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## **Analysis of Shanahan and Son's business systems**

John Anthony Karvelis

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COMPUTER  
SCIENCE

MAY 9 1986

ANALYSIS OF SHANAHAN AND SON'S,  
BUSINESS SYSTEMS  
DIRECTOR: Dr. Lyle Domina  
student: John Anthony Karrelis

MAY 9 1986

Analysis of the Professional Benefits  
of My Honors Capstone

Director: Dr. Lyle Domina

Student: John Anthony Karvelis

5/7/86

I have undoubtably received many professional benefits from my project that I do not perceive, yet I cannot help but feel that every benefit is directly related to the realistic experience I received. My experience alone was my greatest professional benefit from analyzing Shanahan and Son's following four manual business systems: Payroll, Accounts Receivable, Accounts Payable, and General Ledger. In this paper I am attempting to throw more light upon what specific experiences I have benefitted from.

The first benefit and most obvious would be the reiteration of the analysis steps that I have previously learned in college. By being required to perform the analysis steps of ~~the observing of~~ the work place, creating dataflow diagrams, writing the data dictionaries, developing the process specifications, and creating structured charts, I have been able to refresh my memory of the tasks involved in completing these steps and of their purposes or functions. As a result, when I enter the business world I should be more knowledgeable of the analysis phase than I would have been otherwise.

Another benefit and definitely the most important is that I performed these steps for an actual business as if I was an actual consultant. Therefore, not only did I refresh my memory of the steps, but I actually performed them. In the classroom, many of the analysis phase's steps cannot be truly simulated. Probably the task which was the hardest to create in the classroom is that of observation.

However, in my project I performed the observation task as I would under real conditions. I interviewed a secretary, a bookkeeper, and a supervisor all of which I did not know prior to the interview. As a result, I obtained actual experience in interviewing. From this particular experience I learned that employees will often contradict each other over how a business system actually runs. I found that by interviewing as many people as possible that are involved in a particular system and that by asking many detailed questions, one can usually determine how a system is actually carried out. Secondly, I learned that a person who works within a business system will describe its policies and procedures in ways that are understandable to him, but not necessarily understandable to an outsider. Consequently, I learned that an interviewer must be patient and polite in order to eventually receive a clear answer.

Also unlike my classes I was able to perform the analysis steps for the same business systems. This allowed me to see how the different steps were interrelated and how the structured chart would act as a bridge to the design stage. Although I was not able to begin the design stage I was able to perceive the interdependence of the steps within the analysis and design stages. This has helped me understand the necessity and effectiveness of structured analysis and design.

Lastly, the on the job experience has helped me to increase my confidence in myself and in my choice of careers. By performing this project I am more confident about my ability to be successful at similar assignments in the future.

I now know more of what this type of project entails and I will now be more prepared in the future. I am also more confident in my choice of careers because I have accepted a position <sup>as</sup> ~~where~~ I will be a programmer analyst and I will be performing analysis and design work. Because this project gave me a taste of what analysis and design are actually like and because I enjoyed this project tremendously, I am now enthusiastically looking forward to a satisfying career.

P The majority of my professional benefits are a result of my on the job experience. No classroom can be as effective as the actual world. Through this project I have increased my knowledge of the analysis phase and even of the design phase. I now understand the concepts of structured analysis and design more thoroughly and I now know much more about the actual implementation of these steps. Above all else, this project has helped me to increase my confidence in performing analysis and design work.

MAY 9 1986

Analysis of My Time Estimates  
for My Honors Capstone

Director: Dr. Lyle Domina

Student: John Anthony Karvelis

5/7/86

The business world revolves around deadlines in order to give employees guidance. Therefore, an employer must set time estimates for when projects are to be completed. These dates may be determined through fanciful formulas, but are usually attained through taking into consideration similar work experiences. One thing is for certain and that is that time estimates are necessary. During the course of my Honors Independent Study, I was required to make time estimates for the steps within my project. My project entailed the analysis of Shanahan and Son's, Builders, Inc.'s business systems. These manual systems are the Payroll, the Accounts Receivable, the Accounts Payable, and the General Ledger.

The following are the time estimates for my steps and the actual time spent on my steps for an allotted fifteen weeks.

	Estimated	Actual
Observing	15	18.5
Dataflow Diagrams	24	30
Data Dictionary	24	22
Process Specifications	24	18
Structured Charts	30	16
Finalizing	<u>17</u> <u>13</u>	<u>102.5</u> <u>0</u>
Total	130	102.5

# TABLE OF CONTENTS

PAYROLL

DATAFLOW DIAGRAMS

PROCESS SPECIFICATIONS

ACCOUNTS RECEIVABLE

DATAFLOW DIAGRAMS

PROCESS SPECIFICATIONS

ACCOUNTS PAYABLE

DATAFLOW DIAGRAMS

PROCESS SPECIFICATIONS

GENERAL LEDGER

DATAFLOW DIAGRAMS

PROCESS SPECIFICATIONS

DATA DICTIONARY

STRUCTURED CHARTS

PAYROLL

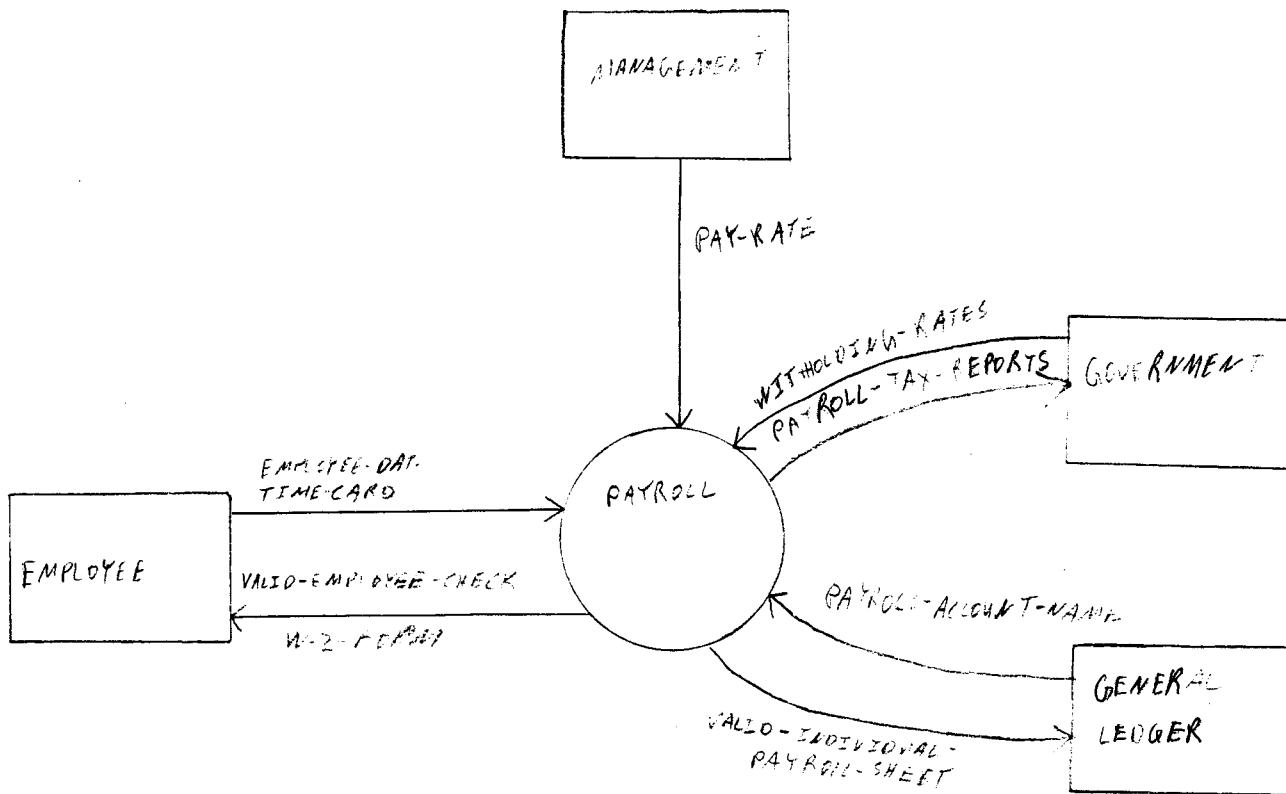
ACCOUNTS RECEIVABLE

ACCOUNTS PAYABLE

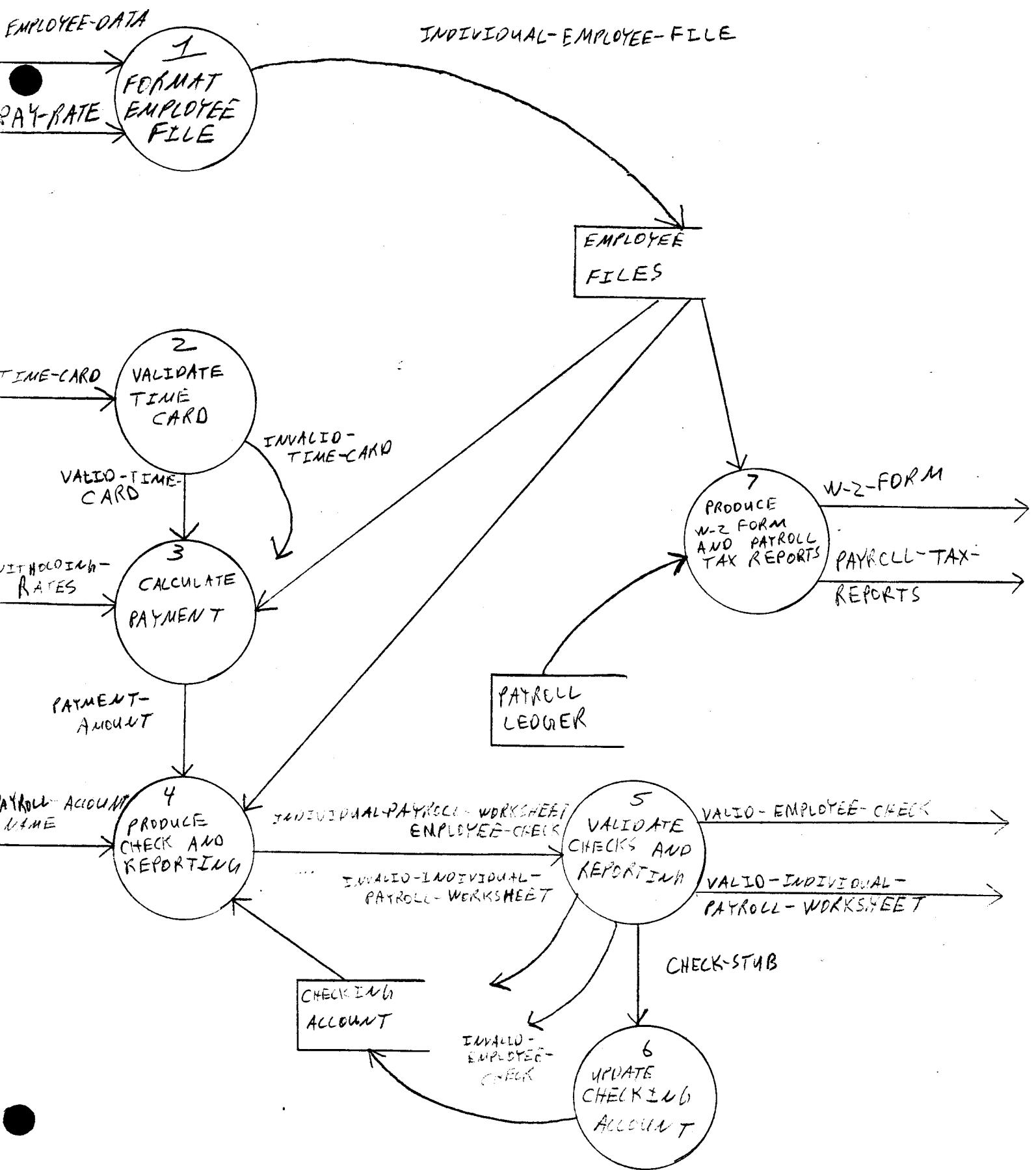
GENERAL LEDGER

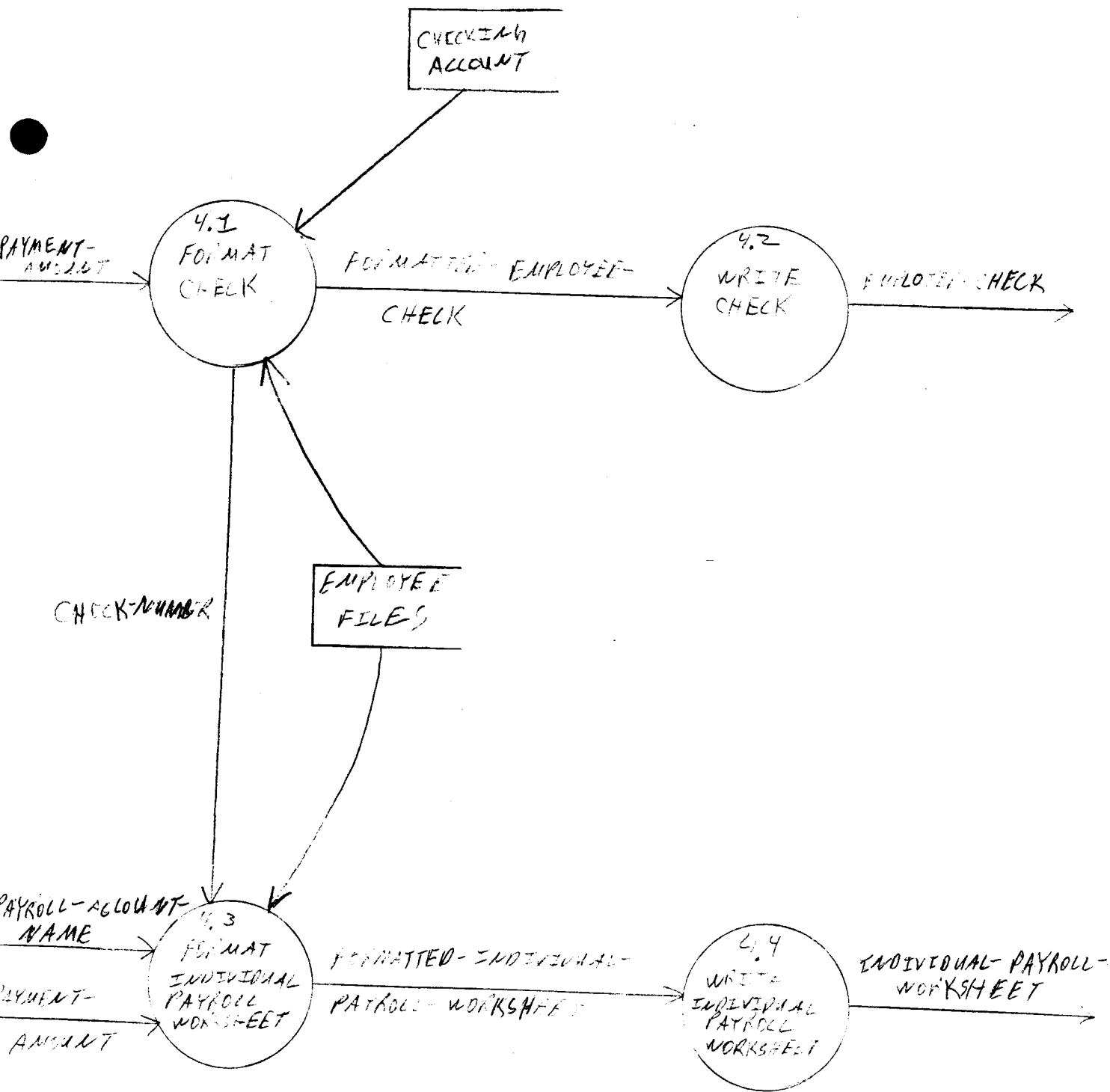
PAYROLL

DATAFLOW DIAGRAMS



PAYROLL  
OVERVIEW





DATA AREA 5  
PAYROLL

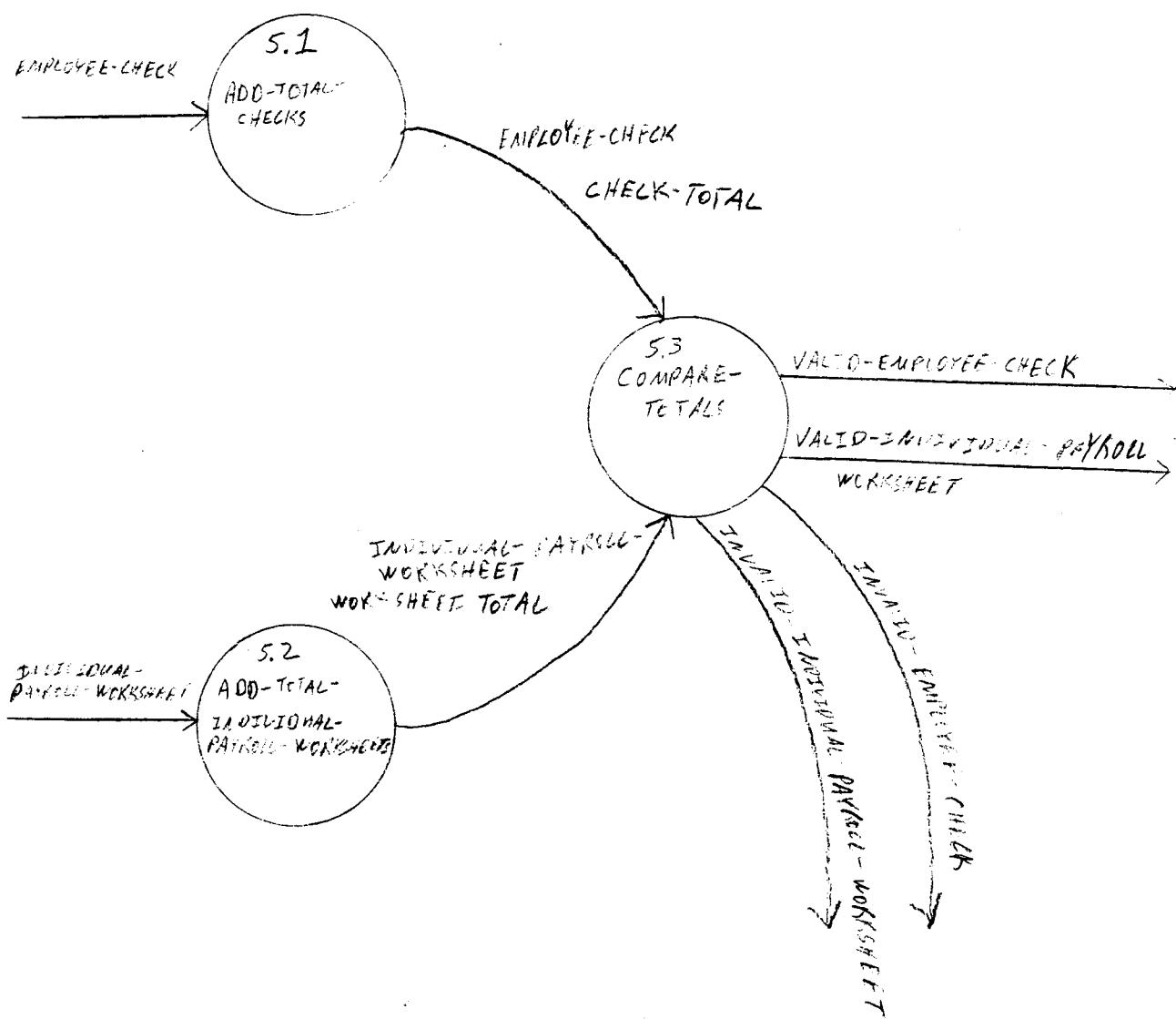
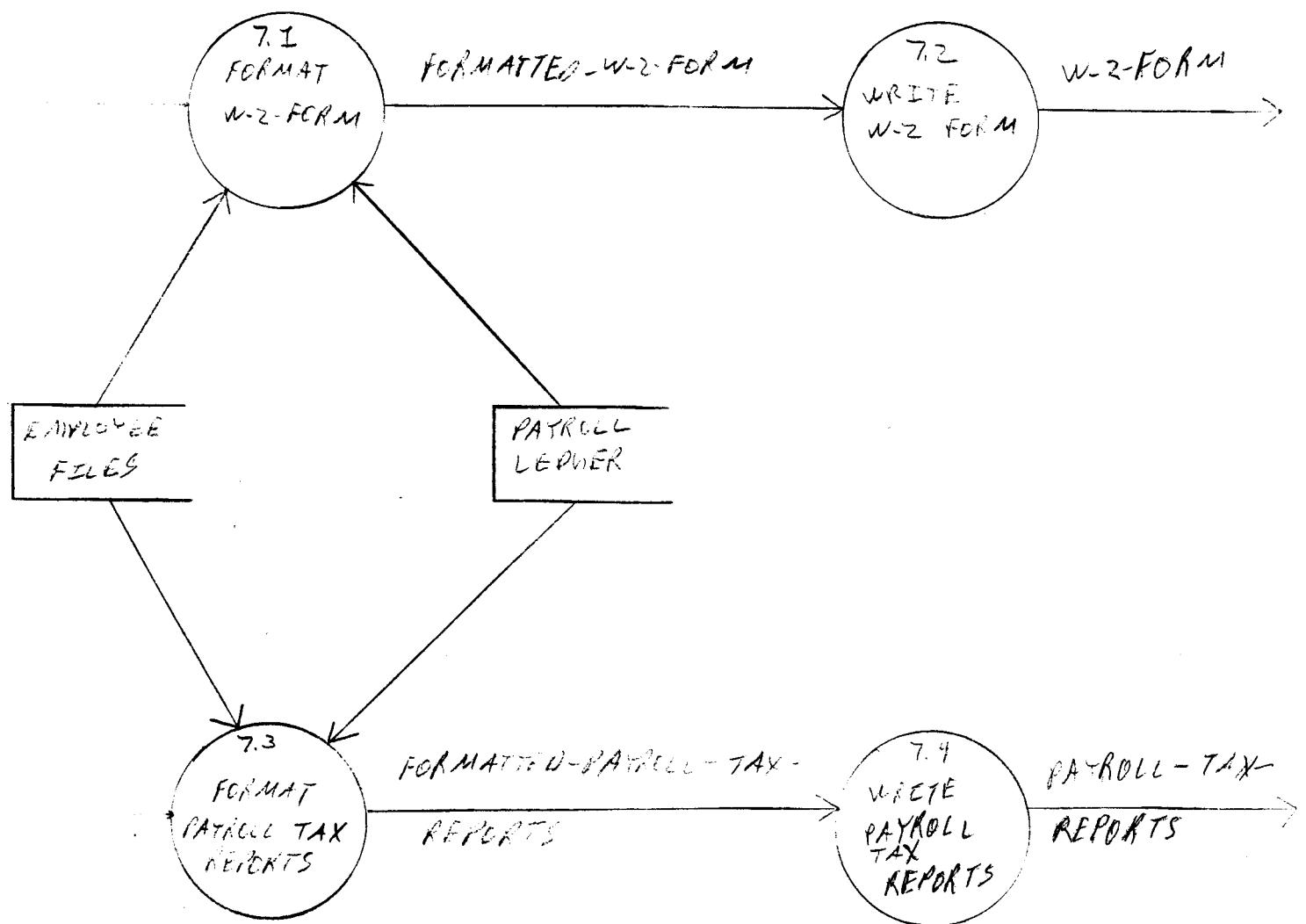


DIAGRAM 7  
PAYROLL



PATROL

PROCESS SPECIFICATIONS

- (1) ATTAIN EMPLOYEE-DATA.  
ATTAIN RATE.  
GET INDIVIDUAL-EMPLOYEE-FILE.  
PUT INDIVIDUAL-EMPLOYEE-FILE.
  
- (2) ATTAIN TIME-CARD.  
IF TIME-CARD IS VALID,  
THEN,  
    VALID-TIME-CARD.  
OTHERWISE,  
    INVALID-TIME-CARD.
  
- (3) ATTAIN VALID-TIME-CARD.  
ATTAIN WITHHOLDING-RATES.  
CALCULATE PAYMENT-AMOUNT.
  
- (4.1) ATTAIN PAYMENT-AMOUNT.  
ATTAIN INDIVIDUAL-EMPLOYEE-FILE.  
GET FORMATTED-EMPLOYEE-CHECK.
  
- (4.2) ATTAIN FORMATTED-EMPLOYEE-CHECK.  
PUT EMPLOYEE-CHECK.

# PAYROLL

- (4.3) ATTAIN PAYROLL-ACCOUNT-NAME.  
ATTAIN PAYMENT-AMOUNT.  
ATTAIN INDIVIDUAL-EMPLOYEE-FILE.  
GET FORMATTED-INDIVIDUAL-PAYROLL-WORKSHEET.
- (4.4) FOR EACH FORMATTED-INDIVIDUAL-PAYROLL-WORKSHEET:  
ATTAIN FORMATTED-INDIVIDUAL-PAYROLL-WORKSHEET.  
PUT INDIVIDUAL-PAYROLL-WORKSHEET.
- (5.1) ATTAIN EMPLOYEE-CHECK.  
FOR EACH EMPLOYEE-CHECK:  
ADD EMPLOYEE-CHECK's AMOUNT PAID TO CHECK-TOTAL.
- (5.2) ATTAIN INDIVIDUAL-PAYROLL-WORKSHEET.  
FOR EACH INDIVIDUAL-PAYROLL-WORKSHEET:  
ADD INDIVIDUAL-PAYROLL-WORKSHEET AMOUNT PAID  
TO WORKSHEET-TOTAL.

5.3

ATTAIN WORKSHEET-TOTAL.  
ATTAIN CHECK-TOTAL.

FOR EACH EMPLOYEE-CHECK AND INDIVIDUAL-PAYROLL-WORKSHEET,  
ATTAIN EMPLOYEE-CHECK.  
ATTAIN INDIVIDUAL-PAYROLL-WORKSHEET.

IF WORKSHEET-TOTAL THEN EQUAL CHECK-TOTAL,  
FOR EACH EMPLOYEE-CHECK AND INDIVIDUAL-PAYROLL-WORKSHEET,  
VALID-EMPLOYEE-CHECK.  
VALID-INDIVIDUAL-PAYROLL-WORKSHEET.  
OTHERWISE,

DETERMINE IF ANYONE IS EMPLOYEE-CHECK OF  
INDIVIDUAL-PAYROLL-WORKSHEET.

IF ERRONEOUS EMPLOYEE-CHECK OR  
INDIVIDUAL-PAYROLL-WORKSHEET,  
THEN,

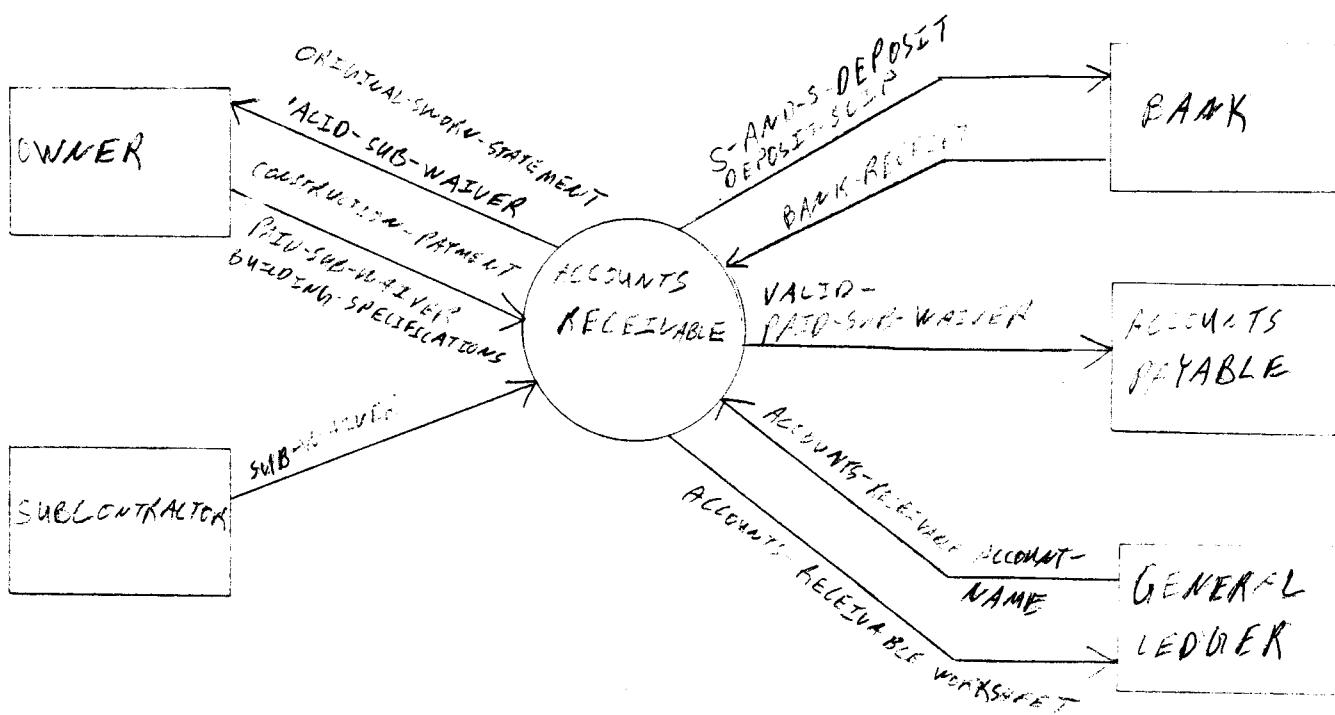
INVALID-EMPLOYEE-CHECK.  
INVALID-INDIVIDUAL-PAYROLL-WORKSHEET.

- ⑥ ATTAIN CHECK-STUB,  
ACCESS CHECKING ACCOUNT.  
POST DEBIT TO ACCOUNT.  
POST NEW TOTAL.
- 7.1 ACCESS EMPLOYEE FILE.  
ACCESS PAYROLL LEDGER.  
GET FORMATTED-W-2-FORM.
- 7.2 ATTAIN FORMATTED-W-2-FORM.  
PUT W-2-FORM.
- 7.3 ACCESS EMPLOYEE FILE.  
ACCESS PAYROLL LEDGER.  
GET FORMATTED-PAYROLL-TAX-REPORTS.
- 7.4 ATTAIN FORMATTED-PAYROLL-TAX-REPORTS  
PUT PAYROLL-TAX-REPORTS.

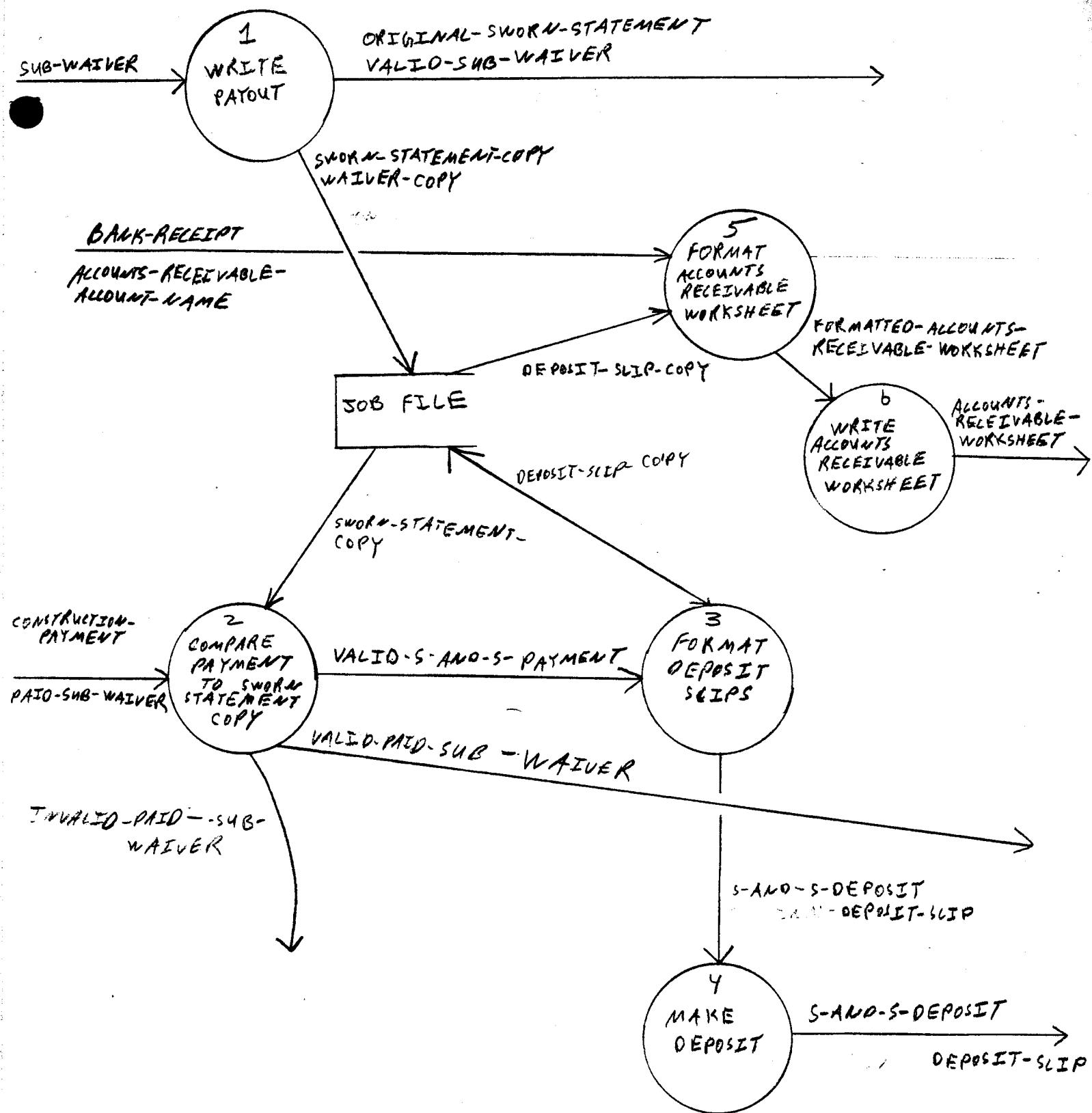
ACCOUNTS RECEIVABLE

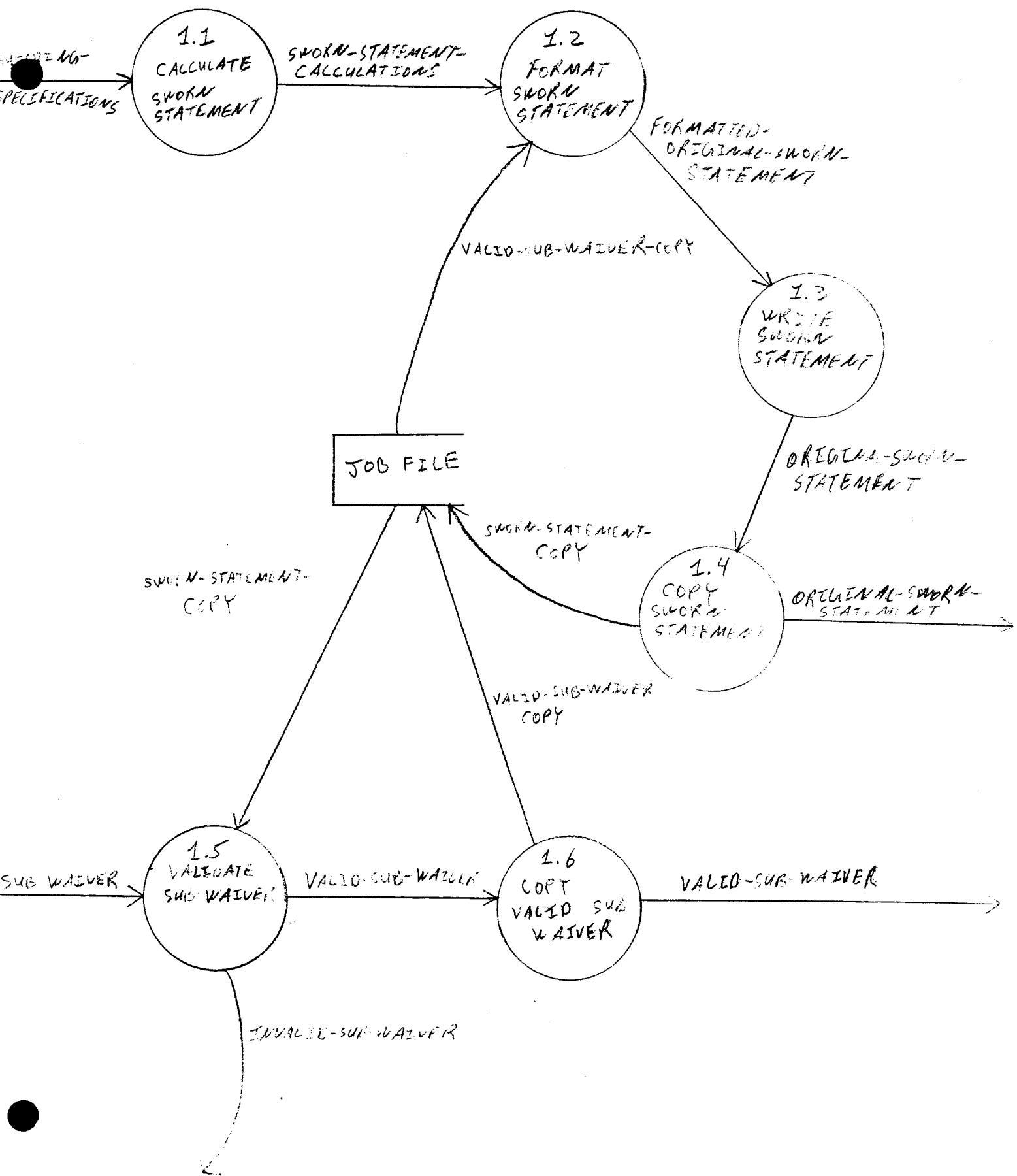
DATAFLOW DIAGRAMS

# CONTEXT

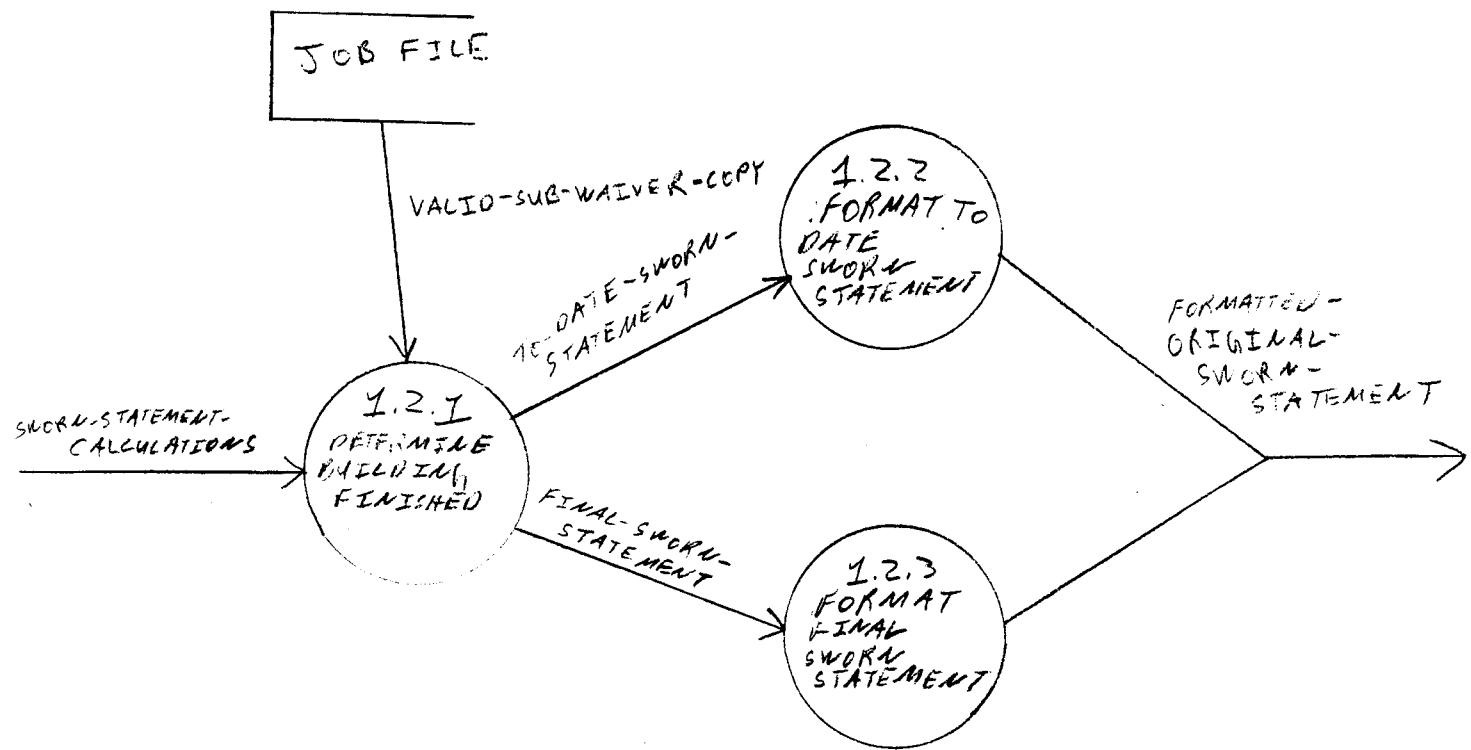


## ACCOUNTS RECEIVABLE OVERVIEW

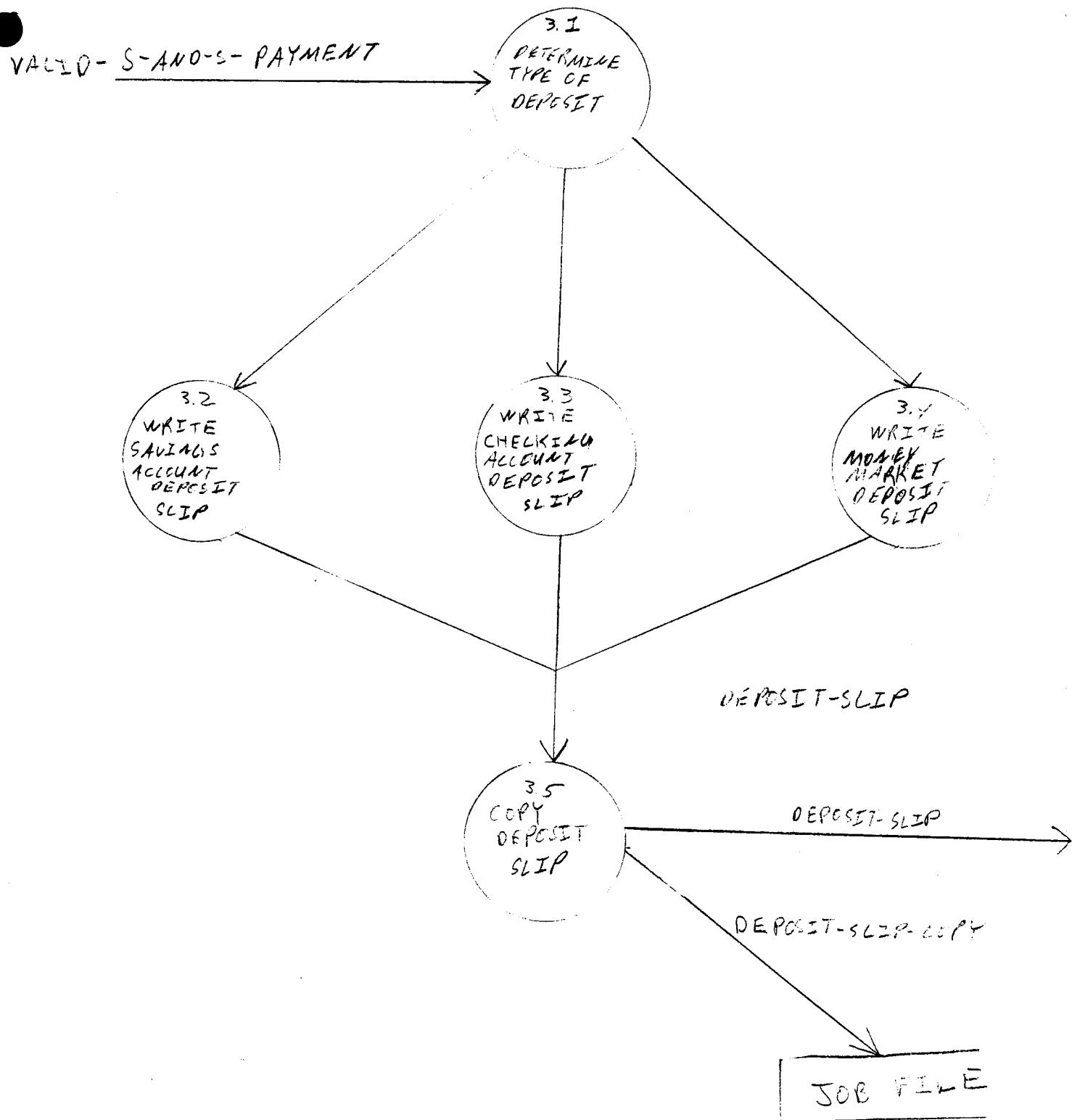




ACCOUNTS RECEIVABLE  
DIAGRAM 1.2



ACCOUNTS  
RECEIVABLE  
DIAGRAM 3



ACCOUNTS RECEIVABLE

PROCESS SPECIFICATIONS

1.1

ATTAIN BUILDING-SPECIFICATIONS.  
FOR EACH KIND-OF-WORK:  
CALCULATE AMOUNT.

1.2.1

ATTAIN SWORN-STATEMENT-CALCULATIONS.  
ATTAIN VALID-SUB-WAIVER-COPY.  
COMPARE VALID-SUB-WAIVER TO CALCULATIONS.  
IF SWORN-STATEMENT-CALCULATIONS COMPLETED,  
THEN,  
FINAL-SWORN-STATEMENT.  
OTHERWISE,  
TO-DATE-SWORN-STATEMENT.

1.2.2

ATTAIN TO-DATE-SWORN-STATEMENT.  
GET FORMATTED-ORIGINAL-SWORN-STATEMENT.

1.2.3

ATTAIN FINAL-SWORN-STATEMENT.  
GET FORMATTED-ORIGINAL-SWORN-STATEMENT.

1.3

ATTAIN FORMATTED-ORIGINAL-SWORN-STATEMENT.  
PUT ORIGINAL-SWORN-STATEMENT.

1.4 ATTAIN ORIGINAL-SWORN STATEMENT.  
COPY ORIGINAL-SWORN STATEMENT.  
PUT SWORN STATEMENT-COPY.

1.5 ATTAIN SUB-WAIVER.  
ATTAIN SWORN STATEMENT-COPY.  
IF SUB-WAIVER EQUAL DETAIL-LIKE:  
THEN,  
VALID-SUB-WAIVER.  
OTHERWISE,  
INVALID-SUB-WAIVER.

1.6 ATTAIN VALID-SUB-WAIVER.  
COPY VALID-SUB-WAIVER.  
PUT VALID-SUB-WAIVER-COPY.

ACCOUNTS RECEIVABLE

(2) ATTAIN CONSTRUCTION-PAYMENT.  
ATTAIN PAID-SUB-WAIVER.

ATTAIN SWORN-STATEMENT-COPY.

IF CONSTRUCTION-PAYMENT EQUAL SWORN-STATEMENT-COPY  
THEN,

VALID-S-AND-S-PAYMENT,  
FOR EACH PAID-SUB-WAIVER:  
VALID-PAID-SUB-WAIVER.

OTHERWISE,

INVALID-S-AND-S-PAYMENT.  
FOR EACH PAID-SUB-WAIVER:  
INVALID-PAID-SUB-WAIVER.

(3.1)

ATTAIN S-AND-S-PAYMENT.  
FOR EACH S-AND-S-PAYMENT.  
COMPARE S-AND-S-PAYMENT TO TYPE:

CASE 1 (SAVINGS ACCOUNT DEPOSIT):

(3.2) PUT SAVINGS-ACCOUNT-DEPOSIT-SLIP.

CASE 2 (CHECKING ACCOUNT DEPOSIT):

(3.3) PUT CHECKING-ACCOUNT-DEPOSIT-SLIP.

CASE 3 (MONEY MARKET DEPOSIT SLIP):

(3.4) PUT MONEY-MARKET-DEPOSIT-SLIP.

ACCOUNTS  
RECEIVABLE

(3.5) ATTAIN ORIGINAL-DEPOSIT-SLIP.  
COPY ORIGINAL-DEPOSIT-SLIP.  
PUT DEPOSIT-SLIP-COPY.

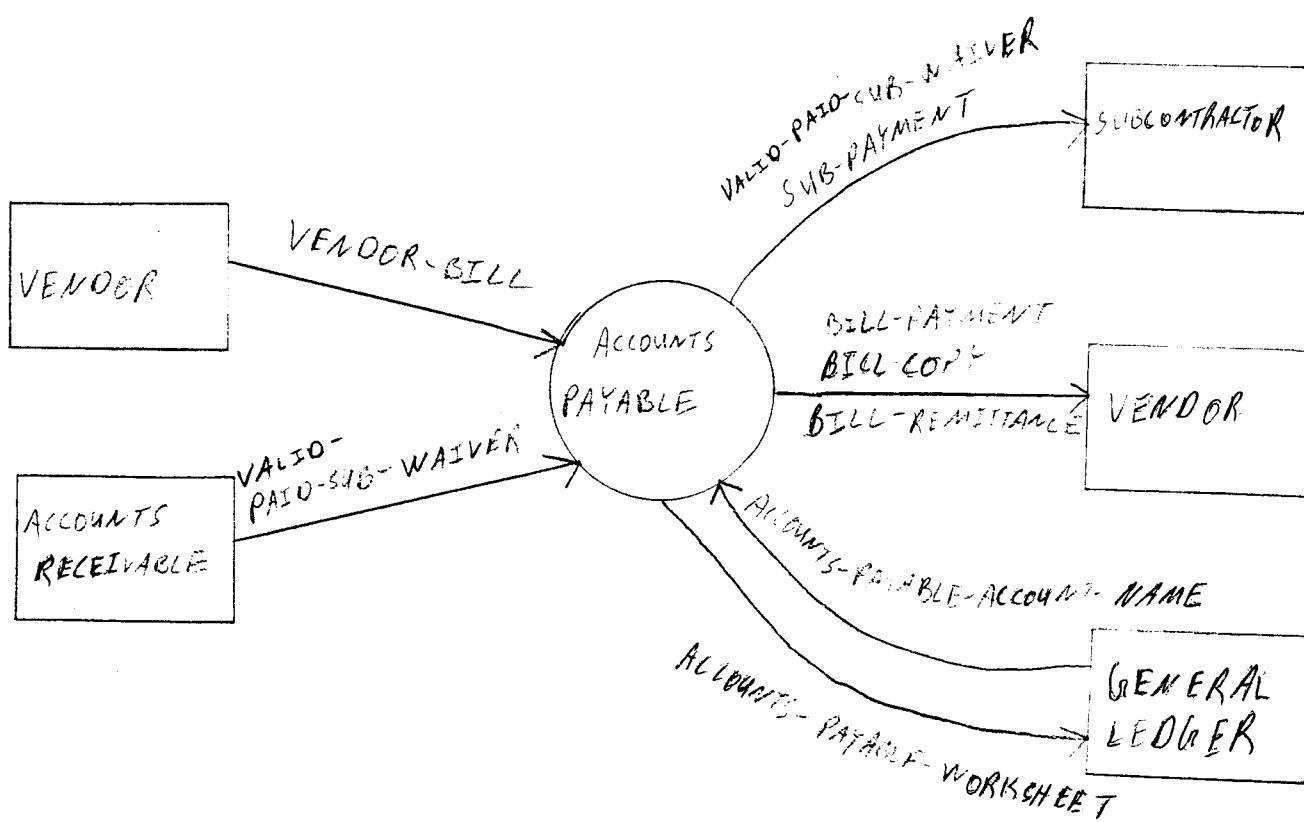
(4) ATTAIN S-AND-S-DEPOSIT.  
ATTAIN ORIGINAL-DEPOSIT-SLIP.  
MAKE DEPOSIT.

(5) ATTAIN BANK-RECEIPT.  
ATTAIN ACCOUNTS-RECEIVABLE-ACCOUNT-NAME.  
ATTAIN DEPOSIT-SLIP-COPY.  
GET FORMATTED-ACCOUNTS-RECEIVABLE-WORKSHEET.

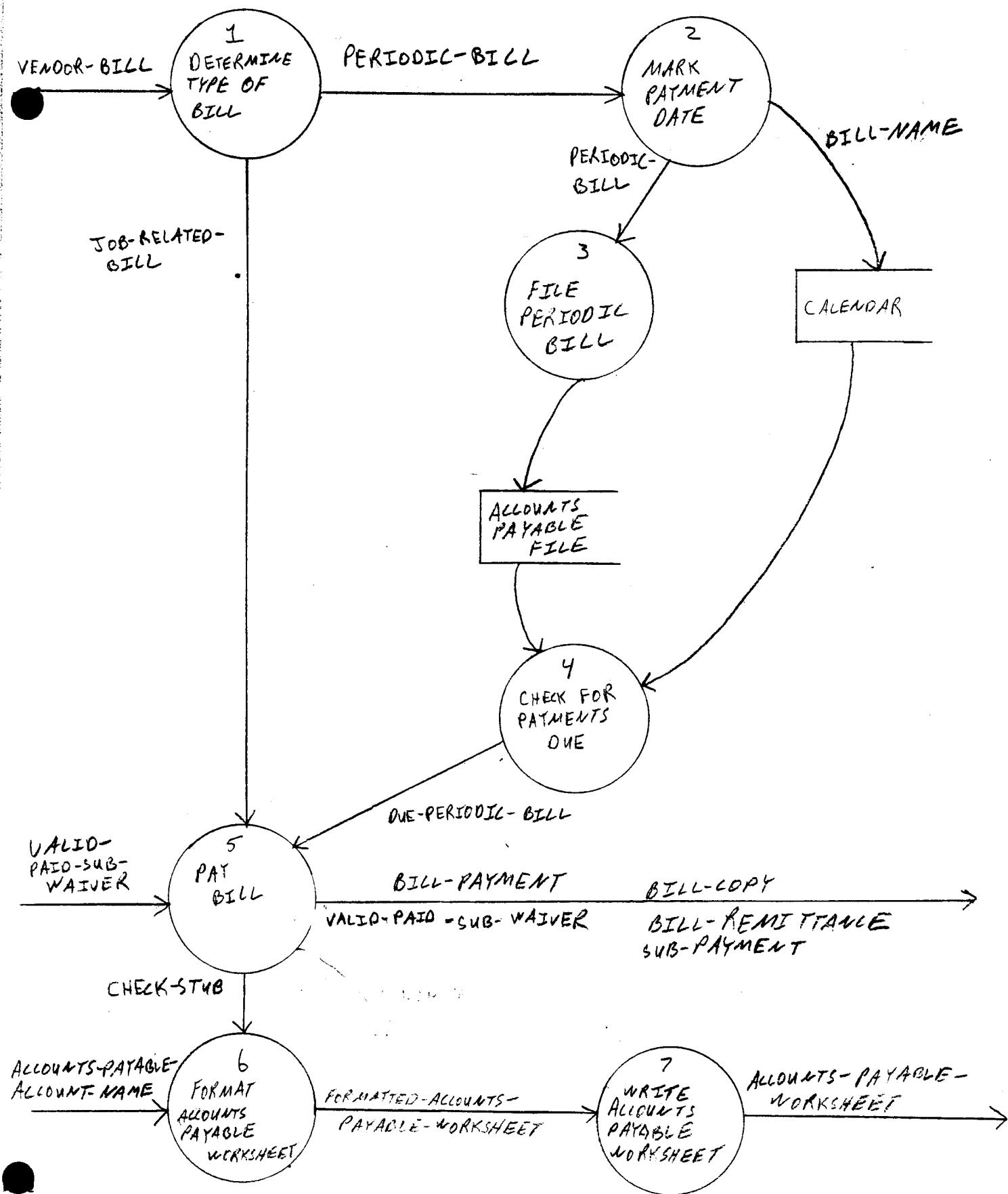
(6) ATTAIN FORMATTED-ACCOUNTS-RECEIVABLE-WORKSHEET.  
PUT ACCOUNTS RECEIVABLE - WORKSHEET.

ACCOUNTS PAYABLE

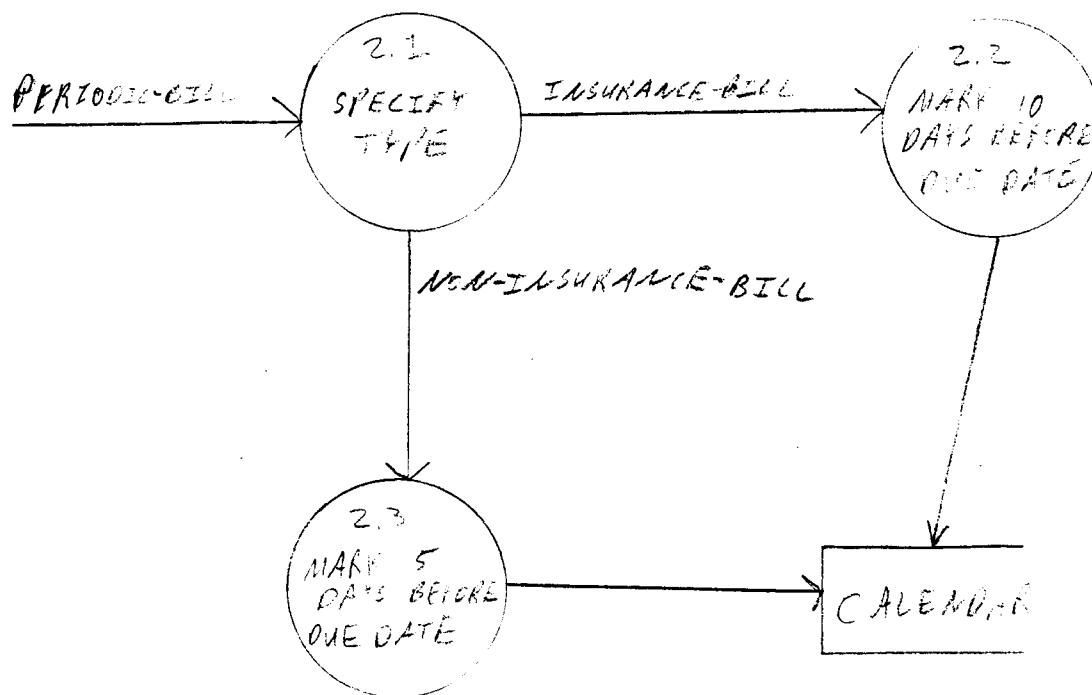
DATAFLOW DIAGRAMS

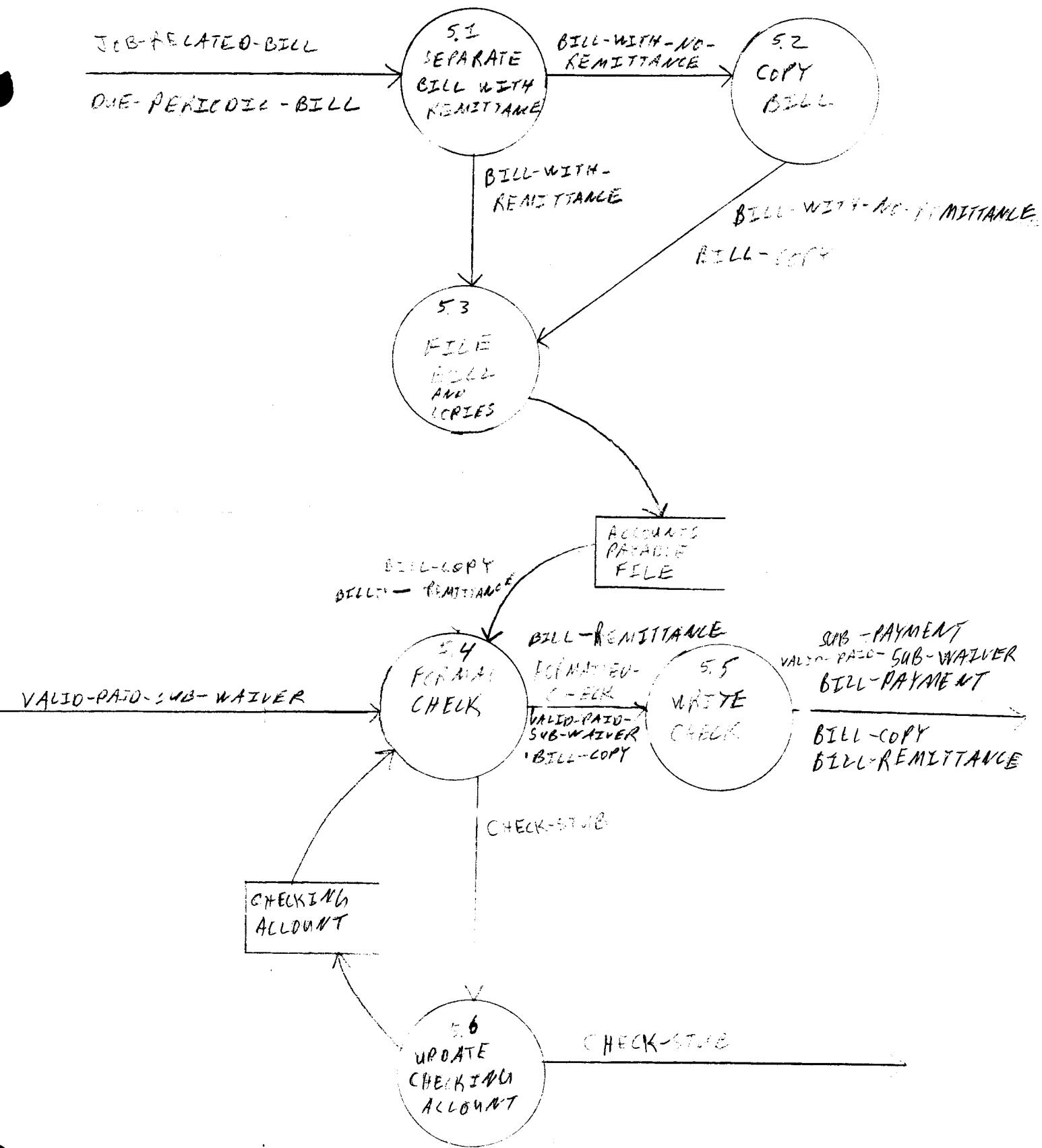


ACCOUNTS PAYABLE  
OVERVIEW



ACCOUNTS PAYABLE  
SCHEDULE 2





ACCOUNTS PAYABLE

PROCESS SPECIFICATIONS

- (1) ATTAIN VENDOR-BILL.  
IF VENDOR-BILL SPECIFIC TO JOB,  
THEN,  
JOB-RELATED-BILL.  
OTHERWISE,  
PERIODIC-BILL.

- (2.1) ATTAIN PERIODIC-BILL.  
IF INSURANCE-BILL,  
THEN,  
INSURANCE-BILL.  
OTHERWISE,  
NON-INSURANCE.

- (2.2) ATTAIN INSURANCE-BILL.  
PUT BILL-NAME ON CALENDAR  
10 DAYS BEFORE DUE DATE.

ACCOUNTS  
PAYABLE

2.3

ATTAIN NON-INSURANCE-BILL.  
PUT BILL-NAME ON CALENDAR  
5 DAYS BEFORE DUE-DATE.

3

ATTAIN PERIODIC-BILL.  
PUT PERIODIC-BILL IN ACCOUNTS  
PAYABLE FILE.

4

ATTAIN CALENDAR.  
IF BILL-NAME WRITTEN ON CURRENT-DATE,  
THEN,

ATTAIN PERIODIC-BILL FROM  
ACCOUNTS PAYABLE FILE.

(5.1) ATTAIN JOB-RELATED-BILL AND DUE-PERIODIC-BILL.  
IF JOB-RELATED-BILL OR DUE-PERIODIC-BILL  
HAS NO REMITTANCE,  
THEN,  
BILL-WITH-NO-REMITTANCE.

OTHERWISE,  
BILL-WITH-REMITTANCE.

(5.2) ATTAIN BILL-WITH-NO-REMITTANCE.  
COPY BILL-WITH-NO-REMITTANCE.

(5.3) ATTAIN BILL-WITH-REMITTANCE OR BILL-WITH-NO-  
REMITTANCE AND BILL-COPY.  
PUT BILL-WITH-REMITTANCE BILL-WITH-NO-  
REMITTANCE OR BILL-COPY IN ACCOUNTS  
PAYABLE FILE.

ACCOUNTS  
PAYABLE

5.4 ATTAIN VALID-PAID-SUB-WAIVER AND  
(BILL-COPY OR BILL-REMITTANCE).  
GET FORMATTED-CHECK.

5.5 ATTAIN FORMATTED-CHECK <sup>AND</sup> VALID-PAID-SUB-WAIVER  
(BILL-COPY OR BILL-REMITTANCE).  
PUT BILL-PAYMENT.

5.6 ATTAIN CHECK-STUB.  
ACCESS CHECKING ACCOUNT.  
DEBIT CHECKING ACCOUNT FOR CHECK-STUB-AMOUNT.

(6)

ATTAIN CHECK-STUB AND ACCOUNTS-PAYABLE-ACCOUNT-NAME.  
GET FORMATTED-ACCOUNTS-PAYABLE-WORKSHEET.

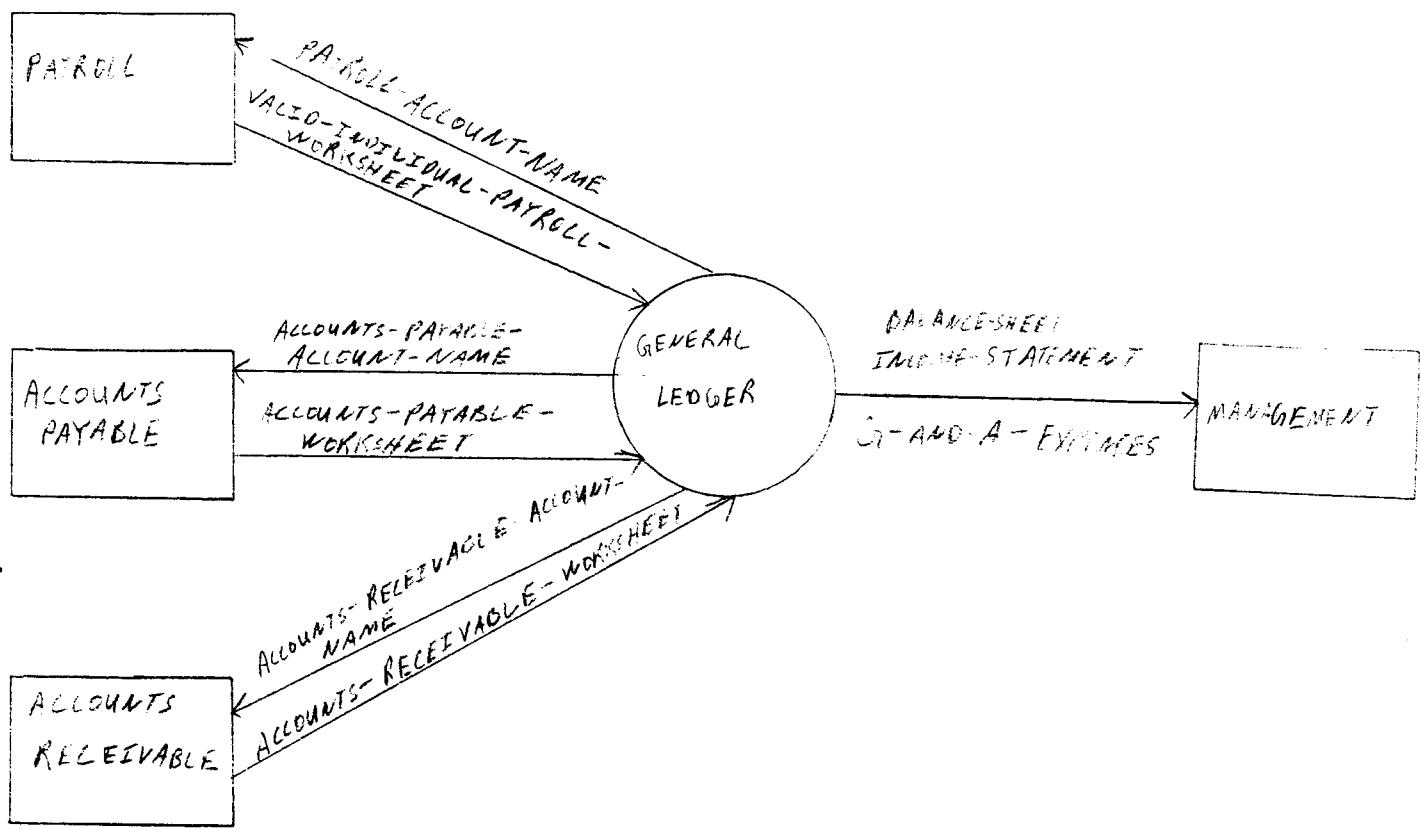
(7)

ATTAIN FORMATTED-ACCOUNTS-PAYABLE-WORKSHEET  
PUT PAYMENT-DESCRIPTION,  
PUT CHECK-NUMBER,  
PUT AMOUNT-PAID,  
PUT PAYEE-NAME.

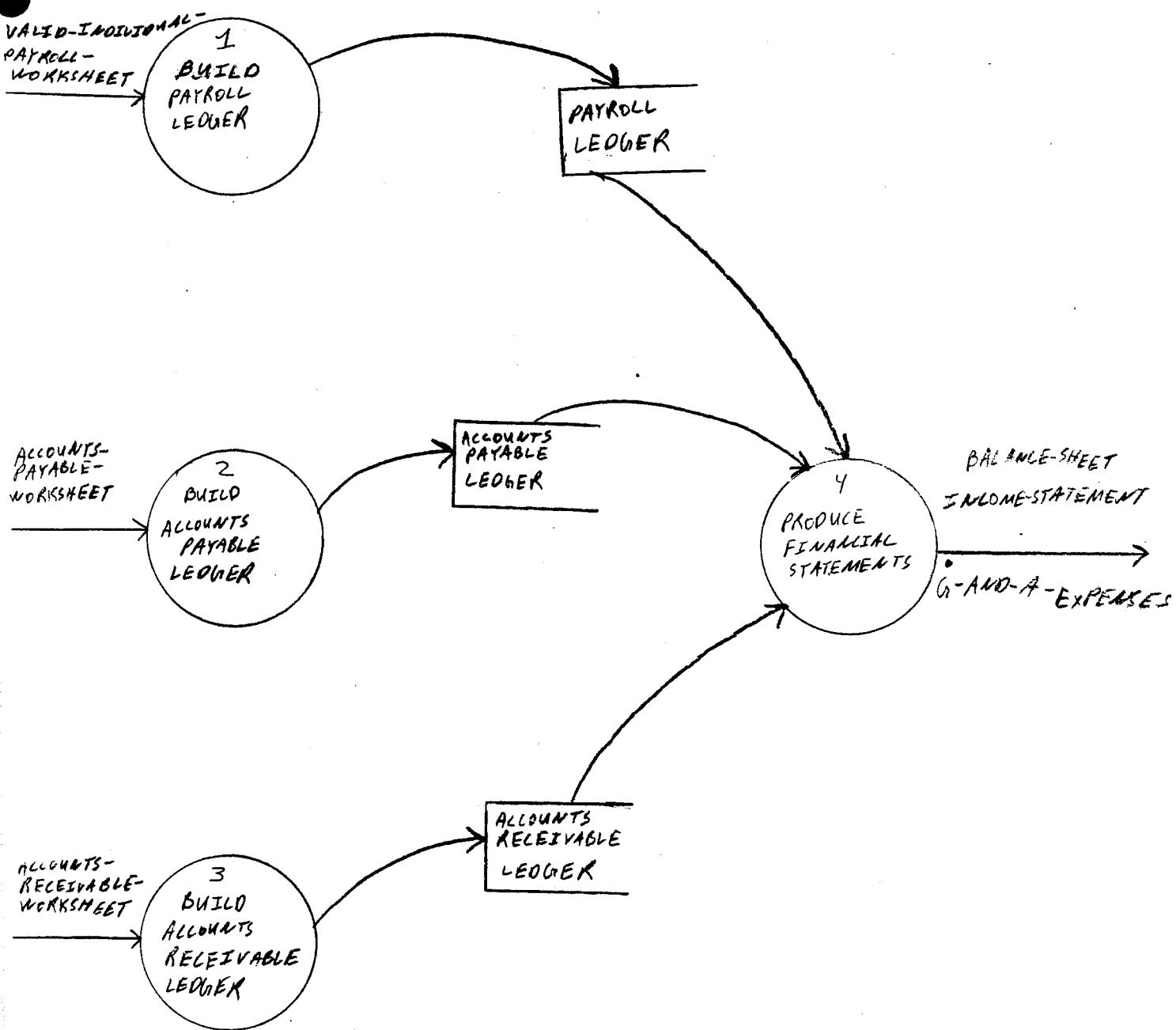
GENERAL LEDGER

DATA FLOW DIAGRAMS

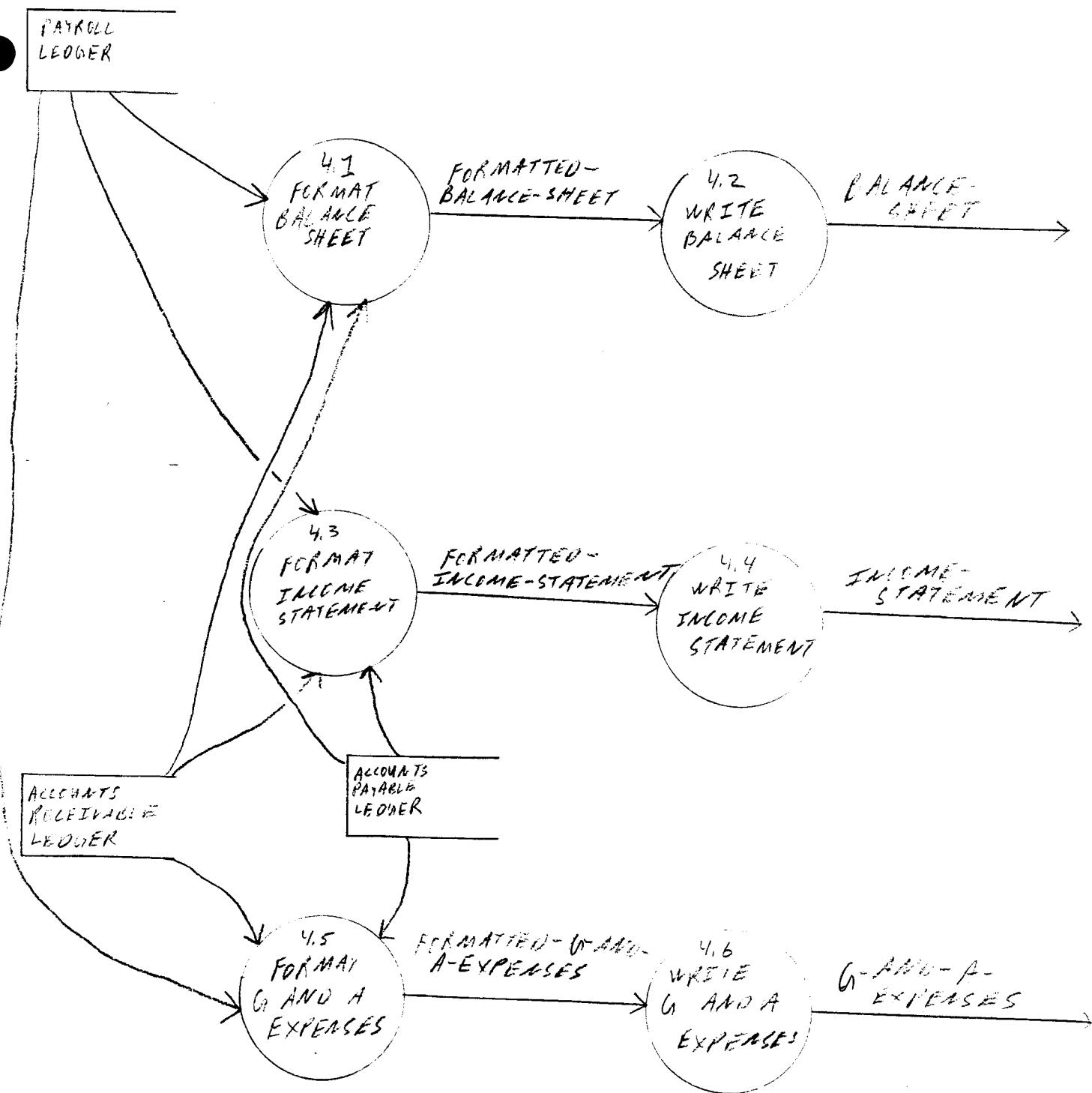
# CONTEXT



# GENERAL LEDGER OVERVIEW



GENERAL  
LEDGER  
DIAGRAM 4



GENERAL LEDGER

PROCESS SPECIFICATIONS

GENERAL LEDGER

(1) ATTAIN VALO-INDIVIDUAL-PAYROLL-WORKSHEET.

FOR EACH VALO-INDIVIDUAL-PAYROLL-WORKSHEET:

ACCESS PAYROLL LEDGER.

POST DEBITS AND CREDITS TO PAYROLL LEDGER ACCOUNT.

(2) ATTAIN ACCOUNTS-PAYABLE-WORKSHEET.

FOR EACH ACCOUNTS-PAYABLE-WORKSHEET:

ACCESS ACCOUNTS PAYABLE LEDGER.

POST DEBITS AND CREDITS TO ACCOUNTS PAYABLE LEDGER.

(3) ATTAIN ACCOUNTS-RECEIVABLE-WORKSHEET.

FOR EACH ACCOUNTS-RECEIVABLE-WORKSHEET:

ACCESS ACCOUNTS RECEIVABLE WORKSHEET.

POST DEBITS AND RECEIVABLE LEDGER.

CREDITS TO ACCOUNTS RECEIVABLE

LEDGER.

4.1 ACCESS PAYROLL LEDGER.

ACCESS ACCOUNTS RECEIVABLE LEDGER.

ACCESS ACCOUNTS PAYABLE LEDGER.

FOR EACH BALANCE-SHEET CHART:

GET AMOUNT.

GET FORMATTED-BALANCE-SHEET.

GENERAL LEDGER

4.2

ATTAIN FORMATTED-BALANCE-SHEET.  
FOR EACH BALANCE-SHEET CATEGORY:  
PUT AMOUNT.  
PUT BALANCE-SHEET.

4.3

ACCESS PAYROLL LEDGER.

ACCESS ACCOUNTS PAYROLL LEDGER.

ACCESS ACCOUNTS RECEIVABLE LEDGER.

FOR EACH INCOME-STATEMENT CATEGORY:  
GET AMOUNT.

GET FORMATTED-INCOME-STATEMENT.

4.4

ATTAIN FORMATTED-INCOME-STATEMENT.

FOR EACH INCOME-STATEMENT AMOUNT:  
PUT AMOUNT.

PUT INCOME-STATEMENT.

4.5

ACCESS PAYROLL LEDGER.

ACCESS ACCOUNTS PAYROLL LEDGER.

ACCESS ACCOUNTS RECEIVABLE LEDGER.

FOR EACH G-AND-A-EXPENSES CATEGORY:  
GET AMOUNT.

GET FORMATTED-G-AND-A-EXPENSES.

ATTAIN FORMATTED-G-AND-A-EXPENSES.

FOR EACH G-AND-A-EXPENSES CATEGORY:  
PUT AMOUNT.

PUT G-AND-A-EXPENSES.

4.6

# DATA DICTIONARY

DATA ELEMENT NAME: ACCOUNTS-PAYABLE-ACCOUNT-NAME

ALIASES:

BILL-NAME

VALUES & MEANINGS:

A thru Z

NOTES: ACCOUNTS-PAYABLE-ACCOUNT-NAME CONSIST OF  
THE NAME OF THE CREDITOR

FILE NAME: ACCOUNTS-PATABLE-FILE

● ALIASES:

COMPOSITION:

(PROJECT-NAME) + PAYEE-NAME +  
AMOUNT-DUE \* + DATE-DUE +  
{ PAYMENT-DESCRIPTION }

FILE NAME: ACCOUNTS PAYABLE LEDGER

ALIASES:

COMPOSITION: { AMOUNT-PAID + CHECK-NUMBER + PAYEE-NAME + }  
{ PAYMENT-DESCRIPTION }

NOTES: Annual totals of each account

DATAFLOW NAME: ACCOUNTS - PAYABLE - WORKSHEET

PAGES: ACCOUNTS PAYABLE LEDGER

COMPOSITION:

NOTES: ACCOUNT totals for a week

DATA ELEMENT NAME: ACCOUNTS-RECEivable-ACCOUNT-NAME

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: Debtors Name

FILE NAME: ACCOUNTS RECEIVABLE LEDGER

• LIASES:

COMPOSITION:

ACCOUNTS- RECEIVABLE- ACCOUNT- NAME +  
PAYMENT- DESCRIPTION + AMOUNT- PAID +  
DATE- ISSUED

NOTES: Annual totals of accounts

PATRON NAME: ACCOUNTS- RECEIVABLE - WORKSHEET

ALIASES: ACCOUNTS RECEIVABLE LEDGER

COMPOSITION:

NOTES: Weekly totals of accounts

DATA ELEMENT NAME: AMOUNT

ALIASES:

VALUES & MEANINGS:

\$ dollar

C - 9

NOTES: Dollar Amount of each particular category  
includes on business forms.

DATA ELEMENT NAME: AMOUNT-PAID

ALIASES:

VALUES & MEANINGS:

\$ dollar

0 - 9

NOTES: PERTAINS TO AMOUNT OF CHECK  
PAYMENT OR CASH PAYMENT

FILE NAME: BALANCE-SHEET

ALIASES:

COMPOSITIONS:

{CATEGORY-DESCRIPTION + AMOUNT}

NOTES:

DATAFLOW NAME: BANK- RECEIPT

ALIASES: DEPOSIT-SLIP

COMPOSITION:

NOTES:

DATAFLOW NAME: BILL-COPY

ALIASES: JOB-RELATED-BILL PERIODIC-BILL  
BILL-WITH-NO-REMITTANCE DUE-PERIODIC-BILL  
VENDOR-BILL BILL-REMITTANCE BILL-WITH-REMITTANCE

COMPOSITION: PAYEE-NAME + AMOUNT-DUE + DUE-DATE +

{ ITEM-DETAIL-LINE }

NOTES: NONE

DATA ELEMENT NAME: BILL-NAME

ALIASES: PAYEE-NAME

VALUES & MEANINGS:

A thru Z

NOTES: BILL NAME CONSISTS OF  
CREDITOR'S NAME OR PAYEE'S NAME.

DATAFLOW NAME: BILL-PAYMENT

ALIASES:

COMPOSITION: AMOUNT-PAID + PAYEE-NAME + CURRENT-DATE  
PAYER-NAME + PAYMENT-DESCRIPTION

NOTES:

DATAFLOW NAME: BILL-REMITTANCE

ALIASES: BILL-COPY, VENDOR-BILL, BILL WITH REMITTANCE  
BILL WITH NO REMITTANCE, JOB-RELATED-BILL, PERIODIC-BILL,  
ONE-PERIODIC-BILL

COMPOSITION:

NOTES:

# DATAFLOW NAMES: BUILDING-SPECIFICATIONS

Aliases:

COMPOSITION: {KIND-OF-WORKS}

NOTES: CONSISTS OF CONSTRUCTION DETAILS

FILE NAME: CALENDAR

ALIASES:

COMPOSITION:

{ DATES }

NOTE:

DATA ELEMENT NAME: CATEGORY-DESCRIPTION

ALIASES:

VALUES & MEANINGS:

\$ dollar  
0 - 9

A thru Z

NOTES: Detail of what Amounts signify on  
Financial Statements

FILE NAME: CHECKING ACCOUNT

ALIASES:

COMPOSITION:

{ CHECK-NUMBER + PAYMENT-DESCRIPTION +  
DEBIT + CREDIT + (DATE-  
ISSUED) + BALANCE }

NOTES:

DATAFLOW NAME: CHECK-STUB

ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES:

DATA ELEMENT NAME: CHECK-STUB-AMOUNT

ALIASES: AMOUNT-PWD

VALUES & MEANINGS:

NOTES:

DATA ELEMENT NAME: CHECK-TOTAL

ALIASES:

VALUES & MEANINGS:

0-9

NOTES: TOTAL AMOUNT OF ALL OF THE EMPLOYEE-CHECKS.

DATAFLOW NAME: CONSTRUCTION-PAYMENT

ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES: RECEIVED BY SHARAHAN & SONS FROM  
OWNER

DATA ELEMENT NAME: CURRENT-DATE

ALIASES:

VALUES & MEANINGS:

A thru Z

0 thru 9

NOTES:

DATA ELEMENT: DATE-ISSUED

ALIASES:

VALUES & MEANINGS:

0 - 9

NOTES:

DATE-ISSUED      PERTAINS TO  
DATE THE CHECK WAS ISSUED

DATAFLOW NAME: DEPOSIT-SLIP

ALIASES:

COMPOSITION:

DEPOSITOR-NAME + TYPE-OF-DEPOSIT  
CURRENT-DATE + AMOUNT + FINANCIAL-  
INSTITUTION-NAME

NOTES:

DATAFLOW NAME: DEPOSIT-SCIP-COPY

ALIASES: DEPOSIT-SCIP

COMPOSITION:

NOTES:

DATA ELEMENT NAME: DEPOSITOR-NAME

ALIASES: PAYER-NAME

VALUE & MEANINGS:

NOTES:

DATAFLOW NAME: DATA PERIODIC-BILL

ALIASES: BILL-COPY BILL-REMITTANCE LOG-IN WITH-NO-  
REMITTANCE JOB-RELATED-BILL PERIODIC-BILL  
VENDOR-BILL

COMPOSITION:

NOTES:

DATAFLOW NAME: EMPLOYEE-CHECK

ALIASES:

COMPOSITION: AMOUNT-PAID + PAYEE-NAME + CURRENT-DATE +  
PAYER-NAME + PAYMENT-DESCRIPTION

NOTES:

DATAFLOW NAME: EMPLOYEE- DATA

ALIASES:

COMPOSITION: EMPLOYEE-NAME + EMPLOYEE-EDUCATION +  
PAST-EXPERIENCE + EMPLOYEE-REFERENCES

NOTES:

DATA ELEMENT NAME: EMPLOYEE-EDUCATION

ALIASES:

VALUES & MEANINGS:

A thru Z

0-9

NOTES:

FILE

NAME: EMPLOYEE FILES

ALIASES:

COMPOSITION: { INDIVIDUAL-EMPLOYEE-FILE }

NOTES: STORED ALPHABETICALLY IN FILE CABINET

DATA ELEMENT NAME: EMPLOYEE-NAME

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES:

DATA ELEMENT NAME: EMPLOYEE-REFERENCES

ALIASES:

VALUES & MEANINGS:

A thru Z

0 - 9

NOTES:

DATA ELEMENT NAME: FEDERAL-TAX

ALIASES:

VALUES & MEASURES:

\$ dollar

C-9

NOTE DOLLAR AMOUNT ACT RATE

DATA ELEMENT NAME: FEDERAL-TAXES

ALIASES:

VALUES & MEANINGS:

C - 9

ATTRIBUTES: FEDERAL TAXES WITHOLDING RATE

DATA ELEMENT NAME: F.I.C.A.

ALIASES:

VALUES & MEANINGS:

\$ dollar

0-9

NOTES: Social Security withholding AMOUNT ACT, PAGE

DATA ELEMENT NAME: F.I.C.A. - TAXES

ALIASES:

VALUES & MEANINGS:

O - 9

NOTES: SOCIAL SECURITY WITHHELD BY FED.

DATAFLOW NAME: FINAL-SHORN-STATEMENT

ALIAS: FINAL-SHORN-STATEMENT

COMPOSITION:

NOTES:

DATA ELEMENT NAME: FINANCIAL-INSTITUTION-NAME

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: Bank or Savings & Loan

DATAFLOW NAME: FORMATTED-ACCOUNTS-RECEIVABLE-WORKSHEET

ALIASES: ACCOUNTS- RECEIVABLE- WORKSHEET

COMPOSITION:

NOTES:

DATAFLOW NAME: FORMATTED-BALANCE-SHEET

ALIASES: BALANCE - SHEET

COMPOSITION:

NOTES:

DATAFLOW NAME: FORMATTED-CHECK

ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES:

DATAFLOW NAME: FORMATTED-C-AND-A-EXPENSES

ALIASES: C-AND-A-EXPENSES

COMPOSITION:

NOTES:

DATAFLOW NAME: FORMATTED-INCOME-STATEMENT

ALIASES: INCOME-STATEMENT

COMPOSITION:

NOTES:

DATAFLOW NAME: FORMATTED-ORIGINAL-SWORN-STATEMENT

ALIASES: ORIGINAL-SWORN-STATEMENT

COMPOSITION:

NOTES:

DATA ELEMENT NAME: FORMATTED-PAYROLL-TAX-REPORTS

ALIASES:

COMPOSITION:

{ EMPLOYEE-NAME + PAYROLL-TAX-INFORMATION }

NOTES:

DATAFLOW NAME: FORMATTED-W-2-FORM

ALIASES:

COMPOSITION: EMPLOYEE-NAME + W-2-INFORMATION

NOTES:

DATAFLOW NAME: FORMATTED- INDIVIDUAL-PAYROLL- WORKSHEET

ALIASES:

COMPOSITION: PAYROLL-ACCOUNT-NAME + PAYMENT-RATE +  
HOURS + REGULAR-PAY + OVERTIME-PAY +  
F.I.C.A. + FEDERAL-TAX + STATE-TAX +  
LOANS + NET-PAY + CHECK-NUMBER

NOTES:

FILE NAME: G-AND-A-EXPENSES

ALIASES:

COMPOSITION: {CATEGORY-DESCRIPTION + AMOUNT}

NOTES:

DATA ELEMENT NAME: HOURS

ALIASES:

VALUES & MEANINGS:

0 - 9

NOTES: Hours worked

FILE NAME: INCOME- STATEMENT

ALIASES:

COMPOSITION: {CATEGORY-DESCRIPTION + AMOUNT}

NOTES:

DATAFLOW NAME: INDIVIDUAL-EMPLOYEE-FILE

ALIASES:

COMPOSITIONS: EMPLOYEE-DATA + PAYMENT-RATE

NOTES:

DATAFLOW NAME: INDIVIDUAL-PATROLL-WORKSHEET

ALIASES:

COMPOSITION: PAYROLL-ACCOUNT-NAME + PAYMENT-RATE +  
HOURS + REGULAR-PAY + OVERTIME-PAY +  
F.I.C.A + FEDERAL-TAX + STATE-TAX +  
LOANS + NET-PAY + CHECK-NUMBER

NOTES:

DATAFLOW NAME: INSURANCE-BILL

ALIASES: BILL-COPY JOB-RELATED-BILL -NON-INSURANCE-BILL  
PERIODIC-BILL BILL-WITH-NO-REMITTANCE  
ONE-PERIODIC-BILL VENDOR-BILL BILL-REMITTANCE  
BILL-WITH-REMITTANCE

COMPOSITION:

NOTES:

DATAFLOW NAME: INVALID-EMPLOYEE-CHECK

ALIASES:

COMPOSITION: AMOUNT-PAID + PAYEE-NAME + CURRENT-DATE  
PAYER-NAME + PAYMENT-DESCRIPTION

NOTES: PROVEN FABRICATION

DATA-CREW NAME: INVALID- INDIVIDUAL- PAYROLL- WORKCHECK

ACCESS:

COMPOSITION:

PAYROLL-ACCOUNT-NAME + PAYMENT-RATE +  
HOURS + REGULAR-PAY + OVERTIME-PAY +  
F.I.C.A. + FEDERAL-TAX + STATE-TAX +  
LOANS + NET-PAY + CHECK-NUMBER

NOTES: PROVEN ERRONEOUS

DATAFLOW NAMES: INVALID-PAID-SUB-WAIVER

• ALIASES: VALID-PAID-SUB-WAIVER

COMPOSITION:

NOTES:

DATAFLOW NAME: INVALID-SUB-WAIVER

ALIASES: VALID-SUB-WAIVER

COMPOSITION:

NOTES:

DATAFLOW NAME: INVACIO-TIME-CARD

ALIASES:

COMPOSITION: EMPLOYEE-NAME +  $\sum_{i=1}^5$  HOURS + WORK-DESCRIPTIONS

NOTES: ERATICOUS CARD

FILE NAMES: JOB FILE

ALIASES:

COMPOSITION: { SWORN-STATEMENT.CPT + DEPOSIT-METHOD.CPT +  
VALID-SUBMISSION.CPT }

NOTES:

CAMAFLOW NAME: JOB- RELATED-BILL

ALIASES: BILL-COPY BILL- REMITTANCE BILL- WITH- REMITTANCE  
BILL- WITH- NO- REMITTANCE PERIODIC- BILL  
VENDOR- BILL DUE- PERIODIC- BILL

COMPOSITION:

NOTES:

DATA ELEMENT NAME: KIND-OF-WORK

ALIASES:

VALUES & MEANINGS:

A thru Z

0 - 9

NOTES:

DETAILED DESCRIPTION OF WORK  
REQUESTED BY OWNER

DATA ELEMENT NAME: LOANS

ALIASES:

VALUES & MEANINGS:

\$ dollar

C-4

NOTES:

LOANS PFD Deductible From Payments

DATA ELEMENT NAME: NET-PAY

ALIASES:

VALUES & MEANINGS:

\$ dollar

0-9

NOTES:

PATMENT FOR ONE PAYMENT

DATAFLOW NAME: NON-INSURANCE-BILL

ALIASES: BILL-COPY

COMPOSITION:

NOTES:

DATAFLOW NAME: PAID-SUB-WAIVER

ALIASES: VALID-PAID-SUB-WAIVER

COMPOSITION:

NOTES:

DATA ELEMENT NAME: PCT-EXPERIENCE

ALIASES:

VALUES & MEANINGS:

A thru Z

0-9

NOTES:

DATAFLOW NAME: PAY-RATE

ALIASES:

COMPOSITION:

EMPLOYEE-NAME + PAYMENT RATE

NOTES:

DATA ELEMENT NAME: SAVER NAME

ALIASES:

VALUES OR MEANINGS:

A thru Z

NOTES: NAME OF CREDITOR

DATA ELEMENT NAME: PAYER-NAME

ALIASES:

VALUES & MEANINGS:

SHANAHAN & SONS, BUILDERS INC.

NOTES: ENDORSEMENT FOR CHECKS

DATA ELEMENT NAME: PAYMENT-AMOUNT

ALIASES:

VALUES & MEANINGS:

0 - 9

NOTES: AMOUNT EMPLOYEE WILL ACTUALLY  
RECEIVE FOR COMPLETED WORK

DATA ELEMENT NAME PAYMENT DESCRIPTION

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: DESCRIBES GENERAL DETAILS OF BILL

DATA ELEMENT NAME: PAYMENT-RATE

ALIASES:

VALUES & MEANINGS:

\$ dollar

0 - 9

OPTIONS

- A) Hourly
- B) Salary (Supervisors)

NOTES:

DATA ELEMENT NAME: PAYROLL-ACCOUNT-NAME

ALIASES: EMPLOYEE-NAME

VALUES & MEANINGS:

A thru Z

NOTES: NAME OF EMPLOYEE

DATAFLOW NAME: PAYROLL-LEDGER

ALIASES:

COMPOSITION:

PAYROLL-ACCOUNT-NAME + RATE + -CUST +  
REGULAR-PAY + OVERTIME-PAY + WAGES-TOTAL +  
F.I.C.A. + FEDERAL-TAX + STATE-TAX +  
LOANS + NET-PAY + CHECK-NUMBER

NOTES:

Maintains annual totals for Accounts

DATA ELEMENT NAME: PAYROLL-TAX-INFORMATION

ALIASES:

VALUES & MEANINGS:

A thru Z

0-9

NOTES:

DATAFLOW NAME: PAYROLL-TAX-REPORTS

ALIASES:

COMPOSITION: {EMPLOYEE-NAME + PAYROLL-TAX-INFORMATION}

NOTES:

DATAFLOW NAME: PERIODIC-BILL

ALIASES: BILL-COPY BILL-REMITTANCE BILL-WITH-REMITTANCE  
BILL-WITH-NO-REMITTANCE JOB-RELATED-BILL  
VENDOR-BILL DUE-PERIODIC-BILL

COMPOSITION:

NOTES:

DATA ELEMENT NAME: PREVIOUS PAYMENTS

PLACES:

VALUES & MEANINGS:

\$ 0.00

0 - 9

NOTS: Amount PAID IN THIS PAST

DATA ELEMENT NAME: PROJECT-NAME

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: PROJECT-NAME IS USUALLY THE NAME OF  
THE OWNER OR HIS BUSINESS

DATA ELEMENT NAME: REGULAR-PAY

ALIASES:

VALUES & MEANINGS:

\$ dollar

0 - 9

NOTES:

DATAFILE NAME: S-A-N-D-S-DEPOSIT

ALIASES: E.I. - PAYMENT

COMPOSITION:

NOTE: THIS PAYMENT RECEIVED FROM THE M&G  
PRTALS TO SHAHAN & SONS WORK COMP.

DATA ELEMENT NAME: STATE-TAX

ALIASES:

VALUES & MEANINGS:

\$ dollar

C-9

NOTES: AMOUNT NOT RATE

DATAFLOW NAME: ORIGINAL-SMORN-STATEMENT

ALIASES:

COMPOSITION: { BUILDER-NAME + KIND-OF-WORK + }  
{ <sup>b</sup>ΣAMOUNT }

NOTES:

DATA ELEMENT NAME: OVERTIME-PAY

ALIASES:

VALUES & MEANINGS:

\$ dollar

0 - 9

NOTES:

DATA ELEMENT NAME: OWNER'S-NAME

ALIASES:

VALUES & MEANINGS:

A thru Z

NOTES: One who contracted building to be built.

DATA ELEMENT NAME: STATE-TAXES

ALIASES:

VALUES & MEANINGS:

0-9

NOTES:

STATE WITHHOLDING

RATE

DATA ELEMENT NAME: SUB-NAME

ACCESS:

VALUES & MEANINGS:

A thru Z

NOTES: SUB-CONTRACTOR'S NAME

DATAFILE NAME: SUB-PAYMENT

ALIASES: BILL-PAYMENT

COMPOSITION: PAYEE-NAME + PAYER-NAME  
+  
PAYMENT-DESCRIPTION + AMOUNT-PAID +  
CURRENT-DATE

NOTES:

DATAFLOW NAME: SUB-WAIVER

ALIASES: VAL20-SUB-WAIVER

COMPOSITION:

NOTES:

DATAFLOW NAME: SWORN-STATEMENT-CALCULATIONS

• LIASES:

• COMPOSITION: { KIND-OF-WORK + AMOUNT }

NOTES:

DATAFLOW NAME: SWORN-STATEMENT-COPY

ALIASES: ORIGINAL-SWORN-STATEMENT

COMPOSITION:

NOTES:

DATAFLOW NAME: TIME-CARD

PHASES:

COMPOSITION: EMPLOYEE-NAME +  $\sum_0^5$  HOURS + WORK-DESCRIPTORS

NOTES:

DAWLOW NAME: ROBERT J. CWERKA STATEMENT

ROBERT J. CWERKA STATEMENT

CONNECTIONS:

NOTE

DATA ELEMENT NAME: TYPE-OF-DEPOSIT

ALIASES:

VALUES & MEANINGS:

- 1) SAVINGS ACCOUNT
- 2) CHECKING ACCOUNT
- 3) MONEY MARKET

NOTES:

DATAFLOW NAME: VALID-EMPLOYEE-CHECK

ALIASES:

COMPOSITION: AMOUNT-PAID + PAYEE-NAME + CURRENT-DATE +  
PAYER-NAME + PAYMENT-DESCRIPTION

NOTES: PROVEN TO BE CORRECT

FILE NAME: VACID-INDIVIDUAL-PATROLL-WORKSHEET

ALIASES: PATROLL-LEDGER

COMPOSITION:

NOTES: Maintains totals for each account for one payment period

DATAFLOW NAME: PAID-IN-NAME-F  
VALID -  
ALIASES:  
COMPOSITION: OWNER-NAME + NAME-OF-PAINTER +  
AMOUNT-PAID + DUE-DATE + PREVIOUS-PAYOUTS

NOTES:

DATAFLOW NAME: VALID-S-AND-S-PAYMENT

ALIASES: BILL-PAYMENT

COMPOSITION:

NOTES: THIS DATAFLOW PERTAINS TO THE  
DIRECTOR OF SHANAHAN & SONS

DATAFLOW NAME: VACIO-SUB-WAIVER

ALIASES:

COMPOSITION: OWNER-NAME + SUB-NAME +  
AMOUNT-DUE + DUE-DATE + PREVIOUS-PAYMENTS

NOTES:

DATAFLOW NAMES: VALID-SUB-WAIVER-COPY

RELASES: VALID-SUB-WAIVER

POSITIONS:

NOTES:

DATAFLOW NAME: VALID-TIME-CARD

ALIASES:

COMPOSITION: EMPLOYEE-NAME +  $\sum_0^5$  HOURS + WORK-DESCRIPTION

NOTES: CORRECT CARD

DATAFLOW NAME: VENDER-BILL

ALIASES:

BILL-COPY  
BILL-WITH-REMITTANCE  
JOB-RELATED-BILL  
DUE-PERIODIC-BILL

BILL-REMITTANCE

BILL-WITH-NO-REMITTANCE

COMPOSITION:

NOTES:

DATAFLOW NAME: W-2-FORM

ALIASES:

COMPOSITION: EMPLOYEE-NAME + W-2-INFORMATION

NOTES:

DATA ELEMENT NAME: W-2-INFORMATION

ALIASES:

PLACES & MEASUREMENTS:

A thru Z

0-9

NOTES:

DATA ELEMENT NAME: WAGES-TOTAL

ALIASES:

VALUES & MEANINGS:

A dollar

0-9

NOTES:

Total For One Payment Period  
without Deductions

DATAFLOW NAME: WITHOLDING-RATES

ALIASES:

COMPOSITION: FEDERAL-TAXES + STATE-TAXES +  
F.I.C.A. - TAXES.

NOTES:

DATA ELEMENT NAME: WORK-DESCRIPTION

ALIASES:

VALUES & MEANINGS:

A thru Z  
0 - 9

NOTES:

DATA ELEMENT NAME: WORKSHEET-TOTAL

ALIASES:

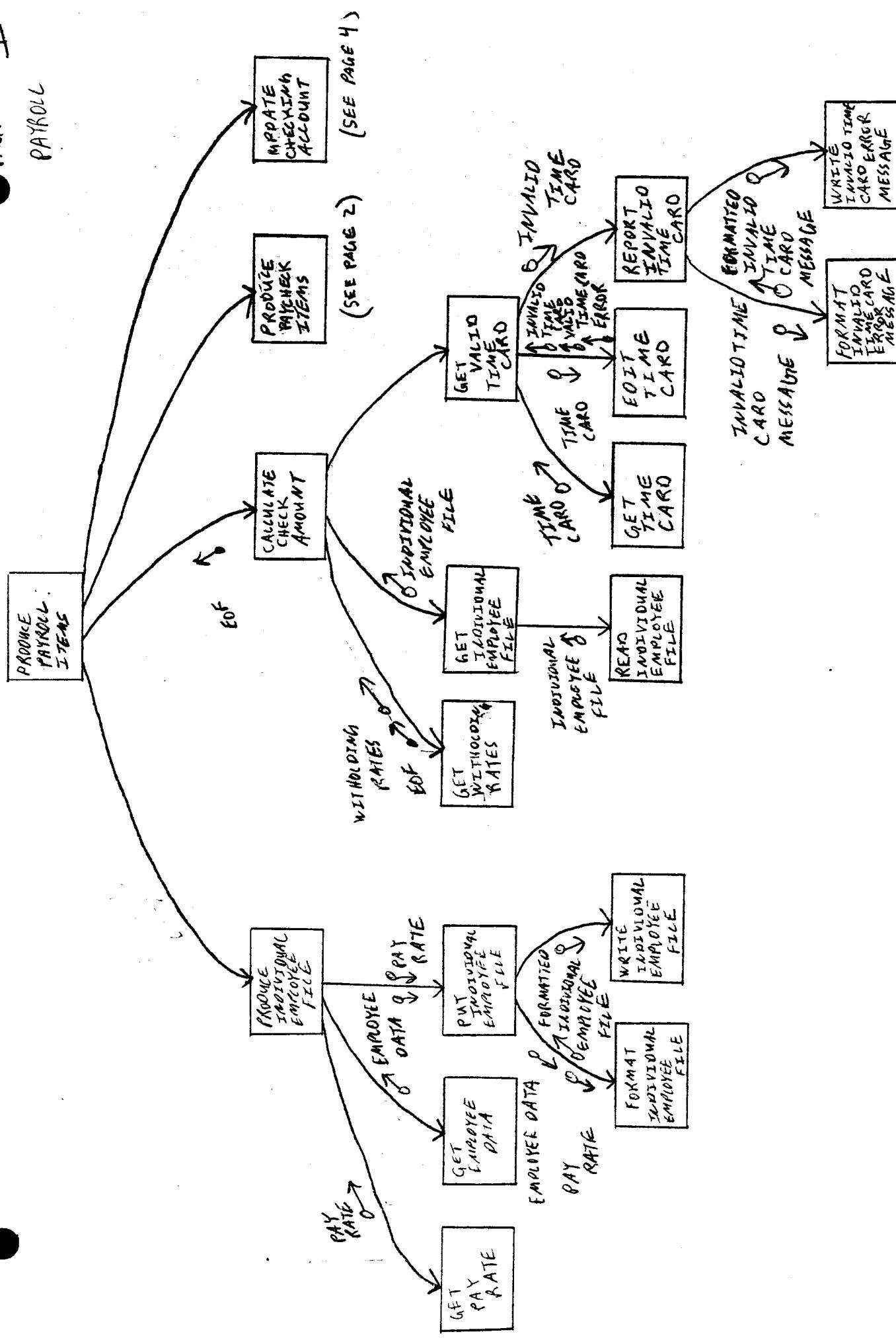
VALUES & MEANINGS:

0 - 9

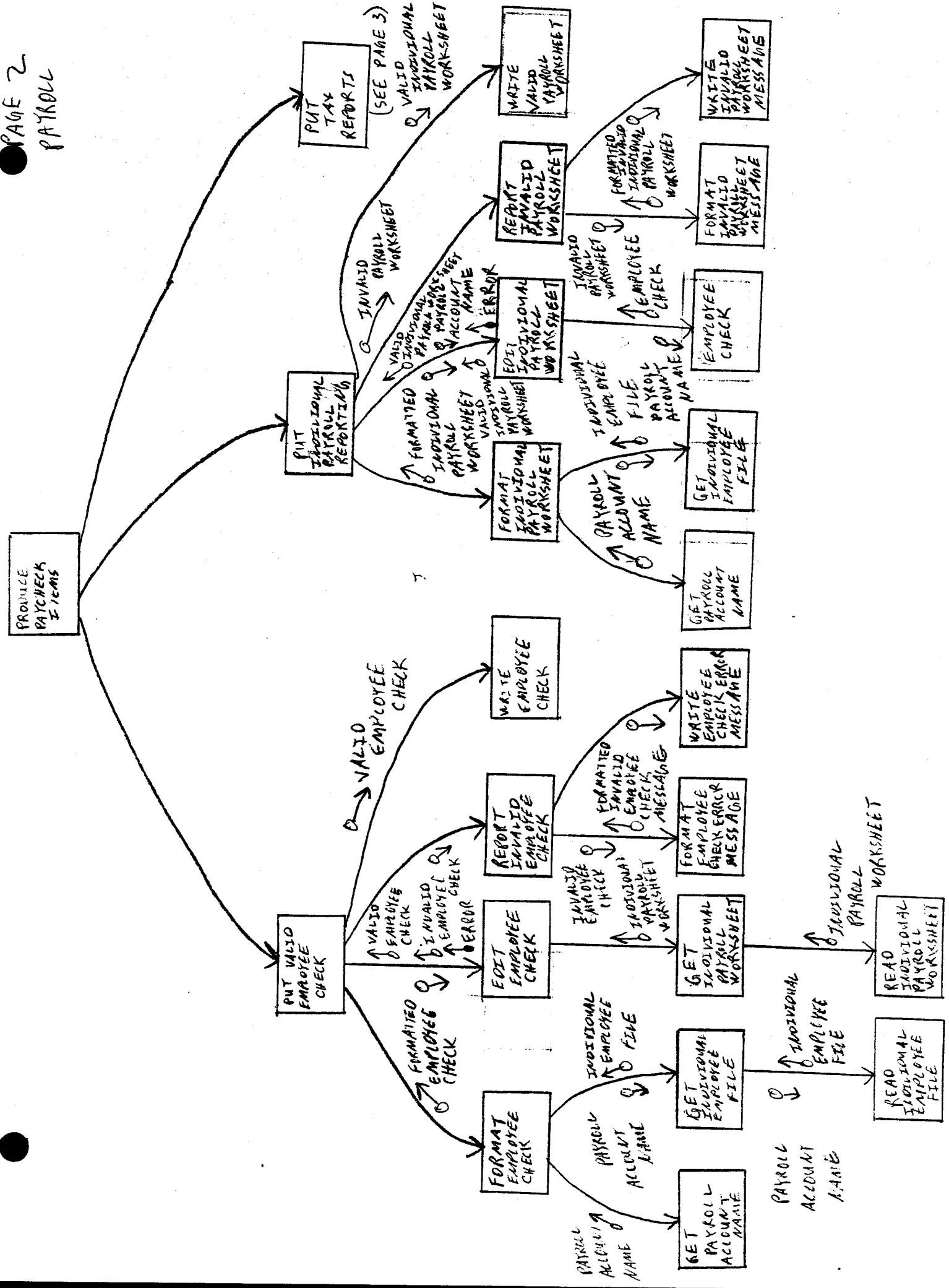
NOTES: TOTAL AMOUNT OF NET-PAY FOR ALL OF THE  
INDIVIDUAL-PATROL-WORKSHEETS

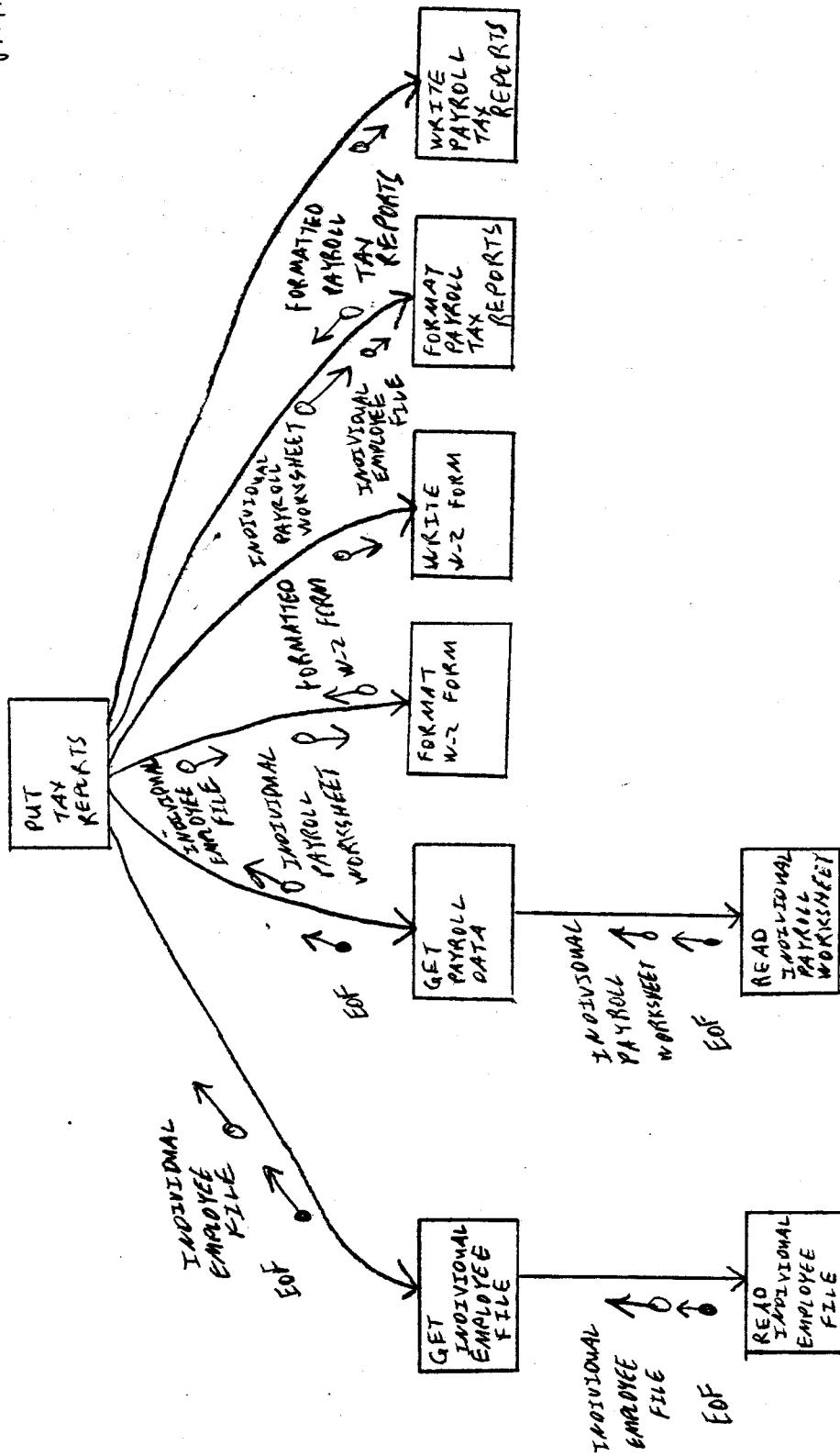
# STRUCTURED CHARTS

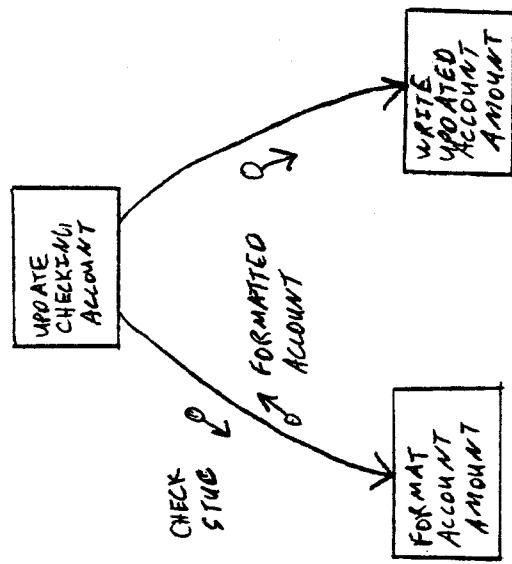
PAYROLL  
STRUCTURED CHART



PAGE 2  
PATROL

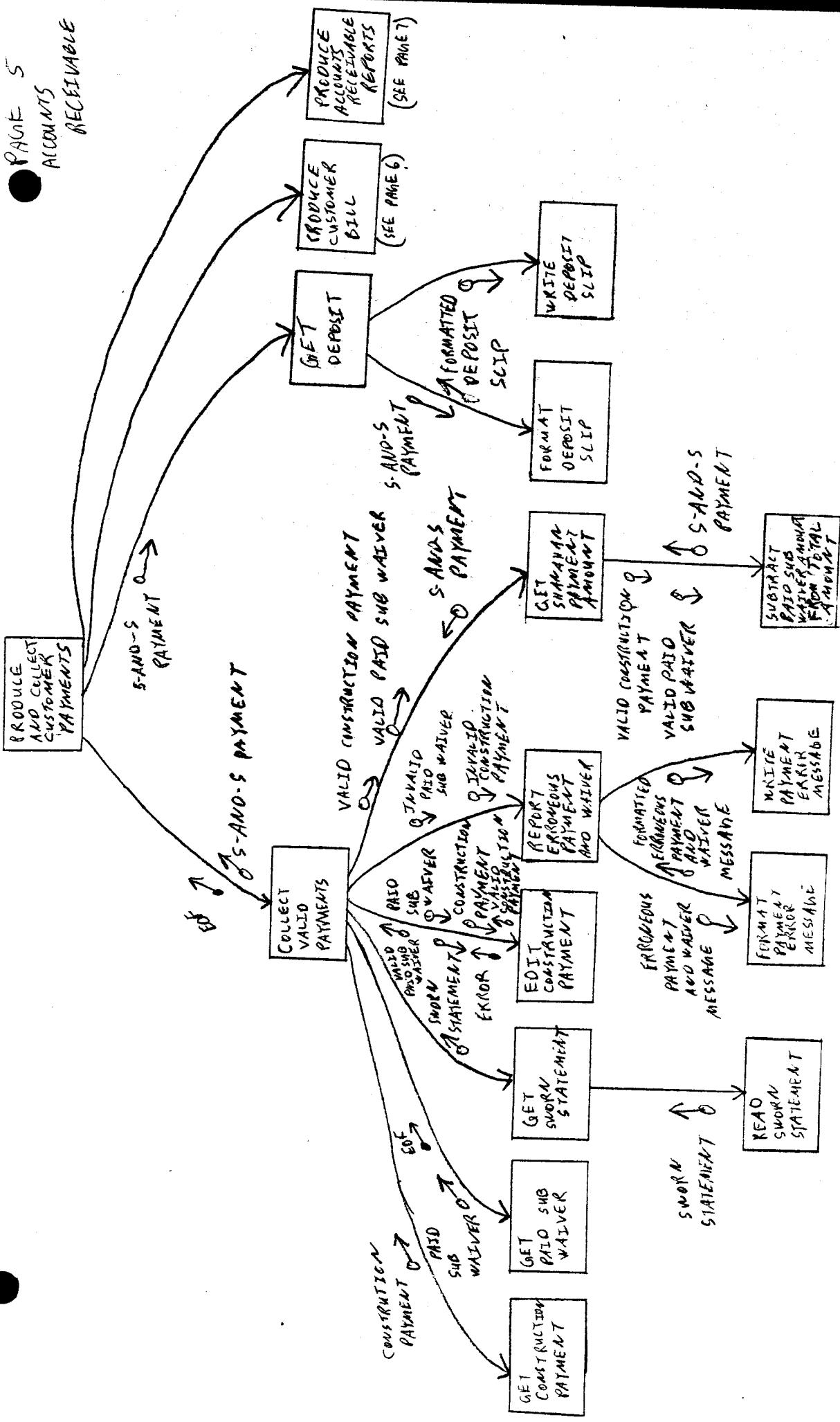


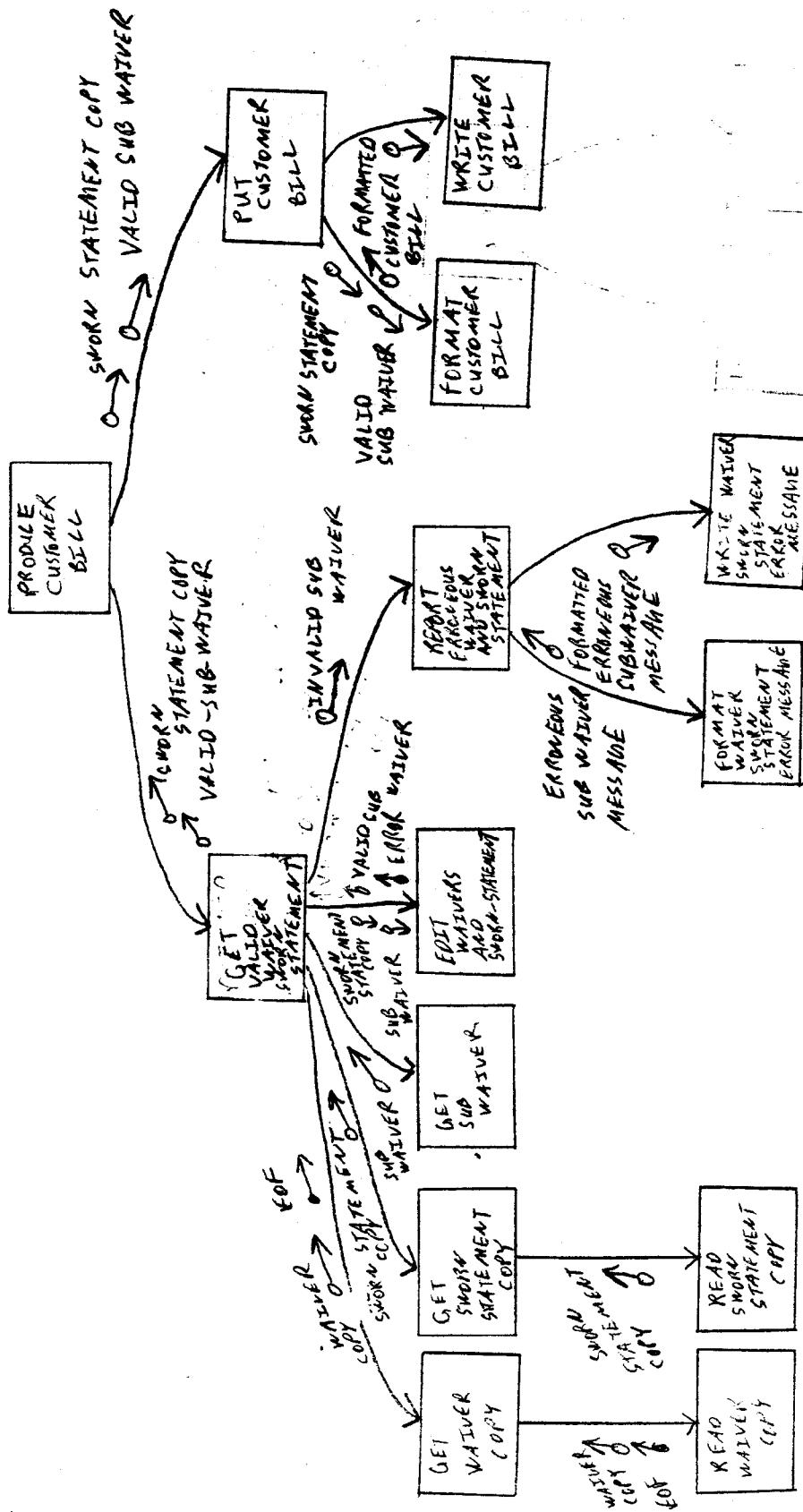




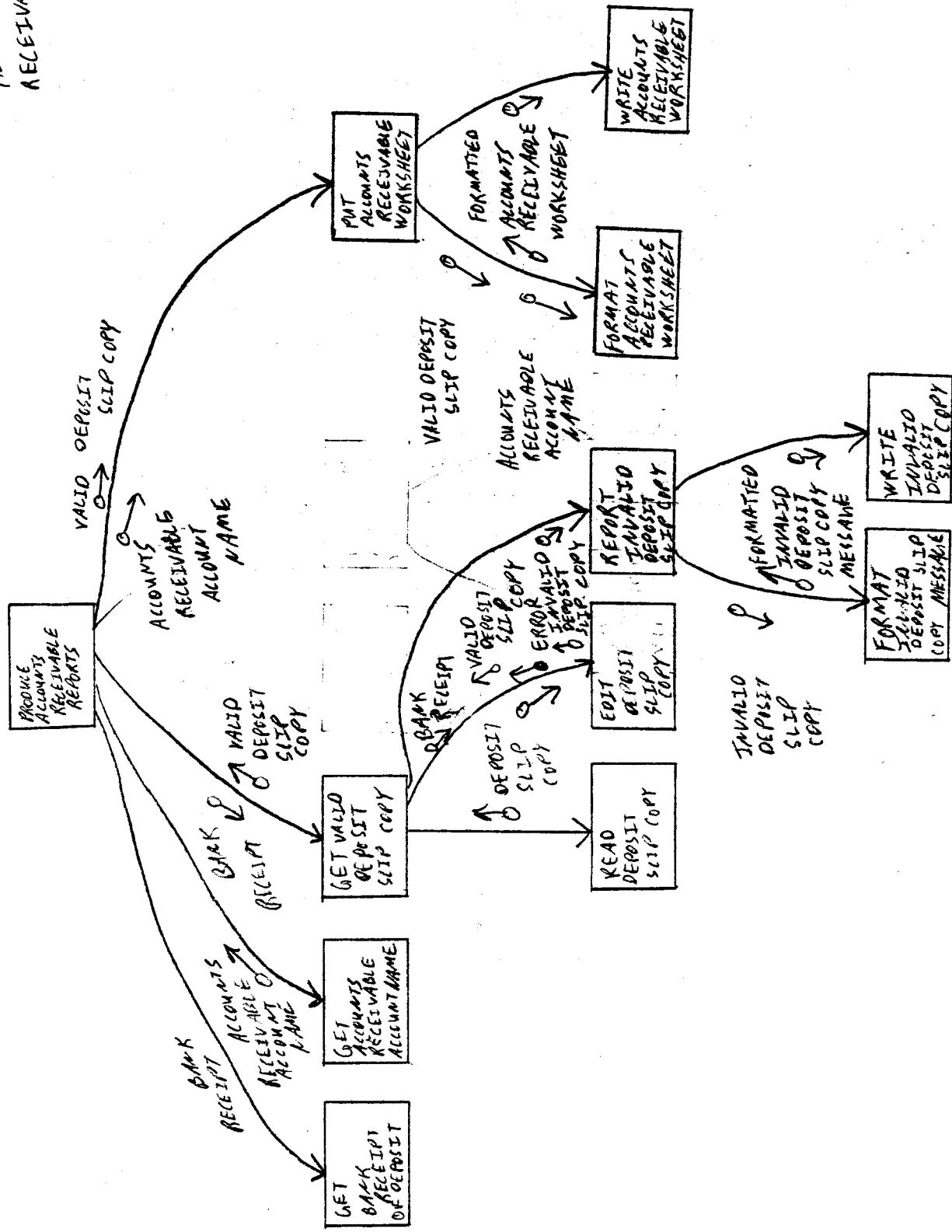
ACCOUNTS RECEIVABLE

STRUCTURED CHART





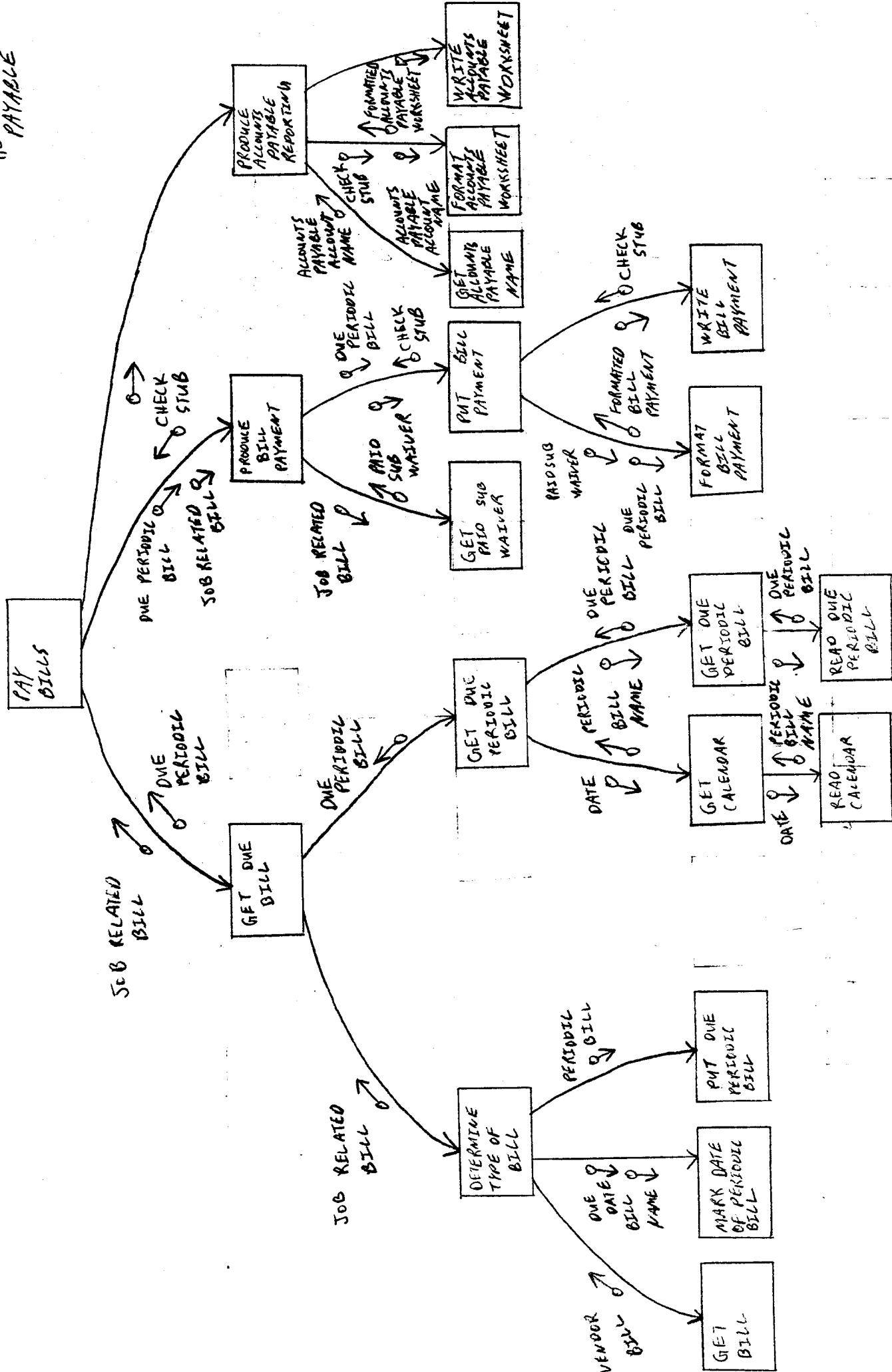
PAGE 7  
 ACCOUNTS  
 RECEIVABLE



ACCOUNTS PAYABLE

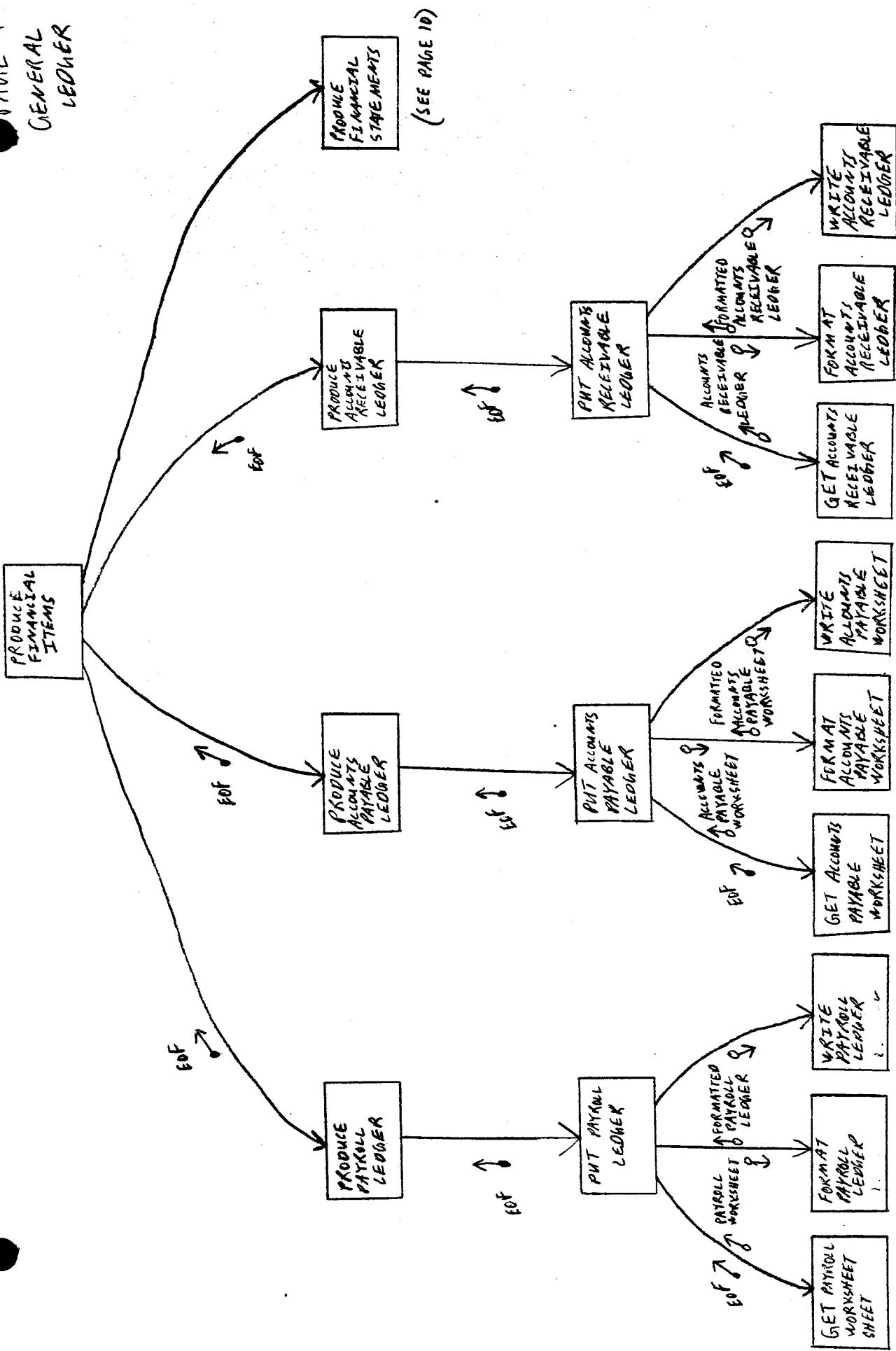
STRUCTURED CHART

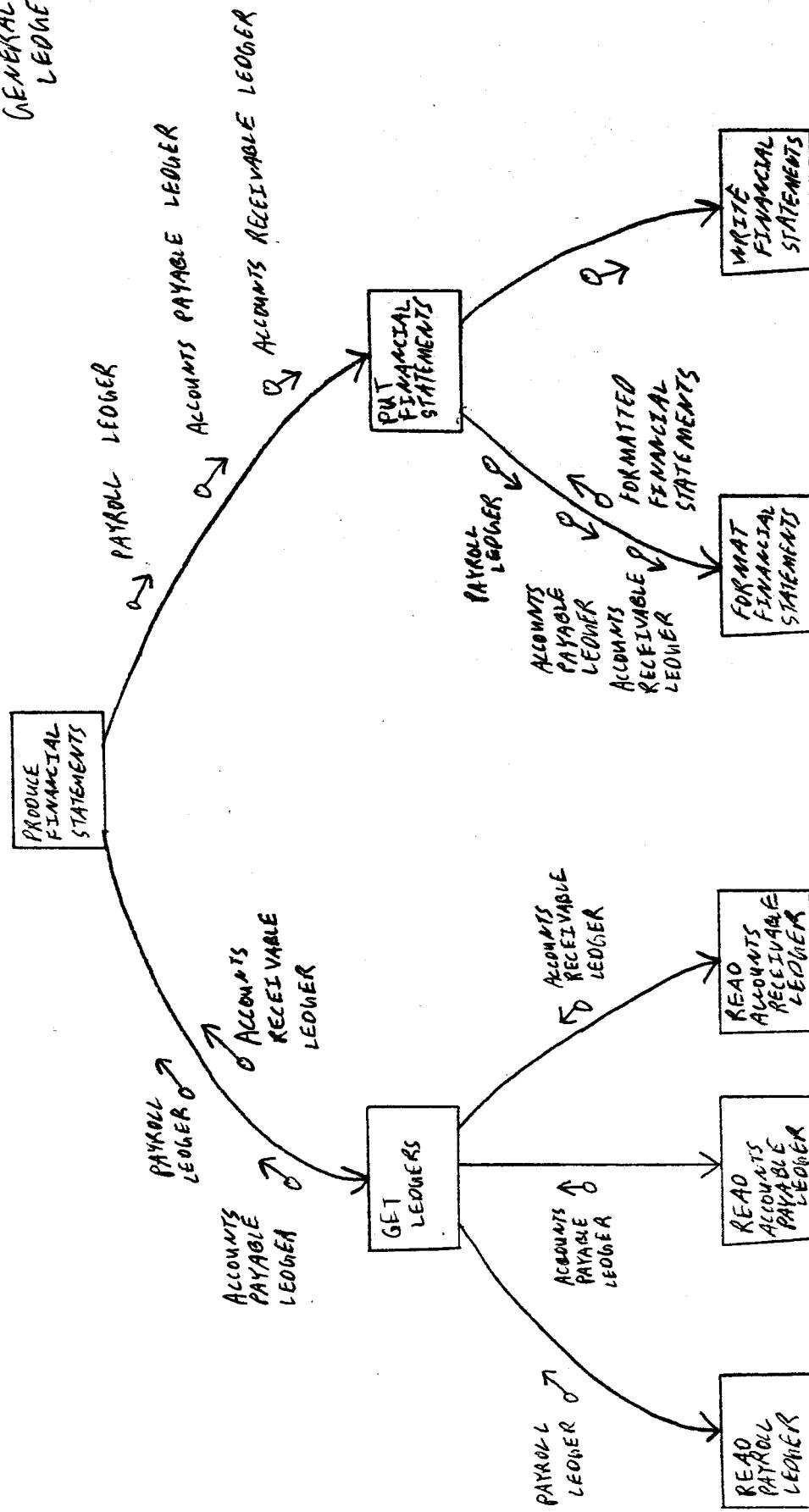
PAGE 8  
ACCOUNTS PAYABLE



GENERAL LEDGER

STRUCTURED CHART





Most of my estimates were quite close to the actual time required. My overall estimate was somewhat longer than the actual time spent mainly because I ran out of time to proofread my work.

When I made my time estimates I tried to recall similar projects and the time I spent on them. I tried to come up with the time that I thought the step would require and then I would add another two hours in case of any mishaps.

Out of the six steps, I found that the creation of the dataflow diagrams was the most time consuming and difficult. I found that the difficulty of the other steps was dictated by the quality of the dataflow diagrams. Because my DFD's were quite clear and logical, the creation of the data dictionary, the process specifications, and structured charts were mainly a reiteration of the logic graphically displayed in the DFD's.

Although the DFD's were the most difficult to create and had a preponderant impact on subsequent steps, I cannot overlook the initial step of the whole project which was the observation step. I spent more time interviewing and observing Shanahan and Son's than I had expected. The people I interviewed were very helpful and after the initial interviews everyone was willing to answer more questions, if I had them. This was fortunate because while working on my DFD's, I was required to ask the owner of Shanahan and Son's a few questions about the General Ledger System.

Overall, though I had few questions after my first interviews because in the past I had been taught to pay attention to the smallest of details when observing or interviewing. For instance, by keeping track of the colors of work reports, I was able to follow the logic of most of Shanahan and Son's business systems quite easily.

The time estimates were a little high for the data dictionary and the process specifications steps. This occurred because I did not initially realize that the dataflow diagrams would help me immensely in the development of the data dictionary and the process specifications. The difficulties arising from developing the data dictionary stemmed from the time consuming writing of the definitions and from the confusion concerning<sup>n</sup> the descriptions of some dataflows. I also found that it was difficult to keep track of aliases and I found myself creating aliases for dataflows which were physically similar and not logically similar. Because I did not have enough time to correct this error it still exists in my data dictionary. Nevertheless, I believe that the names of the dataflows and the notes for the dataflows will make it clear the logical function of the incorrect aliases.

Although, I only spent sixteen hours developing the four structured charts for the four business systems analyzed, I believe my time estimate is close to the actual time required for that step. In the consequence of a lack of time I found myself having to squeeze in at least 24 hours of work into 16.

A structured chart is primarily based on the overview DFD of a system, but there are many differences concerning the overall structure of these two documents. A DFD and a structured chart are similar because they both reveal the logic of a particular system, but in contrast they will do so in two distinct languages or methods. While completing my structured charts I often found errors that I <sup>would</sup> ~~had~~ have to correct. As a result, I cannot help but feel that there are more errors that I overlooked. I believe that if I had had more time, I could have been more confident in the validity of the structured charts.

The sixth step that of finalizing or proofreading my work was also an appropriate estimate. If I had followed my estimates more closely, I could have had time to correct the discrepancies among the aliases in my data dictionary. I could have also made the left margins larger for the majority of the documents in my project so that my project would be more legible.

I feel that my estimates were quite correct. They may have been a few hours too long, but only by a negligible amount. I <sup>e</sup> believe that this project has taught me to follow my estimates more closely and to call them and treat them as deadlines. If I would have followed my time estimates more religiously my project would have definitely have been of a higher quality.