COMPUTERIZATION OF MATERIAL TEST DATA REPORTING SYSTEM

Interim Report

by

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FEDERAL HIGHWAY ADMINISTRATION

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16. Abstract

This study was initiated to provide an integrated system of reporting, storing and retrieving of construction and material test data using computerized (storage-retrieval) and quality control techniques. The findings reported in this interim report covers the development and implementation of the system of reporting test data generated by the Materials Section.

The operational system has replaced the manual system of typing and filing test reports. The system is capable of generating, for distribution, standard test reports for aggregate, cement, steel and bituminous material. Input is from punched cards. The system is also capable of generating special summary report for quality control evaluation of stored data. The system has provided, in addition to convenience, a monetary savings due to reduction in typing and filing effort. The system will be expanded to cover data generated by project construction and material within the Highway Department.

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TABLE OF CONTENTS

LIST OF FIGURES

IMPLEMENTATION

Since the beginning of 1972, the system has been totally implemented at the Materials Section of the Department of Highways. This implementation has reduced the typing effort by almost 70 percent.

INTRODUCTION

In recent years the task of recovering information from records of material testing has increased enormously. This has largely been due to the accelerated quality assurance program within the Department of Highways and an increased awareness of the constant improvement in the acceptance sampling plans and specifications to keep them compatible with the advancing materials and construction technology. However, the problem of retrieving information from test records becomes extremely cumbersome if it involves manual operation. When done manually, monitoring and auditing of multi-project construction activity for compliance becomes increasingly difficult to the point that deficiencies during construction may go undetected only to present themselves for explanation during final certification of various items.

In order to remedy these conditions, the Department, in cooperation with the FHWA, embarked on a project with a view towards utilizing the computer concept. The use of a computer based system would provide a more accessible file on the multitude of test data generated during project construction. This report is a status report and is confined to the discussion of the development and implementation of the system for the Materials Laboratory.

OBJECTIVES

The overall objective of the study is to develop an integrated computer based system by which the various districts of the Department of Highways can transmit the construction and material test data through the terminals for storage, analyses and retrieval. The long range objective will be to provide easy access to the construction and material test data for final certification of construction projects and also for statistical evaluation for quality assurance and acceptance procedures.

Specifically, the objectives can be defined in terms of the following benefits such an approach would provide:

1. Assist in monitoring construction projects for compliance with specifications.

2. Maintain a continuous log of basic construction materials for specifications purposes.

3. Provide considerable savings in time spent in manually typing, auditing or spot checking various test reports.

4. Eliminate the final manual audit of testing compliance. This will help accelerate the certification of construction items to the FHWA.

5. Provide a more meaningful running record of the pattern of variation in men (contractor), materials and machinery for subsequent statistical quality control evaluation.

THE PRESENT SYSTEM

General

The present system can best be defined as "less than desirable." The system of reporting and documenting differs widely between different laboratories and between project engineers.

One of the major limitations of the present manual system is its inability to respond rapidly and accurately to a wide variety of user requests. This means that if a change in the output is desired, considerable time and effort are required to respond to the new request. The second deficiency in the manual system is its inability to cross reference passing and failing samples, tests, locations, etc. This is most desirable when it is time to compile data for final certifications. The third deficiency of the current system, which ties directly to the first two, is the format in which the data is organized and stored. The format does not lend itself to adequate quality control analysis.

In most cases material sampling and testing for job control or conformance is performed by either or all of the following sources:

1. Project Engineer
2. District Laboratory
3. Central Laboratory
4. Material Producers

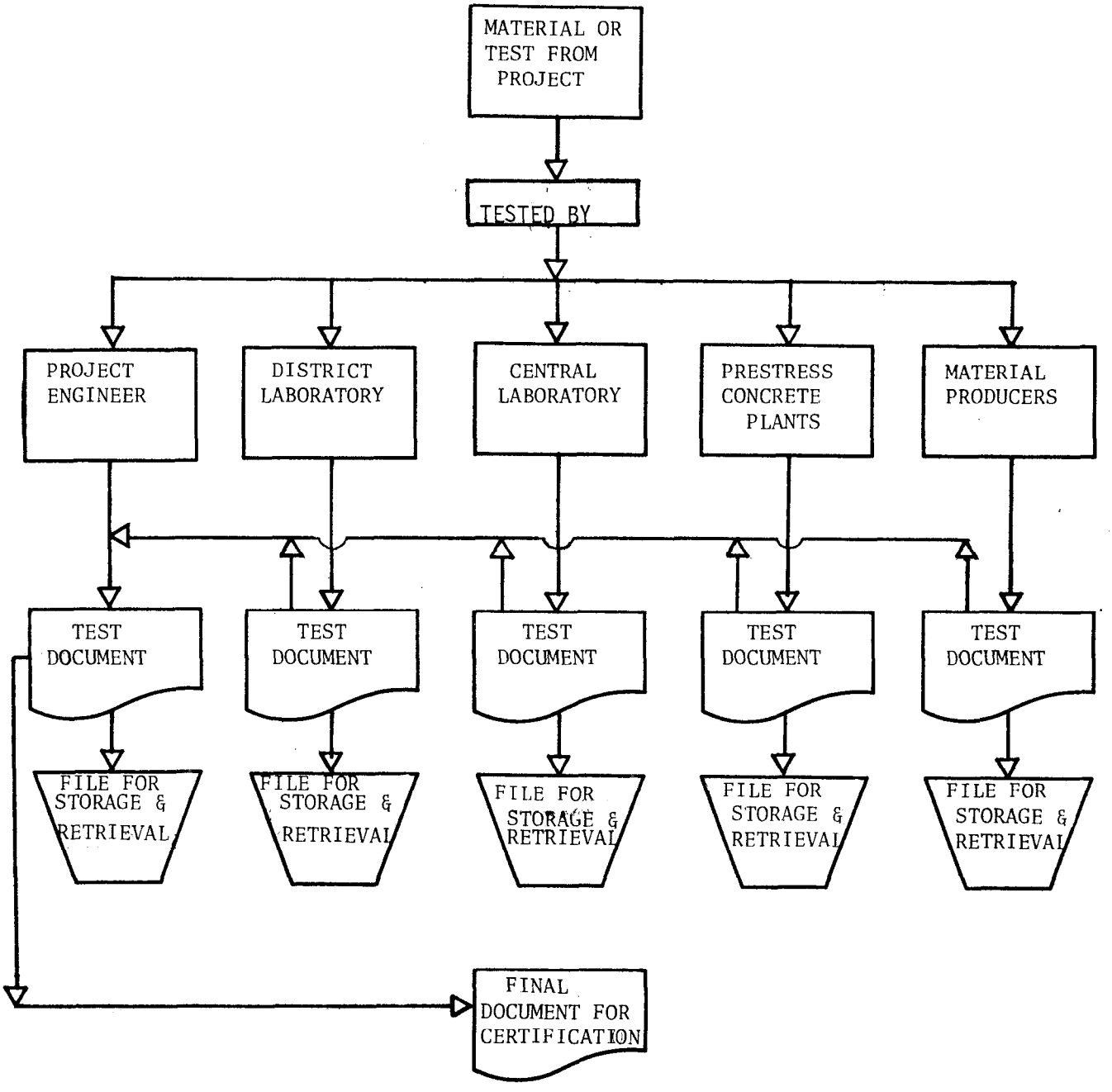


Figure 1 - Flow Chart of the Present Manual System

Figure 1 is a flow diagram of the present manual system. At the end of the project all the test data generated by various sources is compiled for final pay estimates.

Volume of Testing by Laboratories

The volume of sampling and testing depends on the number of ongoing construction projects in each district. Past records have indicated that on the average 15,000 tests are performed by each district during the course of a year. This figure is twice as much for the Materials Laboratory. Seventy-five percent of the data generated by the laboratories requires typing for distribution. The typed documents are filed and stored in filing cabinets. Extraction of user requested information has to be done manually, and this effort can become extremely tedious, if not impossible.

THE NEW SYSTEM

General

The purpose of the new system is to integrate the present system of sampling, test reporting and certification of construction projects. This concept is demonstrated in Figure 2. The system operations necessary to achieve these functional goals can be lised as follows:

1. Provide input data that can be easily stored.
2. Provide output reports according to specific categories (material, project, district, etc.).
3. Provide specification check for each material, test, etc.
4. Cross reference with passing and failing tests for a given sample, test, location, etc.
5. Provide statistical evaluation of test data.

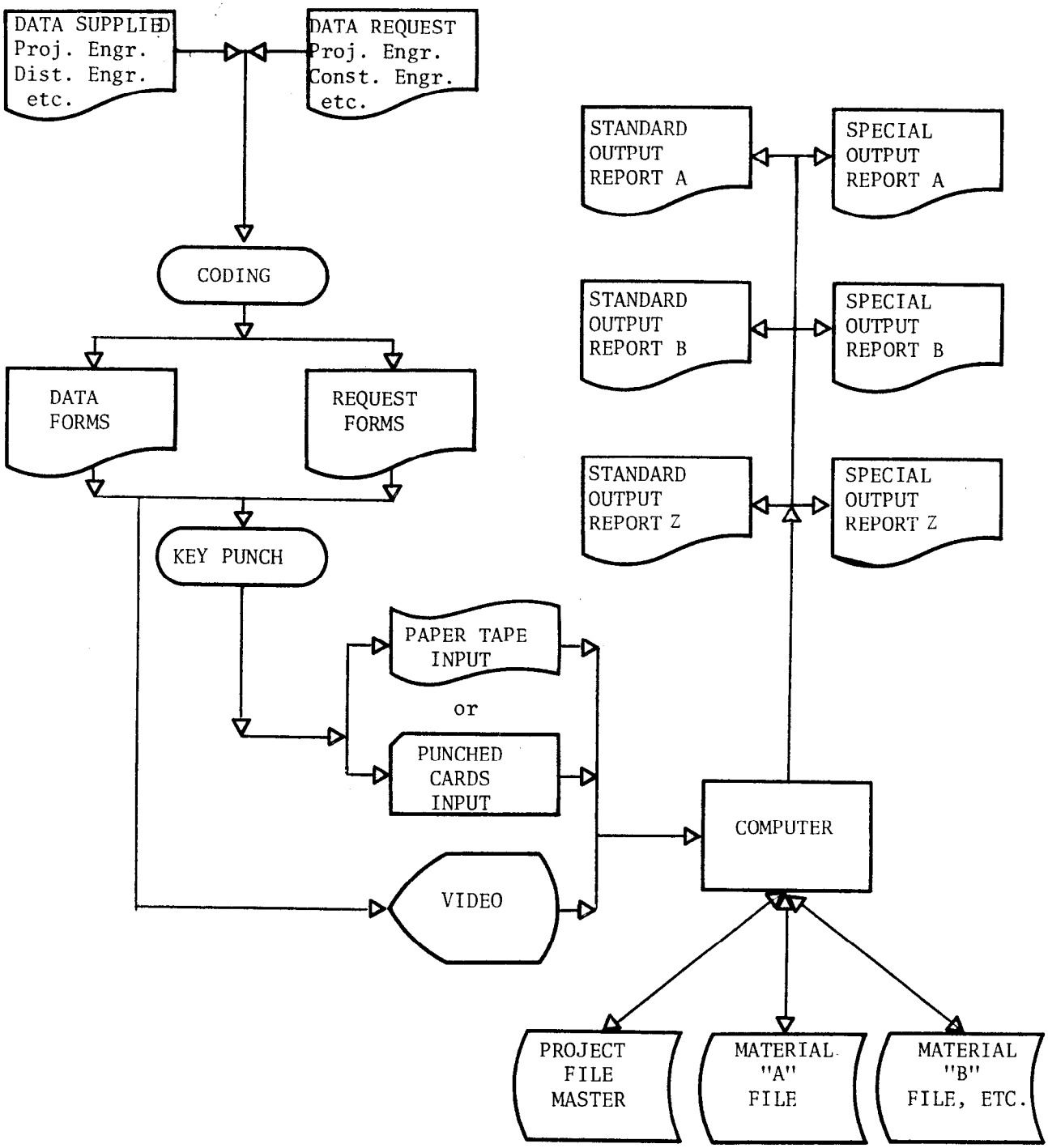


Figure 2 - Flow Chart of the Proposed Integrated System

Preliminary Considerations for Development of the System for Materials Laboratory

The Materials Laboratory was chosen for this initial phase because of the heavy test load they received and the skeleton crew of clerical help that is available for typing the test reports. Furthermore, the close proximity of the laboratory to the central computer system and the principal researchers provided easy communication which is desirable because of the frequent changes or revisions generally associated with any system development.

Numerous meetings were required with the Materials Section's personnel to reach a decision on the major material types that should be included in the initial phase of this study. The selection of the following four materials was based on the frequency of testing these materials.

1. Aggregates
2. Cement
3. Reinforcing Steel
4. Bituminous Materials

The next step, after the selection, was to cull and edit the existing report forms in a manner that would provide maximum information for identification of the sample and the test and also provide easy storage format. The latest work cards, used by the laboratory for reporting the test results, were used as guidelines in the design of input format. Considerations were also given to the exception tests in the same light as those most frequently reported. A major portion of the editing time was spent on the header information - information pertaining to Sample Identification. Figure 3 is the Sample Identification form that accompanies the material submitted for testing. Of the 15 items indicated, eight were selected for retention in the final format. These eight items are underlined in Figure 3. Figures 4 through 8 are the input forms showing the pertinent header information and the necessary test

FORM 800
REV. 5-61

LOUISIANA DEPARTMENT OF HIGHWAYS
BATON ROUGE

Received _____ Lab. No. _____

SAMPLE IDENTIFICATION

Material Coarse Aggregate Source Star Materials Company

Address 2561 State Street, Baton Rouge, La.

Project (State) 897-01-58 (F.A.P.) S-92 (8)

District No. 61 Purchase Order No. _____

Submitted by John Harris for David Reed Project Engineer

(Name) (Title)

P. O. Box 635, Baton Rouge, Louisiana

(Address)

Sample taken from Stockpile at Oscar

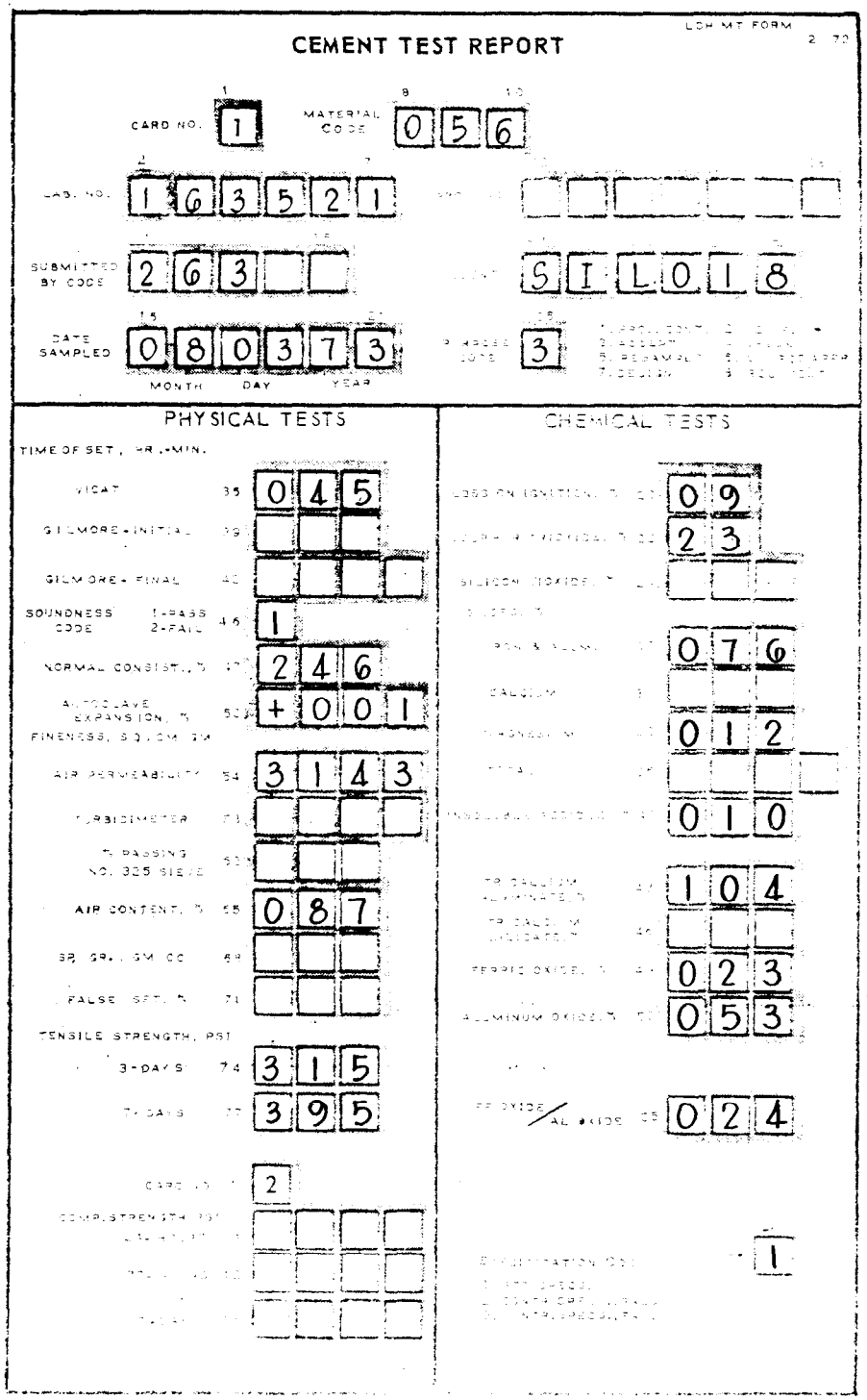
Quantity of material represented by sample 200 c.y.

Identification #1 Date sampled February 27, 1970

Intended Use of material Type B PCC Pavement

Remarks: _____

Figure 3 - Sample Identification Form



6

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS
MATERIALS SECTION

DATE 08/28/73

REPORT OF TESTS
OF
TYPE I PORTLAND CEMENT

LABORATORY NO...163521 PROJECT NO.. NONE DATE SAMPLED.. 8/03/73

SUBMITTED BY....IDEAL CEMENT CO., (BATON ROUGE, LA.)

PURPOSE.....ACCEPTANCE IDENTIFICATION..SILO18

TEST RESULTS

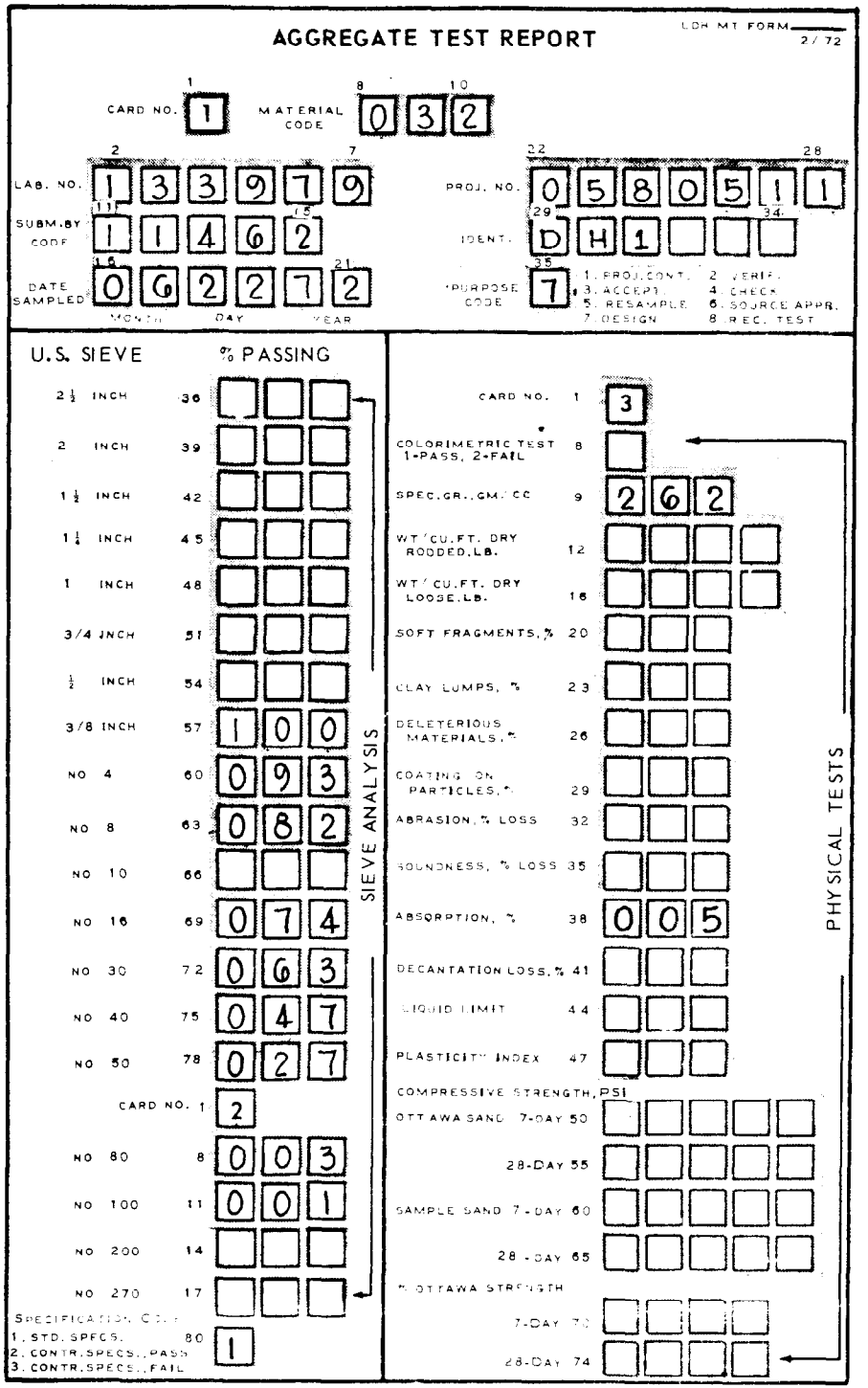
PHYSICAL TESTS		CHEMICAL TESTS	
TIME OF SET, HR/MIN, VICAT	:45	LOSS ON IGNITION, %	.9
SOUNDNESS	PASSED	SULFUR TRIOXIDE, %	2.3
NORMAL CONSISTENCY, %	24.6	IRON & ALUMINUM OXIDE, %	7.6
AUTOCLAVE EXPANSION, %	.01	MAGNESIUM OXIDE, %	1.2
FINENESS, AIR PERMEABILITY	3143	INSOLUBLE RESIDUE, %	.10
AIR CONTENT, %	8.7	TRICALCIUM ALUMINATE, %	10.4
TENSILE STRENGTH, PSI, 3 DAYS	315	FERRIC OXIDE, %	2.3
TENSILE STRENGTH, PSI, 7 DAYS	395	ALUMINUM OXIDE, %	5.3
		RATIO OF FE2O3 TO AL2O3	2.4

REMARKS... THIS SAMPLE CONFORMS TO STANDARD SPECIFICATIONS FOR TYPE I PORTLAND CEMENT

COPIES TO
IDEAL CEMENT CO., (BATON ROUGE, LA.)
MATERIALS ENGINEER

E. J. BRECKWOLDT BY _____
MATERIALS ENGINEER

Figure 4 - Input/Output Form for Aggregate Test Data



STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS
CENTRAL LABORATORY

8 28 73

REPORT OF TESTS
OF
FINE AGGREGATE FOR CONCRETE

LABORATORY NO...133979 PROJECT NO.. 58-05-11 DATE SAMPLED.. 6/22/72

SUBMITTED BY....J. A. ERWIN, PROJECT ENGINEER

PURPOSE.....DESIGN IDENTIFICATION..DH1

TEST RESULTS

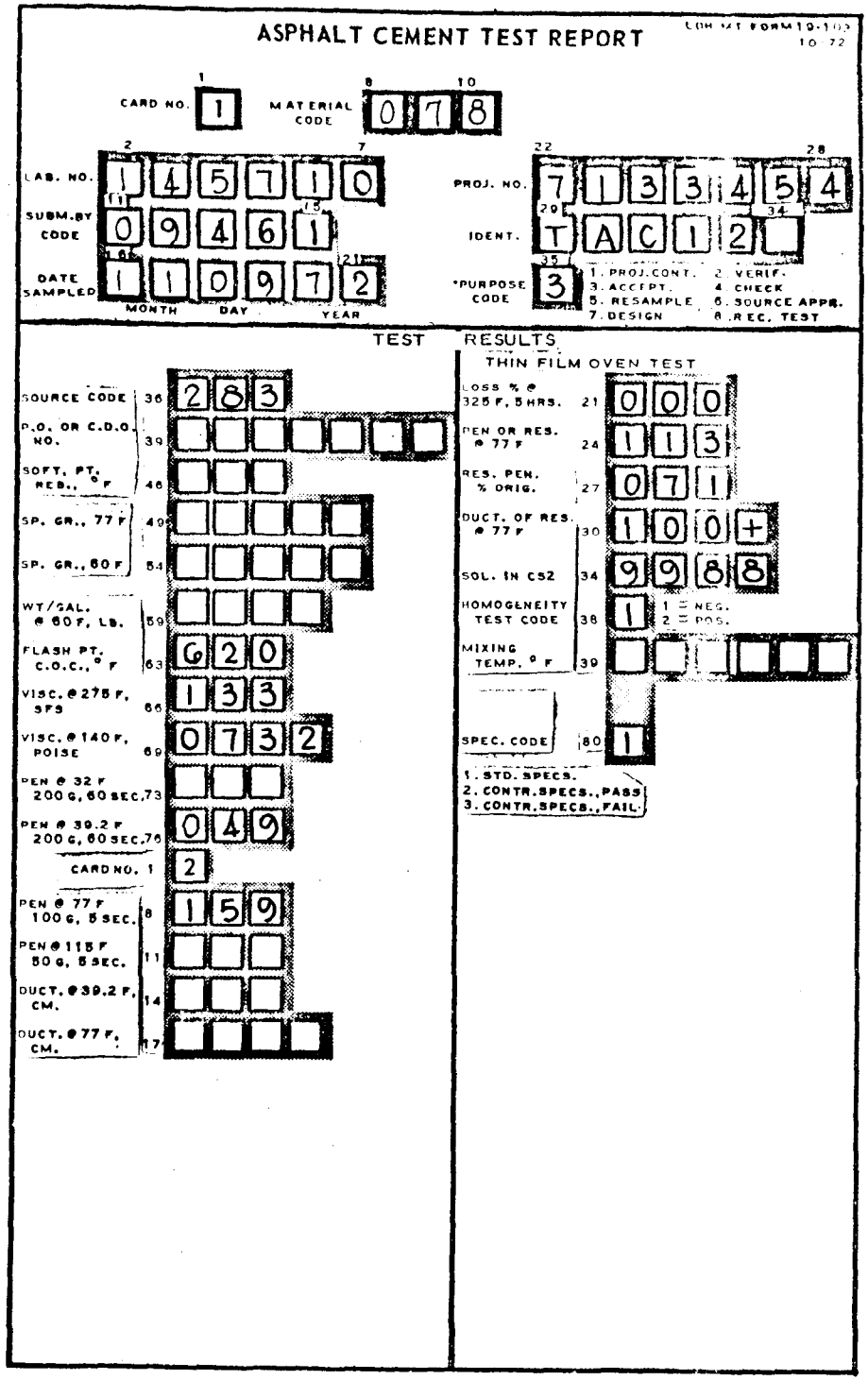
	PER CENT PASSING	REMARKS
3/8 INCH	100	PASSED
NO. 4	93	FAILED
NO. 8	82	
NO 16	74	PASSED
NO. 30	63	
NO. 40	47	
NO. 50	27	PASSED
NO. 100	3	PASSED
NO. 200	1	PASSED
SPECIFIC GRAVITY	2.62	
ABSORPTION, PERCENT	.5	

REMARKS....THIS SAMPLE DOES NOT CONFORM TO STANDARD SPECIFICATIONS FOR FINE AGGREGATE FOR CONCRETE

COPIES TO
J. A. ERWIN, PROJECT ENGINEER
MATERIALS ENGINEER
62 DISTRICT LABORATORY ENGINEER
DISTRICT ENGINEER

E. J. BRECKWOLDT BY
MATERIALS ENGINEER

Figure 5 - Input/Output Form for Cement Test Data



MATT3031 STATE OF LOUISIANA 8 28 73
DEPARTMENT OF HIGHWAYS
CENTRAL LABORATORY

REPORT OF TESTS
OF
ASPHALT CEMENT (AC-8)

LABORATORY NO...145710 PROJECT NO..713-34-54 DATE SAMPLED..11/09/72

SUBMITTED BY....WALLACE HARGRAVE, PROJECT ENGINEER

PURPOSE.....ACCEPTANCE IDENTIFICATION..TAC12

SOURCE.....HUMBLE OIL & REFINING CO. (BATON ROUGE, LA.)

PO OR CDO NO....

TEST PROPERTY	TEST RESULTS	REMARKS
FLASH POINT, C.O.C., F.	620	PASSED
VISCOSITY, S.F.S., AT 275 F.	133	PASSED
VISCOSITY, ABSOLUTE AT 140 F, POISES	732	PASSED
PENETRATION AT 39.2 F. 200 G, 60 SEC	49	PASSED
PENETRATION AT 77 F., 100G., 5 SEC.	159	PASSED
THIN FILM OVEN TEST LOSS PCT AT 325 F., 5 HRS.	.00	PASSED
THIN FILM OVEN TEST PENETRATION OF RESIDUE AT 77 F.	113	
THIN FILM OVEN TEST RESIDUE PENETRATION, PCT OF ORIG.	71	PASSED
THIN FILM OVEN TEST DUCT OF RES AT 77 F. 5 CM/MIN	100+	PASSED
SOLUBILITY IN CS2 %	99.88	PASSED
HOMOGENEITY TEST	NEG.	PASSED

REMARKS....THE ABOVE TEST RESULTS CONFORM TO SPECIFICATIONS

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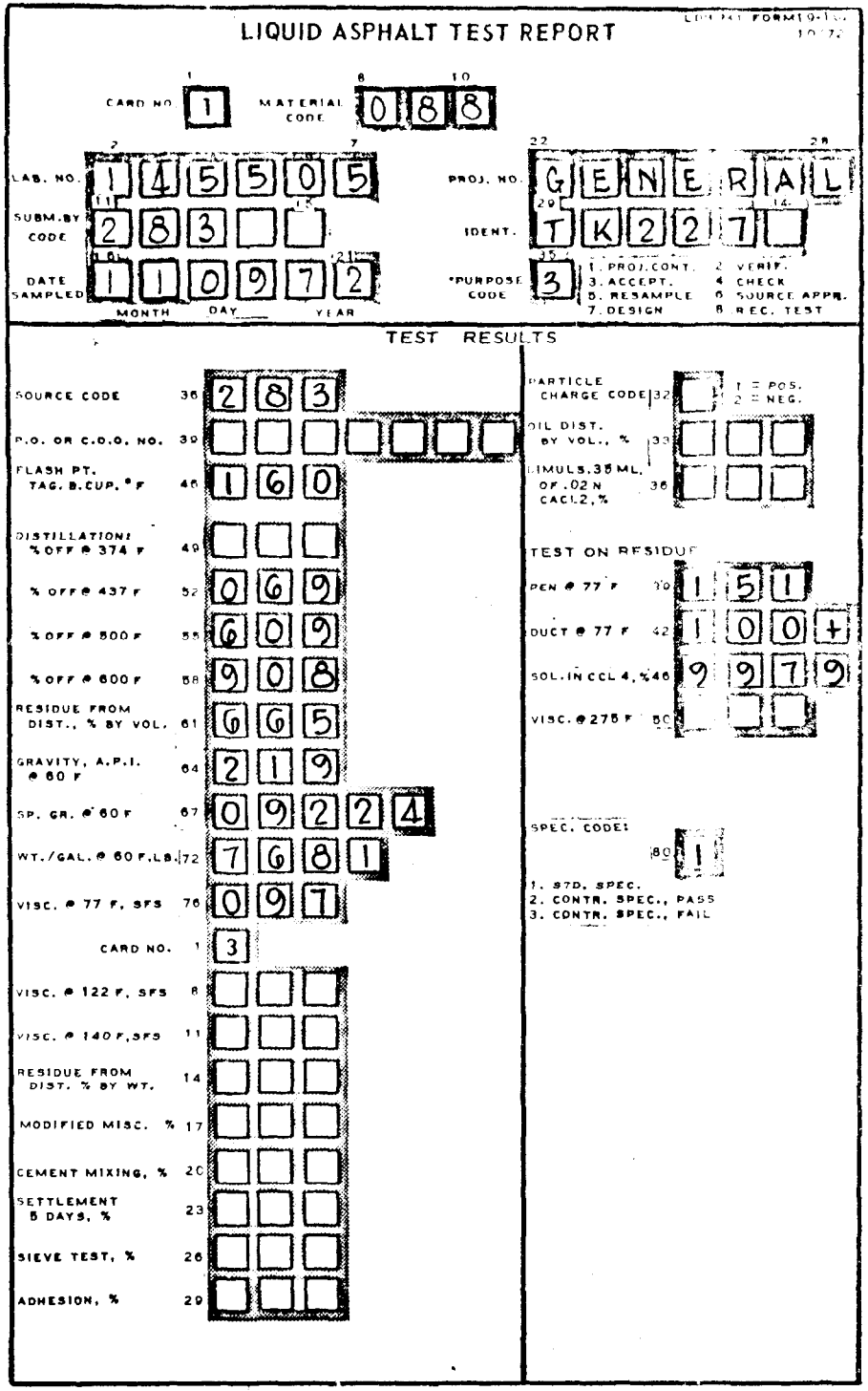
WALLACE HARGRAVE, PROJECT ENGINEER
MATERIALS ENGINEER
61 DISTRICT LABORATORY ENGINEER
DISTRICT ENGINEER

E. J. BRECKWOLDT BY _____
MATERIALS ENGINEER

Figure 7 - Input/Output Form for Asphalt Cement Test Data



LIQUID ASPHALT TEST REPORT

CARD NO. 1 MATERIAL CODE 088

LAB. NO. 145505 PROJ. NO. GENERAL

SUBM. BY CODE 283 IDENT. TK227

DATE SAMPLED 11 09 72 (MONTH DAY YEAR) *PURPOSE CODE 3

1. PROJ. CONT. 2. VERIF. 3. ACCEPT. 4. CHECK 5. RESAMPLE 6. SOURCE APPR. 7. DESIGN 8. REC. TEST

TEST RESULTS

SOURCE CODE	36	283
P.O. OR C.D.O. NO.	39	
FLASH PT. TAG. B.CUP, °F	46	160
DISTILLATION: % OFF @ 374 F	49	
% OFF @ 437 F	52	069
% OFF @ 500 F	55	609
% OFF @ 600 F	58	908
RESIDUE FROM DIST., % BY VOL.	61	665
GRAVITY, A.P.I. @ 60 F	64	219
SP. GR. @ 60 F	67	09224
WT./GAL. @ 60 F, LBS.	72	7681
VISC. @ 77 F, SFS	76	097
CARD NO.	1	3
VISC. @ 122 F, SFS	8	
VISC. @ 140 F, SFS	11	
RESIDUE FROM DIST. % BY WT.	14	
MODIFIED MISC. %	17	
CEMENT MIXING, %	20	
SETTLEMENT 5 DAYS, %	23	
SIEVE TEST, %	26	
ADHESION, %	29	

PARTICLE CHARGE CODE	32	(1 = POS. 2 = NEG.)
OIL DIST. BY VOL., %	33	
EMULS. 35 ML. OF .02 N CACL2, %	36	

TEST ON RESIDUE

PEN @ 77 F	39	151
DUCT @ 77 F	42	100+
SOL. IN CCL4, %	46	9979
VISC. @ 275 F	50	

SPEC. CODE: 80 1

1. STD. SPEC.
2. CONTR. SPEC., PASS
3. CONTR. SPEC., FAIL

MATT2031 STATE OF LOUISIANA 8 30 73
DEPARTMENT OF HIGHWAYS
CENTRAL LABORATORY

REPORT OF TESTS
OF
MEDIUM CURING CUTBACK ASPHALT (MC-30)

LABORATORY NO...145505 PROJECT NO..GENERAL DATE SAMPLED..11/09/72

SUBMITTED BY....HUMBLE OIL & REFINING CO. (BATON ROUGE, LA.)

PURPOSE.....ACCEPTANCE IDENTIFICATION..TK227

SOURCE.....HUMBLE OIL & REFINING CO. (BATON ROUGE, LA.)

PO OR CDO NO....

TEST PROPERTY	TEST RESULTS	REMARKS
FLASH TAG. OPEN CUP F.	160	PASSED
DISTILLATION % OFF AT 437 F	6.9	PASSED
DISTILLATION % OFF AT 500 F	60.9	PASSED
DISTILLATION % OFF AT 600 F	90.8	PASSED
RESIDUE FROM DIST., % BY VOLUME	66.5	PASSED
GRAVITY A.P.I. AT 60 F.	21.9	
SPECIFIC GRAVITY AT 60 F	.9224	
WEIGHT PER GALLON AT 60 F, LBS.	7.681	
VISCOSITY, SFS 77F	97	PASSED
TEST ON RESIDUE, PENETRATION AT 77 F	151	PASSED
TEST ON RESIDUE, DUCTILITY AT 77 F	100+	PASSED
TEST ON RESIDUE, SOLUBILITY, % CCL4	99.79	PASSED

REMARKS....THIS SAMPLE CONFORMS TO SPECIFICATIONS

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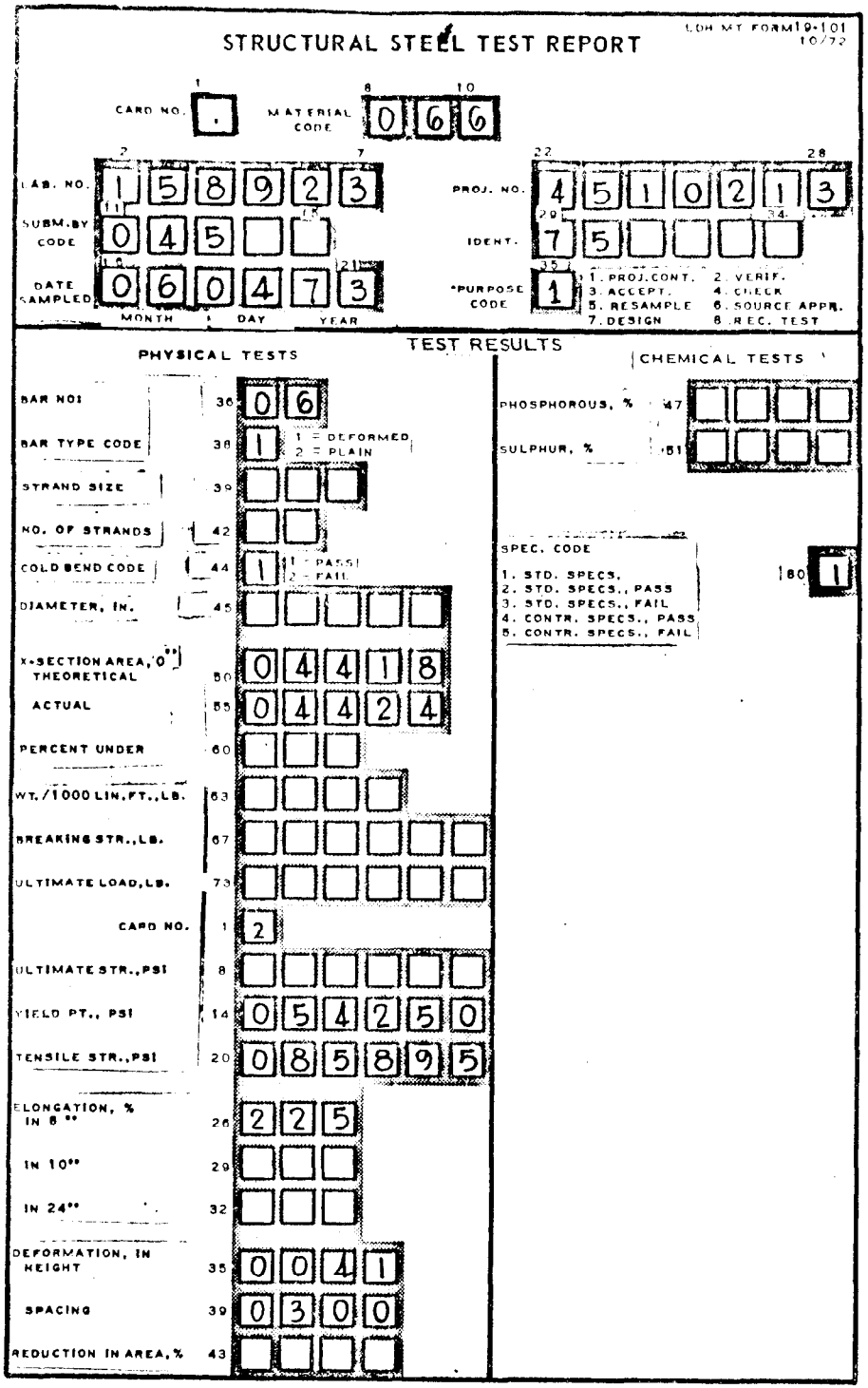
MATERIALS ENGINEER

E. J. BRECKWOLDT BY _____
MATERIALS ENGINEER

Figure 6 - Input/Output Form for Structural Steel Test Data



STRUCTURAL STEEL TEST REPORT

LDH MT FORM 19-101 10/72

CARD NO. 1 | MATERIAL CODE 0 6 6

LAB. NO. 1 5 8 9 2 3 | PROJ. NO. 4 5 1 0 2 1 3

SUBM. BY CODE 0 4 5 | IDENT. 7 5

DATE SAMPLED 0 6 0 4 7 3 (MONTH / DAY / YEAR) | *PURPOSE CODE 1 (1. PROJ. CONT. 2. VERIF. 3. ACCEPT. 4. CHECK 5. RESAMPLE 6. SOURCE APPR. 7. DESIGN 8. REC. TEST)

TEST RESULTS

PHYSICAL TESTS		CHEMICAL TESTS	
BAR NO.	0 6	PHOSPHOROUS, %	
BAR TYPE CODE	1 (1 = DEFORMED, 2 = PLAIN)	SULPHUR, %	
STRAND SIZE			
NO. OF STRANDS			
COLD BEND CODE	1 (1 = PASS, 2 = FAIL)		
DIAMETER, IN.			
X-SECTION AREA, 0" THEORETICAL	0 4 4 1 8		
ACTUAL	0 4 4 2 4		
PERCENT UNDER			
WT./1000 LIN.FT., LB.			
BREAKING STR., LB.			
ULTIMATE LOAD, LB.			
CARD NO.	2		
ULTIMATE STR., PSI			
YIELD PT., PSI	0 5 4 2 5 0		
TENSILE STR., PSI	0 8 5 8 9 5		
ELONGATION, % IN 8"	2 2 5		
IN 10"			
IN 24"			
DEFORMATION, IN HEIGHT	0 0 4 1		
SPACING	0 3 0 0		
REDUCTION IN AREA, %			

SPEC. CODE: 1. STD. SPECS. 2. STD. SPECS., PASS 3. STD. SPECS., FAIL 4. CONTR. SPECS., PASS 5. CONTR. SPECS., FAIL — 80: 1

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS
MATERIALS SECTION

8 27 73

REPORT OF TESTS
OF
GRADE 40 REINFORCING STEEL

LABORATORY NO...158923 PROJECT NO..451-02-13 DATE SAMPLED.. 6/04/73

SUBMITTED BY....W. G. MAYER, PROJECT ENGINEER

PURPOSE.....PROJECT CONTROL IDENTIFICATION..75

TEST PROPERTY	TEST RESULTS	REMARKS
BAR NUMBER	6	
BAR TYPE		ROUND DEFORMED
CROSS SECT AREA, SQ. IN. THORETICAL	.4418	
CROSS SECT AREA, SQ. IN. ACTUAL	.4424	
COLD BEND	PASS	
YIELD POINT, PSI	54250	PASSED
TENSILE STRENGTH, PSI	85895	PASSED
ELONGATION, % IN 8 IN	22.5	PASSED
DEFORMATION, IN HEIGHT	.041	PASSED
DEFORMATION, IN SPACING	.300	PASSED

REMARKS....THIS SAMPLE CONFORMS TO STANDARD SPECIFICATIONS

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W. G. MAYER, PROJECT ENGINEER
MATERIALS ENGINEER

E. J. BRECKWOLDT BY _____
MATERIALS ENGINEER

Figure 8 - Input/Output Form for Liquid Asphalt Test Data

data information for the materials. Three of the items in the header information are entered in a numerically coded format.

Selection of Input Media

A number of media were considered for input of data into the system. These included Optical Mark Page Reader, punched cards from data cards and remote terminals including video and card/paper tape readers.

The Optical Mark Page Reader was ruled out by those who had had unfavorable experience with that system of hardware. Furthermore, since the installation of terminal was in the development stage, it was decided to use punched cards for test data input. The forms shown in Figures 4 through 8 were designed for that purpose.

SYSTEM DESIGN

Input

To generate a test report for a given material, three files are accessed. These are:

1. Test Submitter File
2. Standard Specification File
3. Test Data File

Figure 9 is a generalized flow chart for material testing system. The general card layout and record layout for each of the above files are shown in Appendix A. The contents of each of the above files and the manner in which it is created is described in the following paragraphs.

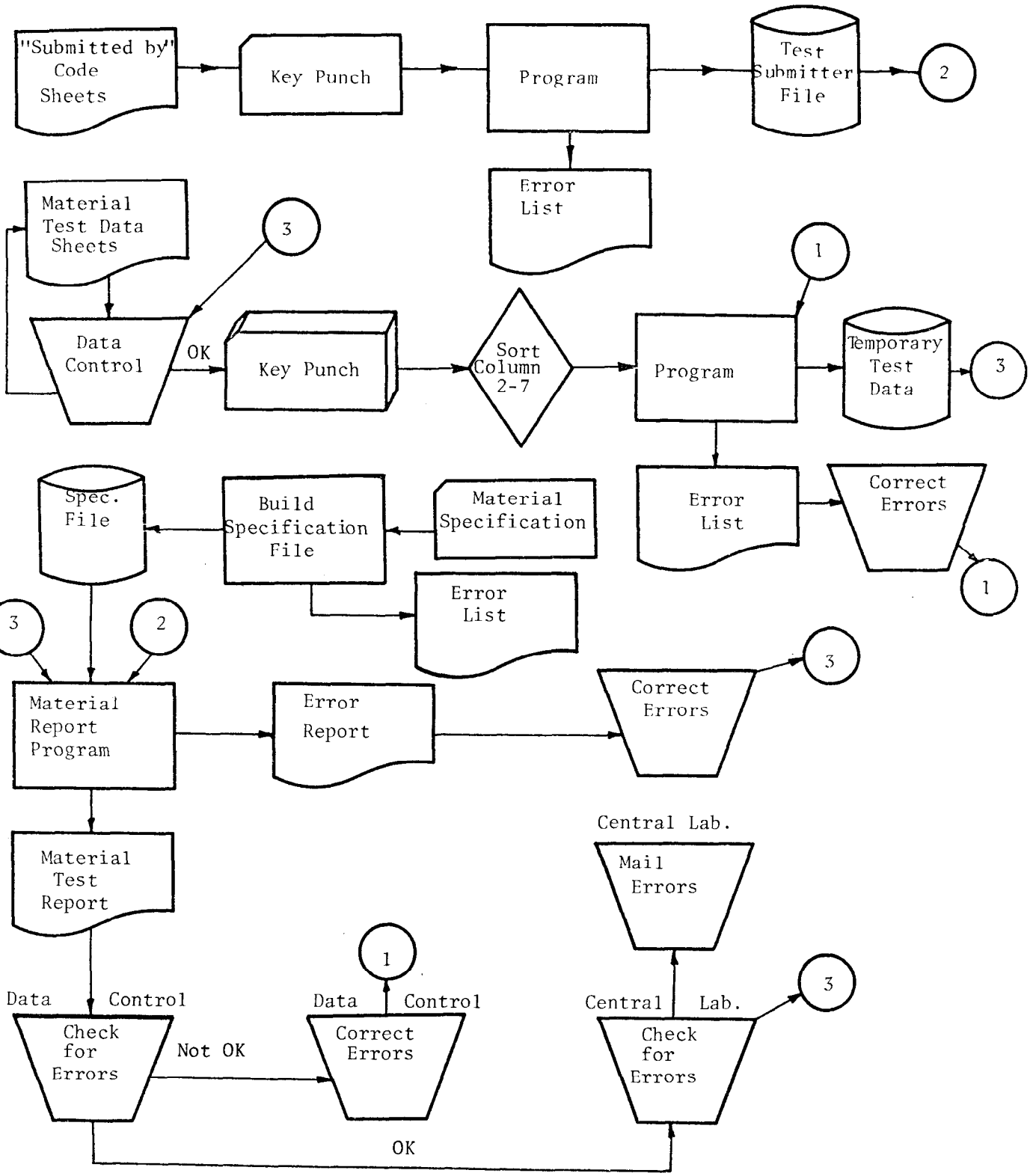
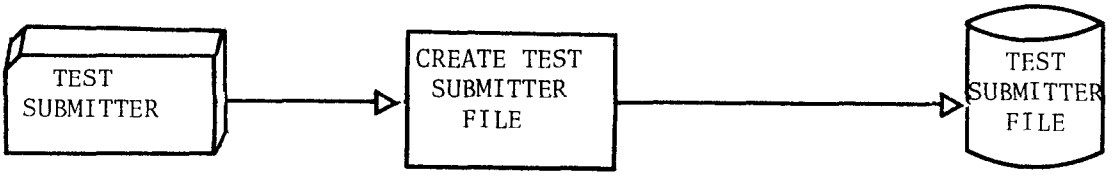


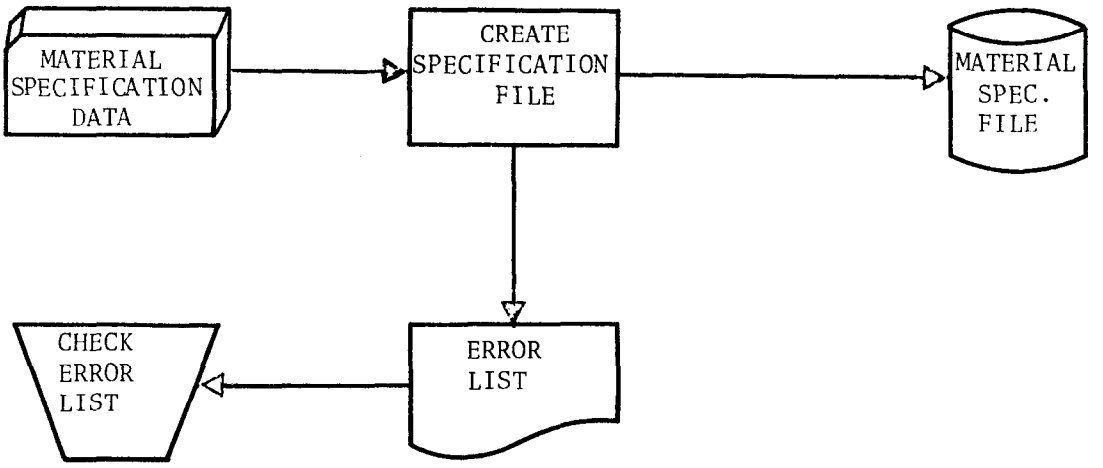
Figure 9 - Generalized Flow Chart for Material Testing System

1. Test Submitter File:



The Test Submitter File contains a code number and name for each person (or company) submitting materials for testing. The disk file is used by all programs that produce test reports. The updates are made to the card file and then reloaded on the disk. The test Submitter code appears in columns 11-13 on card No. 1 of the test data input forms (Figures 4 through 8).

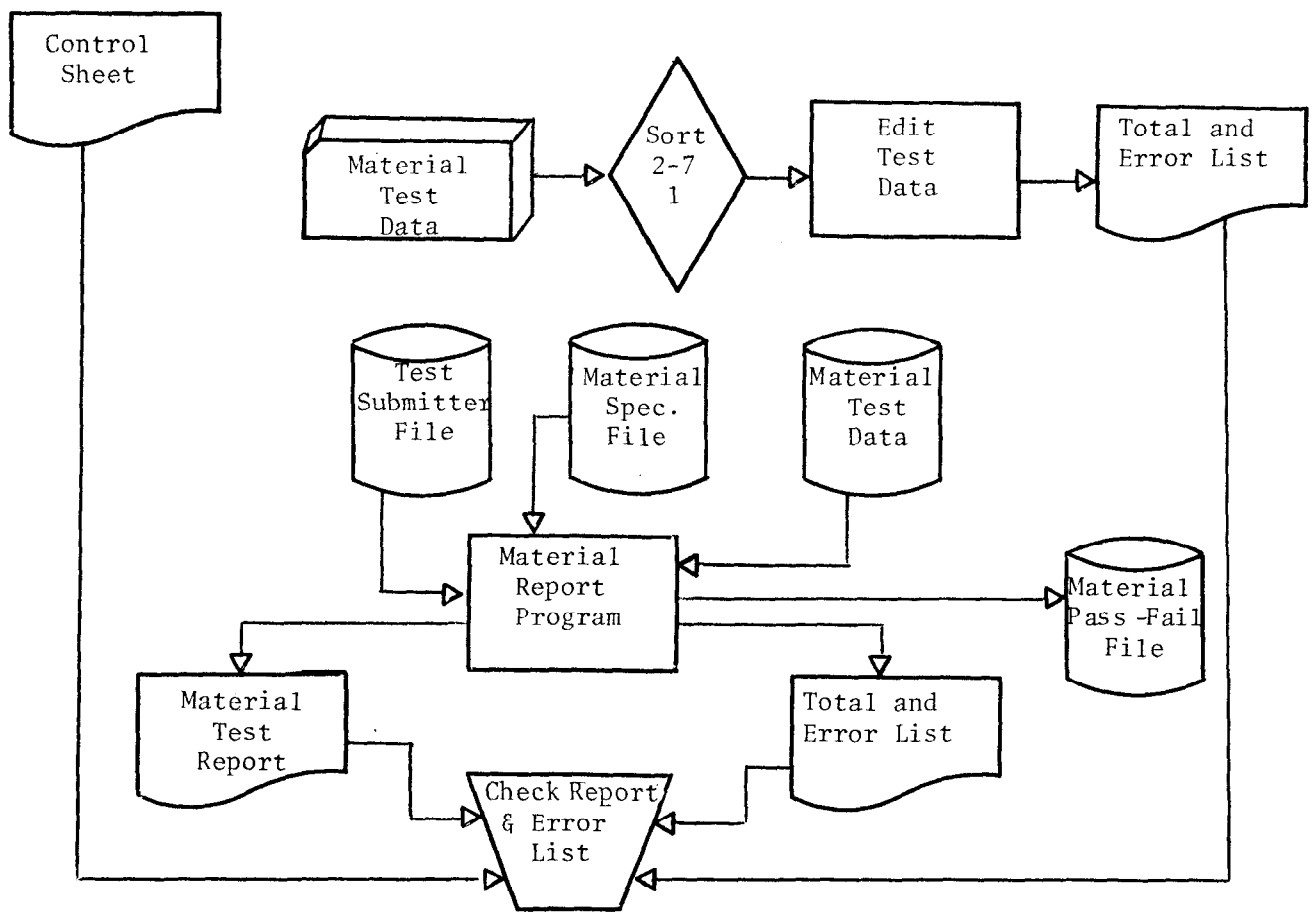
2. Standard Specification File:



The material specification file contains a set of standard specifications for different materials that fall into the four broad material categories included in the system. The disk file is accessed by the report program to determine the name of the material and to compare the test results with the specification for conformance. The internal check for conformance is made only when standard specifications govern the test or material. If special provisions govern, then checking is done manually and the file is accessed for name retrieval only.

Columns 8 - 10 of card No. 1 are used for material code and column 80 of card No. 2 indicates the type of specifications that govern the material or test.

3. Test Data File:



The material test data is punched on cards at the Materials Laboratory from coded test data forms (Figures 4 - 8). The cards are sent to the Computer Section in separate batches according to major material category. A one-page printer report is produced by the report generating program. These reports are returned to the materials laboratory for distribution. The cards are filed for a specified period after which time they are loaded on magnetic tape. The general form of card and record layout is shown in Appendix A.

Output

Standard Reports

The system is designed to generate a standard output report for each material test. These reports are then distributed to interested individuals or Sections. Figures 4 through 8 show copies of output reports adjacent to the input test data form for each of the materials. These reports have replaced the standard typed reports. Although the content of the report is self explanatory, some points need to be clarified.

The general "REMARKS" statement located below the test results is dependent on the individual comments beside each test property under the "REMARKS" column. Furthermore, the distribution list (copies to) is determined by the system from the input data in columns 11 - 15.

Special Reports

The thrust of the study is directed towards retrieval of special reports. This could be user requested or standard summary report printout for audit purposes. Figure 10 is one such form of special report; the data were extracted from an asphalt cement. file. The first printout shows information as it appears on tape. It should be noted that the information presented in the printout does not appear in the tape file in its

entirety. For example, the data for AC (Material Code field in input form) and SOURCE appear in coded form in the file, whereas the printout reflects decoded data on material and source. Furthermore, individual remarks signifying PASS or FAIL are also absent from the original file. The remarks appearing in the final printout provide a means of identifying the point of failure. This is necessary for final pay estimates. The F80% under RM2 means that the contractor is qualified to receive 80% of the contract unit price because of non-conforming viscosity measurement at 275°F.

The second printout is according to AC type. This second printout could have been according to any other category (Source, Laboratory Numbers, Project Numbers, etc.). The auditing task is greatly simplified by such reports as compared to manual report by report audit. The third printout shows the statistical analysis of data according to the previous sorting. This final printout is desirable for specification revisions and/or updates. An important application use of such an output report is the comparison it would provide between different sources with respect to the variability parameter for any specified test property. On the other hand, the user may be interested (for research pruposes) not in how the product varies, with respect to measured property, between sources but rather in how the product varies within a given source over a period to time. Yet another application would be the more sophisticated analysis of the data such as multiple repression and factor analysis. Plot procedures can be used as an aid in studying the functional relationship between variables. Thus the applications are many and will depend on intended purposes for which the user wishes to retrieve the information.

System Requirements:

Hardware

During the development stage, the Department had an IBM 360 Model 40 which has been

replaced by IBM 370 Model 145.

Software

The computer programs for generating standard test reports are all written in standard COBOL. Appendix B lists and describes the various program components that are utilized by the system for generating standard reports. The software for special reports is developed according to the type of report (format) desired. Subroutines are used for statistical evaluation. The programs are available upon request.

Updates

Because of frequent revisions in the standard specifications and the submitter and the material list, updates of files becomes an integral part of the system operation. Currently, the input test data forms are being designed so that they would serve as a dual purpose card - a work card as well as an input card for key punching. This would do away with the transfer of data from the work card to the input data card (Figures 4 through 8) for key punching which was necessary during the early development of the system.

Future Effort

The development of the system described in this report was the pilot phase of the overall study which is to provide various districts of the Department of Highways with an easy form of input of construction project test data, through terminals, for storage and retrieval. Effort is already underway towards designing the system for collection and input of data for the following construction items:

1. Asphaltic Concrete
2. Soil for Base Course
3. Base Course Compaction, Depth and Width
4. Paving and Structural Concrete

Initial plans for transmission of data for input call for an IBM 1050 system with Card Reader and 3270 video system.

SUMMARY

Since the beginning of 1972, the computerized System, discussed in the preceding sections for reporting of material test data by the Materials Laboratory, has generated 20,000 + test reports. The implementation of the system has substantially reduced the cost of typing the test reports. Feed back from the Materials Laboratory has indicated a reduction in typing of approximately 70 to 75%. Additionally, use of the system has resulted in less effort than generally required of engineering personnel for checking and rechecking of test data for specification conformance. The system has practically eliminated the errors that are generally associated with manual checking of test results for specification conformance.

Before computerization, needless duplication of some activities existed, such as two or three Department Sections keeping identical information in their files. The system has streamlined the distribution of reports because test data are readily available to any individual or section at a central location (computer tapes). Once the data is collected and stored in usable form, it can be utilized in many ways to accomplish tasks that would normally require hours of tedious work to be accomplished manually as for variance analysis of material, method, source, equipment etc. The application of the system is bound to outdistance imagination.

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT FOR AC BEFORE SORTING

OBS	LAB NO	AC	DIST	PROJ NO	S PT	SRC	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	157334	8	07	7133519	T	TXC	620	PASS	138	PASS	862	PASS	174	PASS	0.00	PASS
2	158205	20	61		R	EXN	630	PASS	208	PASS	1984	PASS	83	PASS		
3	158204	20	62		R	EXN	620	PASS	217	PASS	2009	PASS	83	PASS	0.02	PASS
4	155181	20	61		R	EXN	500	PASS			2499		70	FAIL	0.61	PASS
5	150196	20	62	4240408	T	EXN	550	PASS	192	F80%	1975	PASS	100	PASS	0.37	PASS
6	149681	20	61		R	EXN	640	PASS	220	PASS	1891	PASS			0.00	PASS
7	148311	20	61		R	EXN	530	PASS	223	PASS	1965	PASS	83	PASS		
8	156603	20	62		R	EXN	600	PASS	214	PASS	1934	PASS	83	PASS	0.02	PASS
9	156085	20	02		R	SHL	575	PASS	196	FAIL	1941	PASS	90	PASS		
10	155958	20	61		R	EXN	655	PASS	200	PASS	1748	PASS	90	PASS	0.09	PASS
11	155522	20	61	4540408	R	EXN	640	PASS	226	PASS	2059	PASS	75	PASS	0.03	PASS
12	159300	20	62		R	EXN	640	PASS	228	PASS	2189	PASS	78	PASS	0.01	PASS
13	159010	5	08	4170202	T	MCM	650	PASS	226	PASS	2446	PASS	92	PASS	0.00	PASS
14	158851	5	04	4170103	T	MCM	455	PASS	222	PASS	2412	PASS	91	PASS	0.00	PASS
15	153907	20	61		R	EXN	650	PASS	211	PASS	1947	PASS	84	PASS	0.00	PASS
16	150136	8	07		R	TXC	615	PASS	140	PASS	733	PASS	163	PASS	0.00	PASS
17	150068	8	62		R	SLD	495	PASS	129	PASS	700	PASS	174	PASS	0.67	PASS
18	150434	8	61		R	DXI	610	PASS	146	PASS	808	PASS	150	PASS	0.00	PASS
19	158222	5	07		R	TXC	610	PASS	210	PASS	2089	PASS	90	PASS	0.00	PASS
20	157406	5	03		R	TXC	615	PASS	207	PASS	2059	PASS	91	PASS	0.00	PASS
21	157221	5	05	0530812	T	CLM	450	PASS	251	PASS	2663	PASS	83	PASS	0.02	PASS
22	156857	5	02		R	SHL	580	PASS	218	PASS	2207	PASS	86	PASS	0.03	PASS
23	157799	20	03		R	EXN	635	PASS	204	PASS	1903	PASS	85	PASS		
24	156745	5	02		R	SHL	550	PASS	193	FAIL	1972	PASS	93	PASS		
25	156622	5	07		R	TXC	585	PASS	213	PASS	2089	PASS	88	PASS	0.00	PASS
26	156087	5	04	0530812	T	CLM	625	PASS	233	PASS	2434	PASS	87	PASS	0.03	PASS
27	156086	5	62		R	SLD	530	PASS	211	PASS	2365	PASS	93	PASS	0.37	PASS
28	155903	5	05		R	CLM	630	PASS	229	PASS	2371	PASS	87	PASS	0.01	PASS
29	155371	5	03		R	TXC	615	PASS	209	PASS	2077	PASS	85	PASS	0.00	PASS
30	155062	5	08		R	CLM	620	PASS	218	PASS	2170	PASS	86	PASS		
31	150007	5	02	7133006	T	SHL	575	PASS	229	PASS	2658	PASS	88	PASS	0.48	
32	151042	5	03	4500429	T	TXC	625	PASS	214	PASS	2046	PASS	94	PASS	0.00	PASS
33	150680	5	61	4510805	T	SLD	520	PASS	200	PASS	2040	PASS	112	F NP	1.05	F80%
34	149971	5	61		R	SHL	530	PASS	213	PASS	2409	PASS	86	PASS	0.29	PASS
35	149315	5	62		R	SLD	560	PASS	222	PASS	1915	PASS	93	PASS	0.12	PASS
36	150135	5	07		R	TXC	610	PASS	218	PASS	3545	PASS	92	PASS	0.00	PASS
37	159331	5	03		R	TXC	615	PASS	218	PASS	2182	PASS	88	PASS	0.00	PASS
38	158064	40	02		R	SHL	570	PASS	286	PASS	4370	PASS	62	PASS	0.00	PASS
39	148309	20	62		R	EXN	520	PASS	228	PASS	2102	PASS	79	PASS	0.37	PASS
40	157019	40	02		R	SHL	600	PASS	283	PASS	4460	PASS	59	PASS		
41	156919	40	61	2500119	T	EXN	670	PASS	292	PASS	4230	PASS	54	PASS	0.01	
42	156880	40	61	8521211	T	EXN	655	PASS	300	PASS	4204	PASS			0.02	PASS
43	156728	40	61		R	EXN	650	PASS	275	PASS	3962	PASS				
44	155548	40	02		R	SHL	590	PASS	298	PASS	5045	PASS	53	PASS	0.16	PASS
45	155521	40	62	0300212	T	EXN	665	PASS	312	PASS	4185	PASS	49	PASS	0.00	PASS
46	155505	40	61		R	EXN	660	PASS	287	PASS	4039	PASS	50	PASS	0.03	PASS
47	155351	40	61		R	EXN	670	PASS	273	PASS	3713	PASS	52	PASS	0.02	PASS
48	151354	40	62		R	EXN	640	PASS	303	PASS	3854	PASS	50	PASS		
49	151856	40	62	2700107	T	EXN	675	PASS	303	PASS	3911	PASS			0.06	PASS
50	151137	40	03	8530909	T	EXN	655	PASS	300	PASS	3696	PASS	50	PASS	0.11	PASS
51	150343	40	61		R	EXN	690	PASS	290	PASS	4026	PASS	51	PASS	0.00	PASS
52	149957	40	61		R	EXN	625	PASS	310	PASS	3937	PASS	52	PASS		
53	150435	40	61	7141899	T	EXN	675	PASS	288	PASS	3854	PASS	52	PASS	0.12	PASS
54	148266	40	02		R	SHL	590	PASS	290	PASS	4179	PASS	58	PASS	0.00	PASS
55	148312	40	62		R	EXN	540	PASS	298	PASS	4050	PASS	52	PASS		

Figure 10 - Special Reports Printouts
Printout 1

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT FOR AC BEFORE SORTING

OBS	LAB NO	AC	DIST	PROJ NO	S PT	SRC	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
56	150185	8	62		R	SLD	520	PASS	144	PASS	988	PASS	165	PASS	.77	PASS
57	159402	40	61	2650121	T	EXN	670	PASS	290	PASS	3949	PASS	55	PASS	.06	PASS
58	157466	40	62		R	EXN	655	PASS	301	PASS	4523	PASS	40	FAIL	.07	PASS
59	157374	3	07	0320311	T	TXC	630	PASS	304	PASS	4650	PASS	60	PASS	.00	PASS
60	157296	3	03		R	TXC	615	PASS	290	PASS	4217	PASS	62	PASS	.00	PASS
61	156811	3	04	P065870	T	LIN	655	PASS	296	PASS	3898	PASS	66	PASS	.08	PASS
62	156693	3	61		R	TXC	600	PASS	284	PASS	4077	PASS	64	PASS	.00	PASS
63	156089	3	05	0080929	T	LIN	655	PASS	294	PASS	4166	PASS	62	PASS	.01	PASS
64	155931	3	08		R	TXC	610	PASS	283	PASS	3969	PASS	65	PASS	.00	PASS
65	155550	3	08	0068663	T	LIN	660	PASS	305	PASS	4039	PASS	70	PASS	.03	PASS
66	155731	3	04	4510139	T	CLM	665	PASS	335	PASS	3805	PASS	61	PASS	.01	PASS
67	155549	3	02		R	TXC	585	PASS	296	PASS	4386	PASS	62	PASS	.01	PASS
68	155063	3	05		R	CLM	620	PASS	286	PASS	4605	PASS	63	PASS		
69	151557	3	08	1180208	T	LIN	640	PASS	298	PASS	3924	PASS	64	PASS	.05	PASS
70	150154	3	08		R	CLM	630	PASS	301	PASS	4595	PASS	63	PASS	.03	PASS
71	150155	3	04	750114	T	LIN	655	PASS	287	PASS	3943	PASS	66	PASS	.00	PASS
72	150008	3	61	4500429	T	TXC	620	PASS	317	PASS	5070	PASS	60	PASS	.01	PASS
73	149316	3	62		R	SLD	555	PASS	299	PASS	3810	PASS	65	PASS		
74	150433	3	04	4170212	T	LIN	670	PASS	319	PASS	5121	PASS	59	PASS	.02	PASS
75	149317	3	07		R	TXC	600	PASS	303	PASS	4211	PASS	63	PASS	.00	PASS
76	149485	3	05	4510810	T	LIN	645	PASS	282	PASS	3444	F80*	71	PASS	.08	PASS
77	157827	3	02	2020110	T	FNT	630	PASS	306	PASS	4357	PASS	62	PASS	.00	PASS
78	159444	8	08	0068021	T	MCM	680	PASS	154	PASS	820	PASS	166	PASS	.00	PASS
79	159330	8	04		R	OXI	615	PASS	126	PASS	712	PASS	172	PASS	.17	PASS
80	159094	8	04	7133605	T	CLM	590	PASS	135	PASS	949	PASS	165	PASS	.02	PASS
81	157789	8	61	7133571	T	EXN	620	PASS	136	PASS	718	PASS	174	PASS	.04	PASS
82	156918	8	62	7133407	T	EXN	620	PASS	136	PASS	762	PASS	168	PASS	.01	PASS
83	156725	8	61	7133587	T	EXN	595	PASS	144	PASS	801	PASS	166	PASS	.00	PASS
84	156046	8	05	7133196	T	MCM	645	PASS	145	PASS	747	PASS	180	PASS	.00	PASS
85	156045	8	03	7133555	T	MCM	645	PASS	146	PASS	809	PASS	190	PASS	.00	PASS
86	155906	8	07		R	TXC	625	PASS	131	PASS	717	PASS	163	PASS	.00	PASS
87	155368	8	61		R	EXN	635	PASS	124	FAIL	1972	PASS	80	FAIL	.02	PASS
88	155523	8	03		R	EXN	615	PASS	156	PASS	821	PASS	156	PASS	.00	PASS
89	155061	8	04		R	CLM	650	PASS	135	PASS	769	PASS	160	PASS	.00	PASS
90	155055	8	02	7133407	T	EXN	615	PASS	154	PASS	930	PASS	142	PASS	.00	PASS
91	151344	8	07		R	TXC	610	PASS	137	PASS	773	PASS	157	PASS		

Figure 10 - Special Reports Printouts (Continued)
Printout 1

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT AFTER SORTING BY AC TY

AC=3

OBS	LAB NO	DIST	PROJ NO	S PT	SRC	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	157374	07	0320311	T	TXC	630	PASS	304	PASS	4650	PASS	60	PASS	.00	PASS
2	157296	03		R	TXC	615	PASS	290	PASS	4217	PASS	62	PASS	.00	PASS
3	156811	04	P065870	T	LIN	655	PASS	296	PASS	3898	PASS	66	PASS	.08	PASS
4	156693	61		R	TXC	600	PASS	284	PASS	4077	PASS	64	PASS	.00	PASS
5	156089	05	0080929	T	LIN	655	PASS	294	PASS	4166	PASS	62	PASS	.01	PASS
6	155981	08		R	TXC	610	PASS	283	PASS	3969	PASS	65	PASS	.00	PASS
7	155550	08	0068663	T	LIN	660	PASS	305	PASS	4039	PASS	70	PASS	.03	PASS
8	155731	04	4510139	T	CLM	665	PASS	335	PASS	3805	PASS	61	PASS	.01	PASS
9	155549	02		R	TXC	585	PASS	296	PASS	4386	PASS	62	PASS	.01	PASS
10	155063	05		R	CLM	620	PASS	286	PASS	4605	PASS	63	PASS		
11	151557	08	1180208	T	LIN	640	PASS	298	PASS	3924	PASS	64	PASS	.05	PASS
12	150154	08		R	CLM	630	PASS	301	PASS	4599	PASS	63	PASS	.03	PASS
13	150155	04	750114	T	LIN	655	PASS	287	PASS	3943	PASS	66	PASS	.00	PASS
14	150008	61	4500429	T	TXC	620	PASS	317	PASS	5070	PASS	60	PASS	.01	PASS
15	149316	62		R	SLD	555	PASS	299	PASS	3810	PASS	65	PASS		PASS
16	150433	04	4170212	T	LIN	670	PASS	319	PASS	5121	PASS	59	PASS	.02	PASS
17	149317	07		R	TXC	600	PASS	303	PASS	4211	PASS	63	PASS	.00	PASS
18	149485	05	4510810	T	LIN	645	PASS	282	PASS	3444	F80%	71	PASS	.08	PASS
19	157827	02	2020110	T	FNT	630	PASS	306	PASS	4357	PASS	62	PASS	.00	PASS

AC=5

OBS	LAB NO	DIST	PROJ NO	S PT	SRC	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	159010	08	4170202	T	MCM	650	PASS	226	PASS	2446	PASS	92	PASS	0.00	PASS
2	158851	04	4170103	T	MCM	455	PASS	222	PASS	2412	PASS	91	PASS	0.00	PASS
3	158222	07		R	TXC	610	PASS	210	PASS	2089	PASS	90	PASS	0.00	PASS
4	157406	03		R	TXC	615	PASS	207	PASS	2059	PASS	91	PASS	0.00	PASS
5	157221	05	0530812	T	CLM	450	PASS	251	PASS	2663	PASS	83	PASS	0.02	PASS
6	156957	02		R	SHL	580	PASS	218	PASS	2207	PASS	86	PASS	0.03	PASS
7	156745	02		R	SHL	550	PASS	193	FAIL	1972	PASS	93	PASS		
8	156622	07		R	TXC	535	PASS	213	PASS	2089	PASS	88	PASS	0.00	PASS
9	156087	04	0530812	T	CLM	625	PASS	233	PASS	2434	PASS	87	PASS	0.03	PASS
10	156086	62		R	SLD	530	PASS	211	PASS	2365	PASS	93	PASS	0.37	PASS
11	155708	05		R	CLM	630	PASS	229	PASS	2371	PASS	87	PASS	0.01	PASS
12	155371	03		R	TXC	615	PASS	209	PASS	2077	PASS	85	PASS	0.00	PASS
13	155062	08		R	CLM	620	PASS	218	PASS	2170	PASS	86	PASS		
14	150007	02	7133006	T	SHL	575	PASS	229	PASS	2658	PASS	88	PASS	0.48	PASS
15	151042	03	4500429	T	TXC	625	PASS	214	PASS	2046	PASS	94	PASS	0.00	PASS
16	150680	61	4510805	T	SLD	520	PASS	200	PASS	2040	PASS	112	F NP	1.05	F80%
17	149971	61		R	SHL	530	PASS	213	PASS	2409	PASS	86	PASS	0.29	PASS
18	149315	62		R	SLD	560	PASS	222	PASS	1915	PASS	93	PASS	0.12	PASS
19	150135	07		R	TXC	610	PASS	218	PASS	3545	PASS	92	PASS	0.00	PASS
20	159331	03		R	TXC	615	PASS	218	PASS	2182	PASS	88	PASS	0.00	PASS

Figure 10 - Special Reports Printouts (Continued)
Printout 2

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT AFTER SORTING BY AC TY

AC=8

OBS	LAB NO	DIST	PROJ NO	S PT	SRC	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	157334	07	7133519	T	TXC	620	PASS	138	PASS	862	PASS	174	PASS	.00	PASS
2	150136	07		R	TXC	615	PASS	140	PASS	733	PASS	163	PASS	.00	PASS
3	150068	62		R	SLD	495	PASS	129	PASS	700	PASS	174	PASS	.67	PASS
4	150434	61		R	DXI	610	PASS	146	PASS	808	PASS	150	PASS	.00	PASS
5	150185	62		R	SLD	520	PASS	144	PASS	988	PASS	165	PASS	.77	PASS
6	159444	08	0068021	T	MCM	680	PASS	154	PASS	820	PASS	166	PASS	.00	PASS
7	159330	04		R	DXI	615	PASS	126	PASS	712	PASS	172	PASS	.17	PASS
8	159094	04	7133605	T	CLM	590	PASS	135	PASS	949	PASS	165	PASS	.02	PASS
9	157789	61	7133571	T	EXN	620	PASS	136	PASS	718	PASS	174	PASS	.04	PASS
10	156918	62	7133407	T	EXN	620	PASS	136	PASS	762	PASS	168	PASS	.01	PASS
11	156725	61	7133587	T	EXN	595	PASS	144	PASS	801	PASS	166	PASS	.00	PASS
12	156046	05	7133196	T	MCM	645	PASS	145	PASS	747	PASS	180	PASS	.00	PASS
13	156045	03	7133555	T	MCM	645	PASS	146	PASS	809	PASS	190	PASS	.00	PASS
14	155906	07		R	TXC	625	PASS	131	PASS	717	PASS	163	PASS	.00	PASS
15	155368	61		R	EXN	635	PASS	124	FAIL	1972	PASS	80	FAIL	.02	PASS
16	155523	03		R	EXN	615	PASS	156	PASS	821	PASS	156	PASS	.00	PASS
17	155061	04		R	CLM	650	PASS	135	PASS	769	PASS	160	PASS	.00	PASS
18	155055	02	7133407	T	EXN	615	PASS	154	PASS	930	PASS	142	PASS	.00	PASS
19	151344	07		R	TXC	610	PASS	137	PASS	773	PASS	157	PASS		

AC=20

OBS	LAB NO	DIST	PROJ NO	S PT	SRC	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	158205	61		R	EXN	630	PASS	208	PASS	1984	PASS	83	PASS		
2	158204	62		R	EXN	620	PASS	217	PASS	2009	PASS	83	PASS	.02	PASS
3	155181	61		R	EXN	500	PASS			2499		70	FAIL	.61	PASS
4	150196	62	4240408	T	EXN	550	PASS	192	F80%	1975	PASS	100	PASS	.37	PASS
5	149681	61		R	EXN	640	PASS	220	PASS	1891	PASS			.00	PASS
6	148311	61		R	EXN	530	PASS	223	PASS	1965	PASS	83	PASS		
7	156603	62		R	EXN	600	PASS	214	PASS	1934	PASS	83	PASS	.02	PASS
8	156085	02		R	SHL	575	PASS	196	FAIL	1941	PASS	90	PASS		
9	155958	61		R	EXN	655	PASS	200	PASS	1748	PASS	90	PASS	.09	PASS
10	155522	61	4540408	R	EXN	640	PASS	226	PASS	2059	PASS	75	PASS	.03	PASS
11	159300	62		R	EXN	640	PASS	228	PASS	2189	PASS	78	PASS	.01	PASS
12	158907	61		R	EXN	650	PASS	211	PASS	1947	PASS	84	PASS	.00	PASS
13	157799	03		R	EXN	635	PASS	204	PASS	1903	PASS	85	PASS		
14	148309	62		R	EXN	520	PASS	228	PASS	2102	PASS	79	PASS	.37	PASS

Figure 10 - Special Reports Printouts (Continued)
Printout 2

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT AFTER SORTING BY AC TY

AC=40

OBS	LAB NO	DIST	PROJ NO	S PT	SRC	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	158064	02		R	SHL	570	PASS	286	PASS	4370	PASS	62	PASS	.00	PASS
2	157019	02		R	SHL	600	PASS	283	PASS	4460	PASS	59	PASS		
3	156919	61	2500119	T	EXN	670	PASS	292	PASS	4230	PASS	54	PASS	.01	PASS
4	156880	61	8521211	T	EXN	655	PASS	300	PASS	4204	PASS			.02	PASS
5	156728	61		R	EXN	650	PASS	275	PASS	3962	PASS				
6	155548	02		R	SHL	590	PASS	298	PASS	5045	PASS	53	PASS	.16	PASS
7	155521	62	0300212	T	EXN	665	PASS	312	PASS	4185	PASS	49	PASS	.00	PASS
8	155505	61		R	EXN	660	PASS	287	PASS	4039	PASS	50	PASS	.03	PASS
9	155351	61		R	EXN	670	PASS	273	PASS	3713	PASS	52	PASS	.02	PASS
10	151854	62		R	EXN	640	PASS	303	PASS	3854	PASS	50	PASS		
11	151856	62	2700107	T	EXN	675	PASS	303	PASS	3911	PASS			.06	PASS
12	151137	03	8530909	T	EXN	655	PASS	300	PASS	3696	PASS	50	PASS	.11	PASS
13	150843	61		R	EXN	690	PASS	290	PASS	4026	PASS	51	PASS	.00	PASS
14	149957	61		R	EXN	625	PASS	310	PASS	3937	PASS	52	PASS		
15	150435	61	7141895	T	EXN	675	PASS	288	PASS	3854	PASS	52	PASS	.12	PASS
16	148266	02		R	SHL	590	PASS	290	PASS	4179	PASS	58	PASS	.00	PASS
17	143312	62		R	EXN	540	PASS	298	PASS	4050	PASS	52	PASS		
18	159402	61	2650121	T	EXN	670	PASS	290	PASS	3949	PASS	55	PASS	.06	PASS
19	157466	62		R	EXN	655	PASS	301	PASS	4523	PASS	40	FAIL	.07	PASS

Figure 10 - Special Reports Printouts (Continued)
Printout 2

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT AFTER SORTING BY SOURC

SRC=CLM

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	155731	3	04	4510139	T	665	PASS	335	PASS	3805	PASS	61	PASS	.01	PASS
2	155063	3	05		R	620	PASS	286	PASS	4605	PASS	63	PASS		
3	150154	3	08		R	630	PASS	301	PASS	4599	PASS	63	PASS	.03	PASS
4	157221	5	C5	0530812	T	450	PASS	251	PASS	2663	PASS	83	PASS	.02	PASS
5	156087	5	04	0530812	T	625	PASS	233	PASS	2434	PASS	87	PASS	.03	PASS
6	155908	5	05		R	630	PASS	229	PASS	2371	PASS	87	PASS	.01	PASS
7	155062	5	08		R	620	PASS	218	PASS	2170	PASS	86	PASS		
8	159094	8	C4	7133605	T	590	PASS	135	PASS	949	PASS	165	PASS	.02	PASS
9	155061	8	C4		R	650	PASS	135	PASS	769	PASS	160	PASS	.00	PASS

SRC=DXI

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	150434	8	61		R	610	PASS	146	PASS	808	PASS	150	PASS	.00	PASS
2	159330	8	04		R	615	PASS	126	PASS	712	PASS	172	PASS	.17	PASS

Figure 10 - Special Reports Printouts (Continued)
Printout 2

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT AFTER SORTING BY SOURC

SRC=EXN

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	157789	8	61	7133571	T	620	PASS	136	PASS	718	PASS	174	PASS	.04	PASS
2	156918	8	62	7133407	T	620	PASS	136	PASS	762	PASS	168	PASS	.01	PASS
3	156725	8	61	7133587	T	595	PASS	144	PASS	801	PASS	166	PASS	.00	PASS
4	155368	8	61		R	635	PASS	124	FAIL	1972	PASS	80	FAIL	.02	PASS
5	155523	8	03		R	615	PASS	156	PASS	821	PASS	156	PASS	.00	PASS
6	155055	8	02	7133407	T	615	PASS	154	PASS	930	PASS	142	PASS	.00	PASS
7	158205	20	61		R	630	PASS	208	PASS	1984	PASS	83	PASS		
8	158204	20	62		R	620	PASS	217	PASS	2009	PASS	83	PASS	.02	PASS
9	155181	20	61		R	500	PASS			2499		70	FAIL	.61	PASS
10	150196	20	62	4240408	T	550	PASS	192	F80%	1975	PASS	100	PASS	.37	PASS
11	149681	20	61		R	640	PASS	220	PASS	1891	PASS			.00	PASS
12	148311	20	61		R	530	PASS	223	PASS	1965	PASS	83	PASS		
13	156603	20	62		R	600	PASS	214	PASS	1934	PASS	83	PASS	.02	PASS
14	155958	20	61		R	655	PASS	200	PASS	1748	PASS	90	PASS	.09	PASS
15	155522	20	61	4540408	R	640	PASS	226	PASS	2059	PASS	75	PASS	.03	PASS
16	159300	20	62		R	640	PASS	228	PASS	2189	PASS	78	PASS	.01	PASS
17	158907	20	61		R	650	PASS	211	PASS	1947	PASS	84	PASS	.00	PASS
18	157799	20	03		R	635	PASS	204	PASS	1903	PASS	85	PASS		
19	148309	20	62		R	520	PASS	228	PASS	2102	PASS	79	PASS	.37	PASS
20	156919	40	61	2500119	T	670	PASS	292	PASS	4230	PASS	54	PASS	.01	PASS
21	156880	40	61	8521211	T	655	PASS	300	PASS	4204	PASS			.02	PASS
22	156728	40	61		R	650	PASS	275	PASS	3962	PASS				
23	155521	40	62	0300212	T	665	PASS	312	PASS	4185	PASS	49	PASS	.00	PASS
24	155505	40	61		R	660	PASS	287	PASS	4039	PASS	50	PASS	.03	PASS
25	155351	40	61		R	670	PASS	273	PASS	3713	PASS	52	PASS	.02	PASS
26	151854	40	62		R	640	PASS	303	PASS	3854	PASS	50	PASS		
27	151856	40	62	2700107	T	675	PASS	303	PASS	3911	PASS			.06	PASS
28	151137	40	03	8530909	T	655	PASS	300	PASS	3696	PASS	50	PASS	.11	PASS
29	150843	40	61		R	690	PASS	290	PASS	4026	PASS	51	PASS	.00	PASS
30	149957	40	61		R	625	PASS	310	PASS	3937	PASS	52	PASS		
31	150435	40	61	7141899	T	675	PASS	288	PASS	3854	PASS	52	PASS	.12	PASS
32	148312	40	62		R	540	PASS	298	PASS	4050	PASS	52	PASS		
33	159402	40	61	2650121	T	670	PASS	290	PASS	3949	PASS	55	PASS	.06	PASS
34	157466	40	62		R	655	PASS	301	PASS	4523	PASS	40	FAIL	.07	PASS

SRC=FNT

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	157827	3	02	2020110	T	630	PASS	306	PASS	4357	PASS	62	PASS	0	PASS

Figure 10 - Special Reports Printouts (Continued)
Printout 2

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT AFTER SORTING BY SOURC

SRC=LIN

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	156811	3	04	P065870	T	655	PASS	296	PASS	3898	PASS	66	PASS	.08	PASS
2	156089	3	05	0080929	T	655	PASS	294	PASS	4166	PASS	62	PASS	.01	PASS
3	155550	3	08	0068663	T	660	PASS	305	PASS	4039	PASS	70	PASS	.03	PASS
4	151557	3	08	1180208	T	640	PASS	298	PASS	3924	PASS	64	PASS	.05	PASS
5	150155	3	04	750114	T	655	PASS	287	PASS	3943	PASS	66	PASS	.00	PASS
6	150433	3	04	4170212	T	670	PASS	319	PASS	5121	PASS	59	PASS	.02	PASS
7	149485	3	05	4510810	T	645	PASS	282	PASS	3444	F80%	71	PASS	.08	PASS

SRC=MCM

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	159010	5	08	4170202	T	650	PASS	226	PASS	2446	PASS	92	PASS	0	PASS
2	158851	5	04	4170103	T	455	PASS	222	PASS	2412	PASS	91	PASS	0	PASS
3	159444	8	08	0068021	T	680	PASS	154	PASS	820	PASS	166	PASS	0	PASS
4	156046	8	05	7133196	T	645	PASS	145	PASS	747	PASS	180	PASS	0	PASS
5	156045	8	03	7133555	T	645	PASS	146	PASS	809	PASS	190	PASS	0	PASS

SRC=SHL

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	156857	5	02		R	580	PASS	218	PASS	2207	PASS	86	PASS	.03	PASS
2	156745	5	02		R	550	PASS	193	FAIL	1972	PASS	93	PASS		
3	150007	5	02	7133006	T	575	PASS	229	PASS	2658	PASS	88	PASS	.48	PASS
4	149971	5	61		R	530	PASS	213	PASS	2409	PASS	86	PASS	.29	PASS
5	156085	20	02		R	575	PASS	196	FAIL	1941	PASS	90	PASS		
6	158064	40	02		R	570	PASS	286	PASS	4370	PASS	62	PASS	.00	PASS
7	157019	40	02		R	600	PASS	283	PASS	4460	PASS	59	PASS		
8	155548	40	02		R	590	PASS	298	PASS	5045	PASS	53	PASS	.16	PASS
9	148266	40	02		R	590	PASS	290	PASS	4179	PASS	58	PASS	.00	PASS

Figure 10 - Special Reports Printouts (Continued)
Printout 2

THE FOLLOWING IS AN EXAMPLE OF THE OUTPUT AFTER SORTING BY SOURC

SRC=SLD

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	149316	3	62		R	555	PASS	299	PASS	3810	PASS	65	PASS		
2	156086	5	62		R	530	PASS	211	PASS	2365	PASS	93	PASS	0.37	PASS
3	150680	5	61	4510805	T	520	PASS	200	PASS	2040	PASS	112	F NP	1.05	F80%
4	149315	5	62		R	560	PASS	222	PASS	1915	PASS	93	PASS	0.12	PASS
5	150068	8	62		R	495	PASS	129	PASS	700	PASS	174	PASS	0.67	PASS
6	150185	8	62		R	520	PASS	144	PASS	988	PASS	165	PASS	0.77	PASS

SRC=TXC

OBS	LAB NO	AC	DIST	PROJ NO	S PT	FLPT	RM1	V275SF	RM2	V140P	RM3	PEN77	RM4	TFLOSS	RM5
1	157374	3	07	0320311	T	630	PASS	304	PASS	4650	PASS	60	PASS	.00	PASS
2	157296	3	03		R	615	PASS	290	PASS	4217	PASS	62	PASS	.00	PASS
3	156693	3	61		R	600	PASS	284	PASS	4077	PASS	64	PASS	.00	PASS
4	155981	3	08		R	610	PASS	283	PASS	3969	PASS	65	PASS	.00	PASS
5	155549	3	02		R	585	PASS	296	PASS	4386	PASS	62	PASS	.01	PASS
6	150008	3	61	4500429	T	620	PASS	317	PASS	5070	PASS	60	PASS	.01	PASS
7	149317	3	07		R	600	PASS	303	PASS	4211	PASS	63	PASS	.00	PASS
8	158222	5	07		R	610	PASS	210	PASS	2089	PASS	90	PASS	.00	PASS
9	157406	5	03		R	615	PASS	207	PASS	2059	PASS	91	PASS	.00	PASS
10	156622	5	07		R	585	PASS	213	PASS	2089	PASS	88	PASS	.00	PASS
11	155371	5	03		R	615	PASS	209	PASS	2077	PASS	85	PASS	.00	PASS
12	151042	5	03	4500429	T	625	PASS	214	PASS	2046	PASS	94	PASS	.00	PASS
13	150135	5	07		R	610	PASS	218	PASS	3545	PASS	92	PASS	.00	PASS
14	159331	5	03		R	615	PASS	218	PASS	2182	PASS	88	PASS	.00	PASS
15	157334	8	07	7133519	T	620	PASS	138	PASS	862	PASS	174	PASS	.00	PASS
16	150136	8	07		R	615	PASS	140	PASS	733	PASS	163	PASS	.00	PASS
17	155906	8	07		R	625	PASS	131	PASS	717	PASS	163	PASS	.00	PASS
18	151344	8	07		R	610	PASS	137	PASS	773	PASS	157	PASS		

Figure 10 - Special Reports Printouts (Continued)
Printout 2

THE FOLLOWING IS AN EXAMPLE OF THE STATISTICAL EVALUATION OF DAT

AC=3

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
FLPT	19	628.421053	29.956108	897.368421	11940.000000	16152.63158	555.000000	670.000000	4.767
V275SF	19	299.210526	13.656821	186.508772	5685.000000	3357.15789	282.000000	335.000000	4.564
V140P	19	4225.842105	433.749193	188138.362573	80291.000000	3386490.52632	3444.000000	5121.000000	10.264
PEN77	19	63.578947	3.132549	9.812865	1208.000000	176.63158	59.000000	71.000000	4.927
TFLOSS	17	0.019412	0.026803	0.000718	0.330000	0.01149	0.0	0.080000	138.074

AC=5

FLPT	20	577.500000	56.603422	3203.947368	11550.000000	60875.00000	450.000000	650.000000	9.801
V275SF	20	217.700000	12.524082	156.852632	4354.000000	2980.20000	193.000000	251.000000	5.753
V140P	20	2307.450000	363.177566	131897.944737	46149.000000	2506360.95000	1915.000000	3545.000000	15.739
PEN77	20	90.250000	6.016425	36.197368	1805.000000	687.75000	83.000000	112.000000	6.666
TFLOSS	18	0.133333	0.271228	0.073565	2.400000	1.25060	0.0	1.050000	203.421

AC=8

FLPT	19	611.578947	42.231262	1783.479532	11620.000000	32102.63158	495.000000	680.000000	6.905
V275SF	19	139.789474	9.204944	84.730994	2656.000000	1525.15789	124.000000	156.000000	6.585
V140P	19	862.684211	280.870878	78868.450292	16391.000000	1419992.10526	700.000000	1972.000000	32.558
PEN77	19	161.315789	22.425315	502.894737	3065.000000	9052.10526	80.000000	190.000000	13.902
TFLOSS	18	0.094444	0.231700	0.053685	1.700000	0.91264	0.0	0.770000	245.330

AC=20

FLPT	14	598.923571	53.535702	2866.071429	8385.000000	37258.928571	500.000000	655.000000	8.939
V275SF	13	212.846154	12.225971	149.474359	2767.000000	1793.692308	192.000000	228.000000	5.744
V140P	14	2010.428571	174.248149	30362.417582	28146.000000	394711.428571	1748.000000	2499.000000	8.667
PEN77	13	83.307692	7.442945	55.397436	1083.000000	664.769231	70.000000	100.000000	8.934
TFLOSS	10	0.152000	0.217245	0.047196	1.520000	0.424760	0.0	0.610000	142.925

AC=40

FLPT	19	639.210526	41.608732	1731.286550	12145.000000	31163.15789	540.000000	690.000000	6.509
V275SF	19	293.631579	10.584110	112.023392	5579.000000	2016.42105	273.000000	312.000000	3.605
V140P	19	4115.105263	321.554366	103397.210526	78187.000000	1861149.78947	3696.000000	5045.000000	7.814
PEN77	16	52.437500	4.912145	24.129167	839.000000	361.93750	40.000000	62.000000	9.368
TFLOSS	14	0.047143	0.051803	0.002684	0.660000	0.03489	0.0	0.160000	109.884

Figure 10 - Special Reports Printouts

Printout 3

APPENDIX A

Card and Record Layout Forms

IBM

INTERNATIONAL BUSINESS MACHINES CORPORATION

MULTIPLE-CARD LAYOUT FORM

GX24-6599-0
Printed in U.S.A. (Rept. 1/70)

Company ______________

Application *Submitter Name* by ______________ Date ______________ Job No. ______________ Sheet No. ______________

SUBMITTER CODE (columns 1–3)	SUBMITTER NAME (columns 4–66)	(columns 67–80)

IBM

INTERNATIONAL BUSINESS MACHINES CORPORATION

MULTIPLE-CARD LAYOUT FORM

GX24-6599-0
Printed in U.S.A. (Rept. 1/70)

Company ______________________

Application *Specifications* ______ by ______ Date ______ Job No. ______ Sheet No. ______

CARD NO.	TEST TYPE	DESCRIPTION OF MATERIAL	MATERIAL SPECIFICATIONS
9 (1)	9 9 9 (2 3 4)	9 … 9 (5–57)	9 … 9 (58–80)

CARD NO.	TEST TYPE	MATERIAL SPECIFICATIONS (CONTINUED AS NEEDED)
9 (1)	9 9 9 (2 3 4)	9 … 9 (5–80)

CARD NO.	TEST TYPE	
9 (1)	9 9 9 (2 3 4)	9 … 9 (5–80)

CARD NO.	TEST TYPE	
9 (1)	9 9 9 (2 3 4)	9 … 9 (5–80)

CARD NO.	TEST TYPE	
9 (1)	9 9 9 (2 3 4)	9 … 9 (5–80)

CARD NO.	TEST TYPE	
9 (1)	9 9 9 (2 3 4)	9 … 9 (5–80)

IBM INTERNATIONAL BUSINESS MACHINES CORPORATION

GX24-6599-0
Printed in U.S.A. (Rept. 1/70)

MULTIPLE-CARD LAYOUT FORM

Company _____ _____

Application Test Data _____ by _____ Date _____ Job No. _____ Sheet No. _____

CARD #1

1	2-7	8-10	11-13	14-15	16-21	22-28	29-34	35	36-80
9	LAB. NO. (Numeric)	TEST TYPE (Numeric)	SUB. BY CODE (Num)	DIST. (Num)	DATE SAMPLED (Numeric)	PROJECT NUMBER (Numeric)	IDENT. (ALPHA-NUMERIC)	PURP. CODE	TEST DATA (CONTINUED AS NEEDED ON NEXT CARD)

HEADER INFORMATION

1. Proj. Cont.
2. Verif.
3. Accept.
4. Check
5. Resample
6. Source Appr.
7. Design
8. Rec. Test

CARD #2

1	2-7	8-79	80
9	LAB. NO. (Numeric)	TEST DATA (CONTINUED AS NEEDED ON NEXT CARD)	SPEC. CODE

1. Std. Spec.
2. Contr. Spec., Pass
3. Contr. Spec., Fail

CARD #3

1	2-7	8-80
9	LAB. NO. (Numeric)	

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Page 1 of 1

Record Name

APPLICATION *Submitter*

Date

SUBMITTER CODE

SUBMITTER NAME

CH▶
HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

CH▶
HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F
DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

CH▶
HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF
DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

CH▶
HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF
DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used	
Input To	Output From

Recording Mode
Records per Block
Characters per Record
Label Records are
File Identification
Retention Cycle
Organization Type

Date	Revisions By

CHARACTERISTIC CODES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Cement Test Data*

Page 1 of 1
Date

Record positions 0–63 (HEX 00–3F):

LAB NUMBER | TEST TYPE | SUBMITTED BY | CODE | DISTRICT | DATE SAMPLED | PROJECT NUMBER | IDENTIFICATION | PURPOSE | TIME OF SET | VICAT | TIME OF SET | GILMORE I. | TIME OF SET | GILMORE F. | SOUNDNESS | NORMAL CONSISTENCY % | AUTOCLAVE EXPANSION % | FINENESS AIR. PERME. | FINENESS TURBIDMETER | FINENESS % PASS #325

CH▶
HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

Record positions 64–127 (HEX 40–7F):

AIR. CONT. % | SPEC. GRAVITY | FALSE SET % | TENSILE STG. 3 DAY | TENSILE STG. 7 DAY | COMP. STG. 24 HOUR | COMP. STG. 72 HOUR | COMP. STG. 7 DAY | LOSS OF IGNITION | SULFUR TRIOXIDE | SILICONE DIOXIDE | IRON & ALUM. OXIDE | CALCIUM OXIDE | MAGNES. OXIDE | TOTAL % | INSOL. RES. | TRICAL. ALUM. | TRICAL. SILI. | FERRIC OXIDE | ALUM. OXIDE | RATIO FERRIC TO ALUM.

CH▶
HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F
DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

Record positions 128–191 (HEX 80–BF):

SPEC. CODE

CH▶
HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF
DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

Record positions 192–255 (HEX C0–FF):

CH▶
HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF
DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used	
Input To	Output From

Recording Mode
Records per Block
Characters per Record
Label Records are
File Identification
Retention Cycle
Organization Type

Date	Revisions By

BYTES
8 - double word
4 - word
2 - halfword
1 - 2 packed-decimal digits

CHARACTERISTIC CODES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Cement Specifications*

Page 1 of 2

Date

DESCRIPTION

Positions HEX 00–3F (DEC 0–63):

- (00)
- TYPE (01)
- TEST CODE (02–03)
- (04–38)
- MIN.
- VICAT. MAX.
- VICAT. MIN.

CH ▶

HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F

DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

Positions HEX 40–7F (DEC 64–127):

- GILMORE INIT. MAX
- GILMORE INIT. MIN.
- GILMORE FINAL
- MAX. GILMORE FINAL
- MIN. SOUND.
- MAX. SOUND.
- MIN. NORMAL CONS. %
- MAX. NORMAL CONS. %
- MIN. AUTO. EXP. %
- MAX. AUTO. EXP. %
- MIN. AIR. PERM.
- MAX. AIR. PERM.
- MIN. TURBID.
- MAX. TURBID.
- MIN. PASS #325
- MAX. PASS #325
- MIN. AIR. CONT.
- MAX. AIR. CONT.
- MIN. S.G.
- MAX. S.G.
- MIN.

CH ▶

HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

Positions HEX 80–BF (DEC 128–191):

- FALSE SET MAX
- FALSE SET MIN.
- 3 DAY MAX.
- 3 DAY MIN.
- 7 DAY MAX.
- 7 DAY MIN.
- 24 HOUR MAX.
- 24 HOUR MIN.
- 72 HOUR MAX.
- 72 HOUR MIN.
- 7 DAY COMP. STG. MAX.
- 7 DAY COMP. STG. MIN.
- IG. LOSS MAX.
- IG. LOSS MIN.
- #1 SUL. TRI. MAX.
- #2 SUL. TRI. MAX.
- MIN. SILICON DIOXIDE
- MAX. SILICON DIOXIDE
- MIN. IRON & ALUM.
- MAX. IRON & ALUM.
- MIN. CAL. OXIDE

CH ▶

HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF

DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

Positions HEX C0–FF (DEC 192–255):

- MAX. CAL. OXIDE
- MIN. MAG. OXIDE
- MAX. MAG. OXIDE
- MIN. TOTAL %
- MAX. TOTAL %
- MIN. INSOL. RES.
- MAX. INSOL. RES.
- MIN. TRI. ALUM.
- MAX. TRI. ALUM.
- MIN. TRI. SIL.
- MAX. TRI. SIL.
- MIN. FERRIC OXIDE
- MAX. FERRIC OXIDE
- MIN. ALU. OXIDE
- MAX. ALU. OXIDE
- MIN. RATIO FO/AO
- MAX. RATIO FO/AO

CONTINUED →

CH ▶

HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF

DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used	
Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

BYTES
8 – double word
4 – word
2 – halfword
1 – 2 packed-decimal digits

CHARACTERISTIC CODES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Liquid Asphalts Specifications*

Page 1 of 2

Date

DESCRIPTION

Header fields: TYPE; TEST CODE; MIN. FLASH PT. T.O.C. FULL PAY.; MAX. FLASH PT. T.O.C. FULL PAY.; MIN.

Bytes 00–3F (0–63)

HEX	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
DEC	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63

Fields: FLASH PT. T.O.C. / PART. PAY. / MAX. / FLASH PT. PART. PAY. / T.O.C. / MIN. / DIST.@374F / FULL PAY. / MAX. / DIST.@374F / FULL PAY. / MIN. / DIST.@374F / PART. PAY. / MAX. / DIST.@374F / PART. PAY. / MIN. / DIST.@437F / FULL PAY. / MAX. / DIST.@437F / FULL PAY. / MIN. / DIST@437F / PART. PAY. / MAX. / DIST@437F / PART. PAY. / MIN. / DIST@500F / FULL PAY. / MAX. / DIST.@500F / FULL PAY. / MIN. / DIST.@500F / PART. PAY. / MAX. / DIST@500F / PART. PAY. / MIN. / DIST@600F / FULL PAY. / MAX. / DIST.@600F / FULL PAY. / MIN. / DIST.@600F / PART. PAY. / MAX. / DIST.@600F / PART. PAY. / MIN. RESID / DIST. %VOL. / FULL PAY. / MAX. RESID / DIST. %VOL. / FULL PAY. / MIN. RESID / DIST. %VOL. / PART. PAY. / MAX. RESID. / DIST. %VOL.

Bytes 40–7F (64–127)

HEX	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F
DEC	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127

Fields: PART. PAY. / MIN. / GRAV. A.P. / PART. PAY. / MAX. / GRAV. A.P. / FULL PAY. / MIN. / GRAV. A.P. / PART. PAY. / MAX. GRAV. / A.P.I. / PART. PAY. / MIN SFS / VISC. 77F / FULL PAY. / MAX. VISC / SFS 77F / FULL PAY. / MIN. VISC. / SFS 77F / PART. PAY. / MAX. VISC. / SFS 77F / PART. PAY. / MIN. VISC / SFS 122F / FULL PAY. / MAX. VISC. / SFS 122F / FULL PAY. / MIN. VISC / SFS 122F / PART. PAY. / MAX. VISC / SFS 122F / PART. PAY. / MIN. VISC / SFS 140F / FULL PAY. / MAX. VISC / SFS 140F / FULL PAY. / MIN. VISC / SFS 140F / PART. PAY. / MAX. VISC / SFS 140F / PART. PAY. / MIN. RESID / DIST. % WT. / FULL PAY. / MAX. RESID / DIST. % WT / FULL PAY. / MIN. RESID / DIST. % WT / PART. PAY. / MAX. RESID / DIST. % WT / PART. PAY. / MIN. / MOD. MISC. / FULL PAY.

Bytes 80–BF (128–191)

HEX	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF	B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF
DEC	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191

Fields: MAX. / MOD. MISC / FULL PAY. / MIN. / MOD. MISC / PART. PAY. / MAX. / MOD. MISC / PART. PAY. / MIN. CEM. MIX / FULL PAY. / MAX. / CEM. MIX / FULL PAY. / MIN. / CEM. MIX / PART. PAY. / MAX. / CEM. MIX / PART. PAY. / MIN. SETTLE / 5 DAY / FULL PAY. / MAX. SETTLE / 5 DAY / FULL PAY. / MIN. SETTLE / 5 DAY / PART. PAY. / MAX. SETTLE / 5 DAY / PART. PAY. / MIN. / SIEVE TEST / FULL PAY. / MAX. / SIEVE TEST / FULL PAY. / MIN. / SIEVE TEST / PART. PAY. / MAX. / SIEVE TEST / PART. PAY. / MIN. / ADHESION / FULL PAY. / MAX. / ADHESION / FULL PAY. / MIN. / ADHESION / PART. PAY. / MAX. / ADHESION / PART. PAY. / MIN. PART. CHG. / MAX. PART. CHG.

Bytes C0–FF (192–255)

HEX	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF
DEC	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Remarks ______

Where Used	
Input To	Output From

Recording Mode ______

Records per Block ______

Characters per Record ______

Label Records are ______

File Identification ______

Retention Cycle ______

Organization Type ______

Date	Revisions By

BYTES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Liquid Asphalts Test Data*

Page 1 of 1

Date

Line 1 fields (positions 0–63): LAB NO. | TYPE TEST | SUBMITTED BY CODE | DISTRICT NO. | DATE SAMPLED | PROJECT NO. | IDENTIFICATION | PURPOSE | SOURCE | P.O. OR C.D.O. NO. | FLASH PT. T.O.P., F | DIST. % OFF @ 374°F. | DIST. % OFF @ 437°F | DIST. % OFF @ 500°F. | DIST. % OFF @ 600°F | RESIDUE FROM DIST. % BY VOL. | GRAV. A.P.I.

CH▶

HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F

DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

CONT'D.

Line 2 fields (positions 64–127): @ 60°F | SPECIFIC GRAVITY @ 60°F | WT./GALLON @ 60°F, LBS. | VISC., SFS @ 77°F | VISC., SFS @ 122°F | VISC., SFS @ 140°F | RESIDUE FROM DIST. % BY WT. | MOD. | MISC., % | CEMENT MIXING, % | SETTLE. 5 DAYS, % | SIEVE TEST, % | ADHESION % | PART. CHG | OIL DIST. BY VOL. | DIMULS. 35 ML. OF .02NCACL2,% | TEST ON RESIDUE PEN. @77F | TEST ON RESIDUE DUCT. @77F | SOL. IN CCL4,% | VISC. @ 275°F | SPEC. CODE

CH▶

HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

CH▶

HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF

DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

CH▶

HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF

DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used: Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Aggregate Spec. (cont'd)*

Page 2 of 2

Date

CONT'D. →

	MAX. OTTAWA SAND 7DAY	MIN. OTTAWA SAND 28 DAY	MAX. OTTAWA SAND 28 DAY	MIN. SAMPLE SAND 7 DAY	MAX. SAMPLE SAND 7 DAY	MIN. SAMPLE SAND 28 DAY	MAX. SAMPLE SAND 28 DAY	MIN. % OTTAWA STRENGTH 7DAY	MAX. % OTTAWA STRENGTH 7 DAY	MIN. % OTTAWA STRENGTH 28 DAY	MAX. % OTTAWA STRENGTH 28 DAY	CONT'D.

CH▶

HEX ~~00 01 02 03 04 05~~ 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F

DEC ~~0 1 2 3 4 5~~ 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

256 260 270 280 290 300 308 310

DESCRIPTION (CENTERED)

CH▶

HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

320 330 340 350 360 361

CH▶

HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF

DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

CH▶

HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF

DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used: Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

BYTE

CHARACTERISTIC CODES

HEX DEC

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Aggregate Specifications*

Page 1 of 2
Date

Field	Description
TYPE TEST CODE	
DESCRIPTION	
MIN. 2½"	
MAX. 2½"	
MIN. 2"	

HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

CONT'D. → MAX. 2" | MIN. 1½" | MAX. 1½" | MIN. 1¼" | MAX. 1¼" | MIN. 1" | MAX. 1" | MIN. 3/4" | MAX. 3/4" | MIN. ½" | MAX. ½" | MIN. 3/8" | MAX. 3/8" | MIN. #4 | MAX. #4 | MIN. #8 | MAX. #8 | MIN. #10 | MAX. #10 | MIN. #16 | MAX. #16

HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F
DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

CONT'D. → MIN. #30 | MAX. #30 | MIN. #40 | MAX. #40 | MIN. #50 | MAX. #50 | MIN. #80 | MAX. #80 | MIN. #100 | MAX. #100 | MIN. #200 | MAX. #200 | MIN. #270 | MAX. #270 | MIN. S.G. | MAX. S.G.

HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF
DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

CONT'D. → MIN. SOFT FRAG | MAX. SOFT FRAG | MIN. CLAY LUMP | MAX. CLAY LUMP | MIN. DELE | MAX. DELE | MIN. COAT | MAX. COAT | MIN. ABR LOSS | MAX. ABR LOSS | MIN. SOUND LOSS | MAX. SOUND LOSS | MIN. ABS LOSS | MAX. ABS LOSS | MIN. DEC LOSS | MAX. DEC LOSS | MIN. LIQUID LIMIT | MAX. LIQUID LIMIT | MIN. PLAS LIMIT | MAX. PLAS LIMIT | MIN. OTTAWA SAND 7 DAY | CONTD. →

HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF
DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used	
Input To	Output From

Recording Mode
Records per Block
Characters per Record
Label Records are
File Identification
Retention Cycle
Organization Type

Date	Revisions By

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Aggregate Test Data*

Page 1 of 1

Date

Record line 1 (positions 00–3F hex / 0–63 dec): LAB NUMBER | TYPE TEST | SUBMITTED BY | DISTRICT CODE | DATE SAMPLED | PROJECT NUMBER | IDENTIFICATION | PURPOSE | 2½" | 2" | 1½" | 1¼" | 1" | 3/4" | ½" | 3/8" | NO. 4 | NO. 8 | CONT'D.

CH▶

HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F

DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

Record line 2 (positions 40–7F hex / 64–127 dec): NO. 8 | NO. 10 | NO. 16 | NO. 30 | NO. 40 | NO. 50 | NO. 80 | NO. 100 | NO. 200 | NO. 270 | SPEC. CODE COLOR, [illegible] | SPECIFIC GRAVITY | WT/CF DRY RODDED | WT/CF DRY LOOSE | SOFT FRAG. % | CLAY LUMP % | DELET. MATER. % | COATING OF PART % | ABB. LOSS % | SOUND. LOSS % | ABSORB. % | DECAN. LOSS % | CONT.

CH▶

HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

Record line 3 (positions 80–BF hex / 128–191 dec): LIQUID LIMIT | PLASTIC INDEX | OTTAWA SAND 7 DAY | OTTAWA SAND 28 DAY | SAMPLE SAND 7 DAY | SAMPLE SAND 28 DAY | % OTTAWA STRENGTH 7 DAY | % OTTAWA STRENGTH 28 DAY

CH▶

HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF

DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

Record line 4 (positions C0–FF hex / 192–255 dec):

CH▶

HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF

DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used: Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

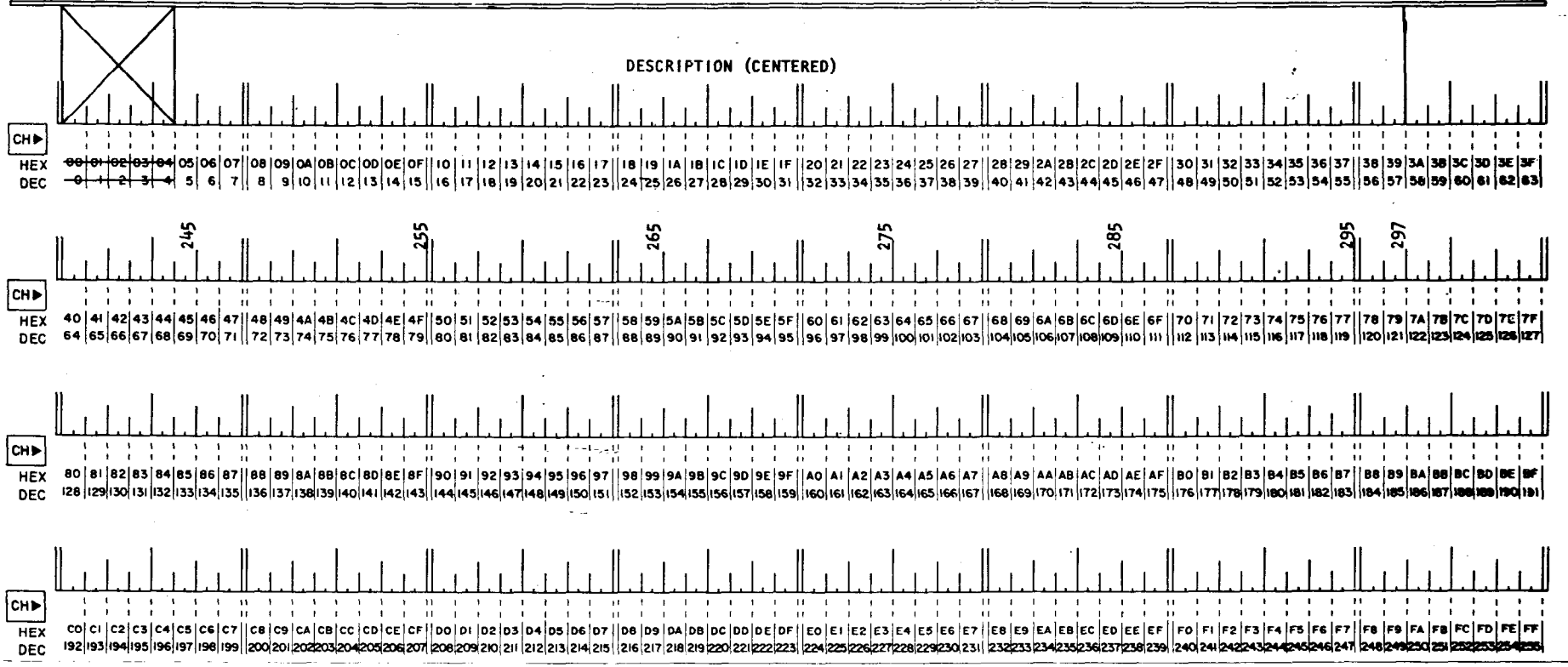
LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION Cement Specs. (cont'd)

Date

DESCRIPTION (CENTERED)



Remarks

Where Used	
Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

BYTES
8 - double word
4 - word
2 - halfword
1 - 2 packed-decimal digits

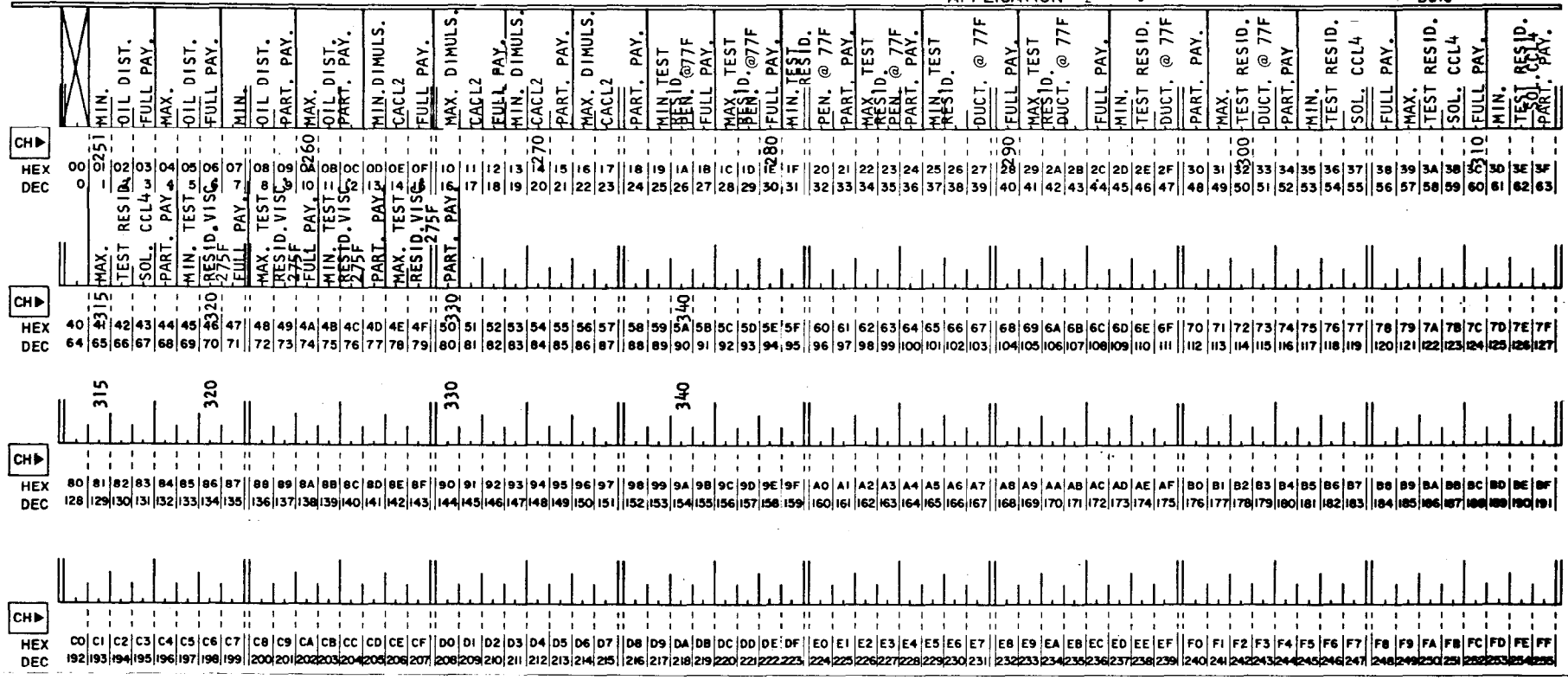
CHARACTERISTIC CODES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Liquid Asphalts Specifications (cont'd)*

Date



Remarks	Where Used: Input To	Where Used: Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

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BYTES
8 - double word
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1 - 2 packed decimal digits

CHARACTERISTIC CODES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Asphalt Cement Test Data*

Page 1 of 1

Date

HEX	DEC	Field
00	0	(crossed out)
01–06	1–6	LAB NO.
07–09	7–9	TYPE TEST
0A–0B	10–11	SUBMITTED BY
0C	12	CODE
0D–0E	13–14	DISTRICT NO.
0F–14	15–20	DATE SAMPLED
15–1B	21–27	PROJECT NO.
1C–21	28–33	IDENTIFICATION
22	34	PURPOSE
23–25	35–37	SOURCE
26–2C	38–44	P.O. OR C.D.O. NO.
2D–2F	45–47	SOFTENING POINT R&B, °F.
30–34	48–52	SPECIFIC GRAVITY, 77°F.
35–39	53–57	SPECIFIC GRAVITY, 60°F.
3A–3D	58–61	WT./GALLON @ 60°F., LBS.
3E–3F	62–63	FLASH POINT C.O.C., °F.
41–43	65–67	VISCOSITY – SFS @ 275°F.
44–47	68–71	VISCOSITY ABSOLUTE @ 140°F. POISES
48–4A	72–74	PEN.@32°F 200G. 60SEC.
4B–4D	75–77	PEN.@39.2°F 200G. 60SEC.
4E–50	78–80	PEN.@77°F 100G. 5 SEC.
51–53	81–83	PEN.@115°F 50G. 5SEC.
54–56	84–86	DUCT.@ 39.2°F. 5CM./MIN. CM.
57–5A	87–90	DUCTILITY @77°F. 5 CM./MIN CM.
5B–5D	91–93	TFOT. LOSS % @325°F. 5 HOURS
5E–60	94–96	TFOT. RESID. PEN @ 77°F.
61–63	97–99	TFOT. RESID. PEN % ORIGINAL
64–67	100–103	TFOT. RESID. DUCT. @ 77°F 5CM./MIN. CM.
68–6B	104–107	SOLUBILITY IN CS2, %
6C	108	HOMOG. TEST
6D–6F	109–111	MIXING TEMP., °F.
73	115	SPEC. CODE

Remarks

Where Used	
Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Asphalt Cement Specifications*

Date

DESCRIPTION

HEX	DEC	Description
00	0	VISC., SFS
01	1	TYPE / FULL PAY.
02	2	TEST / MAX.
03	3	CODE / VISC., SFS
04	4	FULL PAY.
05	5	MIN.
06	6	VISC., SFS
07	7	PART. PAY.
08	8	MAX.
09	9	VISC., SFS
0A	10	PART. PAY.
0B	11	MIN.
0C		VISC., POISE
0D	13	FULL PAY.
0E	14	
0F	15	MAX.
10	16	VISC.
11	17	POISE
12	18	FULL PAY.
13	19	MIN.
14	20	VISC.
15	21	POISE
16	22	PART. PAY.
17	23	MAX.
18	24	VISC.
19	25	POISE
1A	26	PART. PAY.
1B	27	MIN.
1C	28	PEN.@39.2F
1D		FULL PAY.
1E	30	MAX.
1F	31	PEN.@39.2F
20	32	FULL PAY.
21	33	MIN.
22	34	PEN.@39.2F
23	35	PART. PAY.
24	36	MAX.
25	37	PEN.@39.2F
26	38	PART. PAY.
27	39	MIN.
28	40	PEN.@77°F.
(R)		FULL PAY.
2A	42	MAX.
2B	43	PEN.@77°F.
(R)		FULL PAY.
2D	45	MIN.
2E	46	PEN.@77°F.
(T)		FULL PAY.
30	48	MAX.
31	49	PEN.@77°F.
(T)		FULL PAY.
33	51	MIN.
34	52	PEN.@77°F
(T)		PART. PAY.
36	54	MAX.
37	55	PEN.@77°F
(T)		PART. PAY.
39	57	MIN. FLASH POINT / MIN.
3A		DUCT.@39.2F
3B	59	FULL PAY.
3C	60	MAX. FLASH POINT / MAX.
3D		DUCT.@39.2F
3E	62	FULL PAY.
3F	63	MIN. / MIN.

CONT'D.

HEX	DEC	Description
40	64	DUCT. 39.2F
41	65	PART. PAY.
42	66	MAX.
43	67	DUCT. 39.2F
44	68	PART. PAY.
45	69	MIN.
46	70	DUCT.@77F
47	71	FULL PAY.
48	72	
49	73	MAX.
4A	74	DUCT.@77F
4B	75	FULL PAY.
4C	76	
4D	77	MIN.
4E	78	DUCT.@77F
4F	79	PART. PAY
50	80	
51	81	MAX.
52	82	DUCT.@77F
53	83	PART. PAY
54	84	
55	85	MIN.
56	86	TFOT, LOSS
57	87	FULL PAY.
58	88	MAX.
59	89	TFOT, LOSS
5A	90	FULL PAY.
5B	91	MIN. TFOT
5C	92	LOSS, %
5D	93	PART. PAY.
5E	94	MAX. TFOT
5F	95	LOSS, %
60	96	PART. PAY
61	97	MIN. TFOT
62	98	PEN.@77°F
63	99	FULL PAY.
64	100	MAX. TFOT
65	101	PEN.@77°F
		FULL PAY.
67	103	MIN. TFOT
68	104	PEN.@77°F
69	105	PART. PAY
6A	106	MAX. TFOT
6B	107	PEN.@77°F
6C	108	PART. PAY
6D	109	MIN. TFOT
6E	110	PEN.,%ORIG
6F	111	FULL PAY.
70	112	MAX. TFOT
71	113	PEN.,%ORIG
72	114	FULL PAY.
73	115	MIN.
74	116	PEN.,%ORIG
75	117	PART. PAY
76	118	MAX.
77	119	PEN.,%ORIG
78	120	PART. PAY
79	121	MIN. TFOT
7A	122	DUCT.@77F
7B	123	FULL PAY
7C	124	
7D	125	MAX. TFOT
7E	126	DUCT.@77F.
7F	127	FULL PAY.

CONT'D.

HEX	DEC	Description
80	128	
81	129	MIN. TFOT
82	130	DUCT.@77F
83	131	PART. PAY
84	132	
85	133	MAX. TFOT
86	134	DUCT.@77F
87	135	PART. PAY
88	136	
89	137	MIN.
8A	138	SOL. CS2
8B	139	FULL PAY.
8C	140	
8D	141	MAX.
8E	142	SOL. CS2
8F	143	FULL PAY.
90	144	
91	145	MIN.
92	146	SOL. CS2
93	147	PART. PAY
94	148	
95	149	MAX.
96	150	SOL. CS2
97	151	PART. PAY
98	152	
99	153	MIN. HOMOG.
9A	154	MAX. HOMOG.
9B	155	MIN.
9C	156	PEN.@32°F
9D	157	FULL PAY.
9E	158	MAX.
9F	159	PEN.@32°F.
A0	160	FULL PAY.
A1	161	MIN.
A2	162	PEN.@32°F
A3	163	PART. PAY
A4	164	MAX.
A5	165	PEN.@32°F
A6	166	PART. PAY
A7	167	MIN.
A8	168	PEN.@115°F
A9	169	FULL PAY.
AA	170	MAX.
AB	171	PEN.@115°F
AC	172	FULL PAY.
AD	173	MIN.
AE	174	PEN.@115°F
AF	175	PART. PAY
B0	176	MAX.
B1	177	PEN.@115°F
B2	178	PART. PAY
B3	179	MIN.
B4	180	SOFT. PT.
B5	181	FULL PAY.
B6	182	MAX.
B7	183	SOFT. PT.
B8	184	FULL PAY.
B9	185	MIN.
BA	186	SOFT. PT.
BB	187	PART. PAY
BC	188	MAX.
BD	189	SOFT. PT.
BE	190	PART. PAY
BF	191	

CONT'D.

HEX	DEC	Description
C0	192	
C1	193	
C2	194	
C3	195	
C4	196	
C5	197	
C6	198	
C7	199	
C8	200	
C9	201	
CA	202	
CB	203	
CC	204	
CD	205	
CE	206	
CF	207	
D0	208	
D1	209	
D2	210	
D3	211	
D4	212	
D5	213	
D6	214	
D7	215	
D8	216	
D9	217	
DA	218	
DB	219	
DC	220	
DD	221	
DE	222	
DF	223	
E0	224	
E1	225	
E2	226	
E3	227	
E4	228	
E5	229	
E6	230	
E7	231	
E8	232	
E9	233	
EA	234	
EB	235	
EC	236	
ED	237	
EE	238	
EF	239	
F0	240	
F1	241	
F2	242	
F3	243	
F4	244	
F5	245	
F6	246	
F7	247	
F8	248	
F9	249	
FA	250	
FB	251	
FC	252	
FD	253	
FE	254	
FF	255	

Remarks

Where Used	
Input To	Output From

Recording Mode
Records per Block
Characters per Record
Label Records are
File Identification
Retention Cycle
Organization Type

Date	Revisions By

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Asphalt Cement Specifications (cont'd)*

Date

MIXING TIME, °F.

DESCRIPTION (CENTERED)

CH ▶

HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F

DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

255 260 270 280 290 300 306

CH ▶

HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

CH ▶

HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF

DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

CH ▶

HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF

DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used	
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BYTES
8 - double word
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2 - halfword
1 - 7 packed-decimal digits

CHARACTER/BIT CODES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Structural Steel Test Data*

Page 1 of 1

Date

Line 1 fields: LAB. NO. | TEST TYPE | SUBMITTED BY CODE | DISTRICT NO. | DATE SAMPLED | PROJECT NO. | IDENTIFICATION | PURPOSE | BAR NO. | BAR TYPE | STRAND SIZE | NO. OF STRANDS | COLD BEND | DIAMETER INCHES | CROSS SECTIONAL AREA, SQ. IN. THEORETICAL | CROSS SECTIONAL AREA, SQ. IN ACTUAL | % UNDER | WT./1000LF. LB. → CONTD.

CH▶

HEX 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F

DEC 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

Line 2 fields: WT./1000 LIN. FT. LB. | BREAKING STRENGTH LB. | ULTIMATE LOAD LB. | ULTIMATE STRENGTH PSI | YIELD PT. PSI | TENSILE STRENGTH PSI | ELONGATION IN 8" % | ELONGATION IN 10" % | ELONGATION IN 24" % | DEFORM. INCH HEIGHT | DEFORM. INCH SPACING | REDUCTION IN AREA, % | PHOSPHORUS % | SULPHUR % | SPEC. CODE

CH▶

HEX 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

DEC 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127

CH▶

HEX 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 99 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF

DEC 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191

CH▶

HEX C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF

DEC 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

Remarks

Where Used: Input To	Where Used: Output From

Recording Mode
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CHARACTERISTIC CODES

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION *Structural Steel Specifications*

Date

DESCRIPTION

CH	HEX	DEC	DESCRIPTION
	00	0	1/4"STRND. WT./1000LF.
	01	1	LB. MIN.
	02	2	EXTRA STR.
	03	3	1/4"STRND. WT./1000LF.
	04	4	LB. MIN.
	05	5	REG. STR.
	06	6	5/16"STRND. WT./1000LF.
	07	7	LB. MIN.
	08	8	EXTRA STR.
	09	9	5/16"STRND. WT./1000LF.
	0A	10	LB. MIN.
	0B	11	REG. STR.
	0C	12	3/8"STRND. WT./1000LF.
	0D	13	LB. MIN.
	0E	14	EXTRA STR.
	0F	15	3/8"STRND. WT./1000LF.
	10	16	LB. MIN.
	11	17	REG. STR.
	12	18	7/16"STRND. WT./1000LF.
	13	19	LB. MIN.
	14	20	EXTRA STR.
	15	21	7/16"STRND. WT./1000LF.
	16	22	LB. MIN.
	17	23	REG. STR.
	18	24	1/2" STRAND
	19	25	LB. MIN.
	1A	26	EXTRA STR.
	1B	27	1/2" STRAND
	1C	28	BREAKING STRENGTH MIN., LB.
	1D	29	REG. STR.
	1E	30	1/2" STRAND
	1F	31	
	20	32	
	21	33	
	22	34	BREAKING STRENGTH
	23	35	EXTRA STR.
	24	36	1/2" STRAND
	25	37	
	26	38	
	27	39	
	28	40	BREAKING STRENGTH
	29	41	REG. STR.
	2A	42	5/16"STRND.
	2B	43	
	2C	44	
	2D	45	
	2E	46	BREAKING STRENGTH
	2F	47	EXTRA STR.
	30	48	5/16"STRND.
	31	49	
	32	50	
	33	51	
	34	52	BREAKING STRENGTH
	35	53	REG. STR.
	36	54	3/8"STRAND
	37	55	
	38	56	
	39	57	
	3A	58	BREAKING STRENGTH
	3B	59	EXTRA STR.
	3C	60	% UNDER
	3D	61	3/8"STRAND
	3E	62	WT./1000LF.
	3F	63	REG. STR.
	40	64	BREAKING STRENGTH
	41	65	REG. STR.
	42	66	7/16"STRND.
	43	67	
	44	68	
	45	69	
	46	70	BREAKING STRENGTH
	47	71	EXTRA STR.
	48	72	
	49	73	EXTRA STR.
	4A	74	7/16"STRND.
	4B	75	
	4C	76	BREAKING
	4D	77	STRENGTH
	4E	78	REG. STR.
	4F	79	1/2"STRAND
	50	80	
	51	81	
	52	82	BREAKING
	53	83	STRENGTH
	54	84	EXTRA STR.
	55	85	1/2" STRAND
	56	86	
	57	87	
	58	88	ULTIMATE STRENGTH MIN.PSI
	59	89	
	5A	90	
	5B	91	0.177DIAM WIRE
	5C	92	
	5D	93	
	5E	94	ULT. STR.
	5F	95	MIN.,PSI
	60	96	0.192DIAM WIRE
	61	97	
	62	98	ULT. STR.
	63	99	MIN., PSI
	64	100	0.225DIAM WIRE
	65	101	
	66	102	
	67	103	
	68	104	ULT. STR.
	69	105	MIN., PSI
	6A	106	0.250DIAM WIRE
	6B	107	
	6C	108	
	6D	109	
	6E	110	
	6F	111	
	70	112	ULT. STR.
	71	113	MIN., PSI
	72	114	0.276DIAM WIRE
	73	115	
	74	116	
	75	117	
	76	118	YIELD PT.
	77	119	MIN., PSI
	78	120	
	79	121	
	7A	122	YIELD
	7B	123	POINT
	7C	124	MAX., PSI
	7D	125	
	7E	126	
	7F	127	
	80	128	YIELD PT.
	81	129	MAX. PSI.
	82	130	TENSILE
	83	131	STRENGTH
	84	132	MIN.
	85	133	PSI.
	86	134	
	87	135	
	88	136	TENSILE
	89	137	STRENGTH
	8A	138	MAX. PSI.
	8B	139	
	8C	140	
	8D	141	
	8E	142	MIN. ELONGATION IN 8 INCHES, PERCENT
	8F	143	#3 BAR
	90	144	
	91	145	
	92	146	
	93	147	#4 BAR
	94	148	
	95	149	
	96	150	#5 BAR
	97	151	
	98	152	
	99	153	#6 BAR
	9A	154	
	9B	155	
	9C	156	#7 BAR
	9D	157	
	9E	158	
	9F	159	#8 BAR
	A0	160	
	A1	161	
	A2	162	#9 BAR
	A3	163	
	A4	164	
	A5	165	#10 BAR
	A6	166	
	A7	167	
	A8	168	#11 BAR
	A9	169	
	AA	170	
	AB	171	#14 BAR
	AC	172	#18 BAR (%)
	AD	173	
	AE	174	
	AF	175	ELONGATION IN 10", %
	B0	176	MIN.
	B1	177	
	B2	178	FILLER
	B3	179	ELONG. IN
	B4	180	24", %MIN.
	B5	181	
	B6	182	FILLER
	B7	183	DEFORM. IN
	B8	184	HT. MIN.
	B9	185	#3 BAR
	BA	186	
	BB	187	
	BC	188	
	BD	189	
	BE	190	
	BF	191	
	C0	192	
	C1	193	
	C2	194	
	C3	195	
	C4	196	
	C5	197	
	C6	198	
	C7	199	
	C8	200	
	C9	201	
	CA	202	
	CB	203	
	CC	204	
	CD	205	
	CE	206	
	CF	207	
	D0	208	
	D1	209	
	D2	210	
	D3	211	
	D4	212	
	D5	213	
	D6	214	
	D7	215	
	D8	216	
	D9	217	
	DA	218	
	DB	219	
	DC	220	
	DD	221	
	DE	222	
	DF	223	
	E0	224	
	E1	225	
	E2	226	
	E3	227	
	E4	228	
	E5	229	
	E6	230	
	E7	231	
	E8	232	
	E9	233	
	EA	234	
	EB	235	
	EC	236	
	ED	237	
	EE	238	
	EF	239	
	F0	240	
	F1	241	
	F2	242	
	F3	243	
	F4	244	
	F5	245	
	F6	246	
	F7	247	
	F8	248	
	F9	249	
	FA	250	
	FB	251	
	FC	252	
	FD	253	
	FE	254	
	FF	255	

CONT'D

CONT'D

52

Remarks

Where Used	
Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

BYTES
0 - double word
1 - word
2 - halfword
1 - 2 packed-decimal digits

CHARACTERISTIC CODES

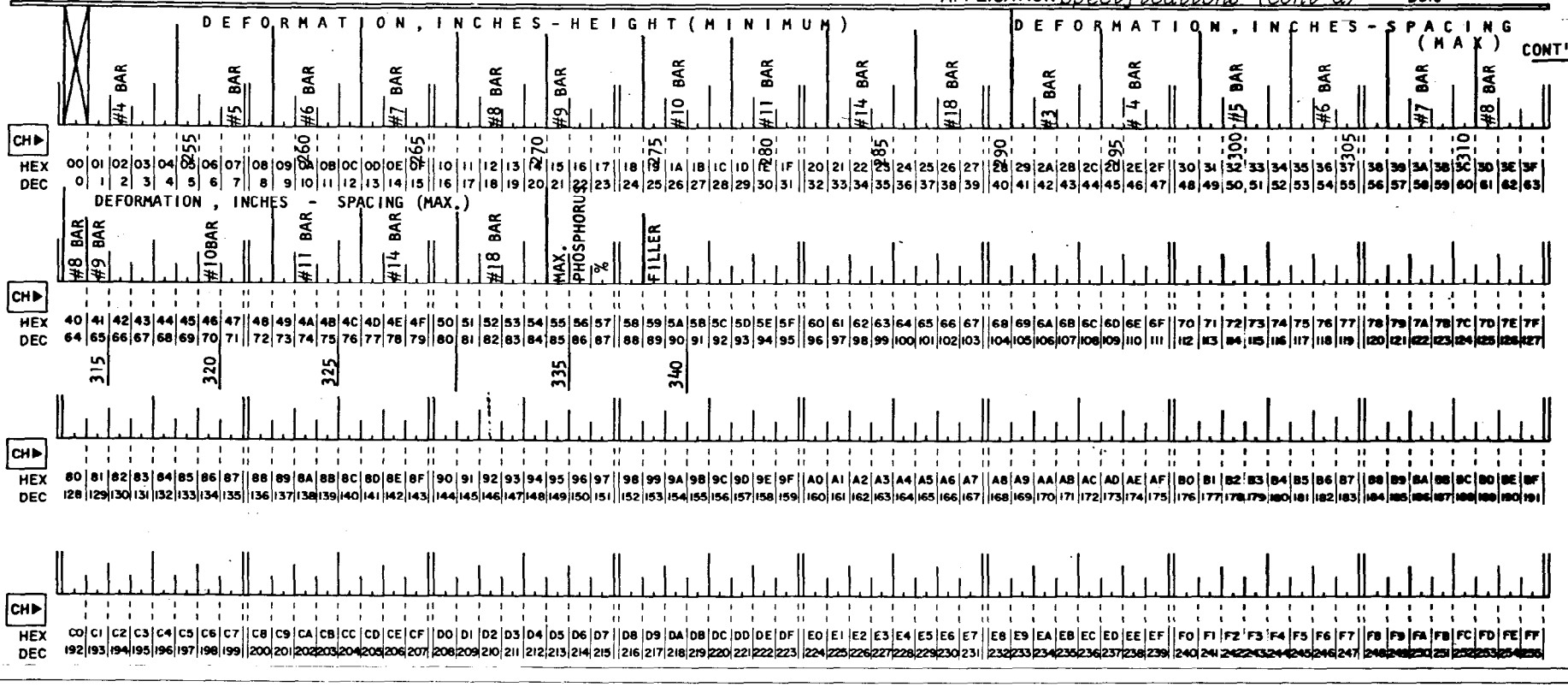
HEX DEC

LOUISIANA DEPARTMENT OF HIGHWAYS RECORD LAYOUT SHEET

Record Name

APPLICATION Structural Steel Specifications (cont'd)

Date



Remarks

Where Used	
Input To	Output From

Recording Mode

Records per Block

Characters per Record

Label Records are

File Identification

Retention Cycle

Organization Type

Date	Revisions By

BYTES
1 - character record
4 - word
2 - halfword
1 - 2 packed decimal digits

APPENDIX B

List of Program Components

MATT MATERIAL TESTING

***** P R O G R A M S *****

COMPONENT NAME	USAGE	ORIGINATOR	DATE WRITTEN	DESCRIPTION
MATT1010	ENGR.	CROUSE, CARL J. JR.	06-29-72	MATERIAL TESTING STEEL EDIT PROGRAM THE TWO INPUT CARDS FOR EACH TEST ARE EDITTED ON ALL FIELDS FOR NUMERIC OR ALPHA-NUMERIC DATA ACCORDING TO CARD LAYOUT. TEST CARDS WITH ERRORS WILL BE PRINTED. GOOD TEST DATA WILL BE LOADED ON DISK AND USED BY THE STEEL REPORT PROGRAM.
MATT1020	ENGR.	BROOKS, SANDRA	12-02-71	MATERIAL TESTING STEEL SPECIFICATION CREATE PROGRAM CREATES A SEQUENTIAL DISK FILE. FIVE CARDS ARE READ IN FOR EACH TYPE, CHECKED FOR ERRORS, IF NO ERRORS OCCUR A RECORD ON DISK WILL BE WRITTEN, IF ERRORS DO OCCUR THEY WILL BE DISPLAYED.
MATT1030	ENGR.	PALMER, BARBARA G.	12-16-71	MATERIAL TESTING STEEL REPORT PROGRAM THIS PROGRAM PRINTS A REPORT OF TEST DATA THAT HAS BEEN EDITTED BY THE EDIT PROGRAM. READS EACH TEST, COMPARES IT WITH THE MASTER SPECIFICATION FILE, PRINTS THE RESULTS SHOWING WHETHER IT PASSED OR FAILED. THE SUBMITTER FILE IS USED TO PRINT THE NAME OF THE PERSON THIS REPORT WILL BE SENT TO. THE NUMBER OF INPUT AND OUTPUT TEST WILL BE DISPLAYED.
MATT2010	ENGR.	PALMER, BOBBIE	09-13-72	MATERIAL TESTING LIQUID ASPHALT EDIT PROGRAM. THE TWO INPUT CARDS FOR EACH TEST ARE EDITTED ON ALL FIELDS FOR NUMERIC OR ALPHA-NUMERIC DATA ACCORDING TO CARD LAYOUT. TEST CARDS THAT HAVE ERRORS WILL BE PRINTED ALONG WITH THE COLUMN NUMBERS WHERE THE ERRORS OCCURRED. IT WILL ALSO DISPLAY THE NUMBER OF TEST READ IN AND WRITTEN OUT.
MATT2020	ENGR.	PALMER, BOBBIE	09-13-72	MATERIAL TESTING LIQUID ASPHALT SPECIFICATION PROGRAM THIS PROGRAM READS FIVE CARDS FOR EACH TEST. EDITS THESE CARDS AND CREATES A DISK FILE. IF ANY ERRORS ARE DETECTED THEY ARE DISPLAYED WITH THE CARD NUMBER AND COLUMNS.
MATT2030	ENGR.	PALMER, BARBARA G.	11-14-72	MATERIAL TESTING LIQUID ASPHALT REPORT PROGRAM THIS PROGRAM PRINTS A REPORT FROM TEST DATA THAT HAS BEEN EDITTED BY THE LIQUID ASPHALT EDIT PROGRAM. IT READS EACH TEST, COMPARES IT WITH THE MASTER LIQUID ASPHALT SPEC. FILE, PRINTS THE RESULTS SHOWING WHETHER IT PASSED OR FAILED. THE SUBMITTER FILE IS USED TO PRINT THE NAME OF THE PERSON THIS REPORT WILL BE SENT TO. THE NUMBER OF INPUT AND OUTPUT TEST

***** P R O G R A M S *****

COMPONENT NAME	USAGE	ORIGINATOR	DATE WRITTEN	DESCRIPTION
				WILL BE DISPLAYED.
MATT3010	ENGR.	PALMER, BOBBIE	09-13-72	MATERIAL TESTING ASPHALT CEMENT EDIT PROGRAM THE TWO INPUT CARDS FOR EACH TEST ARE EDITTED ON ALL FIELDS FOR NUMERIC OR ALPHA-NUMERIC DATA ACCORDING TO CARD LAYOUT. TEST CARDS THAT HAVE ERRORS WILL BE PRINTED ALONG WITH THE COLUMN NUMBERS WHERE THE ERRORS OCCURRED. IT WILL ALSO DISPLAY THE NUMBER OF TEST READ IN AND WRITTEN OUT.
MATT3020	ENGR.	PALMER, BARBARA G.	09-13-72	MATERIAL TESTING ASPHALT CEMENT SPECIFICATION PROGRAM THIS PROGRAM READS FOUR CARDS FOR EACH TEST. EDITS THESE CARDS AND CREATES A DISK FILE. IF ANY ERRORS ARE DETECTED THEY ARE DISPLAYED WITH THE CARD NUMBER AND COLUMNS.
MATT3030	ENGR.	PALMER, BOBBIE	11-14-72	MATERIAL TESTING ASPHALT CEMENT REPORT PROGRAM THIS PROGRAM PRINTS A REPORT FROM TEST DATA THAT HAS BEEN EDITTED BY THE EDIT PROGRAM. IT READS EACH TEST, COMPARES IT WITH THE MASTER SPECIFICATION FILE, PRINTS THE RESULTS SHOWING WHETHER IT PASSED OR FAILED. THE SUBMITTER FILE IS USED TO PRINT THE NAME OF THE PERSON THIS REPORT WILL BE SENT TO. THE NUMBER OF INPUT AND OUTPUT TEST WILL BE DISPLAYED.
MATT4010	ENGR.	LEBLANC, DAVID	10-04-71	MATERIAL TESTING CEMENT SPECIFICATION LOAD PROGRAM THIS PROGRAM READS IN 4 CARDS FOR EACH TEST, EDITS THEM AND IF NO ERRORS ARE DETECTED, CREATES A SEQUENTIAL DISK FILE. IF ERRORS ARE DETECTED, A MESSAGE WILL BE PRINTED EXPLAINING THE ERROR.
MATT4020	ENGR.	JONES, JIM	09-22-71	MATERIAL TESTING CEMENT EDIT PROGRAM THIS PROGRAM EDITS THE CEMENT TEST INPUT DATA CARDS. IF NO ERRORS ARE DETECTED IN THE BATCH AN OUTPUT SEQUENTIAL FILE IS CREATED. IF ERRORS ARE DETECTED IN THE BATCH, ERROR MESSAGES WILL BE PRINTED AND THE OUTPUT DISK FILE WILL NOT BE CREATED.
MATT4030	ENGR.	NEUBIG, LEE	09-12-72	MATERIAL TESTING CEMENT REPORT PROGRAM THIS PROGRAM PRINTS A REPORT SHOWING THE TEST RESULTS OF THE CEMENT TEST DATA. IT READS IN EDITTED TEST DATA, COMPARES THESE TEST AGAINST THE MASTER SPECIFICATION FILE, PRINTS THE REPORT SHOWING THE RESULTS (PASSED OR FAILED). THE

***** P R O G R A M S *****

COMPONENT NAME	USAGE	ORIGINATOR	DATE WRITTEN	DESCRIPTION
				SUBMITTER FILE IS USED TO PRINT THE NAME OF THE PERSON THIS REPORT WILL BE SENT TO.
MATT5010	ENGR.	PALMER, BOBBIE	07-20-71	MATERIAL TESTING AGGREGATE SPECIFICATION LOAD PROGRAM. READS IN FIVE CARDS FOR EACH TEST. CREATES DISK OUTPUT USING THE FIVE CARDS. THIS DISK FILE THAT IS BEING CREATED WILL BE USED BY THE AGGREGATE REPORT PROGRAM, TO CHECK THE SPECIFICATIONS FOR EACH TEST. IF CARDS ARE NOT IN ORDER OR ALL FIVE CARDS FOR EACH GROUP ARE NOT READ, A DISPLAY WILL BE PRINTED.
MATT5020	ENGR.	PALMER, BARBARA G.	01-31-72	MATERIAL TESTING AGGREGATE EDIT PROGRAM THE THREE INPUT CARDS FOR EACH TEST ARE EDITTED ON ALL FIELDS FOR NUMERIC OR ALPHA-NUMERIC DATA ACCORDING TO CARD LAYOUT. TEST CARDS WITH ERRORS WILL BE PRINTED. TEST CARDS WITHOUT ERRORS WILL BE LOADED ON TAPE FOR THE REPORT PROGRAM.
MATT5030	ENGR.	PALMER, BARBARA G.	05-25-72	MATERIAL TESTING AGGREGATE REPORT PROGRAM THIS PROGRAM PRINTS A REPORT SHOWING THE TEST RESULTS OF THE AGGREGATE TEST DATA. INPUT CONSIST OF EDITTED TEST DATA, SUBMITTER MASTER FILE AND THE MASTER AGGREGATE SPECIFICATION FILE. THE PROGRAM WILL READ THE TEST DATA, CHECK IT AGAINST THE AGGREGATE SPECIFICATION FILE AND PRINT THE RESULTS. IT USES THE SUBMITTER FILE TO PRINT THE NAME OF THE PERSON THE REPORT WILL BE SENT TO.
MATT6010	ENGR.	PALMER, BOBBIE	07-20-71	MATERIAL TESTING CREATE TEST SUBMITTER FILE. THE NAMES AND IDENTIFICATIONS OF ALL PERSONS OR FIRMS THAT CAN SUBMIT TESTS IS LOADED ONTO A SEQUENTIAL DISK FILE.

***** R E P O R T S *****

COMPONENT NAME	USAGE	ORIGINATOR	DATE WRITTEN	DESCRIPTION
MATT1011	ENGR.	CROUSE, CARL J. JR.	06-29-72	MATERIAL TESTING STEEL EDIT PRINT-OUT. THIS IS A PRINT-OUT OF ALL TEST DATA FOR THE STEEL EDIT PROGRAM THAT IS IN ERROR. COLUMN NUMBERS AND FIELDS THAT ARE IN ERROR WILL BE PRINTED ON LARGE BLANK PAPER. NUMBER OF RECORDS READ IN AND NUMBER OF RECORDS WRITTEN ON DISK WILL BE DISPLAYED.
MATT1031	ENGR.	PALMER,BARBARA G.	11-14-72	MATERIAL TESTING STEEL REPORT PRINTS A REPORT WITH THE TEST RESULTS. (PASS OR FAIL) USES FOUR PART SMALL BLANK PAPER. EACH TEST IS PRINTED ON A SEPARATE PAGE.
MATT1032	ENGR.	PALMER, BOBBIE	12-16-71	MATERIAL TESTING STEEL REPORT ERRORS. IF TEST RECORDS CANNOT BE FOUND ON THE TEST SUBMITTER FILE THEY ARE LISTED ON THIS REPORT. ALSO THE NUMBER OF TEST REPORTS INPUT TO THE PROGRAM AND THE NUMBER OUTPUT TO THE PRINTER ARE PRINTED ON THIS REPORT.
MATT2011	ENGR.	PALMER, BARBARA G.	09-13-72	MATERIAL TESTING LIQUID ASPHALT EDIT PRINTOUT THIS IS A PRINT-OUT OF ALL TEST DATA FOR THE LIQUID ASPHALT EDIT PROGRAM THAT IS IN ERROR. COLUMN NUMBERS AND FIELDS THAT ARE IN ERROR WILL BE PRINTED ON LARGE BLANK PAPER.
MATT2021	ENGR.	PALMER, BOBBIE	09-13-72	MATERIAL TESTING LIQUID ASPHALT SPECIFICATION PROGRAM. ERROR MESSAGES ARE DISPLAYED, GIVING THE CARD NUMBER AND THE CARD COLUMN IN ERROR.
MATT2031	ENGR.	PALMER, BARBARA G.	11-14-72	MATERIAL TESTING LIQUID ASPHALT REPORT PRINTS A REPORT WITH THE TEST RESULTS. (PASS OR FAIL) USES FOUR PART SMALL BLANK PAPER. EACH TEST IS PRINTED ON A SEPARATE PAGE.
MATT2032	ENGR.	PALMER, BOBBIE	11-14-72	MATERIAL TESTING LIQUID ASPHALT ERRORS. IF TEST RECORDS CANNOT BE FOUND ON THE TEST SUBMITTER FILE THEY ARE LISTED ON THIS REPORT. ALSO THE NUMBER OF TEST REPORTS INPUT TO THE PROGRAM AND THE NUMBER OUTPUT TO THE PRINTER ARE PRINTED ON THIS REPORT.

***** R E P O R T S *****

COMPONENT NAME	USAGE	ORIGINATOR	DATE WRITTEN	DESCRIPTION
MATT3011	ENGR.	PALMER, BARBARA G.	09-13-72	MATERIAL TESTING ASPHALT CEMENT EDIT PRINTOUT THIS IS A PRINT-OUT OF ALL TEST DATA FOR THE ASPHALT CEMENT EDIT PROGRAM THAT IS IN ERROR. COLUMN NUMBERS AND FIELDS THAT ARE IN ERROR WILL BE PRINTED ON LARGE BLANK PAPER.
MATT3021	ENGR.	PALMER, BOBBIE	09-13-72	MATERIAL TESTING ASPHALT CEMENT SPECIFICATION PROGRAM. ERROR MESSAGES ARE DISPLAYED, GIVING THE CARD NUMBER AND THE CARD COLUMN IN ERROR.
MATT3031	ENGR.	PALMER, BARBARA G.	11-14-72	MATERIAL TESTING ASPHALT CEMENT REPORT. PRINTS A REPORT WITH THE TEST RESULTS. (PASS OR FAIL) USES FOUR-PART SMALL BLANK PAPER. EACH TEST IS PRINTED ON A SEPARATE PAGE.
MATT3032	ENGR.	PALMER, BOBBIE	11-14-72	MATERIAL TESTING ASPHALT CEMENT ERRORS. IF TEST RECORDS CANNOT BE FOUND ON THE TEST SUBMITTER FILE THEY ARE LISTED ON THIS REPORT. ALSO THE NUMBER OF TEST REPORTS INPUT TO THE PROGRAM AND THE NUMBER OUTPUT TO THE PRINTER ARE PRINTED ON THIS REPORT.
MATT4011	ENGR.	LEBLANC, DAVID	10-04-71	MATERIAL TESTING CEMENT SPECIFICATION LOAD PROGRAM. THIS PRINT-OUT PRINTS ERRORS AND THE COLUMNS THAT ARE IN ERROR.
MATT4021	ENGR.	JONES, JIM	09-22-71	OUTPUT FROM MATERIAL TESTING CEMENT EDIT PROGRAM PRINT-OUT WILL CONSIST OF ERROR MESSAGES AND CARDS THAT ARE IN ERROR.
MATT4031	ENGR.	NEUBIG, LEE	09-12-72	MATERIAL TESTING CEMENT REPORT PRINTS EACH TEST ON A SEPARATE PAGE. IF ERRORS OCCUR, THEY WILL BE PRINTED. REPORTS ARE PRINTED ON SMALL BLANK FOUR-PART PAPER.
MATT4032	ENGR.	PALMER, BOBBIE	09-12-72	MATERIAL TESTING CEMENT ERRORS. IF TEST RECORDS CANNOT BE FOUND ON THE TEST SUBMITTER FILE THEY

***** R E P O R T S *****

COMPONENT NAME	USAGE	ORIGINATOR	DATE WRITTEN	DESCRIPTION
				ARE LISTED ON THIS REPORT. ALSO THE NUMBER OF TEST REPORTS INPUT TO THE PROGRAM AND THE NUMBER OUTPUT TO THE PRINTER ARE PRINTED ON THIS REPORT.
MATT5011	ENGR.	PALMER, BOBBIE	07-20-71	MATERIAL TESTING AGGREGATE SPECIFICATION PROGRAM. ERROR MESSAGES ARE DISPLAYED, GIVING THE CARD NUMBER AND THE CARD COLUMN IN ERROR.
MATT5021	ENGR.	PALMER, BOBBIE	01-31-72	AGGREGATE EDIT PROGRAM EXPLAINATION OF THE ERROR IS PRINTED WITH THE CARD THAT IS IN ERROR FOLLOWING.
MATT5031	ENGR.	PALMER, BARBARA G.	05-25-72	MATERIAL TESTING AGGREGATE REPORT PRINTS A REPORT WITH THE TEST RESULTS. (PASS OR FAIL). USES SMALL BLANK FOUR-PART PAPER.
MATT5032	ENGR.	PALMER, BOBBIE	05-25-72	MATERIAL TESTING AGGREGATE REPORT ERRORS. TEST RECORDS NOT FOUND ON THE TEST SUBMITTER FILE ARE LISTED. ALSO THE NUMBER OF TEST REPORTS INPUT TO THE PROGRAM AND THE NUMBER OUTPUT TO THE PRINTER ARE PRINTED ON THIS REPORT.
MATT6011	ENGR.	PALMER, BOBBIE	07-20-71	MATERIAL TESTING CREATE TEST SUBMITTER FILE ERRORS. LISTS ERRORS IN THE INPUT DATA TO BUILD THE FILE.