Iowa Infrastructure '95

A Report of Infrastructure Needs in the State of Iowa

Final Report

Prepared for:

Capital Projects Committee
of the Legislative Council

Prepared by:

James E. Rowings

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Iowa State University

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List of Figures

List of Tables

Introduction

This document presents the findings of a research effort conducted by the Department of Civil and Construction Engineering at Iowa State University for the Iowa Legislative Service Bureau. The study was divided into the following seven tasks:

1. Compilation of a systematic and consistent inventory of the horizontal and vertical infrastructure of this state.
2. Determination of the current value of infrastructure.
3. Development of an overall assessment of infrastructure needs for the next 10 years, considering various infrastructure categories, construction of new facilities, and maintenance and renovation of current facilities.
4. Development of systematic measurement criteria for the vertical and horizontal infrastructure, with preference being given to measurement criteria and the recommendations of the state Department of Transportation's 1994 quadrennial study of horizontal transportation infrastructure needs.
5. Identification of recent and current expenditures and financing methods for infrastructure construction, maintenance, and renovation.
6. Development of recommendations as to proposed funding mechanisms to meet the infrastructure needs for the next 10 years.
7. Development of specific needs assessment priority lists for vertical infrastructure and for horizontal infrastructure, giving preference to the recommendations of the state Department of Transportation's 1994 quadrennial study for purposes of the horizontal transportation infrastructure.

The types of infrastructure analyzed in this study vary greatly in several areas. The infrastructure is controlled by various entities from school superintendents and school boards, to city managers and city engineers, to professional facilities management groups at state universities. These various agencies and entities represent a wide range of facility management and capital planning experience ranging from almost none at all to significant numbers of professional planners. The function of the infrastructure included in this study varies greatly also. The facilities range from public schools, to police and fire stations, to hospitals, to wastewater

treatment plants. This wide range of management type and facility function make the development of a consistent methodology of collecting, compiling, and analyzing relevant information for the determination of needs virtually impossible. Therefore, the findings for tasks 1-3 will be reported separately for each major infrastructure category such as schools, cities, etc. The methodology used for each of these infrastructure categories will be explained in their respective sections of the report.

Public Schools

Information for public schools was collected by means of a survey sent to all 389 districts in the state. This survey was prepared by the researchers with the cooperation of the Department of Education. The Department of Education routinely collects information from the school districts regarding vacated school buildings in the state. In doing so, they also collect information on occupied buildings. The Department of Education provided a copy of their vacated building database to serve as the basis of the survey for this study. In return, a copy of the data set produced by this study will be made available to the Department of Education. Table 1, *School Data*, contains a listing of the type of information that was included in the data obtained from the Department of Education.

The Department of Education Database included a record for each building and addition in the state. There were over 4000 records in the database covering approximately 2500 buildings. Since the data had not been updated for 4 years, the research effort required updating this information for the Department of Education as well as collecting other information from school districts relevant to the study. To accomplish this, the school districts were asked to provide information on how the space in their schools is being utilized. Table 2, *Space Usage Categories*, shows a listing of the space usage categories for which school districts were asked to provide the number of rooms and the total square footage for each applicable category. A space usage record was necessary for each build and each addition in the district. Building capacities and current and expected future enrollment information was also requested on the surveys. A blank form was included with the mailing to be used to provide information on new additions or buildings. Examples of the forms used are in Appendix A.

The Department of Education is required by law to collect information on vacated buildings in all public school districts. Hence, the Department of Education provided a cover letter for the survey directing that districts complete the survey and return the forms to Iowa State University in the prepaid envelope provided. Table 3, *School Survey Response Rates*, presents how public school districts responded to the survey. Overall, 77 percent of the school districts responded to the survey in some manner, however, only 64 percent were complete or substantially complete to the point where all of the information could be utilized. The responses to the survey

Page Header	The page header contains the county and district number, the AEA number, the district name and address, the superintendent's name and phone number.
School #:	This line contains the school number which should correspond to the numbers in the directory, the building name or description, building address and city. **Note: If the school number varies from that in the directory please explain why.**
Accessible:	Is the building accessible to handicapped individuals?
Mobile building:	Is this a relocatable building? **(note: on some forms an error caused the wrong response to be shown)**
Capacity:	What is the maximum student capacity of the building? (original design capacity)
Year closed:	If this building was closed give the year
Year disposed:	The year in which the school board took action to dispose of the building
Current use:	If the building was disposed of, what is its current use? **demolished, sold-private party, sold-public party, given to city or other government agency, other–describe**
Type of construction:	**brick, wood frame, metal, block, brick and block, concrete**
Gross square feet:	The sum of each floor measured to the exterior walls
Heat type:	**steam, hot air, electricity, hot water**
Heat source:	**electricity, coal, oil, solar, natural gas, LP gas, wood, other**
Status:	**vacated, partially occupied, leased, rented, fully occupied**
Sewer:	**public, septic tank, lagoon, none, other**
Water:	**city, private, none, other**
Pool:	Does the building have a swimming pool?
Code violation:	Were there any fire code violations on the last inspection?
Acres:	Size of the site in acres to the nearest whole acre
Ownership:	**LEA owned, privately owned, rented-leased, other**
Last remodel date:	The last date on which the building was significantly remodeled
Last replace roof:	The last date on which the roof was replaced
Last replaced windows:	The last date on which the windows were replaced
Asbestos Sq Ft:	The total square feet of friable asbestos including walls, ceilings and boiler coverings
Asbestos Ln Ft:	The total linear feet of asbestos including pipe wrapping
3yr asbestos reinspection:	On what date was the last 3 year asbestos reinspection performed?
Preventative maintenance:	Do you have a formal preventative maintenance program?
Contract custodial/maint:	Do you contract either custodial or maintenance work?
Enrollment (this building):	current and design capacities for the building as a whole plus future enrollment predictions

Academic Areas
- General Classroom
- Classroom Other
- Art
- Auditorium
- Music
  - Instrumental
  - Vocal
  - Other
- Home Economics
- Vocational / Technical
  - Drafting / Graphics
  - Industrial
  - Agricultural
  - Other
- Science
  - Classroom
  - Laboratory
- Media Center
  - Reading Room
  - Conference
  - Production Lab
  - Work Area
  - Library
  - Periodical Room
- Student Center / Student Lounge
- Computer Labs
- Distance Learning / Teleconference
- Business Machines / Typewriters

Physical Education
- Locker Rooms
- Shower Rooms
- Gymnasium
- Office
- Swimming Pool
- Training Room
- Weight Room
- Wrestling Room
- Team Sports Locker Room
- Athletic Storage

Food Services Facilities
- Cafeteria
- Storage Area
- Kitchen(s)
- Dishroom(s)

Administration and Support Areas
- Administration
- Conference
- Guidance
- Health
- Work Room
- Storage

Maintenance and Operations
- Custodial Storage
- Boiler Room
- General Storage
- Work Shop

School Survey Response Rates

Enrollment Category	Number of Districts	Complete		Substantial		Partial		Blank		None	
		#	%	#	%	#	%	#	%	#	%
- 399	85	44	52%	8	9%	6	7%	9	11%	18	21%
400 - 649	109	62	57%	13	12%	2	2%	12	11%	20	18%
650 - 999	80	43	54%	14	18%	3	4%	5	6%	15	19%
1000 - 2999	89	40	45%	11	12%	6	7%	5	6%	27	30%
3000 -	26	12	46%	1	4%	0	0%	4	15%	9	35%
Total	389	201	52%	47	12%	17	4%	35	9%	89	23%

were divided into the following five categories:

Complete - Appeared to have completed all requested information

Substantial - Most information appeared to have been provided

Partial - A significant amount of information was missing (typically square footage for space usage)

Blank - Survey forms were returned without any information updated

None - the survey forms were not returned.

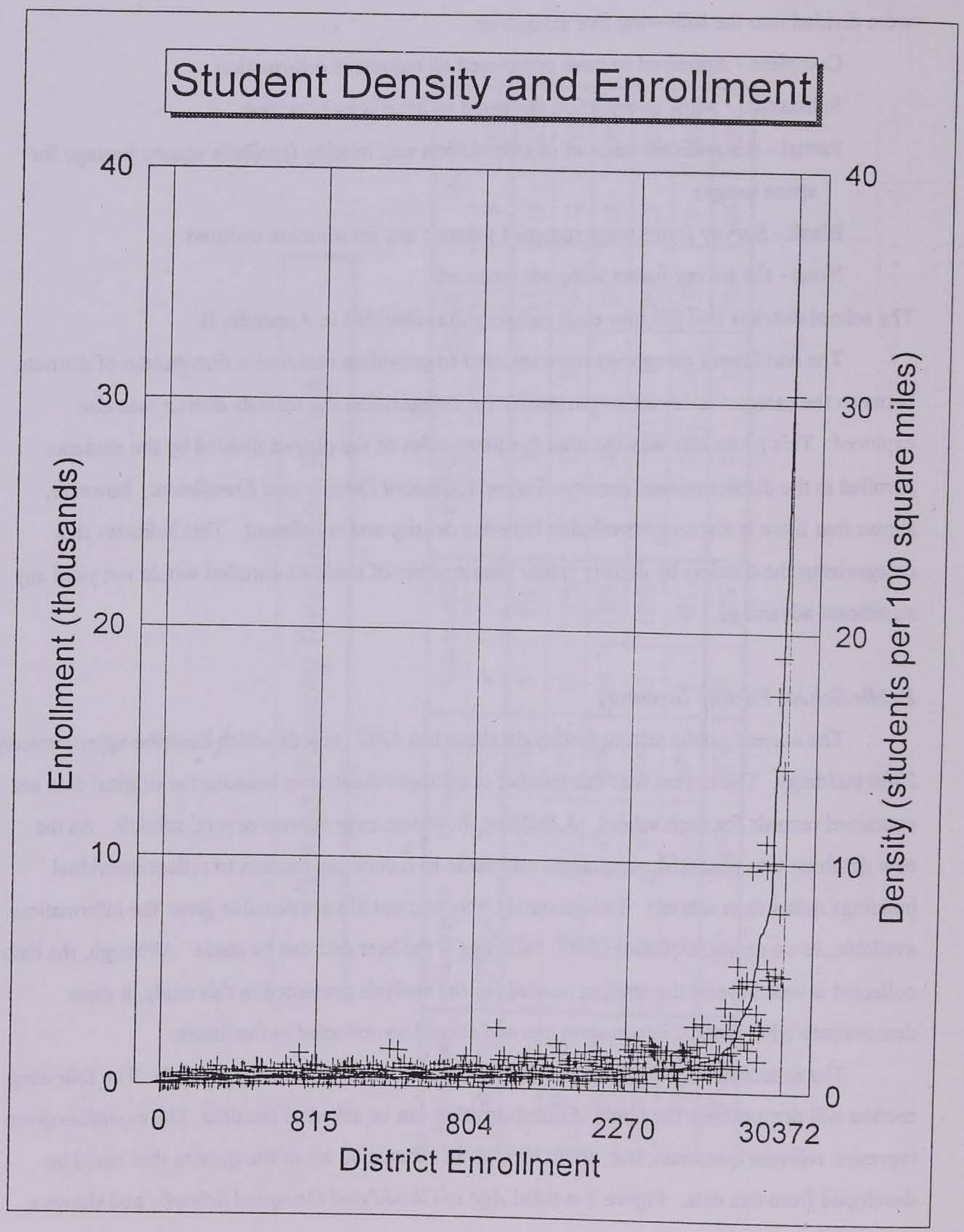
The school districts that fall into each category are identified in Appendix B.

The enrollment categories were selected to provide a reasonable distribution of districts between the categories. Another parameter for categorizing the schools district was also explored. This parameter was the area in square miles of the district divided by the students enrolled in the district termed density. Figure 1, *Student Density and Enrollment*, however, shows that there is a strong correlation between density and enrollment. This indicates that categorizing the districts by density rather than number of students enrolled would not yield any significant advantage.

Public School Facility Inventory

The current public school facility database has 4242 records which describe approximately 2300 buildings. The reason that this number is an approximation is because the original data set contained records for each school. A building, however, may contain several schools. As the new database was prepared, an attempt was made to reduce the records to reflect individual buildings rather than schools. Unfortunately, this was not always possible given the information available, so an estimate of about 2300 buildings is the best that can be made. Although, the data collected is well beyond the amount needed for the analysis presented in this study, it does demonstrate what type of information can and should be collected in the future.

The school facility database has a tremendous amount of information in it. The following section will demonstrate the kinds of questions that can be asked of the data. The examples given represent relevant questions, but, are in no way an exhaustive set of the queries that could be developed from this data. Figure 2 is titled *Age of Closed and Occupied Schools*, and shows a


Student Density and Enrollment
40
30
20
10
0
Enrollment (thousands)
40
30
20
10
0
Density (students per 100 square miles)
0
815
804
2270
30372
District Enrollment

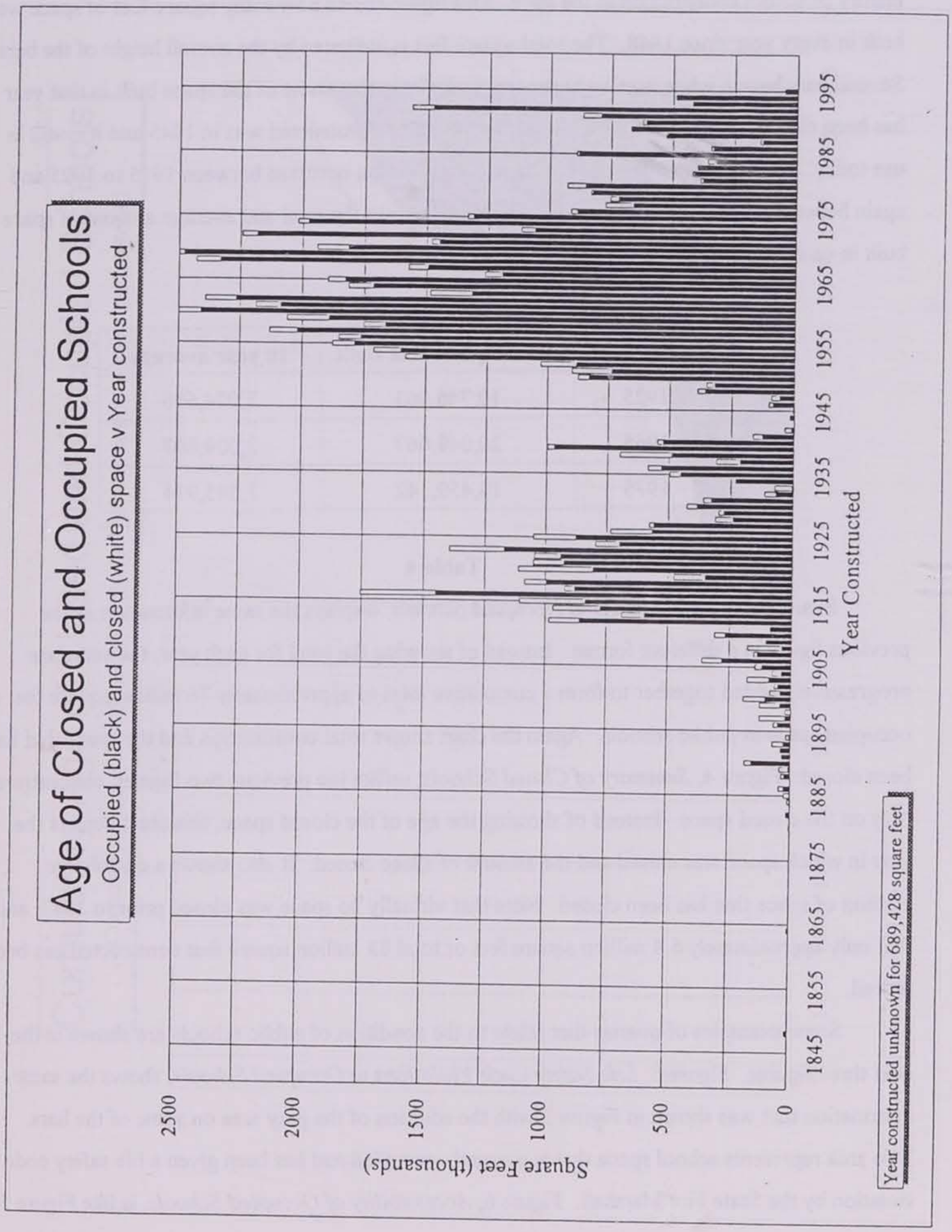


Figure 2 - Age of Closed and Occupied Schools

history of school construction in the state. This figure shows how many square feet of space were built in every year since 1848. The total square feet is indicated by the overall height of the bars. Several bars have a white portion at the top, to indicate that some of the space built in that year has been closed. Notice that the oldest school building constructed was in 1845 and it is still in use today. Also, notice, that peak periods of construction occurred between 1915 to 1925 and again between the years of 1955 to 1975. Table 4 shows the total and average amount of space built in each of these periods.

Period	Total square feet built	10 year average
1915 - 1925	10,746,063	1,074,606
1955 - 1965	20,048,067	2,004,807
1965 - 1975	18,459,142	1,845,914

Table 4

Figure 3, *Age of Closed and Occupied Schools*, displays the same information as the previous figure in a different format. Instead of showing the total for each year, the years are progressively added together to form a cumulative total of approximately 76 million square feet of occupied space in public schools. Again the chart shows total construction and the space that has been closed. Figure 4, *Summary of Closed* Schools, unlike the previous two figures, concentrates only on the closed space. Instead of showing the age of the closed space, this chart depicts the year in which space was closed and the amount of space closed. It also shows a cumulative amount of space that has been closed. Note that virtually no space was closed prior to 1982, and that only approximately 5.4 million square feet of total 83 million square feet constructed has been retired.

Some examples of queries that relate to the condition of public schools are shown in the next three figures. Figure 5, *Life Safety Code Violations in Occupied Schools*, shows the same information that was shown in Figure 2 with the addition of the gray area on some of the bars. This area represents school space that is presently occupied and has been given a life safety code violation by the State Fire Marshall. Figure 6, *Accessibility of Occupied Schools*, is like Figure 5

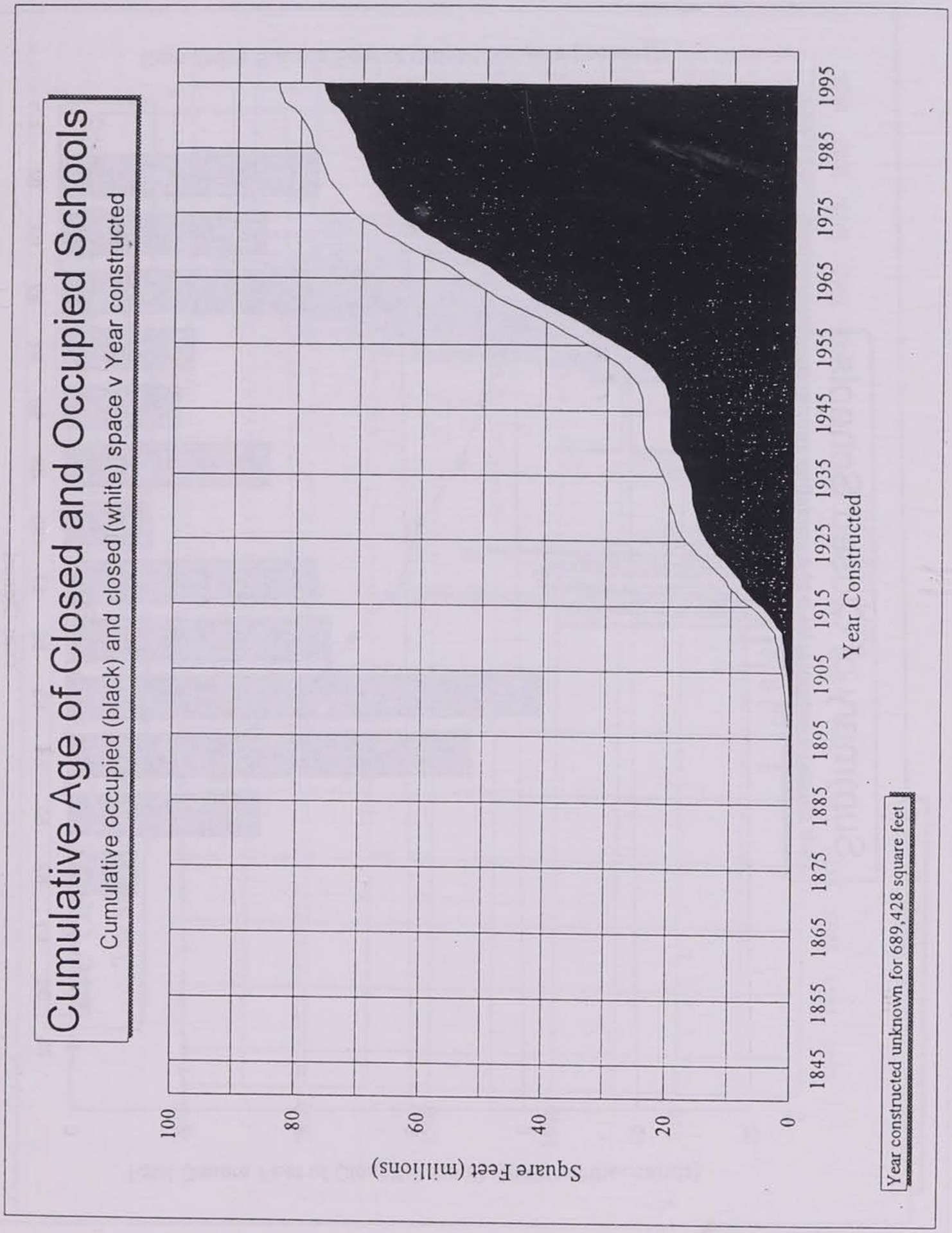


 Figure 3 - Cumulative Age of Closed and Occupied Schools

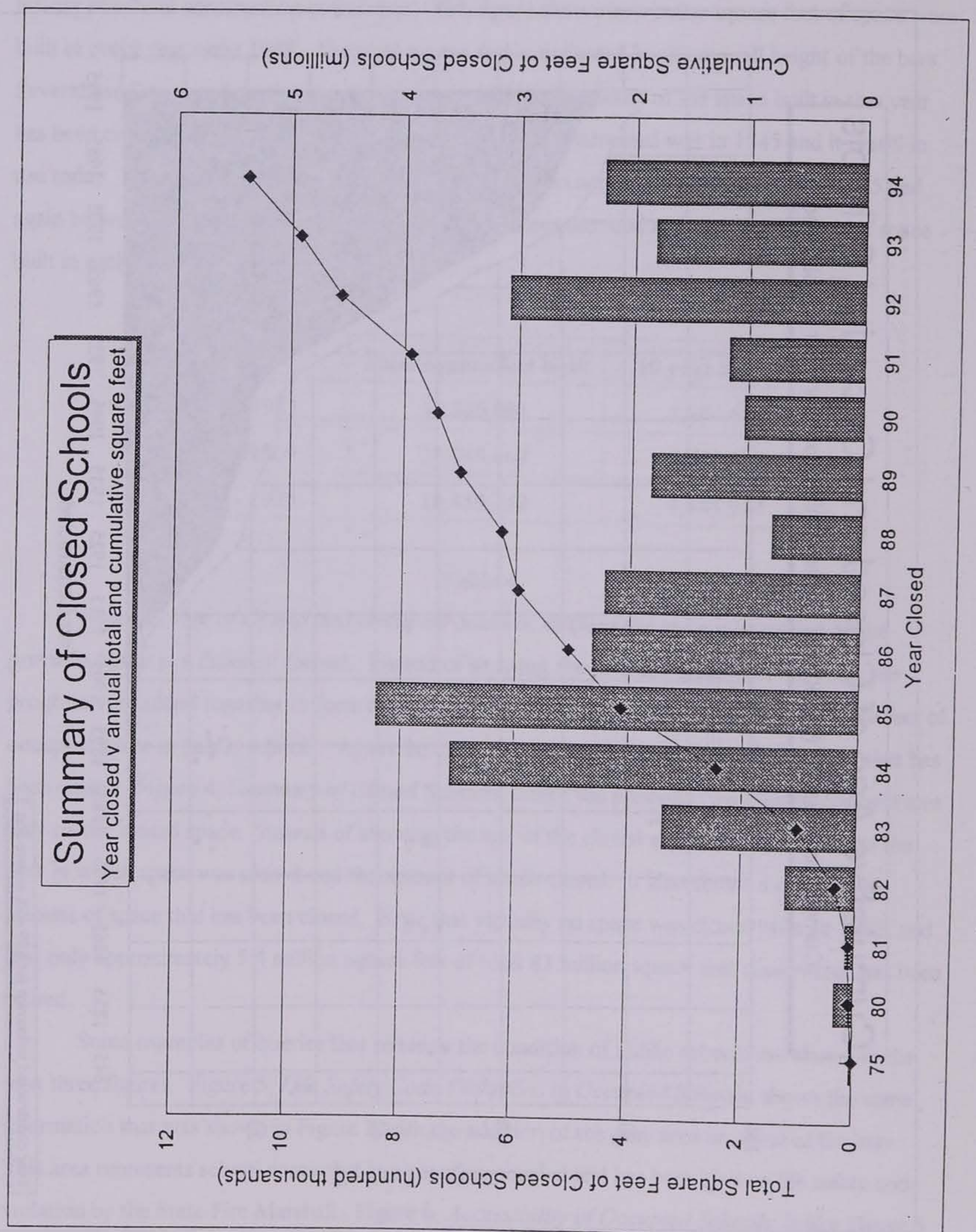


Figure 4 - Summary of Closed Schools

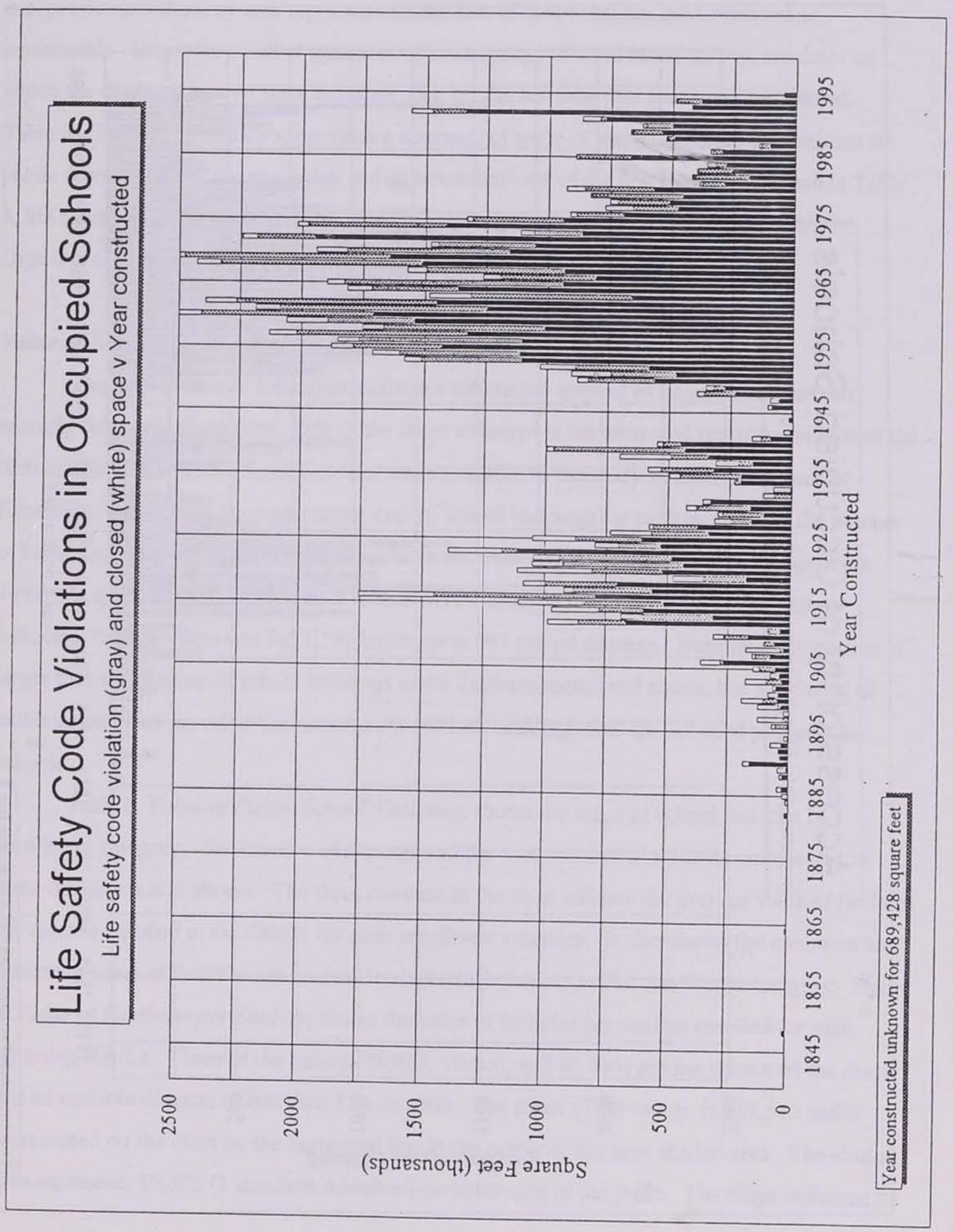


Figure 5 - Life Safety Code Violations in Occupied Schools

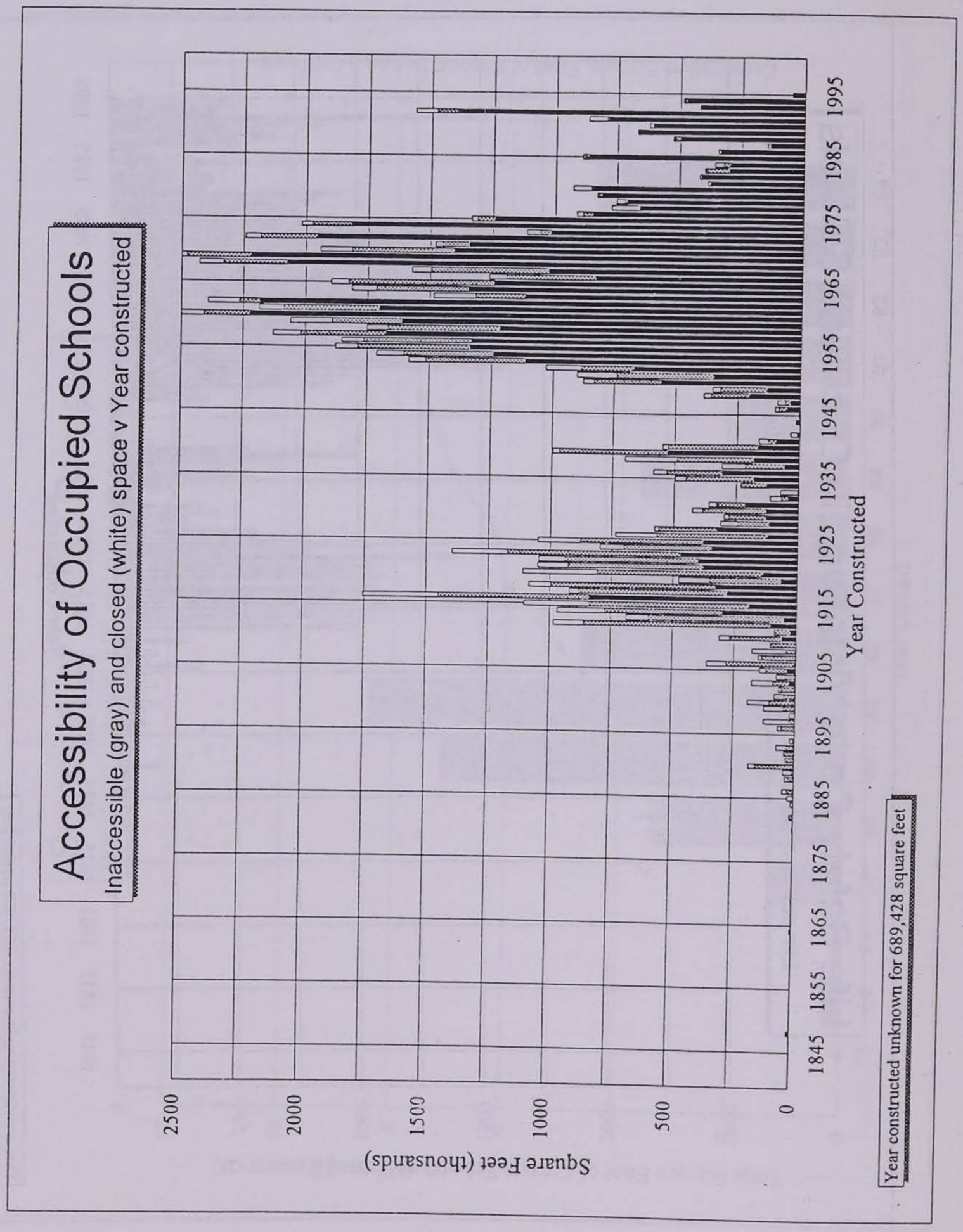


Figure 6 - Accessibility of Occupied Schools

except that now the gray area represents square feet of space that has been reported as inaccessible. Examples of other measures of inadequacy collected in the survey, are dates on which the roof or windows were replaced, and, or, the last time that space was remodeled. Table 5, *Condition Indicators*, provides a summary of some of these indicators of condition for public schools. All of the space that is deficient in any one of the first four areas shown in Table 5, life safety violation, inaccessible, unimproved, or inadequate roof, is shown in Figure 7, *Deficient Occupied Schools*, by the gray portion of the bars.

Value of School Facilities

The Department of Education collects a substantial amount of financial information annually from school districts. One of the items collected is the estimated replacement cost of the district's facilities. This information was made available to the study by the Department of Education. It included the replacement cost of school buildings for each district and the number of buildings in each district. The total replacement value for all public school buildings in the 1993-94 report was $4,892,882,227. There were 8 districts that reported $0. The report indicated that this value was for 3,191 buildings in 397 school districts. Note that this number is larger than the number of school buildings in the database mentioned above, but it includes all buildings whereas the other data attempts to exclude buildings that are not used primarily as schools.

Table 6, *Value of Public School Facilities*, shows the value of school facilities by enrollment category. The number of districts and the total number of students represented in these districts is also shown. The three columns at the right indicate the average value of facilities per student enrolled in the district for each enrollment category. It also shows the minimum and maximum value of facilities per student for individual districts in that enrollment category. Figure 8, *Value of Facilities per Student*, shows the value of facilities per student enrolled for each reporting district. Three of the values (78,922, 50,000, and 30,000) are not shown on the chart and all occur in districts of less than 150 students. The mean of the values is $11,515 and is represented on the chart by the horizontal line in the center of the gray shaded area. The shaded area represents $5,592 (1 standard deviation) on either side of the mean. The range indicated by

Life Safety Violations	
Percent of space in violation	31 %
Percent of individual schools in violation	36%
Inaccessible	
Percent of inaccessible space	29%
Percent of inaccessible school buildings	45%
Unimproved Space	
Percent of space built before 1980 that has not been remodeled.	81%
Square of unimproved space	53,475,104 sf
Inadequate Roof	
Percent of space built before 1970 that has not had the roof replaced.	46%
Square feet of space with inadequate roof	24,286,532 sf
Old Windows	
Percent of space built before 1965 that has not had the windows replaced	61%
Square feet of space with old windows	26,989,453 sf
Overall Deficient	
Percent of all occupied space that is deficient in any of the above areas (excluding windows)	89%
Total square feet of deficient space	64,468,175 sf

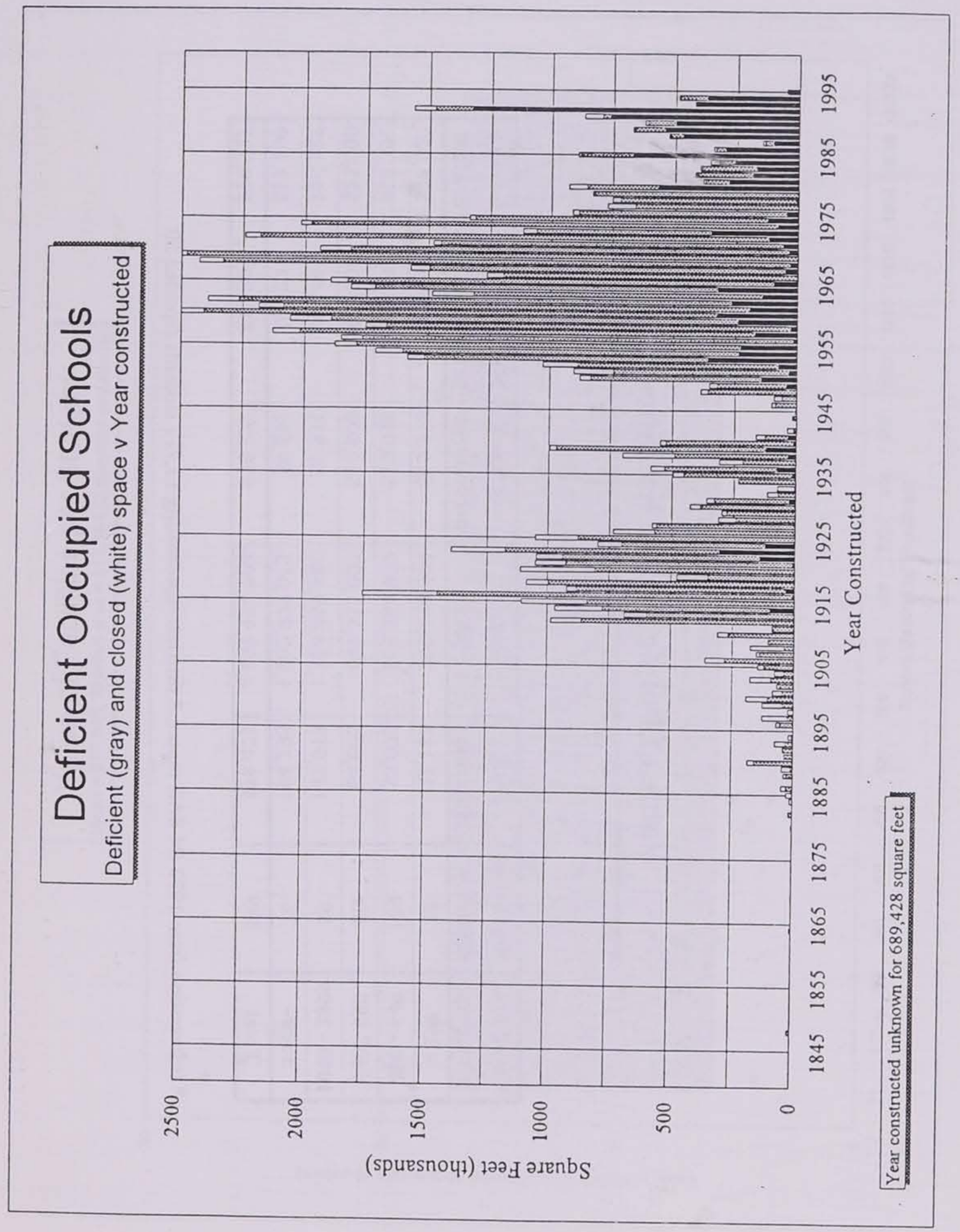


Figure 7 - Deficient Occupied Schools

Value of Public School Facilities*

Enrollment Category	Number of Districts	Total Students	Total Value	Average $ per Student	Minimum $ per Student	Maximum $ per Student
- 399	85	22,185	299,299,624	$15,258	$4,164	$78,922
400 - 649	109	55,075	605,254,979	$10,938	$3,639	$18,391
650 - 999	80	64,005	691,533,007	$10,809	$1,629	$25,000
1000 - 2999	89	142,913	1,394,889,381	$9,831	$5,649	$26,587
3000 -	26	194,295	1,902,977,013	$9,691	$6,427	$13,160
Total	389	478,473	4,893,954,004	$10,228	$1,629	$78,922

* Information from 1993-94 SAR report, 8 districts representing 13,713 students reported $0

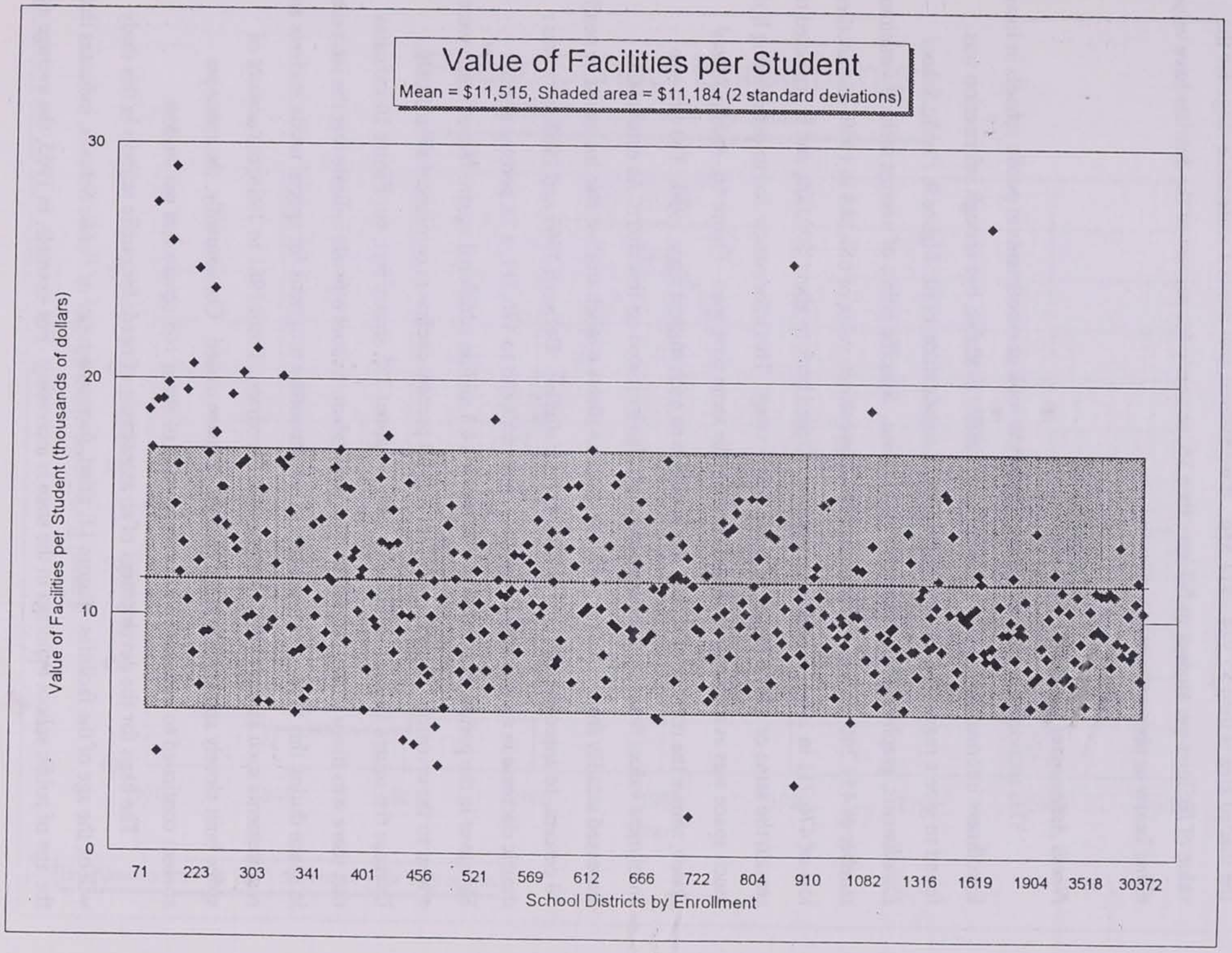


Figure 8 - Value of Facilities per Student

the shaded area is then $5,924 - $11,516. If we assume, that this is a reasonable range for the value of facilities per student to fall into, then 36, or nearly 10, percent of the districts have values either below or above this range.

Needs Assessment for Public Schools

This section will begin by taking a historical look at enrollments in public schools in Iowa. Enrollment information for every year was not readily available, but enough information was found to give a reasonable picture of enrollment trends since 1930. Figure 9, *Public School Enrollments*, graphically illustrates this information. Specific points of interest include a minimum number of 454,240 students enrolled in 1944, a maximum value of 659,888 in 1969, and another low of 476,711 in 1988. Enrollment has now climbed back to about 500,000, and is projected to remain the same or a little higher over the next 5 years. This information led to determining how much space was available to each student over the same time span. Figure 10, *Public School Space*, shows the number of square feet available to each student since 1930. The extreme enrollment values from the previous figure are also indicated on this chart. As enrollments increased steadily from 1944 to 1969, the space available to each student also increased by nearly 50 percent, to approximately 100 square feet per student. Between 1969 and 1988 there was a drastic decrease in enrollments in the state, from 659,888 to 476,711, a 28 percent decline. However in the period from 1970 to 1980 over 14.3 million additional square feet of space were added to the inventory of public schools. The 28 percent decline in enrollment should only increase the square feet per student, by 1980, to about 125 square feet, but Figure 10 indicates that there was likely about 140 square feet per student. School officials indicate that the increases in space during this time were necessary to accommodate programs for special needs students and requirements such as each school having an art program. From 1981 to 1988, the amount of space built closely approximated the amount of space closed. Consequently, the space per student continued to increase to its present value of about 165 square feet per student.

The basis for the development of an assessment of needs for public schools in this study will be the age of the facilities. Figure 11, titled, *Increasing Age of Public Schools*, indicates that the age of public school buildings in the state is increasing. For example, in 1965, the average age

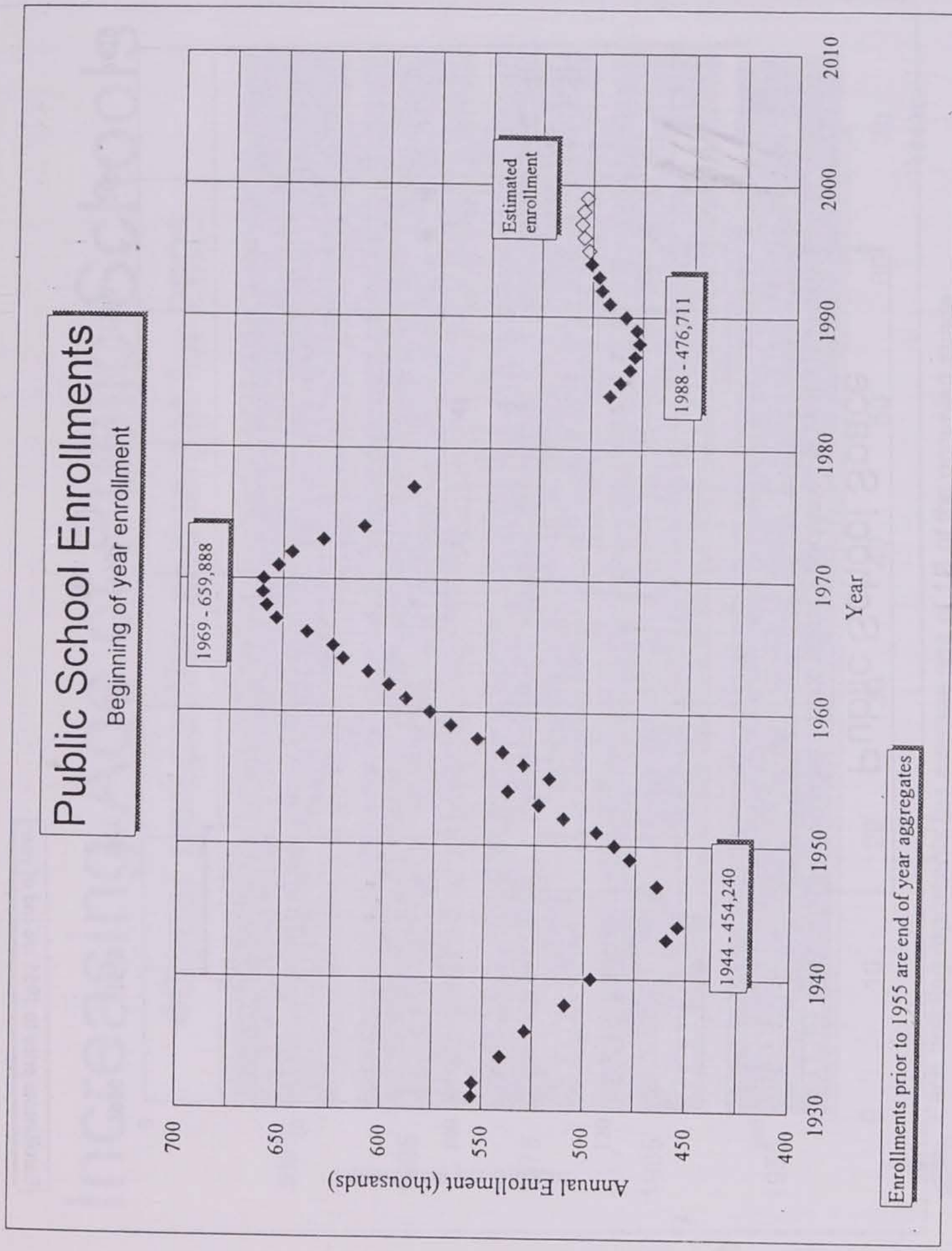


Figure 9 - Public School Enrollments

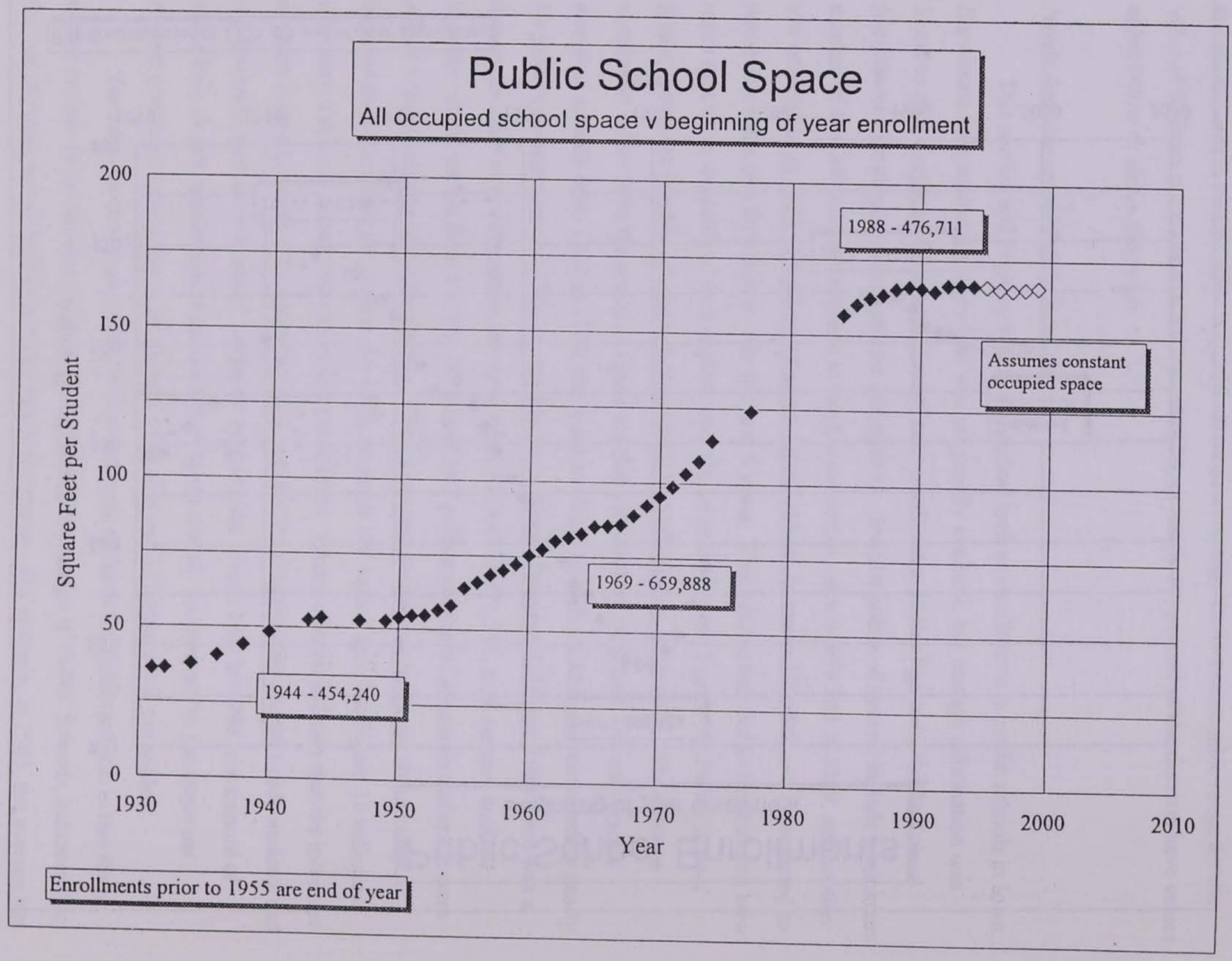


Figure 10 - Public School Space

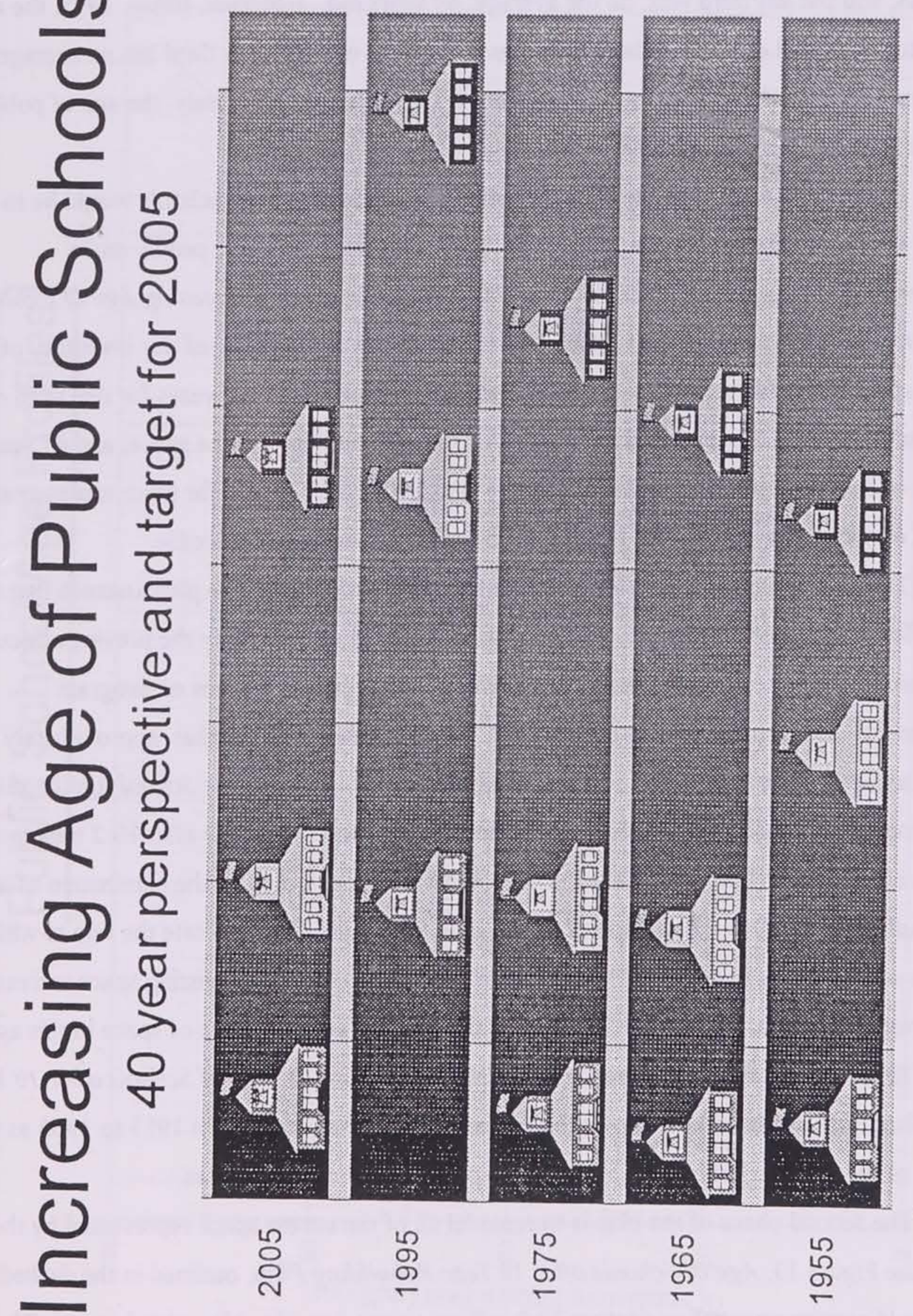


Figure 11 - Increasing Age of Public Schools

of one third of public school buildings was only 5 years old, the next third had an average age of 17 years, and the last third was, on the average, 49 years old. However, today, 1995, the average of the top one third of public school buildings is 18 years old, the next third has an average age of 45 years, and, on the average, the last one third is 68 years old. Obviously, the age of public schools is increasing dramatically.

One way to determine the capital expenditure needs for public schools would be to project what it would require to decrease the age of the existing space to a age profile more representative of the past. The bar labeled 2005 on the Figure 11, *Increasing Age of Public Schools*, is the goal that has been established to reduce the average age of our inventory of public school space. This bar represents attaining a target average age of 6.6 years for one third of the public school space, 20 years of average age for the next one third of the space, and 47 years for the last one third of public school space by the year 2005. This goal is far more representative of the age of public schools around 1965 to 1975 than is the current age profile.

To achieve this goal, a two phase plan has been developed. The plan assumes that the square feet of occupied space will remain constant. This is supported by the previous discussion on square feet of space available to each student, although new initiatives on program requirements could change this as seen before. The first phase requires that approximately 19.2 million square feet be built in the next ten years. Figure 12 titled, *Public School Age Profiles*, shows the target profile (long dash line) described above, and the profile after 19.2 million square feet have been rebuilt (short dash line). One way to view this would be the elimination of all space built prior to 1945. The slope of the lines on the profile chart indicate the rate at which space is accumulating over time. From 1953 to 1975 the slope of the existing space increases at a higher rate than the target profile. This means that there is an abundance of space in this age range. This can be more clearly seen by examining the Figure 13, *Age of Schools after 10 Year Rebuilding Plan*, which clearly shows the excess space in the period from 1953 to 1955 as the portion of the gray bars above the target age represented by the black bars.

The second phase of the plan is to remodel all of the excess space represented by the gray bars in the Figure 13, *Age of Schools after 10 Year Rebuilding Plan*, outlined in the dashed line. This would require remodeling another 19.2 million square feet of public school space. The

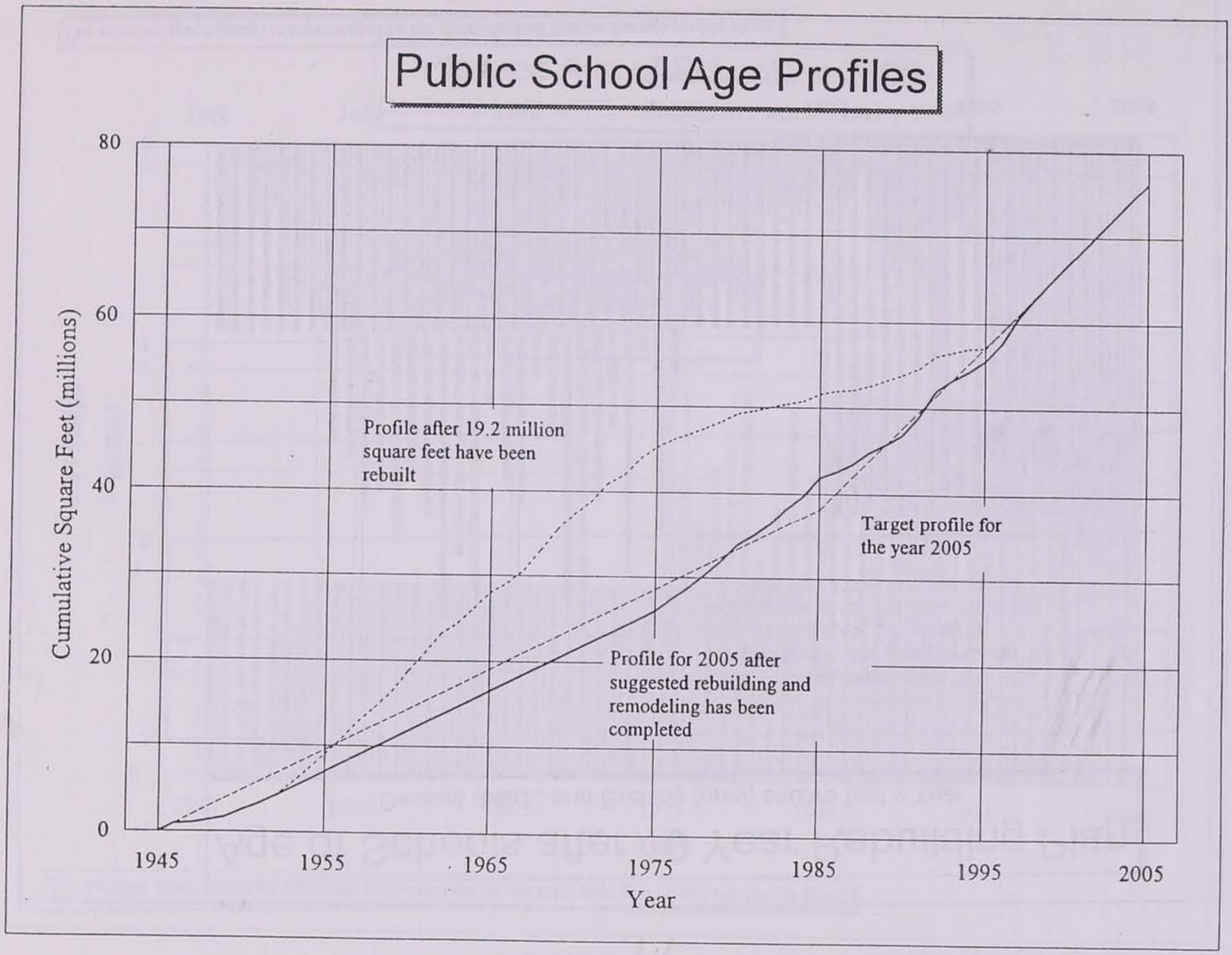
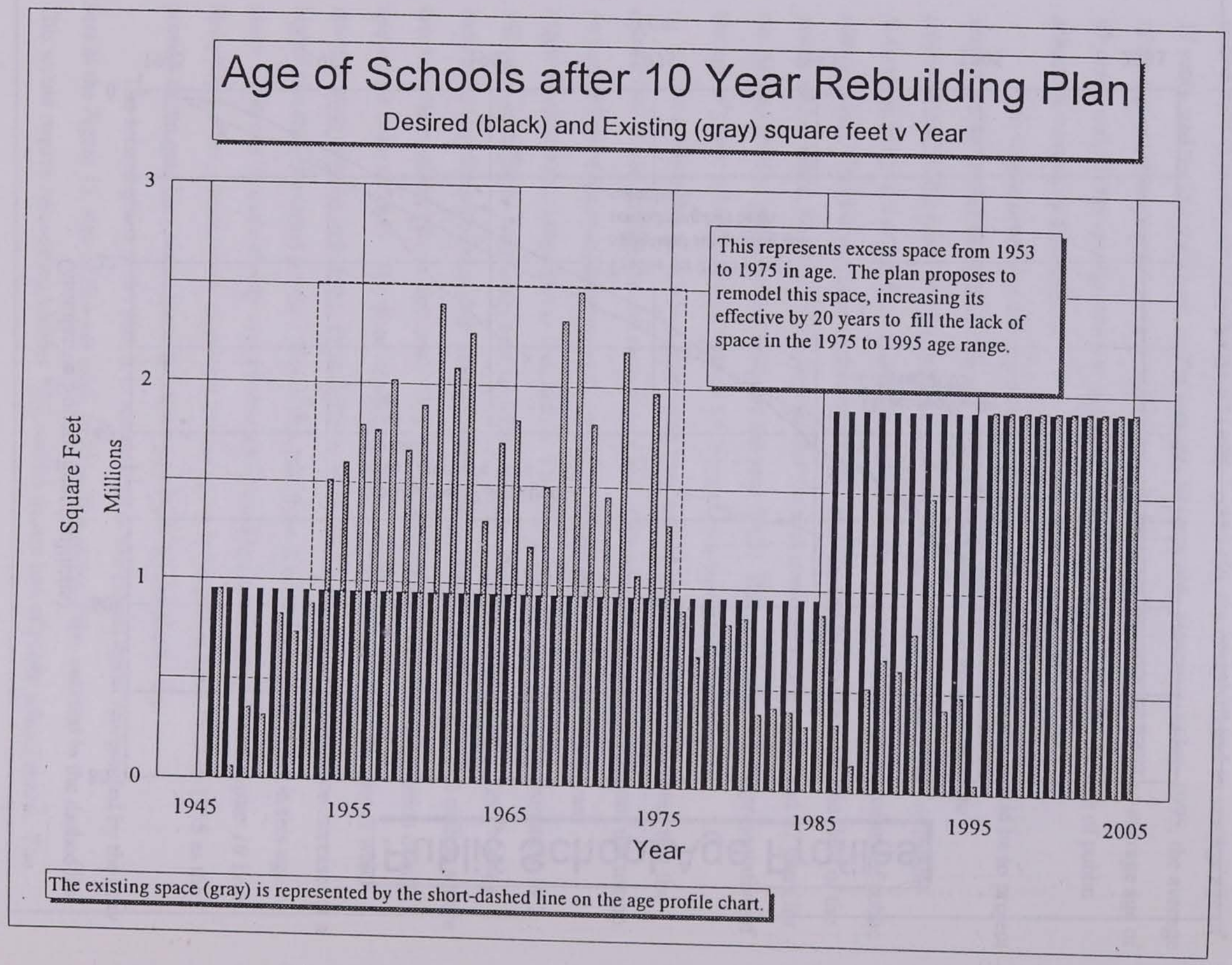


Figure 12 - Public School Age Profiles


Age of Schools after 10 Year Rebuilding Plan
Desired (black) and Existing (gray) square feet v Year
This represents excess space from 1953 to 1975 in age. The plan proposes to remodel this space, increasing its effective by 20 years to fill the lack of space in the 1975 to 1995 age range.
Square Feet
Millions
3
2
1
0
1945
1955
1965
1975
1985
1995
2005
Year
The existing space (gray) is represented by the short-dashed line on the age profile chart.

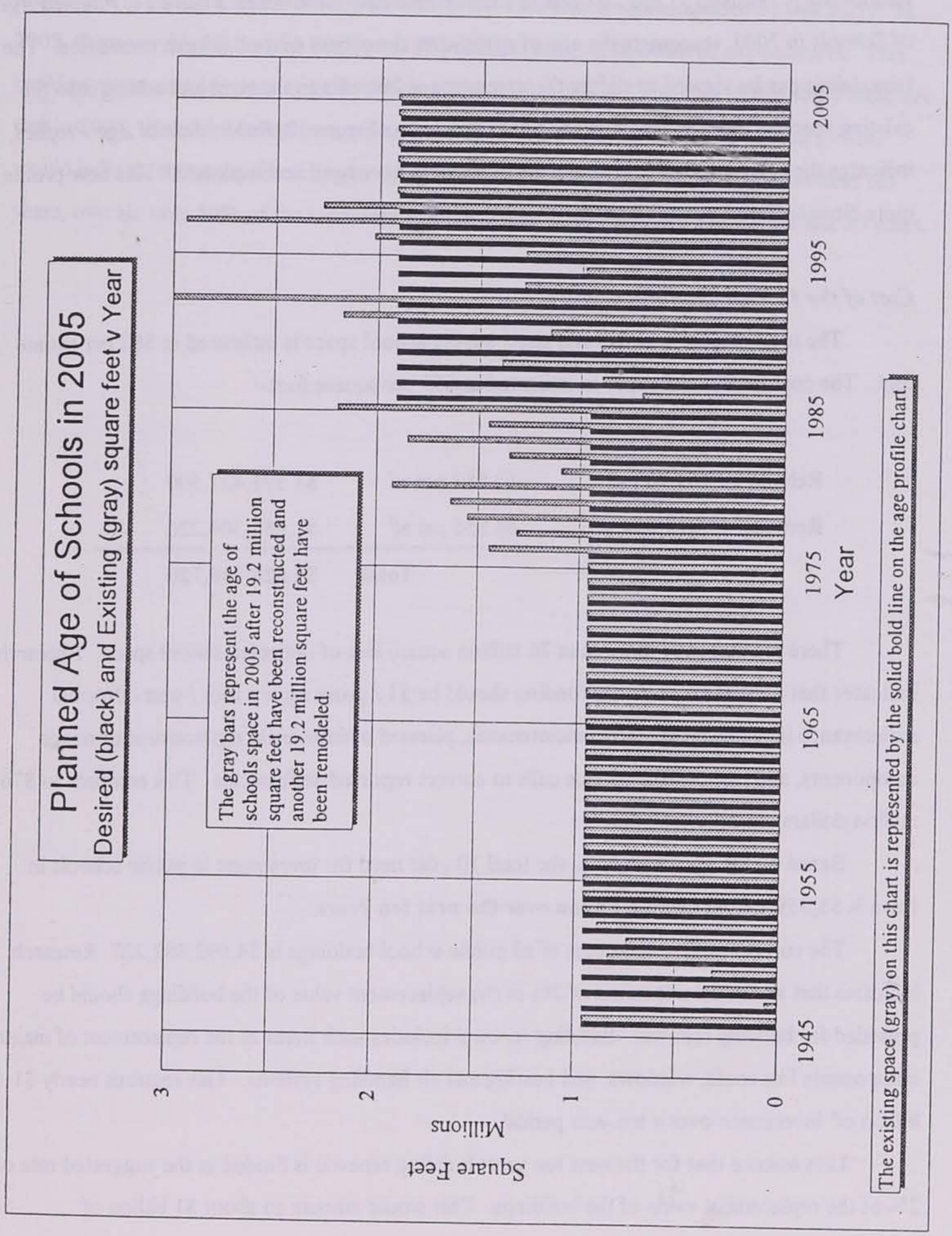


Figure 14 - Planned Age of Schools in 2005

remodeling is assumed to add 20 years to the effective age of the space. Figure 14, *Planned Age of Schools in 2005*, represents the age of space after the excess space has been remodeled. The remodeling can be viewed as sliding the excess space 20 years to the right and adding it to the existing space in those years. The solid bold line on the Figure 12, *Public School Age Profiles*, indicates the age profile after both phases of the plan have been accomplished. This new profile is quite close to the target age profile.

Cost of the 10 Year Plan

The total project cost to build good quality school space is estimated at $82 per square foot. The cost to remodel space is estimated at $55 per square foot.

Rebuild 19,163,750 sf	@ $82 per sf	$1,571,427,500
Remodel 19,223,804 sf	@ $55 per sf	$1,057,309,220
	Total	**$2,628,736,720**

There are currently more than 76 million square feet of occupied school space. Research indicates that normal maintenance funding should be $1 / gross square foot / year. Normal maintenance includes preventative maintenance, planned maintenance, replacement of minor components, and response to service calls to correct reported deficiencies. This amounts to $76.2 million dollars annually.

Based on the above analysis, the total 10 year need for investment in public schools in Iowa is $3,359,129,953 or **3.4 billion over the next ten years**.

The current replacement cost of all public school buildings is $4,892,882,227. Research indicates that an annual allocation of 2% of the replacement value of the buildings should be provided for building renewal. Building renewal includes such items as the replacement of major components like roofs, windows, and heating and air handling systems. This requires nearly $1 billion of investment over a ten year period.

Lets assume that for the next ten years building renewal is funded at the suggested rate of 2% of the replacement value of the buildings. This would amount to about $1 billion of

investment in public school buildings instead of the $2.6 billion recommended by this study. In 2005, there would still be a $1.6 billion (1994 dollars) backlog of deferred expenditures. This backlog represents 16 years of under funding of school facilities. The data in this study indicates that in 2005, this under investment would have occurred primarily in the last 30 years. This would indicate that even if building renewal was funded at the suggested rate for the next ten years, overall, only 50% of the necessary amount would have been invested for the last 30 years.

Cities

As with school districts, a survey was also used to collect information from cities. Surveys were sent to all 147 Iowa cities with populations of 2000 or greater. The survey sought to collect three types of information from cities. They were:

1. Inventory type information of city facilities and parks,
2. Insurance replacement values for city facilities, and
3. Capital improvement plans.

Examples of the survey forms and responses are included in Appendix C.

The inventory information was gathered with two forms, "*City Facilities and Space Usage Report*", and " *Parks and Recreation Inventory*." The first form collected information about a city's buildings. The respondent was asked to indicate the function(s) that the facility performs. The functions listed on the survey form were the following:

City Offices / Administration
Police Station
Fire Station
Maintenance
Library
Airport
Cemetery
Mass Transit
Auditorium
Gymnasium
Theater
Other

For each building, information such as the year it was constructed, the number of stories, the type of construction, the gross square feet, and dates of major system upgrades, were collected for the original building and any additions. The reverse side of the form had the respondent indicate how the space in each building was used by entering a percentage for each relevant category.

The *Parks and Recreation Inventory* form collected relevant information on city parks and recreational facilities excluding major structures such as gymnasiums that would have been included in the building inventory reports. The *Parks and Recreation Inventory* form gathered information such as the size and type of park, number of courts and fields. playgrounds, trails and

paths, campgrounds, aquatic facilities, and ancillary structures.

The second part of the city survey asked cities for insurance valuation information for their facilities. Cities were asked to provide a schedule or contact their insurance provider and have them provide the schedule. The types of information typically included on these schedules, although they vary for each city, are the following:

The facility name / description:

The facility's address:

Type of construction:

The year that it was built:

Size of the facility in square feet:

The number of stories:

Fire protection system:

Value of the facility:

Value of the contents of the facility:

Value of the electronic data processing equipment:

Total value of the facility:

A good example of a response from a city is included in Appendix C, unfortunately, many cities did not provide information as detailed as this example. Since the survey was entirely voluntary, fewer responses were anticipated.

The third portion of the city survey asked cities to provide their capital improvement plan if they prepared one.

Table 7, *City Survey Response Rates*, indicates how cities responded to the survey. Overall, 42 of the 147 cities surveyed, or 29 percent, responded to the survey in some form. Of the 42 that responded 36 returned inventory type information, 28 returned value of facilities information, and only 19 returned capital improvement information. The cities were also divided into population categories and the response rates are given for each category also. The population category of 13,000 to 44,999 had the best response rate to the survey, 50 percent overall, 43 percent for both inventory and value information, and 29 percent returned capital improvement plans. Overall, the response to the survey by cities was not very good. Although

City Survey Response Rates

Population Category	Number of Cities	Returned		Space		Value		CIP		None	
		#	%	#	%	#	%	#	%	#	%
- 3,999	64	15	23%	14	22%	9	14%	5	8%	49	77%
4,000 - 5,999	28	8	29%	7	25%	6	21%	4	14%	20	71%
6,000 - 12,999	33	9	27%	8	24%	6	18%	4	12%	24	73%
13,000 - 44,999	14	7	50%	6	43%	6	43%	4	29%	7	50%
45,000 -	8	3	38%	1	13%	1	13%	2	25%	5	63%
Total	147	**42**	**29%**	**36**	**24%**	**28**	**19%**	**19**	**13%**	**105**	**71%**

Table 7 indicates, for example, that 24 percent of cities returned inventory information, much of the information was incomplete. This fact limited the amount of the analysis that could be performed and the reliability of the findings.

City Facility Inventory

The previous section of this report mentioned that city facilities were described by functional categories, and a list of these categories was provided. Table 8 shows the functional categories grouped into five infrastructure types; protective, enriching, public works, transportation, and utilities.

Infrastructure Type	Functional Category	
Protective	Police Station	Animal Shelter
	Fire Station	
Enriching	Library	Gymnasium
	Museum	Theater
	Community Center	Housing (elderly)
	Auditorium	
Public Works	Offices / Administration	Public Works
	Maintenance	Cemetery
Transportation	Airport	Mass Transit
Utilities	Wastewater	Power Generation
	Water	

Table 8

The five infrastructure types will be used throughout the analysis of city facilities as the basic categories of city infrastructure.

The first step in the inventory analysis, was to determine how much of each type of infrastructure cities possessed. Table 9, *Inventory Summary*, gives a summary of this analysis. The information is divided by population categories and the total population of the cities responding to the survey and the total population represented by the population category is

Inventory Summary

Population			Infrastructure Type						
			Protect	Enrich	PW	Trans	Utilities	Total	
- 3,999	Sample	36,817	1.87	4.03	3.62	0.84	1.78	12.14	sf / cap
	Total	176,347	329,961	711,198	637,554	148,130	313,887	2,140,731	Projected sf
4,000 - 5,999	Sample	34,464	1.76	2.69	5.75	2.98	43.30	56.49	sf / cap
	Total	136,893	241,072	368,472	787,250	408,185	5,927,863	7,732,842	Projected sf
6,000 - 12,999	Sample	68547	1.94	1.92	2.84	1.43	1.55	9.68	sf / cap
	Total	281,948	548,011	540,887	801,545	402,950	435,963	2,729,356	Projected sf
13,000 - 44,999	Sample	158,614	1.76	1.08	1.10	0.93	0.22	5.11	sf / cap
	Total	355,184	626,204	385,370	392,067	331,571	78,913	1,814,125	Projected sf
45,000 -	Sample	66,467	1.39	4.86	2.11	2.87	0.66	11.88	sf / cap
	Total	703,325	974,732	3,417,825	1,484,594	2,015,947	464,160	8,357,258	Projected sf
All Cities			1.64	3.28	2.48	2.00	4.37	13.77	sf / cap
	Total	1,653,697	2,719,980	5,423,751	4,103,010	3,306,783	7,220,786	22,774,311	Projected sf

shown. These populations are the basis for making projections about all cities from the cities that responded to the survey. The first line of each population category, shows how many square feet per capita were reported on the returned surveys. This square footage is then used to project how many square feet exist in each infrastructure type for all of the cities in each of the population categories. The projected square footage is summed at the bottom of the table and overall square feet per capita amounts are calculated. Table 10 presents a summary of the information shown in Table 9.

Infrastructure Type	Total Projected Square Feet	Projected Square Feet Per City Resident
Protective	2,719,980	1.64
Enriching	5,423,751	3.28
Public Works	4,103,010	2.48
Transportation	3,306,783	2.00
Utilities	7,220,786	4.37
Total	**22,774,311**	**13.77**

Table 10

The average age of city facilities can also be determined from the data. Table 11, *Age of Infrastructure in Iowa Cities*, shows the average of the facilities for each infrastructure category. The average age of facilities has been calculated by two different methods. The first column represents the average age weighted by the amount of square feet of each building. This method gives more weight to building that are larger in size. The second method simply calculates the average age of all the buildings in each infrastructure category. Table 11 also shows the infrastructure type that each infrastructure category represents. The average of facilities for each infrastructure type was also determined, and are shown in Table 12, *Age of Infrastructure by Type*. Again, the average calculated by the two methods described above, is indicated as well as the age of the oldest facility for each infrastructure type. The data appears to indicate that on

Age of Infrastructure in Iowa Cities

No.	Infrastructure Category	Infrastructure Type	Average Age *	Average Age **
1	Offices / Administration	Public Works	1956	1950
2	Police Station	Protective	1971	1966
3	Fire Station	Protective	1972	1969
4	Maintenance	Public Works	1977	1969
5	Library	Enriching	1946	1944
6	Museum	Enriching	1940	1932
7	Airport	Transportation	1967	1966
8	Cemetary	Public Works	1951	1956
10	Community Center	Enriching	1956	1955
11	Auditorium	Enriching	1983	1961
12	Gymnasium	Enriching	1942	1936
13	Theater	Enriching	1935	1932
14	Public Works	Public Works	1967	1968
15	Wastewater	Utilities	1970	1970
16	Water	Utilities	1958	1956
17	Power Generation / Distribution	Utilities	1937	1958
18	Housing (elderly)	Enriching	1988	1988
19	Animal Shelter	Protective	1978	1978

* Average age weighted by square feet

** Average age of buildings

Age of Infrastructure By Type

Infrastructure Type	Average Age *	Average Age **	Oldest Building
Enriching	1958	1947	1890
Public Works	1965	1960	1800
Portective	1971	1967	1912
Transportation	1967	1966	1920
Utilities	1964	1964	1891
Total	**1965**	**1961**	

* Average age weighted by square feet

** Average age of buildings

average, the age of enriching type infrastructure is older than the other types of infrastructure.

Inventory information was also collected on city parks. City parks would typically be considered enriching type infrastructure, and, although they do include buildings, a completely different set of information is collected to describe them. Appendix C includes an example of the survey form that was used for city parks. Table 13, *City Parks*, shows an example of an analysis that can be performed using the information collected concerning city parks. Based on the returned surveys, total acres of maintained, total acres of unmaintained parks, and the number of parks for each population category is projected. A comparison is also made based on the previous quantities for each 1000 residents of Iowa cities.

Value of City Facilities

Cities were asked to provide insurance valuation information for their facilities. Many cities have a schedule of values that has been prepared by their insurance provider. This is the document that the survey attempted to obtain. Many city officials, however, decided to write the information on the inventory and space usage forms instead of returning a copy of the schedule. The problem with this approach was that the schedules usually included more complete data and cover all insured property of the city, not just the facilities included in the forms. The information from the schedules was put into a database. Table 14, *Value of City Facilities*, presents the results of an analysis that was performed to determine the value of city facilities. This analysis made projections based on the sample and total populations in each population category. Values for building, contents, other, and total are included. The total value of city facilities, projected in this manner, is $2,355,324,667 or $1,424 for each resident of a city in Iowa.

To demonstrate another method of analyzing the value of city facilities, the analysis presented in Table 15, *Value of City Facilities by Functional Category*, was performed. Rather than basing the analysis on population categories, the facilities were grouped into categories

City Parks

Population Category	Sample Pop. & No. of Cities		Sample Maintained Acres	Sample Unmaint. Acres	Sample Number of Parks
- 3,999	36,156	13	488.4	36.5	50
4,000 - 5,999	34,464	7	427.7	19.2	41
6,000 - 12,000	57,207	7	855.6	601.8	68
13,000 - 44,999	132,720	5	1,901.7	530.5	110
45,000 -	66,467	1	2,281.5	0.0	43
Total	**327,014**	**33**	**5,954.8**	**1,188.0**	**312**

Population Category	Total Pop. & No. of Cities		Projected Maintained Acres	Projected Unmaint. Acres	Projected Number of Parks
- 3,999	176,347	64	2,382.3	178.0	244
4,000 - 5,999	136,893	28	1,698.8	76.3	163
6,000 - 12,000	281,948	33	4,216.6	2,966.0	335
13,000 - 44,999	355,184	14	5,089.3	1,419.8	294
45,000 -	703,325	8	24,141.3	0.0	455
Total	**1,653,697**	**147**	**37,528.4**	**4,640.1**	**1,491**

Population Category	Total Pop. & No. of Cities		Per 1000 Capita Maintained Acres	Per 1000 Capita Unmaint. Acres	Per 1000 Capita Number of Parks
- 3,999	176,347	64	13.5	1.0	1.4
4,000 - 5,999	136,893	28	12.4	0.6	1.2
6,000 - 12,000	281,948	33	15.0	10.5	1.2
13,000 - 44,999	355,184	14	14.3	4.0	0.8
45,000 -	703,325	8	34.3	0.0	0.6
Total	**1,653,697**	**147**	**22.7**	**2.8**	**0.9**

Value of City Facilities

Population Category	Sample Pop. & No. of Cities		Sample Building Value	Sample Contents Value	Sample Other Value	Sample Total Value
- 3,999	25,653	9	27,008,445	5,605,705	1,573,286	34,187,436
4,000 - 5,999	29,274	6	34,490,089	7,880,394	307,000	42,677,483
6,000 - 12,000	49,138	6	79,227,377	6,345,941	2,140,892	87,714,210
13,000 - 44,999	161,921	6	107,026,176	20,614,326	482,276	128,122,778
45,000 -	66,467	1	94,398,941	12,995,249	0	107,394,190
Total	**332,453**	**28**	**342,151,028**	**53,441,615**	**4,503,454**	**400,096,097**

Population Category	Total Pop. & No. of Cities		Projected Building Value	Projected Contents Value	Projected Other Value	Projected Total Value
- 3,999	176,347	64	185,664,766	38,535,425	10,815,276	235,015,467
4,000 - 5,999	136,893	28	161,284,818	36,850,816	1,435,614	199,571,247
6,000 - 12,000	281,948	33	454,597,267	36,412,255	12,284,184	503,293,705
13,000 - 44,999	355,184	14	234,768,716	45,218,834	1,057,903	281,045,453
45,000 -	703,325	8	998,888,699	137,510,095	0	1,136,398,795
Total	**1,653,697**	**147**	**2,035,204,266**	**294,527,424**	**25,592,976**	**2,355,324,667**

Population Category	Total Pop. & No. of Cities		Per Capita Building Value	Per Capita Contents Value	Per Capita Other Value	Per Capita Total Value
- 3,999	176,347	64	1,052.84	218.52	61.33	1,332.69
4,000 - 5,999	136,893	28	1,178.18	269.19	10.49	1,457.86
6,000 - 12,000	281,948	33	1,612.34	129.15	43.57	1,785.06
13,000 - 44,999	355,184	14	660.98	127.31	2.98	791.27
45,000 -	703,325	8	1,420.24	195.51	0.00	1,615.75
Total	**1,653,697**	**147**	**1,230.70**	**178.10**	**15.48**	**1,424.28**

Value of City Facilities by Functional Category

Function Category	Sample				Projected			
	Building Value	Contents Value	Other Value	Total Value	Building Value	Contents Value	Other Value	Total Value
Administrative	19,427,411	3,117,827	666,215	23,211,453	96,636,371	15,508,782	3,313,905	115,459,058
Protective	22,713,357	3,710,895	706,185	27,130,437	112,981,415	18,458,838	3,512,725	134,952,978
Public Works	28,954,465	3,443,642	1,643,112	34,041,219	144,026,109	17,129,460	8,173,214	169,328,783
Parks & Rec	41,671,916	4,796,562	335,225	46,803,703	207,285,609	23,859,193	1,667,486	232,812,287
Cultural	32,654,732	20,687,199	200,788	53,542,719	162,432,080	102,902,843	998,765	266,333,689
Airport	15,467,493	588,205	91,755	16,147,453	76,938,836	2,925,866	456,410	80,321,112
Transportation	695,200	97,098	0	792,298	3,458,083	482,988	0	3,941,071
Other Services	1,817,595	166,025	6,000	1,989,620	9,041,132	825,846	29,845	9,896,823
Water Utility	34,586,992	3,761,715	420,900	38,769,607	172,043,582	18,711,628	2,093,653	192,848,862
Wastewater Util	80,090,559	10,036,509	82,274	90,209,342	398,388,696	49,923,883	409,250	448,721,829
Power Utility	36,044,000	1,115,000	0	37,159,000	179,291,072	5,546,264	0	184,837,336
Ohter	15,925,908	1,070,461	351,000	17,347,369	79,219,096	5,324,717	1,745,954	86,289,767
Community Ctr	12,101,400	850,477	0	12,951,877	60,195,122	4,230,466	0	64,425,588
Total	**342,151,028**	**53,441,615**	**4,503,454**	**400,096,097**	**1,701,937,202**	**265,830,774**	**22,401,207**	**1,990,169,183**

similar to the ones used to categorize city facilities for inventory purposes. The categories used in this analysis are:

1. Administrative
2. Protective
3. Public Works
4. Parks and Recreation
5. Cultural Services
6. Airport
7. Transportation
8. Other Services
9. Water Utilities
10. Wastewater Utilities
11. Power Utilities
12. Other
13. Community Centers

Values for each group of facilities were summed and then projected based on the sample and total populations of returned surveys and all surveyed cities respectively. This analysis determined that the total projected value of city facilities was $1,990,169,183, a little less than the previous analysis.

Infrastructure Needs of Iowa Cites

The third part of the city survey asked cities to provide their capital improvement plans. As Table 7 indicates, only 19 of the 42 cities that responded were able to provide capital improvement information. The capital improvement plans that were submitted were used to produce the analysis in Table 16, *Capital Expenditures by Population Category*. As in previous examples, the cities were grouped by population category, and the various expenditures were categorized by infrastructure type. Notice that there are two extra infrastructure types that were not included in other tables, wastewater and streets. These planned expenditures were separated out because these need have been included in other areas of this study. However, they can be used as a potential cross check against the amounts found in other areas. All of the amounts provided in the plans were extended to cover a 10 year planning period.

Table 16 indicates that for the cities that returned capital improvement plans there are total planned expenditures of $537,392,123, and that the total 10 year projected need for Iowa Cities is

Capital Expenditures by Population Category

Table 16 - Capital Expenditures by Population Category

Population Category	Sample Pop. & No. of Cities		Sample Infrastructure Category: Enriching	Public Works	Protective	Utilities	Trans.	Sub Total	Wastewater	Streets	Total
- 3,999	14,654	5	4,778,600	4,971,000	821,000	3,961,560	0	14,532,160	15,076,350	9,647,900	39,256,410
4,000 - 5,999	21,333	4	4,925,750	19,714,100	442,500	15,011,728	6,400,000	46,494,078	16,304,200	11,693,570	74,491,848
6,000 - 12,000	28,121	4	15,400,000	14,028,333	0	6,716,750	8,384,217	44,529,300	2,342,500	10,381,667	57,253,467
13,000 - 44,999	103,680	4	94,017,849	96,147,968	12,218,467	126,434,286	18,156,252	346,974,821	89,663,629	286,646,018	723,284,468
45,000 -	113,665	2	44,046,356	1,441,400	1,604,000	35,114,008	2,656,000	84,861,764	20,524,000	107,237,128	212,622,892
Total	**281,453**	**19**	**163,168,555**	**136,302,801**	**15,085,967**	**187,238,332**	**35,596,469**	**537,392,123**	**143,910,679**	**425,606,283**	**1,106,909,085**

Population Category	Total Pop. & No. of Cities		Projected Infrastructure Category: Enriching	Public Works	Protective	Utilities	Trans.	Sub Total	Wastewater	Streets	Total
- 3,999	176,347	64	57,505,922	59,821,273	9,879,957	47,673,620	0	174,880,771	181,429,582	116,103,332	472,413,685
4,000 - 5,999	136,893	28	31,608,339	126,504,584	2,839,505	96,329,653	41,068,542	298,350,622	104,623,393	75,037,167	478,011,182
6,000 - 12,000	281,948	33	154,404,153	140,651,486	0	67,343,773	84,062,203	446,461,615	23,486,476	104,089,124	574,037,215
13,000 - 44,999	355,184	14	322,083,677	329,380,979	41,857,677	433,134,987	62,199,173	1,188,656,489	307,167,114	981,983,789	2,477,807,393
45,000 -	703,325	8	272,545,668	8,918,952	9,925,072	217,274,972	16,434,533	525,099,196	126,996,369	663,551,252	1,315,646,818
Total	1,653,697	147	838,147,759	665,277,273	64,502,211	861,757,004	203,764,450	2,633,448,694	743,702,935	1,940,764,663	5,317,916,292

$2,633,448,694. A summary of the information contained in Table 16 is shown in Table 17.

Infrastructure Type	Amount from Capital Improvement Plans	Projected Amount
Enriching	163,168,555	838,147,759
Public Works	136,302,801	665,227,273
Protective	15,085,967	64,502,211
Utilities	187,238,332	861,757,004
Transportation	35,596,469	203,764,450
Total	**537,392,123**	**2,633,448,694**

Table 17

Department of Management

The Department of Management is responsible for a broad range of facilities throughout the state of Iowa including:

Corrections
Cultural Affairs
Education
Employment Services
General Services
Human Services
Iowa Law Enforcement Academy
Judicial Branch
Natural Resources
Personnel
Public Defense
Public Safety
Board of Regents
State Fair Authority
Transportation
Veterans Affairs

Inventory and Value of Department of Management Facilities

Information was obtained from the Board of Regents regarding facilities under their control. The information was primarily building schedules which listed buildings and information such the year constructed, the number of stories, the type of construction and the gross square feet. Unfortunately, the information provided was not consistent from one institution to the next with the exception of gross square feet and replacement values. Tables 18 - 21 provide a summary for each educational institution controlled by the Board of Regents and a summary of the total facilities. There are over 28.6 million square feet of space with an estimated replacement value for buildings and contents of nearly 5 billion dollars.

Arnold Kreig, Architect, with General Service Property Management, provided a building log for the Capitol Complex, Human Services, and Corrections. It appeared, however, that the information was last updated in 1988, making its value for this analysis somewhat limited. A summary of the information in this document can be seen in Table 22. Replacement values for the facilities were not provided. The total square footage for facilities in this report was over 8.8 million square feet, 2.2 million of that in the Capitol Complex. Detailed backup was not provided at the same level of detail as other areas of this study.

Iowa State University
Summary of Values
July 1994

	Square Footage	Percent of Total Space	Value* of Buildings	Value* of Contents	Total Value*	Value per Square Foot
General Fund	5,884,815	51.9%	812,660	97,519	910,179	155
Lakeside Laboratory	37,960	0.3%	2,267	283	2,550	67
Ag Experiment Station	897,837	7.9%	58,037	6,964	65,001	72
Residence System	2,931,684	25.8%	377,727	45,327	423,054	144
Athletics	314,871	2.8%	58,115	6,974	65,089	207
Student Unions	542,488	4.8%	78,500	9,420	87,920	162
Self-Supporting Space	732,244	6.5%	358,219	12,492	370,711	506
Total	**11,341,899**	100.0%	**1,745,525**	**178,979**	**1,924,504**	**170**

* Values in thousands of dollars

University of Iowa
Summary of Values
As of 6/30/94

	Square Footage	Percent of Total Space	Value* of Buildings	Value* of Contents	Total Value*	Value per Square Foot
General Fund	5,965,206	46.1%	855,722	106,965	962,687	161
University Hospitals	2,409,659	18.6%	522,391	65,299	587,690	244
Psych Hospital (UIHC)	84,070	0.6%	18,491	2,311	20,802	247
Hospital School	97,349	0.8%	21,411	2,676	24,087	247
Oakdale Campus	305,154	2.4%	38,828	4,853	43,681	143
Tenant Properties	100,200	0.8%	9,279	1,160	10,439	104
Residence System	2,238,830	17.3%	323,795	40,474	364,269	163
Athletics	358,917	2.8%	95,110	11,889	106,999	298
Student Unions	311,944	2.4%	28,889	3,611	32,500	104
Other Self-Supporting Space	1,077,066	8.3%	182,425	22,803	205,228	191
Total	**12,948,395**	**100.0%**	**2,096,341**	**262,041**	**2,358,382**	**182**

* Values in thousands of dollars

University of Northern Iowa
Iowa School for the Deaf
Iowa Braille and Sight Saving School
Summary of Values - June 1994

	Square Footage	Percent of Total Space	Value* of Buildings	Value* of Contents	Total Value*	Value per Square Foot
General Fund	2,332,864	61.2%	363,824	40,389	404,213	173
Tenant Properties	4,105	0.1%	369	46	415	101
Residence Ssytem	1,475,874	38.7%	192,267	24,033	216,300	147
Total	**3,812,843**	**100.0%**	**556,460**	**64,468**	**620,928**	**163**

Iowa School for the Deaf	342,426	63.7%	48,344	6,043	54,387	159
Braille and Sight Saving Schoo	195,088	36.3%	28,865	3,483	32,348	166
Total	**537,514**	**100.0%**	**77,209**	**9,526**	**86,735**	**161**

* Values in thousands of dollars

All Regents Facilities
Summary of Values
July 1994

	Square Footage	Percent of Total Space	Value* of Buildings	Value* of Contents	Total Value*	Value per Square Foot
General Fund	14,720,339	51.4%	2,108,415	254,399	2,362,814	161
University Hospitals	2,409,659	8.4%	522,391	65,299	587,690	244
Psych Hospital (UIHC)	84,070	0.3%	18,461	2,311	20,772	247
Hospital School	97,349	0.3%	21,411	2,676	24,087	247
Oakdale Campus	305,154	1.1%	38,828	4,853	43,681	143
Lakeside Laboratory	37,960	0.1%	2,267	283	2,550	67
Ag Experiment Station	897,837	3.1%	58,037	6,964	65,001	72
Tenant Properties	104,305	0.4%	9,648	1,206	10,854	104
Residence System	6,646,388	23.2%	893,789	109,834	1,003,623	151
Athletics	673,788	2.4%	153,225	18,863	172,088	255
Student Unions	854,432	2.4%	107,389	13,031	32,500	104
Other Self-Supporting Space	1,809,310	8.3%	540,644	35,295	205,228	191
Total	**28,640,591**	**100.0%**	**4,474,505**	**515,014**	**4,989,519**	**174**

* Values in thousands of dollars

Iowa Department of Management
Capitol Complex, Human Services, Corrections
April 1988

	Square Footage	Residence Capacity	Average Residence
Capitol Complex	2,158,703		
Iowa Men's Reformatory	568,049	840	828
Cherokee Mental Health Institute	580,451	243	208
Clarinda Treatment Complex	446,596	240	255
Eldora Training School	269,789	200	255
Iowa State Penitentiary	704,320	780	702
Glenwood State Hospital	1,037,802	851	655
Independence Mental Health Institute	505,400	268	243
Iowa Veterans Home	595,827	831	699
Iowa Correctional Institute for Women	118,016	100	108
Mount Pleasant Treatment Complex	520,656	530	527
Riverview Release Center	80,660	96	107
Iowa Medical and Classiification Center	223,244	300	289
North Cental Correctional Facility	74,756	100	98
Iowa Juvenille Home	131,160	90	89
Woodward State Hospital School	818,282	640	452
Total	**8,833,711**	**6,109**	**5,515**

Capital Needs for Department of Management Facilities

The Department of Management provided the Legislative Capital Projects Committee with a *Five-Year Capital Project Priority Plan* for fiscal years 1996 - 2000. This document was used to identify Department of Management facility needs for the purposes of this study. Table 23, *Summary of Capital Requests*, provides a summary of all capital requests for facilities controlled by the Iowa Department of Management. The five-year needs represented in this report amount to over $817 million, which for purposes of the study has been used to project **10-year needs of over $1.6 billion**.

The report also identified over $116 million of deferred maintenance. Table 24 shows the deferred maintenance needs by agency identified in the report.

Agency	Deferred Maintenance
Education	4,734,000
Employment Services	394,000
General Services	14,282,000
Human Services	22,829,000
Natural Resources	2,170,000
Board of Regents	70,922,000
Veterans Affairs	823,000
Total	**$116,154,000**

Table 24

Iowa Department of Management
Summary of Capital Requests
For Fiscal Years 1996 through 2000

	Dollars (thousands)						
	1996	1997	1998	1999	2000	Balance	Total
Corrections	7,300	47,217	47,217	8,217	4,050		**114,001**
Cultural Affairs	2,297	1,125	4,238				**7,660**
Education	2,325	1,052	1,141	1,120	1,050	5,381	**12,069**
Employment Services	1,767	1,617	157				**3,541**
General Services	6,897	13,977	19,999	20,477	16,202	8,807	**86,359**
Human Services	2,346	1,003	18,644	17,029	13,089		**52,111**
Iowa Law Enforcement Academy	84	90	176	245	135		**730**
Judicial Branch			150				**150**
Natural Resources	9,312	9,407	11,127	8,387	6,427		**44,660**
Personnel	35						**35**
Public Defense	1,848	4,519	5,934	3,616	1,400		**17,317**
Public Saftey	2,000	2,886	1,304				**6,190**
Board of Regents	74,197	63,757	101,054	73,463	82,056		**394,527**
Transportation	10,523	7,775	8,600	10,235	12,090		**49,223**
State Fair Authority			3,000	2,375	2,675		**8,050**
Veterens Affairs	19,619	277	212	496	185		**20,789**
	140,550	**154,702**	**222,953**	**145,660**	**139,359**	**14,188**	**817,412**

Hospitals

The Iowa Hospital Association reports that in 1994 there were 120 community hospitals operating in Iowa. This compares with 128 in 1985 and 130 in 1984. Eighty nine of Iowa's 99 counties contain at least one community hospital, and no Iowan is more than 25 miles from a hospital. Over 98 percent of the community hospitals in Iowa are private not-for-profit, owned by state or local government, or by a church or other nonprofit entity. Less than 2 percent of Iowa's hospitals are for-profit, compared to 3.2 percent in the Midwest and 13.7 percent nationally. The largest single ownership category in Iowa is the county hospital, accounting for 44 institutions (36.7 percent). Only one state governed acute care hospital, the University of Iowa Hospitals and Clinics, exists in Iowa.

Since 1983, Iowa hospitals lost money providing care to patients, except in 1985. Patients revenue margins ranged from losing 4.8 cents on every dollar of patient revenue received in 1988 to making 1.4 cents on every dollar in 1985. Hospitals lost 4.3 cents on every dollar of patient revenue received in 1992. Operating revenue margins including all sources of operating revenue such as tax subsidies, hit a peak in 1985 of 6.1 percent and have declined to their lowest level of 2.0 percent in 1992. When all sources of revenue were considered, including non-operating sources of contributions and investment income total revenue margins dropped to their lowest level of 3.5 cents on every dollar received in 1992 compared to 8.2 cents in 1985. Deterioration of margins limits a hospital's ability to provide charity care, invest in new equipment, update facilities, and pay principal on current and long term debt of $1.1 billion in Iowa hospitals in 1992. Table 25. *Operating Margins for Iowa Hospitals in 1990*, shows an example of how margins were derived for Iowa hospitals in 1990. The total operating margin for all Iowa hospitals in 1990 was less than $120 million. Hospitals use operating margins for several purposes:

- To provide care to medically indigent and uninsured
- To keep pace with rapid advances in medical care and to replace outdated or worn-out facilities and equipment
- **To maintain and update physical structures**
- To provide new programs and services to meet the community's health care needs
- Hire and retain highly trained health care professionals

Operating Margins for Iowa Hospitals in 1992

Revenue from patient services		
Total billed for inpatient services	2,045,209,200	
Total billed for outpatient and emergency services	673,076,831	
Total billed	**2,718,286,031**	
Amounts not collected		
Charity care	61,800,988	
partially funded Medicare and Medicaid programs, other contractural arrangements and deductions	546,478,372	
Total Revenue		
Total revenue received	**2,110,006,671**	
Expenses for patient services		
Salaries	980,697,368	
Bad debts	47,222,612	
Operating expenses	1,169,587,730	
Total expenses	**2,197,507,710**	
Operating Margin		
Operating margins from patient revenue only	**(87,501,039)**	**-4.1%**
Revenue from other sources		
Tax appropriations, cafeteria, gift shop, etc.	158,864,622	
Contributions grants, interest income	50,328,006	
Less operating losses	1,823,554	
Total Margin		
Considering all sources of income	**119,868,035**	**5.2%**

- To support hospital-related research and education
- To reduce the current long-term $1.1 billion debt
- To cover payment shortfalls from Medicare, Medicaid, Blue Cross, and other third party payers totaling $902.4 million in 1992

In 1992, Iowa community hospitals were valued at $2.9 billion, of which nearly 50 percent were plant and equipment assets. The average age of fixed assets in Iowa hospitals was 9.8 years in 1992 compared to the national average of 7.9 years indicating aging physical plants in Iowa hospitals. The following table shows age of plant ratios for Iowa and the nation over several years:

	Age of Plant	
	National	**Iowa**
1990	7.71	9.81
1991	7.92	9.63
1992	7.91	9.76

Table 26

Iowa hospitals compare unfavorably in age of plant to the national medians and the increasing trend in Iowa hospitals is also unfavorable. This ratio is a measure of the average age of a hospital's fixed assets. A higher ratio highlights growing concerns in Iowa hospitals for the need for remodeling or replacement of buildings or equipment.

The calculation for age of plant is the ratio of accumulated depreciation to depreciation expenses. The depreciation expense would need to increase by approximately $55 million annually assuming the value of facilities remains constant, to reach the national average for the age of plant ratio. Assume that the average depreciation of fixed assets is 10 percent annually, this would represent an investment of $550 million.

Research indicates that an annual allocation of 2% of the replacement value of the

buildings should be allocated annually for building renewal. For Iowa hospitals, $58 million is required annually, just to maintain the status quo. This represents 50 percent of the current operating margin and does not address the deferred expenditures that have resulted in the increasing age of plant. If the current backlog of deferred capital expenditures indicated by the age of plant ratio were to be reduced over the next ten years, as well as maintaining adequate building renewal funds, conservatively, the capital investment needs for Iowa hospitals would approach **$1.1 billion over the next ten years**. Given the current financial condition of Iowa hospitals it is doubtful that this need can be met, and Iowans will have to continue to settle for below average facilities and equipment in their hospitals or drive further to obtain the same facilities for care.

Wastewater Systems

The U.S. Environmental Protection Agency (EPA) publishes a report titled "1990 Needs Survey Report to Congress -- Assessment of Needed Publicly Owned Wastewater Treatment Facilities In the United States" on a biannual basis. The needs reported here were taken from the 1990 needs survey, even though, the 1992 survey results have been published. The information in these reports is collected and reported to the EPA by the Iowa Department of Natural Resources (DNR). The reported needs for Iowa in 1992 were less than 10 percent of those reported in 1990. When personnel at DNR were question, the response given was that the person in charge of collecting and reporting this data had left the agency and then shortly thereafter died. The DNR personnel were not aware of the large change in reported needs, but agreed that the 1992 figures were clearly suspect and likely incomplete. Therefore, the 1992 survey was disregarded for the purposes of this study.

The following table shows the reported needs for all Iowa publicly owned wastewater treatment facilities since 1992 broken down into 7 categories:

Category I - Secondary Treatment
Category II - Advanced Treatment
Category IIIA - Infiltration/Inflow Correction
Category IIIB - Replacement/Rehabilitation of Sewers
Category IVA - New Collector Sewers
Category IVB - New Inceptor Sewers
Category IV - Combined Sewer Overflows

	Category (millions)							
	I	**II**	**IIIA**	**IIIB**	**IVA**	**IVB**	**V**	**Total**
1982	491	94	86	1	123	222	427	**1444**
1984	477	97	63	2	125	231	166	**1161**
1986	432	80	52	2	41	185	5	**797**
1988	256	55	50	2	42	236	5	**646**
1990	172	500	49	1	43	195	5	**965**

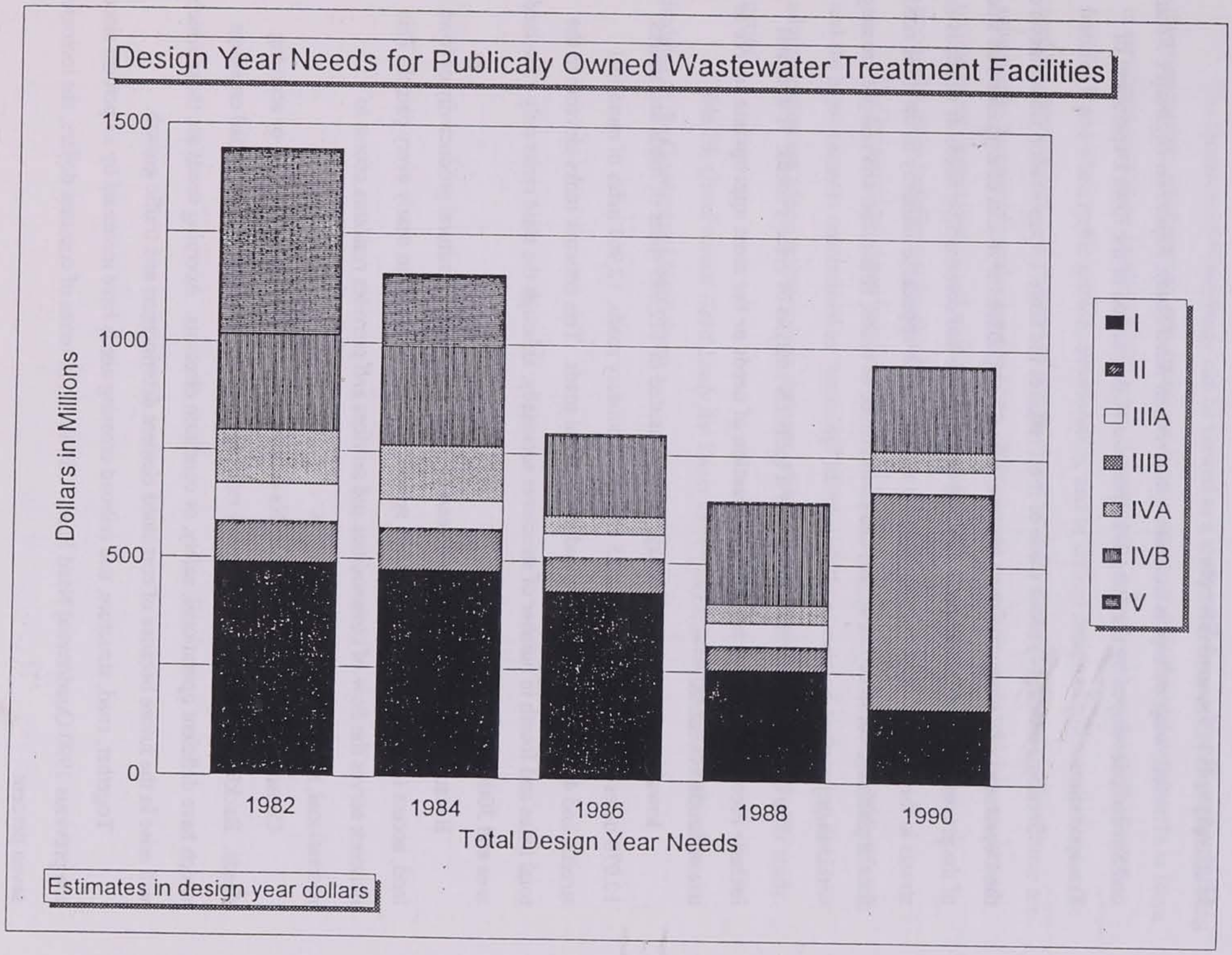
Table 27

A visual summary of this table is presented in Figure 15, *Design Year Needs for Publicly Owned Wastewater Treatment Facilities*. The needs estimates presented here represent needs for two time periods:

Current Needs -- needs for documented facilities to satisfy the current or existing population, plus

Design Year Needs -- needs for documented facilities to satisfy an approximate 20-year design life for facilities.

The best projection of needs for 1995, in 1995 dollars, is **$1,062,000,000** ($965 million inflated by 2% annually for 5 years). Recall that the city survey projected $743,702,935 for wastewater needs in 147 Iowa cities with populations of 2000 and over. The amount in the EPA report however, includes all wastewater systems in the state which explains the larger number


Design Year Needs for Publicaly Owned Wastewater Treatment Facilities
Dollars in Millions
1500
1000
500
0
1982
1984
1986
1988
1990
Total Design Year Needs
I
II
IIIA
IIIB
IVA
IVB
V
Estimates in design year dollars

Highways, Roads, and Streets

The following excerpt is from the "*Quadrennial Need Study, Report on Highways, Roads, and Streets*", developed by the State Transportation Commission of the Iowa Department of Transportation.

Section 307A.2(14) of the Code of Iowa requires the State Transportation Commission of the Department of Transportation to prepare, adopt, and publish the results of a quadrennial study of the present deficiencies and future 20-year maintenance and construction needs of all roads and streets in the state. It must also examine the ability of each applicable authority to meet the needs for the planning, construction, repair, and maintenance of roads, structures, and railroad crossings within their jurisdiction.

The Quadrennial Need Study is only a technical analysis of system needs. **It does not include recommendations on the prioritization of needs or the most appropriate source or use of funds available.**

Iowa's road system on January, 1994, consisted of 112,949 miles of roads and streets: 10,078 miles of primary roads, 89,455 miles of secondary roads, 12,967 miles of municipal streets, and 449 miles of state park and institutional roads. This network ranks eleventh in the total miles and fourth in number of structures nationally, although the state ranks only 25 in land area and 30th in population.

Because of the widespread commercial, industrial, and agricultural productivity of Iowa land, access to the state's transportation system has been provided to nearly every parcel. This network serves the flow of commodities and services and provides residents access to recreational, social, and cultural activities.

Construction needs identified in this study are classified as either backlog or accruing needs. Backlog needs are those currently existing on roads, structures, and railroad crossings which have deficient operational, safety, or condition elements. Accruing needs are those which will arise in the future because of continued element deterioration and traffic growth.

Together, road, structure, and railroad crossing needs have increased by 23 percent since the previous 1990 Quadrennial Need Study. However, in terms of constant dollars, the increase is seven percent.

The Quadrennial Need Study can be viewed as a study to determine the cost of performing the construction, rehabilitation, and maintenance necessary to sustain the various systems in Iowa in serviceable condition for the next 20 years. Construction costs represent the upgrading of features if and when traffic growth, deterioration, and/or critical design obsolescence dictates the need for improvement. All systems of comparable functional classification and traffic volume are subjected to comparable analysis procedures. This ensures a uniform study which is sensitive to unique travel characteristics and traffic volume, while also providing a consistent evaluation among the many jurisdictions involved.

The reader should keep in mind that all needs are expressed in 1993 dollars. Maintenance and the improvements represented as "accruing" along with the associated engineering and administration are added at intervals as they are estimated to be incurred over the 20-year study period.

Table 28, *Quadrennial Need Study for Years 1994 - 2013*, presents a summary of the findings of the Quadrennial Need Study.

Quadrennial Need Study for Years 1994 - 2013
by Jurisdictional Responsibility

	1993 Dollars in 1,000's				
	Backlog	Accruing	Maintenance	Administration	Total
State Primary Highways					
Rural	2,996,254	3,423,658	1,797,888	656,769	**8,874,569**
Municipal	523,244	1,661,739	470,576	209,317	**2,864,876**
Subtotal	3,519,498	5,085,397	2,268,464	866,086	**11,739,445**
County Secondary Roads					
Farm to Market	2,785,725	2,976,887	1,466,634	321,590	**7,550,836**
Local	1,518,991	1,689,818	2,491,005	145,560	**5,845,374**
Subtotal	4,304,716	4,666,705	3,957,639	467,150	**13,396,210**
County Conservation Parkways	6868	7361	13467	3476	**31,172**
Municipal Streets	2,278,198	3,503,705	1,946,058	293,530	**8,021,491**
State Park and Institutional Roads	53,074	55,237	10,116	14,030	**132,457**
Total Needs	**$10,162,354**	**$13,318,405**	**$8,195,744**	**$1,644,272**	**$33,320,775**

Systematic Infrastructure Measurement Criteria

This section presents recommendations for measurement criteria for vertical and horizontal infrastructure. The Quadrennial Need Study has been used in Iowa since the early 1960's as the means for measuring the relative 20 year road construction, administration and maintenance needs for each of the 99 counties. The study uses a procedure involving 5 steps to predict the 20-year needs:

1. Determine the functional classification for each road section in the state
2. Develop design guides for each road section, structure, and railroad crossing category to reflect design practices.
3. Collect inventory data
4. Perform an adequacy appraisal of both the existing and future condition of each road section, structure, and railroad crossing and establish any necessary improvements to correct the deficiencies identified
5. Estimate the costs of such improvements, and sum those with the cost of maintenance and administration to determine total dollar needs.

The Quadrennial Need Study is a well defined process that has evolved and developed over the last three decades, and currently uses a computer program developed by the Federal Highway Administration (FHWA). The FHWA program consists of two modules; the needs study analysis program patterned after the Iowa manual and computer methods of the 1960's and the investment module for projecting revenue need scenarios. To accomplish the type of analysis presented in the Quadrennial Need Study, requires a tremendous amount of resources. The fact that all of the infrastructure analyzed in the study falls under the direct jurisdiction of the Iowa Department of Transportation (IDOT), and the fact that IDOT has a vast network of highly trained personnel to collect, input, and analyze the data, make the study possible.

Infrastructure '95 Analysis Methodology

The first section of this report has presented the various approaches that were utilized in collecting data, analyzing the data collected, and making projections of needs for the various

infrastructure classes. Each infrastructure class presented in the report, public schools, cities, Department of Management facilities, hospitals, and wastewater facilities, are all unique in several areas. The type and function of the facilities in each class varies tremendously. The relevant criteria, and analysis process to identify needs for a wastewater facility are very different than those for a public school. The planning and management capabilities of the agencies and entities responsible for the capital needs of each infrastructure class varies also. Small public school districts simply do not have the resources or skills to determine facility needs like the facility personnel for, say, a large university might have. For these reasons, it was necessary to use completely different methods to determine needs for each of the different infrastructure classes.

Even though the procedures for collecting and analyzing the needs of the various classes of infrastructure all differ, the 5 basic steps used by the Quadrennial Need Study were involved somewhere in the process. For example, the city analysis determined a functional classification for each city facility, and collected inventory data by means of a survey. The inventory data, for the facilities in this study, included the value of the facilities, something which is not addressed in the Quadrennial Need Study. The other three steps are assumed to occur within the city's capital improvement planning process. Deficiencies of facilities are identified and prioritized, a design for the facilities is developed prior to construction or renovation, and the cost to make improvements is determined. For purposes of the survey, the result of this process is determined to be the capital improvement plan developed by each city. In fact, in one form or another, each analysis of infrastructure needs contains these 5 basic steps.

The Quadrennial Need Study Approach

One of the most difficult portions of the needs analysis process is the adequacy appraisal to identify deficiencies and establish proper improvement plans. The Quadrennial Need Study, in the adequacy appraisal process, uses a computer to analyze each road section, structure, and railroad crossing to determine the existing deficiencies and to predict the accruing deficiencies over the 20-year study period. This is accomplished through a process of simulation in which traffic is forecast and the condition ratings are depreciated in yearly increments. During each cycle of the study, the condition of operational, safety, and condition elements of the road section,

structure, or railroad crossing are analyzed to identify deficiencies. The level when these elements become deficient is variable depending on the functional classification and traffic volume of the item analyzed. If deficient conditions are noted, an appropriate improvement is simulated. The process produces a listing of each road section, structure, and railroad crossing studied, which indicates the type of improvement needed, if any, the cause of the needed improvement, and the year in which the improvement would be necessary.

Applying the Quadrennial Need Study approach of computer simulation, to all of the different classes of infrastructure would be impractical. The simulation software that the Iowa Department of Transportation uses took decades of data and study to develop to the current point on a national level . The expected high cost and development time necessary to create a similar program for each class of infrastructure in the state would be unfeasible. A much more practical approach would be to educate and assist the various agencies and entities responsible for Iowa's infrastructure in identifying, planning, and financing capital needs.

Many of the agencies and entities responsible for Iowa's infrastructure lack the basic skills and knowledge necessary to evaluate capital needs. This was not more clearly evident than in the results of the school survey. Even though the survey asked for basic information, such as when a building was constructed, and how many rooms and square feet are dedicated to classrooms, public school officials found it very difficult to provide the requested information. Very few school districts had this type of information available. It was common for superintendents to assign the task of completing the survey to the custodian, and since it was impractical to measure every room because there were no dimensioned drawings available, the square footage returned on the survey was an approximation. For agencies to understand and protect their investment in capital assets, it becomes necessary for them to develop a capital asset management program.

Capital Asset Management Program

This study recommends the use of a facilities audit as one element of a comprehensive approach to capital asset management in the State of Iowa. This approach leads to better planning of maintenance and capital expenditures to protect and extend the life of capital assets. Frequently, lack of planning and limited funds create maintenance backlogs and unattended facility

deficiencies. These facilities deteriorate, resulting in deferred maintenance and a significant financial burden for corrective measures. Therefore, it is necessary to have a formal process--the facilities audit--that clearly identifies and quantifies the condition and functional performance of the facilities and the various options for correcting deficiencies.

In total, the elements of a comprehensive capital asset management program are:

A. Strategic Facilities Development Plan

1. Physical development policy
2. Facilities management information database
3. Facilities improvement plan

B. Capital Budget Plan

1. Project schedule
2. Funding source
3. Impact of proposed space changes
4. Project priority selection guidelines
5. Capital project programming and budget

C. Facilities Management Plan

1. Operations and maintenance plan
2. Organizational plan: facilities planning and operations
3. Space allocation procedures

The facilities audit is one component of the facilities management information database. Developed as a source of a strategic facilities development plan, an audit is essential to define existing facilities conditions and assist in preparing a capital improvement plan. The audit is designed for use by facilities managers responsible for maintenance, capital renewal and replacements, and capital budgeting. Circumstances may differ for various agencies, but the basic principles could be used at all levels, from a single structure to multiple building complexes in dispersed locations. A continuous process of facilities audits, rather than a one-time program, would provide up-to-date major maintenance priorities and could generate a significant portion of routine maintenance workloads. An effective audit program could extend the useful life of facilities, reduce disruptions in use of space and equipment downtime, and improve relations

between facilities management departments and facilities users.

A properly designed audit would include:

- ◆ inventory of facilities, providing descriptions of characteristics
- ◆ inspections of existing buildings and infrastructure conditions
- ◆ evaluations of functional performance
- ◆ recommendations for correcting observed deficiencies

If an audit is designed in a comprehensive, easy-to-use format, it could be used:

- ◆ in the field without extensive training
- ◆ with or without consultant assistance
- ◆ for any facility or class of infrastructure, regardless of size

Today, most public building facilities are the result of the integration of a series of complex and diverse systems. Unlike highways, which are typically comprised of a single system with one primary function, a building is comprised of many systems, each serving one or more functions integrated into a complex facility that may have several primary functions. A computer program, capable of modeling the complex relationships between these systems within all of the possible functional areas, would be so complex and enormous that it would tax even the most powerful computers in existence today.

The primary systems of a modern facility include the foundation and substructure, the structural system, the exterior wall system, and the roofing system. Secondary systems include interior work that makes the facility usable: ceilings, floors, interior walls and partitions, and specialities. Service systems include all operating systems, such as HVAC, pluming, electrical systems. Safety standards, including life safety and code compliance, are grouped together. Obviously, a building can have a multitude of systems, each with its own operating characteristics, maintenance requirements and useful life span. Table 29 gives a listing of the various systems.

As an example of the information that can be included in a facilities audit, a series of sample forms developed primarily for post-secondary education institutions are presented in Appendix E. These forms could be adapted to include all of the various infrastructure classes included in this study.

BUILDING COMPONENT DESCRIPTIONS

PRIMARY SYSTEMS

Foundation and Substructure
- Footings
- Foundation walls
- Grade beams
- Insulation
- Slab on grade
- Waterproofing and underdrain

Structural System
- Floor system
- Roof system
- Platforms and walkways
- Pre-engineered buildings
- Stairs
- Structural framing system

Exterior Wall System
- Chimneys and exhaust stacks
- Entrances
- Exterior doors and frames
- Exterior walls
- Exterior windows

Roof System
- Flashings and expansion joints
- Gutters and downspouts
- Insulation
- Hatches and skylights
- Roofing

SECONDARY SYSTEMS

Ceiling System
- Directly applied systems
- Exposed structural systems
- Suspended systems

Floor Covering System
- Floor finishes

Interior Wall and Partition Systems
- Hardware
- Interior doors and frames
- Interior walls
- Interior windows
- Special openings: access panels, etc.
- Toilet partitions

Specialities (examples)
- Bathroom accessories
- Kitchen equipment
- Laboratory equipment
- Projection equipment
- Signage
- Telephone enclosures
- Wastehandling
- Window coverings

SERVICE SYSTEMS

HVAC Systems
- Biolers
- Computer room cooling
- Cooling tower
- Ductwork and piping
- Fan coil units
- Fans
- Heat pump
- Packaged rooftop AC units
- Packaged water chillers
- Radiation
- Solar heating

Plumbing Systems
- Controls
- Drinking fountains
- Piping, valves, and traps
- Plumbing fixtures
- Pumps
- Sprinkler systems
- Water storage

Electrical Service
- Cable trays
- Cables and bus ducts
- Conduits
- Duct bank
- Panelboards
- Switchboard
- Switchgear
- Substations
- Transformers
- Underfloor raceways
- Underground and overhead service

Electrical Lighting
- Baseboard electrical heat
- Emergency/standby power
- Lighting fixtures
- Lighting protection
- Motor controls
- Motors
- Safety switches
- Telecommunications and data
- Wiring

Conveying Systems
- Dumbwaiters
- Elevators
- Escalators
- Material handling systems
- Moving stairs and walks
- Pneumatic tube systems
- Vertical conveyors

Other Systems
- Clock systems
- Communications networks
- Energy control systems
- Public address systems
- Satellite dishes
- Sound systems
- TV systems

SAFETY STANDARDS

Safety Standards
- Asbestos
- Code compliance
- Detection alarm systems
- Disability accessibility
- Egress: travel distance, exits, etc.
- Emergency lighting
- Fire extinguisher and suppression
- Fire ratings
- Hazardous/toxic material storage

Capital Asset Management Commission

As a result of this study, it is proposed that the State of Iowa enacts legislation that establishes a Capital Asset Management Commission. This commission would be a resource for agencies and entities responsible for infrastructure statewide. The commission would:

- Work with infrastructure agencies to develop facility audits for all classes of infrastructure in the state
- Assist infrastructure agencies in developing capital asset management programs
- Collect and analyze relevant information from facilities audits, and report on the condition of capital assets and capital asset renewal progress
- Develop prioritization plans for addressing critical needs to protect deteriorating capital assets
- Assist the legislature and other agencies in the development of funding sources and funding mechanisms for continuous attention to capital renewal
- Assist agencies in developing alternatives to new construction in the areas of capital asset renewal and adaptive reuse of existing capital assets
- Assist agencies in establishing new maintenance programs designed to prevent accumulation of capital asset deterioration
- Maintain a database of capital project costs for typical maintenance and construction activities
- Assist infrastructure agencies in selecting appropriate delivery systems for capital projects

As discussed earlier, there is a broad range of capital asset management experience and skills in agencies across the state. Accordingly, there is a wide range in the success of these agencies in preserving and maintaining their capital assets. The proposed commission would become the facilitative agency that would seek out successful programs and techniques in the State of Iowa and across the nation. The commission would then act as an information clearinghouse to guide and assist other agencies in developing their own capital asset management programs based on the "lessons learned" from other's successes.

Funding Challenges and Opportunities

The needs identified in this study are enormous in magnitude when compared to current funding levels provided for the categories of facilities. Part of this disparity is a result of a lingering problem of government to adequately balance short term and long term needs in the funding process. Clearly, the easiest way to satisfy the short term budget needs for programs is to reduce, delay or cut expenditures for construction and maintenance of capital facilities. The needs identified above require a discipline and dedicated program for addressing them or they will continue to grow without a change in the level of investment or change in the mechanism for investment. The current system is not adequately meeting the needs and the decision makers are typically not professionals familiar with financing and management of capital facilities.

There are several approaches for financing the needs identified in this report. While several of these are not used currently in Iowa, it is likely that multiple approaches will be required to satisfy even the most basic current and future needs. The current approaches and commitment to addressing the problem are not working. The needs are expanding rapidly each year that progress is not made to address the backlog of deferred maintenance and replacement needs for space. There are three potential sources for the facilities. These include voluntary(donations and investments such as bonds), involuntary(property, sales and income taxes), and user fees(tuition, gas taxes, tolls, meter based fees, daily charges, etc.). The main burden for capital facilities has typically fallen on the involuntary sources. For the highway needs there is a dedicated source and mechanism for collecting fees, the gas tax. This creates a fund that can be used to address the ongoing maintenance needs as well as reconstruction and expansion investments. It is likely that in the future the voluntary sources and the user fees will need to also be used to adequately meet the vertical infrastructure needs. Some other states have tax free investment funds established to address many of their needs. In Iowa these are limited to Regents Bonds. These could be expanded to other areas, such as the public school needs. In addition, the requirement for a super-majority of 60 % for school bond issues in Iowa creates a difficult situation for most districts to obtain the necessary votes to pass a bond issue the first time due to the demographics of the state and the need to get nearly two affirmative votes for every

vote against the issue.

The typical way of funding many infrastructure projects in Iowa is by paying up front for the construction costs. In some cases payment is made over a prescribed period of time that is much shorter than the useful life of the facility. This would be typical of the bond issue approach for meeting the financing needs. The maintenance needs are not set aside as part of the bonding process but must be budgeted annually from operating funds. The third approach is to pay for the facility as it is used through a rent or lease payment. Each of these terms for financing can be used and it is likely that the future will see more use of the lease option or the lease purchase approach for financing. Some legislative changes may be necessary for the school districts to take full advantage of the lease purchase option. Ownership is typically with the public agency directly for the infrastructure facilities. The ownership could also be private or shared ownership between public and private entities. The lease purchase option allows the opportunity for a facility to begin as a privately owned facility and transition to a publicly owned facility. This approach, known as privatization or BOT(build, operate, & transfer) has been used over the last ten years and is growing in popularity throughout the United States. Sharing could also occur between the different public entities where usage is shared. When resources are scarce, it is likely that more emphasis will be placed on shared ownership.

This study could not completely explore all of the issues that are related to the financing questions. It is clear that other states approach the financing issue differently, yet they have different political climates than Iowa and have different levels of needs. It is apparent from the needs assessment, that infrastructure needs are not being adequately met in Iowa currently. Several issues that are closely related to the financing opportunities include the following:

Control of the Facilities such as Schools(Local vs State vs private)

Equity of Facilities Among Areas of the State, Within Metropolitan Areas, and Between Social, Racial, or Other Economic Groups

Financing Impacts on the Tax Base and Tax Revenues

Financing the Funding Stream for Maintenance

measured, gets managed." The discipline of performing the audit will keep the decision makers more aware of the condition and will create a climate of accountability for the capital assets of the public entity.

It is also recommended that the State of Iowa enacts legislation that establishes a Capital Asset Management Commission. This commission would be a resource for agencies and entities responsible for infrastructure statewide. The commission would:

- Work with infrastructure agencies to develop facility audits for all classes of infrastructure in the state
- Assist infrastructure agencies in developing capital asset management programs
- Collect and analyze relevant information from facilities audits, and report on the condition of capital assets and capital asset renewal progress
- Develop prioritization plans for addressing critical needs to protect deteriorating capital assets
- Assist the legislature and other agencies in the development of funding sources and funding mechanisms for continuous attention to capital renewal
- Assist agencies in developing alternatives to new construction in the areas of capital asset renewal and adaptive reuse of existing capital assets
- Assist agencies in establishing new maintenance programs designed to prevent accumulation of capital asset deterioration
- Maintain a database of capital project costs for typical maintenance and construction activities
- Assist infrastructure agencies in selecting appropriate delivery systems for capital projects

Leveraging and Risk of State Investment

Ability of Local Entities to Finance or Attract Investment in Facilities

The financing issues will take significant work and may require legislative changes to allow alternative delivery and contracting systems for public projects. The stimulation of investment may require changes to allow the broader use of tax free bonding for certain types of public facilities such as schools.

Summary, Conclusions, and Recommendations

This study examined a broad cross section of Iowa's infrastructure in as consistent manner as was possible. Over 75% of the school districts participated in a detailed assessment of their needs in a manner similar to that used for state highway needs. The most disturbing issues appear to be in the area of life-safety and accessibility for public schools. There is a wide disparity in the age and quality of school facilities within the state creating a situation of inequity between districts and among students as a result of maintaining local control and responsibility for school financing and facilities.

The needs identified in all areas indicate a significant backlog of work to be financed and addressed. The needs of state government are also not being met adequately. There is a need for a consistent and rigorous facilities audit of all state facilities to assure that the needs are being identified and condition measured in a consistent manner and within the same time frame for supporting the decision making process.

Based on the needs assessment that was able to be performed here that an ongoing effort is needed to consistently and effectively manage the infrastructure investment that we have in Iowa. It is recommended that a program of capital asset management be required of all public entities and that funding be provided for implementation. The use of a facilities audit as one element of a comprehensive approach to capital asset management in the State of Iowa would provide a consistent method for continually assessing the condition of infrastructure. "What gets

measured, gets managed." The discipline of performing the audit will keep the decision makers more aware of the condition and will create a climate of accountability for the capital assets of the public entity.

It is also recommended that the State of Iowa enacts legislation that establishes a Capital Asset Management Commission. This commission would be a resource for agencies and entities responsible for infrastructure statewide. The commission would:

- Work with infrastructure agencies to develop facility audits for all classes of infrastructure in the state
- Assist infrastructure agencies in developing capital asset management programs
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- Develop prioritization plans for addressing critical needs to protect deteriorating capital assets
- Assist the legislature and other agencies in the development of funding sources and funding mechanisms for continuous attention to capital renewal
- Assist agencies in developing alternatives to new construction in the areas of capital asset renewal and adaptive reuse of existing capital assets
- Assist agencies in establishing new maintenance programs designed to prevent accumulation of capital asset deterioration
- Maintain a database of capital project costs for typical maintenance and construction activities
- Assist infrastructure agencies in selecting appropriate delivery systems for capital projects

Appendix A

Example School Survey Forms

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF EDUCATION
AL RAMIREZ, ED.D., DIRECTOR

Date: September 23,1994

To: All District Superintendents

From: C. Milton Wilson, Consultant
School Facilities

Subject: Update of Annual Inventory of Vacated Buildings

As you may remember, the Department is required to collect and update information on vacated buildings owned by local districts and not used for school purposes on a yearly basis.

Enclosed you will find forms to be used for reporting buildings. A printout of previously reported buildings, and a form from Iowa State University on room and building use is enclosed. We are working with Iowa State to collect this information so that there is no duplication. Both agencies have specific needs for the information in order to meet mandated requests and information. Please complete and return by October 17, 1994 or as soon as you can.

Please make the necessary corrections, additions or deletions as indicated on the form and in the directions. If there are no changes mark so on the form and return. If a building is no longer in service please mark through it and indicate the current status of the building.

Please be sure to return the forms you received to Dave Harmelink at ISU, in the envelope provided.

If you have questions, please call me at (515) 281-4743 or Dave at (515) 294-3914. *The forms are due back in his office by October 17,1994*

Thank you in advance for your assistance and cooperation.

Instructions

Facilities Building Report (front page)

The data contained on these forms is from the facilities building report which has not been updated for several years, and hence, may be somewhat outdated. There is a separate page for each building identified in this data set. Each building may have one or more additions, and if there are more than three additions they will be on another page. *Please update any incorrect information directly on these forms.* A description of the items on the form and appropriate responses follows:

Note: Appropriate responses shown in bold.

Page Header - The page header contains the county and district number, the AEA number, the district name and address, the superintendent's name and phone number.

School #: - This line contains the school number which should correspond to the numbers in the directory, the building name or description, building address and city. **Note: If the school number varies from that in the directory please explain why.**

Accessible: - Is the building accessible to handicapped individuals?

Mobile building: - Is this a relocatable building? **(note: on some forms an error caused the wrong response to be shown)**

Capacity: - What is the maximum student capacity of the building? (original design capacity)

Year closed: - If this building was closed give the year.

Year disposed: - The year in which the school board took action to dispose of the building.

Current use: - If the building was disposed of, what is its current use? **demolished, sold-private party, sold-public party, given to city or other government agency, other–describe**

Type of / Type of construction: - **brick, wood frame, metal, block, brick and block, concrete**

Gross square feet: - The sum of each floor measured to the exterior walls.

Heat type: - **steam, hot air, electricity, hot water**

Heat source: - **electricity, coal, oil, solar, natural gas, LP gas, wood, other**

Status: - **vacated, partially occupied, leased, rented, fully occupied**

Sewer: - **public, septic tank, lagoon, none, other**

Water: - **city, private, none, other**

Pool: - Does the building have a swimming pool?

Code violation: - Were there any fire code violations on the last inspection?

Acres: - Size of the site in acres to the nearest whole acre.

Ownership: - **LEA owned, privately owned, rented-leased, other**

Last remodel date: - The last date on which the building was significantly remodeled.

Last replace roof: - The last date on which the roof was replaced.

(over)

8 729 AEA 11
Boone Community School District
500 ~~Seventh~~ Street
Boone, Iowa 50036

Donald G Hanse
(515) 432-470

Please make corrections or complete any missing data by writing on this form.

Original Building

7-12

Boone Junior-Senior High School 500 7th Street

School #:	109	**Boone High School , Address?, Boone**					
Building #:	1	Year constructed:	1914	Status:	fully occupied	Last remodel date:	4/ 1/86
Addition #:	0	Type of	brick and block	Sewer:	public	Last replaced roof:	10/ 1/90
Accessible:	Yes	Number of stories:	3	Water:	city	Last replaced windows:	4/ 1/86
Mobile bldg:	[redacted]	Gross square feet:	99,250	Pool:	No	Asbestos Sq Ft:	748
Capacity:	600	Heat type:	steam	Code violation:	No	Asbestos Ln Ft:	222
Year closed:	0	Heat source:	natural gas	Acres (site):	3	3yr asbestos reinspection:	6 /25/92
Yr disposed:	0			Ownership:	LEA owned	Preventative maintenance:	Yes
Current use:	N/A			On-site parking:	No	Contract custodial/maint:	Yes or (No)

Addition # 1

500 7th Street Boone

School #:	109	**Addition I , Address?,**					
Building #:	1	Year constructed:	1924	Status:	fully occupied	Last remodel date:	4/ 1/86
Addition #:	1	Type of	brick and block	Sewer:	~~unknown~~ public	Last replaced roof:	4/ 1/86
Accessible:	Yes	Number of stories:	3	Water:	~~unknown~~ city	Last replaced windows:	4/ 1/86
Mobile bldg:	[redacted]	Gross square feet:	32,750	Pool:	No	Asbestos Sq Ft:	0
Capacity:	600	Heat type:	steam	Code violation:	No	Asbestos Ln Ft:	1,003
Year closed:	0	Heat source:	natural gas			3yr asbestos reinspection:	6 /25/92
Yr disposed:	0					Preventative maintenance:	Yes
Current use:	N/A					Contract custodial/maint:	Yes or (No)

Addition # 2

500 7th Street Boone

School #:	109	**Addition 2 , Address?,**					
Building #:	1	Year constructed:	1955	Status:	fully occupied	Last remodel date:	4/ 1/86
Addition #:	2	Type of	brick and block	Sewer:	~~unknown~~ Public	Last replaced roof:	9/ 1/ 154
Accessible:	Yes	Number of stories:	3	Water:	~~unknown~~ City	Last replaced windows:	4/ 1/86
Mobile bldg:	[redacted]	Gross square feet:	28,000	Pool:	No	Asbestos Sq Ft:	0
Capacity:	400	Heat type:	steam	Code violation:	No	Asbestos Ln Ft:	0
Year closed:	0	Heat source:	natural gas			3yr asbestos reinspection:	6 /25/92
Yr disposed:	0					Preventative maintenance:	Yes
Current use:	N/A					Contract custodial/maint:	Yes or (No)

Addition # 3

500 7th Street Boone

School #:	109	**Boone High School , Address?,**					
Building #:	1	Year constructed:	1985	Status:	fully occupied	Last remodel date:	4/ 1/86
Addition #:	3	Type of	brick and block	Sewer:	~~unknown~~ Public	Last replaced roof:	4/ 1/86
Accessible:	Yes	Number of stories:	1	Water:	~~unknown~~ city	Last replaced windows:	4/ 1/86
Mobile bldg:	[redacted]	Gross square feet:	74,000	Pool:	Yes	Asbestos Sq Ft:	0
Capacity:	200	Heat type:	~~steam~~ Hot air & Hot water	Code violation:	No	Asbestos Ln Ft:	0
Year closed:	0	Heat source:	natural gas			3yr asbestos reinspection:	6 /25/92
Yr disposed:	0					Preventative maintenance:	Yes
Current use:	N/A					Contract custodial/maint:	Yes or (No)

Enrollment (this building): Current 1200 Capacity 1300 95-96 1150 96-97 1125 97-98 1125 98-99 1100 99-00 _

New Building or Addition

County #:

District #:

School #:

Building name:

Building address:

Building #:

Addition #:

Accessible: **Yes or No**

Mobile building: **Yes or No**

Capacity:

Year closed:

Year disposed:

Current use: **demolished, sold-private party, sold-public party, given to city or other government agency, describe**

Year constructed:

Type of / Type of construction: **- brick, wood frame, metal, block, brick and block, concrete**

Number of stories:

Gross square feet:

Heat type: **- steam, hot air, electricity, hot water**

Heat source: **- electricity, coal, oil, solar, natural gas, LP gas, wood, other**

Status: **- vacated, partially occupied, leased, rented, fully occupied**

Sewer: **- public, septic tank, lagoon, none, other**

Water: **- city, private, none, other**

Pool: **Yes or No**

Code violation: **Yes or No**

Acres:

Ownership: **- LEA owned, privately owned, rented-leased, other**

On-site parking: **Yes or No**

Last remodel date: ____ / ____ / ____

Last replace roof: ____ / ____ / ____

Last replaced windows: ____ / ____ / ____

Asbestos Sq Ft:

Asbestos Ln Ft:

3yr asbestos reinspection: ____ / ____ / ____

Preventative maintenance: **Yes or No**

Contract custodial/maint: **Yes or No**

Enrollment: Current_____ 95-96_____ 96-97_____ 97-98_____ 98-99_____ 99-00_____

Cooperative Uses Form

On this form please indicate uses of rooms outside of normal academic activities. These activities can include adult education classes, public meetings, community activities, and club activities. Include the school number, the number of rooms for each activity and how often the room is used for this purpose.

County No:______ District No:____________

☐ **No activities, outside of normal academic activities, are held in any facility in this district.**

School Number	Type of activity	Number of Rooms	Rate of Usage
109	adult education classes	4	2 nights per week

Appendix B

School District Response Categories

School districts that have not responded to the survey

ADAIR-CASEY
AKRON WESTFIELD
ALBIA
APLINGTON
ATLANTIC
BATTLE CREEK-IDA GROVE
BAXTER
BETTENDORF
CARDINAL
CENTER POINT-URBANA
CENTRAL CITY
CENTRAL CLINTON
CHARITON
CHARLES CITY
CLARION-GOLDFIELD
CLARKE
CLEAR LAKE
CLINTON
COLFAX-MINGO
COLLINS-MAXWELL
COLO-NESCO
COON RAPIDS-BAYARD
CORNING
DAVENPORT
DAVIS COUNTY
DECORAH
DES MOINES INDEPENDENT
DOWS
DUBUQUE
DUMONT
EARLHAM
EAST MONONA
EAST UNION
EASTERN ALLAMAKEE
EASTWOOD
ESSEX
EXIRA
FREMONT
GILMORE CITY-BRADGATE
GLENWOOD
GMG
HAMBURG
HARMONY
HIGHLAND
HOWARD-WINNESHIEK
INDEPENDENCE
INDIANOLA
IOWA CITY
JESUP
KNOXVILLE
LAKE VIEW-AUBURN
LAURENS-MARATHON
LENOX
LEWIS CENTRAL
LINCOLN CENTRAL
LINEVILLE-CLIO
LISBON
MARTENSDALE-ST MARYS
MOC-FLOYD VALLEY
MONTEZUMA
MOUNT VERNON
MUSCATINE
NEVADA
NEW LONDON
NISHNA VALLEY
NORTH LINN
NORTH MAHASKA
NORTH SCOTT
NORWAY
PERRY
PLEASANT VALLEY
PLEASANTVILLE
POSTVILLE
PRESTON
SERGEANT BLUFF-LUTON
SHELDON
SIOUX CENTRAL
SPENCER
TRI-COUNTY
TRIPOLI
UNION
WAPSIE VALLEY
WAUKEE
WAVERLY-SHELL ROCK
WEST BRANCH
WILLIAMSBURG
WILLOW
WINTERSET
WODEN-CRYSTAL LAKE

School districts that failed to provide space usage information

BEDFORD
BELLE PLAINE
BUFFALO CTR-RAKE-LAKOTA
CLARINDA
CLEARFIELD
CORWITH-WESLEY
COUNCIL BLUFFS
DEEP RIVER-MILLERSBURG
EDGEWOOD-COLESBURG
FREDERICKSBURG
FREMONT-MILLS
GARNAVILLO
GILBERT
GRAETTINGER
GUTTENBERG
LINN-MAR
LONE TREE
MARION INDEPENDENT
MORAVIA
NEW MARKET
NORTHEAST
OELWEIN
REMSEN-UNION
SCHALLER CRESTLAND
SCHLESWIG
SHEFFIELD-CHAPIN
SOUTH TAMA COUNTY
SOUTHERN CAL
STUART-MENLO
URBANDALE
VALLEY
VENTURA
WASHINGTON
WATERLOO
WEST CENTRAL

School districts that have provided partial or incomplete information

ALLISON-BRISTOW
BONDURANT-FARRAR
CHEROKEE
DELWOOD
FORT MADISON
JOHNSTON
MID-PRAIRIE
MONTICELLO
ORIENT-MACKSBURG
PLAINFIELD
PRESCOTT
SIGOURNEY
SOUTH WINNESHIEK
SPIRIT LAKE
THOMPSON
VAN METER
WEST HARRISON

School districts that have returned complete of substantially complete surveys

ACKLEY
ADEL-DE SOTO-MINBURN
ALBERT CITY-TRUESDALE
ALBURNETT
ALDEN
ALGONA
ALLAMAKEE
ALTA
AMES
ANAMOSA
ANDREW
ANITA
ANKENY
ANTHON-OTO
AR-WE-VA
ARMSTRONG-RINGSTED
AUDUBON
AURELIA
BALLARD
BCL-UW
BELLEVUE
BELMOND-KLEMME
BENNETT
BENTON
BOONE
BOYDEN-HULL
BOYER VALLEY
BRIDGEWATER-FONTANELLE
BROOKLYN-GUERNSEY-MALC
BURLINGTON
BURT
C AND M
CAL
CALAMUS/WHEATLAND
CAMANCHE
CARLISLE
CARROLL
CEDAR FALLS
CEDAR RAPIDS
CENTERVILLE
CENTRAL
CENTRAL DECATUR
CENTRAL LEE
CENTRAL LYON
CHARTER OAK-UTE
CLARENCE-LOWDEN
CLARKSVILLE
CLAY CENTRAL/EVERLY
CLEAR CREEK-AMANA
COLLEGE
COLUMBUS
CRESTON
DALLAS CENTER-GRIMES
DANVILLE
DENISON
DENVER
DEXFIELD
DIAGONAL
DIKE
DUNKERTON
DURANT
EAGLE GROVE
EAST BUCHANAN
EAST CENTRAL
EAST GREENE
EAST MARSHALL
EDDYVILLE-BLAKESBURG
ELDORA-NEW PROVIDENCE
ELK HORN-KIMBALLTON
EMMETSBURG
ENGLISH VALLEYS
ESTHERVILLE
FAIRFIELD
FARRAGUT
FOREST CITY
FORT DODGE
FOX VALLEY
GALVA-HOLSTEIN
GARNER-HAYFIELD
GEORGE
GLADBROOK
GLIDDEN-RALSTON
GRAND
GRAND VALLEY
GREENE
GREENFIELD
GRINNELL-NEWBURG
GRISWOLD
GRUNDY CENTER
GUTHRIE CENTER
H-L-V
HAMPTON
HANCOCK-AVOCA
HARLAN
HARRIS-LAKE PARK
HARTLEY-MELVIN SANBORN
HINTON
HUBBARD-RADCLIFF
HUDSON
HUMBOLDT
IKM
INTERSTATE 35
IOWA FALLS
IOWA VALLEY
JANESVILLE CONSOLIDATED
JEFFERSON-SCRANTOM
KEOKUK
KEOTA
KINGSLEY-PIERSON
LAKE MILLS
LAMONI
LAWTON-BRONSON
LE MARS
LINCOLN
LITTLE ROCK
LOGAN-MAGNOLIA
LOUISA-MUSCATINE
LU VERNE
LYNNVILLE-SULLY
MADRID
MALLARD
MALVERN
MANNING
MANSON-NORTHWEST
WEBSTER
MAPLE VALLEY
MAQUOKETA
MAQUOKETA VALLEY
MARCUS-MERIDEN-CLEGHORN
MARSHALLTOWN
MASON CITY
MEDIAPOLIS
MELCHER-DALLAS
MESERVEY-THORNTON
MFL MAR MAC
MIDLAND
MISSOURI VALLEY
MORMON TRAIL
MORNING SUN
MOULTON-UDELL
MOUNT AYR
MOUNT PLEASANT
MURRAY
NASHUA
NEW HAMPTON
NEW HARTFORD
NEWELL-FONDA
NEWTON
NORA SPRINGS-ROCK FALLS
NORTH CENTRAL
NORTH FAYETTE
NORTH KOSSUTH
NORTH POLK
NORTH TAMA COUNTY
NORTH WINNESHIEK
NORTHEAST HAMILTON
NORTHWOOD-KENSETT
NORWALK
ODEBOLT-ARTHUR
OGDEN
OKOBOJI
OLIN CONSOLIDATED
OSAGE
OSKALOOSA
OTTUMWA
OXFORD JUNCTION CONS
PANORAMA
PARKERSBURG
PATON-CHURDAN
PCM
PEKIN
PELLA
POCAHONTAS AREA
POMEROY-PALMER

PRAIRIE VALLEY
RED OAK
REINBECK
RICEVILLE
RIVERSIDE
ROCK VALLEY
ROCKWELL CITY-LYTTON
ROCKWELL-SWALEDALE
ROLAND-STORY
RUDD-ROCKFORD-MARBLE RK
RUSSELL
RUTHVEN-AYRSHIRE
SAC
SAYDEL CONSOLIDATED
SENTRAL
SEYMOUR
SHELBY
SHENANDOAH
SIBLEY-OCHEYEDAN
SIDNEY
SIOUX CENTER
SIOUX CITY
SOLON
SOUTH CLAY
SOUTH HAMILTON
SOUTH O'BRIEN
SOUTH PAGE
SOUTHEAST POLK
SOUTHEAST WARREN
SOUTHEAST WEBSTER
SPRINGVILLE
ST ANSGAR
STANTON
STARMONT
STORM LAKE
STRATFORD
SUMNER
TERRIL
TIPTON
TITONKA CONSOLIDATED
TREYNOR
TRI-CENTER
TURKEY VALLEY
TWIN CEDARS
TWIN RIVERS
UNDERWOOD
UNITED
VAN BUREN
VILLISCA
VINTON-SHELLSBURG
WACO
WALL LAKE
WALNUT
WAPELLO
WAYNE
WEBSTER CITY
WELLSBURG-STEAMBOAT RCK
WEST BEND
WEST BURLINGTON IND
WEST DELAWARE COUNTY
WEST DES MOINES
WEST HANCOCK
WEST LIBERTY
WEST LYON
WEST MARSHALL
WEST MONONA
WEST SIOUX
WESTERN DUBUQUE
WESTWOOD
WHITING
WILTON
WINFIELD-MT UNION
WOODBINE
WOODBURY CENTRAL
WOODWARD-GRANGER

Appendix C

Example City Survey Forms

IOWA INFRASTRUCTURE '94

Dear City Official:

The Iowa Legislative Council is conducting a study of Iowa's infrastructure to establish a common baseline for all type of infrastructure in the State of Iowa. The Construction Engineering Department at Iowa State University is assisting the Iowa Legislative Council in undertaking this study. Your assistance is needed to help us provide the following information:

1. An inventory of infrastructure in the state
2. A determination of the value of this infrastructure
3. An assessment of infrastructure needs for the next ten years.

There are three portions to this survey.

1. The first are forms that are titled *"City Facilities and Space Usage Inventory"* and *"Parks and Recreation Inventory"*. These forms are to be used to describe various characteristics of your facilities. A separate form should be used for each individual facility. Please make copies of the form as necessary.

2. The second portion is described on the sheet titled *"Current Value of Facilities"*. The instructions for this portion of the survey are described on this form.

3. The third portion is described on the form titled *"Capital Improvements Plan"*.

It will probably be necessary to distribute these forms to several individuals within the city for the information to be accurate. **Please distribute the forms to the appropriate individuals, collect them when they have been completed, and return them in the postage paid envelope that is provided.**

If you have any questions at all, please contact me.

Sincerely,

Dave Harmelink

451 Town Engineering
Iowa State University
Ames, Iowa 50011

Phone: (515) 294-3914
Fax: (515) 294-3845
Email: biker@iastate.edu

Instructions for forms:

City Facilities and Space Usage Inventory

and

Parks and Recreation Inventory

City Facilities and Space Usage Inventory:

Function

A separate form should be used for each of significant structure or facility that the city possesses. The second block, which asks for the function that the facility provides is a good guide for the types of facilities that should be included on this form. Note that there is a space marked other for facilities that you feel are significant but are not specifically listed. Please try to provide a comprehensive report of the city's facilities.

Building Information

This area includes information about the original structure and any additions. Indicate the year that each portion was constructed, how many stories there are, what type of construction (ie. brick, wood frame, concrete, metal, etc.), and the gross square feet summed up for each floor. In the replace/remodel dates section provide dates for most recent time any of the items listed were performed (or at least performed on a major portion of the structure in question).

Space Usage Report

For each function listed on the front of the form, use the appropriate section to describe how the space in that area is used. Try to make a reasonable approximation of how the space is used. *You do not need to measure the areas for accuracy.* The percentage for each use should be the percentage of the entire facility dedicated to that use. **The sum of all the space use on this form should be 100%.**

Parks and Recreation Inventory:

Use a separate form for each facility. The form should be fairly self-explanatory so just answer the questions as accurately as possible.

Thank you for your cooperation and assistance.

City Facilities and Space Usage Inventory

Please use a seperate form for each individual facility

City Name:	Date: ___/___/___
Building Name:	Preparer's Name:
Building Description:	Circle one: **Owned Leased**

What function(s) does this facility provide?

- ☐ City Offices / Administration
- ☐ Police Station
- ☐ Fire Station
- ☐ Other: _____
- ☐ Maintenance
- ☐ Library
- ☐ Museum
- ☐ Airport
- ☐ Cemetary
- ☐ Mass Transit
- ☐ Civic/Community Center
- ☐ Auditorium
- ☐ Gymnasium
- ☐ Theater

Important: For each of the functions checked above, complete the appropriate space on the reverse side of this form

Building Information

Original Building

Year Constructed:	Replace/Remodel Dates:	**Tuckpoint or**
# of Stories:	**Remodel Building** ___/___/___	**Reseal Exterior** ___/___/___
Construction Type:	**Replace Roof** ___/___/___	**Replace HVAC** ___/___/___
Gross Square Feet:	**Replace Windows** ___/___/___	**Replace Electrical** ___/___/___

Addition # 1

Description:

Year Constructed:	Replace/Remodel Dates:	**Tuckpoint or**
# of Stories:	**Remodel Building** ___/___/___	**Reseal Exterior** ___/___/___
Construction Type:	**Replace Roof** ___/___/___	**Replace HVAC** ___/___/___
Gross Square Feet:	**Replace Windows** ___/___/___	**Replace Electrical** ___/___/___

Addition # 2

Description:

Year Constructed:	Replace/Remodel Dates:	**Tuckpoint or**
# of Stories:	**Remodel Building** ___/___/___	**Reseal Exterior** ___/___/___
Construction Type:	**Replace Roof** ___/___/___	**Replace HVAC** ___/___/___
Gross Square Feet:	**Replace Windows** ___/___/___	**Replace Electrical** ___/___/___

Please complete reverse side of this form

Make copies of this form if necessary

City Facilities and Space Usage Inventory

Please use a seperate form for each individual facility

City Name: Audubon, Iowa		Date: 1 / 31 / 95
Building Name: Memorial Building	Preparer's Name: R. Spencer	
Building Description: City Offices, Police, Comm. Center		Circle one: (Owned) Leased

What function(s) does this facility provide?

- [X] City Offices / Administration
- [X] Police Station
- [ ] Fire Station
- [ ] Other: _____
- [ ] Maintenance
- [ ] Library
- [ ] Museum
- [ ] Airport
- [ ] Cemetary
- [ ] Mass Transit
- [X] Civic/Community Cente
- [ ] Auditorium
- [ ] Gymnasium
- [ ] Theater

Important: For each of the functions checked above, complete the appropriate space on the reverse side of this form

Building Information

Original Building

Year Constructed: 1924	Replace/Remodel Dates:		
# of Stories: 3	**Remodel Building**	/ / 1986	**Tuckpoint or Reseal Exterior** / / 1993
Construction Type: Masonry	**Replace Roof**	/ / 1993	**Replace HVAC** / / 1989
Gross Square Feet: 15,943	**Replace Windows**	/ /	**Replace Electrical** / /

Addition # 1

Description: Police Dep't Addition

Year Constructed: 1967	Replace/Remodel Dates:		
# of Stories: 1	**Remodel Building**	/ / 1983	**Tuckpoint or Reseal Exterior** / / 1993
Construction Type: Masonry	**Replace Roof**	/ / 1993	**Replace HVAC** / / 1983
Gross Square Feet: 16,419	**Replace Windows**	/ /	**Replace Electrical** / / 1983

Addition # 2

Description:

Year Constructed:	Replace/Remodel Dates:		
# of Stories:	**Remodel Building**	/ /	**Tuckpoint or Reseal Exterior** / /
Construction Type:	**Replace Roof**	/ /	**Replace HVAC** / /
Gross Square Feet:	**Replace Windows**	/ /	**Replace Electrical** / /

Please complete reverse side of this form

Make copies of this form if necessary

Value 547,000

Parks and Recreation Inventory (One form per facility)

County Name:		Date: 1 1
Park Name:	Preparer's Name:	
Park Location:		

General Info

This park was founded or constructed in what year? ____

How many acres of maintained area does the park include? ____ acres

How many acres of unmaintained area (woodlands, marshes, grasslands, etc.)? ____ acres

Courts and Fields

	How many ball parks are there?		How many are lighted?
	How many tennis courst are there?		How many are lighted?
Golf course?	How many volley ball courts are there?		How many are lighted?
No. of holes?	How many football/soccer fields are there?		How many are lighted?
	Other fields? _____		How many are lighted?

Playgrounds

How many playground areas does the park have? ____

How many square feet of area do all of the playgrounds combined cover? ____ sf

Trails and Paths

What is the length of paved trails in the park? ____ feet

What is the length of dirt or gravel paths in the park? ____ feet

Campgrounds

How many modern campsites (electricity, water, sewer) does the park have? ____

How many primative campsites does the park have? ____

How much area does the gampground cover? ____ acres / sf

Aquatic Facilities

How many swimming pools does the park have? ____ Year(s) build? ____

How many acres of lakes or ponds are in the park? ____ acres

How many? Beaches / Swimming areas? ____ Ramps? ____ Docks? ____ Slips? ____

Structures

	Number of buildings	Year built
Administration building		
Shelter houses		
Community buildings		
Cabins		
Maintenance buildings		
Equipment storage		

	Number of buildings	Year built
Modern restrooms		
Primative "pit" restrooms		
Showers		
Other _____		
Other _____		
Other _____		

Note: If this facility has any other significant structures or features please describe on the back of this form.

<<<< Make copies of this form as needed >>>>

Current Value of Facilities.

Read Carefully

Dear County Official:

One of the pieces of information that we are collecting is the value of your facilities. The easiest way to obtain this information is from your property insurance schedule. Either you or your insurance carrier should have this information. This schedule may contain information similar to the following:

The facility name / description:
The facility's address:
Type of construction:
The year that it was build:
Size of the facility in square feet:
The number of stories:
Fire protection system:
Value of the facility:
Value of the contents of the facility:
Value of electronic data processing equipment:
Total value of the facility:

The items that are shown in bold print are the ones that are most important to our study. It may be useful to have the others if they are readily available, but it is not absolutely necessary.

If you do not have this information your insurance carrier should. Please pass this request to either your insurance carrier or you insurance agent, and ask them to provide you with the requested information.

Please provide information for all of the facilities that are insured by the county.

Information can be returned to me directly:

Dave Harmelink
451 Town Engineering
Iowa State University
Ames, Iowa 50011

Or it can be returned, along with the rest of the survey information, using the BUSINESS REPLY MAIL envelop provided.

Thank you for your cooperation and assistance

CITY OF HUMBOLDT, IOWA
VALUATION OF FACILITIES

Facility Name/Description	Facility Address	Type of Construction	Year Built	Size (Sq Feet)	Number of Stories	Fire Protection System	Value of Facility	Value of Contents	Value of Electronic Data Processing Equip.	Total Value of Facility
City Hall/Fire Department	29 5th Street South	Masonry Noncombustible	1960's	9000	1	Extinguisher	$426,000	$30,000	$18,500	$474,500
Beck Building	407 1st Avenue South	Frame	Not Available	2000	1	Extinguisher	$52,500	$0	$0	$52,500
Disposal Plant Garage	1313 Taft South	Noncombustible	1968	2400	1	Extinguishers	$60,000	$5,000	$0	$65,000
Disposal Plant Garage	1313 Taft South	Masonry Noncombustible	1937	120	1	Extinguishers	$2,000	$0	$0	$2,000
Brick Grit House	1313 Taft South	Masonry Noncombustible	1937	224	1	None	$4,000	$3,000	$0	$7,000
Disp Plnt Main Building	1313 Taft South	Masonry Noncombustible	1966	777	1	None	$14,000	$17,000	$0	$31,000
Disp Plant Wood Shed	1313 Taft South	Frame	1985	48	1	None	$1,000	$3,000	$0	$4,000
Digester with Boiler	1313 Taft South	Steel - Concrete	1966	141	1	None	$0	$325,000	$0	$325,000
Primary Clarifyer	1313 Taft South	Concrete	1966	141	1	None		$5,000	$0	$5,000
Sewer Lift Station	902 Lewis Street	Masonry	1950	64	1	None	$2,000	$5,000	$0	$7,000
Disp Plant Lift Station	Blackbird Addition		1980	19	1	None	$0	$5,000	$0	$5,000
City Maintenance Shed	1000 Lewis Street	Masonry Noncombustible	1950	5600	1	Extinguisher	$252,000	$5,000	$0	$257,000
Street Dept Steel Shed	1000 Lewis Street	Frame	1950's	2480	1	None	$22,000	$0	$0	$22,000
MWW Shop	302 8th Street South	Masonry Noncombustible	1969	2027	1	Extinguishers	$250,000	$15,000	$0	$265,000
Water Department Plant	1000 Sumner SW	Masonry Noncombustible	1930's	12000	2	Extinguishers	$2,545,000	$1,491,000	$1,000	$4,037,000
MWW Pump House	1000 Sumner SW	Noncombustible	1974	60	1	Extinguishers	$12,000	$15,000	$0	$27,000
MWW Brick Pump House	1000 Sumner SW	Masonry Noncombustible	1974	150	1	Extinguishers	$13,000	$15,000	$0	$28,000
MWW Water Tower	1009 4th Avenue SW	Masonry Noncombustible	1950	N.A.	2	None	$1,305,000	$3,500	$0	$1,308,500
Park Band Stand	Bicknell Park Band Stand	Masonry Noncombustible	1916	324	1	None	$24,000	$0	$0	$24,000
Fish Hatchery	1306 3rd Avenue North	Masonry Noncombustible	1930	Not Avail	1	None	$50,000	$3,000	$0	$53,000
Park Dept. Storage Shed	1306 3rd Avenue North	Frame	1930	1986	2	None	$3,000	$0	$0	$3,000
Taft Park Shelter House	Taft Street	Masonry Noncombustible	1940	600	1	Extinguishers	$15,000	$1,500	$0	$16,500
Taft Park Storage Shed	Taft Street	Frame	1980	96	1	None	$1,500	$0	$0	$1,500
New Shelter House	Beebe Park	Frame	Not Finished	140	1	None	$9,000	$0	$0	$9,000
Wildcat Wonderland	Taft Park	Frame	1990	N.A.	1	None	$108,000	$0	$0	$108,000
Pool Bath House/Div Bds	405 8th Avenue North	Masonry Noncombustible	1954	2240	1	Extinguishers	$50,000	$4,000	$0	$54,000
Pool Fencing/Filter House	405 8th Avenue North	Masonry Noncombustible	1954	837	1	None	$13,000	$6,000	$0	$19,000
Pool Shelter House	405 8th Avenue North	Frame	1975	160	1	None	$1,500	$0	$0	$1,500
Pool Log Cabin	405 8th Avenue North	Frame	1962	240	1	None	$4,000	$0	$0	$4,000
Masonry Hangar	2601 220th Street	Masonry Noncombustible	1940-1941	15000	1	None	$40,000	$0	$0	$40,000
Airport Administration Bldg	2601 220th Street	Noncombustible	1974	576	1	Extinguishers	$20,000	$4,000	$0	$24,000
Metal Hangars (3)	2601 220th Street	Noncombustible	1968-1980	12000	1	None	$70,000	$0	$0	$70,000
Enclosed Metal Hangar	2601 220th Street	Noncombustible	Not Available	Not Avail	1	None	$35,000	$0	$0	$35,000
Public Library	30 6th Street North	Masonry Noncombustible	1907	7500	2	Sprinkler system	$940,000	$324,000	$10,500	$1,274,500
Law Enforcement Center	430 Sumner Avenue	Frame	1960's	288	1	None	$0	$4,000	$4,000	$8,000
Union Cemetery Garage	RR 1	Frame	1975	672	1	Extinguishers	$10,000	$2,000		$12,000

1 Main Building went from flat roof to peak roof in 1985.
2 Lift Stations were rebuilt or replaced in 1989.
3 Main building pumps were rebuilt or replaced in 1993-94.
4 Overhead door, windows, walk-in doors, heating system, and exterior covering new in 1993.
4 40' x 50' addition in 1993.
4 130 sq ft office area, 150 sq ft employee area, and 70 sq ft restroom added in 1994.
5 Plant structure improvements in 1930, 1950, 1969, 1972, & 1988.
5 Plant roof improvements in 1930's, 1950's, 1970's, & 1980's.
6 The City of Humboldt owns half of this hangar (15,000 sq ft). The other half is owned by Carla Peterson.
7 The City owns the land that these hangars sit on, but the hangars are privately owned by private citizens.
8 An addition to the Library of 2,500 sq ft was put on in 1993.
9 This location was first used as the Law Enforcement Center in 1979 by the City and County of Humboldt.

Capital Improvements Plan

Dear planning official:

If you have a Capital Improvements Plan (CIP), please send me a copy of it. In lieu of a CIP send me any information that relates to planned infrastructure expenditures (excluding highway/road needs). If planned expenditures are not available you could provide information for actual capital improvements over the last several years. Any information regarding capital improvement expenditures that you can provide will be useful to the study. As a last resort, make a list of what you think major expenditures may be and what they may be used for.

Deferred Maintenance

Are there any currently identifiable infrastructure maintenance items that are not in the capital improvements budget?

Description	Reason Deferred	Amount

Dave Harmelink
451 Town Engineering
Iowa State University
Ames, Iowa 50011

Phone: (515) 294-3914
Fax: (515) 294-3845
Email: biker@iastate.edu

Appendix D

City Survey Responses

Cities that provided inventory information

Algona
Asbury
Bellevue
Bloomfield
Boone
Carlisle
Cedar Falls
Centerville
Clarinda
Colfax
Cresco
Denison
Emmetsburg
Forest City
Fort Dodge
Garner
Hudson
Humboldt
Indianola
Jefferson
Leon
Mason City
Milford
Muscatine
Newton
Oelwein
Pella
Pleasant Hill
Rock Valley
Sioux Center
Spirit Lake
Waterloo
Waverly
Webster City
West Des Moines
Windsor Heights

Cities that provided facility value information

Algona
Boone
Cedar Falls
Centerville
Clarinda
Clinton
Colfax
Cresco
Emmetsburg
Forest City
Garner
Hudson
Humboldt
Jefferson
Leon
Mason City
Milford
Muscatine
Newton
Oelwein
Pella
Rock Valley
Sioux Center
Spirit Lake
Washington
Waterloo
Webster City
West Des Moines

Cities that provided capital improvement information

Ames
Algona
Audubon
Cedar Falls
Centerville
Clarinda
Leon
Muscatine
Newton
Oelwien
Pleasant Hill
Rock Valley
Spirit Lake
Washington
Waterloo
Waverly
West DesMoines
Windsor Heights
Vinton

Appendix E

Sample Inspection Forms and Checklists

A. Facility Inventory

A.1. Building Inventory List
A.2. Building File Standard Inspection Form

B. Building Components

Primary System

B.1. Foundation and Substructure
B.2. Structural System
B.3. Exterior Wall System
B.4. Roof System

Secondary System

B.5. Ceiling System
B.6. Floor Covering System
B.7. Interior Wall and Partition Systems
B.8. Specialities

Service Systems

B.9. Heating, Ventilating, and Cooling
B.10. Plumbing Systems
B.11. Electrical Service
B.12. Conveying Service
B.13. Conveying Systems
B.14. Other Systems

C. Infrastructure Components

C.1. Site Work
C.2. Landscaping
C.3. Structures
C.4. Utilities

D. Functional Performance

D.1. Suitability and Adaptability
D.2. Use Considerations

A.1. BUILDING INVENTORY LIST

BUILDING INVENTORY LIST

BUILDING #	BUILDING NAME	BUILDING LOCATION/ ADDRESS	OWNERSHIP O/L/O-L

A.2. BUILDING FILE

BUILDING DATA

1. Building # _____ 2. Building Name _____
3. Address _____
4. Grid Location _____ 5. Use _____
6. # Floors _____ 7. Gross Area (sq. ft.) _____
8. Net Assignable Area (sq. ft.) _____
9. Ownership ___ (O) ___ (L) ___ (O/L)
10. Book Value $_____ 11. Replacement Value $ _____
12. Age (Original construction, additions) _____

LAND DATA

1. Location _____
2. Ownership ___ (O) ___ (L) ___ (O/L)
3. Book Value $_____ 4. Current Market Value $ _____
5. Year(s) Acquired_____ 6. Area (acreage, sq. ft.) _____

NOTES: _____

STANDARD INSPECTION FORM

FACILITY AUDIT INSPECTION REPORT

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # _____ Name _____

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION _____

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures				
Def #	Description	Rating	Craft	Labor$	+ Mat'l$ =	Total Cost	

B.1. FOUNDATION AND SUBSTRUCTURE CHECKLIST

Components: Footings; Grade beams; Foundation walls; Waterproofing and underdrain; Insulation; and Slab-on-grade.

DEFICIENCIES	CAUSES
Settlement, alignment changes or cracks	• Soils— changes in load bearing capacity due to shrinkage, erosion, or compaction. Adjacent construction undermining foundations. Reduced soil cover resulting in frost exposure. • Design loads— building equipment loads exceeding design loads. Vibration from heavy equipment requiring isolated foundations. • Structural or occupancy changes— inadequate bearing capacities. Foundation settling. Earthquake resistance non— functioning.
Moisture penetration	• Water table changes— inadequate drainage. Ineffective drains or sump pump/sump pits. • Roof drainage— storm sewer connections inadequate or defective. Installation of roof restrictors, gutters, and downspouts where required. • Surface drainage— exterior grades should slope away from building and structures. • Utilities— broken or improperly functioning utility service lines or drains. • Leakage— wall cracks, opening of construction joints, inadequate or defective waterproofing. • Condensation— inadequate ventilation, vapor barrier, and/or dehumidification.
Temperature changes	• Insulation— improperly selected for insulating value, fire ratings, and vermin resistance.
Surface material deterioration	• Concrete, masonry, or stucco— spalling, corrosion of reinforcing, moisture penetration, or chemical reaction between cement and soil. • Steel or other ferrous metals— corrosion due to moisture or contact with acid-bearing soils. • Wood— decay due to moisture or insect infestation.
Openings deterioration	• Non-functioning of doors, windows, hatchways, and stairways. Utilities penetration due to damage, weather, wear, or other cause.
Floors, concrete — cracking or arching	• Shrinkage, settlement, or subsoil, inadequate drainage, movement in exterior walls, or frost heave. Improper compaction of base. Heaving from hydraulic pressure.
Floors, wood — rooting or arching	• Excessive dampness or insect infestation. Leak in building exterior. Lack of ventilation.
Crawl space ventilation and maintenance	• Inadequate air circulation due to blockage of openings in foundation walls. Moisture barrier ineffective. Pest control, housekeeping, and proper drainage.

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.1 Name Foundation and Substructure

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION

Footings; Grade beams; Foundation walls; Water-proofing and under drain; Insulation and Slab-on-grade

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B. 2. STRUCTURAL SYSTEM CHECKLIST

Components: Floor system; Roof system; Structural framing system; Pre-engineered buildings; Platforms and walkways; and Stairs.

The primary materials encountered in the superstructure inspection are concrete, steel, and wood. Typical observations of deficiencies will be observed by: failures in the exterior closure system of exterior walls, openings, and roofs; cracks; movement of materials; moisture penetration; and discoloration. The exterior visual survey will detect failures of surface materials or at openings that will require further inspection to determine whether the cause was the structural design.

Concrete is a composite material and subject to more types of failure than steel or wood. Observed failures can originate by incorrect design and construction techniques not readily detected by visual inspections. Analysis of original design criteria and materials by laboratory testing may be required to determine the causes of problems.

DEFICIENCIES	CAUSES
Concrete (Columns, walls, beams, and floor and roof slabs)	
Overall alignment	• Settlement; improper or inadequate design and construction techniques. Under designed for loading conditions.
Deflection	• Expansion and/or contraction; changes in design loads. Original design deficient. Original materials deficient.
Surface conditions:	
Cracks	• Inadequate design and/or construction; changes in design loads; stress concentration; extreme temperature changes; secondary effects of freeze-thaw.
Scaling, spalls, and pop-outs	• Extreme temperature changes; reinforcement corrosion; mechanical damage; poor materials.
Stains	• Chemical reaction of reinforcing; reaction of materials in concrete mixture; environmental conditions.
Exposed reinforcing	• Corrosion of steel; insufficient cover; mechanical damage.
Steel (Structural members, stairs, and connections)	
Overall alignment	• Settlement; design and construction techniques; improper fabrication.
Deflection or cracking	• Expansion and/or contraction; changes in design loads; fatigue due to vibration or impact.
Corrosion	• Electrochemical reaction; failure of protective coating; excessive moisture exposure.
Surface deterioration	• Excessive wear
Wood (Structural members and connections)	
Overall alignment	• Settlement; improper or inadequate design and construction techniques.
Deflection or cracking	• Expansion and/or contraction; changes in design loads; fatigue due to vibration or impact; failure of compression members. Poor construction techniques. General material failures.
Rot (Decay)	• Direct contact with moisture; condensation; omission or deterioration of moisture barrier. Poor construction techniques. Damage from rodents or insects.

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.2 Name Structural System

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION

Floor system; Roof system; Structural framing system; Pre-engineered buildings; Platforms and walkways; Stairs

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.3. EXTERIOR WALL SYSTEM CHECKLIST

Components: Exterior walls; Exterior windows; Exterior doors and frames; Entrances; Chimneys and exhaust stacks.

GENERAL INSPECTIONS

Overall appearance	Window & door fit	Settlement
Displacement	Flashing condition	Evidence of moisture
Paint conditions	Material integrity	Construction joints
Caulking	Cracks	Hardware conditions

EXTERIOR WALLS

- **Wood** (Shingles, weatherboard siding, plywood)

	Check for:
Paint or surface treatment conditions	Moisture penetration
Rot or decay	Loose, cracked, warped, or broken boards and shingles

- **Concrete, Masonry, and Tile** (Concrete, brick, concrete masonry units, structural tile, glazed tile, stucco, stone)

	Check for:
Settlement	Structural frame movement causing cracks
Construction and expansion joints	Condition of caulking and mortar
Surface deterioration	Efflorescence and staining
Parapet movement	Tightness of fasteners

- **Metal** (Corrugated iron or steel, aluminum, enamel coated steel, protected metals)

	Check for:
Settlement	Structural frame movement
Condition of bracing	Surface damage due to impact
Tightness of fasteners	Caulking
Flashings	Corrosion

- **Finishes** (Mineral products, fiberglass, polyester resins, and plastics)

	Check for:
Settlement	Structural frame movement
Surface damage due to impact	Cracks
Stains	Fasteners
Adhesion to substrate	Caulking
Flashings	

B. 3, *continued*

EXTERIOR WINDOWS AND DOORS

Check for:
Frame fitting
Paint or surface finish
Cleanliness
Rot or corrosion
Frame and molding condition
Putty and weatherstripping
Security
Material condition (glass, wood, and metal panels)
Screens and storm windows

SHADING DEVICES

Check for:
Material condition
Cleanliness
Operations

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.3 Name Exterior Wall System

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Exterior walls; Exterior windows; Exterior doors and frames; Entrances; Chimneys and stacks

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def#	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.4. ROOF SYSTEM CHECKLIST

Components: Roofing; Insulation; Flashings, expansion joints, and gravel stops; Roof hatches, smoke hatches, and skylights; Gutters and downspouts; Walking surfaces; Railings.

Note comments on following:

GENERAL APPEARANCE

___Good ___Fair ___Poor

WATERTIGHTNESS

___Evidence of leaks on undersurface
___Faulty material
___Faulty application
___Weather damage
___Fastening failure
___Surface weathering
___Faulty design
___Standing water
___Mechanical damage
___Flashing failure

ROOFING SURFACES

Built-up *(Felt or bitumen surfacing)*
___Adhesion
___Bare areas
___Cracks, holes, tears
___Alligatoring
___Moisture meter readings
___Blisters, wrinkles
___Fish mouths
___Ballast

Single-ply *(Thermosetting, thermoplastic, composites)*
___Adhesion
___Bare areas
___Cracks
___Seam conditions
___Ballast
___Moisture meter readings
___Blisters, wrinkles
___Holes, tears
___Protective coating

Metal Roofing *(Preformed, formed)*
___Corrosion (%)
___Seams
___Holes
___Protective coating
___Cracks or breaks
___Expansion joints

Shingles & Tiles *(Metals, clay, mission, concrete, or others)*
___Disintegration
___Missing (%)
___Underlayment
___Broken or cracked (%)
___Fasteners

Wood Shingles
___Cracked
___Curled
___Missing (%)

INSULATION *(Rigid, spray-on, sheets)*

___Disintegration
___Moisture

B.4, *continued*

FLASHINGS, EXPANSION JOINTS & GRAVEL STOPS

___Deterioration
___Holes or damage
___Protective coating

ROOF HATCHES, SMOKE HATCHES & SKYLIGHTS

___Flashings, seals
___Glazing , covering

DRAINAGE, GUTTERS & DOWNSPOUTS

___Alignment, pitch
___Clamping rings secure
___Corrosion

WALKING SURFACES

___Surface condition
___Fasteners
___Drainage

RAILINGS

___Attachments
___Structural condition
___Finishes
___Code compliance

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.4 Name Roof System

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Roofing; Insulation; Flashings, expansion joints, and gravel stops; Roof hatches, smoke hatches, and skylights; Gutters and downspouts; Walking surfaces; Railings

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.5. CEILING SYSTEMS CHECKLIST

Components: Exposed structural systems; Directly applied; Suspended systems.

GENERAL INSPECTION

Note comments on following:

Building user comments _____

_____

_____

Overall appearance:

___Good ___Fair ___Poor

___Settlement or sagging
___Alignment
___Attachment
___Evidence of moisture
___Stains, discoloration
___Missing units
___Suitability
___Acoustic quality
___Code compliance

EXPOSED STRUCTURAL SYSTEMS (UNPAINTED, PAINTED, SPRAY-ON, DECORATIVE)

___Cracks
___Surface deterioration
___Missing elements
___Adhesion

DIRECTLY APPLIED & SUSPENDED SYSTEMS

Overall appearance:

___Good ___Fair ___Poor

___Fasteners
___Trim condition

Openings:

___Panels
___Inserts
___Lighting fixtures
___Air distribution
___Fire protection
___Other

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.5 Name Ceiling Systems

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Exposed structural systems; Directly applied; Suspended systems

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.6. FLOOR COVERING SYSTEMS CHECKLIST

Components: Carpet; Composition; Concrete; Resilient; Ceramic tile; Masonry; Terrazzo; Wood; Metal; Other (raised floors, etc.).

GENERAL INSPECTION

Note comments on following:

Building user comments _____

_____

Overall appearance:

___Good ___Fair ___Poor

___Evidence of moisture
___Visible settlement
___Irregular surface
___Tripping hazards
___Accessibility hazards

Replacement necessary _____

CARPET

(Tufted, tile)

___Age
___Wear
___Stains
___Discoloration
___Holes, tears
___Seam conditions

RESILIENT

(Asphalt tile, cork tile, linoleum, rubber, vinyl)

___Broken tiles
___Loose tiles
___Shrinkage
___Lifting, cupping
___Fading
___Cuts, holes
___Porosity

MASONRY

(Stone, brick)

___Cracks
___Deterioration
___Joints
___Stains
___Porosity
___Sealing

MONOLITHIC TOPPING

(Concrete, granolithic, terrazzo, magnesite)

___Cracks
___Porosity
___Joints
___Sealing

WOOD

(Plank, strips, block, parquet)

___Shrinkage
___Cupping, warpage
___Excessive wear
___Uneveness
___Decay
___Sealing

OTHER

(Raised floors, etc.)

_____

_____

_____

_____

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.6 Name Floor Covering Systems

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Carpet; Composition; Concrete; Resilient; Ceramic tile; Masonry Terrazzo; Wood; Metal; Other (raised floors, etc.)

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.7. INTERIOR WALL & PARTITION SYSTEMS CHECKLIST

Components: Interior walls; Wall coverings and finishes; Interior doors, windows, and frames; Hardware; Special openings (access panels, shutters, etc.).

PARTITIONS, FRAMING & MOVABLE WALLS

___Strength and stability
___Physical condition
___Acoustic quality
___Evidence of moisture
___Maintainability
___Adaptability
___Code compliance
___Abuse, vandalism

WALL COVERINGS & FINISHES

___Cracks
___Joint openings
___Peeling, flaking
___Rips, tears
___Looseness
___Water stains, discoloration
___Missing segments

INTERIOR DOORS, WINDOWS & FRAMES

___Frame conditions
___Frame anchoring
___Door surfaces
___Glazing
___Seals
___Shading devices

HARDWARE

___Overall condition
___Maintainability
___Appearance
___Operation
___Keying system
___Fit
___Locksets
___Closure devices
___Panic devices
___Security operations

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.7 Name Interior wall & Partition System

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Interior walls; Wall coverings and finishes; Interior doors, windows, and frames; Hardware; Special openings (access panels, shutters, etc.)

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.8. SPECIALTIES CHECKLIST

Components: Bathroom accessories; Kitchen equipment; Laboratory equipment; Projection screens; Signage; Telephone enclosures; Waste handling; Window coverings, etc.

GENERAL INSPECTION

Note comments on following:

Building user comments _____

_____

Overall appearance:

___Good ___Fair ___Poor

___Suitability
___Attachment
___Missing components
___Operating condition

___Vandalism
___Repairs/replacements
___Code compliance

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.8 Name Specialties

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION

Bathroom accessories; Kitchen equipment; Laboratory equipment; Projection screens; Signage; Telephone enclosures; Waste handling; Window coverings, etc.

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.9. HEATING, VENTILATING & COOLING CHECKLIST

Components: Boilers; Radiation; Solar heating; Ductwork and piping; Fans; Heat pump; Fan coil units; Air handling units; Packaged rooftop A/C; Packaged water chillers; Cooling tower; Computer room cooling.

GENERAL INSPECTION:

Building user comments _____

Lubrication: bearings and moving parts _____

Rust and corrosion _____

Motors, fans, drive assemblies _____

Wiring and electrical controls _____

Thermostats and automatic temperature controls _____

Thermal insulation and protective coatings _____

Guards, casings, hangers, supports, platforms, and mounting bolts _____

_____

Piping and piping system identification _____

Solenoid valves _____

Burner system assemblies _____

Combustion chambers, smoke pipes _____

Electrical heating units _____

Guards, casings, hangers, supports, platforms, and mounting bolts _____

_____

Steam and hot water heating equipment _____

Accessible steam, water, and fuel piping _____

Traps _____

Humidifier assemblies _____

Water sprays, weirs, and similar devices _____

Shell-and-tube type condensers _____

Self-contained evaporative condensers _____

Air-cooled condensers _____

Compressors _____

Liquid receivers _____

Refrigerant driers, strainers, valves, oil traps, and accessories _____

_____

B.9, *continued*

Cleaning, maintenance, repair, and replacement:

___Registers
___Grills
___Dampers
___Louvers
___Bird and insect screens
___Supply and return ducts
___Drain pans
___Coils

Air Filters:

___Type
___Replacement schedule

SYSTEM EVALUATION

___Heating capacity
___Temperature control

Heating:

___Seasonal
___All year
___Noise level
___Energy consumption
___Air circulation and ventilation
___Filtration
___Humidity control

Cooling:

___Seasonal
___All year
___Cooling capacity
___Temperature and humidity control
___Noise level
___Energy consumption
___Air circulation & ventilation
___Filtration
___Reliability

Ventilation:

___Air velocity
___Exhaust air systems
___Bag collection
___Wet collectors
___Steam and hot water coils
___Electrical heating units
___Fire hazards
___Fire protective devices
___Air balance

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.9 Name Heating, Ventilating & Cooling

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Boilers; Radiation; Solar heating; Ductwork and piping; Fans; Heat pump; Fan coil units; Air handling units; Packaged rooftop A/C; Packaged water chillers; Cooling tower; Computer room cooling

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.10. PLUMBING SYSTEMS CHECKLIST

Components: Piping, valves, and traps; Controls; Pumps; Water storage; Plumbing fixtures; Drinking fountains; Sprinkler systems.

GENERAL INSPECTION

Building user comments _____

Occupied spaces:

General appearance: ___Good ___Fair ___Poor

Leaks, dripping, running faucets and valves _____

Maintenance history _____

Supply adequacy _____

Sanitation hazards _____

Drain & backflow protection _____

Cross connections _____

Fixture quantity _____

Fixture types & conditions _____

Disabled and impaired fixtures _____

Female facilities _____

Metal pipe & fittings corrosion _____

Pipe joints & sealing _____

Hanger supports & clamps _____

Filters _____

WATER SYSTEM

___Water pressure adequate
___Odors, tastes
___Main cutoff operable
___Water heating temperature setting
___Pump condition
___Insulation condition
___Water quality

SANITARY & STORM SYSTEM

___Flow adequate
___Cleanouts access
___Floor drains
___Chemical resistance
___Gradient
___On-site disposal system

CODE REQUIREMENTS

___EPA/local permits
___Other

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.10 Name Plumbing Systems

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Piping, valves, and traps; Controls; Pumps; Water storage; Plumbing fixtures; Drinking fountains; Sprinkler systems

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.11. ELECTRICAL SERVICE CHECKLIST

Components: Underground and overhead service; Duct bank; Conduits; Cable trays; Underfloor raceways; Cables and bus ducts; Switchgear; Switchboard; Substations; Panelboards; Transformers.

GENERAL INSPECTION

Building user comments _____

Safety conditions _____

Service capacity, % used, and age _____

Switchgear capacity, % used, and age _____

Feeder capacity, % used, and age _____

Panel capacity _____

Thermoscanning: Y __ N __ Date _____

Maintenance records available _____

Convenience outlets _____

EXTERIOR SERVICE

____Line drawing

Feed source:

___Utility/owned
___Above/below ground

Transformer:

___Transformer tested
___Transformer arcing or burning
___Transformer PCBs
___Ownership (*facility or utility*)

INTERIOR DISTRIBUTION SYSTEM

___Line drawing
___Incoming conduit marked
___Main circuit breaker marked
___Panel boards, junction boxes covered
___All wiring in conduit
___Conduit properly secured
___Panels marked
___Panel schedules
___Missing breakers

EMERGENCY CIRCUITS

Emergency generator(s):
___Condition and age
___Auto start and switchover
___Testing schedule
Test records available: Y__ N __
___Service schedule
Service schedule records available: Y __ N __
___Circuits appropriate
___Cooling & exhaust
___Fuel storage (capacity)

EMERGENCY LIGHTING/ POWER SYSTEMS:

Battery operation: Y __ N __
Separate power feed: Y __ N __
Exit signs: Y __ N __
Stairways/corridors: Y __ N __
Elevators: Y __ N __
Interior: Y __ N __
HVAC: Y __ N __
Exterior: Y __ N __

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.11 Name Electrical Service

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION

Underground and overhead service; Duct bank; Conduits; Cable trays; Underfloor raceways; Cables and bus ducts; Switchgear; Switchboard; Substations; Panelboards

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.12. ELECTRICAL LIGHTING CHECKLIST

Components: Lighting fixtures; Wiring; Motor controls; Motors; Safety switches; Telecommunications and data; Emergency/standby power; Baseboard electric heat; Lightning protection.

GENERAL INSPECTION

Building user comments _____

Lighting Levels:

___Adequate ___Excessive ___Inadequate

Evenness of distribution _____

Fixture condition

Flickering of units: Y __ N __

Location _____

Buzzing, humming, or other sounds _____

Lens condition _____

Emergency lighting _____

Exit lighting _____

Code compliance _____

WIRING, WALL SWITCHES, LIGHTING FIXTURES

___Cover plates in place
___Junction boxes covered
___All wire in conduit
___Sufficient outlets provided
___GFI circuit breakers
___Grounded wiring
___All switches operational _____

Cleaning, maintenance, repair, and replacement:

_____

_____

_____

_____

_____

_____

_____

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.12 Name Electrical Lighting

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION

Lighting fixtures; Wiring; Motor controls; Motors; Safety switches; Telecommunications and data; Emergency/standby power; Baseboard electric heat; Lightning protection

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.13. CONVEYING SYSTEMS CHECKLIST

Components: Dumbwaiters; Elevators; Escalators; Material handling systems; Moving stairs and walks; Pneumatic tube systems; Vertical conveyors.

GENERAL INSPECTION

(Passenger Conveying)

Building user comments _____

Maintenance history _____

Inspection frequency _____

Overall appearance (Interior) ___Good ___Fair ___Poor

Overall appearance (Exterior) ___Good ___Fair ___Poor

Door operations _____

Control systems _____

Noise _____

Code compliance _____

Disabled and impaired access _____

Major repairs necessary _____

Replacement necessary _____

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.13 Name Conveying Systems

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Dumbwaiters; Elevators; Escalators; Material handling systems; Moving stairs and walks; Pneumatic tube systems; Vertical conveyors

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.14. OTHER SYSTEMS

Components: Energy control systems; Clock systems; Public address systems; Sound systems; TV systems; Satellite dishes; Communications networks; etc.

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.14 Name Other Systems

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION

Energy control systems; Clock systems; Public address systems; Sound systems; Satellite dishes; Communications networks; etc.

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

B.15. SAFETY STANDARDS CHECKLIST

Components: Asbestos; Code compliance; Detection and alarm systems; Disabled accessibility; Emergency lighting; Egress—travel distance, exits, etc.; Fire ratings; Extinguishing and suppression; Hazardous and toxic material storage.

GENERAL INSPECTION

Building user comments _____

Code compliance _____

Maintainability _____

Means of egress _____

Fire ratings _____

Audible & visual device condition _____

Extinguishing systems (See also B.10. Plumbing):

___Type ___Condition

Lighting system (See also B.11. Electrical Lighting):

___Type ___Condition

Disabled and impaired accessibility

EXTERIOR LIGHTING

Adequacy:

___Good ___Fair ___Poor

Condition _____

Controls (type & location) _____

FIRE ALARM SYSTEMS

Panel visible: Y ___ N ___
Operational: Y ___ N ___

___Pull station condition
___Detector condition

STAIRS AND RAMPS

Exits marked _____

Hardware operational _____

Tripping hazards _____

Surface conditions _____

Lighting adequate _____

Handrails _____

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # B.15 Name Safety Standards

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Asbestos; Code compliance; Detection and alarm systems; Disabled accessibility; Emergency lighting; Egress—travel distances; exits, etc.; Fire ratings; Extinguishing and suppression; Hazardous and toxic material storage

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

C. 1. SITE WORK CHECKLIST

Components: Roads, walks, parking lots; Curbing; Drainage and erosion control; Parking lot control; Fencing; Athletic and other recreation facilities.

GENERAL INSPECTION

Note comments on following where applicable:

Overall appearance

Good _____ Fair _____ Poor _____

Maintainability _____

Repairs/replacements _____

Code compliance _____

ROADS, WALKS, AND PARKING LOTS

Surface conditions _____

Subsurface conditions _____

Settling and uplift _____

Cracks, holes _____

Drainage and slope _____

CURBING

Alignment _____

Erosion _____

Repairs/replacements _____

DRAINAGE AND EROSION CONTROL

Surface drainage _____

Manholes, inlets, catch basins _____

Vegetation _____

Channels, dikes _____

Retention, detention _____

Drains _____

C.1, *continued*

PARKING LOT CONTROLS

Location _____

Operation _____

Repairs/replacements _____

ATHLETIC AND OTHER RECREATION FACILITIES

(*See structural materials and finishes in lists B.2 and B.3*)

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # C.1 Name Site Work

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Roads, walks, parking lots; Curbing; Drainage and erosion control; Parking lot control; Fencing; Athletic and other recreation facilities

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

C.2. LANDSCAPING CHECKLIST

Components: Lawns; Planting; Trees; Shrubs.

GENERAL INSPECTION

Note comments on following where applicable:

Overall appearance:

___Good ___Fair ___Poor

Location _____

Size adequacy _____

Condition _____

Maintainability _____

Protection from equipment _____

Pruning _____

Disease and pest control _____

Fertilizing _____

Containers, gratings, planter boxes _____

Repairs/replacements _____

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # C.2 Name Landscaping

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Lawns; Planting; Trees; Shrubs

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

C.3. STRUCTURES CHECKLIST

Components: Bridges; Culverts; Retaining walls; Tunnels; Ornamental features: sculpture, fountains, memorials, etc.; Antennae; Satellite dishes.

GENERAL INSPECTION

Note Comments on following where applicable (See also B.1 and B.2):

Overall appearance:

___Good ___Fair ___Poor

Maintainability _____

Repairs/replacements _____

Foundations/anchoring _____

Structural condition _____

Surface condition _____

Safety/access _____

Drainage _____

Joints/groundwater leaks _____

Ventilation/lighting _____

Size adequacy/capacity _____

Code compliance _____

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # C.3 Name Structures

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION

Bridges; Culverts; Retaining walls; Tunnels; Ornamental features: sculpture, fountains, memorials, etc.; Antennae; Satellite dishes

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

C.4 . UTILITIES CHECKLIST

Components: Central utility systems; Energy distribution systems; Electrical distribution systems; Piping systems: compressed air, distilled water, domestic water, high and low temperature water, storm drainage, sanitary sewage, irrigation systems; Site lighting; Water treatment and distribution systems; Wastewater treatment and collection systems. (See also B.9 – B.12)

GENERAL INSPECTION

Note comments on following where applicable:

Size capacity/adequacy _____

Structural condition _____

Maintainability _____

Repairs/replacements _____

Code compliance/certifications _____

CENTRAL UTILITY SYSTEMS

Energy plants:

Boilers _____

Turbines _____

Chillers _____

ENERGY DISTRIBUTION SYSTEMS

Steam and condensate returns _____

High and low temperature water _____

Chilled water _____

Natural gas _____

ELECTRICAL DISTRIBUTION SYSTEMS

Substations _____

Transformers _____

Relays _____

Meters _____

Fencing _____

Structures _____

Feeders _____

Wiring _____

C.4, *continued*

PIPING SYSTEMS
(Chilled water, distilled water, domestic water, irrigation, sanitary, storm)

Joints, trap _____ Manholes _____

Valves, flanges _____ Grates _____

Controllers _____ Backflow preventers _____

Piping _____ Meters _____

Pumps _____

SITE LIGHTING

Lamps _____

Wiring _____

Controls _____

WATER TREATMENT AND DISTRIBUTION SYSTEMS

WASTEWATER TREATMENT AND COLLECTION SYSTEMS

FACILITY AUDIT INSPECTION REPORT

STANDARD INSPECTION FORM

1. FACILITY INSPECTION DATA

Facility: # _____ Name _____

Component: # C.4 Name Utilities

Inspector: _____ Date: _____

2. COMPONENT DESCRIPTION Central utility systems; Energy distribution systems; Electrical distribution systems; Piping systems: compressed air, distilled water, high and low temperature water, storm drainage, sanitary sewage, irrigation systems; Site lighting; Water treatment and distribution systems; Wastewater treatment and collection systems (See also B.9 – B.12)

3. COMPONENT EVALUATION:

Deficiency		Priority	Corrective Measures
Def #	Description	Rating	Craft Labor$ + Mat'l$ = Total Cost

D.1. SUITABILITY AND ADAPTABILITY

1. FACILITY INSPECTION DATE

Facility Name _____ Facility # _____

Inspector _____ Date _____

2. COMPONENT DESCRIPTION

Flexible design concept _____

_____

Partitions (Demountable or rigid) _____

_____

Specialized building type _____

_____

Flexible service systems _____

_____

Stationary equipment _____

_____

Functional spaces _____

_____

Working environment _____

_____

Circulation and functional relationships _____

_____

Conflicting uses _____

_____

Code conformance _____

_____

Disabled accessibility _____

_____

Deferred maintenance _____

_____

3. COMMENTS _____

_____

D.2. USE CONSIDERATIONS

1. FACILITY INSPECTION DATA

Facility Name _____ Facility # _____

Inspector _____ Date _____

2. COMPONENT DESCRIPTION

Traditional Values	Significant role or meaning relative to practices or values.
Historic Values	Significance to the institution or community for historic associations similar to National Register of Historic Places criteria.
Aesthetic Values	Visual qualities and physical relationships with other buildings or the landscape.
Social/Community Values	Benefits or detriments to location and/or community.
Interim Use	Other temporary uses of facility.
Future Land Use	Conflicting land use with future plans.
Suitability	Spatial characteristics relative to specific use or suitability specialized use difficult to replace.
Intangible Values	Orientation, psychological environment, noise, odors, etc.

3. COMMENTS _____