DOCUMENT RESUME

ED 060 559 EA 004 148

| | |
|---|---|
| AUTHOR | Banghart, Frank W. |
| TITLE | An Automated Inventory System for Educational Physical Facilities. A Technical Report. |
| INSTITUTION | Florida State Univ., Tallahassee. Educational Systems and Planning Center. |
| REPORT NO | Doc-No-1031715 |
| PUB DATE | 31 Oct 71 |
| NOTE | 41p. |
| AVAILABLE FROM | Educational Systems and Planning Center, Dept. of Education Administration, Florida State University, Tallahassee, Florida 32306 (Document No. 1031715, $2.00) |
| EDRS PRICE | MF-$0.65 HC-$3.29 |
| DESCRIPTORS | Automation; *Computer Oriented Programs; Data Bases; *Educational Administration; *Educational Facilities; *Facility Inventory; *Information Retrieval; Information Storage; Information Systems; Physical Facilities; Planning; Population Trends; State Departments of Education |

ABSTRACT

The purpose of this study was to develop a computer-based automated inventory information retrieval system of educational facilities for grades K-12. This system will permit the Florida Department of Education to maintain a complete and current inventory of public school facilities. Though designed specifically for the Florida Bureau of School Facilities, the system is flexible enough to be adapted to other State education agencies or to individual school systems. (Table 3.2 may reproduce poorly.) (Author)

Florida State University
EDUCATIONAL SYSTEMS AND PLANNING CENTER
Department of Educational Administration

Contributing Staff*

Frank W. Banghart
Director

Edward Harris
Dennis Kramer
John Love (D)
James McGee

Secretarial Staff

Beatriz Clewell

Document No. 1031715

*The Educational Systems and Planning Center Reports are intended to reflect the work at the Center. By the nature of the Center's operations, each project (and resulting report) reflects degrees of contribution by staff members. No one works in isolation at the Center. Occasionally a graduate student might participate in the project and do his dissertation as part of the project. If so, a "D" follows his name.

# AN AUTOMATED INVENTORY SYSTEM FOR EDUCATIONAL PHYSICAL FACILITIES

One of the problems facing education today is that of developing a quick, simple and adequate method of accounting for school facilities in grades K through 12. The development of such a system is necessary to the adequate housing of our children in schools at a time when rapid changes in the population are taking place. During the last two decades educators have become increasingly aware of the effects that population changes have had on education. These changes have been of such unexpected nature and magnitude that they have been described as a demographic revolution.

Educators today are faced with the challenge of providing facilities and teachers for a school-age population which is increasing at a rate of over one million students per year. These educators often work without sufficient data to determine future needs. Tax-payers cannot be given accurate estimates of school needs, and many bond issues fall by the wayside because boards of education cannot show a just cause for expansion of facilities or site acquisition.

Much has been written about population growth and school construction needs. In spite of these numerous writings very little has been done in the way of providing a current inventory of school facilities from which one can project needs in school construction.

## Purpose of the Study

The purpose of this study was to develop an automated inventory information retrieval system of educational facilities for grades K to 12. This automated system will permit the Florida Department of Education to maintain a complete and current inventory of public school facilities. The system is designed to specifically solve the inventory problem of the State of Florida, Department of Education, Bureau of School Facilities. However, the system is flexible enough to be adapted to other State Departments of Education or individual school systems.

One of the main objectives in developing a school property accounting system is to enable school administrators to keep the data current and accurate. The true value of a property accounting system would be to permit the monitoring and printing of an accurate, up-to-date summary of school facilities data at any time. This information retrieval system will be significant both for the data assembled and for the potential use of this information by

school officials, legislators and the public in providing better school facilities for the future.

The use of an electronic data processing system to monitor school facilities inventories, capital outlay expenditures and pupil projections will enable Departments of Education to improve their methods of making surveys. Instead of making intermittent projections of student and facility needs, a constant check can be made to evaluate the progress being made in keeping new construction at a pace equal to current pupil membership. The necessity of visiting schools can be lessened and more emphasis can be placed on service and helping school districts plan for school construction. An automated system of gathering school facilities data for local, state and federal purposes will also help to establish good procedures of property accounting. Continuous monitoring of sites, land, property and expenditures can provide guidance, service and control of school facility needs and expenditures in a fast, accurate manner.

Recent Study and Research

In December 1956 the U. S. Commissioner of Education issued a call to develop a Handbook for Property Accounting for Local and State School Systems. At the first meeting were representatives of five educational organi-

zations: (1) A.A.S.A., (2) A.S.B.O., (3) Council of Chief State School Officers, (4) National Council of Schoolhouse Construction and (5) National School Boards Association. Also present was a representative of the United States Office of Education.

The first draft was reviewed in June 1957. In November of that year the first National Conference on Property Accounting for Local and State School Systems met in Washington, D. C. to study the progress on the first manual. The revised manual was then studied at eight regional conferences in 1958 to determine its suitability to local school situations throughout the United States.

A second National Conference on Property Accounting for Local and State School Systems was held in August 1958 at which time final decisions were made on the content of the handbook. Subsequently, each of the five organizations approved the handbook and recommended its use to federal, state and local agencies.

The handbook classifies and defines specific items of information about land, buildings and equipment that need to be comparable among school systems. These items may be used by all concerned with school property. They provide the basis for maintaining essential information about school property, and for making reports to agencies concerned as well as to the public.

In January 1966 the United States Office of Education provided a grant to the State of Iowa to conduct the Midwestern States Educational Information Project. This project was a research effort on the part of 13 midwestern states to develop an integrated educational information system capable of delivering to administrators a selected compilation of accurate educational information when needed.

Included in the system is information in five general areas: (1) facilities, (2) finance, (3) instructional program, (4) personnel and (5) pupils. Each area is a complement to the total system and is referred to as a subsystem. A meaningful aspect of this subsystem must be capable of being integrated with any one of all of the other four subsystems. [3]

The philosophy and rationale of the facilities subsystems was stated in July 1967:

> The Facilities Subsystem of the Midwestern States Educational Information Project will be primarily concerned with information about the physical properties of school facilities. Thus, it will define and interpret specific information about sites, buildings and equipment which are needed by local, state and national agencies.
>
> It is believed by the Facilities Subsystem Committee that state educational agencies have inadequate data available about school facilities in use by the local school districts. Methods of collection are less than satisfactory and are not suitable for rapid retrieval and utilization by the state and national agencies. These methods of collection do not provide

ways for data to be integrated among the various areas of education. For example, pupil data are not readily available for use by the areas of facilities, finance, personnel or instructional programs. Data are needed about school facilities--sites, buildings, and equipment, in order to provide children, teachers, and administrators with the best environment to improve the educational process.

In addition to the insufficient amount of data collected on facilities, existing data are not recorded in an orderly fashion, are not associated with standard definition, are not readily related to finance, instructional program, personnel, and pupil data, and do not serve as acceptable components of a total integrated system about education. Thus, they appear inadequate to meet the demands for administrative decision-making, local and state utilization, analysis of operation, program administration, and reporting.

The state agency, with the development and implementation of an efficient and comprehensive system of records on school facilities, will be able to collect, process, store, retrieve, analyze, use, disseminate, and contribute meaningful information throughout its areas of responsibilities. With this system the state agency should be able to better meet the functions of the state in providing the educational leadership which is necessary for various aspects of school facilities.

Local Educational agencies will be assisted with leadership and recommendations in the development of adaptation of their system--whether it be machine or manual. The implementation of the Facilities Subsystem in a state department, as a part of the information system, will provide pertinent data for the purposes of leadership, communication, planning, and utilization of facilities. [3]

To determine the data items needed about sites, building and equipment for the "integrated information system" of the MSEIP, the Facilities Subsystem identified and analyzed the activities of the school plant program of the participating state educational agencies.

The Facilities Subsystem Committee of MSEIP has been directed to the accomplishment of the following objectives:

(1) Provide an information system to improve and enhance school facilities to provide for better education.

(2) Provide a comprehensive accounting system of facilities and standardization of acceptable procedures, terminology and definitions.

(3) Provide basic information to fulfill the state agency functions of planning and development as well as those of regulatory and operational natures.

(4) Furnish data for federal reports, specialized research and special state governmental committees.

(5) Provide facilities data that will be compatible with other areas of education.

(6) Provide for simplified methods of collecting and reporting.

(7) Eliminate multiple requests for identical data by various agencies.

(8) Make it possible for local school districts to submit information to state departments as a by-product of their operation.

(9) Make it possible for the state departments to submit information to the U. S. Office of Education as a by-product of their own operation.

(10) Provide the system with an "open-endedness" or "flexibility" so that it may be revised and adapted to the needs--present and future--of individual states and local agencies.

(11) Provide data that will describe the physical characteristics of existing facilities. [4]

The MSEIP System design was revised in June 1969 and is available from the State of Iowa Department of Public Instruction, Des Moines, Iowa.

The Federal Higher Education Section of the State of Florida, Department of Education, administers the Title 1 projects of the Higher Education Facilities Act of 1963. By contract with the Higher Education Facilities Services, the State of Florida, Department of Education, provides for the collection, editing and auditing of facilities data as reported annually on O.E. Form 2300-7--"Inventory of College and University Physical Facilities"--for the Higher Education General Information Survey (HEGIS). This survey is conducted annually by the Higher Education Survey Branch of the National Center for Educational Statistics of the United States Office of Education. Facilities data for these surveys were included in the 1968 report and subsequently expanded in 1969 and 1970. [2]

The tables for the 1970 report were prepared by direct printout from an interactive terminal in Tallahassee, Fla., connected over regular telephone lines with an IBM 360/50

computer in Richmond, Virginia. All data and program instruction were entered into the computer by the same terminal and a file management system allowed for dynamically-controlled off-line storage and retrieval of data.[2]

The rapid growth in size and number of institutions of higher education has highlighted the need for systematic collection and use of data in the management of colleges and universities. In attempting to meet these needs, state coordinating agencies, colleges and universities in thirteen western states in 1967 asked the Western Interstate Commission for Higher Education to design, develop and implement management information systems and data bases including common uniform data elements. [7] This resulted in the promulgation of a Data Element Dictionary.

The "Facilities Related Elements" section of the Data Element Dictionary is the third of five sections which will be included in the total dictionary. All elements dictionaries are listed below:

1. Student Related Elements.
2. Staff Related Elements.
3. Facilities Related Elements.
4. Course Related Elements.
5. Finance Related Elements. [6]

The "Facilities Related Elements" section of the Data Element Dictionary is based, for the most part, on two publications:

1. The Higher Education Facilities Classification and Inventory Procedures Manual published by the National Center for Educational Statistics in 1968, and
2. a draft of the Space Utilization Manual prepared by the Space Utilization Committee of the Association of the Executive Directors of Higher Education Facilities Commissions and the Division of College Facilities, United States Office of Education.

The data element definitions in this section are compatible with the Higher Education Facilities Classification and Inventory Procedures Manual (HEFCM) and further details and instructions on these data elements can be obtained from that manual. [6] The criteria for inclusion of data elements in this edition are that they be

1. necessary for completion of the Higher Education General Information Survey (HEGIS);
2. likely to be needed for Cost Exchange Procedures;
3. likely to be needed for the Student Flow Model;
4. likely to be needed for the Resource Requirements Prediction Model;
5. necessary to link operational files together for the derivation of information; and
6. basic to institutional record keeping. [6]

A second edition of the Data Element Dictionary is planned which will incorporate changes resulting from "(1) reactions by the higher education community to the first edition, (2) early experience with WICHE MIS Models, and (3) additional efforts by the MIS staff in the area of higher education information systems."[6] The second edition will also be expanded to include technical information such as suggested code structures, detailed category definitions and programming.

In summary, it is evident by the various aforementioned studies that there is a desire by a number of local, state and district organizations to establish an information retrieval system for physical facilities in education. The following system design is an attempt to synthesize the previously mentioned development into a state-wide automated information retrieval system.

## SYSTEMS DESIGN

The chief objective of the system was to develop an automated system for collecting, processing, storing and retrieving information on educational facilities. There are also several related objectives:

1. To develop common data elements in all school districts.
2. To provide basic data needed for educational planners to make decisions.

3. To provide basic data for research.
4. To provide immediate dissemination of information on school facilities to those requesting such information.
5. To discontinue the necessity of duplicating the collection of similar data by several state agencies.
6. To provide accurate data for reports to the U.S.O.E., State Agencies, Legislators and citizens.
7. To monitor all local school district facilities and keep records accurate and up to date.
8. To develop a team approach to facilities planning by providing a common data base to all concerned.
9. To establish a subsystem to be integrated into a statewide Management Information System when such a system is developed.

Data Base Design

There are four files that make up the data base for the facilities inventory system:

1. Parcel File

The Parcel File is the basic file of the inventory system and is completed for each parcel of land owned, leased or rented by the school district (a parcel is land that is not separated by a dedicated street). A complete description of the land is given showing identification number, ownership, use, acreage, service systems

available, site development, student membership and grades recommended to be housed on the site.

2. Building File

The Building File is completed for each individual building on a parcel of land. This file assigns a building to a parcel; it provides information concerning ownership, use, structure, exterior walls, heating and cooling systems, lighting, communications systems and fire protection.

3. Room File

The Room File is completed for each room or space in each building and gives information concerning the building and floor on which it is located, room number, area, teacher stations, pupil stations and room condition.

The most significant part of the room file is the room design code which was devised so that each space can be accurately described by a number code which allows easy storage, accurate reporting and quick retrieval of room information in school facilities.

4. Contract File

The Contract File is completed for every capital outlay project in the county school system.

A complete analysis of the contract is given, showing type of construction, cost of utility installation, site development costs, electrical, heating and plumbing

cost, expenditures by state-adopted account numbers and allocation of funds by source.

## SYSTEMS OVERVIEW

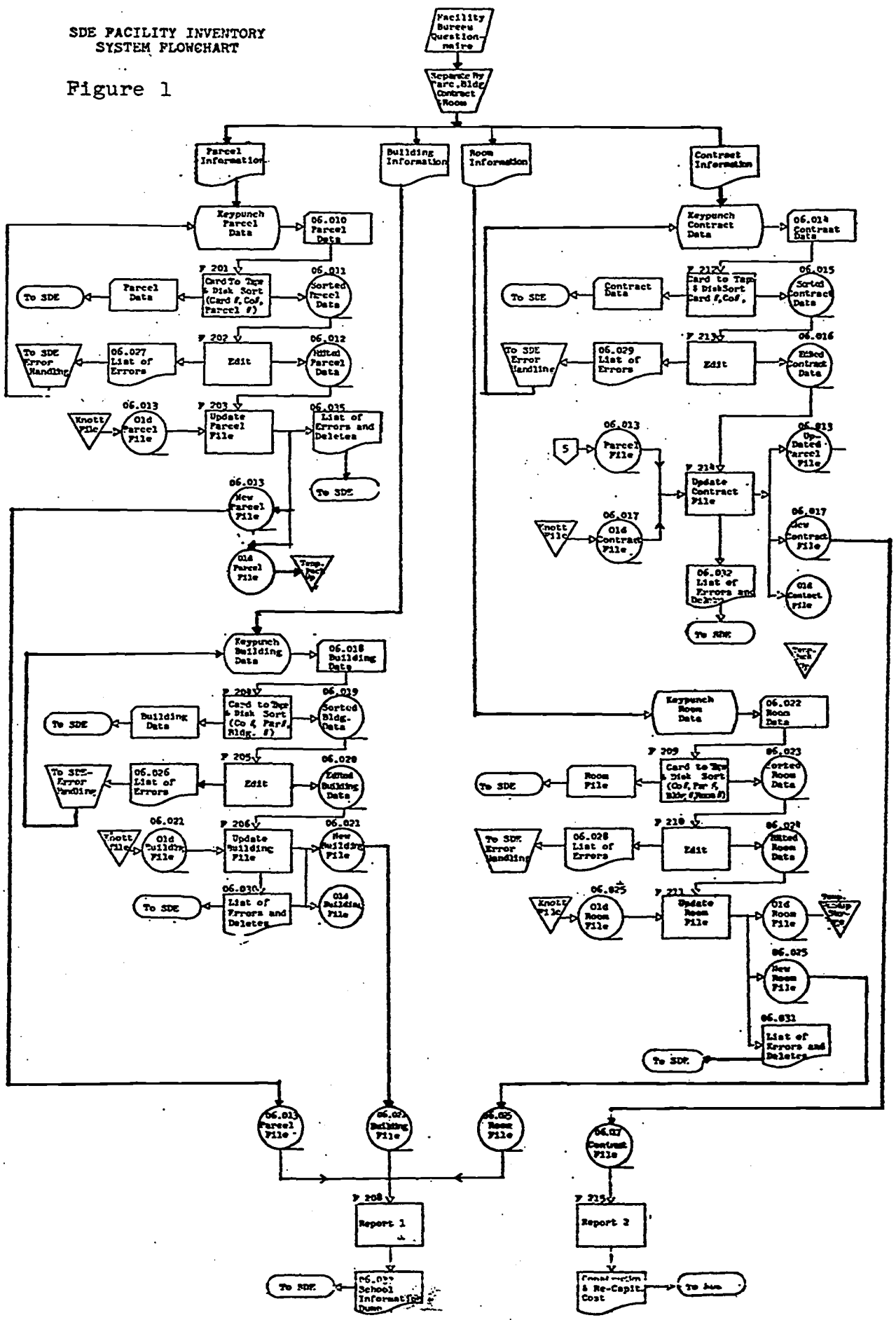
A copy of the complete Facilities Inventory System Flowchart is shown in Figure 1. Represented by the flowchart are the five basic jobs of the system relating to the parcel data, building data, room data, contract data and report information. As the facility questionnaires are collected by the Bureau of School Facilities (BSF), they are separated into data categories of parcel, building, room and contract. These questionnaires are then used for keypunching the cards which are to be input data for four of the five jobs mentioned above.

Generally, the function of the four jobs is to create current tape files which are to be utilized by the report programs of the fifth job. The job steps included within each build/update job category consist of an IBM utility routine to convert the card data to tape and to sort these data, a COBOL (level D) program to edit the sorted data for proper codes and a COBOL update program which is used to keep each file current.

The fifth job of this system includes two COBOL report programs. The first report program utilizes the parcel, building and room files to report comprehensive school

SDE FACILITY INVENTORY
SYSTEM FLOWCHART

Figure 1



information on each administrative unit. The second report uses the contract file to prepare construction contract costs.

A. System Inputs

School principals provide the basic data input for the Parcel File, Room File and Building File. In cases where the basic information is not available to them, the county school plant planner will be requested to help supply the information. In school districts that are too small to have a school plant planner, it may take a cooperative effort on the part of several school administrators to supply the basic information.

Finance officers supply the basic data for completion of the Contract File. The data supplied on this file are taken from the contract ledger which is kept in the finance office.

The system is maintained and updated by the Bureau of School Facilities and the School District administrative staff. As contracts are let for capital outlay projects, the contract data is forwarded to the Survey Section, Bureau of School Facilities. As new construction is completed by county school districts, architects from the Bureau of School Facilities make a final inspection of the construction and update the Parcel, Building and Room forms.

Specific instructions for obtaining the original data

are given to principals and school staffs by members of the Survey Section, Bureau of School Facilities, at workshops held in the counties. In addition, an instruction booklet for completing the questionnaire is distributed to all staffs and administrators.

B. Data Processing Procedures

Questionnaires are manually scanned for completeness by the Bureau of School Facilities and used as a source for keypunching. The cards are then computer sorted, edited for accuracy and used as the basis for building and updating the files of the system.

C. Output

The first batch report is a list combining the data in the Parcel File, Building File and Room File. Specific school districts may be selected or all districts run at one time. A complete description of this report is contained in Table 1.

The second batch report summarizes the data on contracts let during the past fiscal year. This report contains data on cost of land, new school plants, new buildings, additions and renovations. In addition, information on various costs of construction are shown. As in the first batch report, the output may be achieved selectively by specific school systems or on a statewide basis. A description of the report is shown in Table 2.

TABLE 1 .--Parcel, Building, Room Report

06.033 FACILITIES REPORT - COUNTY - CHARLOTTE 07/16/71 PAGE 40

| COUNTY NAME | CO# | ADM# | PAR# | GRID | ST NO | ST NAME | CITY | OWNER | ACRE | YRACQ | C OUT | GRADES | USE | GR SQ FT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHARLOTTE | 08 | 0121 | 012 | 000 | 000825 | CARMALITA ST | PUNTA GORDA | SC. BD | 020 | 71 | 2 | 07 09 | JR HI | 083327 |

| SCHOOL NAME | BLDG TYPE | WATER SRCE | SEWER TR | POLICE | FIRE | PLAYGD | DRAIN |
|---|---|---|---|---|---|---|---|
| PUNTA GORDA JR HI | COMP | PUB | PUB | CIT | 7 | NOTDEV | ADE |

AVERAGE DAILY MEMBERSHIP FOR 06/71
PRE0000 K0000 1 0000 2 0000 3 0000 4 0000 5 0000 6 0000 7 0000 8 0000 9 0000 10 0000 11 0000 12 0000 EX 0000 TOT 0000

| BLDG# | ADM# | PRIME USE | REL UN | STRUCTURE | EXT WALL | STOR | COR | SRCE HEAT | HEAT DIST | HEAT CAP TYPE | COOL | VENT TYPE | LITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0121 | AWAIT | 00 | STL | COMB P | 1 | OUL | ELEC | IND R. CYC | ADE | IND UN | NO | SH. FLU |

| LITE ADD | EM LIT | PHON | INTER COM | TV | FIRE ALA | AUTO SP | FIRE HOSE | EXTING | YR CONST | |
|---|---|---|---|---|---|---|---|---|---|---|
| ADD | YES | PART | 2 W. C. | C.C. | YES | NONE | YES | NO | 1971 | 08012012101 |

| | ROOM | AREA | DESIGN# | DESIGN CODE | TCH STA | PUPIL STA | ROOM COND | FLOOR COV | COOLING | FLOOR LOC | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0004 | 05400 | 800 | CIRC | 0 | 000 | 0 | TILE | INDUN | 1 | 08012012101 |
| | 000A | 05400 | 800 | CIRC | 0 | 000 | SAT | TILE | INDUN | 1 | 08012012101 |
| | 000B | 00060 | 760 | CUST MAIN | 0 | 000 | SAT | TILE | INDUN | 1 | 08012012101 |
| | 000C | 00576 | 763 | CUST MAIN | 1 | 000 | SAT | CONC | INDUN | 1 | 08012012101 |
| | 0000 | 01216 | 810 | 810 | 0 | 000 | SAT | CONC | INDUN | 1 | 08012012101 |
| | 0000 | 00156 | 610 | ADMIN | 0 | 000 | SAT | CARP | INDUN | 1 | 08012012101 |
| | 0001 | 00120 | 611 | ADMIN | 0 | 000 | SAT | CARP | INDUN | 1 | 08012012101 |
| | 0002 | 00552 | 614 | ADMIN | 0 | 000 | SAT | CARP | INDUN | 1 | 08012012101 |
| | 0003 | 00462 | 615 | ADMIN | 0 | 000 | SAT | TILE | INDUN | 1 | 08012012101 |
| | 0004 | 00320 | 612 | ADMIN | 0 | 000 | SAT | CARP | INDUN | 1 | 08012012101 |
| | 0005 | 00640 | 641 | ADMIN | 0 | 000 | SAT | CARP | INDUN | 1 | 08012012101 |
| | 0006 | 01126 | 617 | ADMIN | 0 | 000 | SAT | TILE | INDUN | 1 | 08012012101 |
| | 0007 | 00064 | 622 | ADMIN | 0 | 000 | SAT | TILE | INDUN | 1 | 08012012101 |
| | 0008 | 00064 | 714 | CAFE | 0 | 000 | 0 | TILE | INDUN | 1 | 08012012101 |
| | 0009 | 00561 | 630 | ADMIN | 0 | 000 | U | TILE | INDUN | 1 | 08012012101 |
| | 0020 | 02275 | 005 | REG. C.R. | 3 | 090 | 0 | CARP | INDUN | 1 | 08012012101 |
| | 0030 | 00304 | 721 | LOUNGES | 0 | 000 | 0 | TILE | INDUN | 1 | 08012012101 |
| | 0040 | 02275 | 005 | REG. C.R. | 3 | 090 | 0 | CARP | INDUN | 1 | 08012012101 |
| | 0050 | 01036 | 330 | ART | 1 | 030 | 0 | TILE | INDUN | 1 | 08012012101 |
| | 0060 | 01104 | 101 | SCI LAB | 0 | 000 | 0 | TILE | INDUN | 0 | 08012012101 |
| | 0070 | 02275 | 005 | REG. C.R. | 3 | 090 | U | CARP | INDUN | 0 | 08012012101 |
| | 0080 | 00304 | 721 | LOUNGES | 0 | 000 | 0 | TILE | INDUN | 0 | 08012012101 |
| | 0090 | 02275 | 005 | REG. C.R. | 3 | 090 | 0 | CARP | INDUN | 0 | 08012012101 |
| | 0100 | 01036 | 301 | EX. CH. | 1 | 015 | 0 | CARP | INDUN | 0 | 08012012101 |
| | 0110 | 01184 | 409 | VOC. ED | 1 | 030 | 0 | CARP | INDUN | 0 | 08012012101 |
| | 0120 | 06500 | 503 | LIB | 0 | 000 | 0 | CARP | INDUN | 0 | 08012012101 |
| | 0130 | 00980 | 510 | AV. | 0 | 000 | 0 | TILE | INDUN | 0 | 08012012101 |
| | 0140 | 02700 | 438 | H. ECON | 2 | 048 | 0 | TILE | INDUN | 0 | 08012012101 |
| | 0150 | 03024 | 701 | CAFE | 0 | 000 | 0 | TILE | INDUN | 0 | 08012012101 |
| | 0160 | 02150 | 702 | CAFE | 0 | 000 | U | OTH | INDUN | 0 | 08012012101 |
| | 0170 | 08544 | 521 | AUD-CAFTOR | 0 | 000 | 0 | WOOD | INDUN | 0 | 08012012101 |
| **TOTAL | 045525 | | | | 018 | 0483 | | | | | |

TABLE 2.- Contract Report

CONTRACT REPORT FOR - NEW BUILDING YEAR - 70 07/16/71 PAGE 2

COUNTY NUMBER - 08 PARCEL NUMBER - 012 PROJECT NUMBER - 0093 DATE CONTRACT LET - 05710

TYPE OF CONSTRUCTION - 01 ADDITIONAL ACREAGE - 000 GROSS SQ.FEET - 83,327

INCREASE IN PUPIL STATIONS - 712 INCREASE IN TEACHER STATIONS - 25

CONTRACT COST - $1,390,681 LEGAL AND ADM COST - $22,120 ARCHITECT AND ENGR COST - $0

FURNITURE AND EQUIPMENT COST - $17,850 SITE IMPROVEMENT COST - $140,219

TOTAL COST - $1,490,900

CONTRACT COST ANALYSIS

COST PER PUPIL STATION - $1,953 COST PER TEACHER STATION - $55,627 COST PER SQ FOOT - $16.69

TOTAL COST ANALYSIS

COST PER PUPIL STATION - $2,093 COST PER TEACHER STATION - $59,636 COST PER SQ FOOT - $17.89

## INTERACTIVE SYSTEMS DESIGN

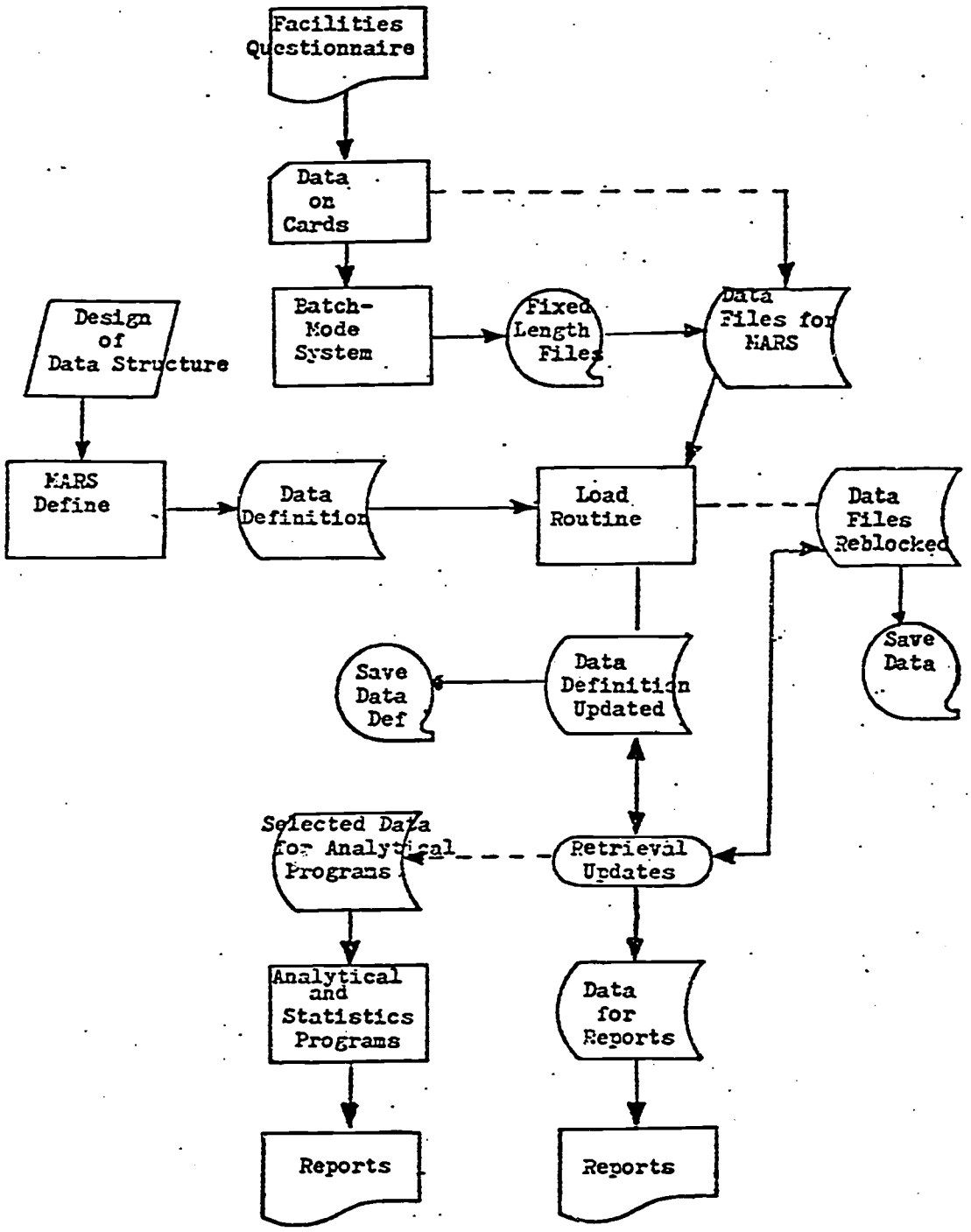
Batch-mode systems of the type described in this study can easily be utilized in sophisticated multiple-file retrieval systems provided by many computer vendors. This Florida State Facilities System was tested in a system of this type.

The three files--parcel, building and room--containing data from three counties have been used with the Control Data 6000 Multi-Access Retrieval System (MARS). [1] On-line and batch-mode retrieval, updates and reports are possible under this system. The general systems chart of the data base construction and use is shown in Figure 2.

### DEFINE Module

The processes in the DEFINE module consist of three stages. The first is clerical in which the user describes the base; the next is the computer operation in which a data base description is formed to be used in succeeding stages. Numerous options exist in developing this stage, and only the procedure followed in defining the sample data base used in this study will be described. For this sample the definition procedures were used to define a base

Figure 2—MARS Data Base System



for the fixed length record files contained in the Facilities Inventory System. The description of these fixed length record files is shown in Table 3.1.

The user needs in terms of retrieval were assayed and the resulting MARS data base, utilizing the information from Table 3.1, was developed. This data base description is shown in Table 3.2. The keyed items in this base can be used for random retrieval by qualifying with a WHERE command, but the subitems without keys can only be used in sequential retrieval. Any item can be used in selective sequential retrieval by qualifying with an IF command.

The MARS VI, Version 2, retrieval system allows the DEFINE module to be used on fixed length records as well as variable length records. For use on fixed length records, a SUBITEM module must be defined for each file. In the files used, the record identification for each of the file definitions is as follows:

| FILE | ID |
|---|---|
| Room | ROOMRE |
| Building | BLDGRE |
| Parcel | PACRE |

There are various options in the DEFINE module. These are as follows: data validation, permissible values, range of values, mask,and output transformation specification. One option used extensively in the facilities system is the

Table 3.1 - DATA FILE DESCRIPTIONS

| Field Cols. | Field Name | Field Description |
|---|---|---|
| | | **Room File** |
| 1-2 | CTY-NUM | County Number |
| 3-5 | PAR-NUM | Parcel Number |
| 6-9 | AU-NUM | Administrative Unit Number |
| 10-11 | BUILD-NUM | Building Number |
| 12-15 | RM-NUM | Room Number |
| 16-20 | SQ-FT-RM | Square Foot of Room Space |
| 21 | LOCATION | Floor Location of Room |
| 22-24 | DESIGN | Room Design |
| 25 | COOLING | Type of Room Cooling |
| 26 | FLOR-COV | Type of Floor Covering |
| 27 | TEAC-STAT | Teacher Station in Room |
| 28-30 | PUP-STAT | Pupil Station in Room |
| 31 | CONDIT-CODE | Room Condition Code |
| | | **Parcel File** |
| 1-2 | CTY-NUM | County Number |
| 3-5 | PAR-NUM | Parcel Number |
| 6-11 | CUM-LAND | TOTALS ACCUMULATED FROM CONTRACTS |
| 12-17 | CUM-CONST | TOTALS ACCUMULATED FROM CONTRACTS |
| 18-21 | AU-NUM | Administrative Unit Number |

TABLE 3.1--Continued

| Field Cols. | Field Name | Field Description |
|---|---|---|
| | | Parcel File |
| 22-39 | AU-NAM | Administrative Unit Name |
| 40-42 | GRID-NUM | Grid Number |
| 43-48 | STRT-NUM | Street Number |
| 49-60 | STRT-Name | Street Name |
| 61-72 | CITY | City |
| 73-74 | OWNER | Ownership of Parcel |
| 75-77 | T-ACRES | TOTALS ACCUMULATED FROM CONTRACTS |
| 78-81 | ACQ-DATE | Year of Parcel Acquisition |
| 82-87 | T-SQ-FT | TOTALS ACCUMULATED FROM CONTRACTS |
| 88-89 | USE | Use of Parcel |
| 90 | PLAN | Plan on Parcel |
| 91 | WATER | Water Source |
| 92 | SEWAGE | Sewage Treatment |
| 93 | POLICE | Police Protection Availability |
| 94 | FIRE | Fire Protection Rating |
| 95 | PL-GRD | Playground Area |
| 96 | PAR-DRAIN | Parcel Drainage |
| 97-100 | ADM-DATE | Administrative Date |
| 101-104 | PRE-K | Pre-kindergarten |
| 105-108 | K | Kindergarten |
| 109-112 | GRA-1 | Grade 1 |
| 113-116 | GRA-2 | Grade 2 |

TABLE 3.1--Continued

| Field Cols. | Field Name | Field Description |
|---|---|---|
| | | **Parcel File** |
| 117-120 | GRA-3 | Grade 3 |
| 121-124 | GRA-4 | Grade 4 |
| 125-128 | GRA-5 | Grade 5 |
| 129-132 | GRA-6 | Grade 6 |
| 133-136 | GRA-7 | Grade 7 |
| 137-140 | GRA-8 | Grade 8 |
| 141-144 | GRA-9 | Grade 9 |
| 145-148 | GRA-10 | Grade 10 |
| 149-152 | GRA-11 | Grade 11 |
| 153-156 | GRA-12 | Grade 12 |
| 157-160 | EXC-CHILD | Exceptional Child |
| 161 | CO-CODE | Capital Outlay Classification |
| 162-163 | LOW-GRA | Lowest Grade |
| 164-165 | HI-GRA | Highest Grade |
| | | **Building File** |
| 1 | CARD-NUM | VALUE K FOR BUILD OR UPDATE, Q FOR DELETE |
| 2-3 | CTY-NUM | County Number |
| 4-6 | PAR-NUM | Parcel Number--Assigned by County |
| 7-10 | AD-UN-NUM | Administrative Unit to Which Building is Assigned |
| 11-12 | BLDG-NUM | Building Number--Assigned by Local Unit |
| 13-14 | OWN-SHP | Ownership |
| 15-16 | PR-USE | Primary Use |

TABLE 3.1 --Continued

| Field Cols. | Field Name | Field Description |
|---|---|---|
| | | **Building File** |
| 17-18 | NUM-SIM-UNT | Number of Relocatable Units of Same Type |
| 19 | STR-COMP | Structural Composition |
| 20-21 | EXT-WALLS | Exterior Wall Finish |
| 22 | NUM-STRS | Number of Stories |
| 23 | CORR-LOAD | Corridor Loading |
| 24 | SRCE-HEAT | Source of Heat Energy |
| 25-26 | DIST-HEAT | Type of Heat Distribution |
| 27 | ADQ-HEAT | Capacity of Heating System |
| 28 | TYPE-COOL | Type Cooling System |
| 29 | MECH-VENT | Mechanical Ventilation |
| 30 | TYPE-ART-LITE | Type Artifical Lighting |
| 31 | ADQ-ART-LITE | Adequacy of Artifical Lighting |
| 32 | EMER-LITE | Emergency Lighting Available |
| 33 | TELE-SYS | Telephone System |
| 34 | INTER-SYS | Intercom System |
| 35 | TV-SYS | T.V. System |
| 36 | FIRE-ALARM | Fire Alarm Break Systems Available |
| 37 | AUTO-SPRINK SYS | Automatic Sprinkler System |
| 38 | FIRE-HOSE | Fire Hose Cabinets Available |
| 39 | ADQ-FIRE-EXT | Adequacy of Fire Extinguisher Availability |
| 40-41 | DATE-CONST | Year of Original Construction |

TABLE 3.2

DEFINE FACILITIES

```
 MARS VI  V2.0 QA 06/01/71
DEFINE;
NEW DATA BASE FACILITIES;
1) CTY_NUM (NAME);
2) PAR NUM (NAME);
3) AU_NUM (NAME);
4) BLDG NUM (NAME);
MAP;
DEFINE SUBITEMS;
RECORD ID IS ROOMRE;
COL 1-2,C1,CTY NUM.ALPHA,KEY;
COL 3-5,C2,PAR NUM.ALPHA,KEY;
COL 6-9,C3,AU NUM.ALPHA,KEY;
COL 10-11,C4,BLDG NUM ALPHA,KEY;
COL 12-15,RM NUM.ALPHA;
COL 16-20,C6,SQ FT RM NUM;
COL 21,C7,LOCATION.ALPHA;
COL 22-24,C8,DESIGN.ALPHA;
COL 25,C9,COOLING.ALPHA,
VALUES(1=CENT,2=LCLZN,3=INDUC,4=COMB,5=NONE);
COL 26,C10,FLOOR COV.ALPHA,
VALUES(1=WOOD,2=CONC,3=TILE,4=TERR,5=CARP,6=OTH);
COL 27,C11,TEAC STA.NUM;
COL 28-30,C12,PUP STAT.NUM;
COL 31,C13,COND CO.ALPHA,
VALUES(1=SAT,2=UNSA);
END DEFINITION;
DEFINE SUBITEMS;
RECORD ID IS BLDGRE;
COL 1,CARD N.ALPHA;
COL 2-3,C1,CTY NUM.ALPHA,KEY;
COL 4-6,C2,PAR NUM.ALPHA,KEY;
COL 7-10,C3,AU NUM.ALPHA,KEY;
COL 11-12,C4,BLDG NUM.ALPHA,KEY;
COL 13-14,OWN SHP,ALPHA;
COL 15-16,PR USE.ALPHA,
   VALUES(01=ABAN,02=AWAIT,03=VAC,04=PRE K,05=K,06=ELEM,07=MID,08=SR HI,
   09=HIGH,10=EX CH,11=COMB,12=AG ,13=P. E ,14=PL. GD.,15=STA,
   16=AD.ED ,17=CTY ADM,18=BASE,19=MAINT,20=TRAN,21=FD. SER,22=COMMSER,
   23=JT. USE,24=MULTIUSE,25=OTH);
COL 17-18,NUM SIM.ALPHA;
COL 19,STR COMP.ALPHA,
   VALUES(1=CON,2=STL,3=WOOD,4=COMB,5=MBL,6=UNT,7=DIV,8=PORT,9=OTH);
COL 20-21,EXT WALL.ALPHA,
   VALUES(01=CON,02=BR,03=H.BL,04=STUC,05=WOOD,06=COMB P,07=OTH P,
   08=WD. FR,09=ST.FR,10=AL.FR,11=COMB. ,12=COMB.R,13=OTH R);
COL 22,NUM STRS.ALPHA;
COL 23,COR LOAD.ALPHA,
   VALUES(1=SIN,2=DBL,3=OPN);
COL 24,SRC HEAT.ALPHA,
   VALUES(1=OIL,2=GAS,3=ELEC,4=COAL,5=NONE);
```

TABLE 3.2--Continued

```
COL 25-26,DIS HEAT.ALPHA,
  VALUES(01=CEN H. AIR,02=CEN H. WTR,03=CEN STM.,04=CEN RAD ,
  05=ZON H.AIR,06=ZON H  WTR,07=ZON STM ,08=ZON RAD.,09=IND V SPHE,
  10=IND U SPHE,11=IND RAD,12=IND R.CYC,13=IND COMB,14=NONE);
COL 27,ADQ HEAT.ALPHA,
  VALUES(1=ADE,2=INAD);
COL 28,TYP COOL.ALPHA,
  VALUES(1=CEN,2=LCL ZN,3=IND UN,4=COMB,5=NONE);
COL 29,MECH VEN.ALPHA,
  VALUES(1=YES,2=NO);
COL30,TYP AR L.ALPHA,
  VALUES(1=BR.BLB,2=GLOB,3=INC RNG,4=B. FLU,5=SH. FLU,6=COMB);
COL 31,ADQ AR L.ALPHA,
  VALUES(1=ADQ,2=INAD);
COL 32,EME LITE.ALPHA,
  VALUES(1=YES,2=NO);
COL 33,TELE SYS.ALPHA,
  VALUES(1=COMP,2=PART,3=NONE);
COL 34,INTE SYS.ALPHA,
  VALUES(1=2W.C.,2=2 W.C.,3=1 W.C.,4=1 W.C.,5=NONE);
COL 36,FIRE ALA.ALPHA,
  VALUES(1=YES,2=NO);
COL 37,AUTO SPR.ALPHA,
  VALUES(1=COMP,2=PART,3=NONE);
COL 38,FIR HOSE.ALPHA,
  VALUES(1=YES,2=NO);
COL 39,ADQ FIRE.ALPHA,
  VALUES(1=YES,2=NO);
COL 40-41,DATE CON.ALPHA;
END DEFINITION;
DEFINE SUBITEMS;
RECORD ID IS PARCRE;
COL 1-2,C1,CTY NUM.ALPHA,KEY;
COL 3-5,C2,PAR NUM.ALPHA,KEY;
COL 6-11,CUM LAND.NUM;
COL 12-17,CUM CONS.NUM;
COL 18-21,C3,AU NUM.ALPHA,KEY;
COL 22-39,AU NAME.ALPHA;
COL 40-42,GRID NUM.ALPHA;
COL 43-48,STRT NUM.ALPHA;
COL 49-60,STR NAME.ALPHA;
COL 61-72,CITY.ALPHA;
COL 73-74,OWNER.ALPHA,
VALUES(01=FED,02=ST,03=CTY,03=MUN,05=SC  BD,06=AUTH,07=LSEPUR,08=LSE,09=COMB,
10=PVT,11=OTH);
COL 75-77,T ACRES.NUM;
COL 78-81,ACQ DATE.ALPHA;
COL 82-87,T SQ FT.NUM;
COL 88-89,USE.ALPHA,
VALUES(01=VAC,02=PRE. K,03=K,04=ELEM,05=MID,06=JR HI,07=HIGH,08=EX. CH,
09=COMB,10=AG,11=P.E.,12=P.. GD.,13=STA,14=CTY ADM,16=WHSE,17=MAIN,
18=TRAN,19=FD SER,20=COMMSER,21=JT. USE,22=MULTUSE,23=OTH);
```

TABLE 3.2--Continued

```
COL 90,PLAN.ALPHA,
VALUES(1=FING,2=CAMP,3=COMP,4=MODCO,5=COMB);
COL 91,WATER.ALPHA,
VALUES(1=PUB,2=WELL,3=PVT);
COL 92,SEWAGE.ALPHA,
VALUES(1=PUB,2=ON SITE,3=SEPT,4=PVT);
COL 93,POLICE.ALPHA,
VALUES(1=CIT,2=CTY,3=COMB,4=PVT);
COL 94,FIRE.ALPHA;
COL 95,PL GRD.ALPHA,
VALUES(1=DEV,2=PARDEV,3=NOTDEV,4=NONE);
COL 96,PAR ORN.ALPHA,
VALUES(1=ADE,2=INAD);
COL 97-100,ADM DATE.ALPHA;
COL 101-104,PRE K.NUM;
COL 105-108,K,NUM;
COL 109-112,GRA 1.NUM;
COL 113-116,GRA2.NUM;
COL 117-120,GRA 3.NUM;
COL 121-124,GRA 4.NUM;
COL 125-128,GRA 5.NUM;
COL 129-132,GRA 6.NUM;
COL 133-136,GRA 7.NUM;
COL 137-140,GRA 8.NUM;
COL 141-144,GRA 9.NUM;
COL 145-148,GRA 10.NUM;
COL 149-152,GRA 11.NUM;
COL 153-156,GRA 12.NUM;
COL 157-160,EXC CHLD.NUM;
COL 161,CO CODE.ALPHA;
COL 162-163,LOW GRA.ALPHA;
COL 164-165,HI GRA.ALPHA;
END DEFINITION;
CATALOG;
PFN=
;
 ID=4060HARRS;RP=2;
 CY=3;
PERMANENT FILE FUNCTION COMPLETE
 EXIT;
```

output transformation. This option converts the various numeric codes for output reports. The conversions can be seen in Table 3.2.

The DEFINE module can be executed in batch-mode and saved as a permanent file.

LOAD Module

The LOAD module uses the previously catalogued data definition and the data files that have been copied to disk. In executing the LOAD module, only one data file is used in each pass. Table 3.3 shows the results of one of the passes. When the LOAD stages are completed, retrieval, reports and updating can begin; however, for future use, copies of the data base and data files should be saved on removable disks or tapes. This back-up system can be reloaded when needed. The data files can also be used outside the MARS system for retrieval, updates and reports, if necessary.

The data files for the LOAD stages were as follows:

| FILE | DATA NAME |
|---|---|
| ROOM | ROOMF |
| BUILDING | BLDGF |
| PARCEL | PARCF |

These files are reblocked, and in this system they were written

Table 3.3 - LOAD ROOM

```
 MARS VI  V2.0 QA 06/01/71
ATTACH;
PFN=
FACILITIES;CY=3;
PERMANENT FILE FUNCTION COMPLETE
LOADER;
DATA FILE IS ROOMF;
RECORD FILE IS ROOMM;
ISSUE REPORT WHEN ALL LEGALITY CHECKED;
ISSUE REPORT WHEN SELECTION TABLES ARE COMPLETE;
ISSUE REPORT WHEN FINAL SORT IS COMPLETE;
ISSUE REPORT WHEN LOADING IS COMPLETE;
ISSUE REPORT WHEN ALL CHECKPOINTS OCCUR;
SCAN ROOMRE;
        ALL LEGALITY IS CHECKED FOR THIS INVERSION.
              NUMBER OF ACCEPTABLE ENTRIES =  5132
              NUMBER OF VALUES ACCEPTED =   25660
              NUMBER OF ENTRIES WITH REJECTED VALUES =     0
              NUMBER OF VALUES REJECTED =     0
              NUMBER OF VALUES EXCLUDED =     0
              NUMBER OF DATA SETS ACCEPTED =  5132
              NUMBER OF NON-VALUED DATA SETS ACCEPTED =     0
NUMBER OF RECORDS EXAMINED WAS      5132
NUMBER OF RECORDS ACCEPTED WAS      5132
NUMBER OF RECORDS STARRED WAS          0
NUMBER OF RECORDS ON RECORD FILE IS      5132

              MERGE COMPLETED FOR ELEMENT C   1
TOTAL NUMBER OF UNIQUE VALUES FOR THIS ELEMENT =       4

              MERGE COMPLETED FOR ELEMENT C   2
TOTAL NUMBER OF UNIQUE VALUES FOR THIS ELEMENT =     123

              MERGE COMPLETED FOR ELEMENT C   3
TOTAL NUMBER OF UNIQUE VALUES FOR THIS ELEMENT =     119

              MERGE COMPLETED FOR ELEMENT C   4
TOTAL NUMBER OF UNIQUE VALUES FOR THIS ELEMENT =      28

              MERGE COMPLETED FOR ELEMENT C9999
TOTAL NUMBER OF UNIQUE VALUES FOR THIS ELEMENT =    5898
        SELECTION TABLES ARE COMPLETE
        FINAL SORT IS COMPLETE
        LOADING COMPLETED
              NUMBER OF ACCEPTABLE ENTRIES =  5132
              NUMBER OF VALUES ACCEPTED =   25660
              NUMBER OF ENTRIES WITH REJECTED VALUES =     0
              NUMBER OF VALUES REJECTED =     0
              NUMBER OF VALUES EXCLUDED =     0
              NUMBER OF DATA SETS ACCEPTED =  5132
              NUMBER OF NON-VALUED DATA SETS ACCEPTED =     0
              NUMBER OF NULLS CREATED IN THIS JOB =     0
              TOTAL NUMBER OF UNIQUE VALUES IN DATA BASE =   6172
               TOTAL SIZE OF CURRENT DATA BASE =   315 PARTITIONS  OR
              806400 CHARACTERS
FACILITIES              DEFINITION VERSION    1   DATA VERSION     3
EXIT;
```

on disk and saved as:

| FILE | RECORD NAME |
|---|---|
| ROOM | ROOMM |
| BUILDING | BLDGM |
| PARCEL | PARCM |

RETRIEVAL and REPORT Modules

Retrieval may be done directly on-line or in a batch-mode operation. Simple reports can be obtained in the RETRIEVAL module; however, more sophisticated reports can be obtained in the REPORTER module. To QUALIFY data for a report, the user must be in RETRIEVAL mode and then go to REPORT mode.

MARS VI, Version 2, has the possibility for cross file retrieval as well as numerous options in a "cross file" report. Editing capabilities similar to COBOL editing are available for both retrieval and report jobs. Within the MARS system, complete Boolean expressions and connectors as well as such simple calculation routines as COUNT, SUM and AVG are available to the user.

Description of all options and procedures to be used in retrieval and reports are given in the CDC reference manuals on MARS.

An example of a retrieval session utilizing the Facilities Data Base is shown on the following pages.

```
 ??/??/71    LOGGED IN AT  ??.??.52.
             WITH USER-ID MS
             EQUIP/PORT ?1/16
COMMAND- EFL,65000.
COMMAND- ETL,???.
COMMAND- ATTACH,ROOMM,ROOMM.
??.??.37.ATTACH,ROOMM,ROOMM.
COMMAND- ATTACH,BLDGM,BLDGM.
??.??.53.ATTACH,BLDGM,BLDGM.
COMMAND- ATTACH,PARCM,PARCM.
??.??.11.ATTACH,PARCM,PARCM.
COMMAND- MARS.
```

```
 MARS VI  V2.0 QA ??/??/71
ATTACH;
ATTACH;
PFM=   FACILITIES;CY=3;
FACILITIES;CY=3;
RETRIEVAL;
PERMANENT FILE FUNCTION COMPLETE
RETRIEVAL;
DATA BASE IS ROOMM;
DATA BASE IS ROOMM;
CURRENT ACTIVE FILE(S) ARE     ROOMM
IF CTY NUM EQ ?3 AND DESIGN EQ ?1? AND FLOOR COV EQ 5
IF CTY NUM EQ ?3 AND DESIGN EQ ?1? AND FLOOR COV EQ 5
AND COOLING GE 1 REPORT PAR NUM,AU NUM,BLDG NUM,SQ FT RM,
AND COOLING GE 1 REPORT PAR NUM,AU NUM,BLDG NUM,SQ FT RM,
COOLING;
COOLING;
```

| PAR NUM | AU NUM | BLDG NUM | SQ FT RM | COOLING |
|---|---|---|---|---|
| ??? | ???1 | ?1 | ??2?? | INDUC |
| ?1? | ?1?1 | ??- | ????? | INDUC |
| ?1? | ?1?1 | ?1 | ??1?? | INDUC |
| ?1? | ?3?1 | ?1 | ??241 | INDUC |
| ?31 | ?311 | ?1 | ??3?? | INDUC |
| ?3? | ?3?1 | ?1 | ????? | CENT |
| ??? | ?4?1 | ?1 | ??2?? | CENT |

```
22.28.52.REPORT COMPLETE
--- END OF RETRIEVAL ---
DATA BASE IS PARCM;
DATA BASE IS PARCM;
CURRENT ACTIVE FILE(S) ARE     PARCM
IF CTY NUM EQ 03 AND CO CODE EQ 2 REPORT PAR NUM,AU NAME,AU NUM;
IF CTY NUM EQ 03 AND CO CODE EQ 2 REPORT PAR NUM,AU NAME,AU NUM;
```

| PAR NUM | AU NAME | AU NUM |
|---|---|---|
| 008 | HUTCHISON BCH ELEM | 0081 |
| 009 | ADAR GROVE ELEMENT | 0091 |
| 010 | CALLAWAY ELEMENTAR | 0101 |
| 011 | CHERRYSTELEMENTARY | 0111 |
| 010 | OAKLAND TERRACE EL | 0101 |
| 023 | SPRINGFIELD ELEM | 0231 |
| 028 | OAK GROVE TMR CTR | 0282 |
| 033 | MOWAT JR HI | 0331 |
| 034 | RUTHERFORD HI SCHOO | 0341 |
| 047 | NORTHSIDE ELEMENT | 0471 |
| 048 | TOM D HANEY | 0481 |
| 001 | MILLVILLE SCHOOL | 0101 |

```
22.32.17.REPORT COMPLETE
--- END OF RETRIEVAL ---
IF CTY NUM EQ 03 AND GRA 8 GE 1 REPORT PAR NUM,AU NUM,AU NAME,
IF CTY NUM EQ 03 AND GRA 8 GE 1 REPORT PAR NUM,AU NUM,AU NAME,
T ACRES,T SQ FT;
T ACRES,T SQ FT;
```

| PAR NUM | AU NUM | AU NAME | T ACRES | T SQ FT |
|---|---|---|---|---|
| 014 | 0141 | EVERITT JR HI | 025 | 001666 |
| 016 | 0161 | JINKS JR HIGH | 020 | 002980 |
| 033 | 0331 | MOWAT JR HI | 042 | 001344 |

```
22.35.23.REPORT COMPLETE
--- END OF RETRIEVAL ---
```

## SUMMARY

This report is concerned with the application of the foregoing system to an inventory of Florida State school facilities.

The input information was stored in four files:

1. Parcel File - This file contains all pertinent information about the parcel of land such as area, utilities available, location and use.

2. Building File - This file contains all pertinent information about each building on the parcel of land. Data are gathered on type of structure, service system, building use and construction dates.

3. Room File - This file stores information on room location, design, area, condition and service systems available.

4. Contract Cost File - This file contains cost information concerning capital outlay projects. Data are gathered as to types of construction such as new buildings, building additions and renovations. Data are also stored on the costs of various phases of construction such as plumbing, electricity, structure, etc.

The system developed in this study is rather simple in nature yet broad in coverage and adaptability. Adminis-

trators completed the questionnaires necessary to build the files with very little pre-training or instruction. It is estimated that it took about one to two hours to instruct the participant and an additional four hours for them to survey their schools and complete the questionnaires.

An analysis of the reports shows clearly the potential of the automated inventory system developed in this study. The data stored in the four master files is important in itself because it is a record or inventory of facilities, service systems and construction costs in a school district. Even more important are the capabilities that this system provides to generate important data via on-line retrieval. Types of service systems, sums of facilities, averages of costs, room areas, land areas, and many more types of questions can be answered from the data base.

Another advantage that this inventory system offers is its use as a subsystem in a statewide Management Information System. When this system is used along with an information system in finance, curriculum, staff and pupil personnel, then a truly workable Management Information System will become available.

The simplicity and adaptability of the system allows for its easy expansion to include other facets of education. Educational specification writers can call on this system for background information and thus by adding a few bits of

information to the input, an evaluation of the facilities can be made.

The results of this study will permit the Department of Education to establish a statewide automated inventory information retrieval system for school facilities. The inventory data base may then be used to replace outdated methods formerly used to maintain an inventory of school facilities.

## BIBLIOGRAPHY

1. Control Data Corporation, "MARS VI, Version 2," (unpublished report; Palo Alto, California, 1969).

2. Halstead, W. Robert, Inventory of Physical Facilities in Florida Insitutions of Higher Education: Fall 1970 (Tallahassee, Florida: Department of Education, 1971), p. vii.

3. MSEIP, Adaptation of Project Proposal to Educational Application (Des Moines, Iowa: State of Iowa, Dept. of Public Instruction, 1967),pp. 1-47.

4. Idem., Documentation of the Facilities Subsystem (Des Moines, Iowa: State of Iowa, Dept. of Public Instruction, 1967), p. 5.

5. Reason, Paul L. and George G. Tankard, Jr. (comps.), Property Accounting for Local and State School Systems, U. S. Office of Education, State Educational Records and Reports Series, Handbook III, No. 22, Bulletin 1959 (Washington, D. C.: Government Printing Office, 1962).

6. Thomas, Charles R., Data Element Dictionary: Facility (Boulder, Colorado: Western Interstate Commission for Higher Education, 1970), pp. 1-4.

7. Western Interstate Commission for Higher Education, Common Uniform Data Elements Proposal (Boulder, Colorado, 1968), p. 2.

The following publications are available on a limited basis. Use coupon below.

| | |
|---|---|
| Document No. 630701 | "Simulation for Determining Student Station Requirements and School Space Needs" ($2.00) |
| Document No. 731702 | "Simulation of Space Needs and Associated Costs" ($2.00) |
| Document No. 831703 | "Demographic Mapping Via Computer Graphics" ($2.00) |
| Document No. 930704 | "Third Annual Symposium of Educational Systems Analysis and Planning: Planning Instructional Systems" ($4.00) |

Educational Systems and Planning Center
Department of Educational Administration
Florida State University
Tallahassee, Florida 32306

Please send___copies of Doc. #_____.
Payment must accompany order. Make check payable to Florida State University.

_____
Name

_____
Address

_____

_____

_____
City State Zip Code