were $93,776,178. Of this, the portion allotted to the Operation and Maintenance of the Physical Plant was $6,149,619. Seventy percent of these monies was used for salaries and an additional twenty percent was used for fixed expenses. There is normally minimal elasticity in the Operation and Maintenance budget for unbudgeted projects, but a nominal amount of money is sometimes available.

The Operations and Maintenance funds were requested by the University's president from the state legislature along with the other operating monies. Once the operating money reached the University the manner in which it is expended was somewhat discretionary. Therefore, if there were elasticity in the Maintenance and Operations budget, and local discretion in the monies use, some of this money might be applied to solving the problem of architectural barriers on the University campus.

All University money designated for capital outlays must be approved on an individual basis by the state legislature. The division point between Maintenance and Operations expenses and capital outlay expenses was approximately ten thousand dollars. As previously discussed the anticipated capital expenditures in the three bienniums 1972 to 1978 were $59,795,808, $29,069,100, and $28,008,855 respectively. Unfortunately, the economic conditions prevalent in the United States and Virginia since 1972 caused the Virginia legislature to severely reduce capital outlay appropriations. Of the total capital development which was to be completed by the end of the 1976 biennium, only $8,662,978 was finished. The projects completed were the addition and renovation of Memorial Gymnasium, construction of the Bookstore, addition of the Auditorium to McBryde Hall, and the extension of Stanger Street to Price's Fork Road.

The slowdown of the University's facility development caused severe space problems. The current estimates were that the University is one million square feet under current needs. The first priority in the remaining construction was the addition to Newman Library. Efforts were extensive to press this need upon the 1976 meeting of the state legislature. However, the capital outlay money extended to the University amounted to approximately $500,000, the lowest amount in several years. This money was to be used to improve the University power plant in order to bring it into conformance with environmental standards and repair some windows in University buildings. In spite of the developmental slowdown the University still intends to continue with the Directional Plan of Development but in a longer time frame.

The problem of obtaining capital outlay money will effect the handicap's accessibility to campus. Cost estimates to make the existing campus buildings totally barrier free approximated four million dollars. In the researcher's opinion this estimate was reasonably accurate as the amount proportionately similar to that which was estimated necessary to convert Radford College, the closest college to Virginia Polytechnic Institute and State University, to a totally barrier free campus. Capital outlays of this kind can not be considered feasible given the current economic and political climate. The money for building or site alterations designed to increase the campus's accessibility to the handicapped would either have to come from the Operations and Maintenance fund or be incorporated into the major site and building renovations outlined in the Directional Plan of Development.

Another process discussed in the administrative staff interview was the current procedure for having buildings constructed on the Virginia Polytechnic Institute and State University campus. The building process centers around the Directional Plan of Development, 1972 which outlined the parameters of campus development. The implementation of the plan is the responsibility of the University Building Committee. In the planning of new construction, the Building Committee would represent the University and serve as the client to the architect and various governmental agencies which become involved in the process. The Building Committee would establish a sub-committee for any building to be constructed. This sub-committee would have as members, representatives from the departments which would be using the building.

The first legislative appropriations for a new building were usually for initial planning and drawings. The sub-committee would hire an architectural firm to produce these preliminary plans and drawings. Once they were produced and approved by the University Building Committee approval would also have to be gained from various governmental agencies such as the State Art Commission, Environmental Agency, and Division of Engineering and Buildings. Once approval from these agencies was obtained, the appropriations for the development of working drawings would be requested. When granted, the working drawings would be developed by the architect and again these drawings must be approved by the University Building Committee and the various governmental agencies. When this second phase was completed appropriations would be requested to begin construction of the building. The University Building Committee would then obtain bids for the buildings construction and hire a contractor. An inspector from the planning section of the Buildings and Grounds Office of the University would work with the contractor to assure that the building conforms to the approved plans and specifications.

From the standpoint of assuring access for the handicapped this process had two critical points. The first when the architect drew the working drawings and second when the drawings were reviewed by the Division of Engineering and Buildings. The architects work would be guided by the state building code. The state of Virginia has adopted the code established by the Building Officials and Code Administrators International, Inc., more commonly known as the BOCA Code. The BOCA Code is periodically revised and the version of the code which became

effective in Virginia on April 1, 1976 was the first issue of the code which included standards for the handicapped. Consequently, before this date the architect would have had to have a singular awareness of the problems of access for the handicapped or they would be likely to produce drawings based on a building code which lacked provisions for handicapped.

As discussed in the review of literature, Virginia adopted a state law dealing with access to public buildings in 1970 and the Division of Engineering and Buildings drafted specifications to be applied under the law. This Division reviews the working drawings for a public building and are charged with seeing to it that the drawing conforms to the standards. It was at this point that architectural features not conforming to the Virginia guidelines for access were to be screened out of the drawings. The data from the buildings constructed or renovated since 1970 indicated that the screening process has not been fully efficient. There are two reasons which were offered as explanations for this situation. First, the Division of Engineering and Buildings had numerous standards to check and may have overlooked aspects of the accessibility standards. Second, the working drawings may have been approved before the effective date of the Divisions accessibility specifications. Several administrative interviewees emphasized that the University buildings conformed to the codes which were applicable during the final planning stages for the buildings.

In summation, the responsibility for assuring that the new University construction is barrier-free rested with the Division of

Engineering and Buildings. Funds for making currently existing buildings barrier-free were minimal. There was no specific architectural plan or policy of the University for assuring barrier-free construction in future buildings. There have not been capital outlay funds designated for this specific purpose in the past and the current economic problems will limit any possibility for making such requests in the future. The capital outlay priorities of the University will be directed toward relieving a critical space problem although some operations and maintainance money may be available for minor projects. The administrative staff interviewed varied as to their individual perceptions of the problems of the handicapped and access at the University.

In the case of four of the persons interviewed the contact with the researcher or the Ad Hoc Committee for the Removal of Architectural Barriers to the Handicapped provided the administrators first exposure to the access problem in a broad context. The University, especially the Department of Buildings and Grounds, has in the past reacted to individual problems of handicapped students. For example, there have been handrails installed on some exterior steps and small ramps have been installed to circumvent threshold steps. In each of these instances help was provided for an individual, not the handicapped as a group.

Most of the University administrators interviewed believed that the primary problem the handicapped would have on the campus was covering the distance between the various buildings. They pointed out that handicapped parking spaces may not solve the distance problem

as there was keen competition for existing parking spaces and the spaces reserved for the handicapped would be poached. In each case the administrator indicated that personal empathy must be tempered with the reality of scarce resources.

In 1968 the United States Congress expanded the Civil Rights Act to include the handicapped. The Civil Rights Act required non-discriminatory personal practices for protected classes. No specific Federal guidelines were established to indicate which policies were discriminatory and which were not in relation to the handicapped. Institutions such as Virginia Polytechnic Institute and State University were required to make "reasonable accomodations" to a handicapped employee. What was considered reasonable was difficult to determine. Reasonable accomodation might include relocation of office space or installation of a special telephone but would not involve the installation of an elevator. The worker's safety was also considered a part of reasonable accomodation. It should be noted that both the University Equal Employment Office (EEO) and the Office of Occupational Health and Safety were recently established and were still in the initial development phase of their operation. Therefore, both of these offices were primarily reacting to complaints rather than initiating investigations. The E. E. O. Office regularly advertised openings with the State Rehabilitation Service to recruit handicapped workers. Several handicapped were employed at the University and it was the researcher's impression that the ability to do the job was the basic hiring criteria. There was no department, office, or official group on the University campus, except the Ad Hoc Committee, focusing

directly upon the problem of accessibility of Virginia Polytechnic Institute and State University to the handicapped.

The University's Architectural School is one of the finest in the United States. A pool of fifteen hundred deans of professional schools ranked the University's Architectural school seventh nationally (Starchek, 1976). Established in 1964 the rapid development of the architectural school was attributed to a unique educational format. All the college courses were organized as exploratory laboratory experiences. Students were formed into work groups centering around a specific design problem. The faculty became resource people for exploring solutions to the design problems. There were no class meetings, projects, or drawing board criticism as was normally found in regular architectural programs. One architecture project group was developing models of household plumbing fixtures for use by the handicapped.

In discussing the education of architects and the needs of the handicapped with the architectural school faculty, two distinctive educational methodologies appeared. The first education method centered around making architectural students familiar with the capabilities of handicapped persons and relying on this knowledge to result in accessible architectural designs. The second method suggested establishing fixed standards as guidelines to be applied in the architect's design. As previously noted, several architectural schools were working on synthesizing experiments to make architectural students aware of the needs of the handicapped. Likewise the development of various fixed standards continued. The best approach is yet

to be demonstrated.

SUMMARY

The study found that Virginia Polytechnic Institute and State University was not a fully accessible University. The primary problem areas were:

1. The crowded parking situation and lack of spaces designated for handicapped us.

2. Lack of curb cuts and other modifications which would reduce the site to a common level.

3. Numerous interior and exterior steps most lacking warning strips and handrails.

4. Old multi-story buildings which lack ground level entrances or elevators.

5. Lack of sanitary facilities in University buildings suitable for use by handicapped persons.

These primary problem areas were supplemented by numerous minor ones. None the less the access problem at the University was better than casual observation would lead one to conclude. Also, while the cost to make the campus totally barrier free is prohibitive, significant improvement can be made for relatively minor amounts of money.

The question often arose as to the merit of spending large sums of money for the benefit of forty to fifty handicapped students and faculty. It must be pointed out that this question is reversible. That is, could it be that there are only forty to fifty handicapped students at the University because money has not been spent to reduce

architectural barriers? Would these numbers increase if the investments were made?

Chapter 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS FOR FURTHER STUDY

The problems of the physically handicapped and architectural barriers has been a growing international, national, and University concern. Handicapped citizens are frequently "walled out" of public buildings because of thoughtlessness of design. The handicapped have the right of access to public buildings. Because Virginia Polytechnic Institute and State University is a public university, in fact and tradition, it has a responsibility to assure the accessibility of the campus to all who wish to use it. The first step in remeding the access problem at the University level would be to inventory the architectural barriers in the campus buildings and on the University site and to assess the current status of other factors effecting access at the University. The purpose of this study was to examine the problem of access and the handicapped at Virginia Polytechnic Institute and State University by answering these four research questions:

1. What was the current status of the problem of architectural barriers within the facilities of Virginia Polytechnic Institute and State University?

2. What was the extent of the activity, either proposed or in progress, for relieving the existing architectural barriers within

Virginia Polytechnic Institute and State University?

3. What was the extent of activity designed to prevent architectural barriers in future construction of University facilities?

4. What were the activities or programs which would be appropriate to provide for the removal of architectural barriers within current and future facilities of Virginia Polytechnic Institute and State University?

The study developed the data to answer these questions through three research methods. First, an architectural survey form was developed from existing forms, architectural specifications, and related literature. This survey form was used to inventory the architectural barriers in fifty-one academic and administrative buildings on the University's main campus.

The second method involved contacting handicapped students and staff at the University in order to obtain their viewpoint concerning problems associated with access at the University. The contact was made by a mailed questionnaire and through personal interviews.

The third method involved interviewing various members of the University staff to determine the process for making the campus accessible to the handicapped. A second purpose of these interviews was to determine if funds would be available to support the process of making the University accessible, and to determine the experience and perceptions of administrative staff concerning problems of access. The data gathered through these research methods were used to answer the four research questions posed by the study.

Response to Question One. What was the current status of the problem of architectural barriers within the facilities of Virginia Polytechnic Institute and State University?

Virginia Polytechnic Institute and State University is not fully accessible. No building or site feature on campus fully complies with either the ANSI Standards, the Virginia State Standards as outlined by the Division of Engineering and Buildings, or the criteria for the Symbol of Access. Most of the buildings of the University were built before full awareness of the architectural needs of the handicapped was developed. The most recent construction on the University campus demonstrated some awareness of these needs but failed to fully satisfy them.

Response to Question Two. What was the extent of the activity either proposed or in progress, for relieving the existing architectural barriers within Virginia Polytechnic Institute and State University?

There was virtually no activity directed toward relieving the existing architectural barriers within the University. The Faculty Senate recently formed an Ad Hoc Committee for the Removal of Architectural Barriers and charged it with the responsibility of surveying architectural barriers and developing cost effective solutions. This study was provided to the Committee to assist in the first phase of their charge. The Committee has as a member the supervisor of the planning section of the Division of Buildings and Grounds. Official administrative sanction of the Committee and its purpose could best be described as reluctant, but not absent. It appeared that the reluctance was not due to the administration's lack of sympathy, but a perceived

lack of resources.

Currently, no money exists for an extensive remodeling program for the removal of architectural barriers. Nominal funds might become available for minor alterations but major structural and site renovation will have to be incorporated with the renovations outlined in the Directional Plan of Development.

Administrative response to individual needs has lead to the removal of some architectural barriers. However, there was no generalized plan or policy directed toward total relief of the access problems caused by existing architectural and site barriers.

Response to Question Three. What was the extent of activity designed to prevent architectural barriers in future construction of University facilities?

Up to the time of the study the University relied on two outside agents to assure that the new construction was barrier free, the architect and the Division of Engineering and Buildings. The architects, in turn, relied primarily on the State Building Code. The State Building Code did not make specific provisions for the handicapped until 1976. The Division of Engineering and Buildings relied on the set of standards which it developed. The Division's standards for assuring access to handicapped persons was only one of several standards the Division oversees. This factor may have lead to insufficient application of the access standards to the new buildings on the University campus.

The University did not have a person or agency which screened architectural drawings and plans for architectural barriers. The

Ad Hoc Committee or the supervisor of the University Planning Office may choose to perform this role in the future.

Response to Question Four. What were the activities or programs which would be appropriate to provide for the removal of architectural barriers within current and future facilities of Virginia Polytechnic Institute and State University? This question is answered by the recommendations of the study.

RECOMMENDATIONS

Several recommendations for making the University more accessible can be made after reviewing the data. The following recommendations are divided into two categories. The first are those recommendations that reflect changes in policy and procedures. The second are recommendations for modifying buildings or site features. These recommendations form as complete a list as can be supported by the data gathered through the study. There was no effort to set priorities or to make the recommendations cost effective.

The recommendations are coded to indicate the data sources which support the recommendations. The recommendations are coded to the data summary tables presented in Chapter 4. The data codes follow the recommendation and are enclosed in parehthesis. The code indicates the table and item which supports the recommendation. If the recommendation has support other than that in the summary tables this is also noted. For example, the first recommendation is supported by data summarized in Table V, specifically items number thirty-five, sixty-two, sixty-three, and by the literature search.(see List of Tables,P.-vi)

Policy and Procedures Recommendations

1. The University Board should develop a written policy statement relating to access for the handicapped. In addition to a general statement relating to making the existing campus barrier free, a specific statement should be issued assuring that all new construction and major renovations discussed in the Directional Plan of Development will be barrier free and constructed at least to the Division of Engineering and Building Standards. Application of these standards to public buildings is required by law but a statement of intent to comply should be a part of the general University policy. Instructions to architects hired by the University Building Committee should include the policy statement above (V-35, 62, 63; literature search).

2. A notice or memo should be circulated to the University's instructional staff and classified employees suggesting that the handicapped be assisted in any way practical. Specific reference should be made to assistance in crossing threshold steps, to unlocking doors leading to convenient pathways, to assisting in the use of freight elevators, and to directions allowing use of desk telephones. The policy statement discussed in item one above should accompany the memo (II-20, 28 to 35, 43 to 45; V-24).

3. Some person or committee at the University should be specifically assigned the responsibility of screening architectural barriers from new construction. The Ad Hoc Committee or the supervisor of the planning office would probably accept this responsibility (V-34, 38, 40, 44 to 46).

4. The University should establish a centralized and complete record of handicapped students on this campus. This record would be of value to future research, and would allow contact of the handicapped by service organizations. These records would also be necessary if the class scheduling process is to be adapted to the needs of the handicapped (V-5B; researcher's experiences related to this study indicates no such record exists).

5. Several aspects of the class scheduling process could be revised to assist the handicapped. If the handicapped student can be identified in the student registration process, then courses with handicapped persons in attendance can be assigned to class rooms on the building's grade level or the handicapped student can be assigned to a class section meeting on grade level. With the University's computerized registration process this recommendation seems a reasonable possibility. Several handicapped students have worked this process out for themselves (II-25, 27; IV-5B; V-13, 14, 31 to 33).

6. Blind orientation walks should be arranged during the student orientation process. In-coming blind students should be identified and contacted in advance and a meeting established with a campus guide. This guide would orientate the blind student or faculty member to the University campus. Braille maps and instructions might be developed to assist in the orientation process (II-34, 37, 40, 45, 48; IV-4C; V-15 to 17, 29).

7. Vehicles displaying the special handicapped parking decals issued by the University Security Office should be allowed to use the metered parking spaces in the same manner as those vehicles with HP

license plates. Of particular note was the parking problem related to visiting Henderson Infirmary. The time required to see a doctor is longer than the parking time allowed on the parking meters on the Mall. It is unreasonable to insist that a person with a handicap go to the Mall or to the street and back to the Infirmary several times to "feed the meter" (II-1, 2; IV-4A, 5A, 5D; V-1 to 6).

8. University service and independent delivery vehicles which use the campus walkways as roadways should be required to maintain a vehicle speed less than that of the slowest walking pedestrian. Persons should be discouraged from operating vehicles on the walkways for the convenience of the individual. It is suggested that vehicles which are loading and off-loading heavy or numerous objects be the only ones permitted to use the walkways. The researcher has on numerous occasions observed University and private delivery vehicles being operated at high rates of speed on the campus walks while haphazardly overtaking and passing pedestrians. The possible legal ramifications resulting from striking a pedestrian while operating a motor vehicle on the walkway should be unpleasant to contemplate by a University administrator. This is a particular hazard to handicapped persons who might not see, hear, or be able to react to the vehicle operating on the walkway (researchers observation of general site).

9. Doors which limit or close off convenient routes of access should be unlocked. Two such doors would be the ramped entrance to Donaldson Brown Continuing Education Center and the auditorium doors in Burruss Hall. The auditorium in Burruss Hall provides a continuous

pathway from the most accessible building entrance near the rear of the new section to the single elevator in the front of the old section. (II-17, 28; V-32).

Architectural and Site Recommendations

1. Designate specific close-in parking spaces for handicapped use. The Virginia guidelines require one percent of the total parking spaces be available and assigned for this purpose. This would approximate one hundred and ten spaces. This number would not be necessary initially. Approximately twenty close-in parking spaces should be assigned for handicapped use. Existing regular sized parking spaces might be temporarily utilized if these spaces are located in the parking areas in such a manner that the driver's door of any vehicle using the parking spaces opens into an open area. For example, four handicapped parking spaces on the Drill Field Circle could be located adjacent to the two pedestrian crosswalks so that the crosswalk area provides the required open area. Other handicapped parking spaces should be established in parking areas three, nine, twenty-seven, twenty-nine, thirty-two, thirty-three, and in special parking areas such as the Donaldson Brown Center entrance circle and on Turner Street.

In addition to assigning parking space for use by the handicapped, an effective enforcement process must also be designed. A handicapped person needs to change parking spaces as they are required to move about the campus. A non-handicapped person will often park in a single parking space for the duration of the work day. Therefore,

while a healthy person requires a single parking space, a handicapped person would require as many as three spaces and two of these three will be vacant at any one time. The handicapped user relies on these parking spaces being vacant, consequently the space would be as useful when vacant as when occupied. To assure that handicapped parking spaces remain vacant and available for use by handicapped persons a monetary fine more stringent than the normal one dollar would be required. It is recommended that a tow-away zone be established and rigidly enforced, or as an alternative, a significant monetary fine be assessed to an unauthorized user of the handicapped parking spaces.

Handicapped parking space should also be provided at the University's special events. Five spaces close to the entranceway of the facility holding the event should be reserved for use by vehicles with HP plates or University handicapped parking decals (II-1 to 3; III-1 to 3; IV-4A, 5A, 5D; V-1 to 7, 57, 58).

2. A combination of a reserved parking area and an entrance ramp should be provided at Henderson Infirmary. The parking area at the rear of the building and the rear entrance would be most appropriate for this modification (II-1 to 3; III-10; IV-4A, 5A, 5D, 6B; V-1 to 6).

3. Gravel parking areas and walkways should be paved. Parking areas which are temporary should have a small part of the parking area paved along with the attached walkway. The paved area should be designated for handicapped parking only (II-4, 8, 9; III-4, 8, 9; IV-4D, 6E; V-8).

4. The central campus walkway designated AA on the University map in Appendix J, should be reduced to a common level. If this walkway was at a common level most of the buildings on the northwest side of the University campus would be accessible to the handicapped. This walk conveniently connects to parking area thirty-two which would provide off street parking for the handicapped. Reduction to grade would require demolition of the four staircases on the walkway length and installation of ramps. Several other walkways, particularly in the area of Lane Hall, may also need ramps to by-pass staircases or may need to be graded to a more gradual slope (II-7, 8, 18, 19; III-7 , 8, 18, 19; IV-4B, 6B; V-16, 19, 21).

5. Reduction of the above walkways to common grade would make little sense if the handicapped person could not move onto the walkways because of a curb. Curb cuts or ramps should be installed on several campus walkways and in parking areas. Specifically, the Drill Field Circle should be reduced to a common level as should the pedestrian crosswalks crossing the Drill Field. At least one other curb cut should be placed near the Bookstore to provide access to the Bookstore-Donaldson Brown quadrangel. Parking areas which need curb cuts would include the Donaldson Brown Circle, Turner Street, and parking areas nine, twenty-six, twenty-nine, thirty-one, and thirty-two. Fullfillment of this recommendation would require approximately twenty curb cuts or pedestrian ramps (II-5, 8; III-5, 8; IV-6B, 6C; V-12, 13).

6. Twelve walkways were found to be in poor repair. Also nine walkways were too narrow to allow handicapped persons to pass

each other and remain on the walkway surface. These walks should be repaired to present a smooth, common surface, free of defects, at least forty eight inches wide (II-6 to 9; III-6 to 9; IV-4D, V-8).

7. Handrails should be installed on all exterior staircases. Some handrails have been installed on staircases near Pamplin Hall. A similar type rail should be applied to the remainder of the exterior stairways (II-19, IV-4E, 5C; V-14, 15).

8. Abrasive strips should be placed before and after exterior steps. This will provide a change in surface texture which will warn the blind that they are approaching the steps. As an alternative the existing walk can be scored before and after the steps using a masonry saw (V-16, 17).

9. Thirty-three buildings did not have ground level entrances. These entrances should be reduced to grade or be ramped to permit access to the buildings. Due to their heavy usage particular attention should be directed to Burruss, Cheatham, Holden, Hutcheson, Newman Library, Norris, Pamplin, Patton, Randolph, Robeson, and Squires (II-10, 20; III-10, 20; IV-6B; V-19, 20).

10. The Bookstore and Memorial Gymnasium have ramps without handrails. Handrails should be installed on these ramps (II-16).

11. Ten doorways did not have sufficient level area to allow room for the movement of a wheelchair while opening the door. Also seven doorway threshold plates were improperly shaped to allow a wheelchair free movement over them. These doorways and threshold plates should be modified to repair these defects. The floor areas

directly interior of most doorways need to be carpeted or have abrasive strips installed to reduce the slipperiness of the floor when wet (II-17, 20 to 22; III-17, 20 to 22; V-18).

12. One entrance to each building, the most accessible, should be equipped with automatic doors (II-24; III-24; IV-5D, 6D).

13. Turnstiles should be removed from Newman Library and the Bookstore. These turnstiles are installed to control the pedestrian traffic at the entrances. Their removal would require some increased alertness by the check-out personnel but these turnstiles make it extremely difficult for a handicapped person to use these facilities (II-21; IV-21; IV-5D; V-20).

14. Most interior stairs did not conform to the specifications developed in conjunction with the survey form. Conditions such as worn treads, projecting nosings, handrails in poor condition or at improper height, and lack of handrail extensions were prevalent. Handrails should be repaired and/or placed at specified height, handrail extensions added, tread surface repaired, and beveled trim strips placed on protruding nosings where necessary (II-26 to 29; III-26 to 29; IV-4B, 4E, 5C; V-13 to 15, 21).

15. Many buildings such as Newman Library, Patton Hall, part of Burruss, and several classroom buildings lacked public elevators. A part of any major renovation or addition to a high use building should include the installation of an elevator. If major renovation is not contemplated, then an elevator should be added to the present structure. As an alternative, freight elevators currently installed may be remodeled, equipped with automatic doors,

and marked for use by the handicapped (II-28 to 35; III-28 to 35; IV-4B, 6A; V-13, 21 to 25).

16. Several hazards to the blind need to be remedied. Items which project into the building corridors should be removed, relocated, or recessed. Particular attention should be directed to fire extinguishers, water coolers, and vending machines. Doors to high risk areas such as stairwells, locker rooms, and stages should be equipped with handles and knobs which provide tactile warning. Elevators, telephones, and emergency controls should be tactilely identified. Room identification should be tactilely useful and located as specified in the survey form. Existing room identification needs to be relocated or additional identification should be properly installed (II-34, 37, 40, 41, 45, 48; III-34, 37, 40, 41, 45, 48; V-29).

17. Telephones need to be removed from telephone booths and lowered to permit their use by persons confined to wheelchairs. Several phones, particularly in the public area of Squires Student Center, should be equipped with amplification controls for the hard of hearing. Telephones should be equipped with tactile information (II-43 to 45; III-43 to 45).

18. Several buildings lacked warning signals of any kind. Only one building had both visual and audible signals. Each campus building should, as a minimum, be equipped with a fire warning system (II-46; III-47; Supplemental survey by researcher).

19. Drinking fountains were normally located at a height difficult to comfortably reach from a wheelchair. Also, several drinking fountains were not alcoved and some which were alcoved were

excessively recessed. Drinking fountains should be lowered to specifications. Projecting fountains should be alcoved and alcoves should be widened around excessively recessed fountains (II-49, 50; III-49, 50).

20. As previously discussed only three buildings had sanitary facilities with water closets for use by the handicapped. Each building should have one sanitary facility for each sex, on each level, equipped for the handicapped. Equipment should include a water closet designed for handicapped use, a five foot square open area, lowered accessories, and a sink with lever controls, twenty six inches of clear space and insulated plumbing (II-51 to 61; III-51 to 61; IV-6F; V-30).

21. Table height was a general problem encountered in classrooms, conference rooms, lecture halls, libraries, and student commons. Many tables lacked the necessary thirty inches underside clearance for wheelchair use. At least one percent of the tables in any area, including classrooms and laboratory work stations should be elevated to provide a thirty inch underside clearance. Laboratory work stations should also provide twenty eight inch knee openings and fixtures within reach of a seated person. (II-62, 69 to 71, 73, 74, 76; III-62, 69 to 71, 73, 74, 76).

22. Two public auditoriums need accessible level areas provided for the handicapped. In several others the width of the aisles were too narrow for convenient use by the handicapped. Several auditoriums have aisle steps which should be ramped. Finally, access to the stage, when applicable, should be provided (II-64 to 69; III-64 to 69).

23. Library aisles should be increased to a minimum of forty inches wide (II-72; III-73).

24. In student commons/cafeteria the arrangement of furnishings should allow sixty-six inches primary aisles and thirty-five inches secondary aisles. In two cases tray slides should be lowered to between thirty-two inches to thirty-six inches. Four self-service beverage faucets should be replaced with the type which allows the glass to remain on the counter while being filled (II-75 to 81; III-75 to 81).

25. Several areas of the Memorial Gymnasium are not accessible by wheelchair. Ramps should be installed on the lowest level to by-pass steps near the archery room and on the second level near the elevator exit. One shower in each locker room area should be set up for handicapped use. These showers should be kept clear of storage items (II-82 to 85; III-82 to 85).

IMPLICATIONS FOR FURTHER STUDY

It is the researcher's opinion that the prevailing sentiment at the University concerning access for the handicapped is apathy. Both the administration and the handicapped indicated that they felt little would or could be done to increase access. Unless some new element can exert sufficient influence to prompt activities to increase access, none will take place. Perhaps the Ad Hoc Committee will prove to be that element.

It must be evident from the previous discussion that the researcher perceives that applicable standards have been poorly applied

in the past. Unless some conscious effort is made it is very likely that future construction at the University will continue to have unnecessary architectural barriers.

Some expansion is possible from this study. The primary focus of this study was on "the state of the art" relating to access at Virginia Polytechnic Institute and State University. Further studies should develop more detailed, cost effective, recommendations. A study of dormitory facilities should supplement the study of the academic and administrative buildings.

An indepth study of the state and University's handicapped population of Virginia and the University is needed. Little data are available which describe the characteristics of these handicapped. As a part of this study an investigation into reasons why so few handicapped are in attendance at Virginia Polytechnic Institute and State University would be beneficial.

Earlier the question was posed which suggested that the handicapped are not attending this University due to the existence of site and architectural barriers. To lend support to this thought consider that the current permanently handicapped population at the University is probably less than fifty students and staff. In 1975 Virginia's elementary and secondary schools had a total of 1,047,167 students, 17,017 of which were physically handicapped. If this proportion holds true for high school graduates, of which there were 64,065, then approximately one thousand handicapped should have graduated from high school in Virginia in 1975. Approximately five percent of the state's high school graduates enter Virginia Polytechnic In-

stitute and State University. Extending this number to the handicapped would lead to an anticipated fifty handicapped freshman entering the University yearly. This does not consider the other three undergraduate classes, graduate students, or staff. Conservatively estimating, the handicapped population at the University should be two to three times current indications. The question could be asked: What is keeping them away?

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LITERATURE CITED AND REFERENCES

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APPENDICES

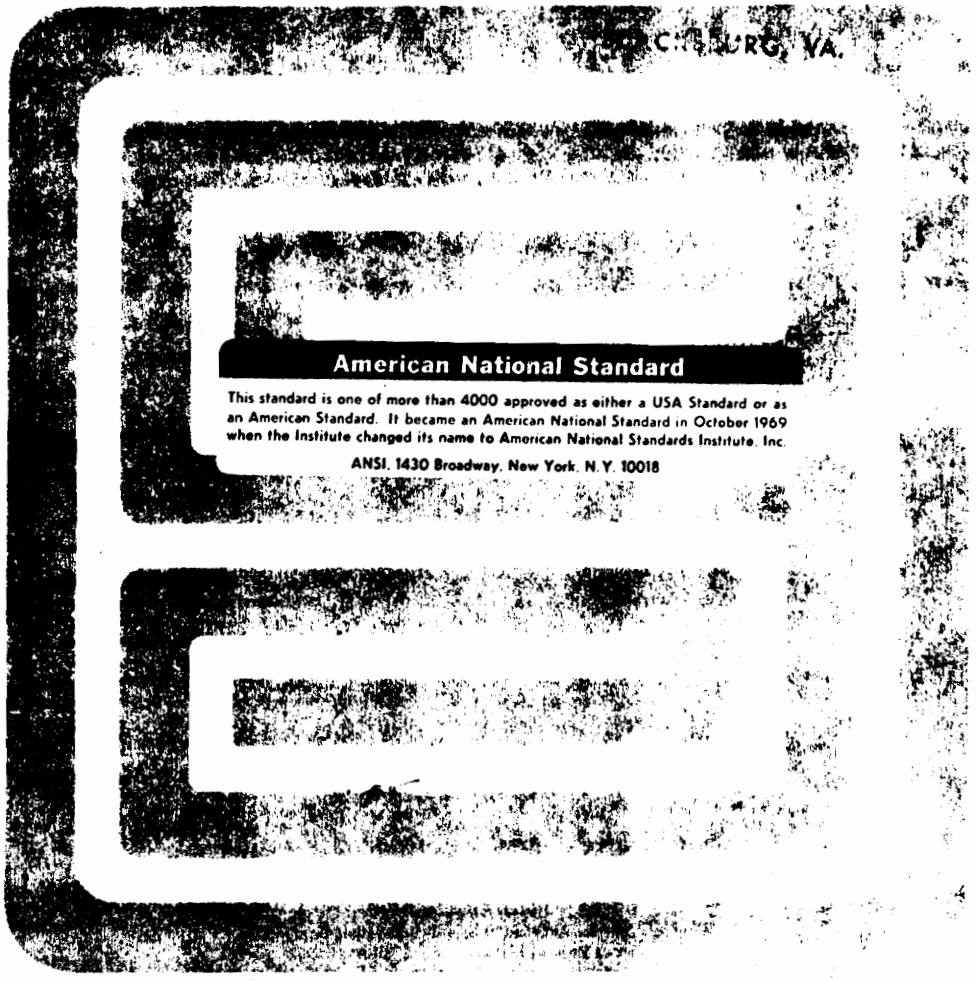
Appendix A

ANSI A117.1-1961; Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped

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.

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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. WERO CLEMONS J. POIREZ *(Alt)*
Federal Housing Administration	WILLIAM J. O'CONNOR
General Services Administration	J. ROWLAND SNYDER
Industrial Home for the Blind	HERBERT RUBALEM, M.D. HAROLD RICHTERMAN *(Alt)*
Industrial Medical Association	KENNETH C. PRACOCK, 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 Aurvansen
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. Gumpoil, 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. Caribaldi
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. Leiir
Division of Hospital and Medical Facilities	August F. Hornack Peter N. Jensen *(Alt)*
Office of Education	Romaine P. Mackie
Office of Vocational Rehabilitation	Philip Kliiger, 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. Kliiger
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

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[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 pusher 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, 68 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.

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[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 approach, 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[5] 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.

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[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.

[5] 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 2081 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.

[5] All American Standards are now designated USA Standards.

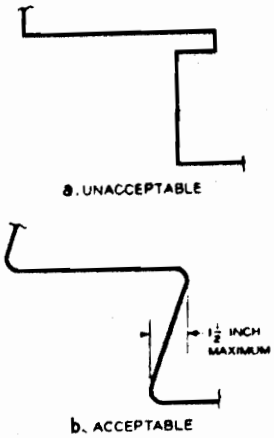


Fig. 1
Steps

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.

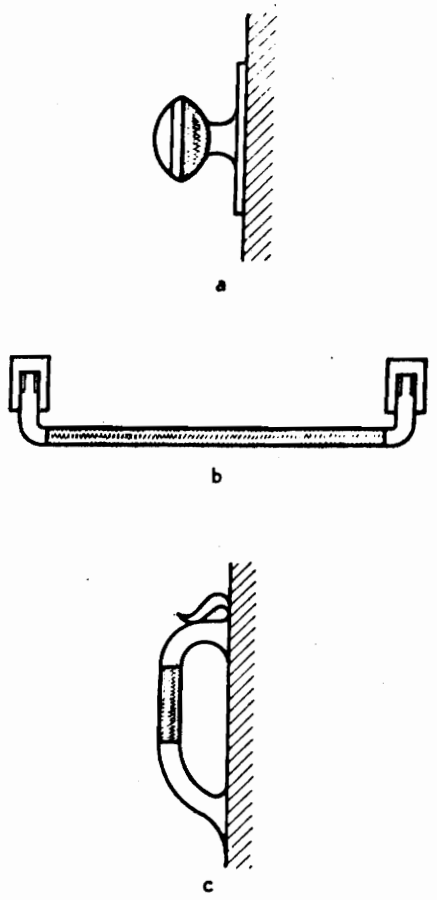


Fig. 2
Knurled Door Handles and Knobs

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

USA Standards

The standard in this booklet is one of nearly 3,000 standards approved to date by the United States of America 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 "USA 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. USA 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 USA 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. In 1966, the USA Standards Institute was constituted as successor to the American Standards Association, founded in 1918. It is a federation of trade associations, technical societies, professional groups, and consumer organizations. Some 2,000 companies are affiliated with the Institute as company members.

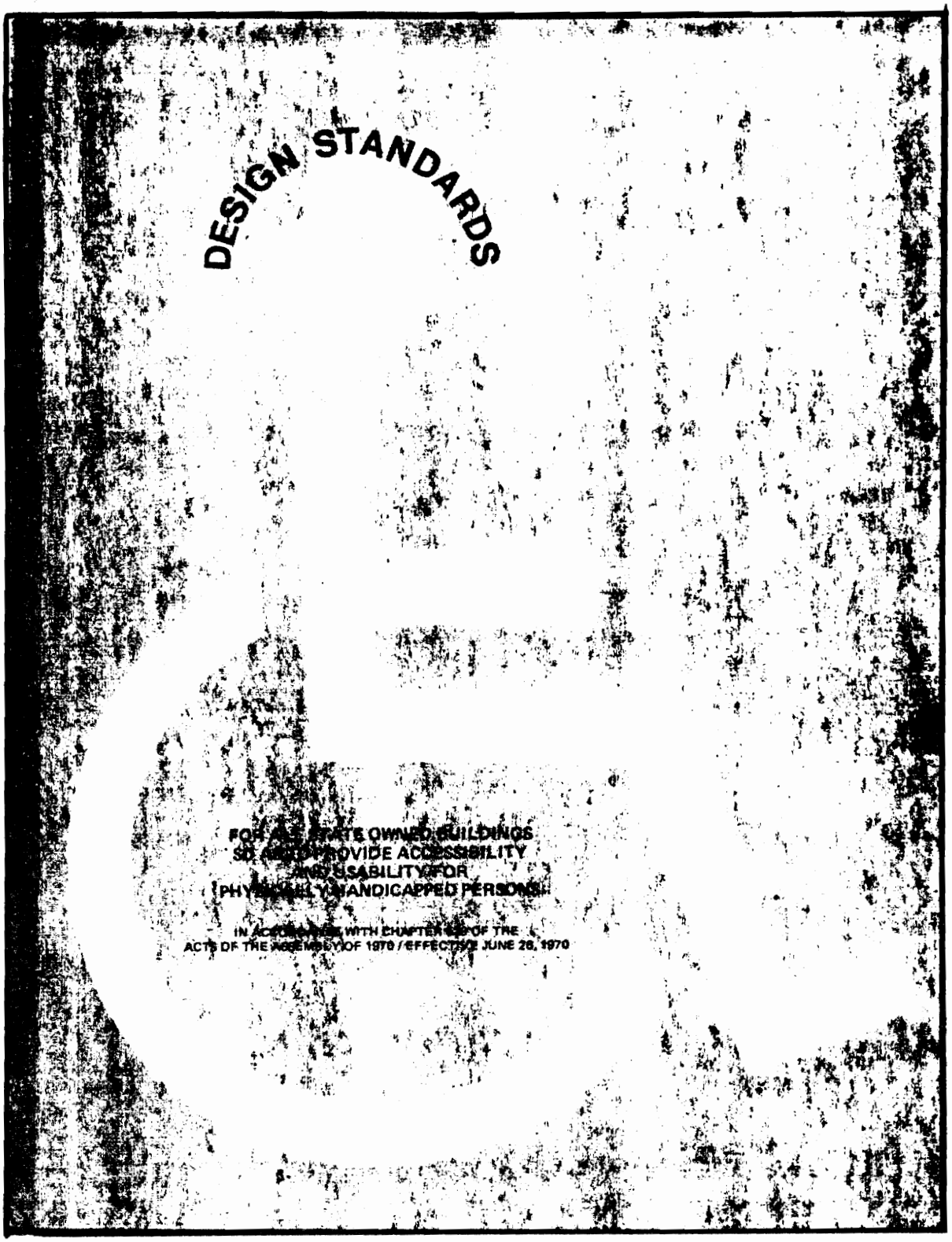
The United States of America Standards Institute is the United States member of the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the Pan American Standards Commission (COPANT). Through these channels American industry makes its position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

For a free list of all USA Standards, write:

United States of America Standards Institute
10 East 40th Street New York, N. Y. 10016

Appendix B

Design Standards for All State Owned Buildings State of Virginia, Division of Engineering and Buildings


DESIGN STANDARDS
FOR ALL STATE OWNED BUILDINGS
SO AS TO PROVIDE ACCESSIBILITY
AND USABILITY FOR
PHYSICALLY HANDICAPPED PERSONS
IN ACCORDANCE WITH CHAPTER 626 OF THE
ACTS OF THE ASSEMBLY OF 1970 / EFFECTIVE JUNE 26, 1970

Site Work

PARKING

● **Special parking** for the disabled should be located as near as possible to the facility served.

Parking signs should be provided for the handicapped.

● Not more than five percent of the **bays** serving a building need be reserved for disabled persons.

The **width of a bay** should be a minimum of 9 feet.

Pedestrian access between every other bay reserved for the disabled should be 4 feet.

A **ramp** should be provided if there is a level change from the parking lot to an adjoining walk.

The **area** for the disabled should be designed so that movement behind parked cars or across lanes of traffic is not necessary.

RAMPS

● Ramps should be provided only when it is impossible to have grade-level entrances.

The **approach** to a ramp should be level, and a minimum of 6 feet in length.

The **surface** should be treated so that it is nonskid.

There should be intermediate **rest platforms** a minimum of 4 feet 6 inches every 30 feet of ramp.

● Where a ramp enters a building there should be a **platform** of 5 feet minimum depth from the building extending a minimum of 1 foot on each side of the doorway.

If there is a significant drop from the side of a ramp or platform, there should be **handrails** on both sides 32 inches above the ramp surface the full length of ramp.

Ramps to buildings **exposed to the elements** either should be protected by a canopy or provided with automatic snow-melting capacity.

STAIRWAYS exterior

Stairways are to be well **illuminated** at all times.

● The **riser** should be a maximum of 6 inches high. The **tread** should be a minimum of 14 inches wide.

STAIRWAYS exterior (cont.)

All stair treads and nosings are to be surfaced with a nonskid finish. There should be no projecting nosings, unless specifically authorized otherwise.

Handrails, 32 inches high should be located on both sides of stairs. Care should be taken to design handrail extensions so that they do not become hazards.

WALKWAYS

● There should be at least one **access without steps** connecting all facilities on a campus.

Pavement materials used on walkways should be firm and not slippery when wet.

● Walks with 5 **percent gradients must have frequent level rest areas** (i.e. 60 feet maximum intervals).

Intersections of walks with streets must be blended by ramps.

Gratings, manholes, and like impediments should not be located in walks.

Pedestrian paths of travel - These are defined by their gradients as follows:

0% - 5%	are considered walks, (surface of adjacent ground at same level as walk).
5+% - 8%	are ramps and require curbs and handrails, on both sides.
8+% - 10%	(absolute maximum) curbs and handrails are required on both sides, distance between curbs must be 30 inches. Level rest areas must be provided no more than 30 feet apart, preferably every 15 feet. All 10% ramps must be accompanied by properly designed stairs.

Buildings-General

CORRIDORS

● Corridor **width** must be a minimum of 5 feet for wheelchair manuverability.

Fixtures that project into corridors are a hazard to the visually handicapped and should be avoided. (i.e. fire extinguishers, low exit signs).

DOORS

● **Depth between two doors** (e.g. outer and inner) must be a minimum of 6 feet 6 inches so that a wheelchair cannot be trapped between the two.

● All doors require a minimum **clear opening**, 2 feet 8 inches.

Necessary **pressure** to open a door should be minimal.

Thresholds: Shape for accessibility, height should not exceed 3/4 inch.

DOORS (cont.)

Handles: Should be not more than 3 feet 6 inches from floors. Horizontal level handles are preferable. Handles should be knurled to serve the blind as indicators of danger areas. On sliding doors, handles should protrude.

View Panels: Glazing should be in all double acting doors. Lower edges should be 3 feet from floors. Doors with large areas of glass should have markings on the glass to avoid accidents.

DRINKING FOUNTAINS

Upper edges of one drinking fountain basin per floor should not be more than three feet above floor level.

Controls and spouts should be located in the front.

Drinking fountains where practical should be set in **recessed area.** Its recess should be no less than 3 feet wide.

ELECTRIC OUTLETS

In areas specifically designed for the handicapped, outlet **height** should be 24 inches.

ELEVATORS

All elevators should be so **adjusted/controlled** that the floor of the elevators when stopped, will conform exactly to building floor levels.

● The **cab size** should be a minimum of 5 feet 1 inch by 5 feet 6 inches wide.

The **doors** should have a sensitive safety edge plus a sensing device, (e.g. photo electric eye) to prevent closing while entering or exiting.

No **control** should be higher than 4 feet 6 inches from the elevator floor.

FLOORS

Where practical shall have **non-slip surfaces.**

LIGHT SWITCHES

No more than 2 light switches should be located on a plate positioned 3½-to-4-feet above floor level.

ROOM IDENTIFICATION

Spaces that would normally be utilized by the visually handicapped, (i.e. reception spaces) should be identified by a **plaque** with raised or notched letters and/or numbers. This plaque should be next to an entrance doorway about five feet above floor level on the side nearest the door handle when the door is closed.

SANITARY FACILITIES

shower areas

The following applies to shower rooms to be used by handicapped persons.

One of the **stalls** should be accessible to the handicapped and should measure 3 feet X 3 feet.

SANITARY FACILITIES

shower areas (cont.)

The **floor surface** should be non-slip and the **curb** should be no more than 2 inches above floor level.

Seats should be positioned 19 inches above the floor and should be positioned on the lefthand and right-hand wall. The seats should be hinged to fold against the wall and a **grab rail** attached to the stall wall opposite the seat should extend around on the back wall.

The **controls and soap tray** all should be placed 3 feet 6 inches above the floor.

Shower heads shall be located 4-to-4-½-feet from the floor.

toilet areas

● At least **one toilet** for each sex on a floor should be accessible to the physically handicapped. It should be **located** most distance from the space entrance.

The **stall door** to the toilet accessible to the handicapped should have 2 feet 8 inches opening clearance and should swing out.

A **stall** should be 3 feet wide 4 feet 8 inches to 5 feet 6 inches deep.

The **toilet**, preferably wall-mounted, should have a **seat** 19-to-20-inches above the floor.

Grab bars, 1½ inches in diameter and 1½ inches from walls, are to be placed on both walls, 33 inches above the floor.

Access to **towel and other dispensers** should be a maximum of 40 inches from floor.

Mirrors should be placed so that the bottom edge is not more than 40 inches above the floor level.

Clear space below a sink for the handicapped should be a minimum of 26 inches above the floor level.

All **faucet handles** should be easy to operate (e.g. level handles rather than knobs).

STAIRWAYS

interior

The **landings and floor levels** should be distinguished from stairs by contrasting color or texture.

● The **risers** should be no more than 7 inches high with no **projecting nosings,** unless specifically authorized otherwise.

STAIRWAYS interior (cont.)	All **handrails** (circular or oval section: 1-¾ inches - 2 inches in outside diameter) should be 32 inches high (measured vertically from stair nosing) and continue 18 inches horizontally at both top and bottom levels.
TELEPHONES	In "any bank", at least **one telephone** should be accessible to a handicapped person (e.g. outside of a booth). **Dial** should be between 3 and 4 feet above floor level.
WARNING SIGNALS	**Audible** warning signals in areas utilized by handicapped persons shall be accompanied where possible by simulaneous **visual** signals for the benefit of the deaf and the blind.

Buildings-Special Use Areas

DORMITORIES	Physically disabled occupants should be assigned **bedrooms** on the ground floor or floors directly accessible to grade. ● A minimum of 2 percent of dormitory **spaces** on a campus should be able to accommodate the ambulatorily handicapped. Room plans should permit **furniture placement** so that there is no less than 4 feet 3 inches between major elements. (Between the side of the bed and a wall surface there may be 3 feet 2 inches. The **mattress top** should be about 22 inches above the floor level. The **clothing storage** facility should be such that a person in a wheelchair can store and retreive effects independently (e.g. hanging rods should be at suitable or adjustable heights for wheelchair occupants). Partial entrance of wheelchairs should be possible. **Operable windows** should be easily operable by a person who must use a wheelchair.
DINING AREAS	●Handicapped must have **direct access** (i.e. not through kitchen or dishwashing areas). **Tables** providing 2 percent of the seating should be thirty inches to the undersurface of table tops, aprons should be no greater than 2 inches. Width between these and **adjacent tables** should be a minimum of 5 feet 6 inches. **Aisles** between the tray slides and control railings should be a minimum of 34 inches.
LABORATORIES	●In laboratories 1 percent of the **stations**, or at least one, should be dedicated to the handicapped. Each "handicapped station" should have a **low work bench** with a clear minimum of 30 inches (floor to underside of work area), and should not have an apron. If there are **fixed stations**, **aisles** between them should have a minimum clear width of 3 feet.
LECTURE HALLS	●One percent of the **student stations** should be for the handicapped. (Where space is level and has **movable seats**, handicapped do not require special consideration.) If there is **fixed seating** only, level space should be provided for the handicapped.
LIBRARIES	One percent of **study carrels** and **tables** should be accessible to wheelchairs (see door and table criteria).
PHYSICAL EDUCATION	●One percent of **student stations** (e.g. lockers) should be appropriate for the amulatorily handicapped.
SPECTATOR SPACES	●One percent of **spectator stations** should be dedicated for ambulatorily handicapped. ● Areas dedicated to the handicapped should be easily accessible to exits. ●All **spaces for wheelchairs** should be level.

● Indicates design items to be considered during the preliminary programming and schematic design phases.

COMMONWEALTH OF VIRGINIA / GOVERNOR'S OFFICE
OFFICE OF ADMINISTRATION
DIVISION OF ENGINEERING AND BUILDINGS

Appendix C

Public Law 90-480

Public Law 90-480

August 12, 1968
[S. 222]

AN ACT

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

Public buildings.
Accessibility to 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—

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

(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.

Standards.

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.

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.

Applicability.

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.

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

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

Approved August 12, 1968.

Appendix D

Amendments to 90-480, March 1970

Title 41—PUBLIC CONTRACTS AND PROPERTY MANAGEMENT

Chapter 101—Federal Property Management Regulations

SUBCHAPTER D—PUBLIC BUILDINGS AND SPACE

PART 101–17—CONSTRUCTION AND ALTERATION OF PUBLIC BUILDINGS

Miscellaneous Amendments

Subpart 101–17.7 is amended to (1) exclude, in addition to the Department of Defense exclusions, certain buildings and facilities on other military reservations, (2) add a definition of the term "alteration," and (3) change the name of the "United States of America Standards Institute" to "American National Standards Institute, Inc."

The table of contents for Part 101–17 is amended to revise entry 101–17.702 as follows:

101–17.702 Definitions.

Subpart 101–17.7—Accommodations for the Physically Handicapped

1. Section 101–17.702 is revised to read as follows:

§ 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 will require either 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; or

(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.

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

2. Section 101–17.703 is revised to read as follows:

§ 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.).

(Sec. 205(c), 63 Stat. 390; U.S.C. 486(c); and Public Law 90–480)

Effective date. This amendment is effective upon publication in the FEDERAL REGISTER.

Dated: March 13, 1970.

ROD KREGER,
Acting Administrator of General Services.

[F.R. Doc. 70–3376; Filed, Mar. 19, 1970; 8:48 a.m.]

Appendix E

Amendments to 90-480, July 1970

Title 41—PUBLIC CONTRACTS AND PROPERTY MANAGEMENT

Chapter 101—Federal Property Management Regulations

SUBCHAPTER D—PUBLIC BUILDINGS AND SPACE

PART 101–17—CONSTRUCTION AND ALTERATION OF PUBLIC BUILDINGS

Facilities of the Washington Metropolitan Area Transit Authority

Subpart 101–17.7 is amended to provide that the buildings and facilities constructed by the Washington Metropolitan Area Transit Authority shall accommodate the physically handicapped. This is in accordance with Public Law 91–205, approved March 5, 1970.

Subpart 101–17.7—Accommodations for the Physically Handicapped

1. Section 101–17.701 is revised to read as follows:

§ 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.

2. Section 101–17.702 is revised to read as follows:

§ 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.

3. Section 101–17.704(d) is revised to read as follows:

§ 101–17.704 Exceptions.

* * * * *

(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.

(Sec. 205(c), 63 Stat. 390, 40 U.S.C. 486(c); and 82 Stat. 718, 42 U.S.C. 4151–4156, as amended by Public Law 91–205)

Effective date. This amendment is effective upon publication in the FEDERAL REGISTER.

Dated: July 1, 1970.

ROBERT L. KUNZIG,
Administrator of General Services.

[F.R. Doc. 70–8630; Filed, July 7, 1970; 8:48 a.m.]

Appendix F

Code of Virginia, Article 4, 2.1-109.01, 1970 and 72

ARTICLE 4.

Facilities for Physically Handicapped Persons in Certain Buildings.

§ 2.1-109.01. "Building" defined. — For the purposes of this article the term "building" shall mean any building or facility, used by the public which is constructed in whole or in part or altered by the use of State, county or municipal funds, or the funds of any political subdivision of this State. (1970, c. 539; 1972, c. 223.)

The numbers of §§ 2.1-109.01 to 2.1-109.07 were assigned by the Virginia Code Commission, the 1970 act having assigned no numbers.

The 1972 amendment deleted "not including public school buildings" following "facility."

§ 2.1-109.02. "Physically handicapped persons" defined. — For the purposes of this article, the term "physically handicapped persons" shall mean persons with:

(a) Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheelchairs;

(b) Impairments that cause individuals to walk with difficulty or insecurity;

(c) Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to dangers;

(d) Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals;

(e) Faulty coordination or palsy from brain, spinal, or peripheral nerve injury; or

(f) Those manifestations of the aging processes that significantly reduce mobility, flexibility, coordination and perceptiveness but are not accounted for in the aforementioned categories. (1970, c. 539.)

§ 2.1-109.03. Authority of Division or Board of Education to prescribe standards. — The Division of Engineering and Buildings shall prescribe such standards for the design, construction, and alteration of buildings constructed in whole or in part or altered by the use of State funds other than school funds as may be necessary to insure that physically handicapped persons will have ready access to, and use of, such buildings.

The Board of Education shall prescribe such standards for the design, construction, and alterations of public school buildings constructed in whole or in part or altered by the use of public funds as may be necessary to insure that physically handicapped persons will have ready access to and use of such buildings. (1970, c. 539; 1972, c. 223.)

The 1972 amendment substituted "shall" for "is authorized to" near the beginning of the first paragraph and added the second paragraph.

§ 2.1-109.04. Authority of local governing bodies to prescribe standards. — The governing body of a county, municipality or other political subdivision, in consultation with the Division of Engineering and Buildings shall prescribe such standards for the design, construction and alteration of buildings, not including public school facilities, constructed in whole or in part or altered by the use of the funds of such county, municipality or other political subdivision as may be necessary to insure that physically handicapped persons will have ready access to, and use of, such buildings. (1970, c. 539; 1972, c. 223.)

The 1972 amendment substituted "shall" for "is authorized to" near the beginning of the section.

§ 2.1-109.05. What buildings to be constructed, etc., in accordance with standards. — Every building or facility designed, constructed or substantially

altered after the effective date of a standard issued under this article which is applicable to such building shall be designed, constructed or altered in accordance with such standard. (1970, c. 539.)

§ 2.1-109.06. Modification or waiver of standards; surveys and investigations. — The Division of Engineering and Buildings with respect to standards issued under § 2.1-109.03, and the governing body of any county, municipality or other political subdivision with respect to standards issued under § 2.1-109.04, are authorized:

(a) To modify or waive any such standard, on a case-by-case basis, upon application made by the head of the department, agency or other instrumentality concerned, upon determining that such modification or waiver is clearly necessary; and

(b) To conduct such surveys and investigations as may be deemed necessary to insure compliance with such standards. (1970, c. 539.)

§ 2.1-109.07. Article applicable to temporary as well as permanent buildings. — The provisions of this article shall apply to temporary and emergency construction as well as permanent buildings. (1970, c. 539.)

Appendix G

Virginia Polytechnic Institute and State University

Faculty Senate Resolution FS-75-4

FS-75-4

THE REMOVAL OF ARCHITECTURAL BARRIERS
TO THE
PHYSICALLY AND SENSORIALLY HANDICAPPED

WHEREAS, the physically and sensorially handicapped now constitute an increasing proportion of the VPI & SU student, faculty and staff populations, and

WHEREAS, VPI & SU has a moral and legal responsibility to provide the maximum comfort and convenience for its populace, and

WHEREAS, buildings and facilities should be accessible to everyone, and

WHEREAS, present facilities demonstrate inadequate accomodations for the physically and sensorially handicapped individual, and

WHEREAS, VPI & SU has served as a model educational institution for the State of Virginia through services to the Commonwealth, and

THEREFORE, be it resolved that the Faculty Senate of Virginia Polytechnic Institute and State University proceed forthright to recommend a plan of action for removing architectural barriers to the physically and sensorially handicapped person;

and be it further resolved that data collection procedures will be designed on the part of the Office of Admission for (1) identifying handicapped individuals who will be on campus as matriculating students, (2) assessing from the above individuals their specific architectural needs, and (3) sensitizing the existing faculty, staff and students to VPI & SU's efforts to accomodate these needs (i.e., catalogue description, application forms, etc.);

and be it still further resolved that buildings and nearby locations to such buildings will become accessible to the physically and sensorially handicapped including the designation of specific parking areas; the lowering of drinking fountains; providing handrails and widening doors in restrooms; and raising letters for the convenience of the visually handicapped on restroom and other door signs;

and finally, be it further resolved that VPI & SU will use its architectural expertise, conduct a cost-benefit on the financial resources needed and expected benefits, and serve as a demonstration model for institutions of higher education seeking to ascertain ways of eliminating architectural barriers to the physically and sensorially handicapped.

Appendix H

Comments in Support of FS-75-4

*Comments in Support of
FS-75-4 [The Removal of Architectural
Barriers to the Physically and
Sensorially Handicapped]

Alarming as it may seem, approximately one out of every six people in the U.S. has a permanent physical disability. Among these are many different causes and manifestations of physical disability and each has its own particular associated problem.

One of the most frustrating problems of physically disabled persons are buildings and facilities, supposedly created for the public or, in our case, matriculating university students, that are designed and constructed in such a manner that they prohibit the full participation of the physically disabled. It is equally frustrating to me as I am sure to some of you to find that architectural barriers prohibit the disabled individual, however well rehabilitated, from pursuing his aspirations, developing his talents, and exercising his skills. Many of the disabled are afraid to venture forth because of the architectural barriers they encounter, especially at an institution like VPI. Others have convinced themselves it is better to stay back because they feel they are a burden to others when they attempt to project themselves into normal social settings. In many instances they are a burden, but it is not their fault. Rather the apathy which has existed concerning this problem is to blame.

A recent study at the University of Illinois revealed that over 60 percent of those disabled early in life making application to the University have not had normal schooling and educational opportunities and experiences. Many have not been in school at all. Very few have had normal experiences in social growth and recreation. Although the study presented other problems, the ONE that is heard most often, and the one that is presently ENEMY NO. 1 is inaccessibility.

With What Are We Concerned?

We are basically concerned with making it possible for the talents and resources of physically handicapped individuals at VPI to be put to use for the betterment of mankind by the elimination of architectural barriers. More specifically, it is the intent of the resolution to make the exterior and interior of buildings more accessible and functional for the physically handicapped.

Since the majority of buildings on this campus are already built, the first problem is to determine what might be done to make accessible and functional existing buildings which are now inaccessible. The second task (probably the simpler of the two) is to recommend improved standards for design and construction of new buildings and facilities that will be erected in the future.

---

*Comments were made by Senator Alan Sheppard to members of Faculty Senate, VPI & SU, Tuesday, April 29, 1975.

With Whom Are We Concerned?

We are concerned with:

1. The nonambulatory disabled, those individuals who, for all practical purposes, are bound to wheelchairs regardless of cause or manifestation.

2. The semi-ambulatory, those individuals who walk with difficulty or insecurity, such as those individuals using braces and/or crutches, amputees, arthritics, pulmonary and cardiac cases.

3. The sight handicapped, those individuals who are totally blind and those whose sight is impaired to the extent that ambulation in public areas is insecure and hazardous.

4. The incoordinates, those individuals whose disabilities leave them with faulty coordination or palsy from cerebral injury, spinal injury, or peripheral nerve injury.

5. The hearing handicapped, those individuals who are deaf or have a hearing handicap to the extent that they might be insecure in major public areas or in industrial situations, because they are unable to communicate or to hear warning signals.

These are the five basic groups of disabilities with which we must be concerned, each including many disabilities by name, cause, and manifestation, each having specific requirements which, however, may have many common solutions.

Since the handicapped should, as far as possible, participate in the broadest range of campus activities equally with those not handicapped, it is imperative that the entire campus be brought into consideration, and not for the benefit of the handicapped student only, but also the staff of VPI & SU and campus visitors with permanent or temporary physical handicaps or with sight, hearing, cardiac or respiratory disabilities.

Facilities designed to serve the handicapped also serve the non-handicapped. Able-bodied people find it easier to get around, and maintenance is facilitated, lowering operating cost.

Intelligent planning avoids extra expense, since a facility constructed form the outset with the problems of the handicapped in mind need cost little if any more than a similar facility planned without these considerations.

My personal feelings are that ultimately, the long range societal value of highly trained and skilled handicapped persons more than offsets the comparatively slight design and construction costs attributable to a response to the needs of the handicapped.

I believe the removal of architectural barriers can really open up opportunities for handicapped students to matriculate at Tech as well as opening up greater employment opportunity for potential staff and faculty personnel.

I strongly urge the Faculty Senate to support Resolution FS-75-4 [The Removal of Architectural Barriers to the Physically and Sensorially Handicapped].

Appendix I

List of Buildings Surveyed

LIST OF BUILDINGS SURVEYED

Agnew Hall

Anaerobe Laboratory

Architecture Annex

Biochem and Nutrition

Bookstore

Building 276

Burruss Hall
  Old Section
  New Section

Center for the Study of
  Public Choice

Julian Cheatham Hall

Coliseum

Cowgill Hall

Davidson Hall

Derring Hall

Dietrick Dining Hall

Donald Brown Continuing
  Education Center

Food Science/Technology

Greenhouses

Henderson Infirmary
  Medical Part
  Non-medical Part

Holden Hall

Home Management House

Hutcheson Hall

Lane Hall

Lane Stadium

McBryde Hall

Memorial Chapel

Memorial Gymnasium

Newman Library

Norris Hall

Owens Dining Hall

Pamplin Hall

Patton Hall

Performing Arts Building

Price Hall

Price House

Randolph Hall

Rector Field House

Robeson Hall

Sandy Hall

Saunders Hall

Security Building

Seitz Hall

Schultz Dining Hall

LIST OF BUILDINGS SURVEYED
(continued)

Smyth Hall

Solitude

Squires Student Center

Veterinary Science Center

Wallace Hall

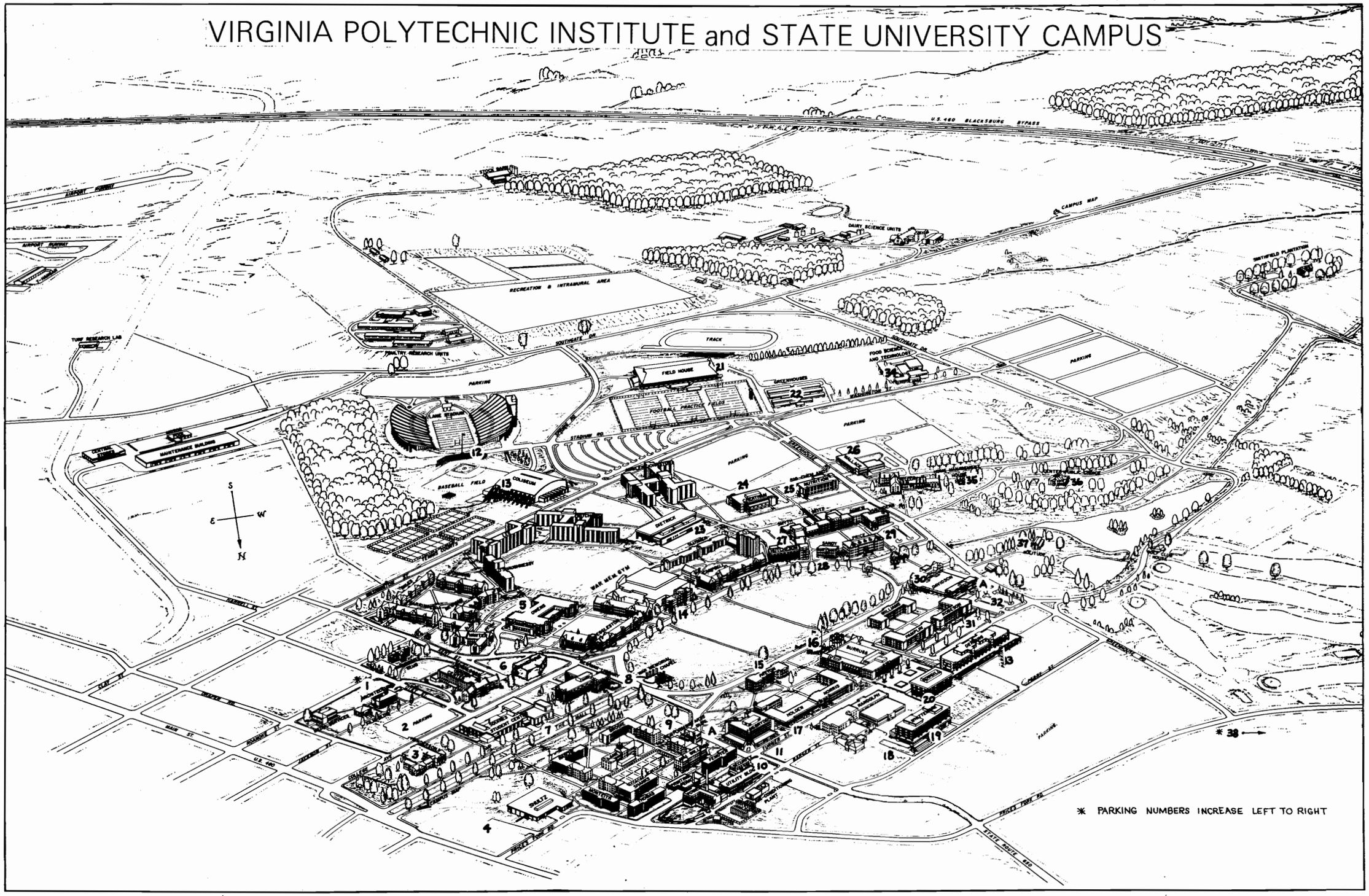
Whittemore Hall

Williams Hall

Appendix J

Map of the University

VIRGINIA POLYTECHNIC INSTITUTE and STATE UNIVERSITY CAMPUS



Appendix K

Survey Form and Attached Drawings

ARCHITECTURAL SURVEY FORM

Name of Building _____

Primary Purpose of Building _____

Date of Initial Construction of Building _____

Architect _____

_____

Approximate Square Feet _____ Approximate Cost _____

Name of Person Conducting the Survey _____

Site Development	YES		NO
A. Parking			
1. Location/description of parking area: _____			
_____			
_____			
2. Are spaces in the parking areas reserved for the handicapped and so indicated by signs?	Y	NA	N
3. What is the width of the handicapped parking space or in the absence of same, what is the width of normal parking space?	_____		
4. Is the surface of the parking area smooth hard?	Y	NA	N
B. Walks			
5. Is the parking area and the walk at the same level or are ramps provided between the walks and parking area?	Y	NA	N
6. Are the walks most commonly used for movement from the parking area to the building entrance at least 48" wide?	Y	NA	N
7. Do the walks most commonly used for movement from the parking area to the building entrance have a gradient of 5% (or $2^{o}50'$, 20-1) or less?	Y	NA	N
8. Do the walks most commonly used for movement from the parking area to the building entrance have a continuous common surface uninterrupted by steps or abrupt changes in level?	Y	NA	N
9. Are there gratings, manholes, breaks, or similar obstructions or defects in the walk?	Y	NA	N
If yes, specify defects: _____			
_____			

	YES		NO
C. Entrance			
10. Is any building entrance at ground level or if not is a ramp provided for the handicapped? . . .	Y	NA	N
11. Location/description of building entrance: _____			
_____			
_____			
12. What is the overall length of the ramp, if provided?	_____		
13. What is the overall height of the ramp, if provided?	_____		
14. Is there a level of approach to the base of the ramp at least 72" in length?	Y	NA	N
15. Is the ramp covered, heated or otherwise protected from accumulations of ice or snow?	Y	NA	N
16. Does the ramp conform to the specifications in the attached drawing? Note slope, surface, run lengths, landings, handrails, curbs	Y	NA	N
If no, underline non-conforming elements.			
Comment: _____			
17. Is there a level platform or area at the building entrance at least 60" long and extending at least 12" on each side of the doorway?	Y	NA	N
18. How many steps between the parking area and building entrance?	_____		
19. Do exterior steps conform to these specifications: Max. rise 6", Min. tread 14", non-skid surface, handrails on both sides 32" above the step surface?	Y	NA	N
If no, underline non-conforming elements.			
Comment: _____			
20. Is there a threshold step at the building entrance?	Y	NA	N
Buildings			
A. Doorway (reference to Site, C. Entrance, item 9 above)			
21. What is the width of the entrance doorway as measured between the narrowest points with the door open?	_____		
22. Is the threshold plate less than 3/4" in height and shaped as to permit access?	Y	NA	N
23. If two doors are used, is the space between the inner and outer door at least 78" in length? . . .	Y	NA	N
24. Is the door(s) automatic?	Y	NA	N
B. Access to All Levels			
25. Does the building have more than one level or floor?	Y	NA	N

	YES		NO
26. Are there interior stairs between the entrance and the primary corridor?	Y	NA	N
27. Do the interior stairs conform to the specifications in the attached drawing? Note rise, tread, surface, nosings, handrail, handrail extensions	Y	NA	N

If no, underline non-conforming elements.

Comment: _____

28. If the building is on one or more levels separated by one or more stairs are alternate provisions of access always available (elevators, ramps, alternate routes)?	Y	NA	N

If yes, please describe: _____

_____

29. Is an elevator available?	Y	NA	N
30. Does the elevator serve all levels or floors? . .	Y	NA	N
31. Is the elevator public?	Y	NA	N
32. Is the elevator accessible from the entrance? . .	Y	NA	N
33. Does the elevator conform to these specifications: self-leveling, cab 61" by 66" min., all controls 54" or less from the floor?	Y	NA	N

If no, underline non-conforming elements?

Comment: _____

34. Does the elevator have tactile instructions or information?	Y	NA	N
35. Do the doors of the elevator have a sensing device to prevent closing while entering or exiting the elevator?	Y	NA	N

C. General Building Features

36. What is the width of the primary corridors at their narrowest point?	_____		
37. Are there projections into the corridor which would be hazardous to the blind (drinking fountains, doors, signs, etc.)?	Y	NA	N

If yes, describe the hazards: _____

_____

38. Are most interior doors at least 32" wide?	Y	NA	N
39. Are most door handles located less than 42" from the floor?	Y	NA	N
40. Do door handles, knobs, and bars on doors to high risk areas (stairs, boiler rooms, etc.) have a surface as specified in the attached drawing? . .	Y	NA	N
41. Are rooms identified by a sign placed on the wall as specified in the attached drawing?	Y	NA	N
42. Do floors have a non-skid finish?	Y	NA	N

		YES		NO
43.	Is at least one public telephone on each floor located outside a booth with a dial between 36" and 48" from the floor?	Y	NA	N
44.	Do any public telephones have amplification controls for the hard of hearing?	Y	NA	N
45.	Do public telephones have tactile instructions or information?	Y	NA	N
46.	Are warning signals both visual and audible? . . .	Y	NA	N
47.	Are public switches and controls mounted 42" to 48" from the floor surface?	Y	NA	N
48.	Do public switches and controls have tactile instructions or information?	Y	NA	N
49.	Does at least one drinking fountain on each floor level have its upper surface less than 36" from the floor?	Y	NA	N
50.	Is the drinking fountain's controls hand operated?	Y	NA	N

D. Sanitary Facilities

51.	What is the width of the entrance doorway measured between its narrowest points with the door open? .	_____		
52.	Does at least one facility on each floor, for each sex, have a water closet designed for use by the handicapped?	Y	NA	N
53.	Is this water closet located as far from the entrance of the facility as practicable?	Y	NA	N
54.	Does any water closet conform to the specifications in the attached drawing? Note direction of door openings, closet length, width, seat height, other dimensions, handrails	Y	NA	N

If no, underline non-conforming elements.

Comment: _____

55.	What are the dimensions of the facilities' standard water closet? Width _____ Length _____ Seat Height _____			
56.	Does the facility have an open area of at least 60" X 60"?	Y	NA	N
57.	Are urinal openings for wall mounted urinals located no more than 19" from the floor or for floor mounted urinals level with the facilities main floor?	Y	NA	N
58.	Is at least one towel dispenser, mirror, and other available accessories located less than 40" from the floor?	Y	NA	N
59.	Does at least one sink have lever type water controls instead of knobs?	Y	NA	N
60.	Does this sink or any other have a clear space underneath of at least 26" as measured from its lowest part to the floor?	Y	NA	N

		YES		NO
61.	Are the hot water inlet pipes under this sink or any other insulated to prevent contact by a handicapped person?	Y	NA	N
E.	Classrooms			
62.	Do most classrooms contain furnishings usable by the handicapped (rigid chair/desk combinations are not usable, classrooms should have one moveable or accessible table or desk with 30" underside clearance)?	Y	NA	N
63.	Are most classroom furnishings arranged for access?	Y	NA	N

If no, specify defects: _____

_____

F.	Lecture Halls/Auditoriums			
64.	If no fixed seating; are accessible, level, areas provided for the handicapped?	Y	NA	N
65.	If fixed seating; are accessible, level, areas provided for the handicapped?	Y	NA	N
66.	If fixed seating, what is the width of the aisle between rows?			
67.	Is the main entrance aisle(s) free of steps? . . .	Y	NA	N
68.	Can the handicapped move onto the stage without assistance?	Y	NA	N
69.	Are tables or other usable writing surfaces provided in lecture halls for use by the handicapped?	Y	NA	N
G.	Laboratories			
70.	Are at least 1% of the laboratory work stations accessible to the handicapped?	Y	NA	N
71.	Does any accessible work station conform to the specifications 30" minimum underside clearance; 28" knee opening; outlets, fixtures, equipment within 29" of the front edge of the work station?	Y	NA	N

If no, underline non-conforming elements.

Comment: _____

H.	Libraries			
72.	Are public aisles at least 40" wide?	Y	NA	N
73.	Are at least 1% of the library tables accessible to the handicapped?.	Y	NA	N
74.	Does any accessible table have an underside clearance of at least 30" with aprons less than 2"?	Y	NA	N
I.	Student Commons/Cafeterias			
75.	Do the handicapped have direct, public, access to the area?	Y	NA	N
76.	Is the underside table clearance at least 30" with aprons less than 2"?	Y	NA	N

		YES		NO
77.	Are the controls of vending machines located between 36" and 48" from the floor?	Y	NA	N
78.	Are the aisles at least 66" wide?	Y	NA	N
79.	Are tray slides located between 32" and 36" from the floor?	Y	NA	N
80.	Are aisles between tray slides and control railings at least 32"?	Y	NA	N
81.	Are self-service beverage faucets of the type which allows the glass to remain on the counter while being filled?	Y	NA	N

J. Physical Education

82.	Are the recreational areas accessible to the handicapped?	Y	NA	N

If no, specify non-accessible areas: _____

_____

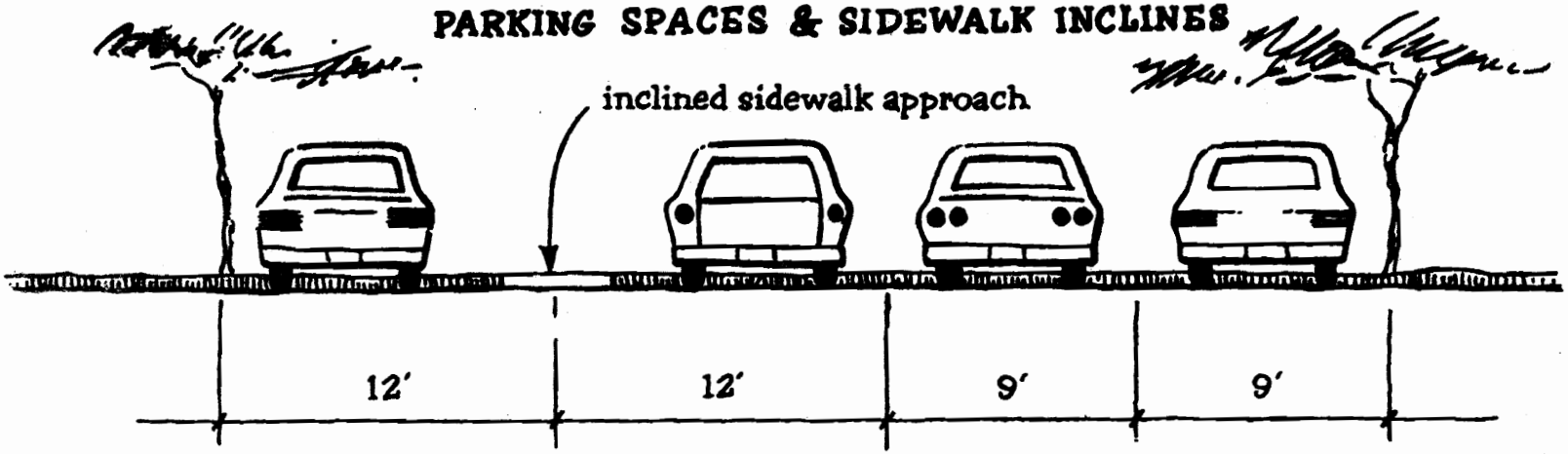
83.	Are at least 1% of the lockers accessible to the handicapped?	Y	NA	N
84.	Are showers accessible to the handicapped?	Y	NA	N
85.	Does any accessible shower conform to the specifications: 36" by 36", seats 19" in height, grab rails, controls 42" or less from the floor, shower head 48" to 54" from the floor, threshold less than 2" in height?	Y	NA	N

If no, underline non-conforming elements.

Comment: _____

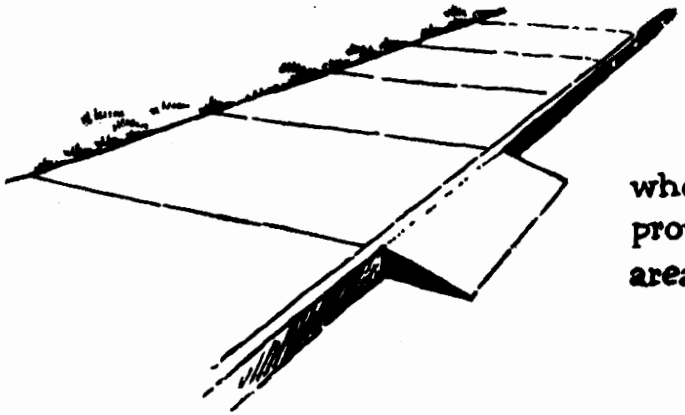
86. Additional comments:

PARKING SPACES & SIDEWALK INCLINES



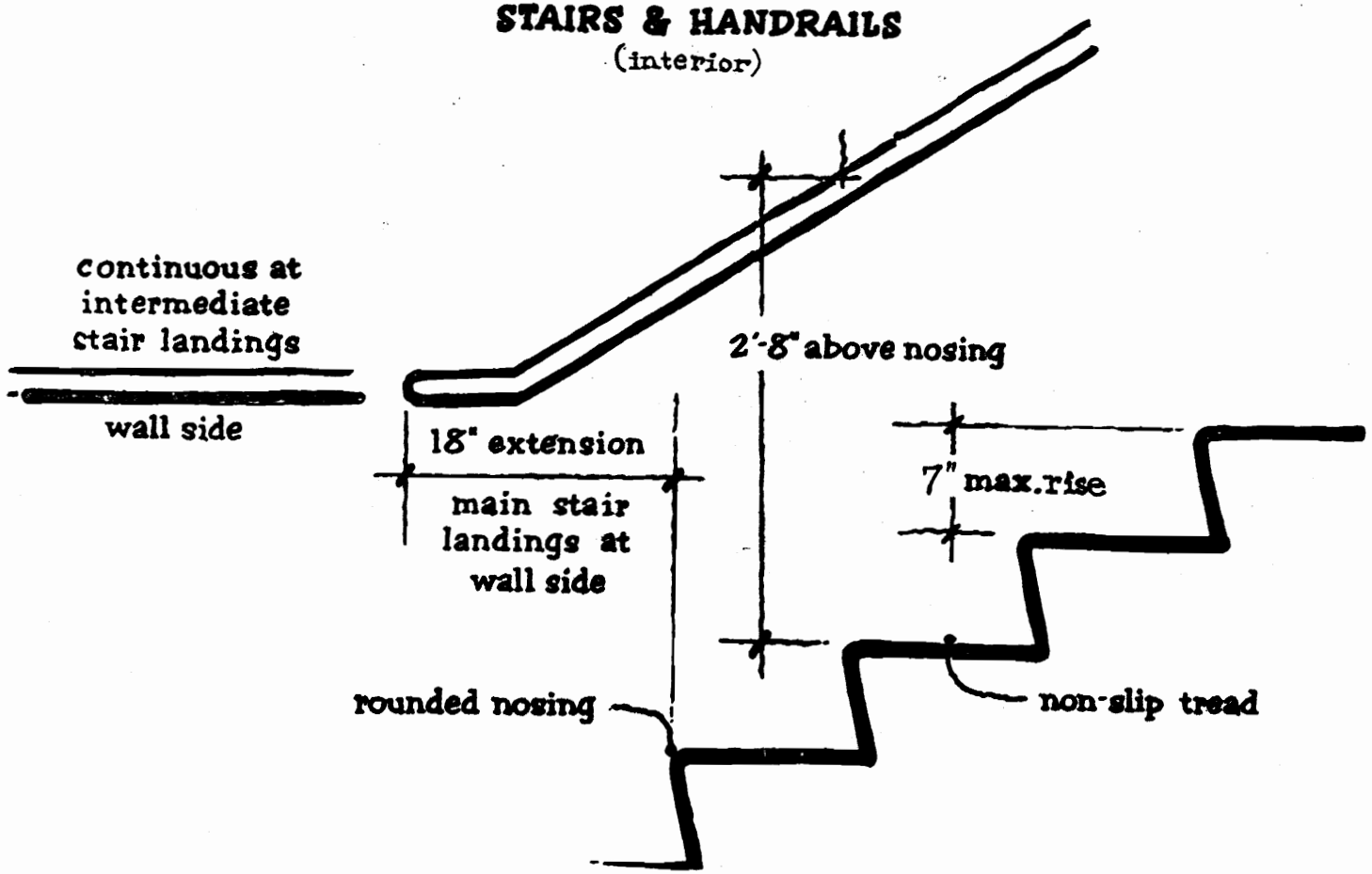
physically handicapped parking

typical parking

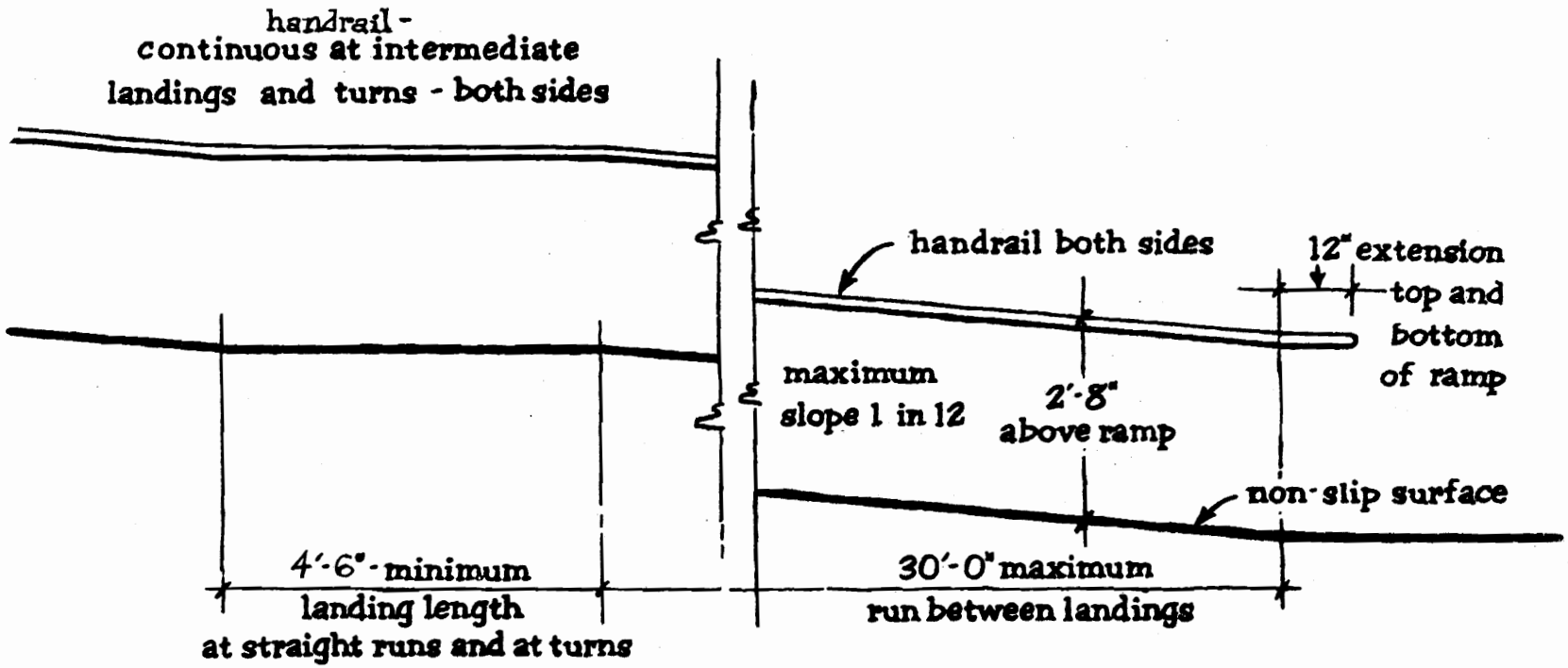


where parking abuts sidewalk provide ramp from parking area to sidewalk

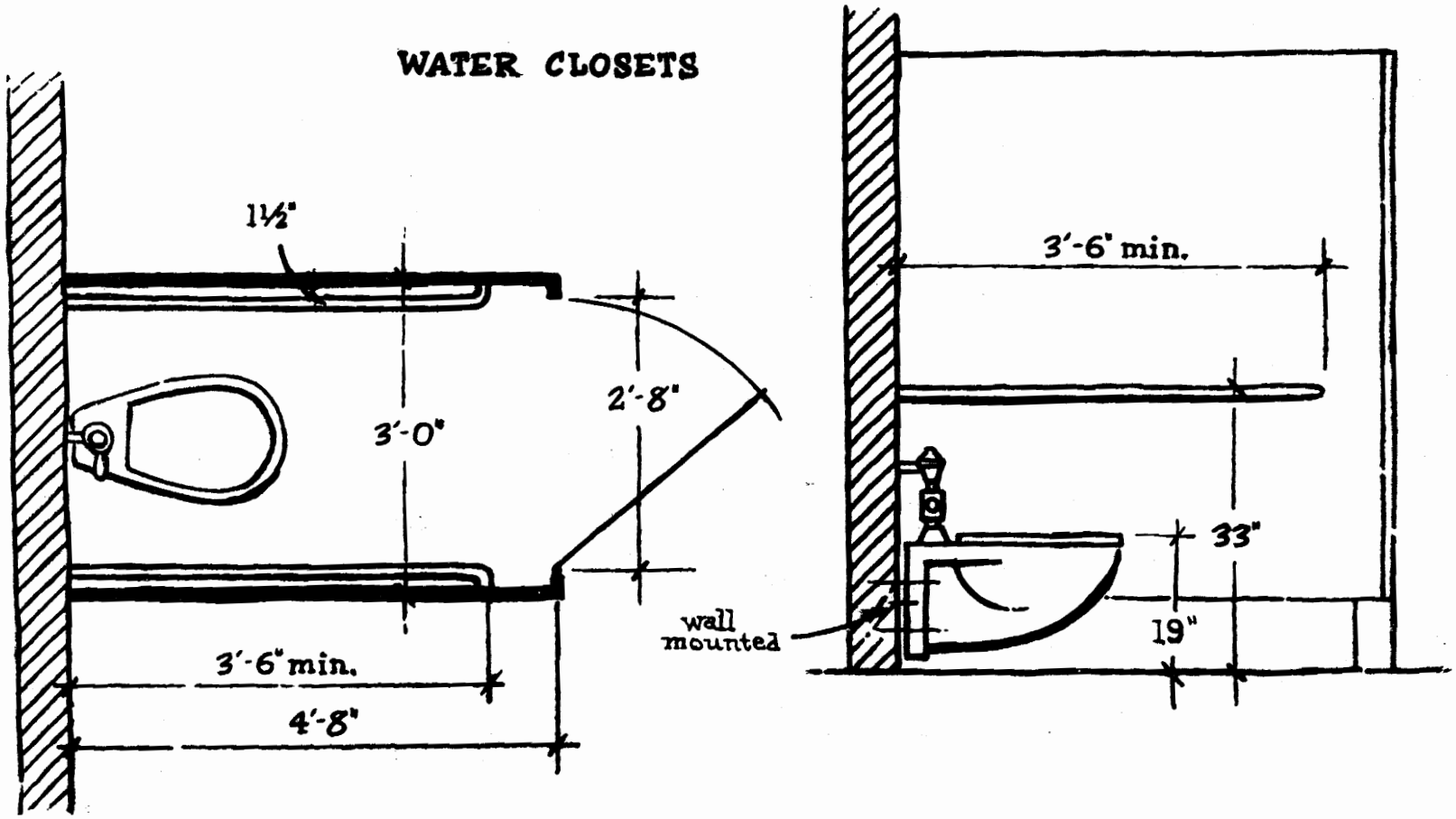
STAIRS & HANDRAILS
(interior)

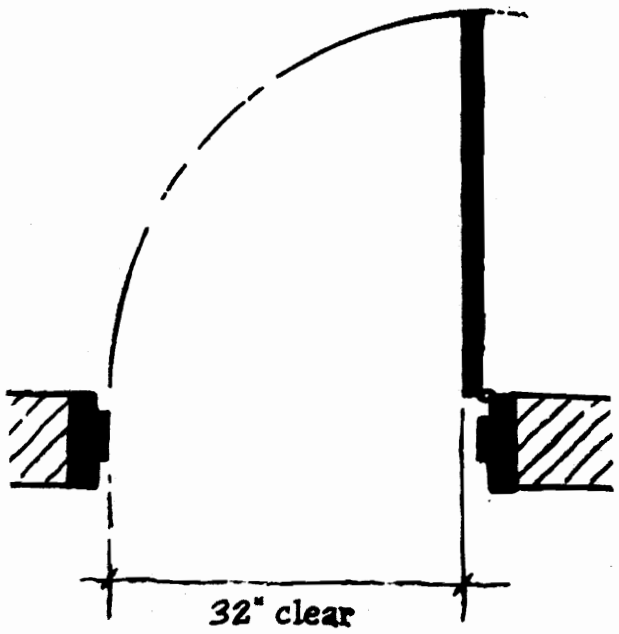


RAMPS


handrail -
continuous at intermediate
landings and turns - both sides
handrail both sides
12" extension
top and
bottom
of ramp
maximum
slope 1 in 12
2'-8"
above ramp
non-slip surface
4'-6" - minimum
landing length
at straight runs and at turns
30'-0" maximum
run between landings

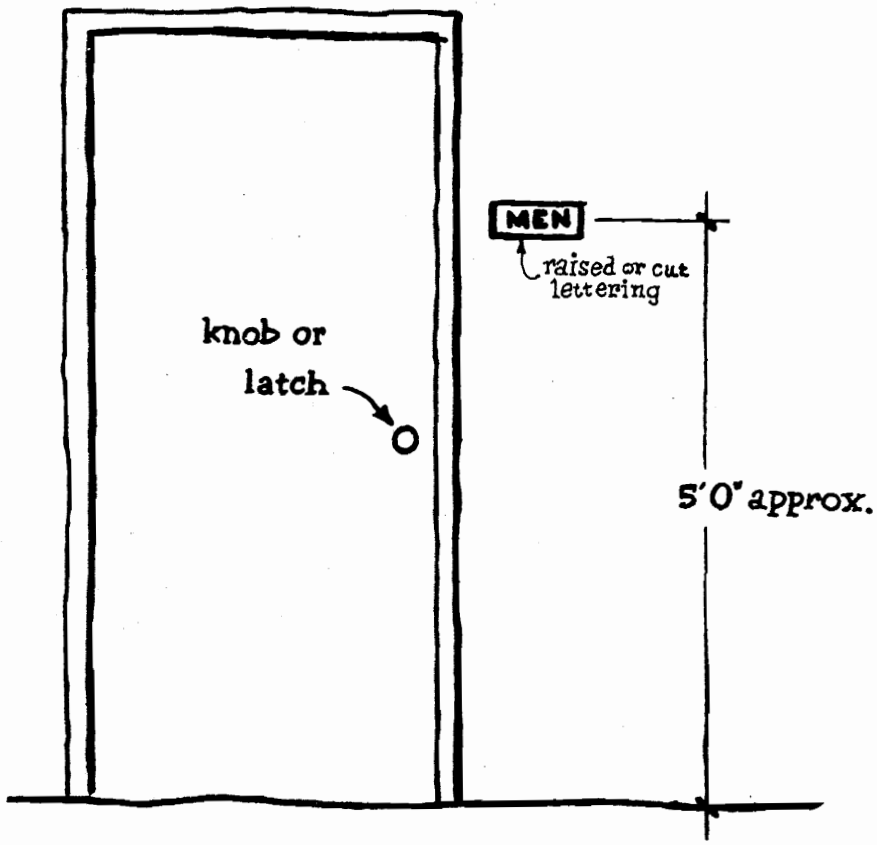
WATER CLOSETS

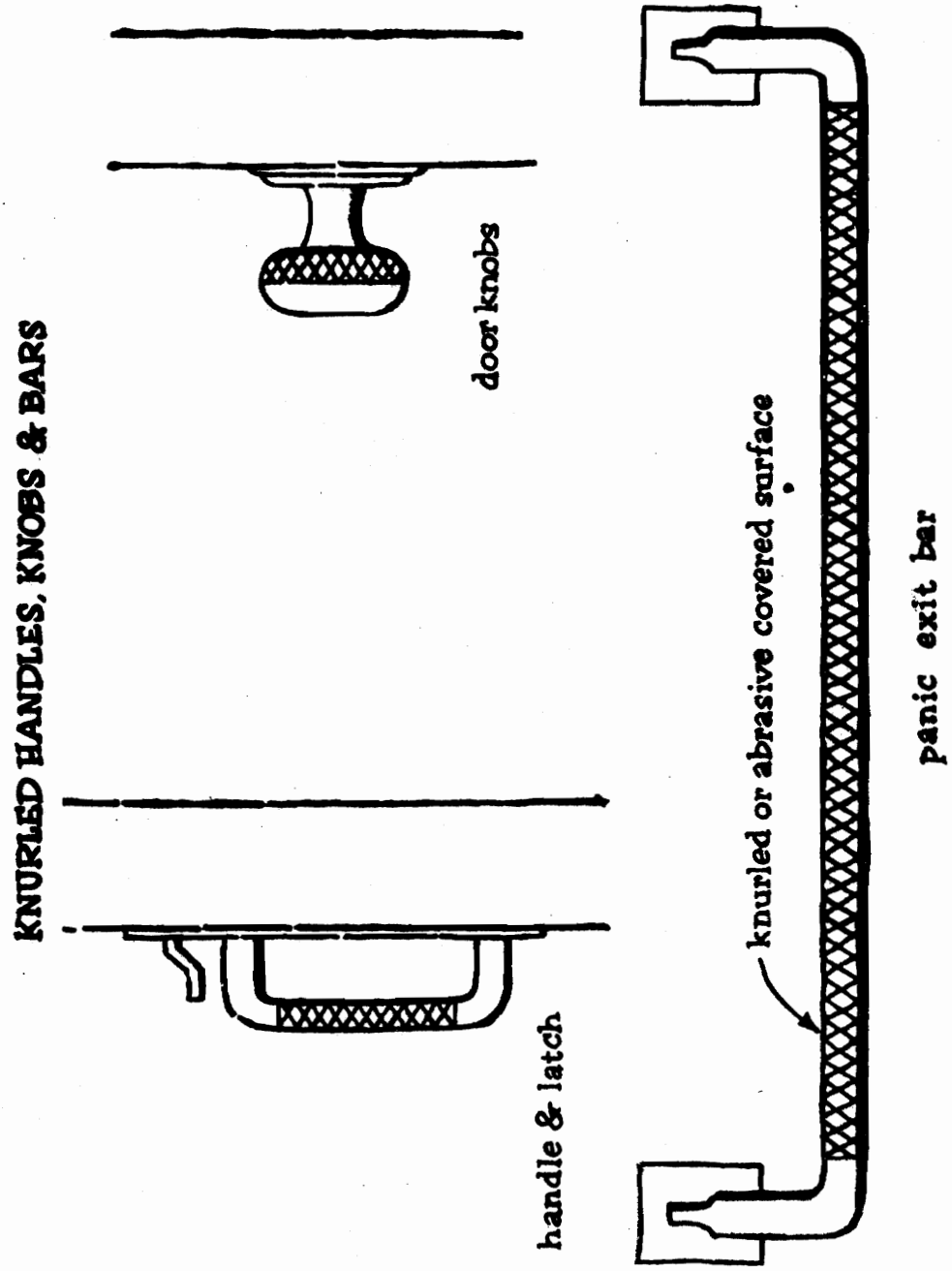




DOORS

IDENTIFICATION




KNURLED HANDLES, KNOBS & BARS
door knobs
handle & latch
knurled or abrasive covered surface
panic exit bar

Appendix L

A Questionnaire Concerning the Access of Virginia Polytechnic Institute and State University to the Handicapped

A Questionnaire Concerning the
Access of VPI & SU to the Handicapped

I am seeking your assistance in evaluating VPI & SU's accessibility to handicapped persons. Access in general refers to the ability of a person to independently and with reasonable effort approach, enter, and conduct their business on the campus or within the facilities of VPI & SU. The information gathered through this questionnaire will be used in a research study of the problem of access and VPI & SU. The VPI & SU Health Service is mailing this questionnaire as a service to the study and to maintain the anonymity of the participants.

The questionnaire should require about ten minutes to complete. Once completed it can be mailed in the enclosed envelope by placing it in any mailbox for campus mail or by leaving it with virtually any secretary on campus. Your assistance with and prompt reply to this questionnaire will be appreciated.

1. Indicate which description below best describes your handicap.

____A. Confined to wheelchair
____B. Difficulty in walking
____C. Blind
____D. Deafness or speaking handicap
____E. Poor coordination
____F. Problems due to age
____G. Temporary handicap: Please describe_____

_____

2. How long have you been handicapped?(If temporary, give an estimate as to how many months the handicap interfered with your normal activity)_____

3. Did you receive special training, other than physical therapy, for dealing with your handicap? Yes_____No_____

If yes, Please describe:_____

_____

_____

4. Considering the factors of (A)access, (B)your handicap, and (C)VPI & SU, what has caused you the greatest problems? Please list the most significant factor first and the least significant factor fifth.

1. _____

2. _____

3. _____

4. _____

5. _____

5. Giving consideration that there is virtually no money available at this time, what are some suggestions you would make to the University administration to increase VPI & SU accessibility to handicapped persons?(Policies, architectural and site changes, etc.)

_____

_____

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6. Giving consideration that if a reasonable budget were available to make some architectural or site changes in the University facilities, what are some changes you would suggest?

_____

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_____

7. Have you personally worked out some method of circumventing existing architectural and site barriers at the University? What are they?

_____

_____

_____

8. Further comments: _____

_____

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OPTIONAL: In order to more completely evaluate VPI & SU's accessibility to the handicapped than is possible through a questionnaire, I would like to talk to some of the VPI & SU students who have handicaps. As I am unaware of who specifically is participating in this survey, please complete the information below if you would be willing to participate in a short interview at your convience.

NAME: _____

LOCAL ADDRESS: _____

_____

PHONE: _____

Again, thank you for your assistance in this study.

Appendix M

Communications Relating to the Study

COLLEGE OF EDUCATION

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DIVISION OF VOCATIONAL-TECHNICAL EDUCATION

November 18, 1975

Mr. William M. Sterrett
Director of Buildings and Grounds
331 Burruss
CAMPUS

Dear Mr. Sterrett:

In reference to our conversations yesterday, I am requesting conformation of your verbal approval to conduct a survey of the architectural barriers to the handicapped in the academic and administrative buildings on VPI's main campus. As I indicated to you, this survey's purpose is to develop data which will be used in my dissertation for the Doctor of Education degree. The dissertation is to be a case study of VPI and the problem of architectural barriers to the handicapped.

Enclosed you will find an example of the type of survey form which will be utilized in the architectural survey. A copy of this form will be completed for each building studied, the data summarized, and recommendations made and reviewed by a jury of experts, one of which will be an administrator of this University. As I will be personally conducting the entire survey I do not anticipate that the process will interfere in any way with the normal conduct of business within the University facilities.

The University need not contribute in any way to the study, however, you or your representative would be welcome at any time to review and make suggestions concerning the conduct of the study. I feel that this is an opportunity for the University, with minimum commitment on it's part, to indicate concern for the handicapped student and demonstrate an awareness for the need for relieving the handicap's number one problem, architectural barriers.

I thank you for your support thus far and look forward to hearing from you. Should questions arise, please contact me at 5123 or 5175 or at the campus address below.

Sincerely,

Robert Carlson

Robert Carlson
216 Lane Hall

November 19, 1975
Approved by:

W. M. Sterrett
Director, B&G

RC:caa

COLLEGE OF EDUCATION

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

DIVISION OF VOCATIONAL-TECHNICAL EDUCATION

January 9, 1976

Charles W. Schiffert, M.D.
Director of Student Health Services
Henderson
CAMPUS

Dear Dr. Schiffert:

I am conducting a case study of the handicapped and the architectual barriers at VPI & SU as a dessertation to fulfill the requirements for an EDd degree from this University. As a part of this study I would like to contact VPI students who are handicapped to determine what problems they may be having in relation to architectual barriers.

The only centralized list of names and addresses of handicapped students appear to be those students who have applied for handicapped parking decals. Today I talked with Mr. Ike Nickols, the Director of Campus Security, about obtaining names and addresses from these records. While personaly willing to provide this information he requested that I obtain further permission from you.

Mr. Nickols was concerned about the confidentality of medical records. I would point out that I am requesting only names and addresses of persons who have otained handicapped parking decals. I have no interest in any medical information whatsoever. I will contact some of these students for interviews but they may individually elect to participate in the study and individually determine the nature and extent of information they wish to contribute.

I therefore request that you approve the release of names and addresses, only, from the security division file of students who have applied for handicapped parking decals.

Please contact me at 5175 or the campus address below if you require further information. I hope you find your way clear to assist me in this matter. Thank you.

Sincerely,

Robert Carlson

Robert Carlson
216 Lane Hall

Approved:
Disapproved: Mr. Nickols
Date:
Comment: Please forward names to me personally. Mark envelope confidential. Thank you C. W. Schiffert, M.D.

Appendix N

List of Names

LIST OF NAMES

Members of the Ad Hoc Committee for the Removal of Architectural Barriers to the Handicapped:

Nathaniel Allen Sheppard - Chairman

Kenneth W. Baker

James Bostrom

Fred Logan

Pascal Malassigne

Alan G. Winslow

Administrative Staff Interviewed:

Kenneth W. Baker, Supervisor of University Planning

Charles Burchard, Dean of the College of Architecture and Urban Studies

Stuart K. Cassell, Vice-President for Administration

Keith A. Furr, Director of Occupational Health and Safety

William O. Goodykoontz, EEO Officer

William M. Sterrett, Director of Buildings and Grounds

VITA

Robert Eugene Carlson was born on April 19, 1943 in Champaign, Illinois. He was raised in Fresno California and returned to Champaign to graduate from Champaign High School in 1961.

Following graduation from high school, he attended the University of Illinois for one year and later attended the Vocational Technical Institute at Southern Illinois University, graduating in 1965 with an Associate in Applied Science Degree in Automotive Mechanics. While working as an automotive mechanic, he completed the requirements for a Bachelor of Science Degree in Education, which was awarded by Southern Illinois University in 1971. Having obtained a Ford Foundation Grant for further study at Southern Illinois University, he completed a Masters Degree in 1972 with a major in Community College/Adult Education. During this period he worked as a maintenance supervisor, automotive mechanic, residence counselor, and automotive mechanics teacher.

From September 1971 to June 1974 he was an automotive instructor and director of the automotive program at Germanna Community College, Fredericksburg, Virginia. In the fall of 1974 he moved to Blacksburg, Virginia to accept a position as half-time faculty member at Virginia Polytechnic Institute and State University with primary instructional responsibility being for teacher training in the Division of Vocational Technical Education. During the following two year period he also completed the requirements for the Educational

Doctorate in Vocational and Technical Education and Business Administration.

He is married to the former Linda LaCost of Findlay, Illinois.

Robert Carlson

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY AND ACCESS FOR THE HANDICAPPED: A CASE STUDY

by

Robert E. Carlson

(ABSTRACT)

The problem of the physically handicapped and architectural barriers has been a growing international, national, and University concern. Handicapped citizens are frequently "walled out" of public buildings because of thoughtlessness of the design. The handicapped have the right of access to public buildings. Because Virginia Polytechnic Institute and State University is a public university, in fact and tradition, it has a responsibility to assure the accessibility of the campus to all who wish to use it. The first step in remeding the access problem at the university level would be to inventory the architectural barriers in the campus buildings and on the University site and access the current status of other factors effecting access at the University.

The purpose of this study was to examine the problem of access and the handicapped at Virginia Polytechnic Institute and State University through these four research questions:

1. What was the current status of the problem of architectural

barriers within the facilities of Virginia Polytechnic Institute and State University?

2. What was the extent of the activity, either proposed or in progress, for relieving the existing architectural barriers within Virginia Polytechnic Institute and State University?

3. What was the extent of activity designed to prevent architectural barriers in future construction of University facilities?

4. What were the activities or programs which would be appropriate to provide for the removal of architectural barriers within current and future facilities of Virginia Polytechnic Institute and State University?

The study developed the data to answer these questions through three research methods. First, an architectural survey form was developed from existing forms, architectural specifications, and related literature. This survey form was used to inventory the architectural barriers in fifty-one academic and administrative buildings on the University's main campus.

The second method involved contacting handicapped students and staff in order to obtain their viewpoint concerning problems associated with access at the University. The contact was made by a mailed questionnaire and through personal interviews.

The third method involved interviewing various members of the University administrative staff to determine the experience and perceptions of administrative staff concerning problems of access. Secondary purposes of these interviews were to determine if funds would be abailable to support the process of making the University accessible.

It was found that the University was not generally accessible to handicapped persons. No building on the campus complied with current National or state access standards. No local organization or person had the responsibility to assure a barrier-free campus. Funds for removing campus barriers were non-existant and few descretionary funds could be used for this purpose. The single activity directed toward removal of architectural barriers on the campus was the development of an Ad Hoc Committee of the University Faculty Senate to study the problem.

The study concluded with several recommendations in the areas of policy and architectural and site alterations. The primary implication for further research was directed toward defining the characteristics of Virginia's and Virginia Polytechnic Institute and State University's handicapped population and to use this data to determine why the University's handicapped population was so low.