

ARIZONA DEPARTMENT OF TRANSPORTATION

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**USER'S MANUAL
DOCUMENTATION**

Final Report

Prepared by:
Cliff Perry
Melody Bruner
Suhas Prakashumar
Texas Transportation Institute
The Texas A&M University System
College Station, Texas 77843-3135

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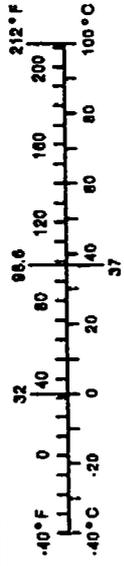
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TECHNICAL REPORT STANDARD TITLE PAGE

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15. Supplementary Notes Research performed in cooperation with the United State Department of Transportation and the Federal Highway Administration Research Study Title: Landscape Inventroy and Management System for the Arizona Department of Transportation.		14. Sponsoring Agency Code	
<p>16. Abstract</p> <p>The application of computer based, spatial information technology (GIS) to the management of transportation facilities is becoming increasingly important. This porject was for the development of spatially referenced system for management of roadside landscape and irrigation development in Arizona.</p> <p>Texas Transportation Institute. Environmental Management Program with ADOT's assistance completed the research activities associated with the identificatiion of needs, an assessment of the Arizona Department of Transportation's computing environment, conceptual design of the management system, evaluation of hardware and software, the pilot demonstration and subsequent trial implementation activities.</p> <p>The research focused on the development of a "paperless" management system where the integration of technologies is the key to effective system consisted of the development of a spatially referenced mapping system for highway landscape and irrigation inventory, integration of intelligent maps into handheld data collection devices, collection of information into handheld devices and incorporation of these new technologies into existing data management systems.</p> <p>Upon completion of the trial implementation period the evaluations suggest that the system, because of its limited focus and high degree of complexity is porbably not cost effective. This judgement is based on the fact that this system is a highly specialized system serving a very small segment of the overall maintenance mission of the Department. To be efficient and cost effective, a wider range of maintenance activities would have to be integrated into a single system framework. In the final analysis, the research successfully established a conceptual framework around which a new maintenance management system can evolve.</p>			
17. Key Words Pen Based Computing, Management Information System, Paperless Managemetn System, Geographic Information System (GIS)		18. Distribution Statement No restrictions. This document is available to the public through the: National Technical Information Service 5285 Port Royal Road Springfield, Virginia 22161	
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INTRODUCTION TO THE PIMa SYSTEM

PIMa is a landscape inventory and management system designed for the Arizona Department of Transportation (ADOT). This is a new system designed to cycle information back into all parts of the management, maintenance and design processes. To accomplish this cycling of information there is an integration of many different types of hardware technology and software packages. Much of this integration required new programming efforts to provided simple, powerful and seamless operations.

ABOUT THIS MANUAL

You don't have to read every word of this manual to be able to use the PIMa system. We have organized the manual so you can quickly learn about the menu and options you will be using. Use the manual as a guide or reference handbook but it is not the only source where information can be found. PIMa combines seven different software packages: 1) Borland's dBase IV version 1.1, 2) E.S.R.I.'s Arc/3.4D, 3) Borland's C++ version 3.1, 4) GRiD's PenRight! Pro, 5) Traveling Software's Laplink, 6) DeluxePaint II or compatible paint package and 7) a modem transfer package PC Anywhere. Each of the software package have user's manual which can answer question which are beyond this manual's guidance.

Each chapter of this manual details on only one tool of the system. Each tool has it's own task or option from which to select. So in most cases, only one chapter of this manual is all you will use for your application.

CONVENTIONS OF THE MANUAL

Several elements in the manual's text are designed to make learning easier.

Boldface and Underline- These special typefaces indicate a Chapter

BOLDFACE AND CAPS- These special typefaces indicates a major topic

***** Indicates an menu item that can be selected under this option

Boldface Indicates either a special word of interest or an entry form the keyboard

USING THE MOUSE

The mouse is required for two of the tools in the PIMa system. The graphical menuing system and the painting package for mapfile manipulations. Other than these two areas using the arrow keys is the standard procedure.

INFORMATION MANAGEMENT MENU (District & Roadside)

GENERAL OVERVIEW-

The PIMa system is a versatile and powerful management tool. The Information Management Menu provides you with detailed maintenance information about the vegetation and irrigation inventory along the highway roadside landscape. This package provides tools which let you create very detailed or large summary reports, view those reports graphically through the monitor screen or plotted display. The overall PIMa system is large and complex but the system provides simple menu driven accessing to greatly reduce its complexity.

The following figure is a diagram of the information management menu used by District 1 and Roadside Development Services. All the menu options are the same for both menus but Roadside Development Services has a few different menu items available for the transferring of transaction and map files.

INFORMATION MANAGEMENT MENU

ANALYSIS	REPORTS	DATA FILES	TRANSFER	PRINT	EXIT
----------	---------	------------	----------	-------	------

ANALYSIS OPTION-

The analysis menu allows you to query or search database files to gather a subset of some information that meets some limiting criteria that you have set.

ANALYSIS	REPORTS	DATA FILES	TRANSFER	PRINT	EXIT
----------	---------	------------	----------	-------	------

Show Query File
Create Query File
Modify Query File
Transfer Query File
Delete Query File
Delete Graphic File

- * **Show Query Files-** allows you to select a previously created query file. Once this query is selected is executed and the information is displayed.
- 1) Select option from the menu by pressing **Enter**
 - 2) A list is display of the current queries files available. Either use the up and down arrow keys to select the file or type the beginning letters of the file name to find, then

press **Enter** to view.

3) Once the query file has been viewed select **Alt-E** and **Exit** or **F-10, Exit & Exit**

- * **Create Query File-** allows you to create a new query file.
 - 1) Select option from the menu by pressing **Enter**
 - 2) The first selection is a list of the database files available to query. Select the **.dbf** to query and press **Enter**
 - 3) The second selection is to name the new query file for later reference.
 - 4) The next screen allows you to create the new query files.

Note: Chapter : Using Queries to Search Databases

- * **Modify Query File-** allows you to modify/change the previous criteria used for the query.
 - 1) Select option from the menu by pressing **Enter**
 - 2) Select query file (**.QBE**) to modify and press **Enter**
 - 3) The next screen allows you to modify the query file

Note: Chapter : Databases reference material to learn about Query setups

- * **Transfer Query File-** allows you to transfer a previously created query file (**.QBE**) to the graphic display module in **Arc/3.4D**.
 - 1) Select option from the menu by pressing **Enter**
 - 2) The first selection is a list of the directories and query files (**.QBE**) files to select. Usual selection is a **.QBE** file from this menu. Search the list for transfer files and select by pressing **Enter**
 - 3) The second option allows you to enter a new name for the transferred **.QBE** and then allow you to give a description to the file. Enter New Name of file and press **Enter**, then provide a description to the file and press **Enter**

- * **Delete Query File-** allows you to delete a previously created query file.
 - 1) Select option from the menu by pressing **Enter**
 - 2) Select query file (**.QBE**) to delete and press **Enter**

- * **Delete Graphic File-** allows you to delete a database file (**.DBF**) from the Graphic Module (**Arc.3.4D**)
 - 1) Select option from menu by pressing **Enter**
 - 2) Select database file (**.DBF**) to delete and press **Enter**

REPORTS OPTION-

The report design option enables you to create reports simply by placing database fields on-screen. You can then add summary fields, test, boxes, and lines to make the report more informative and readable.

ANALYSIS	REPORTS	DATA FILES	TRANSFER	PRINT	EXIT
	Create Database Modify Database View Database Print Database Create Query Modify Query View Query Print Query				

- * **Create Database Report-** allows you to create a report from a database file (.DBF) (1) Select option from menu by pressing **Enter**
 - 2) The first option is to select which database file will be used for the report and press **Enter**
 - 3) The second option is to enter the new name for the report and press **Enter**
 - 4) The final screen is the report design screen used to create the new report
 - 5) Once finished creating report exit **ALT-E** and save **S** or abandon **A** the reportNote:

- * **Modify Database Report-** allows you to modify a previously formed report that uses a database file (.DBF)
 - 1) Select option from menu by pressing **Enter**
 - 2) The first option is to select which database file (.DBF) that will be modified and press **Enter**
 - 3) The second option is to select the form (.FRM) to use with this database file and press **Enter**
 - 4) The final screen is the report design screen to be modified
 - 5) Once finished modifying report exit **ALT-E** and save **S** or abandon **A** the reportNote:

- * **View Database Report-** allows you to view any previously created database report
 Note: A Report form **must** already have been created for the selected database to use this option
 - 1) Select option from menu by pressing **Enter**
 - 2) The first option is to select which database file (.DBF) that will be viewed and press **Enter**
 - 3) Select form to use with this database report form for viewing and press **Enter**
 - 4) Use **Ctrl-S** to Stop and Start the screen when viewing a database file (.DBF)

- * **Print Database Report-** allows you to print a database report
 Note: the report form **must** already have been created for the selected database to use this option
 - 1) Select option from menu by pressing **Enter**
 - 2) The first option is to select which database file (.DBF) to print
 - 3) Select the form (.FRG) to use for printing

- * **Create Query Report-** allows you to create a report from a query file (.QBE)
 - 1) Select option from menu by pressing **Enter**
 - 2) The first option is to select which query file will be used for the report and press **Enter**
 - 3) The second option is to enter the new name for the report and press **Enter**
 - 4) The final screen is the report design screen used to create the new report
 - 5) Once finished creating report exit **ALT-E** and save **S** or abandon **A** the report
 Note:

- * **Modify Query Report-** allows you to modify a previously formed report that uses a query file (.QBE)
 - 1) Select option from menu by pressing **Enter**
 - 2) The first option is to select which query file (.DBF) that will be modified and press **Enter**
 - 3) The second option is to select the form (.FRM) to use with this query file and press **Enter**
 - 4) The final screen is the report design screen to be modified
 - 5) Once finished modifying report exit **ALT-E** and save **S** or abandon **A** the report
 Note:

- * **View Query Report-** allows you to view any previously created query report
 Note: A Report form **must** already have been created for the selected query to use this option
 - 1) Select option from menu by pressing **Enter**
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 - 3) Select form to use with this query report form for viewing and press **Enter**
 - 4) Use **Ctrl-S** to Stop and Start the screen when viewing a queryfile (.QBE)

*** Print Query Report-** allows you to print a query report

Note: the report form **must** already have been created for the selected query to use this option

- 1) Select option from menu by pressing **Enter**
- 2) The first option is to select which query file (.QBE) to print
- 3) Select the form (.FRG) to use for printing

DATA FILES OPTION-

The data files option permits you to view one of the selected databases on the screen. This option however doesn't allow you to edit or create any new data.

- 1) Select option from menu by pressing **Enter**
- 2) The final screen displays the database information; press **ESC** then **Ignore** to return to menu

ANALYSIS	REPORTS	DATA FILES	TRANSFER	PRINT	EXIT
		Vegetation Veg. Dict. Irrig. App. Irrig. Line Surface Soil Dict. Transaction Activities			

- * **Vegetation Database-** allows you to view the vegetation database which contains information plant quantities, location, species, date planted and face slope
- * **Vegetation Dictionary Database-** allows you to view a dictionary database about the numerous plant species located along the highway
- * **Irrigation Appliance Database-** allows you to view the irrigation appliance database which contains information about the irrigation appliance type, quantities, location, size and other misc. information particular to that appliance
- * **Irrigation Line Database-** allows you to view irrigation line data which usually only provides locational information

- * **Surface Database-** allows you to view surface data which contains information about location and type of material on the surface
- * **Soil Dictionary Database-** (very limited dictionary) allows you to view a dictionary database about numerous soils along the highway and their characteristics
- * **Transaction Databases-** allows you to view transaction information which contains date of transaction, activity number, quantities, etc. about each transaction occurring along the highway
- * **Activities Database-**

TRANSFER OPTION-

The transfer option allows you to transfer and append files between directories and computers.

ANALYSIS	REPORTS	DATA FILES	TRANSFER	PRINT	EXIT
			Transaction File Map File Append Transaction File Transfer to Graphics		

- * **Transaction Files-** allows you to transfer transaction files from the district office to roadside development services office.
 - 1) Select option from menu by pressing **Enter**
- * **Map Files-** allows you to transfer map files from the district office to roadside development services.
 - 1) Select option from menu by pressing **Enter**
- * **Append Transaction Files-** allows you to append the org transaction files up to the district or roadside transaction file
- * **Transfer to Graphic-** allows you to transfer out to the graphics module (Arc/3.4D)
 - 1) Select option from menu by pressing **Enter**

PRINT OPTION-

The print option allows you to print either single database files or query files which can be simple single database query or complex multiple database query.

ANALYSIS	REPORTS	DATA FILES	TRANSFER	PRINT	EXIT
				Database File	
				Query Report	

- * **Database File-** allow you to print an entire database file (.DBF). Note: Some database files can be several pages in length and will require a extended period for printing.
- * **Query Report-** allows you to print an previously performed query file (.QBE). Note: Some query files can be several pages in length and will require a extended period for printing.

EXIT OPTION-

ANALYSIS	REPORTS	DATA FILES	TRANSFER	PRINT	EXIT
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USER MANUAL DOCUMENTATION-
ORG MAIN MENU

**PIMa PROJECT, ARIZONA DEPARTMENT OF
TRANSPORTATION, 30TH MAY 1993**

ORG MAIN MENU (ORG 4170)

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MAIN MENU ORG 4170 (ORG 4170)

MAIN MENU ORG 4170

REPORTS TRANSFER MODIFY_LIST EXIT

REPORTS OPTION

REPORTS TRANSFER MODIFY_LIST EXIT

Create New Work Report

* **Create New Work Report**- allows you to create/schedule new daily work activities for one crew. If you have more than one crew each will have to be schedule separately. You should schedule all work activities for this one crew before exiting. If you exit first then return to schedule more activities for the same crew you will lose previously schedule work activities for that crew.

- 1) Select option from menu by pressing Enter
- 2) Enter the date for the new Crew Work Report. example "January 1, 1993" = 01/01/93
- 3) Select from the pop-up menu the crew number. Note: Each GRiDPAD is assigned to one crew. Note: The GRiDPAD should always be assigned to the same crew unless the pad has failed.

CREW WORK REPORT- allows you to schedule daily work activities for a crew. Multiple activities can be schedule once you have entered the Org Report Menu by selecting the Exit Option and Next Work Activity.

Crew No. 01, Report # 1 Work Report Menu

Program:	Activity:	Suffix:	Job No:	Date:						
Activity Description:										
Org:	Route:	Letter:	Begin MP:	End MP:	Dir:	Road:				
Comments:										
-----LABOR-----					-----EQUIPMENT-----					
Emp No.	RT	OT	CT	TRF	TRV	TRN	Unit	Hrs	Start	End
Exit										

* **Crew No. & Report No.**- these two fields keep you informed to which Crew Number and Report Number you are scheduling. Example: Crew No. 2 Report No. 3 This report is for crew # 2 and it is the 3rd work activity for that particular day.

WORK ACTIVITY MENU- the first menu of the Org Work Report is designed to allow simple scheduling of the defined work activities. Most entries are chosen through pop-up selection. Once you place the cursor over the field entry boxes the pop-up menu will appear.

Note: To move from field entry box to field entry box use the

LEFT ARROW and **RIGHT ARROW KEYS**.

To make selections from pop-up menus use the **UP ARROW** and **DOWN ARROW KEYS** or type in the **FIRST LETTER** or **FIRST NUMBER** which you want to chose

Field Entry Boxes:

* **Program:** allows you to enter the program number for this activity

- 1) Move cursor to **Program:**
- 2) Use arrow keys to select program number and press Enter

* **Activity: & Activity Description:** allows you to select the activity number and description for this activity

- 1) Move cursor to **Activity:**
 - 2) Use arrow keys to select the major topic for the activity and press Enter
 - 3) Use arrow keys to select activity number and activity description and press Enter Note: the activity description field box is automatically completed
- Note: Press Esc if you want to reselect from the major topic pop-up

* **Suffix:** allows you to select the suffix letter for the activity chosen

- 1) Move cursor to **Suffix:**
- 2) Use arrows keys or enter the letter to select suffix letter and press Enter

* **Job No:** allows you to select the job number for this work activity

- 1) Move cursor to **Job No:**
- 2) Use arrow keys or enter the letter/number to select the job number and press Enter

* **Date:** the date field is automatically entered from the first entry after selecting Create New Work Report. Note: This field cannot be changed unless you exit and begin again.

* **Org:** allows you to select the org number

- 1) Move cursor to **Org:**
- 2) Use arrow keys or enter the letter/number to select org number and press Enter

* **Route: & Letter:** allows you to select the route and it's corresponding letter together. After a particular highway is select the letter of the highway is stored in the letter field box and the

highway number is stored in the route field box.

- 1) Move cursor to **Route**:
- 2) Use **arrow keys** or **enter the letter/number** of highway to select and press **Enter**

* **Begin MP**: allows you to enter the starting milepost for this activity. This field plays an important role when the map forms have to be viewed. This field must be entered to go to the map forms. The value stored in this field entry box determines the starting map that will be displayed when the map forms are opened.

- 1) Move cursor to **Begin MP**:
- 2) Press **Enter** Note: The cursor now is available to accept numeric entry.
- 3) Enter the mile and tenth milepost to begin this activity. Example **149.2** or **12.3** or **1.2** Note: You must enter the decimal place for the tenth mile designation.
- 4) If beginning milepost less than 5 character you must press **Enter**

* **End MP**: allows you to enter the ending milepost for this activity.

- 1) Move cursor to **End MP**:
- 2) Press **Enter** Note: The cursor now is available to accept numeric entry.
- 3) Enter the mile and tenth milepost to begin this activity. Example **149.2** or **12.3** or **1.2** Note: You must enter the decimal place for the tenth mile designation.
- 4) If ending milepost less than 5 character you must press **Enter**

* **Dir**: allows you to select which side of the highway this activity should be performed. The options for this field are limited to North, South, East, West and Both

- 1) Move cursor to **Dir**:
- 2) Use **arrow keys** or **enter the letter/number** of direction to select and press **Enter**

* **Road**: allows you to select which area for this work activity should be performed within. The options for this field are limited to Frontage, Crossroad, Ramp, and Both

- 1) Move cursor to **Road**:
- 2) Use **arrow keys** or **enter the letter/number** of road area to select and press **Enter**

* **Comments**: allows you to enter a message for the crew relating to this activity. This field is optional and has a field width of 60 characters.

- 1) Move cursor to **Comments**:
- 2) Press **Enter** and type in the comments needed for this activity
- 3) Press **Enter** when completed

LABOR MENU- this menu of the Org Work Report also is designed to allow simple scheduling of the labor needed for the work activities. All entries are chosen through pop-up selection. Once you place the cursor over the field entry box the pop-up menu will appear.

Field Entry Boxes

* **Emp. No.:** allows you to enter an employees code for this activity. This is the only field box available for entry at this time. You can enter up to 10 employees for any one activity.

- 1) Move cursor to **Emp. No.:**
- 2) Press **Enter**
- 3) Use **arrow keys** or enter the first initial/s of employee to select and press **Enter**
- 4) Continue with step # 3 until all employees are entered for this activity
- 5) Use **arrow keys** or enter the letter "X" to select "Xit" and press **Enter**

* **RT-** this field entry box is not active in this menu system

* **OT-** this field entry box is not active in this menu system

* **CT-** this field entry box is not active in this menu system

* **TRF-** this field entry box is not active in this menu system³

* **TRV-** this field entry box is not active in this menu system

* **TRN-** this field entry box is not active in this menu system

EQUIPMENT MENU- this menu of the Org Work Report also is designed to allow simple scheduling of the equipment needed for the work activities. All entries are chosen through pop-up selection. Once you place the cursor over the field entry box the pop-up menu will appear.

Field Entry Boxes

* **Unit:** allows you to enter the equipment unit number and description. This is the only field entry box available for entry at this time. You can enter up to 10 pieces of equipment for any one activity.

- 1) Move cursor to **Unit:**
- 2) Press **Enter**
- 3) Use **arrow keys** or enter the first letter/number of the equipment to select and press **Enter**
- 4) Continue with step # 3 until all pieces of equipment are entered for this activity
- 5) Use **arrow keys** or enter the letter "X" to select "Xit" and press **Enter**

* **Hrs-** this field entry box is not active in this menu system

* **Start-** this field entry box is not active in this menu system

* **End-** this field entry box is not active in this menu system

EXIT MENU- this menu of the Org Work Report is designed to allow you to choose an exiting option. Each option perform completely different tasks so make sure of your selection.

* **Exit:** allows you to select one of three options for exiting the crew work report menu.

- 1) Move cursor to **Exit:**
- 2) Use **arrow keys** to select option and press **Enter**

* **Save Report & Next Report-** saves the current daily work activity report and creates the next daily work report for the same crew. Each report is sequentially numbered beginning at the number 1. **Note:** If you select to exit the report you cannot add any new daily work activity reports without erasing all previously saved daily reports for that crew.

- 1) Move cursor to **Save Report & Next Report**
- 2) Press **Enter**

* **Save Report & Next Crew/Exit-** saves the current daily work activity report and exits the work report menu returns back to **ORG MAIN MENU** **Note:** If you select this option any new reports cannot be added without erasing all previously saved daily reports for that crew.

- 1) Move cursor to **Save Report & Next Crew/Exit**
- 2) Press **Enter**

* **Do Not Save & Exit-** allows you to erase that crews entire daily work reports. Once this option is selected a crews work reports cannot be recovered and will have to be redone.

- 1) Move cursor to **Do Not Save & Exit**
- 2) Press **Enter**

TRANSFER:GRiDPAD OPTION

REPORTS	TRANSFER	MODIFY_LIST	EXIT
	Transfer Out Transfer In Delete GRiDPAD Files		

GRiDPAD Setup- Before setup, both the GRiDPAD and your computer should have the program **LAPLINK** installed and operational.

- 1) Plug **LAPLINK Cable** into both GRiDPAD tablet, 9-pin serial port (male port), and Org Computer, 9-pin serial port (male port).
- 2) Turn GRiDPAD tablet **ON** using power switch
- 3) Select second option **Transfer files from external computer** and press **OK**

Note: This puts the computer in the transfer mode. To verify look at the top menu on the right side bottom for the phrase: **Server computer ready**

* **Transfer Out-** allows you to transfer both crew daily work reports and _list information out to the GRiDPAD. Note: List information is discussed later in the Modify_List option.

1) Select option from menu and press Enter

PIMa TRANSFER MENU- is the menu used to transfer both crew daily work reports and list information out to the GRiDPAD. To be able to transfer the necessary information out (download) to the GRiDPAD you must have the GRiDPAD in the transfer mode.

P I M a T R A N S F E R M E N U	
	New Entry Current Status
Transfer:	Transfer Out
Date:	
Crew No.:	
Execute:	
Exit:	

* **New Entry-** allows you to view the current entry being placed within the current status column

* **Current Status-** shows the current values entered into each row

* **Status Line-** displays the message "Use Left & Right Arrows to Move Up & Down Menu"

Note: The Up & Down Arrow Key only work on pop-up menu list

* **Message-** Provides a general explanation for each data entry field that is selected

Field Entry Boxes

* **Transfer:** This field is automatically filled by the program, but it tells you which type of transfer you are using.

* **Date:** This field allows you to enter the date of the activity you want to transfer to the GRiDPAD

1) Select option from menu and press Enter

2) Enter date of activity and press Enter Example: "05/30/93" The date must be enter with the month first, day second and year third. Also included in the date field is the "/" lines. Note: Date will automatically enter once it is completed.

* **Crew No.:** This field allows you to enter the Crew No./Device which this work report was planned.

1) Select option from menu and press Enter

2) Select Crew No. from the pop-up menu or input number from keyboard and press Enter.
Example: To enter crew no. five type "0" then "5", "05", for crew #5

* **Execute:** Once all the previous fields are completed and GRiDPAD is setup for transfer, select Enter
Note: If you want to transfer out an entire weeks of planned reports, you will just need to change the date then select execute. If you want to change to a different crew change the Crew No. and setup next GRiDPAD

1) Select option from menu and press Enter

* **Exit:** Once you have transferred out all the daily work reports select this option to return to the Org Main Menu

1) Select option from menu and press Enter

* **Transfer In-** This option allows you to transfer information from the GRiDPAD back in from the field.

1) Select option from menu and press Enter

PIMa TRANSFER IN MENU- is used to transfer crew daily work reports in from the GRiDPAD. **Note:** To be able to transfer the necessary information in (upload) from the GRiDPAD you must have the GRiDPAD in the transfer mode. See GRiDPAD setup.

P I M a T R A N S F E R I N M E N U		
	New Entry	Current Status
Transfer:	Transfer In	
Date:		
Date:		
Crew No.:		
Initials:		
Execute:		
Exit:		

* **New Entry-** allows you to view the current entry being placed within the current status column

* **Current Status-** shows the current values entered into each row

* **Status Line-** displays the message "Use Left & Right Arrows to Move Up & Down Menu"
Note: The Up & Down Arrow Key only work on pop-up menu list

* **Message-** Provide an general explanation for each data entry field that is selected

Field Entry Boxes

* **Transfer:** This field is automatically filled by the program, but it tells you which type of transfer you are using.

* **Date:** allows you to enter today's date for PeCoSII Note: This is a required field for the transfer in operation to process the crew daily report.

1) Select option from menu and press Enter

2) Enter today's date and press Enter Example: "05/30/93" The date must be enter with the month first, day second and year third. Also included in the date field is the "/" lines. Note: Date will automatically enter once it is completed.

* **Date:** This field allows you to enter the date of the activity you want to transfer in from the GRiDPAD

1) Select option from menu and press Enter

2) Enter date of activity and press Enter Example: "05/30/93" The date must be enter with the month first, day second and year third. Also included in the date field is the "/" lines. Note: Date will automatically enter once it is completed.

* **Crew No.:** This field allows you to enter the Crew No./Device which this work report will comes from.

1) Select option from menu and press Enter

2) Select Crew No. from the pop-up menu or input number from keyboard and press Enter. Example: To enter crew no. five type "0" then "5", "05", for crew #5

* **Initials:** This field requires you to enter your initials for PeCoSII.

* **Execute:** Once all the previous fields are completed and GRiDPAD is setup for transfer, select Enter. After you have selected enter the Execute command will provide a print out of each daily work report for the day selected. Note: If you want to transfer in an entire day of planned reports, you will just need to change the crew number and Gridpad then select execute. You are allowed only to transfer in one day's worth of work report, then you must exit and return to transfer another day worth of activities.

1) Select option from menu and press Enter

* **Exit:** Once you have transferred out all the daily work reports select this option to return to the Org Main Menu

1) Select option from menu and press Enter

Delete GRiDPAD Files- This option allows you to delete all previously completed work activity files on the GRiDPAD. Note: Use this option after you have transferred in all completed work activities

MODIFY _LIST'S OPTION-

This option allows you to add, delete, change or view any item from a _LIST database file

REPORTS	TRANSFER	MODIFY_LIST	EXIT
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? What are _LIST database files- these files were create to be use with all the pop-up menus used for entry of data. These data entry fields are located in create of work reports, hand held data collection device (GRiDPAD), etc.. These files are transferred into the GRiDPAD during the transfer in process. Note: If you modify any of the _LIST files you must follow the exact format spacing within the file are the _LIST files will not function properly on the GRiDPAD.

WARNING!!!- When you modify any of the _LIST files you cannot leave any bank entry fields are information will not display in the pop-up list

Current _LIST to select from:

ACT_LIST- file for all work activities. Each field contains first the Activity Number followed by the Activity description. The current field names are as follows: TR_ACT- Tree Activities, SH_ACT- Shrub Activities, IR_ACT- Irrigation Activities, HE_ACT- Herbicide Activities, SU_ACT- Surface Activities, OT_ACT- Other Activities, and SI_ACT- Six Hundred Level Activities

APP_LIST- file for all irrigation appliances model numbers. This file is used by the irrigation maps on the GRiDPAD. The current field names are as follows: ARC- Antenna/Radio Controller, BS- Booster Station, BP- Back Flow Preventer, FI- Fertilizer Injector, FC-Field Controller, FU- Filter Unit, FS- Flow Sensor, GV- Gate Valve, PPS- Popup Sprinkler, PRR- Pressure Reduction Riser, QC- Quick Coupler, RC- Remote Control Valve, WM- Water Meter

EMP_LIST- file for Org Employee Numbers. The current field name is as follows: EMP_NO- Employee Number

EQP_LIST- file for Org Equipment List. Each field contains first the Equipment Number followed by the equipment description. The current field name is as follows: EQUIP_DES- Equipment No. and Description

GRM_LIST- file for Ground Treatment materials such as granite mulch, rock mulch, etc. The current field names are as follows: TYPE- Idcode given to the materials and NAME- the entire name for the material

IRR_LIST- file for all irrigation appliances. This file is used by the irrigation maps on the GRiDPAD and should never be changed. The current field names are as

follows: ARC- Antenna/Radio Controller, BS- Booster Station, BP- Back Flow Preventer, FI- Fertilizer Injector, FC-Field Controller, FU- Filter Unit, FS- Flow Sensor, GV- Gate Valve, PPS- Popup Sprinkler, PRR- Pressure Reduction Riser, QC- Quick Coupler, RC- Remote Control Valve, WM- Water Meter

MAP_LIST- file used for map files on GRiDPAD. The current field names are as follows: **REMO_LIST**- Removal list for vegetation, **REPL_LIST**- Size of replacement for vegetation,

MAT_LIST- file used for material list and contains the description, inventory number and unit of measurement. The current field names are as follows: **FE_MAT**- Fertilizing materials, **TR_MAT**- Tree materials, **SH_MAT**- Shrub Materials, **IR_MAT**- Irrigation Materials, **ER_MAT**- Erosion Control Materials, **HE_MAT**- Herbicide Materials, **CH_MAT**- Chemical Materials, **OT_MAT**- Other materials Note: It is critical this file follow an exact format of the field when replacing with a new material.

MOD_LIST- currently this file is not actively used with any programs

SEB_LIST- this file is used in the GRiDPAD when a shrub is selected in a shrub map file. The current field names are as follows: **PLANT_ID**- Identification code for a shrub usually by first two letter of the genus and species, **COM_NAME**- Common name of the plant for easy identification in the field

SUF_LIST- this list is used for the suffix letters popup menu. The only field name is **SUFFIX**- Input letters A-Z as needed

TRE_LIST- this file is used in the GRiDPAD when a shrub is selected in a tree map file. The current field names are as follows: **PLANT_ID**- Identification code for a shrub usually by first two letter of the genus and species, **COM_NAME**- Common name of the plant for easy identification in the field

WRK_LIST- file used for setting up most of the daily work plan. The current field names are as follows: **PROGRAM**- Stores Program No.'s, **ACT_DES**- Store the basic activities descriptions, **JOB_NO**- Stores Job No. Id's, **ORG**- Org Numbers, **HIGH_ID**- Highway identification numbers, **DIRECTION**- Stores direction descriptions, **CLASS**- Class identification code

DATABASE/STRUCTURE MODIFICATION MENU

*** Select File Option**- allows you to select the _list file to be modified. Once the file is selected the file name will appear at the middle left of the screen. At any time you would like to change the file come back to this option and pick from the menu the next file.

1) Select file from menu and press Enter

Edit Field Structure Option- currently this option is not available. If a field name needs to be created or deleted this should be done within the dBase IV program. Note: If you are not familiar with the dBase IV program, call the Information Services Group at (602) 255-8714.

* **Create New Field Name-** not available at this time.

* **Delete Field Name-** not available at this time

WARNING- Programs working in GRiDPAD are currently setup to accept

Edit Info. Structure Option- allow you to view, add or delete any data from a _list file.

WARNING!!!- When you modify any of the _LIST files you cannot leave any blank entry fields as information will not display in the popup list.

* **View Data in File-** this option allows you to only view data located within a _list file.

1) Select option from menu and press Enter

2) Use TAB to move forward between fields and Shift Tab to backwards. Use UP and Down Arrow Keys to move information blocks.

* **Add Data to File-** this option allows you to add data located within a _list file.

1) Select option from menu and press Enter

2) Use TAB to move forward between fields and Shift Tab to backwards. Use UP and Down Arrow Keys to move information blocks.

3) Either move to the end of the field that the information needs to be added or replace an information block that is no longer needed

4) Type in the new information

5) Once finished, exit the program by selecting Exit with the Alt-E and Exit

WARNING!!!- When you modify any of the _LIST files you cannot leave any blank entry fields as information will not display in the popup list.

* **Delete Data From File-** this option allows you to delete data from a _list file.

1) Select option from menu and press Enter

2) Use TAB to move forward between fields and Shift Tab to backwards. Use UP and Down Arrow Keys to move information blocks.

3) Move to the information block that needs to be deleted and mark the record for deletion by selecting the keys Alt-R and then select the option Mark record for deletion Note: To tell whether a record is marked a Del will appear at the bottom righthand of the screen.

4) Continue the above procedure until all the records you need to delete are marked.

5) Once all records are marked you will need to erase the marked records by selecting Alt-O and then selecting the option Erase Marked Records

WARNING!!!- When you modify any of the _LIST files you cannot leave any blank entry fields as information will not display in the popup list.

Return/Exit Option- this option returns you to PIMa's ORG MAIN MENU

1) Select option from menu and press Enter

EXIT OPTION- this option allows you to return to back to the Main Menu

1) Select option from menu and press Enter

REPORTS	TRANSFER	MODIFY_LIST	EXIT
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EDITING MAP FILES- this option allows you to view, edit or remove a map file. These files can either be updated for the GRiDPAD or made suitable for reviewing at later dates. Note: The **DeluxePaintII Enhanced** paint package has to be install on your computer before you can edit or view your .pcx files. There is not a selection from the PIMa menu to start this program but it can be started "C:>" by typing **DP**

* **General Overview-** To become familiar with DeluxePaintII you should read the first two chapters and do the tutorial package located within the DeluxePaintII manual. The paint package is a very rudimentary package, but should handle any of the jobs necessary for PIMa on the 8086 GRiDPAD. The .pcx map files which have been written upon by field maintenance personnel are located in the C:\DPAIN\MAPFILES directory.

USER MANUAL DOCUMENTATION-
dBASE IV REFERENCE MATERIAL

**PIMa PROJECT, ARIZONA DEPARTMENT OF
TRANSPORTATION, 30TH MAY 1993**

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dBASE IV REFERENCE MATERIAL

General Notes- the following information is by no means all the procedures available for database, dBase will allow you to perform almost any type of query or manipulation of data that you will need. A excellent reference book for dBaseIV is: Using dBaseIV, Covers Version 1.1, Written by Que Corporation. The following reference material can be found between pages 299 and 346.

All examples usually utilize the transaction file.

QUERIES IN dBASE

To query(search) a database the following steps must be followed:

- 1) Open dBaseIV
- 2) Select the database file to open
- 3) Move to Queries option and select Enter

Searching the Database

1) **Character Fields-** To query a charter fields use " " quotation marks within the search field.

Examples:

ID	OR	IDCODE	OR	ACT_NO
"SOSE"		"147.3S03"		"322"

2) **Numeric Fields-** To query a numeric fields just place search value into search field.

Examples:

QUANTITY	OR	QUANTITY
=10		>=10 (greater than or equal to)

3) **Date Fields-** To query a date field it requires you to enclose the field in braces { }.

Examples:

DATE	OR	DATE
>{01/03/93} (greater than)		<{01/30/93} (less than)

4) Relational Operators

Examples:

- > Greater Than
- < Less Than
- = Equal To
- <> or #, Not Equal to a Specific Value
- >= Greater Than and Equal To
- <= Less Than and Equal To
- \$ Included within the Field
- LIKE Pattern Match used in Wildcard Searches

5) Searching with WildCards- Wildcards are used to find data that matches a template which you have prescribed.

LIKE or like- is used form searching character fields with either ? or *

?- questions marks located within a query mean any character in just this one position.

Examples:

IDCODE	OR	ACT_NO
LIKE "14?.?S??"		LIKE "32?"
Result: all shrubs in mile 140		Result: all 320 activities

*- asterisk are used within a query to mean all characters in all positions following the asterisk

Examples:

IDCODE	OR	IDCODE
LIKE "142.*"		LIKE "142.3T*"
Result: all inventory in mile 142		Result: all trees in tenth mile 142.3

6) Values in a Range- Searching for values in a range is looking for records falling between to values. A comma is needed to separate

Examples:

QUANTITY	DATE
>10,<20	>{05/30/93},<{06/30/93}
Result: Quantities between 11 and 19	Result: All records between 05/31/93 and 06/29/93

7) **Records meeting Multiple Conditions-** Searching for records meeting multiple conditions: combining search conditions enables you to continue refining you database searches.

Example:

IDCODE	ID	ACT_NO	DATE
LIKE "142.3IA*"	"PRR"	"333"	>={06/01/93},<={07/01/94}

Result: Identifies all pressure reduction risers which have been replace in tenth mile 142.3 between June 1, 1993 and July 1, 1994.

8) **Multiple Values in the Same Field-**

ID	OR	ID
"PRR"		"LAMO"
"RCV"		"WAFI"
Result: selects only pressure reducers and remote control valves		Results: selects both Lantana and Washingtonia fileria

9) **OR and AND Queries-** The first line of the query search is treated as the AND condition and the second line is the OR condition.

ID	REASON
"WAFI"	"FREEZE"
"WAFI"	"IRRIGATION"

Result: Finds all the Washingtonia fileria remove because of freeze or irrigation failure.

OR SEARCHES ONLY

ID	REASON	QUAN	ACT_NO
"WAFI"	"FREEZE"		
	"FREEZE"	>20	"324", "315"

Results: All Washingtonia removed due to freeze or any tree or shrub planting with removal greater than 20

10) **Summarizing Values in the Query-** Summarizing values in the query is used to know information about the total of these records.

Summary Operators:

SUM- Adds all records ant return the totals

AVG- Adds all records then divides by the total number of records to return an average for that field.

MIN- Returns the smallest value in that field

MAX- Returns the largest value in that field

CNT- Counts the number of records in that field

Example:

ID	REASON	QUANTITY	DATE
"LAMO"	"FREEZE"	SUM	>={01/01/93}, <={12/31/94}

Result: Total number of lantana killed due to freeze between 1993 and 1994

11) Grouping Records for Summary

Example:

ID	REASON	QUANTITY	DATE
GROUP BY	"FREEZE"	SUM	>={08/01/92}, <={08/01/93}

Result: List all trees and shrubs killed due to freeze between 08/92 and 08/93 with totals

12) Relational Database Queries- Relational database queries relates two or more database files to each other, enabling the user to draw information from all files based on relationship between fields.

Select from the PIMA menu the Create Query option from ANALYSIS option. Select the database file and name.

1. To add a file to this query select the Layout option from the menu using ALT-L then select the option Add file to query
2. To link databases together use the option Create link by pointing again with the Layout option with ALT-L.

REPORT GENERATION IN dBASE

Two options for report generation are:

- 1) Use Quick Report- this option prints out a report of the selected database file by pressing the Shift-F9 keys
- 2) Using the Report Design Screen

Using and Explanations of the Report Design Screen

- 1) **The Bands Within the Screen**

<u>Band</u>	<u>Description</u>
Page Header	Contains fields and text that print at the top of each page
Report Intro	Print only on the first page of the report
Detail	Prints once for each record in the database
Report Summary	Prints at the end of the report after the last record is printed in the detail band
Page Footer	Prints at the bottom of each page of the report

2) Using Quick Layouts to Create a Default Report

Choose Quick layouts from the Layout Menu ALT-L: then select whether it is to be a column or form

Column Layout- if you want your report to have a column for each database field

Example: IDCODE ID DESCRIPTION
 XXXXXXXXXX XXXX XXXXXXXXXXXX

Form Layout- if you want the report to print each database field on a separate line.

Example: IDCODE XXXXXXXXXXXX
 ID XXXX
 DESCRIP XXXXXXXXXXXX

3) Testing the Report- Choose the print menu with ALT-P: then select View report on screen

4) Adding Fields to the Bands- Choose the field menu from the menu bar with ALT-P: the select Add field

5) Moving Fields on the Band

Within a Band-

1. Position the cursor on the field you want to move and press F6 (Select); the press Enter
2. Press F7 (Move). Using arrow keys position on the band where you want to move the field
3. After you move the field to this new position and press Enter

From One Band to Another Band-

1. Position the cursor on the field you want to move and press F6 (Select); the press Enter
2. Use arrow keys move cursor to the band into which you want to move the field
3. Press F7 (Move). Using arrow keys position on the band where you want to move the field
4. After you move the field to its new position and press Enter

6) Deleting Field from the Band

1. Simply place the cursor on the field and press DELETE

7) Changing A Field's Size

1. Move the cursor to the field you want to change and press Shift-F7(Size). Press arrow key to make field larger or smaller. Press enter to accept the new size. Press Esc if you decide not to resize.

8) Printing the Reports

1. Select the option print menu with ALT-P
2. Select Print this report

USER MANUAL DOCUMENTATION-
THE GRiDPAD

**PIMa PROJECT, ARIZONA DEPARTMENT OF
TRANSPORTATION, 30TH MAY 1993**

THE GRIDPAD

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CREW WORK REPORT FORM:

The various fields that are found in the crew work report form and their uses are given below:

- * **Program** : This field pops up the various program numbers that are used by the crew. This is a character field of width 4.

- * **Activity** : This field pops up the activity list which gives the various activities supported by the ORG. This field is also responsible for the value that will be entered in the **Activity Description** field. Once an activity is chosen from the activity list, the activity description list pops up with all the different activities supported for that activity. After a selection is made the activity number corresponding to the activity chosen is entered into the **Activity** field. This field is a character field of width 4. The activity description of the selected activity is stored in the **Activity Description** field. This field is not accessible to the user directly and it is a character field of width 40.

- * **Suffix** : This field pops up the list of suffixes from A to Z for the activity. This is a character field of width 1.

- * **Job Number** : This field pops up the list of job numbers present in the ORG. This field is a character field of width 10.

- * **Date** : This field gives the current date of the system. The date is generated through the computer. If the date is incorrect the internal date within the computer must be changed. To change date: At DOS prompt A:>, type date and enter new date as soon above. This field is inaccessible to the user.

- * **Org** : This field gives the ORG number. When selected it pops up a list containing the various ORG number's in the district 1 land maintenance. This is a character field of width 4. This is a required field.

- * **Route & Letter** : These two fields are used together. Selecting either of the fields pops up a list of highways under a particular ORG. After a particular highway is selected the letter of the highway is stored in **LETTER** field and the number of the highway is stored in the **ROUTE** field. Example : If the highway is S360 SUPERSTITION, S is stored in the **LETTER** field and 360 is stored in the **ROUTE** field.

- * **Beginning Mile** : This field gives the starting mile post for the day. This is an optional field which the user could enter. This field also plays an important role when the map forms have to be viewed. This field has to be entered to go to the map forms. The value stored in this field determines the starting map that has to be displayed when the map forms are opened. A pop up calculator pad pops up when this field is selected. This is a numeric field of width 4.

* **Ending Mile** : This field gives the ending mile post for the activity. This is also an optional field which the user could enter. A pop up keyboard pops up when this field is selected. This is a numeric field of width 4.

* **Direction** : This field gives the direction of work for the activity. This is an optional field which could be used. When this field is selected a list showing the four directions and an extra option called Both is popped up. The starting letter of these options is stored in the field. This field is a character field of width 1.

* **F, R, C** : This field specifies the part of the highway, where the work is being done. When this field is selected a list is popped up with the various options like Crossroads, Frontage, Ramp, etc, . The first letter of the option chosen is stored in the field. This is an optional field which can be used by the user. This is a character field of width 1.

* **Comments** : This field is an optional 60 character field which the users can use to write some comments on. When this field is selected a key board is popped up, which can be used to enter the comments.

* **Accomplishment** : This field is a numeric field of width 7. This is a required field. user to

The various buttons found in the form with their respective functions are listed below.

* **LABOR FORM** : This button is used to go to the labor form for a particular activity. There exists a labor form for every activity entered in the crew work report form.

* **EQUIPMENT FORM** : This button is used to go to the equipment form for a particular activity. There exists a equipment form for every activity defined in the crew work report form.

* **MATERIAL FORM** : This button is used to go to the material form for a particular activity. There exists a material form for every activity defined in the crew work report form.

* **MAP FORM** : This button is used to go to the map form. Before using this button the beginning mile post has to be entered because the map form is opened with the map of the tenth mile specified in the beginning mile post. The map set which appear is related to activities elected. (For example: Tree activities - Tree maps)

* **NEXT** : This button is used to go to the next activity for the day. This button acts in a circular fashion, i.e once the last activity is reached the next activity selected will be the first one.

* **PREV.** : This button is used to go to the previous activity. Using this and the NEXT button one can browse through all the activities for the day.

* **EMERGENCY** : This button is used to create a new crew work report form in case of an

emergency in the field. This basically brings up the crew work report form with all the fields blanked except the DATE which contains the current date.

* **DELETE** : This button is used to delete fields in the form. The button works in the following manner. After pressing the button, if the pen is clicked on any field that field is deleted and the field is blanked. If another field has to be deleted the same operation has to be repeated.

* **KEYBOARD** : This button is used as an extra option. Whenever this button is used, if the pen is clicked on any field a keyboard pops up instead of the usual pop-up list. This is just used for user convenience.

* **EXIT** : This button is used to quit the ADOT program. The various forms are saved and the relevant information is stored in a transaction file. If any of the crew work report forms are not completed, i.e any required fields are not entered, then a warning message pops up informing the user that a particular form is not completed, the user has the option of completing the form or quitting without saving. If the program is exited without saving that particular activity and its corresponding labor, equipment and material details will be lost.

* **ENTER** : This button is used after a choice has been made from the pop up menus to enter the value into the respective field.

LABOR FORM :

The various fields used in the labor form and the way they are used is defined below :

* **Employee Code** : This field holds the employee code for each employee for a particular activity. When this field is selected a list of employee codes belonging to the specified ORG pops up. There are 10 such fields in the form making it possible to enter a maximum of 10 employee records for a particular activity.

* **Regular Hours (RT)** : This field holds the number of hours an employee has worked. This is a numeric field of width 4, and is a required field to complete the employee record. When this field is selected a list of values ranging from 0.0 to 10.0 in steps of 0.5, is popped up.

* **Over time (OT)** : This field holds the number of extra hours an employee has worked. This is also a numeric field of width 4, but it is an optional field. When this field is selected a list of values ranging from 0.0 to 10.0 in steps of 0.5, is popped up.

* **Comp time (CT)** : This field holds the comp time for an employee. It is an optional numeric field of width 4. When this field is selected a list of values ranging from 0.0 to 10.0 in steps of 0.5, is popped up.

* **Traffic time (TRF)** : This field holds the number of hours the employee has spent on traffic duties. This is also an optional numeric field of width 4. When this field is selected a list of values ranging from 0.0 to 10.0 in steps of 0.5, is popped up.

* **Travel time (TTV)** : This field holds the number of hours the employee spent travelling. This is again an optional numeric field of width 4. When this field is selected a list of values ranging from 0.0 to 10.0 in steps of 0.5, is popped up.

* **Training time (TRN)** : This field holds the number of hours the employee spent training. This is also an optional numeric field of width 4. When this field is selected a list of values ranging from 0.0 to 10.0 in steps of 0.5, is popped up.

The above fields can be entered only from the top. An employee record has to be completed before a new employee record can be started.

There are some fields in the form which cannot be selected, but display useful information. These fields are :

* Six fields which display the total number of hours for all the employees in each of the above mentioned categories.

* Fields which display the current activity number and description. This is added for user convenience.

Some of the buttons used in the labor form are :

* **DELETE** : This button is basically used for deleting fields from the form. Whenever a field is to be deleted, this button is pressed and the pen is clicked on the field that has to be deleted. This operation is similar to the delete button in the crew work report form.

* **KEYBOARD** : This button is used to pop up a keyboard when a field is selected instead of the pop up list. To achieve this the keyboard button is pressed and then a particular field is clicked on and a pop-up keyboard pops up. This operation is similar to the way keyboard button is used in crew work report form.

* **RETURN** : This button is used to return to the crew work report form which initiated this form. If there are employee records that are not completed a warning message pops up. The user can either complete the record or quit the form in which case the incomplete employee record is discarded.

* **ENTER** : This button is used to enter the selected option from a pop up list into the corresponding field. The operation of this button is similar to the way the enter button works on the crew work report form.

EQUIPMENT FORM :

The fields used in the equipment form are defined as follows :

* **Unit Number** : This field stores the identification number of an equipment. When this field is selected a list of the various equipments used by the ORG pops up. The pop up list contains the identification code and also a description of the type of equipment. This is a character field of width 10. This is a required field.

* **Job Hours** : This field holds the number of hours corresponding to an equipment. This is a required numeric field of width 4. When this field is selected a list of values ranging from 0.0

to 10.0 in steps of 0.5, is popped up.

* **Start Mileage** : This field gives the starting mileage on an equipment when the activity was started. This is an optional numeric field of width 8. When this field is selected a pop-up keyboard pops up.

* **Ending Mileage** : This field gives the ending mileage of the equipment used, at the end of the day. This is an optional numeric field of width 8. When this field is selected the pop up keyboard pops up.

Just like the labor form , the fields have to be added from the top and a new record can be added only after completing the previous record.

Some of the buttons used in the form are

* **DELETE** : This button functions in the same manner as the delete button in labor form.

* **KEYBOARD** : This button functions in the same manner as the keyboard button in labor form.

* **RETURN** : This button is used to return to the crew work report form, which initiated the equipment form. If an equipment record is not completed then a warning message comes up. The user can either return to complete the record or quit to exit the form in which case the incomplete record will be deleted.

* **ENTER** : This button functions in the same manner as the Enter button in the labor form.

MATERIAL FORM : Some of the fields used in the material form are :

- * **Location (Loc)** : This is a character field of width 1. This is an optional field. When the field is selected the pop-up keyboard pops up.
- * **Code & Description & Unit** : These three fields work in coordination. Whenever the description field is selected a list containing the description, codes and units of materials corresponding to the activity pops up. For example if the activity is a tree activity, then all the materials corresponding to trees pops up with the rest of the materials under the OTHER MATERIALS label. If the Other materials is selected then another list pops up with the rest of the materials. The Code and Unit fields can be selected individually in which case a pop -up keyboard pops up.
- * **Quantity** : This is a numeric field which is required for the material record. When selected a pop-up calculator pad pops up.
- * **Cost** : This field is also a required numeric field of width 6. When selected a pop-up calculator pad pops up.
- * **MUTCD** : This field is a character field of width 3. This is an optional field, which when selected pops up a keyboard.
- * **Height** : This is an optional numeric field of width 2. It uses the pop-up calculator for entering values.
- * **Width** : This is an optional numeric field of width 2. It uses the pop-up calculator pad for entering values.
- * **K** : This is another optional character field of width 1. It uses the pop-up keyboard for entering values. Just like the labor form , the fields have to be added from the top and a new record can be added only after completing the previous record.

Some of the buttons used in the form are

- * **DELETE** : This button functions in the same manner as the delete button in labor form.
- * **KEYBOARD** : This button functions in the same manner as the keyboard button in labor form.
- * **RETURN** : This button is used to return to the crew work report form which initiated the material form. If a material record is not completed then a warning message comes up. The user can either return to complete the record or quit to exit the form in which case the incomplete record will be deleted.
- * **ENTER** : This button functions in the same manner as the Enter button in the labor form.

MAP FORM :

Map form, shows the map corresponding to the beginning tenth mile and the activity specified in the crew work report form. Depending upon the type of activity, map forms can be classified into three major types

- **Tree maps** : consists of maps with planting beds which contain trees. All the activities related to trees belong to this category.

- **Shrub maps** : shows maps with planting beds which contain shrubs. These maps also show the various regions on the map containing Granite mulches. All other activities belong to this category except irrigation and tree activities.

- **Irrigation maps** : shows irrigation appliances and irrigation lines. All irrigation activities belong to this category.

All the maps mentioned above show the right of way, the medians, the driving lanes, walls/fences, etc.,. The maps also show the tenth mile boundaries. The active portion of the map lies in between the tenth mile boundaries. Some of the tenth mile maps which display a intersection are divided into 2 sections North and South or East and West, this was done because all the information could not be accommodated in one map. These maps are named in the following manner:

Each tenth mile map is identified by the tenth mile number, the type of activity and section of the tenth mile (N or S) if it is divided into sections. The structure of the map name is as follows 5 characters representing the tenth mile + 1 character representing the activity + 1 character representing the section if it exists. For example the name of the map file for the tenth mile 5.6 for an irrigation activity can be written as 005_6I, if the tenth mile was sectioned into North and South parts then the name could be written as 005_6IN or 005_6IS or, if it was sectioned into East and West parts it could be named as 005_6IE and 005_6IW.

The way the map form tackles each one of the above categories of maps varies. A general idea of how the map form works is given initially and then the different categories are considered.

The Map form contains the following buttons-

* **MAPS** : This button is used to select a map for a particular tenth mile. Once this button is pressed a list is popped up with the list of map file names in the range defined by Beginning mile post and Ending mile post. The maps in the list belongs to any one of the categories described above.

* **SELECT/WRITE** : This is a button which toggles from select to write and from write to select. The purpose of the button under the two modes is

- **SELECT** In this mode the various polygons on the map which are marked by a dash can be selected to find out what they contain.
- **WRITE** In this mode the pen can be used to write anything on the maps. In this mode the polygons cannot be selected.

* **SAVE** : This button is used to save the map files after something is written on it. The maps are written with the same name but with a 'w' added at the end of the name. For example in the above example we could save a map with the name 005_6TW.

* **ALL** : This button is used to select all the planting beds in a map. If the save option is selected all the planting beds or irrigation appliances are selected and stored for later use.

* **ENTER** : This button is used after a selection is made on any of the items popped by a list. For example when the MAP button is used a list pops up showing the various map names. Then a particular map name is selected using the ENTER button.

* **+** : This button is used to go forward numerically to the next tenth mile.

* **-** : This button is used to go backward to the previous tenth mile.
Using the above two buttons the whole highway can be traversed.

* **N** : This button becomes active only when a tenth mile map has been sectioned into North and South parts. This button can be used to bring up the North section of the tenth mile. By default when a tenth mile is brought up , it is the North map file.

* **S** : This button becomes active only when a tenth mile map has been sectioned into North and South parts. This button can be used to bring up the South section of the tenth mile.

* **E** : This button becomes active only when a tenth mile map has been sectioned into East and West parts. This button can be used to bring up the East section of the tenth mile. By default when a tenth mile is brought up , it will be the East map file.

* **W** : This button becomes active only when a tenth mile map has been sectioned into East and West parts. This button can be used to bring up the West section of the tenth mile.

Tree Maps : The way the map form tackles the three activities concerning trees are as follows:

- **311 Trim Trees** When this activity is being performed, the user can select any of the marked planting beds. Once selected the common name of the trees found in the planting bed is displayed. The user can either save the name or return without saving. The name if saved is stored in a file for later use. This above operation actually indicates that the activity 311 was performed on all those planting beds the user saved.

- **314 Replace Trees** When this activity is being performed, the user can select any of the marked planting beds. As in the previous case once a planting bed is selected the common name of the trees present in that planting bed is displayed. If the user saves the name, a list pops up on the map, displaying various tree sizes. After selecting a option the user can use the ENTER button to record the selected option. After the size is selected the user has to enter the number of trees replaced, by clicking on the number field which is present on the top right corner of the map form. The user is not allowed to perform any other operation till the number field is entered. All the above information is recorded for later use.

- **315 Remove Trees** As in the previous cases any of the planting beds marked in the map can be selected. If the user saves the name of the tree, then a list pops up displaying a list of possible causes for the removal of the tree. The user can select a option and use the ENTER button to record the selected option. After the cause has been selected the user has to enter the number of trees removed in a planting bed by clicking on the number field as explained in the previous case. The user is not allowed to perform any operation till the number field is entered.

Shrub maps : The way the map form tackles the three activities concerning shrubs are as follows:

In case of shrub maps two things are displayed

Planting beds

Granite mulch

In all the three activities presented below both of the above mentioned regions can be selected. The three activities vary in the way the planting beds are treated. But all of them handle the granite mulch regions in the same manner. When the user selects a granite mulch region the type of the granite mulch is popped up. Whenever a user saves a granite mulch region the information is recorded for later use.

- **321 Trim shrubs / ground covers** This activity is similar to the Trim Trees activity.

- **323 Replace shrubs / ground covers** This activity is similar to the Replace Trees activity.

- **324 Remove shrubs / ground covers** This activity is similar to the Remove Trees activity.

Irrigation Maps: There are four major activities supported by map forms for the irrigation maps. The way these maps are handled are as follows:

The various irrigation appliances and irrigation lines that are marked on the screen can be selected. If a irrigation appliance is selected the name of the irrigation appliance is displayed. If an irrigation line is selected a pop up saying that it is a irrigation line pops up. All the marked regions on the map can be selected using any of the four activities mentioned below, But the way they handle each region varies from activity to activity.

- **331 Irrigation Inspection Major** In this activity the user can select any marked region on the map. The irrigation appliance or line can be saved for future use. There are no pop ups when this

activity is handled.

- **332 Minor Irrigation Inspection/Repair** In this activity the map form handles the irrigation lines and irrigation appliances in different ways. When a Irrigation line is saved the map form records that information. Whereas if a irrigation appliance is selected and saved, a list is popped up showing the various brand names for that particular appliance, the user can select a brand name by using the ENTER button, this selection basically specifies the brand name of the appliance that was replaced. A message pops up asking whether the particular activity is a repair or a replace activity. If it is a replace activity the list of brand names pops up again. Once the user selects a brand name, this specifies the brand name of the appliance that replaced the previous brand, all this information is recorded for later use. There is another option provided for the users in the map forms. If a particular brand name is not in the list popped up , the users can click on the MODEL NO. field to get a pop-up keyboard, so that they can enter the brand name.

- **333 Major Irrigation Appliance Repair/Replace** This activity handles the irrigation maps in the same way as activity 332.

- **334 Major Irrigation Line Repair** When a Irrigation line is selected and saved a list pops up with the various repair activities on a irrigation line, after a user selects one the information is recorded. In this activity the irrigation appliances can be selected for viewing but they won't be saved.

USER MANUAL DOCUMENTATION-
GRAPHIC MENUING SYSTEM FOR
PIMa

**PIMa PROJECT, ARIZONA DEPARTMENT OF
TRANSPORTATION, 30TH MAY 1993**

GRAPHIC MENUING SYSTEM FOR PIMa

PIMa MAIN MENU

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GRAPHIC MAIN MENU

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GIS MENUING SYSTEM FOR THE PIMa PROJECT

How to Start GIS System

To initiate the PIMa program type PIMa at the C:\ prompt.

The Main Menu

The menu system for PIMa is designed to be user friendly and almost entirely mouse driven. Once past the initial PIMa screen, the following menu appears:

SELECT AN OPTION:		
DBASE	GRAPHICS	EXIT

This allows the user to decide to use the DBASE or ARC/INFO portions of the program, or to exit the program entirely.

This documentation deals with the graphics portion of that menu.

Upon choosing the GRAPHICS option of the initial menu, a second option appears:

SELECT FROM THE FOLLOWING:

<u>LOCATION</u>	<u>INVENTORY</u>	<u>MAINTENANCE</u>	<u>DATABASE FILES</u>
MILEPOST	TREES	VEGETATION	RESULT_QUERY
ROUTE	SHRUBS	SURFACE	DATAFILE
INTERSECT	GROUND	IRRIGATION	
	APPLIANCES		
	LINES_IRRIG		
HIDE_MENU	ZOOM	KEYBOARD	DBASE
			QUIT

This menu is divided into five major sections: location, inventory, maintenance, database files and utility.

LOCATION MENU:

The first section deals with location and is highlighted in the following menu :

SELECT FROM THE FOLLOWING:

<u>LOCATION</u>	<u>INVENTORY</u>	<u>MAINTENANCE</u>	<u>DATABASE FILES</u>
MILEPOST	TREES	VEGETATION	RESULT_QUERY
ROUTE	SHRUBS	SURFACE	DATAFILE
INTERSECT	GROUND	IRRIGATION	
	APPLIANCES		
	LINES_IRRIG		
HIDE_MENU	ZOOM	KEYBOARD	DBASE
			QUIT

Location deals with the area of the freeway that is desired for viewing. The first selection should be route.

<u>LOCATION</u>	<u>INVENTORY</u>	<u>MAINTENANCE</u>	<u>DATABASE FILES</u>
MILEPOST	TREES	VEGETATION	RESULT_QUERY
ROUTE	SHRUBS	SURFACE	DATAFILE
INTERSECT	GROUND	IRRIGATION	
	APPLIANCES		
	LINES_IRRIG		

The desired route can be highlighted and selected with the mouse.

SELECT THE DESIRED ROUTE:

AGUA FRIA (LOOP 101)
BLACK CANYON (I-17 NORTH)
E. PAPAGO (LOOP 202)
HOHOKAM EXPRESSWAY (SH 143)
MARICOPA FROM I-17 SOUTH TO SUPERSTITION
PAPAGO (I-10 WEST)
PIMA I-10 SOUTH OF SUPERSTITION
SQUAW PEAK (SH 51)
SUPERSTITION (SH 380)

CANCEL

This menu has been designed for the complete implementation of the freeway system. If a route is selected which has not been implemented yet, the following will appear:

THE SELECTED ROADWAY HAS NOT BEEN IMPLEMENTED YET

OK

To go back to the starting menu, highlight and click on the **OK**.

For the implementation phase, Superstition is the only route that has been implemented at this time. May 1993, the second option under this section of the menu deals with either intersection or milepost increments. Intersections are usually one mile in length, and will display only the baselines in that section of roadway. This part of the menu is ideally to be used for query purposes and not for individual bed or irrigation appliance identification. The milepost option allows the user to select any tenth mile or consecutive tenth mile sections along the selected freeway route.



Highlight and click on the milepost to have the option menu displayed

SELECT THE MILEPOST LOCATION:

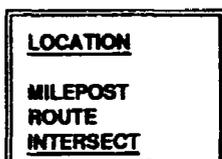
FROM :
TO :

CANCEL OK

Type in the milepost that is desired for viewing. For example, The implementation area is mp 5.4 to mp 12.4 along the Superstition Freeway. By typing in **FROM : 6.8 TO: 7.2** , four tenths of a mile will be displayed on the screen. Note: Make sure the mileposts are typed in ascending order for the program to work properly!

If an entire freeway section is desired for viewing, select the intersect option of the menu. This gives the freeway sections between major intersections, usually in one mile increments. Due to the length of the section the size of the individual polygons will be extremely small and hard to distinguish at this scale. The time to regenerate each of the polygons would slow the system, and tend to irritate the operator of the system. Therefore, only the base lines of the roadway section are displayed. These sections are recommended for queries rather than for identification purposes.

The following is the sample of intersection sections available for viewing.



SELECT THE DESIRED FREEWAY SECTION:

- 1 FROM DOBSON ROAD TO ALMA SCHOOL
- 2 FROM ALMA SCHOOL TO ST. HWY 87
- 3 FROM ST.HWY 87 TO MESA DRIVE
- 4 FROM MESA DRIVE TO STAPLEY DRIVE
- 5 FROM STAPLEY DRIVE TO GILBERT
- 6 FROM GILBERT TO LINDSAY
- 7 FROM LINDSAY TO VAL VISTA

CANCEL

INVENTORY MENU:

The second major section of the main menu deals with the inventory along the roadway. This section includes trees, shrubs, groundcover, irrigation appliances and irrigation lines. Sections of this portion work differently depending upon the type of inventory.

SELECT FROM THE FOLLOWING:

LOCATION

MILEPOST
ROUTE
INTERSECT

<u>INVENTORY</u> TREES SHRUBS GROUND APPLIANCES LINES_IRRIG
--

MAINTENANCE

VEGETATION
SURFACE
IRRIGATION

DATABASE FILES

RESULT_QUERY
DATAFILE

HIDE_MENU

ZOOM

KEYBOARD

DBASE

QUIT

The first option in the menu is trees.

<u>INVENTORY</u> <u>TREES</u> SHRUBS GROUND APPLIANCES LINES_IRRIG

By highlighting and clicking on trees, the first sub-menu appears:

SELECT:

- 1 Identify a particular polygon
- 2 Identify all of a particular species in the viewing area
- 3 Form a specific query

CANCEL

If option "1" is chosen a cursor appears in the viewing screen and by using the mouse to place the cursor in the desired tree polygon; those appearing with white cross-hatching and outlined in white, information about that particular bed will be displayed. The particular pattern for the tree polygons was selected to allow the user to visualize the area or plantings under the tree canopy. After identifying the contents of the desired bed, another question is asked.

WOULD YOU LIKE TO KNOW MORE ABOUT THIS POLYGON?

NO YES

If no more information is desired, click on **no**. However, if more information about the polygon itself, or the plant type in the polygon, click on **yes** and the technical data about the plants contained in a data dictionary will be displayed.

If selecting option "2", identifying all of a particular species in the viewing area, the following list is displayed:

SELECT THE TREE ID YOU WANT TO IDENTIFY

ACFA	SWEET ACACIA
ACSA1	WEeping WATTLE
ACSA2	WATTLE TREE
ACSH	TWISTED ACACIA
ACSM	SOUTHWESTERN SWEET ACACIA
ACST	SHOESTRING ACACIA
CEFL	BLUE PALO VERDE
CEPR	PALO BREA / SONORAN PALO VERDE
CHIJ	DESERT WILLOW
DOUNC	CAT'S CLAW
EUMI	COOLBAH TREE 'SNOW QUEEN'
FRVE	FANTEX ASH
GLTR	THORNLESS HONEYLOCUST
MENE	WESTERN TEA MYRTLE
PAAC	MEXICAN PALO VERDE JERUSALEM THORN
PIHA	ALEPPO PINE
POPU	
PRAL	ARGENTINE MESQUITE
PRCH	CHILEAN MESQUITE
RHLA	AFRICAN SUMAC
VACA	ARIZONA ROSEWOOD
WARO	MEXICAN FAN PALM

By highlighting one of the names in the list, the computer will search the database and then give the user the option to highlight the results with the following:

SELECT THE COLOR NUMBER TO REPRESENT THE SELECTED ITEMS:

1 WHITE	2 RED	3 GREEN	4 BLUE	5 YELLOW
6 CYAN	7 MAGENTA	8 DK GRAY	9 LT GRAY	10 LT RED
11 LT GREEN	12 LT BLUE	13 LT YELLOW	14 LT CYAN	15 LT MAGENTA
66 RED HAT	68 BLUE HAT	53 WHITE SQ	55 GREEN SQ	44 BLUE DIAG

CANCEL

The user then has the option to highlight a color or colored pattern to signify the selected polygons. If no polygons were selected, or accenting is not desired, highlight cancel and proceed.

Option "3" allows the user to formulate single or multiple queries on the displayed data. The type of query option is first choice given.

SELECT THE TYPE OF QUERY:

SINGLE MULTIPLE CANCEL

After this option is made, then the following possible query areas are given. Queries involve only quantity, face or planting date. Size of plant is a possible option, however no data is present for the implementation phase.

SELECT AN ITEM FROM THE FOLLOWING:

#QUAN #FACE #PLANTED

Select one of the three choices

Select the logical operator:

= > < GE LE

Select a logical operator. If working with face or planting date, be sure to use the "=" option. After selecting the desired operation, a list of possibilities for values appears.

ENTER A VALUE FOR THE ITEM:

QUAN	FACE	PLANTED	SIZEPLANTE
10	NORTH	1/89	1GAL
20	SOUTH	8/89	5GAL
30	EAST	1/91	10FT
50	WEST		15FT
100	NONE		20FT
200			25FT
300			30FT
400			35FT
500			40FT
	CANCEL		45FT

By selecting a value, the program will then search the database for items which correspond to the desired values and will then allow the user to highlight the selected polygons in the desired pattern or shade.

The same series of choices is used for a multiple query. The options rotate through the menu twice and then the database is searched for occurrences which are true for both requirements.

The same series of choices is used for a multiple query. The options rotate through the menu twice and then the database is searched for occurrences which are true for both requirements.



The shrub section of the menu operates exactly the same as the tree section. The user can identify a single polygon, multiple polygons, or query the shrub polygons in the displayed section. Shrub polygons can be identified by the green areas outlined in lighter green on the display screen. The menu for shrub selection contains the following for the implementation area:

SELECT THE ID FOR THE SHRUB YOU WANT TO IDENTIFY

```
ACON
ACRE  SPRAWLING WATTLE
BASA  DESERT BROOD
CAAR  FEATHERY CASSIA / WORMWOOD SENNA
CANE  TREADLEAF CASSIA
CAPH  SILVERLEAF CASSIA
CAPU  RED BIRD OF PARADISE
DAGR  TRAILING INDIGO BUSH
HEPA  RED YUCCA
JUCA  CHUPAROSA
MYPY  SANDALWOOD
NEOL  OLEANDER
NEOLL LITTLE RED OLEANDER
NEOLR 'Mrs. Roeding'
NEOLW WHITE OLEANDER
POPU
RUPE  ruellia peninsularis
TEST  YELLOW BELLS
YUAL  SPANISH BAYONET
```

The third section under the inventory menu deals with groundcover.



This is simply an identify operation where a ground polygon, which is displayed as a red hatched pattern on the screen, can be selected. The type of groundcover in that polygon will then be identified.

The fourth and fifth options under the inventory menu deal with irrigation appliances and irrigation lines. Irrigation lines and appliances are drawn only when the irrigation section of the menu is selected. Irrigation appliances are identified by color and shape, Irrigation lines are drawn in two different colors. All lines 1 inch and smaller appear in dark blue and lines greater than one inch appear in a lighter shades of blue. This portion of the menu has three options, either identify a single polygon or line, query for all of a particular type of appliance or size of line in the viewing screen, or cancel.



To identify a single polygon, move the cursor over the desired polygon and click. The id for the appliance will be displayed in the dialogue portion of the screen. If the user desires to find all of a particular type of appliance in the viewing area then the following choices appear:

SELECT THE TYPE OF APPLIANCE

- GV GATE VALVE
- RCV REMOTE CONTROL VALVE
- BP BACKFLOW PREVENTION
- WM WATER METER
- FU FILTER UNIT
- PRR PRESSURE REDUCTION RISER
- ARC ANTENNA / RADIO COMMUNICATION
- QC QUICK COUPLE
- PPS POP-UP SPRINKLER
- BS BOOSTER STATION
- FI FERTILIZER INJECTOR

CANCEL

By selecting one of the above choices, those appliances in the viewing area will be selected, and the user can highlight the appliances in the desired color. It is suggested to use yellow or a vibrant color to allow the user to find the selected polygons.

The following options are available for highlighting the various different line sizes:

SELECT THE DESIRED LINESIZE

- 10IN
- 11IN
- 1IN
- 2IN
- 21/2IN
- 3IN
- 4IN
- CANCEL

Again it is desirable to use a vibrant color such as yellow to identify the selected lines.

MAINTENANCE MENU:

The third major section of the main menu deals with maintenance.

SELECT FROM THE FOLLOWING:

<u>LOCATION</u>	<u>INVENTORY</u>	<u>MAINTENANCE</u>	<u>DATABASE FILES</u>
MILEPOST	TREES	VEGETATION	RESULT_QUERY
ROUTE	SHRUBS	SURFACE	DATAFILE
INTERSECT	GROUND	IRRIGATION	
	APPLIANCES		
	LINES_IRRIG		
HIDE_MENU	ZOOM	KEYBOARD	DBASE
			QUIT

This section was originally designed for queries by the user if the system did not have the full capabilities of dBASE. The queries work well, but their scope is limited and the queries are very slow. All three subsections are essentially the same, only the activity code choices vary for the different sections of the menu. The first option deals with vegetation, and one must choose the option between trees or shrubs. All other queries are the same.

MAINTENANCE

VEGETATION

SURFACE

IRRIGATION

SELECT THE TYPE OF VEGETATION FOR MAINTENANCE QUERY

TREE SHRUB CANCEL

SELECT THE TREE ACTIVITY CODE

311 TRIM
312 STAKE/TIE
313 FERTILIZE
314 REPLACE
315 REMOVE

CANCEL

SELECT THE SHRUB ACTIVITY CODE

321 TRIM
322 FERTILIZE
323 REPLACE
324 REMOVE

CANCEL

The surface maintenance options are as follows:

MAINTENANCE

VEGETATION

SURFACE

IRRIGATION

SELECT THE GROUND MAINTENANCE ACTIVITY

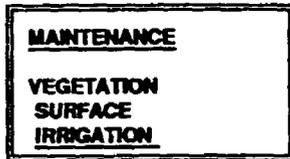
- 341 GRANITE EROSION CONTROL - MAJOR
- 342 GRANITE EROSION CONTROL - MINOR
- 343 NON - GRANITE EROSION CONTROL
- 344 CHEMICAL SOIL STAB. APPL. - LANDSCAPE
- 345 REPAIR BEPMS AND BASINS

- 351 MAJOR L/S VEG. CONTROL - HERBICIDES
- 352 MAJOR L/S VEG. CONTROL - GROWTH REGULATOR
- 353 MINOR LANDSCAPE VEGETATION CONTROL
- 354 LANDSCAPE INSECT CONTROL
- 355 LANDSCAPE RODENT CONTROL - CHEMICAL

- 361 LANDSCAPE LITTER CONTROL
- 362 BLUE STAKE MARKING
- 363 MANUAL WEED CONTROL
- 369 OTHER LANDSCAPE MAINTENANCE

CANCEL

The irrigation options are as follows:



SELECT THE IRRIGATION ACTIVITY CODE

- 331 IRRIGATION INSPECTION - MAJOR
- 332 IRRIGATION INSPECTION - MINOR
- 333 MAJOR IRRIG. APPL. REPAIR / REPLACEMENT
- 334 IRRIGATION LINE REPAIR

CANCEL

The fourth major heading in the main menu allows the user to interact with dBASE while in the graphics mode.

SELECT FROM THE FOLLOWING:

<u>LOCATION</u>	<u>INVENTORY</u>	<u>MAINTENANCE</u>	<u>DATABASE FILES</u>
MILEPOST	TREES	VEGETATION	RESULT_QUERY
ROUTE	SHRUBS	SURFACE	DATAFILE
INTERSECT	GROUND	IRRIGATION	
	APPLIANCES		
	LINES_IRRIG		
HIDE_MENU	ZOOM	KEYBOARD	DBASE
			QUIT

Queries formed in dBASE are contained in a special subdirectory so they can be displayed in while in the graphics portion of the program.

<u>DATABASE FILES</u>
<u>RESULT QUERY</u>
<u>DATAFILE</u>

If the result of a query option is selected, a list of the available query files is displayed on the screen. There will also be some magenta type displayed on the screen. Do not worry about this. It is the result of some background operations within the program. There is no way at present to keep this from being displayed.

Fill in the blank with the name of the desired query file, and press return. Next highlight the field on which the query was designed,

TYPE THE DATA BASE QUERY FILE YOU
WANT TO SEE GRAPHICALLY DISPLAYED

FILENAME :

SELECT THE FIELD:

TREES SHRUBS IRRIGATION SURFACE

CANCEL

or cancel if no file is desired. The program will then display only the area within the limits of the query.

At times the contents of a database file are necessary to understand the available data, or to form a relational join. The next section allows the user to list the contents of a database file.

<u>DATABASE FILES</u>
<u>RESULT QUERY</u>
<u>DATAFILE</u>

TYPE THE FILE TO LIST :
OK CANCEL

If the datafile option is highlighted, the available datafiles are listed on the screen, and the desired file can be typed in for a listing. The files listed are the coverages contained in the program.

UTILITIES MENU:

The fifth and final section of the main menu is the utility section.

SELECT FROM THE FOLLOWING:

<u>LOCATION</u>	<u>INVENTORY</u>	<u>MAINTENANCE</u>	<u>DATABASE FILES</u>
MILEPOST	TREES	VEGETATION	RESULT_QUERY
ROUTE	SHRUBS	SURFACE	DATAFILE
INTERSECT	GROUND	IRRIGATION	
	APPLIANCES		
	LINES_IRRIG		

<u>HIDE MENU</u>	<u>ZOOM</u>	<u>KEYBOARD</u>	<u>DBASE</u>	<u>QUIT</u>
------------------	-------------	-----------------	--------------	-------------

UTILITIES

<u>HIDE MENU</u>	ZOOM	KEYBOARD	DBASE	QUIT
------------------	------	----------	-------	------

The first of the utility options hides the menu. As the different screen displays are completed the menu reappears on the screen. To remove this temporarily click on the selection. To restore the screen either press return or click on the return box on the screen.

UTILITIES

HIDE_MENU	<u>ZOOM</u>	KEYBOARD	DBASE	QUIT
-----------	-------------	----------	-------	------

The zoom feature allows the user to zoom in to any area desired on the screen. By placing the cursor on the upper left corner of the desired area and clicking once, then moving the cursor to the lower right corner of the desired area and clicking again, a window is formed. The screen is cleared and only the new area will be redrawn. To zoom out highlight the **milepost** option on the menu and click, then highlight the **ok** under the milepost and click again to return to the original screen.

UTILITIES

HIDE_MENU	ZOOM	<u>KEYBOARD</u>	DBASE	QUIT
-----------	------	-----------------	-------	------

The keyboard command allows the user to input any commands desired from the keyboard rather than from the menuing system. To return to the menu type **&return**.

UTILITIES

HIDE_MENU ZOOM KEYBOARD **DBASE** QUIT

The DBASE option allows the user to leave the graphics portion of the program to formulate queries or other dBASE functions. Click on DBASE and then on DBASE again when the next menu appears. When finished with dbase operations, the program automatically returns to the graphics screen.

UTILITIES

HIDE_MENU ZOOM KEYBOARD DBASE **QUIT**

Highlight and click QUIT when desiring to leave the PIMa system.

TECHNICAL DOCUMENTATION-
DIGITIZING

**PIMa PROJECT, ARIZONA DEPARTMENT OF
TRANSPORTATION, 30TH MAY 1993**

TECHNICAL DOCUMENTATION- DIGITIZING

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TECHNICAL DOCUMENTATION- DIGITIZING

GENERAL OVERVIEW- DIGITIZING

Current Drawings

At the date 27th, April 1993 the current drawing and data sets have been completed:

<u>Highway ID</u>	<u>Route</u>	<u>Milepost</u>	<u>Street Names</u>
Superstition	U.S. 60	174.2-184.5	Mill Ave.-Gilbert
Papago	I-10	128.1-149.1	Litchfield-E. Buckeye
Black Canyon	I-17	198.9-212.6	W. Buckeye-Bell Rd.
Maricopa Freeway	I-17	194.6-198.8	S. 24th-W. Buckeye
" "	I-10	149.1-158.9	S. 24th-Warner Rd.
Auqa Fria	101	No Data	

General Guidelines-

Drawing Set- The current drawing set was produce in AutoCadd, Release 10. All drawings cover state maintain vegetation and irrigation in District 1 at the beginning date of contract. The area covered is usually between rights-of-way lines.

When drawing the highway system the following guidelines must be strictly observed. If one guideline is not observed, hours can be spent making corrections in Arc/3.4D. Note: These guidelines apply to AutoCadd, Release 10. If your cadd system is different you will want to test it's portability until Arc/3.4D receives an exchange format which is acceptable.

Drawing Setup- The current drawing set was produced using the ALISS file acquired from photogrammetry and mapping services. The ALISS file is a centerline map file for the entire state of Arizona. The map file contains centerline data for all state roadways, exit ramps and bridges. The entire map file was originally geographically referenced with state plane coordinates.

This map file was then translated to AutoCadd were it was divided into numerous maps. These divided maps covered from intersection to intersection but also included the milepost markers on each side of the intersection and are usually one mile in length. Once created the first job is to divide between milepost into tenth mile increments.

Once the transfer and increments items have been finish the base map material has to digitized into the computer. The base map material is taped up from intersection to intersection then calibrated to match the ALISS centerline file. The calibration of the base map material is not an exact science and requires time and practice to get a match that is acceptable. The first item is to calibrate one bridge intersection to the existing centerline map file and then to digitize the matchlines from that calibration. The main guideline in calibration is the bridge intersection need

to match as close to perfect as possible. Any type of rubber sheeting needs to occur in the half-mile between the intersections. Again there is no given way to calibrate each time you calibrate a new set of drawing the process could change.

Drawing Lines- In AutoCadd the line type to use is call P-LINE or POLYLINE. A polyline is a connected sequence of line segments. In AutoCadd a polyline is treated as a single entity. Note: Do not use the arc command or any types of dashed lines when drawing, Arc/3.4D usually will not recognized these types of line segments.

All polylines must snap to another line or close upon itself, see figure 1.

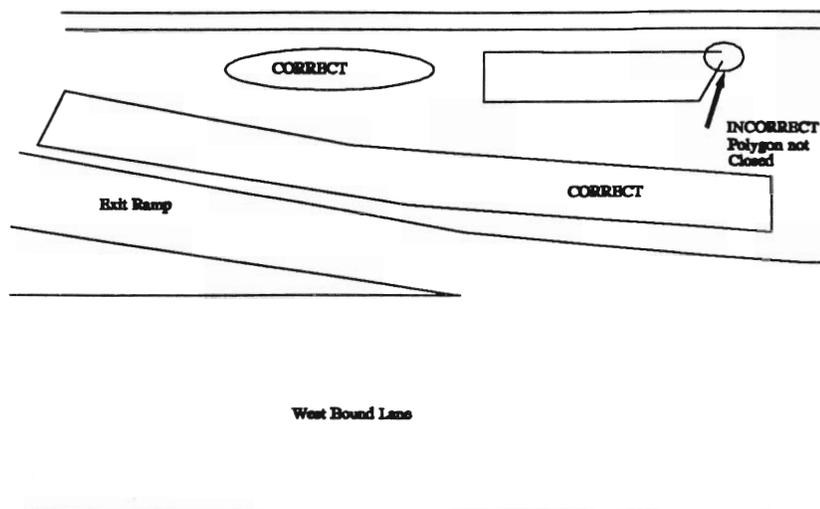


Figure 1. Closing of Polygons

If a line does not end into another line the dangling line segment will create an error box in Arc/3.4D. Another common error which occurs is closing the polygons to late which creates a second polygon, see figure 2. The key guideline to drawing, is every items must close to make a polygon. If the polygons are not closed they will bleed into each other creating either an infinite sized polygon or a polygon with two idcodes.

Idcodes- The idcode system is a simple method used to track all planting beds, irrigation appliances, irrigation lines and surface covers (i.e. bare ground, granite mulches, etc.). The key guideline to placement of idcodes into polygons is the **beginning point has to fall inside of the polygon**. Once the starting point is located within the polygon it can extend outside the polygon without creating any problems. Note: This is true within the autocadd program, test your cadd program to verify.

Another important guideline that must be understood is the tenth mile division of planting beds. If a tenth mile line intersects any planting bed, idcodes must be on both sides of the line. This

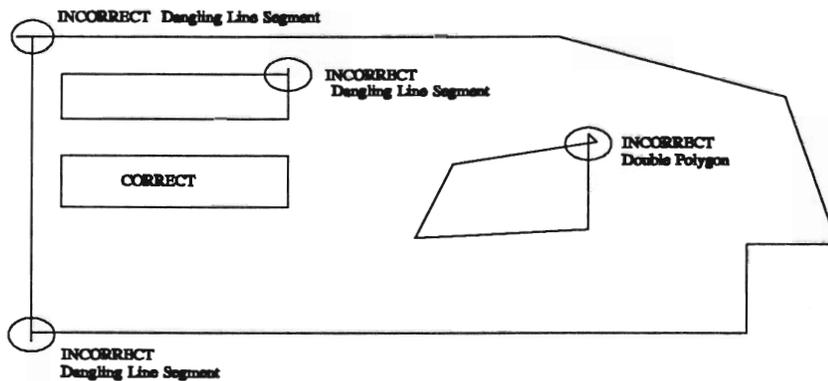


Figure 2. General Polygon Drawing Problems

give the same planting bed two unique idcode labels. When counting the vegetation that belongs with the planting bed it is divide between the two beds.

Figure 3 is a diagram to reference for the idcode system. The first four letters of the system uses the milepost marker which is further divided into tenth mile increments. The fifth and sometimes sixth letters represents the polygon description. The last two or three letters represents a number assign to that polygon. The number 01, restarts at each tenth mile and polygon description type and sequentially advances up to 999 if necessary.

Layers for Drawings

General Overview- All drawing contain layers which can be turn on/off. A layer is similar to a transparent overlay used in drafting. Layers allow you to view and plot related aspects of a drawing separately or in any combination and a color and line type are associated with each layer. Each drawing presently contains approximately thirty two layers. These layers are necessary to cover base plans, vegetation plans, irrigation plans and surface plans. The best method of guaranteeing that these layers will be included into new drawings is to insert a block which contains all the layers into the new drawing.

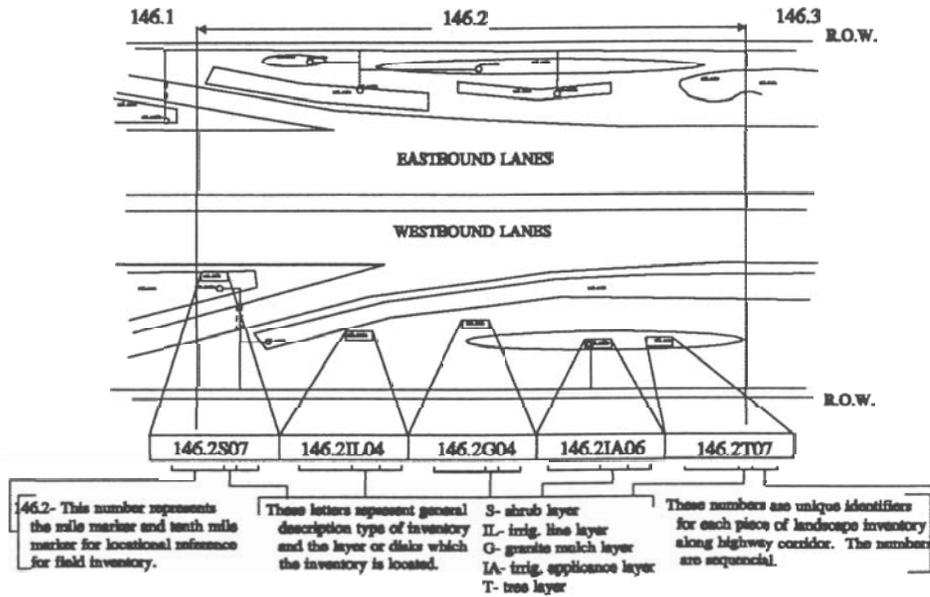


Figure 3. Icode System

Base Plan Information- The base plan information contains layer information that is used for every plan. These layers are usually hardscape structure such as: pavement edges, walls, etc.. The following are the layers used in the base plan:

Layer	Color	Description
0	White	0 Layer- Necessary for every drawing, even though it contain no information
CL	Magenta	Centerline Layer- contains centerline information received from the ALISS file
ML	Red	Matchline Layer- contains matchline information
10THMM	Yellow	Tenth Mile and One Mile Marker Line Layer- use for 10TH mile increment lines
PE	White	Pavement Edge Layer- delineates the pavement edges for roadway, exit ramps, etc.
ROW	Maroon	Rights-of-Way Layer- delineates the physical boundary to which the state owns
WAL	Grey	Wall Layer- delineates walls and fences within the ROW
BR	Cyan	Bridge Layer- delineates pavement edges of bridges

Vegetation Plan Information- There are only two vegetation layers. These layers are TR- Trees and SH- Shrubs but they are drawn quite different from each other. The difference is when shrub planting beds are drawn the ends are squared off as much as possible. Tree planting beds when drawn are rounded at the ends. The round end of these tree planting beds is not by using an arc command but drawn using many line segments to create the illusion of an arc. Also to be noted is all idcodes that attached to these planting beds must be in the same layer.

Layer	Color	Description
TR	Yellow	Tree Layer- use to draw tree planting beds
SH	Green	Shrub Layer- use to draw shrub planting beds

Irrigation Plan Information- The irrigation plan information is the most complicated for drawing in AutoCadd. The main reason for this is the number of layers required to make the maps useful in Arc/3.4D. Each type of irrigation appliance is assigned a layer along with the size of irrigation lines. One difference between these maps and the vegetation maps is all the idcodes go into one layer called IATEXT (Irrigation Appliance TEXT). An important concept which needs to be discussed is all irrigation appliances are polygons, the same as a vegetation planting bed. The starting points for idcodes must be inside the irrigation appliance polygon. The symbols for the irrigation appliances are also unique (see Figure) and should be followed to allow easy identification when digitizing.

-  - GV: GATE VALVE
-  - PRR: PRESSURE REDUCTION RISER
-  - RCV: REMOTE CONTROL VALVE
-  - ARC: ANTENNA RADIO CONTROLLER
-  - WM: WATER METER
-  - FC: FIELD CONTROL SATELLITE
-  - FS: FLOW SENSOR
-  - BP: BACKFLOW PREVENTER UNIT
-  - QC: QUICK COUPLER
-  - BS: BOOSTER STATION
-  - FU: FILTER UNIT
-  - PPS: POPUP SPRINKLER

Figure 4. Symbols Used for Irrigation Appliances when Digitizing

The following is the layers associated with the irrigation plan:

Layer	Color	Description
GV	Magenta	Gate Valve Layer
RCV	Magenta	Remote Control Layer
BP	Magenta	Backflow Preventer Layer
PRR	Magenta	Pressure Reduction Riser Layer
ARC	Magenta	Antenna Radio Controller Layer
QC	Magenta	Quick Coupler Layer
PPS	Magenta	Pop-up Sprinkler Layer
BS	Magenta	Booster Station Layer
FU	Magenta	Filter Unit Layer
FI	Magenta	Fertilizer Injector Layer
WM	Magenta	Water Meter Layer
1IN	Blue	One Inch Line Layer
1QIN	Blue	One and One Half Inch Line Layer
1HIN	Blue	One and One Quarter Inch Line Layer
2IN	Blue	Two Inch Line Layer
2HIN	Blue	Two and One Half Inch Line Layer
3IN	Blue	Three Inch Line Layer
4IN	Blue	Four Inch Line Layer
5IN	Blue	Five Inch Line Layer
6IN	Blue	Six Inch Line Layer
IATEXT	Magenta	Irrigation Appliance Text Layer
IL	Magenta	Irrigation Line Text Layer

Surface Plan Information- The surface plan information is a detail map of the change of surface covers. Surface covers include grass, granite mulches, decomposed granite mulches, rock mulches, bare ground, etc.. All of these surface covers are within one layer called GM (Granite Mulch). The database files carries the information about the type of surface cover. Another key element is the idcode system used for surface cover. Note: If a planting bed divides the entire tenth mile, then idcodes will need to be setup for both areas of surface cover.

Layer	Color	Description
GM	Blue	Granite Mulch Layer- use to delineate between different areas of surface treatments

File Transfer with DXF

Translating files into the Data eXchange Format (DXF) is required for transfer a file into Arc/3.4D. The following is some general guidelines that need to be followed when translating the files. The size of the map to transfer needs to be limited to the power/speed of the computer system. In the PC 486 computer environment we found that a map file no greater than five miles was reasonable to manage. In the workstation environment a map file of greater size may be acceptable, but five mile increments are easier to handle and view.

When performing the DXF translation it is necessary to explode all entities which are blocks. If a drawing is transfer in without being the blocks being exploded the block will not be able to be viewed. For further information about what to do once the information is received into Arc/3.4D, see chapter on Arc/3.4D.

TECHNICAL DOCUMENTATION-
ARC/3.4D

**PIMa PROJECT, ARIZONA DEPARTMENT OF
TRANSPORTATION, 30TH MAY 1993**

TECHNICAL DOCUMENTATION- ARC/3.4D

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TECHNICAL DOCUMENTATION FOR THE PIMa PROJECT

The PIMa project brought some challenges with it. The original Centerline data was translated from Intergraph format to workstation ARC/INFO software ported to the Intergraph workstation environment. That was then put in a DXF format and translated into AUTOCAD. From AUTOCAD the drawings were again put into a DXF format and translated into workstation ARC/INFO on the SUN Sparc II platform. After clean and build operations and data attachment was done, the files were then exported into a PC format for use by ADOT.

To be able to have a format acceptable in the PC, the original coordinates were given a -20,000 , -20,000 x,y shift. The PC can accept only seven significant digits with the PC ARC 3.4d program and it was felt that this would position the coordinates in such a way that the PC format would be met. However it was found that the various data translations kept changing the number of digit places and therefore it became necessary to transform the coordinates by a power of 2 to have the files successfully exported to the PC. It was later found that distances were still off by a factor of 10, so another transformation became necessary. The shifted coordinates need to be recalculated by dividing the tics by 1000 (10^3) to have proper distances in the coverages. This is necessary in the implementation phase. This may not be necessary in the later phases depending on the number of translations the data must go through.

It is recommended to break the roadway segments into five mile increments for ease of handling in the PC environment. Coverages greater than five miles tend to fail when given the clean command, or any of the other complex commands for manipulation. Database searches also become slower with longer stretches of roadway.

COVERAGES

The coverages developed for the program are base, which includes all the highway features, shrub, which includes both shrub and groundcover polygons, tree and irrigation. Base is a linear coverage, shrub and tree are polygonal coverages, and irrigation is developed as both polygonal, the appliances, and linear, the lines themselves.

IMPORTING COVERAGES FROM AUTOCAD

The coverages have been digitized into autocad for ease of data input. The coverages must be put into a dxf format to be translated into PC ARC 3.4d. Each of the separate coverages will be formed from separate layers in the autocad file. To get a listing of the coverages, the dxfinfo command must be used.

The following is a listing of the layers used to form the four coverages necessary to form the PIMa project.

The base coverage uses the following layers: 0, centerlines, matchlines, 10th mile markers, pavement edge, right of way, walls and fences and bridges.

The Tree layer uses: 0, trees, 10th mile markers, pavement edge, right of way and bridges.

The shrub layer uses: 0, shrubs, 10th mile markers, pavement edge, right of way, walls, granite mulch and bridges.

The irrigation layer uses: 0, gate valves, remote control valves, backflow preventers, pressure reduction risers, ant. radio control, 1 inch lines, 1 half inch lines, 2 inch lines, 1 quarter inch lines, 2 half inch lines, quick coupler, pop-up sprinkler, booster station, filter unit, fertilizer injector, 10th mile marker, pavement edge, 3 inch lines, 4 inch lines, irrigation line labels, bridges, irrigation text and water meter.

CLEAN

The clean operation is performed on the tree, shrub and irrigation coverages.

BUILD

The build operation is performed on the base and irrigation coverages using the line option.

ATTACHING DATA

The XCODE and ACODE data from the DXF files is attached to the coverages with the joinitem command in arc. This process can be done after the coverages have been cleaned and built. XCODE data attaches to the .PAT files and ACODE data attaches to the .AAT files. the filename_id is the common item on which the files are joined, and it is much faster to use the ordered option.

Data other than the XCODE and ACODE are attached to the coverages with the IDCODE which is unique to each polygon throughout the entire system.

GRID PAD FILES

Transporting the various map files to the Grid Pad involves forming new coverages of each tenth mile for the tree shrub and irrigation coverages. Each of those new coverages must include lines and label points for every polygon. Each must be built as a line file and as a point file. In addition, each .pat and .aat file formed an item "code" must be added. each coverage must be then dumped into a linegrid or pointgrid format for importation into the Grid Pad environment.

To have the maps in a format acceptable to the GRID PAD with intelligence for the necessary operations, the following files must be formed using PC ARC/INFO commands:

.FIX files- These files are a truncated .aat file containing only the filename_id, idcode and appliance type or ID for the irrigation files. These files are formed using the dump command in TABLES. The format for the shrub and tree files is: filename_id, idcode and id. Naming convention is filename.fix.

.PPP files- These files give the XY coordinates of the label point in each polygon. They are created with the ungen command in the ARC module. These files contain only the file_id and the XY coordinates of that id. Naming convention is filename.ppp.

.XY files- These files are formed by using the dump command in TABLES. The .bnd file for each coverage is dumped to a file using the naming convention filename.xy

RASTER files- Raster files are created using the linegrid and pointgrid commands for each coverage. The cell size is 20 x 20 and the resolution is 380 x 528 for the Grid Pad. Each .nas file is then converted into a .pcx file for importation into the Grid Pad.

TECHNICAL DOCUMENTATION-
dBASE 1V FILES
DIAGRAMS
AND PROGRAMS

**PIMa PROJECT, ARIZONA DEPARTMENT OF
TRANSPORTATION, 30TH MAY 1993**

TECHNICAL DOCUMENTATION- dBASE 4.0 VERSION 1.1

GENERAL OVERVIEW AND DIAGRAMS

Org 4170 Overview	1
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General Overview of Program Files

TRAN_IN.PRG	Document	1
TRAN_OUT.PRG	Document	2
WRK_RPT.PRG	Document	3

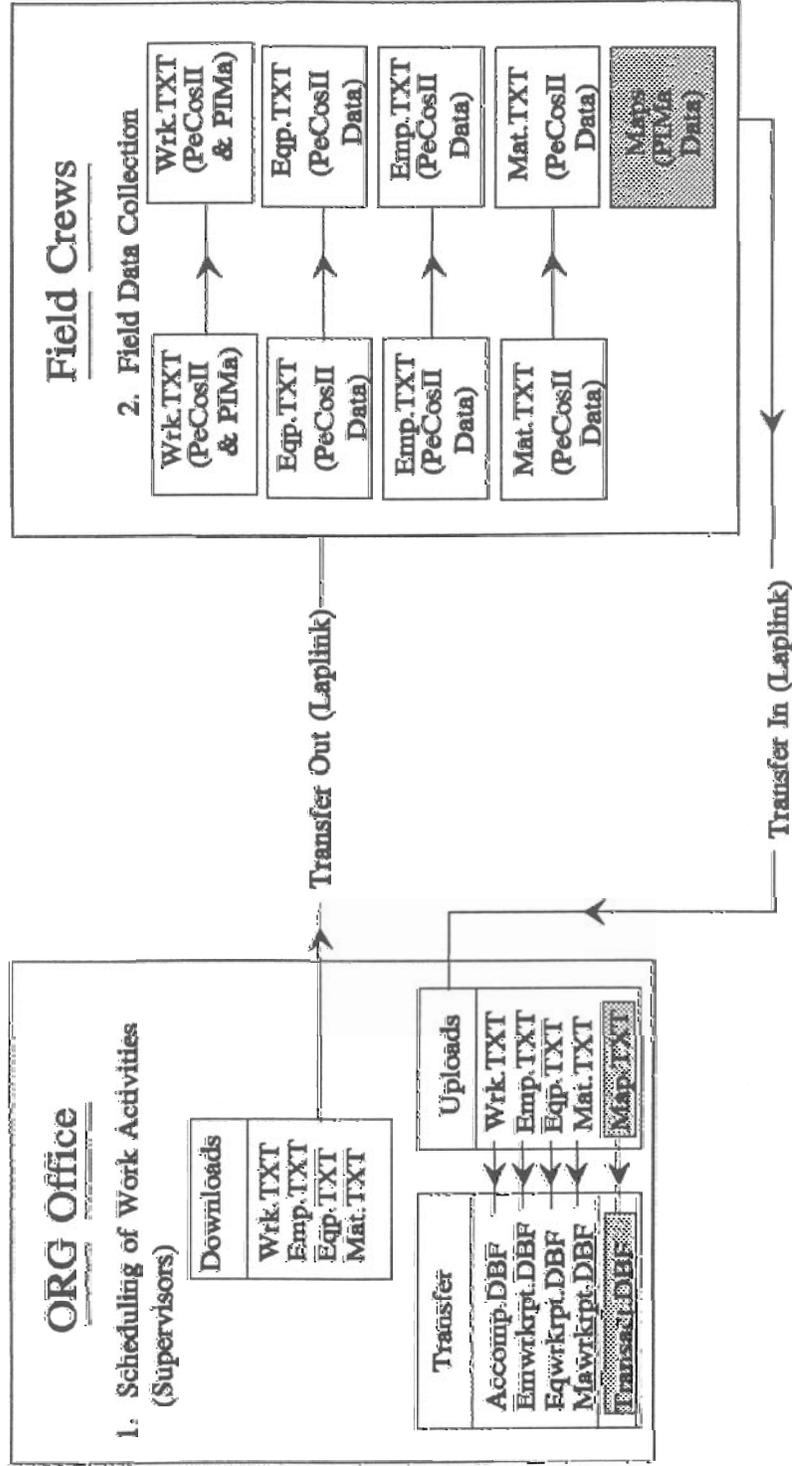
Roadside and District 1

PIMA.PRG	Document	4
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PIMa

Landscape Inventory and Management

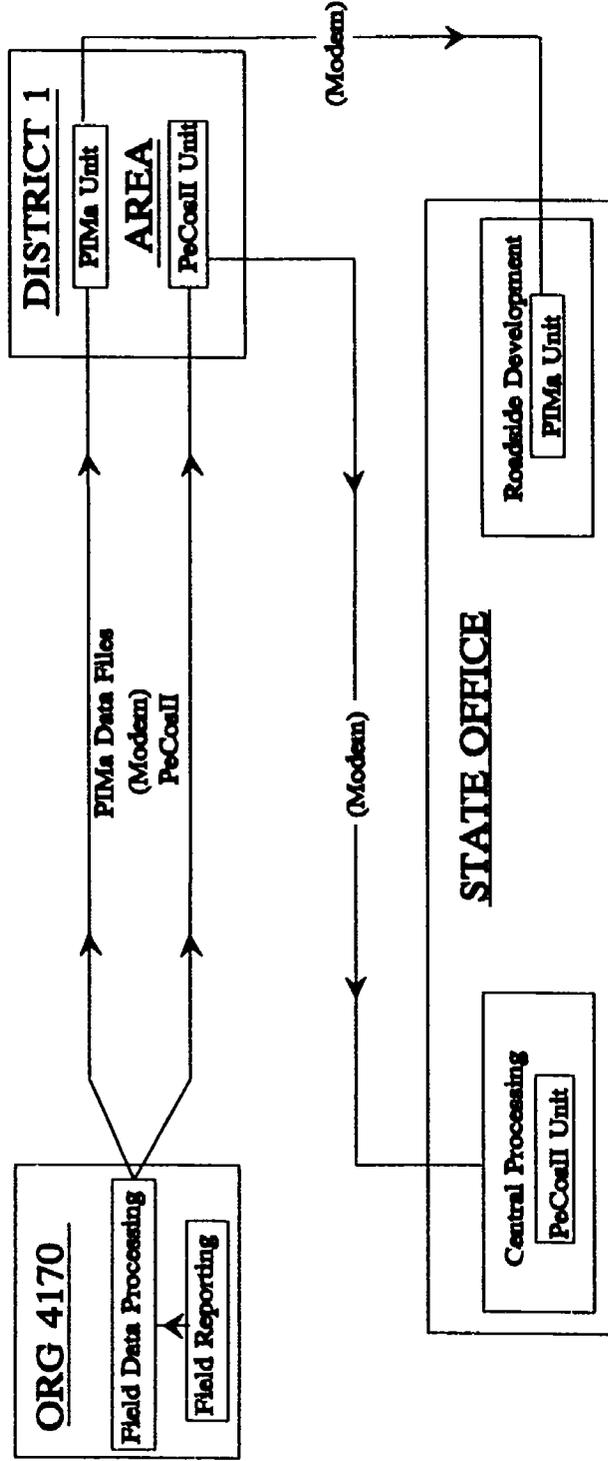
ORG Overview



ORG 4170 Overview

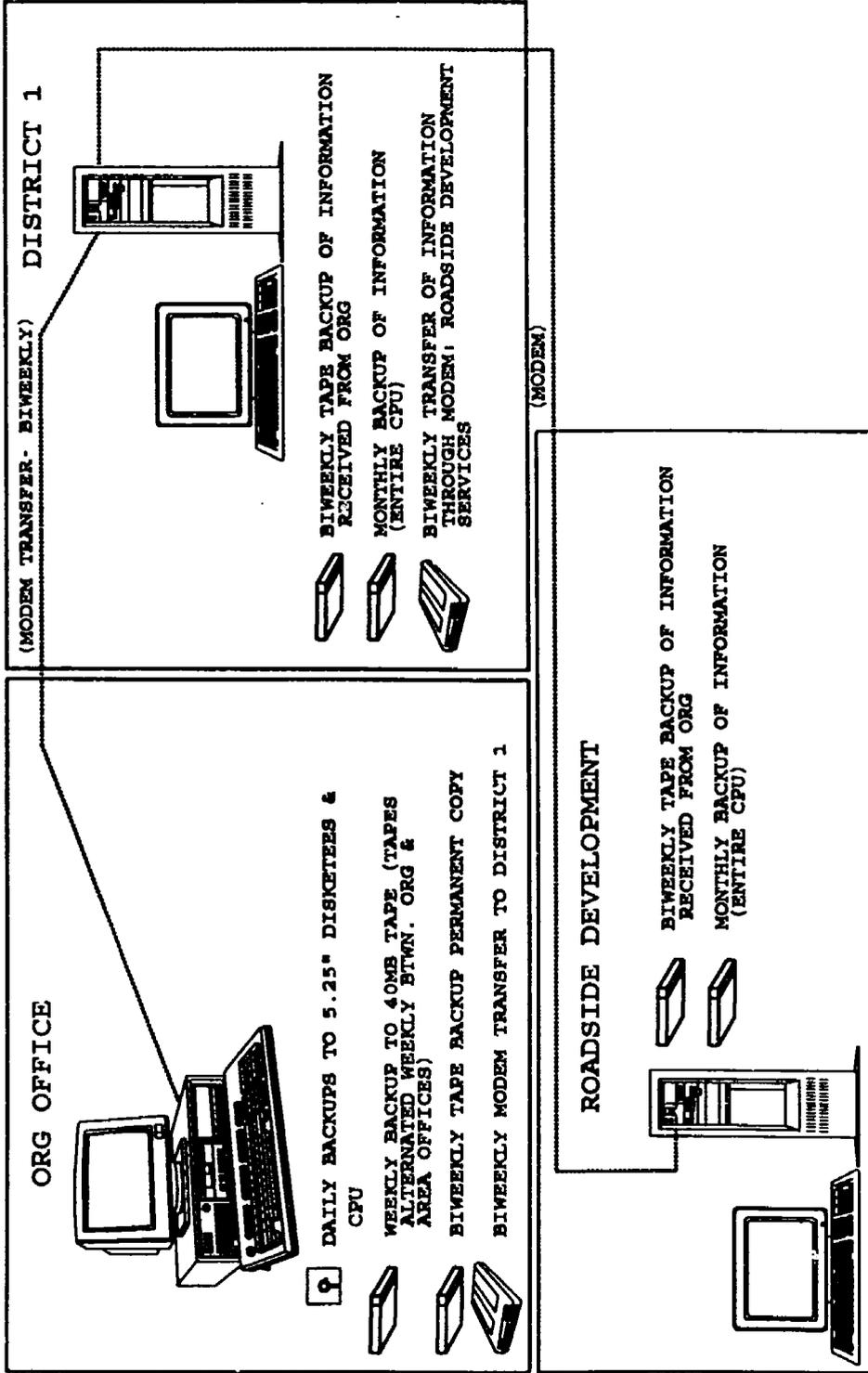
PIMa Landscape Inventory and Management

General Overview



General Overview

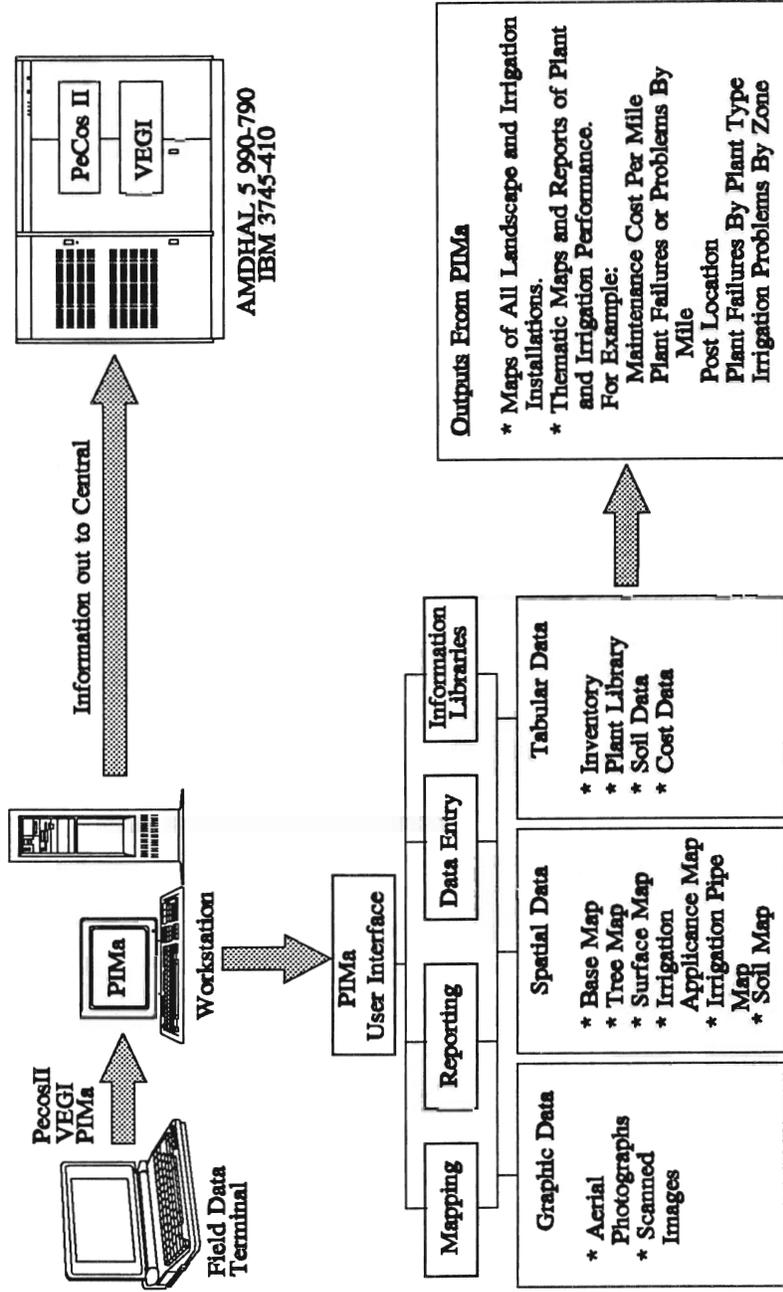
BACKUPS AND MODEM TRANSFER DIAGRAM FOR PIMA



Current Modem Transfer and Backup System Overview

PIMa

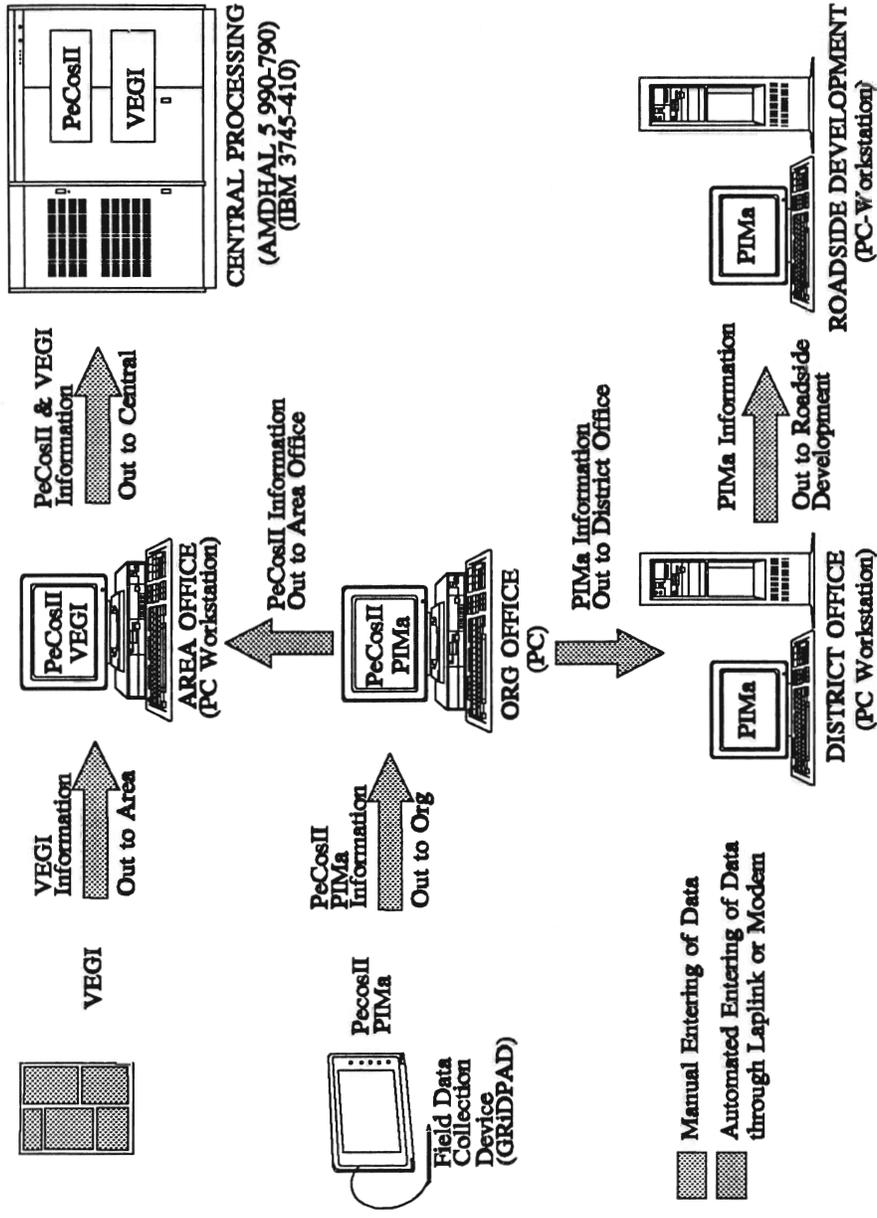
Concept for ADOT's Landscape Inventory and Management System



Original Concept for the Landscape Inventory and Management System

PIMa

Existing System: ADOT's Landscape Inventory and Management System



Existing Landscape Inventory and Management System Used by ORG 4170

DATABASE FILES AND FIELDS REQUIRED FOR PeCoS II

<p>ACCOMP.DBE</p> <p>FISC_YR ACCOMPLISH LABOR_HRS LABOR_COST EQUIP_COST MAT_COST EXPENDITUR EMAS_CLASS CREW_SIZE REMARKS STATUS INITIALS STAT_DATE UPLD_DATE UPLD_PER UPLD_YR</p>	<p>EMVWKRET.DBE</p> <p>FISC_YR EMP_NO REQ_HRS OT_HRS COMP_HRS TRAF_CTL TRAVEL TRAINING EMP_RATE OT_FACTOR R_FISC_YR R_ORG RESC_TYP STATUS INITIALS STAT_DATE UPLD_DATE UPLD_PER UPLD_YR</p>	<p>EQVWKRET.DBE</p> <p>EQUIP_NO R_FISC_YR R_ORG RESC_TYP RESC_CLASS EQUIP_HRS REQ_RATE METER_RATE START_MTR END_MTR OPERATOR STATUS INITIALS STAT_DATE EMAS_UPLD UPLD_PER UPLD_YR</p>	<p>MAVWKRET</p> <p>FISC_YR MAT_ORG MAT_LOC CODE SN_HEIGHT SN_WIDTH KIND QUANT_A MEASUREA CONST INVENTORY STATUS INITIALS STAT_DATE UPLD_DATE UPLD_PER UPLD_YR</p>	<p>INVTN.DBE</p> <p>ORG ORGLOC CODE HEIGHT WIDTH KIND TRANDATE TRANTYPE DOCID TRAN_TO QUANTA UNIT_COST QUANTS UNITA UNITS TOT_VAL VEND CONVERT FROM_UNIT FACTOR ENT_BY ADJUST UPLD_DT</p>
--	--	--	--	--

```

1 set device to screen
2 *set status off
3 set status on
4 set talk off
5 clear
6 *****
7 * Program.....TRAN IN.PRG
8 * Author.....Cliff Perry, Texas Transportation Institute
9 *                               Environmental Management Program
10 * Address.....Texas A&M University, College Station, TX. 77843-3135*
11 * Phone.....(409) 845-0133
12 * Client.....Arizona Department of Transportation, (ADOT)
13 *                               Roadside Development Services
14 * Date.....(07/13/92)
15 *****
16 mTrans          = space (8)
17 cDate           = { / / }
18 dDate           = { / / }
19 eDate           = { / / }
20 tDate           = { / / }
21 rDate           = { / / }
22 nDate           = { / / }
23 stat_date = { / / }
24 tDevice = space (2)
25 fYear          = space (4)
26 aInt           = space (4)
27 bInt           = space (4)
28 cInt           = space (4)
29 District = space (1)
30 Area           = space (1)
31 tTest          = space (8)
32 tTest2         = space (8)
33 tAppend = space (8)
34 tAcomp         = space (8)
35 dtNum1         = space (3)
36 store 0 to nYear, tYear, mNum, crew, Tran
37 set catalog off
38 do NMenu_pro
39 *****
40 procedure NMenu_pro
41     use crew_no
42     set catalog off
43     define menu transfer
44     @ 3,14 to 20,70 double
45     @ 4,20 say "P I M a   T R A N S F E R   I N   M E N U"
46     @ 6,28 say "New Entry"
47     @ 6,42 say "Current Status"
48     @ 21,17 say "Use Left & Right Arrows to Move Up & Down Menu"
49     @ 7,17 say "Transfer:"
50     @ 7,28 say "Transfer In"
51     define pad cDate of transfer prompt "Date:      " at 9,17;
52     message "Enter Today's Date"
53     define popup cDat_pop from 8,16 to 10,27
54     define bar 1 of cDat_pop prompt "Date:      "
55     on pad cDate of transfer activate popup cDat_pop
56     on selection popup cDat_pop do CDate
57     define pad tDate of transfer prompt "Date:      " at 11,17;
58     message "Enter Date of Activity"
59     define popup Date_pop from 10,16 to 12,27
60     define bar 1 of Date_pop prompt "Date:      "
61     on pad tDate of transfer activate popup Date_pop
62     on selection popup Date_pop do TDate
63     define pad crew of transfer prompt "Crew No.:" at 13,17;

```

```

64         message "Enter Crew/Device No. for Transfer"
65     define popup crew_pop from 12,16 to 14,27
66         define bar 1 of crew_pop prompt "Crew No:"
67     on pad crew of transfer activate popup crew_pop
68     on selection popup crew_pop do Crew_pro
69     define popup Device from 12,28 to 14,31 prompt field CREW_NO;
70         message "Enter Crew/Device No. for Transfer"
71     on selection popup Device do Device
72     define pad Init of transfer prompt "Initials:" at 15,17
73     define popup Int_pop from 14,16 to 16,27 message;
74         "Initials of Person Entering Data"
75         define bar 1 of Int_pop prompt "Initials: "
76     on pad Init of transfer activate popup Int_pop
77     on selection popup Int_pop do Int_pro
78     define pad Exec of transfer prompt "Execute:" at 17,17
79     define popup Exe_pop from 16,16 to 18,27 message;
80         "Execute Transfer of Data"
81         define bar 1 of Exe_pop prompt "Execute: "
82     on pad Exec of transfer activate popup Exe_pop
83     on selection popup Exe_pop do Exe_pro
84     define pad Exit of transfer prompt "Exit:" at 19,17;
85         message "Exit to PIMa Main Menu"
86     define popup Ext_pop from 18,16 to 20,27
87         define bar 1 of Ext_pop prompt "Exit: "
88     on pad Exit of transfer activate popup Ext_pop
89     on selection popup Ext_pop do TExit
90     activate menu transfer
91 procedure CDate
92     do case
93         case bar() = 1
94             mNum = 1
95             @ 9,28 get dDate
96             read
97             cDate = dDate
98             @ 9,42 say cDate
99             dDate = eDate
100            @ 9,28 say " "
101         endcase
102
103 procedure TDate
104     do case
105         case bar() = 1
106             if tdate = { / / }
107                 mNum = mNum + 10
108                 @ 11,28 get nDate
109                 read
110                 tDate = nDate
111                 @ 11,42 say tDate
112                 nDate = rDate
113                 @11,28 say " "
114             else
115                 save screen to date
116                 @ 11,28 say "Please exit program first to enter a r
117                 wait
118                 restore screen from date
119             endif
120         endcase
121 procedure Crew_pro
122     do case
123         case bar() = 1
124             activate popup Device
125         endcase
126 procedure Device

```

```

127         mNum = mNum + 100
128         tDevice = prompt()
129         @ 13,42 say tDevice
130         use device
131         set safety off
132         goto 1
133         replace device_no with tDevice
134         deactivate popup
135 procedure Int_pro
136         do case
137             case bar() = 1
138                 mNum = mNum + 1000
139                 @ 15,28 get aInt
140                 read
141                 bInt = upper(aInt)
142                 @ 15,42 say bInt
143                 aInt = cInt
144                 @ 15,28 say " "
145         endcase
146
147 procedure tExit
148         Org_no = "4170"
149         nDevice = 1
150         tTran2 = (ltrim(dtNum1) + Org_no + "T")
151         use MAP_TRAN
152         set safety off
153         set directory to d:\dbase4\pima\transact
154         copy structure to (tTran2) with production
155         set directory to d:\dbase4\pima\transact
156         use (tTran2)
157         do while nDevice < 11
158             nDevice = str(nDevice)
159             kDevice = ("0" + ltrim(nDevice))
160             *tTran = (ltrim(dtNum1) + kDevice + "TRN" + ".TXT"
161             tTran = (ltrim(dtNum1) + kDevice + "TRN" + ".DBF"
162             if file(tTran)
163                 append from (tTran)
164             endif
165             nDevice = val(kDevice)
166             nDevice = nDevice + 1
167         loop
168     enddo
169     set directory to a:\
170     copy to (tTran2)
171     close all
172     set directory to d:\dbase4\pima\work_rpt
173     deactivate menu
174 *****Numeric Month to Character*****
175 procedure Exe_pro
176     if mNum > 1110
177         do IExe_pro
178         return
179     endif
180     if mNum = 1110
181         && Today's Date
182         @ 1,15 say "Screen Incomplete, Please Enter Today's Date";
183         color gr+
184         wait " "
185         return
186     endif
187     if mNum = 1101
188         && Activity's Date
189         @ 1,15 say "Screen Incomplete, Please Enter Activitie's Dat
190         color gr+
191         wait " "

```

```

190             @ 1,0
191             return
192         endif
193         if mNum = 1011                                     && Device Number
194             @ 1,15 say "Screen Incomplete, Please Enter Device Number";
195             color gr+
196             wait " "
197             @ 1,0
198             return
199         endif
200         if mNum = 111                                     && Initials
201             @ 1,15 say "Screen Incomplete, Please Enter Your Initials";
202             color gr+
203             wait " "
204             @ 1,0
205             return
206         endif
207         if mNum > 111
208             @ 1,15 say "Screen Incomplete, You Missing Two Fields";
209             color gr+
210             wait " "
211             @ 1,0
212             return
213         endif
214
215 procedure IExe_pro
216     if month(tDate) >= 7                                 && Establish Fiscal Year
217         nYear = year(tDate)
218         tYear = nYear + 1
219         tYear = str(tYear)
220         tYear = right(tYear,2)
221         nYear = str(nYear)
222         nYear = right(nYear,2)
223         fYear = nYear + tYear
224     endif
225     if month(tDate) < 7
226         nYear = year(tDate)
227         nYear = tYear - 1
228         tYear = str(tYear)
229         tYear = right(tYear,2)
230         nYear = str(nYear)
231         nYear = right(nYear,2)
232         fYear = tYear + nYear
233     endif
234     fYear = val(fYear)
235     tMonth = month(tDate)                                && Sets up CATALOG
236     if tMonth = 1
237         tMonthy = "JAN_"
238     endif
239     if tMonth = 2
240         tMonthy = "FEB_"
241     endif
242     if tMonth = 3
243         tMonthy = "MAR_"
244     endif
245     if tMonth = 4
246         tMonthy = "APR_"
247     endif
248     if tMonth = 5
249         tMonthy = "MAY_"
250     endif
251     if tMonth = 6
252         tMonthy = "JUN_"

```

```

253     endif
254     if tMonth = 7
255         tMonthy = "JUL_"
256     endif
257     if tMonth = 8
258         tMonthy = "AUG_"
259     endif
260     if tMonth = 9
261         tMonthy = "SEP_"
262     endif
263     if tMonth = 10
264         tMonthy = "OCT_"
265     endif
266     if tMonth = 11
267         tMonthy = "NOV_"
268     endif
269     if tMonth = 12
270         tMonthy = "DEC_"
271     endif
272
273 tYear = year(tDate)
274 tYear = ltrim(str(tYear))
275 tCat = (tMonthy + tYear)
276 set directory to d:\dbase4\pima\pecosII
277 set catalog to (tCat)
278 set catalog off
279 set directory to d:\dbase4\pima\work_rpt
280 *****Julian Date Procedure*****
281 * procedure Julian_Date_pro                                && Give numeric value to d
282     set century off
283     tNow = 498                                             && Year 1992/4
284     tjulian = {12/31/91}                                   && Change on January 1, 20(
285     if year (tjulian) < year (tDate)
286         do new_year
287     endif
288     tNum = ""
289     tNum = str(tjulian- tDate)
290     dtNum1 = val(tNum)
291     if year (tjulian) /4 = tNow - 1
292         dtNum1 = 366 - dtNum1
293     endif
294     if year (tjulian) /4 <> tNow -1
295         dtNum1 = 365 - dtNum1
296     endif
297     dtNum2 = dtNum1
298     if dtNum1 < 100
299         if dtNum1 < 10
300             dtNum1 = str(dtNum1)
301             dtNum1 = ("00" + ltrim(dtNum1))
302         else
303             dtNum1 = str(dtNum1)
304             dtNum1 = ("0" + ltrim(dtNum1))
305         endif
306     endif
307     if dtNum2 > 99
308         dtNum1 = str(dtNum1)
309     endif
310     do trn_in
311     do complete
312 procedure new_year
313
314     tjulian = tjulian + 365
315     if year (tjulian) /4 = tNow

```

```

316         do leap_year
317     endif
318     if year (tjulian) < year (tDate)
319         do new_year
320     endif
321 procedure leap_year                                     &&
322     tjulian = tjulian + 1
323     tNow = tNow + 1
324 return
325 *****
326 procedure trn_in
327     tWork          = ("WRK" + ltrim(dtNum1) + tDevice) && set up file
328     tWorkt         = ("WRK" + ltrim(dtNum1) + tDevice + ".TXT")
329     tWorkg         = (ltrim(dtNum1) + tDevice + "WRK" + ".DBF")
330     tEmp           = ("EMP" + ltrim(dtNum1) + tDevice)
331     tEmpt         = ("EMP" + ltrim(dtNum1) + tDevice + ".TXT")
332     tEmp2         = (ltrim(dtNum1) + tDevice + "EMP")
333     tEmpg         = (ltrim(dtNum1) + tDevice + "EMP" + ".DBF")
334     Emp           = "EMWRKAPP"
335     tEqp          = ("EQP" + ltrim(dtNum1) + tDevice)
336     tEqpt         = ("EQP" + ltrim(dtNum1) + tDevice + ".TXT")
337     tEqp2         = (ltrim(dtNum1) + tDevice + "EQP")
338     tEqpg         = (ltrim(dtNum1) + tDevice + "EQP" + ".DBF")
339     Eqp           = "EQWRKAPP"
340     tMat          = ("MAT" + ltrim(dtNum1) + tDevice)
341     tMatt         = ("MAT" + ltrim(dtNum1) + tDevice + ".TXT")
342     tMat2         = (ltrim(dtNum1) + tDevice + "MAT")
343     Mat           = "MAWRKAPP"
344
345
346 * ACCOMP & WORK TRANSFER
347     set directory to d:\dbase4\pima\work_rpt
348     use WRK_TRAN
349     set safety off
350     set directory to d:\dbase4\pima\pecosII
351     copy structure to (tWork) with production
352     set safety on
353     use (tWork)
354     set directory to f:\
355     append from (tWork) type SDF
356     set directory to d:\dbase4\pima\txt_file
357     copy to (tWorkt) type SDF
358     set directory to d:\dbase4\pima\grid_rpt
359     delete file (tWorkg)
360     set directory to f:\
361     *delete file (tWorkt)
362
363 * EMPLOYEE TRANSFER
364     set directory to d:\dbase4\pima\work_rpt
365     use EMP_TRAN
366     set safety off
367     set directory to d:\dbase4\pima\pecosII
368     copy structure to (tEmp) with production
369     use (tEmp)
370     set directory to f:\
371     append from (tEmp) type SDF
372     set directory to d:\dbase4\pima\txt_file
373     copy to (tEmpt) type SDF
374     set directory to d:\dbase4\pima\grid_rpt
375     delete file (tEmpg)
376     set directory to f:\
377     *delete file (tEmpt)
378     do Acomp

```

```

379      set directory to d:\dbase4\pima\work_rpt
380      use (Emp)
381      set directory to d:\dbase4\pima\pecosII
382      copy structure to (tEmp2) with production
383      use (tEmp2) in 1
384      append from (tEmp)
385      set safety on
386      goto top in 1
387      mJobber = a->PIMAJOBID
388      use (tAcomp) in b
389      goto top in b
390      mJobber2 = b->PIMAJOBID
391      do while .not. EOF()
392      do while mJobber2 = mJobber
393          replace a->Rpt_Date with b->Rpt_Date, a->Org with b->Org,;
394          a->District with b->District, a->Area with b->Area,;
395          a->Job_no with b->Job_no, a->Program with b->Program,;
396          a->Activity with b->ACTivity, a->Suffix with b->Suffix,;
397          a->Route with b->Route, a->Route_Ltr with b->Route_Ltr,;
398          a->Beg_mile with b->Beg_mile, a->End_mile with b->End_mile,
399          a->Direction with b->Direction, a->Class with b->Class,;
400          a->Fisc_yr with b->fisc_yr, a->R_Fisc_yr with b->Fisc_yr,;
401          a->Initials with b->Initials,;
402          a->Stat_date with b->Stat_date, a->status with b->status
403          skip 1 in a
404          mJobber = a->PIMAJOBID
405          loop
406      enddo
407      set safety off
408      skip 1 in b
409      mJobber2 = b->PIMAJOBID
410      loop
411      enddo
412
413 * EQUIPMENT TRANSFER
414      set directory to d:\dbase4\pima\work_rpt
415      use EQP_TRAN
416      set safety off
417      set directory to d:\dbase4\pima\pecosII
418      copy structure to (tEqp)
419      use (tEqp)
420      set directory to f:\
421      append from (tEqp) type SDF
422      set directory to d:\dbase4\pima\txt_file
423      copy to (tEqpt) type SDF
424      set directory to d:\dbase4\pima\grid_rpt
425      delete file (tEqpg)
426      set directory to f:\
427      set directory to d:\dbase4\pima\work_rpt
428      use (Eqp)
429      set directory to d:\dbase4\pima\pecosII
430      copy structure to (tEqp2) with production
431      use (tEqp2)
432      append from (tEqp)
433      set safety on
434      use (tEqp2) in 1
435      goto top in 1
436      mJobber = a->PIMAJOBID
437      use (tAcomp) in 2
438      goto top in b
439      mJobber2 = b->PIMAJOBID
440      do while .not. EOF()
441      do while mJobber2 = mJobber

```

```

442         replace a->Rpt_Date with b->Rpt_Date, a->Org with b->Org,;
443         a->District with b->District, a->Area with b->Area,;
444         a->Job_no with b->Job_no, a->Program with b->Program,;
445         a->Activity with b->Activity, a->Suffix with b->Suffix,;
446         a->Route with b->Route, a->Route_Ltr with b->Route_Ltr,;
447         a->Beg_mile with b->Beg_mile, a->End_mile with b->End_mile,
448         a->Direction with b->Direction, a->Class with b->Class,;
449         a->R_Fisc_yr with b->Fisc_yr, a->Initials with b->Initials,
450         a->Stat_date with b->Stat_date, a->status with b->status
451         skip 1 in a
452         mJobber = a->PIMAJOBID
453         loop
454     enddo
455     * do while .not. eof() in b
456         skip 1 in b
457     * enddo
458     mJobber2 = b->PIMAJOBID
459     loop
460     enddo
461 * MATERIAL TRANSFER
462     set directory to d:\dbase4\pima\work_rpt
463     use MAT_TRAN
464     set safety off
465     set directory to d:\dbase4\pima\pecosII
466     copy structure to (tMat)
467     use (tMat)
468     set directory to f:\
469     append from (tMat) type SDF
470     set directory to d:\dbase4\pima\txt_file
471     copy to (tMat) type SDF
472     set directory to f:\
473     *delete file (tMat)
474     set directory to d:\dbase4\pima\work_rpt
475     use (Mat)
476     set directory to d:\dbase4\pima\pecosII
477     copy structure to (tMat2) with production
478     use (tMat2)
479     append from (tMat)
480     set safety on
481     use (tMat2) in 1
482     goto top in 1
483     mJobber = a->PIMAJOBID
484     use (tAcomp) in 2
485     goto top in 2
486     mJobber2 = b->PIMAJOBID
487     do while .not. EOF()
488     do while mJobber2 = mJobber
489         replace a->Rpt_Date with b->Rpt_Date, a->Org with b->Org,;
490         a->District with b->District, a->Area with b->Area,;
491         a->Job_no with b->Job_no, a->Program with b->Program,;
492         a->Activity with b->Activity, a->Suffix with b->Suffix,;
493         a->Route with b->Route, a->Route_Ltr with b->Route_Ltr,;
494         a->Beg_mile with b->Beg_mile, a->End_mile with b->End_mile,
495         a->Direction with b->Direction, a->Class with b->Class,;
496         a->Fisc_yr with b->Fisc_yr, a->Initials with b->Initials,;
497         a->Stat_date with b->Stat_date, a->status with b->status
498         skip 1 in a
499         mJobber = a->PIMAJOBID
500         loop
501     enddo
502     skip 1 in b
503     mJobber2 = b->PIMAJOBID
504     loop

```



```

568      @ 13,15 say "RT"
569      @ 13,21 say "OT"
570      @ 13,27 say "CT"
571      @ 13,32 say "TRF"
572      @ 13,38 say "TRV"
573      @ 13,44 say "TRN"
574      @ 13,48 say "Unit"
575      @ 13,54 say "Hrs"
576      @ 13,63 say "Start"
577      @ 13,75 say "End"
578      @ 14,1 say ";
579 -----
580      do Emp_prnt                                && Print Employees & Equipment
581      * do Eqp_prnt
582      do Mat_prnt                                && Print Materials
583      select 1
584      @ 44,1 say ";
585 -----
586      @ 45,4 say "Accomplishment:"
587      @ 45,20 say Accomplish picture "9999999.9"
588      @ 45,35 say "Prepared By:"
589      @ 46,1 say ";
590 -----
591      eject
592      skip 1 in 1
593 loop
594 enddo
595 set directory to d:\dbase4\pima\work_rpt
596 set device to screen
597 close all
598
599 procedure Emp_prnt
600     select 2
601     mPima2 = b->PIMAJOBID
602     mPima3 = c->PIMAJOBID
603     store 0 to Cnt
604     store 0 to tReg_hrs, tOt_hrs, tComp_hrs, tTraf_ctl,;
605         tTravel, tTraining
606     store 0 to EmpTotal
607     store 15 to Linecnt
608     do while mPima = mPima2 .or. mPima = mPima3
609         if mPima = mPima2
610             @ linecnt,4 say Emp_no
611             @ linecnt,10 say Reg_hrs picture "99999.9"
612             tReg_hrs = tReg_hrs + Reg_hrs
613             @ linecnt,16 say Ot_hrs picture "99999.9"
614             tOt_hrs = tOt_hrs + Ot_hrs
615             @ linecnt,22 say Comp_hrs picture "99999.9"
616             tComp_hrs = tComp_hrs + Comp_hrs
617             @ linecnt,28 say Traf_ctl picture "99999.9"
618             tTraf_ctl = tTraf_ctl + Traf_ctl
619             @ linecnt,34 say Travel picture "99999.9"
620             tTravel = tTravel + Travel
621             @ linecnt,40 say Training picture "99999.9"
622             tTraining = tTraining + Training
623             Cnt = Cnt + 1
624             EmpTotal = EmpTotal + 1
625             skip 1 in 2
626             mPima2 = b->PIMAJOBID
627         endif
628 * Eqp_prnt
629     select 3
630     mPima3 = c->PIMAJOBID

```

```

631     if mPima = mPima3 .and. .not. EOF()
632         @ linecnt,47 say ":"
633         @ linecnt,48 say Equip_no
634         @ linecnt,54 say Equip_hrs picture "99.9"
635         @ linecnt,59 say Start_mtr picture "9999999.9"
636         @ linecnt,70 say End_mtr picture "9999999.9"
637         skip 1 in 3
638         mPima3 = c->PIMAJOBID
639     endif
640     Linecnt = Linecnt + 1
641     select 2
642 loop
643 enddo
644     @ 26,1 say ";
645 -----
646     @ 27,4 say "Crew:"
647     @ 27,9 say EmpTotal picture "9"
648     @ 27,10 say tReg_hrs picture "99999.9"
649     @ 27,16 say tOt_hrs picture "99999.9"
650     @ 27,22 say tComp_hrs picture "99999.9"
651     @ 27,28 say tTraf_ctl picture "99999.9"
652     @ 27,34 say tTravel picture "99999.9"
653     @ 27,40 say tTraining picture "99999.9"
654     @ 28,1 say ";
655 -----
656 return
657
658 procedure Mat_prnt
659     @ 29,1 say ";
660 =====MATERIALS=====
661     @ 30,4 say "Loc"
662     @ 30,9 say "Code"
663     @ 30,15 say "Description"
664     @ 30,38 say "U/M"
665     @ 30,44 say "Quantity"
666     @ 30,53 say "Unit Cost"
667     @ 30,63 say "MUTCD"
668     @ 30,69 say "Ht"
669     @ 30,72 say "Wd"
670     @ 30,75 say "K"
671     @ 31,1 say ";
672 -----
673     select 4
674     mPima4 = d->PIMAJOBID
675     store 32 to Linecnt
676     do while mPima = mPima4 .and. .not. EOF()
677         @ linecnt,4 say Mat_loc
678         @ linecnt,9 say Code
679         @ linecnt,15 say Descrip
680         @ linecnt,38 say MeasureA
681         @ linecnt,44 say Quant_A picture "9999.9"
682         @ linecnt,52 say "$"
683         @ linecnt,53 say Cost picture "999999.99"
684         @ linecnt,63 say MUTCD
685         @ linecnt,69 say SN_Height
686         @ linecnt,72 say SN_Width
687         @ linecnt,75 say Kind
688         Linecnt = Linecnt + 1
689         skip 1 in 4
690         mPima4 = d->PIMAJOBID
691     loop
692 enddo
693 return

```

```

694
695 procedure transact
696     tMap          = ("MAP" + ltrim(dtNum1) + tDevice)
697     tMapt         = ("MAP" + ltrim(dtNum1) + tDevice + ".TXT")
698     tTran        = (ltrim(dtNum1) + tDevice + "TRN")
699     set directory to d:\dbase4\pima\work_rpt
700     use MAP_TRAN
701     set safety off
702     set directory to d:\dbase4\pima\transact
703     copy structure to (tTran) with production
704     use (tTran)
705     set directory to d:\
706     save screen to pcx
707     run d:\dbase4\pima\work_rpt\pcx
708     restore screen from pcx
709     if file(tMap)
710         append from (tMap) type SDF
711         set directory to d:\dbase4\pima\txt_file
712         copy to (tMapt) type SDF
713         set directory to d:\
714     endif
715     *delete file (tMapt)
716     *set catalog off
717     set safety on
718
719 procedure Acomp
720     tAcomp = ("ACC" + ltrim(dtNum1) + tDevice)
721     tAcomp2 = (ltrim(dtNum1) + tDevice + "ACC")
722     set safety off
723     set directory to d:\dbase4\pima\work_rpt
724     use Accomp
725     set directory to d:\dbase4\pima\pecosII
726     copy structure to (tAcomp) with production
727     use (tEmp)
728     status_P = "P"
729     crew = reccount()
730     use (tAcomp)
731     append from (tWork)
732     goto top
733     do while .not. EOF()
734         District = "1"
735         Area = "2"
736         replace Fisc_yr with fYear, Crew_size with crew,;
737         District with "1", Area with "2",;
738         Initials with bInt, Stat_date with cDate,;
739         status with status_P
740             skip 1
741             loop
742     enddo
743     set directory to d:\dbase4\pima\work_rpt
744     use Accomapp
745     set directory to d:\dbase4\pima\pecosII
746     copy structure to (tAcomp2) with production
747     use (tAcomp2)
748     append from (tAcomp)
749     use ACCOMPMA
750     append from (tAcomp2)
751     erase (tAcomp2)
752     set safety on
753     return
754
755 procedure complete
756     set directory to d:\dbase4\pima\work_rpt

```

757 set catalog to schedule
758 use crew no
759 deactivate popup
760
761
762
763
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```

1 *set status off
2 set status on
3 set talk off
4 clear
5 *****
6 * Program.....TRAN OUT.PRG
7 * Author.....Cliff Perry, Texas Transportation Institute
8 *                               Environmental Management Program
9 * Address.....Texas A&M University, College Station, TX. 77843-3135*
10 * Phone.....(409) 845-0133
11 * Client.....Arizona Department of Transportation, (ADOT)
12 *                               Roadside Development Services
13 * Date.....(07/13/92)
14 *****
15 mTrans          = space (8)
16 tDate          = { / / }
17 rDate          = { / / }
18 nDate          = { / / }
19 tDevice = space (2)
20 fYear          = space (4)
21 store 0 to nYear, tYear
22 set catalog off
23 do TMenu_pro
24 *****
25 procedure TMenu_pro
26     use crew no
27     set catalog off
28     define menu transfer
29     @ 5,15 to 20,65 double
30     @ 6,24 say "P I M a   T R A N S F E R   M E N U"
31     @ 8,28 say "New Entry"
32     @ 8,42 say "Current Status"
33     @ 21,17 say "Use Left & Right Arrows to Move Up & Down Menu"
34     @ 10,17 say "Transfer:"
35     @ 10,28 say "Transfer Out"
36     define pad tDate of transfer prompt "Date:      " at 12,17;
37         message "Enter Date of Activity"
38     define popup Date_pop from 11,16 to 13,27
39         define bar 1 of Date_pop prompt "Date:      "
40     on pad tDate of transfer activate popup Date_pop
41     on selection popup Date_pop do TDate
42     define pad tcrew of transfer prompt "Crew No.:" at 14,17;
43         message "Enter Crew/Device No. for Transfer"
44     define popup crew_pop from 13,16 to 15,27
45         define bar 1 of crew_pop prompt "Crew No.:"
46     on pad tcrew of transfer activate popup crew_pop
47     on selection popup crew_pop do TCrew_pro
48     define popup tDevice from 13,28 to 15,31 prompt field CREW_NO;
49         message "Enter Crew/Device No. for Transfer"
50     on selection popup tDevice do TDevice
51     define pad tExec of transfer prompt "Execute:" at 16,17
52     define popup tExe_pop from 15,16 to 17,27 message;
53         "Execute Transfer of Data"
54         define bar 1 of tExe_pop prompt "Execute:  "
55     on pad tExec of transfer activate popup tExe_pop
56     on selection popup tExe_pop do TExe_pro
57     define pad tExit of transfer prompt "Exit:" at 18,17;
58         message "Exit to PIMa Main Menu"
59     define popup tExt_pop from 17,16 to 19,27
60         define bar 1 of tExt_pop prompt "Exit:  "
61     on pad tExit of transfer activate popup tExt_pop
62     on selection popup tExt_pop do TExit
63     activate menu transfer

```

```
64 procedure TDate
65     do case
66         case bar() = 1
67             @ 12,28 get nDate
68             read
69             tDate = nDate
70             @ 12,42 say tDate
71             nDate = rDate
72             @ 12,28 say "          "
73         endcase
74 procedure TCrew_pro
75     do case
76         case bar() = 1
77             activate popup tDevice
78         endcase
79 procedure TDevice
80     tDevice = prompt()
81     @ 14,42 say tDevice
82     use device
83     set safety off
84     goto 1
85     replace device_no with tDevice
86     deactivate popup
87 procedure TExit
88     close all
89     deactivate menu
90 *****Numeric Month to Character*****
91 procedure TExe_pro
92     tMonth = month(tDate)                && Sets up CATALOG
93     if tMonth = 1
94         tMonthy = "JAN_"
95     endif
96     if tMonth = 2
97         tMonthy = "FEB_"
98     endif
99     if tMonth = 3
100        tMonthy = "MAR_"
101    endif
102    if tMonth = 4
103        tMonthy = "APR_"
104    endif
105    if tMonth = 5
106        tMonthy = "MAY_"
107    endif
108    if tMonth = 6
109        tMonthy = "JUN_"
110    endif
111    if tMonth = 7
112        tMonthy = "JUL_"
113    endif
114    if tMonth = 8
115        tMonthy = "AUG_"
116    endif
117    if tMonth = 9
118        tMonthy = "SEP_"
119    endif
120    if tMonth = 10
121        tMonthy = "OCT_"
122    endif
123    if tMonth = 11
124        tMonthy = "NOV_"
125    endif
126    if tMonth = 12
```

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127         tMonthy = "DEC_"
128     endif
129
130 tYear = year(tDate)
131 tYear = ltrim(str(tYear))
132 tCat = (tMonthy + tYear)
133 set catalog to (tCat)
134 set catalog off
135 *****Julian Date Procedure*****
136 * procedure Julian_Date_pro                               && Give numeric value to d:
137     set century off
138     tNow = 498                                           && Year 1992/4
139     tjulian = {12/31/91}                                  && Change on January 1, 20(
140     if year (tjulian) < year (tDate)
141         do new_year
142     endif
143     tNum = ""
144     tNum = str(tjulian- tDate)
145     dtNum1 = val(tNum)
146     if year (tjulian) /4 = tNow - 1
147         dtNum1 = 366 - dtNum1
148     endif
149     if year (tjulian) /4 <> tNow -1
150         dtNum1 = 365 - dtNum1
151     endif
152     dtNum2 = dtNum1
153     if dtNum1 < 100
154         if dtNum1 < 10
155             dtNum1 = str(dtNum1)
156             dtNum1 = ("00" + ltrim(dtNum1))
157         else
158             dtNum1 = str(dtNum1)
159             dtNum1 = ("0" + ltrim(dtNum1))
160         endif
161     endif
162     if dtNum2 > 99
163         dtNum1 = str(dtNum1)
164     endif
165     do trn_out
166 procedure new_year
167     tjulian = tjulian + 365
168     if year (tjulian) /4 = tNow
169         do leap_year
170     endif
171     if year (tjulian) < year (tDate)
172         do new_year
173     endif
174 procedure leap_year                                     &&
175     tjulian = tjulian + 1
176     tNow = tNow + 1
177 return
178 procedure trn_out
179     save screen to tran_out
180     use Device
181     set safety off
182     set directory to c:\dbase4\pima\grid_rpt
183     copy to Device type SDF
184     set safety on
185     tWork = (ltrim(dtNum1) + tDevice + "WRK")
186     use (tWork)
187     set safety off
188     copy to (tWork) type SDF
189     set safety on

```

```
190 tEmp = (ltrim(dtNum1) + tDevice + "EMP")
191 use (tEmp)
192 set safety off
193 copy to (tEmp) type SDF
194 set safety on
195 tEqp = (ltrim(dtNum1) + tDevice + "EQP")
196 use (tEqp)
197 set safety off
198 copy to (tEqp) type SDF
199 set safety on
200 *dtNum1 = ltrim(dtNum1)
201 *dtNum1 = val(dtNum1)
202 *if dtNum1 < 100
203     * tWork = ("0" + ltrim(tWork) + ".TXT")
204 *else
205 *dtNum1 = str(dtNum1)
206 *endif
207 set safety off
208 set directory to c:\dbase4\pima\work_rpt
209 use wrk_list
210 set directory to c:\dbase4\pima\grid_rpt
211 copy to wrk_list type SDF
212 set directory to c:\dbase4\pima\work_rpt
213 use act_list
214 set directory to c:\dbase4\pima\grid_rpt
215 copy to act_list type SDF
216 set directory to c:\dbase4\pima\work_rpt
217 use eqp_list
218 copy structure to temp_eqp with production
219 use temp_eqp order equip_des
220 append from eqp_list
221 delete all for equip_des = "XIT"
222 pack
223 set directory to c:\dbase4\pima\grid_rpt
224 copy to eqp_list type SDF
225 set directory to c:\dbase4\pima\work_rpt
226 use emp_list
227 copy structure to temp_emp with production
228 use temp_emp order emp_no
229 append from emp_list
230 delete all for emp_no = "XIT"
231 pack
232 set directory to c:\dbase4\pima\grid_rpt
233 copy to emp_list type SDF
234 set directory to c:\dbase4\pima\work_rpt
235 use shb_list
236 set directory to c:\dbase4\pima\grid_rpt
237 copy to shb_list type SDF
238 set directory to c:\dbase4\pima\work_rpt
239 use tre_list
240 set directory to c:\dbase4\pima\grid_rpt
241 copy to tre_list type SDF
242 set directory to c:\dbase4\pima\work_rpt
243 use mat_list
244 set directory to c:\dbase4\pima\grid_rpt
245 copy to mat_list type SDF
246 set directory to c:\dbase4\pima\work_rpt
247 use irr_list
248 set directory to c:\dbase4\pima\grid_rpt
249 copy to irr_list type SDF
250 set directory to c:\dbase4\pima\work_rpt
251 use app_list
252 set directory to c:\dbase4\pima\grid_rpt
```

```
253 copy to app_list type SDF
254 set directory to c:\dbase4\pima\work_rpt
255 use map_list
256 set directory to c:\dbase4\pima\grid_rpt
257 copy to map_list type SDF
258 set safety on
259 run tran_out
260 restore screen from tran_out
261 dWrk = (tWork + ".txt")
262 dEmp = (tEmp + ".txt")
263 dEqp = (tEqp + ".txt")
264 delete file (dWrk)
265 delete file (dEmp)
266 delete file (dEqp)
267 set directory to c:\dbase4\pima\work_rpt
268 use crew_no
269 return
270
271
272
273
274
275
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```

1 *****
2 *Program.....ORG.PRG
3 *Author.....Cliff Perry, Texas Transportation Institute
4 *           Environmental Management Program
5 *Address.....Texas A&M University, College Station, TX.
6 *Phone.....(409) 845-0133
7 *Date.....09/30/92
8 *Developed For..ADOT, Landscape Maintenance, ORG 4170
9 *****
10 CLEAR
11 SET TALK OFF
12 SET STATUS OFF
13 *****
14 do Org_menu
15 do Org_pro
16 procedure Org_pro
17     on pad Wrk_rpt of Org activate popup Crew1_pop
18     on pad Tran_pad of Org activate popup Tran5
19     on selection pad Mod_pad of Org do Mod_pro
20     on selection pad Ext_org of Org do Exit05
21     on selection popup Crew1_pop do Act_pro
22     on selection popup Tran5 do Tran_pro
23     activate menu Org
24 procedure Org_menu
25     define menu Org
26     @ 5,20 say "M A I N   M E N U   F O R   O R G   4 1 7 0"
27     @ 4,19 to 6,62 double
28     @ 8,1 to 10,77
29     define pad Wrk_rpt of Org prompt "REPORTS" at 9,4
30     define pad Tran_pad of Org prompt "TRANSFER:GRiDPAD" at;
31         9,20
32     define pad Mod_pad of Org prompt "MODIFY_LIST'S" at 9,47;
33     message "Modification to Various List's Files"
34     define pad Ext_Org of Org prompt "Exit" at 9,70
35 *****POPUP for ORG MENU*****
36 define popup Crew1_pop from 10,4 to 12,28
37     define bar 1 of Crew1_pop prompt "Create New Work Report";
38     message "Creates Org Daily Work Reports"
39     * define bar 2 of Crew1_pop prompt "Revise Existing";
40     *message "Modifies Existing Work Reports"
41     * define bar 3 of Crew1_pop prompt "View Existing Report";
42     *message "View Work Report, No Revision"
43
44 define popup Tran5 from 10,20 to 14,42
45     define bar 1 of Tran5 prompt "Transfer Out";
46     message "Download Information to GRiDPAD"
47     define bar 2 of Tran5 prompt "Transfer In";
48     message "Upload Information from GRiDPAD"
49     define bar 3 of Tran5 prompt "Delete GRiDPAD Files";
50     message "Delete Report files in GRiDPAD"
51
52 procedure ACT_pro
53     do case
54         case bar () = 1           && Create New Reports
55             save screen to Main
56             clear
57             * set directory to c:\dbase4\pima\Work_rpt
58             set directory to d:\dbase4\pima\Work_rpt
59             do Wrk_rpt
60             clear
61             restore screen from Main
62         * case bar () = 2           && Modify Existing Report
63         * return

```

```

64         * case bar () = 3                && View Reports
65             * return
66     endcase
67
68 procedure Tran_pro
69     do case
70         case bar () = 1                    && Transfer Out to Gridpac
71             save screen to Main
72             clear
73             * set directory to c:\dbase4\pima\Work_rpt
74             set directory to d:\dbase4\pima\Work_rpt
75             clear
76             do Tran_out
77             wait
78             restore screen from Main
79         case bar () = 2                    && Transfer In from Gridpac
80             save screen to Main
81             clear
82             * set directory to c:\dbase4\pima\Work_rpt
83             set directory to d:\dbase4\pima\Work_rpt
84             clear
85             do Tran_in
86             wait
87             restore screen from Main
88         case bar () = 3
89             save screen to main
90             clear
91             answer = space(1)
92             @ 5,5 say "Do you want to delete all these files ?
93             get answer
94             read
95             if upper(answer) = "Y"
96                 run dlt
97             endif
98             clear
99             * set directory to c:\dbase4\pima\work_rpt
100            set directory to d:\dbase4\pima\Work_rpt
101            restore screen from Main
102        endcase
103        return
104
105 procedure Mod_pro
106     save screen to Main
107     mDown = space (8)
108     clear
109     set directory to d:\dbase4\pima\Work_rpt
110     set catalog to schedule
111     do Modify
112     clear
113     restore screen from Main
114     *case bar () = 7
115         *save screen to Main
116         *clear
117         *set directory to c:\pima\sched
118         **set directory to d:\dbase4\sched
119         *mCat = space (8)
120         *@ 5,5 say "New name or date for Catalog? " get mCa
121         *read
122         *set catalog to (mCat)
123         *set directory to d:\dbase4\pilot
124         *clear
125         *restore screen from Main
126     *case bar () = 8

```

```

1 *****
2 * Program.....MODIFY.PRG
3 * Author.....Cliff Perry, Texas Transportation Institute
4 *                               Environmental Management Program *
5 * Address.....Texas A&M University, College Station, TX. 77843-3135
6 * Phone.....(409) 845-0133
7 * Client.....Arizona Department of Transportation, (ADOT)
8 *                               Roadside Development Services
9 * Date.....(08/17/92)
10 *****
11 set talk          off
12 *set talk         on
13 set status        off
14 *set status       on
15 clear
16 store 0 to mLine_no, mLen
17 mDec              = space (2)
18 mType             = space (1)
19 mWidth            = space (3)
20 mTypex            = space (10)
21 mFile             = space(12)
22 mFilex            = space (3)
23 mName             = space (10)
24 mNamef            = space(10)
25 mNamex            = space (2)
26 mModify           = space (4)
27 mFielder = space (10)
28 mAct_no = space (10)
29 mAct_des = space (40)
30 mMat              = space (10)
31 mNew              = space (45)
32 *mModify = "LIST"
33 *if mModify = "DATA"
34     *do data_pro
35 *endif
36 *if mModify = "LIST"
37     do list
38 *endif
39 set directory to d:\dbase4\pima\work_rpt
40 do list_pro
41 *****
42 procedure list_pro
43 @ 2,25 say          "DATABASE/STRUCTURE MODIFICATION MENU"
44 @ 1,24 to 3,62 double
45 @ 4,2 to 6,76
46 @ 15,1 to 15,77
47 on pad File of List activate popup File_pop
48 on pad Edit of List activate popup Edit_pop
49 on pad Data of List activate popup Data_pop
50 on selection popup File_pop do File_pro
51 on selection popup Edit_pop do Edit_pro
52 on selection popup Data_pop do Data_pro
53 on selection pad Exit of List do Ext_Mod
54 activate menu List
55 set status on
56 *****
57 procedure list
58 define menu List
59 * Main Menu
60 define pad File of List prompt "Select File" at 5,3;
61     message "Select File to Modify"
62 define pad Edit of List prompt "Edit Field Structure" at 5,18
63 define pad Data of List prompt "Edit Info. Structure" at 5,41

```

```

64 define pad Exit of List prompt "Return/Exit" at 5,65
65 *****Popups for List*****
66 define popup File_pop from 6,3 to 14,12 prompt files like ???_LIST.dbf
67 define popup Edit_pop from 6,18 to 10,40
68     define bar 1 of Edit_pop prompt "Create New Field Name";
69     message "AddS a New Field to Database Structure"
70     define bar 2 of Edit_pop prompt "Delete Field Name";
71     message "Delete a Field from Database Structure"
72 define popup Data_pop from 6,41 to 10,61
73     define bar 1 of Data_pop prompt "View Data in File"
74     define bar 2 of Data_pop prompt "Add Data to File";
75     message "Add Data to a List File"
76     define bar 3 of Data_pop prompt "Delete Data From File";
77     message "Delete Data from a List File"
78
79 *****INFORMATION MENU*****
80 @ 16,2 say "Database File in Use:" color N+/W
81
82 procedure File_pro
83     mFile = prompt ()
84     use (mFile)
85     mFile = right(mFile,12)
86     @ 16,23 say mFile color W+/N
87     mFilex = left(mFile,3)
88 procedure Edit_pro
89 do case
90     case bar () = 1                                && Create New Field
91         define popup type_pop from 7,57 to 10,68
92         define bar 1 of type_pop prompt "Character"
93         define bar 2 of type_pop prompt "Numeric"
94         *define bar 3 of type_pop prompt
95         define popup field_pop from 6,41 to 12,57
96         define bar 1 of field_pop prompt "Field Name      ";
97         message "Press Enter to Input & When Completed"
98         define bar 2 of field_pop prompt "Filed Type      ";
99         message "Press Enter to Input & When Completed"
100        define bar 3 of field_pop prompt "Field Length    ";
101        message "Press Enter to Input & When Completed"
102        define bar 4 of field_pop prompt "Decimal Places:";
103        message "Press Enter to Input & When Completed"
104        define bar 5 of field_pop prompt "Exit            ";
105        message "Press Enter when Finished"
106        on selection popup field_pop do Field
107        on selection popup type_pop do Type
108        activate popup field_pop
109        do Finish
110    endcase
111 procedure Field
112 do case
113     case bar () = 1
114         @ 7,58 say "          "
115         @ 7,58 get mName picture "@!"
116         read
117         @ 7,58 say mName
118         mNameef = mName
119         mLine_no = mLine_no + 1
120     case bar () = 2
121         @ 8,58 say "          "
122         activate popup type_pop
123         @ 8,58 say mTypex
124         mLine_no = mLine_no + 1
125     case bar () = 3
126         @ 9,58 get mWidth

```

```

127         read
128         @ 9,58 say mWidth
129         mLen = val(mWidth)
130         mLine_no = mLine_no + 1
131     case bar () = 4                                     && Decimal Input
132         if mType = "C"
133             @ 10,58 say "Decimal is not required."
134             wait
135             @ 10,85 say " "
136             @ 11,0 say " "
137         else
138             @ 10,58 get mDec
139             read
140             @ 10,58 say mDec
141             mDec = val(mDec)
142         endif
143     case bar () = 5                                     && Exit
144         deactivate popup
145 endcase
146 procedure Type
147 do case
148     case bar () = 1
149         mTypex = "Character"
150         mType = left(mTypex,1)
151         deactivate popup
152     case bar () = 2
153         mTypex = "Numeric"
154         mType = left(mTypex,1)
155         deactivate popup
156 endcase
157
158 procedure Field2
159     mNamex = left(mName,2)
160     mName = (mNamex) + "_ACT"
161     mLen = 45
162 procedure Field3
163     mNamex = left(mName,2)
164     mName = mNamex + "_MAT"
165     mLen = 33
166 procedure finish
167     if mFilex = "ACT"
168         do Field2
169     endif
170     if mFilex = "MAT"
171         do Field3
172     endif
173     if mType = "C"
174         if mLine no >= 3
175             copy to temp.str structure extended
176             use temp.str
177             append blank
178             replace field name with (mName), field type with (mType),;
179                 field_len with (mLen), field_id with "N"
180             create tempor from temp.str
181             use tempor
182             append from Act.dbf &&(mFile)
183             use
184             copy file tempor.dbf to Act.dbf &&(mFile)
185             delete file temp.dbf
186             delete file tempor.dbf
187         else
188             do Not_pro
189         endif

```

```

190     endif
191     if mType = "D"
192         if mLine no >= 4
193             copy to temp.str structure extended
194             use temp.str
195             append blank
196             replace field name with (mName), field_type with (mType),;
197                 field_len with (mLen), field_dec with mDec,;
198                 field_idx with "N"
199             create tempor_from temp.str
200             use tempor
201             append from Act.dbf                &&(mFile)
202             use
203             copy file tempor.dbf to Act.dbf &&(mFile)
204             delete file temp.
205             delete file tempor.dbf
206         else
207             do Not_pro
208         endif
209     endif
210         @ 8,55 say "           "
211         @ 9,55 say "           "
212         @ 7,55 say "           "
213         @ 10,55 say "        "
214 procedure Not_pro
215     @ 6,38 to 9,72
216     @ 7,39 say "Not all the fields were completed."
217     @ 8,39 say "  No files were updated!"
218     wait
219     @ 6,38 say "           "
220     @ 7,38 say "           "
221     @ 8,38 say "           "
222     @ 9,38 say "           "
223     @ 9,0 say "           "
224     mName = mNamef
225     @ 7,55 say mName
226     @ 8,55 say mTypex
227     @ 9,55 say mWidth
228     @ 10,55 say mDec
229     activate popup field_pop
230     do finish
231 *****PROCEDURES FOR DATA POPUP'S*****
232 procedure Data_pro
233 define window data from 1,1 to 21,77
234 define window modify from 1,1 to 21,77
235 do case
236     case bar () = 1                                && View Data
237         use (mFile)
238         set dbtrap off
239         save screen to return
240         do case
241             case mFilex = "ACT"
242                 browse noedit width 40 window data
243             case mFilex = "MAT"
244                 browse noedit width 29 window data
245             otherwise
246                 browse noedit window data
247         endcase
248         set dbtrap on
249     case bar () = 2
250         use (mFile)
251         save screen to return
252         set dbtrap off

```

```

253         do add
254         set dbtrap on
255         restore screen from return
256     case bar () = 3
257         use (mFile)
258         set dbtrap off
259         save screen to return
260         set status on
261         browse noappend window data
262         set status off
263         restore screen from return
264         set dbtrap on
265
266 endcase
267 procedure Ext_Mod                                     && Exit Modify Program
268     clear_
269     *set directory to c:\dbase4\pima
270     *set catalog to pilot
271     deactivate menu
272 procedure add
273 activate window modify
274 *do case
275 *case mFilex = "ACT"
276     *do act_menu
277     *do act_pad
278
279 *case mFilex = "MAT"
280     *set status on
281     *browse nodelete window data
282     *set status off
283 *otherwise
284     set status on
285     browse nodelete
286     set status off
287 *endcase
288 deactivate window modify
289 procedure act_pad
290     @ 1,25 say "Input Menu for Activity List"
291     @ 2,1 to 16,16
292     @ 3,2 say "Database      :"
293     @ 3,17 say mFile color W+/N
294     on pad Field of act_menu activate popup field
295     on pad Act_no of act_menu activate popup Act_no
296     on pad Act_des of act_menu activate popup Act_des
297     on pad Material of act_menu activate popup Mat_list
298     on pad Pop_list of act_menu activate popup Pop_list
299     on selection popup field do f_act
300         on selection popup fielder do fieldey
301     on selection popup act_no do Act_no
302     on selection popup act_des do Act_des
303     on selection popup mat_list do Mat_list
304         on selection popup material do Material
305     on selection popup pop_list do Pop_list
306         on selection popup popper do Popper
307     on selection pad Ext_list of act_menu do Ext_Act
308     activate menu Act_menu
309 procedure act_menu
310     define menu Act_menu
311     define pad Field of act_menu prompt "Field Name      :" at 5,2;
312         message "Select Field to Add Information, Enter"
313     define pad Act_no of act_menu prompt "Act. Number    :" at 7,2;
314         message "Input New Activity Number"
315     define pad Act_des of act_menu prompt "Act. Descrip.: " at 9,2;

```

```

316         message "Input Activity Description"
317     define pad Material of act_menu prompt "Material List:" at 11,2;
318     message "Select Material List to Use"
319     define pad Pop_list of act_menu prompt "2nd Mat. List:" at 13,2;
320     message "Select If Additional Info. is Needed"
321     define pad Ext_list of act_menu prompt "Return to Menu" at 15,2;
322     message "Press Enter to Return to Main Menu"
323 *****Popup for Act Menu*****
324     define popup fielder from 4,28 to 10,40 prompt field Act_list
325     define popup field from 4,1 to 6,16
326         define bar 1 of field prompt "Field Name   :"
327     define popup act_no from 6,1 to 8,16
328         define bar 1 of act_no prompt "Act. Number  :"
329     define popup act_des from 8,1 to 10,16
330         define bar 1 of act_des prompt "Act. Descrip.:"
331     define popup mat_list from 10,1 to 12,16
332         define bar 1 of mat_list prompt "Material List:"
333     define popup Material from 10,28 to 16,40 prompt field Mat_list
334     define popup pop_list from 12,1 to 14,16
335         define bar 1 of pop_list prompt "2nd Mat. List:"
336     define popup popper from 12,28 to 18,40 prompt field Pop_list
337 procedure f_act
338     use Mod_list
339     activate popup fielder
340     use (mFile)
341 procedure fielder
342     mFielder = prompt ()
343     @ 5,17 say mFielder color W+/N
344     mFielder = left(mFielder,2) + "_ACT   "
345     deactivate popup
346 procedure Act_no
347     @ 7,17 get mAct_no
348     read
349     @ 7,17 say mAct_no color W+/N
350     do New_field
351 procedure Act_des
352     @ 9,17 get mAct_des
353     read
354     @ 9,17 say mAct_des color W+/N
355     do New_field
356 procedure Mat_list
357     use Mod_list
358     activate popup Material
359     use (mFile)
360 procedure Material
361     mMat = prompt ()
362     @ 11,17 say mMat color W+/N
363     mMat = left(mMat,2)
364     do New_field
365     deactivate popup
366 procedure New_field
367     mNew = (mAct_no + mAct_des + mMat)
368     @ 17,17 say mNew color W+/N
369 procedure Pop_list
370
371 procedure Popper
372 procedure change
373     *replace (mFielder) with (Complete) for (mFielder);
374 procedure Ext_act
375     clear
376     deactivate window modify
377     deactivate menu
378

```

```

1 *****
2 * Program.....WRK RPT.PRG
3 * Author.....Cliff Perry, Texas Transportation Institute
4 *                               Environmental Management Program *
5 * Address.....Texas A&M University, College Station, TX. 77843-3135
6 * Phone.....(409) 845-0133
7 * Client.....Arizona Department of Transportation, (ADOT)
8 *                               Roadside Development Services
9 * Date.....(01/20/92)
10 *****
11
12 set century                off
13 set development off
14 *set delimiters           off
15 *set scoreboard          off
16 *set escape              off
17 *set clock               off
18 set status                off
19 *set status              on
20 set talk                  off
21 *set talk                on
22 *set exact               off
23 set bell                  off
24 set title                 off
25 clear
26 close all
27 *****MEMORY VARIABLES*****
28 mProg = space (3)
29 mSuff = space (1)
30 mOrg = space (4)
31 mActn      = space (4)
32 mActd      = space (40)
33 *mActx     = space (45)
34 mDes       = space (7)
35 mCat = space (12)
36 mDesx      = space (4)
37 mJob = space (10)
38 mRoute = space (20)
39 mRte = space (3)
40 mRte_Ltr= space (1)
41 store 0 to mBmp1
42 mBmp = space (5)
43 store 0 to mEmpl
44 mEmp = space (5)
45 mDir      = space (1)
46 mRdty     = space (2)
47 mComments= space (60)
48 mMat      = space (6)
49 mMatpop = space (1)
50 dDevice = space (2)
51 nMum      = space (1)
52 dDate     = { / / }
53 mCatalog = space (8)
54 mMonthly = space (4)
55 dJob no   = space (2)
56 dJobId    = space (9)
57 mReport   = space (4)
58 mMat_no = "01"
59 *****
60 mReport    = "New "
61 *on error ? "Error ", Error(), " in ", program(), "at line ", lineno(), mes
62 use crew no
63 do Date_pro

```

```

64 procedure Date_pro
65     dJob_nō = "01"
66     set catalog to schedule
67     set catalog off
68     @ 6,5 say "What is the date for this Daily Work Report?      " get c
69     read
70     if mReport = "New "
71         do crew
72         use crew_no
73         @ 7,5 say "What device/crew will be using this Report ?
74         activate menu new
75     endif
76 procedure Crew
77     define menu new
78     define pad crew of new prompt "Crew No." at 7,55
79     define popup crew_pop from 8,55 to 18,59 prompt field CREW_NO
80     on pad crew of new activate popup crew_pop
81     on selection popup crew_pop do crew_pro
82 procedure crew_pro
83     dDevice = prompt ()
84     do catalog
85 clear
86 *****Procedure for Julian Date of Job ID*****
87 * procedure Julian_Date_pro                                && Give numeric val
88     set century off
89     mNow = 498                                             && Year 1992/4
90     julian = {12/31/91}                                    && Change on Januar
91     if year (julian) < year (dDate)
92         do new_year
93     endif
94     mNum = ""
95     mNum = str(julian- dDate)
96     dNum1 = val(mNum)
97     if year (julian) /4 = mNow - 1
98         dNum1 = 366 - dNum1
99     endif
100    if year (julian) /4 <> mNow -1
101        dNum1 = 365 - dNum1
102    endif
103    dNum2 = dNum1
104    if dNum1 < 100
105        if dNum1 < 10
106            dNum1 = str(dNum1)
107            dNum1 = ("00" + ltrim(dNum1))
108        else
109            dNum1 = str(dNum1)
110            dNum1 = ("0" + ltrim(dNum1))
111        endif
112    endif
113    if dNum2 > 99
114        dNum1 = str(dNum1)
115    endif
116    do next
117 procedure new_year
118     julian = julian + 365
119     if year (julian) /4 = mNow
120         do leap_year
121     endif
122     if year (julian) < year (dDate)
123         do new_year
124     endif
125 procedure leap_year                                     &&
126     julian = julian + 1

```

```

127         mNow = mNow + 1
128     return
129     *****
130 procedure next                                     && Sets up
131     use work_app
132     clear
133     copy structure to Appender with production
134     set format to work_rpt
135 do Def_menu
136 do Pad_pro
137     *****DEFINING PAD FOR WRK_RPT MENU*****
138 procedure Def_menu
139 define menu Wrk_rpt
140 define pad Program of Wrk_rpt prompt "Program:" at 3,4
141 define pad Activ of Wrk_rpt prompt "Activity:" at 3,17
142 define pad Suffix of Wrk_rpt prompt "Suffix:" at 3,31
143 define pad Job_no of Wrk_rpt prompt "Job No:" at 3,45
144 define pad Org of Wrk_rpt prompt "Org:" at 5,4
145 define pad Route of Wrk_rpt prompt "Route:" at 5,13
146 define pad Beg_mp of Wrk_rpt prompt "Begin MP:" at 5,35
147 define pad End_mp of Wrk_rpt prompt "End MP:" at 5,50
148 define pad Dir of Wrk_rpt prompt "Dir:" at 5,63
149 define pad Road of Wrk_rpt prompt "Road:" at 5,70
150 define pad Comments of Wrk_rpt prompt "Comments:" at 6,4
151     *****Employee Pad & Labels*****
152 define pad Employ of Wrk_rpt prompt "Emp No." at 8,4
153     *****EQUIPMENT PADS*****
154 define pad Equip of Wrk_rpt prompt "Unit" at 8,48
155 define pad Exit1 of Wrk_rpt prompt "Exit" at 23,49
156
157     *****WRK_RPT POPUPS*****
158 * Popup menu for Prog_pop
159 set catalog off
160 use Wrk_list
161 define popup Prog_pop from 4,4 to 11,11 prompt field PROGRAM
162
163 * Popup menu for Act2_pop
164 define popup Act2_pop from 8,17 to 14,31 prompt field ACT_DES
165     define popup Des_pop from 8,32 to 14,73 prompt field mDes
166
167 * Popup menu for Suff_pop
168 define popup Suff_pop from 4,31 to 9,37 prompt field SUFFIX
169
170 * Popup menu for Job_pop
171 define popup Job_pop from 4,45 to 9,53 prompt field JOB_NO
172
173 * Popup menu for Org_pop
174 define popup Org_pop from 6,4 to 12,11 prompt field ORG
175
176 * Popup menu for Rte_pop
177 define popup Rte_pop from 6,13 to 16,34 prompt field HIGH_ID
178
179 * Popup menu for Dir_pop
180 define popup Dir_pop from 6,63 to 11,70 prompt field DIRECTION
181
182 * Popup menu for Road_pop
183 define popup Road_pop from 6,60 to 10,76 prompt field CLASS
184
185     *****EXIT POPUP MENUS*****
186 * Popup menu for Exit_pop
187 define popup Exit1_pop from 18,48 to 22,77
188     define bar 1 of Exit1_pop prompt "Save Report & Next Report"
189     define bar 2 of Exit1_pop prompt "Save Report & Next Crew/Exit"

```

```

190         define bar 3 of Exit1_pop prompt "Do Not Save & Exit"
191
192 *****PROCEDURES FOR WRK_RPT*****
193 procedure Pad_pro
194 *****Work Report Pad Definitions*****
195 use wrk_list
196 @ 1,3 say "Crew No. "
197 @ 1,12 say dDevice
198 @ 1,14 say ", Report # "
199 @ 1,25 say dJob_no
200 @ 1,33 say "W o r k   R e p o r t   M e n u"
201 @ 2,2 to 24,77 double
202 @ 7,3 to 7,76
203 @ 7,18 say "LABOR"
204 @ 7,56 say "EQUIPMENT"
205 @ 8,47 to 21,47
206 @ 22,3 TO 22,76
207 @ 6,4 say "Comments: "
208 @ 3,63 say "Date:"
209 @ 3,63 fill to 3,67 color N+/W
210 @ 3,68 say dDate
211 @ 4,4 say "Activity Description:"
212 @ 4,4 fill to 6,24 color N+/W
213 @ 5,23 say "Letter:" color N+/W
214 @ 8,15 say "RT" color N+/W
215 @ 8,21 say "OT" color N+/W
216 @ 8,27 say "CT" color N+/W
217 @ 8,32 say "TRF" color N+/W
218 @ 8,38 say "TRV" color N+/W
219 @ 8,44 say "TRN" color N+/W
220 @ 8,54 say "Hrs" color N+/W
221 @ 8,61 say "Start" color N+/W
222 @ 8,72 say "End" color N+/W
223 on pad Program of Wrk_rpt activate popup Prog_pop
224 on pad Activ of Wrk_rpt activate popup Act2_pop
225 on selection pad Suffix of Wrk_rpt do Suffix
226 on pad Job_no of Wrk_rpt activate popup Job_pop
227 on pad Org of Wrk_rpt activate popup Org_pop
228 on pad Route of Wrk_rpt activate popup Rte_pop
229 on selection pad Beg_mp of Wrk_rpt do Beg_pro
230 on selection pad End_mp of Wrk_rpt do End_pro
231 on pad Dir of Wrk_rpt activate popup Dir_pop
232 on pad Road of Wrk_rpt activate popup Road_pop
233 on selection pad Comments of Wrk_rpt do Com_pro
234 on selection pad Employ of Wrk_rpt do Employ
235 on selection pad Equip of Wrk_rpt do Eqp
236 on pad Exit1 of Wrk_rpt activate popup Exit1_pop
237 *****Wrk_rpt Popup Selection Menus*****
238 on selection popup Prog_pop do Prog_pro
239 on selection popup Act2_pop do Act1_pro
240     on selection popup Des_pop do Activity
241 on selection popup Suff_pop do Suff_pro
242 on selection popup Job_pop do Job_pro
243 on selection popup Org_pop do Org_pro
244 on selection popup Rte_pop do Rte_pro
245 on selection popup Dir_pop do Dir_pro
246 on selection popup Road_pop do Road_pro
247 on selection popup Exit1_pop do Exit1_pro
248 save screen to perfect
249 activate menu Wrk_rpt
250 if nMum = "X"
251     restore screen from perfect
252 do pad_pro

```

```
253 endif
254 deactivate menu
255
256 *****PROCEDURES MENU*****
257 procedure Prog_pro
258     mProg = prompt ()
259     use wrk_list
260     @ 3,12 say mProg
261     return
262 procedure Suffix
263     use suf_list
264     activate popup suff_pop
265     use wrk_list
266 procedure Suff_pro
267     mSuff = prompt ()
268     use wrk_list
269     @ 3,38 say mSuff
270     deactivate popup
271     return
272 procedure Job_pro
273     mJob = prompt ()
274     use wrk_list
275     @ 3,52 say mJob
276     return
277 procedure Org_pro
278     mOrg = prompt ()
279     use wrk_list
280     @ 5,8 say mOrg
281     return
282 procedure Rte_pro
283     mRoute = prompt ()
284     mRte_Ltr = left(mRoute,4)
285     mRte = right(mRte_Ltr,3)
286     mRte_Ltr = left(mRte_Ltr,1)
287     use wrk_list
288     @ 5,19 say mRte
289     @ 5,30 say mRte_Ltr
290     return
291 procedure Beg_pro
292     @ 5,44 get mBmp
293     read
294     @ 5,44 say mBmp
295     store val(mBmp) to mBmpl
296     return
297 procedure End_pro
298     @ 5,57 get mEmp
299     read
300     @ 5,57 say mEmp
301     store val(mEmp) to mEmpl
302     return
303 procedure Dir_pro
304     mDir = left(prompt (),1)
305     use wrk_list
306     @ 5,67 say mDir
307     return
308 procedure Road_pro
309     mRdty = left(prompt (),1)
310     use wrk_list
311     @ 5,75 say mRdty
312     return
313 procedure Com_pro
314     @ 6,14 get mComments picture "@"
315     read
```

```

316      @ 6,14 say mComments picture "@!"
317 procedure Act1_pro
318         mCat = prompt ()
319         mDesx = left (mCat,2)
320         mDes = (mDesx + " ACT")
321         mDes = left (mDes,6)
322         do Des_pro
323 *****ACTIVITY DESCRIPTION PROCEDURES*****
324 procedure Des_pro
325     use Act_list
326     activate popup Des_pop
327     use Wrk_list
328 procedure Activity
329     use Wrk_list
330     mActx = prompt ()
331     mMat = right (mActx,3)
332     mMat = left (mMat,2)
333     mMat = (mMat + " MAT")
334     mMat = left (mMat,6)
335     mMatpop = right (mActx,1)
336     mActd = left (mActx,40)
337     mActn = left (mActd,3)
338     mActd = right (mActd,36)
339     @ 3,26 say mActn
340     @ 4,25 say mActd
341     deactivate popup
342 return
343
344 *****EXIT PROGRAM*****
345 procedure Exit1_pro
346     do case
347     case bar () = 1                                && Save & Generate New
348         delete file emp_temp.dbf
349         delete file eqp_temp.dbf
350         clear
351         do Wrk_repl
352         do Rep_next
353         nMum = "X"
354         deactivate menu
355     case bar () = 2                                && Save & Exit
356         nMum = " "
357         do Wrk_repl
358         close all
359         erase Appender.dbf
360         delete file emp_temp.dbf
361         delete file eqp_temp.dbf
362         set talk on
363         set status on
364         set catalog to schedule
365         do Rep_next
366         mReport = "Next"
367         deactivate menu
368     case bar () = 3                                && Do Not Save & Exit
369         clear
370         close all
371         nMum = " "
372         erase Appender.dbf
373         erase ltrim(dNum1) + dDevice + "WRK" + ".dbf"
374         erase ltrim(dNum1) + dDevice + "EMP" + ".dbf"
375         erase ltrim(dNum1) + dDevice + "EQP" + ".dbf"
376         erase ltrim(dNum1) + dDevice + "MAT" + ".dbf"
377         set catalog to schedule
378         set talk on

```

```

379         set status on
380         do Rep_next
381         mReport = "Quit"
382         deactivate menu
383
384     endcase
385
386 procedure Wrk_repl
387     dWork = (ltrim(dNum1) + dDevice + "WRK")
388     if dJob_no = "01"
389         use appender
390         set directory to d:\dbase4\pima\grid_rpt
391         copy structure to (dWork) with production
392     endif
393     set directory to d:\dbase4\pima\grid_rpt
394     dJobid = (ltrim(dNum1) + mOrg + ltrim(dJob_no))
395     dJob_no = right(dJob_no,1)
396     dJob_nox = val(dJob_no)
397     dJob_nox = dJob_nox + 1
398     dJob_no = str(dJob_nox)
399     dJob_no = ("0" + ltrim(dJob_no))
400     set catalog to (mCatalog)
401     set catalog on
402     use (dWork)
403     append blank
404     replace PIMAJOBID with dJobid, PROGRAM with mProg, SUFFIX with mSuf
405     JOB_NO with mJob, ACTIVITY with mActn, ACT_DES with mActd,;
406     RPT_DATE with dDate, ORG with mOrg, ROUTE with mRte,;
407     ROUTE_LTR with mRte_ltr,;
408     BEG_MILE with mBmpl, END_MILE with mEmpl, DIRECTION with mDir,;
409     CLASS with mRdty, COMMENTS with mComments
410     set catalog off
411     set directory to d:\dbase4\pima\work_rpt
412     return
413
414 procedure Rep_next
415     mProg = space (3)
416     @ 3,12 to 3,15
417     mSuff = space (1)
418     @ 3,38 to 3,39
419     mOrg = space (4)
420     @ 5,8 to 5,12
421     mActn = space (4)
422     @ 3,26 to 3,30
423     mActd = space (40)
424     @ 4,25 to 4,65
425     *mActx = space (45)
426     mDes = space (7)
427     mCat = space (12)
428     mDesx = space (4)
429     mJob = space (10)
430     @ 3,52 to 3,62
431     mRoute = space (20)
432     mRte = space (3)
433     @ 5,19 to 5,22
434     mRte_Ltr = space (1)
435     @ 5,30 to 5,31
436     store 0 to mBmpl
437     @ 5,44 to 5,49
438     mBmp = space (5)
439     store 0 to mEmpl
440     mEmp = space (5)
441     @ 5,57 to 5,62

```

```

442      mDir                = space (1)
443      @ 5,67 to 5,68
444      mRdty                = space (2)
445      @ 5,75 to 5,77
446      mComments= space (60)
447      @ 6,14 to 6,74
448      mMat = "01"
449 *****
450 * Program.....EMPLOYEE
451 * Author.....Cliff Perry, Texas Transportation Institute
452 *****
453 *****MEMORY VARIABLES*****
454 procedure Employ
455 @ 9,4 clear to 19,45
456 mName                    = space (7)
457 linecnt = 9
458 cnt                      = 1
459 qnty                     = 0
460 mJobid                   = (ltrim(dNum1) + mOrg + ltrim(dJob_no))
461 mEmployee = (ltrim(dNum1) + dDevice + "EMP")
462 use Emp_app
463 copy structure to Emp_temp with production
464 if dJob_no = "01"
465     use Emp_app
466     set directory to d:\dbase4\pima\grid_rpt
467     copy structure to (mEmployee) with production
468     set directory to d:\dbase4\pima\work_rpt
469 endif
470 *****DEFINE EMPLOYEE MENU*****
471     use emp_list
472     set order to Emp_no
473     define menu Emp_menu
474     define pad Employ of Emp_menu prompt "Emp No." at 8,4
475     define popup Emp_pop from 8,11 to 16,20 prompt field EMP_NO
476     on pad Employ of Emp_menu activate popup Emp_pop
477     * Popup menu for Emp_pop
478     on selection popup Emp_pop do Emp_pro
479 activate menu Emp_menu
480
481 procedure Next_pro
482     use Emp_list
483     set order to Emp_no
484
485 *****EMPLOYEE PROGRAM*****
486 procedure Emp_pro
487     mName = prompt()
488     if mName = "XIT"
489         save screen to Emp_rpt
490         answer = space (1)
491         @ 9,4 clear to 18,45
492         @ 11,9 say "Do you want to save these Employees"
493         @ 12,15 say "for crew "
494         @ 12,24 say dDevice
495         @ 12,27 say " activity "
496         @ 12,37 say dJob no
497         @ 12,39 say " Y/N " get answer
498         read
499         if upper(answer) = "Y"
500             set directory to d:\dbase4\pima\grid_rpt
501             set catalog to (mCatalog)
502             set catalog on
503             use (mEmployee)
504             set directory to d:\dbase4\pima\work_rpt

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505         append from emp_temp
506         set catalog off
507         restore screen from Emp_rpt
508         use wrk_list
509         deactivate menu
510     endif
511     if upper(answer) = "N"
512         @ 9,4 clear to 18,45
513         use Emp_temp
514         delete all for mJobid = PIMAJOBID
515         pack
516         linecnt = 9
517         do next_pro
518     endif
519 else
520     @ linecnt,4 say mName
521     store linecnt + 1 to linecnt
522     do Emp_repl                                     && Replaces variables
523 endif
524
525 procedure Emp_repl
526     use Emp_temp
527     append Blank
528     replace PIMAJOBID with mJobid, EMP_NO with mName
529     do Next_pro
530     return
531
532 *****
533 * Program.....EQUIPMENT *
534 * Author.....Cliff Perry, Texas Transportation Institute
535 *****MEMORY VARIABLES*****
536 procedure eqp
537 close all
538 @ 9,48 clear to 18,70
539 mJobid = (ltrim(dNum1) + mOrg + ltrim(dJob_no))
540 mEqp_no = space (4)
541 mEqp_des= space (26)
542 linecnt = 9
543 cnt = 1
544 qnty = 0
545 mEquip = (ltrim(dNum1) + dDevice + "EQP")
546 dMat = (ltrim(dNum1) + dDevice + "MAT")
547 use Eqp_app
548 copy structure to Eqp_temp with production
549 if dJob_no = "01"
550     use Eqp_app
551     set directory to d:\dbase4\pima\grid_rpt
552     copy structure to (mEquip) with production
553     set directory to d:\dbase4\pima\work_rpt
554 endif
555 do Eqp_menu
556 do Eqp_pro
557 *****DEFINE EQUIPMENT MENU*****
558 procedure Eqp_menu
559     define menu Eqp_menu
560     define pad Eqp_no of Eqp_menu prompt "Unit" at 8,48
561     define popup Eqpno_pop from 8,20 to 18,47 prompt field EQUIP_DES
562 *****EQUIPMENT PROGRAM*****
563 Procedure Eqp_pro
564     use Eqp_list
565     set order to Equip_des
566     on pad Eqp_no of Eqp_menu activate popup Eqpno_pop
567     on selection popup Eqpno_pop do Equip

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568         activate menu Eqp_menu
569
570 procedure nexter
571     use Eqp_list order Equip_des
572
573 procedure Equip
574     mEqp_des = prompt()
575     if mEqp_des = "XIT"
576         save screen to Eqp_rpt
577         answer = space(1)
578         @ 9,48 clear to 18,70
579         @ 11,48 say "Do you want to save this"
580         @ 12,50 say "Equipment for Crew "
581         @ 12,69 say dDevice
582         @ 13,50 say "Activity "
583         @ 13,59 say dJob no
584         @ 13,62 say " Y/N " get answer
585         read
586         if upper(answer) = "Y"
587             set directory to d:\dbase4\pima\grid_rpt
588             set catalog to (mCatalog)
589             set catalog on
590             use (mEquip)
591             set directory to d:\dbase4\pima\work_rpt
592             append from eqp_temp
593             set catalog off
594             restore screen from Eqp_rpt
595             use wrk_list
596             deactivate menu
597         endif
598         if upper(answer) = "N"
599             @ 9,48 clear to 18,70
600             use Eqp_temp
601             delete all for mJobid = PIMAJOBID
602             pack
603             linecnt = 9
604             do nexter
605         endif
606     else
607         mEqp_no = left(mEqp_des,4)
608         @ linecnt,48 say mEqp_des
609         linecnt = linecnt + 1
610         do Eqp_repl
611     endif
612
613 procedure Eqp_repl
614     use Eqp_temp
615     append Blank
616     replace PIMAJOBID with mJobid, EQUIP_NO with mEqp_no
617     *if mMat_no = "01"
618         *use Mat_app
619         *copy structure to (dMat)
620     *endif
621     *if linecnt <= 10
622         *mMat_no = "02"
623         *set catalog to (mCatalog)
624         *set catalog on
625         *use (dMat)
626         *append blank
627         *replace PIMAJOBID with mJobid, LOCATION with " ",;
628         *CODE with "          ",;
629         *DESCRIP with "          ",;
630         *UNIT_MEAS with " ", QUANTITY with 0, COST with 0

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631          *set catalog off
632      *endif
633      do nexter
634      return
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1 *****
2 * Program.....PIMA.PRG
3 * Author.....Cliff Perry, Texas Transportation Institute
4 *                               Environmental Management Program
5 * Address.....Texas A&M University, College Station, TX. 77843-3135
6 * Phone.....(409) 845-0133
7 * Client.....Arizona Department of Transportation, (ADOT)
8 *                               Roadside Development Services
9 * Date.....(01/20/92)
10 *****
11 clear
12 *set development on
13 *set delimiters off
14 *set scoreboard off
15 *set escape off
16 *set clock off
17 set status off
18 set talk off
19 *set exact off
20 set bell off
21 *set catalog off
22 mTran = space(11)
23 mTran1 = space(8)
24 dNum1 = space(3)
25 fDate = space(3)
26 lDate = space(3)
27 tDate = { / / }
28 dDate = { / / }
29 nDate = { / / }
30 rDate = { / / }
31 eDate = { / / }
32 mOrg = space(5)
33 nOrg = space(5)
34 kOrg = space(5)
35 mTran = space(6)
36
37 * Main Menu Program
38 do Def_mens
39 *on pad MAPPING of main activate popup MAP_pop
40 on pad DATA of main activate popup DAT_pop
41 on pad QUERIES of main activate popup QUERY_pop
42 on pad DRAW of main activate popup Arc_pop
43 on pad REPORTS of main activate popup REPORT_pop
44 on pad PRINT of main activate popup PRINT_pop
45 on pad EXIT of main activate popup EXIT_pop
46 *****
47 on selection popup EXIT_pop do EXIT_pro
48 *on selection popup MAP_pop do MAP_pro
49 on selection popup QUERY_pop do QUERY_pro
50 on selection popup Arc_pop do Arc_pro
51 on selection popup REPORT_pop do REPORT_pro
52 on selection popup DAT_pop do DATA_pro
53 on selection popup PRINT_pop do Print_pro
54 activate menu Main
55
56 procedure Def_mens
57 * Main Menu
58 clear
59 define menu Main
60 @ 1,23 TO 5,59 double
61 @ 3, 28 say "INFORMATION MANAGEMENT MENU"
62 @ 7,1 to 9,77 double
63 define pad QUERIES of Main prompt "ANALYSIS" at 8,3

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64 define pad REPORTS of Main prompt "REPORTS" at 8,15
65 define pad DATA of Main prompt "DATA FILES" at 8,29
66 *define pad MAPPING of Main prompt "MAPPING" at 8,39
67 define pad DRAW of Main prompt "TRANSFER" at 8,45
68 define pad PRINT of Main prompt "PRINT" at 8,60
69 define pad EXIT of Main prompt "EXIT" at 8,72
70
71 * Popup Menu QUERY_pop
72 define popup QUERY_pop from 9,3 to 16,25
73     define bar 1 of QUERY_pop prompt "Show Query File";
74         message "Quick View of Query Files"
75     define bar 2 of QUERY_pop prompt "Create Query File";
76         message "Creates a New Query File"
77     define bar 3 of QUERY_pop prompt "Modify Query File";
78         message "Modification to Existing Query File"
79     define bar 4 of QUERY_pop prompt "Transfer Query File";
80         message "Transfers Query for Graphical Display in Arc"
81     define bar 5 of QUERY_pop prompt "Delete Query File"
82     define bar 6 of QUERY_pop prompt "Delete Graphic File";
83         message "Deletes Graphic Query File used in Arc"
84
85 * Popup Menu REPORTS_pop
86 define popup REPORT_pop from 9,15 to 20,34
87     define bar 1 of REPORT_pop prompt "DATABASE:"
88     define bar 2 of REPORT_pop prompt " Create Database";
89         message "Creates a New Database Report"
90     define bar 3 of REPORT_pop prompt " Modify Database";
91         message "Modifies an Existing Database Report"
92     define bar 4 of REPORT_pop prompt " View Database";
93         message "View an Existing Database Report"
94     define bar 5 of REPORT_pop prompt " Print Database";
95         message "Print a Database Report"
96     define bar 6 of REPORT_pop prompt "QUERY FILES:"
97     define bar 7 of REPORT_pop prompt " Create Query";
98         message "Creates a New Query Report"
99     define bar 8 of REPORT_pop prompt " Modify Query";
100         message "Modifies an Existing Query Report"
101     define bar 9 of REPORT_pop prompt " View Query";
102         message "View an Existing Query Report"
103     define bar 10 of REPORT_pop prompt " Print Query";
104         message "Print an Existing Query Report"
105
106 * Popup Menu DAT_pop
107 define popup DAT_pop from 9,29 to 19,46
108     define bar 1 of DAT_pop prompt "View Data:"
109     define bar 2 of DAT_pop prompt " VEGETATION";
110         message "Viewing Only of Vegetation Database File"
111     define bar 3 of DAT_pop prompt " VEG. DICT.";
112         message "Viewing Only of Vegetation Dictionary"
113     define bar 4 of DAT_pop prompt " IRRIG. APP";
114         message "Viewing Only of Irrigation Appliance File"
115     define bar 5 of DAT_pop prompt " IRRIG. LINE";
116         message "Viewing Only of Irrigation Line File"
117     define bar 6 of DAT_pop prompt " SURFACE";
118         message "Viewing Only of Surface File, i.e. Granite Mulch,"
119     define bar 7 of DAT_pop prompt " SOIL DICT.";
120         message "Viewing Only of Soil Dictionary File"
121     define bar 8 of DAT_pop prompt " TRANSACTION";
122         message "Viewing Only of Transaction Database File"
123     define bar 9 of DAT_pop prompt " ACTIVITIES";
124         message "Viewing Only of Activities File"
125
126 * Popup Menu MAP_pop

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127 *define popup MAP_pop from 9,39 to 16,68
128   *define bar 1 of MAP_pop prompt "MODIFIED MAPS:";
129     *message "Maps having been written on by field personnel"
130   *define bar 2 of MAP_pop prompt "  View Modified Maps"
131   *define bar 3 of MAP_pop prompt "  Delete Modified Map"
132   *define bar 4 of MAP_pop prompt "NEW & CORRECTED MAPS:";
133     *message "Maps used for permanent records"
134   *define bar 5 of MAP_pop prompt "  View New/Corrected Maps"
135   *define bar 6 of MAP_pop prompt "  Replace New/Corrected Maps"
136
137 * Popup Menu Arc_pop
138 define popup Arc_pop from 9,45 to 14,71
139   define bar 1 of Arc_pop prompt "Transaction Files";
140     message "Transfer Transaction Files from District Computer"
141   define bar 2 of Arc_pop prompt "Map Files";
142     message "Transfers Map Files from District Computer"
143   define bar 3 of Arc_pop prompt "Append Transaction Files";
144     message "Appends District Transaction Files"
145   define bar 4 of Arc_pop prompt "Transfer to Graphic";
146     message "Transfer to Arc/3.4D Program"
147
148 * Popup Menu Print_pop
149 define popup Print_pop from 9,49 to 12,65
150   define bar 1 of PRINT_pop prompt "Database File"
151   define bar 2 of PRINT_pop prompt "Query Report"
152   *define bar 3 of PRINT_pop prompt "Work Report"
153   * define bar 4 of PRINT_pop prompt "Catalog Listing"
154
155 * Popup Menu EXIT_pop
156 define popup EXIT_pop from 9,53 to 13,77
157   define bar 1 of EXIT_pop prompt "Exit to Dot Prompt"
158   define bar 2 of EXIT_pop prompt "Exit to Control Center"
159   define bar 3 of EXIT_pop prompt "Exit to DOS Prompt"
160   * define bar  of EXIT_pop prompt ""
161
162 return
163
164 procedure QUERY_pro
165   do case
166
167     case bar () = 1                && Show Query File
168       save screen to Main
169       clear
170       @ 5,5 say "Select Query file to view ?"
171       set dbtrap off
172       set view to ?
173       display all
174       set dbtrap on
175       restore screen from Main
176
177     case bar () = 2                && Create Query File
178       save screen to Main
179       set escape off
180       clear
181       set dbtrap off
182       @ 5,5 say "Select database file for query ?"
183       use ?
184       set status on
185       create query
186       set status off
187       set dbtrap on
188       set escape on
189       restore screen from Main

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190
191     case bar () = 3                && Modify Query File
192         save screen to Main
193         clear
194         set escape off
195         set status on
196         @ 4,22 to 6,52 double
197         @ 5,23 say "Select Query File to Modify:"
198         modify query ?
199         set status off
200         set escape on
201         restore screen from Main
202
203     case bar () = 4                && Transfer Query File
204         save screen to Main
205         clear
206         set escape off
207         set status on
208         @ 4,22 to 6,53 double
209         @ 5,23 say "Select Query File to Transfer:"
210         close all
211         set view to ?
212         clear
213         Newname = space(8)
214         @ 5,23 say "Name of new file:" get Newname
215         read
216         set directory to c:\dbase4\pima\query
217         set catalog to graphic
218         copy to (Newname)
219         close all
220         set directory to c:\dbase4\pima
221         set catalog to pilot
222         clear
223         set status off
224         set escape on
225         restore screen from Main
226
227     case bar () = 5                && Delete Query File
228         save screen to Main
229         clear
230         set escape off
231         close all
232         @ 5,5 say "Select Query file to delete ?"
233         set view to ?
234         nDelete = prompt()
235         erase (nDelete)
236         set escape on
237         restore screen from Main
238
239     case bar () = 6                && Delete Graphic File
240         save screen to Main
241         clear
242         close all
243         set escape off
244         set directory to c:\dbase4\pima\query
245         set catalog to graphic
246         @ 5,5 say "Select Graphic file to delete ?"
247         use ?
248         nDelete = prompt()
249         erase (nDelete)
250         set directory to c:\dbase4\pima
251         set catalog to pilot
252         set escape on

```

```

253             close all
254             restore screen from Main
255     endcase
256 return
257
258 procedure REPORT_pro
259     do case
260         case bar () = 1
261             return
262
263         case bar () = 2             && Create Database Report
264             save screen to Main
265             mRprtnm = space (7)
266             @ 10,22 to 12,44 double
267             @ 11,23 say "Select Database File:"
268             use ?
269             clear
270             @ 5,5 say "Name of new report?" get mRprtnm
271             create report (mRprtnm)
272             close all
273             restore screen from Main
274
275         case bar () = 3             && Modify Database Report
276             save screen to Main
277             clear
278             close all
279             set dbtrap off
280             @ 4,11 to 6,53
281             @ 5,12 say "Select Database for Report Modificator
282             use ?
283             clear
284             @ 4,11 to 6,50
285             @ 5,12 say "Select Report Needing Modifications:"
286             modify report ?
287             close all
288             set dbtrap on
289             clear
290             restore screen from Main
291
292         case bar () = 4             && View Database Report
293             save screen to Main
294             clear
295             close all
296             @ 4,11 to 6,50
297             @ 5,12 say "Select Database file to view ?"
298             use ?
299             clear
300             @ 4,11 to 6,50
301             @ 5,12 say "Select Report Form(.frg) for viewing ?"
302             @ 10,5 say ;
303             "Use Ctrl-S to Stop & Start Viewing of Information"
304             color gr+
305             report form ? to textfile.txt
306             erase textfile.txt
307             restore screen from Main
308
309         case bar () = 5             && Print Database Report
310             save screen to Main
311             clear
312             @ 4,11 to 6,50
313             @ 5,12 say "Select Database file to print?"
314             use ?
315             report form ? to print

```

```

316             restore screen from Main
317
318     case bar () = 6
319         return
320
321     case bar () = 7             && Create Query Report
322
323         save screen to Main
324         mRprtnm = space (7)
325         @ 10,22 to 12,41 double
326         @ 11,23 say "Select query file:"
327         set view to ?
328         clear
329         @ 5,5 say "Name of new report?" get mRprtnm
330         create report (mRprtnm)
331         restore screen from Main
332
333     case bar () = 8             && Modify Query Report
334         save screen to Main
335         clear
336         close all
337         set dbtrap off
338         @ 4,11 to 6,53
339         @ 5,12 say "Select Query for Report Modifications:"
340         set view to ?
341         clear
342         @ 4,11 to 6,50
343         @ 5,12 say "Select Report Needing Modifications:"
344         modify report ?
345         close all
346         set dbtrap on
347         clear
348         restore screen from Main
349
350     case bar () = 9             && View Query Report
351         save screen to Main
352         clear
353         close all
354         @ 4,11 to 6,50
355         @ 5,12 say "Select Query file to view ?"
356         set view to ?
357         clear
358         @ 4,11 to 6,50
359         @ 5,12 say "Select Report Form(.frg) for viewing ?"
360         @ 10,5 say ;
361         "Use Ctrl-S to Stop & Start Viewing of Information"
362         color gr+
363         report form ? to textfile.txt
364         erase textfile.txt
365         restore screen from Main
366
367     case bar () = 10            && Print Query Report
368         save screen to Main
369         clear
370         @ 4,11 to 6,50
371         @ 5,12 say "Select Query Report for Printing ?"
372         set view to ?
373         report form ? to print
374         restore screen from Main
375     endcase
376 return
377
378 procedure DATA_pro

```

```
379     do case
380         case bar () = 1
381             return
382         case bar () = 2
383             save screen to Main
384             clear
385             use veg
386             display all
387             restore screen from Main
388         case bar () = 3
389             save screen to Main
390             clear
391             use veg_dict
392             display_all
393             restore screen from Main
394         case bar () = 4
395             save screen to Main
396             clear
397             use irr_app
398             display_all
399             restore screen from Main
400         case bar () = 5
401             save screen to Main
402             clear
403             use irr_line
404             display_all
405             restore screen from Main
406         case bar () = 6
407             save screen to Main
408             clear
409             use surface
410             display all
411             restore screen from Main
412         case bar () = 7
413             save screen to Main
414             clear
415             use soil dic
416             *report Form soil_dic
417             restore screen from Main
418         case bar () = 8
419             save screen to Main
420             clear
421             use tran
422             display all
423             restore screen from Main
424         case bar () = 9
425             save screen to Main
426             clear
427             use activity
428             display all
429             restore screen from Main
430         case bar () = 10
431             save screen to Main
432             clear
433             use ?
434             report form ? to printer
435             restore screen from Main
436
437     endcase
438
439 **procedure Map_pro
440     *do case
441         *case bar () = 1
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```

442             *return
443             *case bar () = 2
444             *case bar () = 3
445             *case bar () = 4
446             *return
447             *case bar () = 5
448             *case bar () = 6
449         *endcase
450 *return
451
452 procedure ARC_pro
453     do case
454         case bar () = 1
455             save screen to main
456             clear
457             set directory to c:\dbase4\pima\transact
458             run tran_trn
459             ! del *.cat
460             set catalog off
461             set directory to c:\dbase4\pima
462             set catalog to pilot
463             restore screen from main
464         case bar () = 2
465             save screen to main
466             clear
467             set directory to c:\dbase4\pima\mapfiles
468             run map_trn
469             set directory to c:\dbase4\pima
470             set catalog to pilot
471             restore screen from main
472         case bar () = 3
473             save screen to main
474             clear
475             set catalog off
476             set directory to
477             set catalog to
478             set directory to c:\dbase4\pima\transact
479             do append
480             on pad File of append activate popup File_pop
481             on pad TExit of append activate popup Newt_pop
482             on selection popup File_pop do File_pro
483             on selection popup Newt_pop do TExit
484             activate menu append
485             restore screen from main
486         case bar () = 4
487             close all
488             quit
489     endcase
490
491 procedure append
492     define menu append
493     @ 3,24 to 5,60 double
494     @ 4,25 say "P I M a   A P P E N D   M E N U"
495     @ 7,24 to 23,60
496     define pad File of append prompt "File Name:" at 9,26;
497     message "Enter File Name to Append"
498     define pad TExit of append prompt "Exit:" at 9,49;
499     message "Exit to PIMa Main Menu"
500 *****
501     define popup File_pop from 10,26 to 22,40 prompt files;
502     like ???????T.DBF
503     define popup Newt_pop from 8,49 to 10,58
504     define bar 1 of Newt_pop prompt "Exit: "

```

```
505
506
507 procedure File_pro
508     mfile = space (12)
509     mFile = prompt ()
510     set directory to c:\dbase4\pima
511     use Tran in 1
512     append from &mFile
513     close all
514     mFile2 = right(mFile,12)
515     copy file &mFile to c:\dbase4\pima\old_tran\&mFile2
516     set directory to c:\dbase4\pima\transact
517     close all
518     delete file (mFile)
519
520 procedure TExit
521     do case
522         case bar () = 1
523             close all
524             clear
525             set directory to c:\dbase4\pima
526             deactivate menu
527     endcase
528 procedure Print_pro
529     do case
530         case bar () = 1
531             save screen to Main
532             clear
533             close all
534             @ 4,11 to 6,50
535             @ 5,12 say "Select Database File for Printing ?"
536             use ?
537             clear
538             set printer on
539             list off
540             eject
541             set printer off
542             restore screen from Main
543         case bar () = 2
544             save screen to Main
545             clear
546             close all
547             @ 4,11 to 6,50
548             @ 5,12 say "Select Query Report for Printing ?"
549             set view to ?
550             clear
551             list off to print
552             eject
553             restore screen from Main
554         *case bar () = 3
555             *save screen to Main
556             *clear
557             *close all
558             *@ 4,11 to 6,50
559             *@ 5,12 say "Select Query Report for Printing ?"
560             *set view to ?
561             *clear
562
563             *list off to print
564             *eject
565             *restore screen from Main
566
567     endcase
```

```
568 return
569
570 procedure EXIT_pro
571     do case
572         case bar () = 1
573             clear
574             set status on
575             return to master
576         case bar () = 2
577             clear
578             set status on
579             deactivate menu
580         case bar () = 3
581             quit
582             cancel
583     endcase
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