
GENERAL PLANNING CONSULTANT
TECHNICAL MANUAL 88.4.2:
USER'S MANUAL FOR JOINT DEVELOPMENT
CASH FLOW MODEL

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1. INTRODUCTION

The SCRTD Joint Development Cash Flow Model is designed to assist SCRTD in the evaluation of joint development projects associated with the Metro Rail system. The model enables the SCRTD to conduct a complete financial feasibility analysis and to evaluate alternative scenarios for potential joint development at Metro Rail stations. The Joint Development Cash Flow Model can assist the SCRTD at several stages of the joint development planning process. Prior to developer solicitation, the model can test the financial viability of various joint development scenarios for inclusion in the Prospectus/RFP. After proposals are received, the model allows for the independent evaluation of a developer's proposed financial plan, estimation of the potential financial return of the project to SCRTD and thorough understanding of the financial structure of the proposed development project to support project negotiations.

The purpose of this User's Manual is to describe the operation of the model and provide the user with a thorough understanding of the commands in the model. The Manual is organized to provide a step-by-step description of each command contained in the model for the user's reference. This Manual supercedes Technical Memorandum 86.4.8 (February, 1986). This version of the User's Manual contains all updates which have been made to the model since the previous version. A detailed list of these updates is contained in Appendix A.

This User's Manual is supplemented by separate Technical Documentation (Technical Memorandum 88.4.6) which contains more detail concerning the model's structure and functions. Technical Memorandum 88.4.6 contains substantial technical detail and is written for the user who has basic familiarity with the model. If the user is completely unfamiliar with the Joint Development Cash Flow Model, it is recommended that the User's Manual be read first.

The model is programmed for the IBM Personal Computer and is programmed in LOTUS 1-2-3 (Version 2.01). The hardware requirements for the model are an IBM PC or compatible with 640K bytes of memory. The software requirements are LOTUS 1-2-3 and SQZ! Data Squeezer for LOTUS. It is not necessary for the user to know the LOTUS 1-2-3 program in order to operate the model. The model is designed to run automatically and interactively through its entire sequence. The model is run by a master program which controls the loading of additional macros and LOTUS worksheets. A macro is a stored sequence of keystrokes. However, it is also possible, if the user is sufficiently familiar with the LOTUS program, to operate the model manually by pressing [CTRL] [BREAK] and then proceeding with manual inputs and changes to formulas as desired (Note: Commands in brackets refer to keys on the IBM-PC keyboard). At any point, the user may return to automatic operation by pressing the [ALT] and [M] keys simultaneously (referred to throughout this Manual as [ALT]-[M]).

2. ORGANIZATION OF THE MODEL

The model consists of seven modules. Each module builds on the information and calculations performed in previous modules. Therefore, the modules must be executed in sequence. The seven modules are:

1. INPUT BASIC HARD COSTS
2. INPUT BASIC SOFT COSTS
3. EXPENDITURE SCHEDULE BY MID-YEAR
4. SHORT TERM LOAN CALCULATIONS
5. OPERATING COST & REVENUE ANALYSIS
6. FINANCIAL ANALYSIS
7. PRINT SUMMARY REPORT

Each module has a macro and one or more worksheets associated with it to perform the required calculations. Each of these components is contained in a separate LOTUS file. The master file that controls the program is AUTO. This file is loaded first and contains the main menu, all required subroutines, the macro for Module 1 and the worksheets for Modules 1 and 2. The macros for Modules 1 through 7 are stored in files A1 through A7. The remaining modules are supported by separate worksheets as follows:

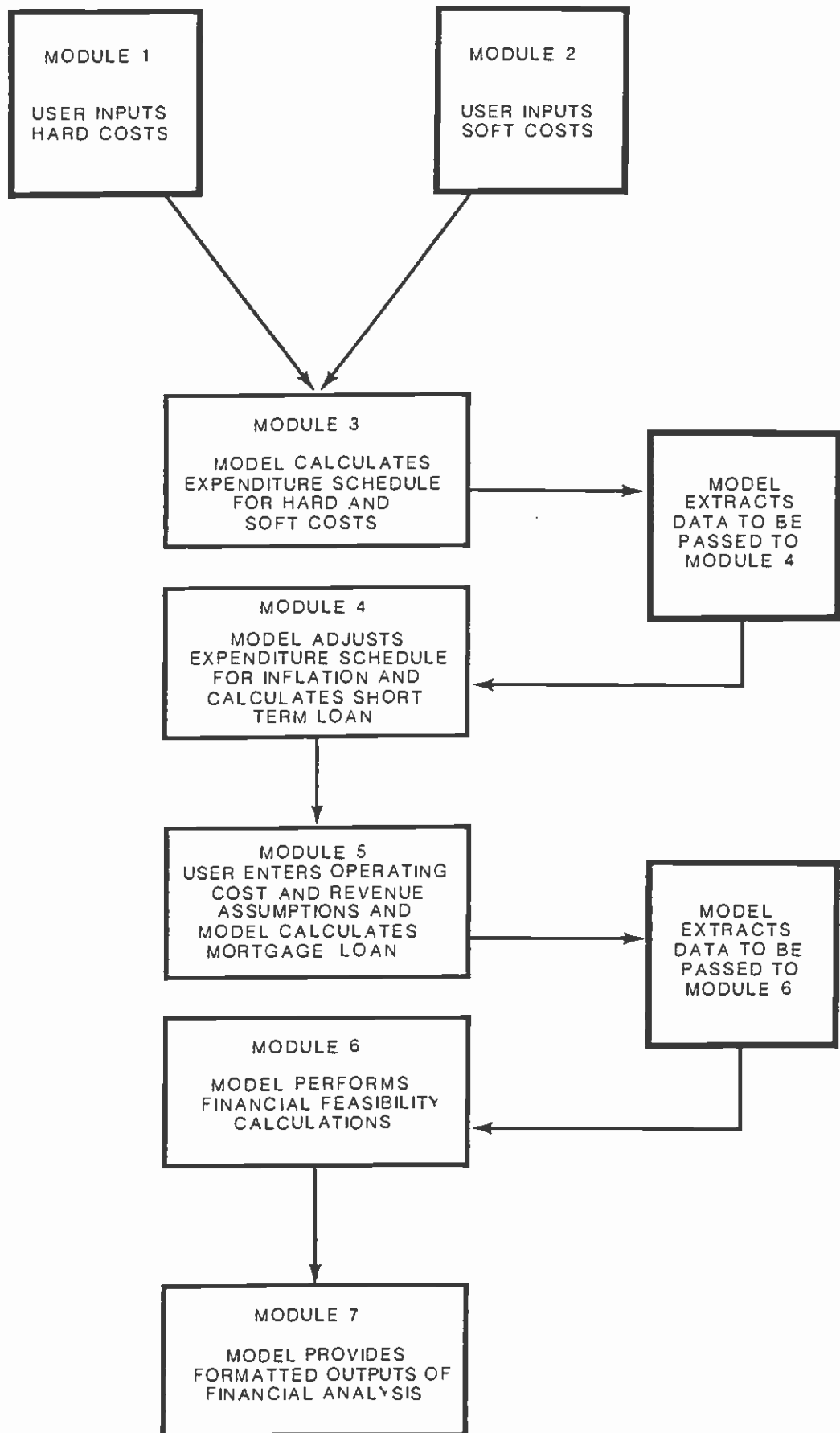
	Associated Worksheet(s)
MODULE 3	AA31, AA32
MODULE 4	AA41
MODULE 5	AA51
MODULE 6	AA61
MODULE 7	AA71

The modules must be executed in the order specified in the Main Menu, except as otherwise described later in this Manual. The flow of information through the model is portrayed in Figure 1. When the user selects a module from the Main Menu, the associated macro (A1 through A7) and worksheets are loaded into AUTO (except for Modules 1 and 2 where the associated worksheets already reside in AUTO). When the user selects the next module, the macro for that module replaces the macro for the previous module and the worksheets for the new module are loaded into the model. At certain points in time, as the modules build up in the model, the capacity of the LOTUS 1-2-3 program is reached. At these points, the user will be prompted to provide file names to save relevant portions of the worksheet for carryover to the next module while the extraneous portions of the worksheet will be purged. These user-generated files are explained in more detail later in this manual. Detailed explanation of the interrelationships between all files in the model is provided in the Joint Development Cash Flow Model Technical Documentation.

Normally, a user will cycle through all the Modules in the course of a project run where it is not necessary to save the data which is input at various points in the execution of the model. However, it is possible to save these inputs at specific points in time which allow the user to return and make changes to the inputs without running through the entire sequence of the model. These procedures are described in Section 5 of this Manual.

FIGURE 1

JOINT DEVELOPMENT CASH FLOW MODEL INFORMATION FLOW



MODULE 8: LEAVE LOTUS 1-2-3 PROGRAM

MODULE 9: SWITCH TO MANUAL MODE

In addition to the functions in the Main Menu listed above, the model also provides two control functions for the user. FINISH allows the user to end the operation of the model and return the computer to DOS. MANUAL allows the user to select the Manual Mode from the Main Menu.

3. LOADING THE MODEL

The model consists of a master program (AUTO) and associated macros and worksheets. In order to run the model, all components must reside in the same directory on the hard disk of the IBM PC/XT or compatible. The user must first load the LOTUS 1-2-3 program using the applicable procedures for the user's machine. Once the LOTUS program is loaded, the user must enter "SQZ" and press [ENTER] to load the SQZ! Data Squeezer for LOTUS program.

After these two programs are loaded, the directory must be set to the directory which contains the model. To do this, press "/", then "F", then "D", then enter the directory name for the model and press [ENTER].

Once the directory is set, the model is loaded by loading the worksheet AUTO.WK! (Note: the suffix WK! is automatically added to any LOTUS file which is saved by the SQZ! program. When saving or retrieving a file with this program activated, the user need only enter the file name. SQZ! will either add the WK! suffix if the file is being saved or search for the WK! suffix if the file is being retrieved.) To do this, press "/", then "F", then "R", then place the cursor on AUTO.WK! and press [ENTER]. The model will be loaded and the user can begin.

The user will be prompted to press [ALT]-[M] to start the model and bring the following menu (Module 1 Submenu) to the top of the screen:

MAIN-MENU TITLE STRUCTURE PARKING NOT-SITE LAND IMPROV.&CONT OUTPUT

The user should press [ENTER] to go to the Main Menu (Figure 2). The model will provide the prompt NEXT STEP NO.? The user should then enter the number of the desired Module. The sections which follow describe the operation of each of the Modules in detail.

NEXT STEP NO.?

M A I N M E N U

1. INPUT BASIC HARD COSTS
2. INPUT BASIC SOFT COSTS
3. EXPENDITURE SCHEDULE BY MID-YEAR
4. SHORT TERM LOAN CALCULATIONS
5. OPERATING COST & REVENUE ANALYSIS
6. FINANCIAL ANALYSIS
7. PRINT SUMMARY REPORT
8. FINISH
9. MANUAL MODE

NEXT STEP----->

1

FIGURE 2

4. OPERATION OF THE MODEL

This section of the Manual is designed to provide the user with a function-by-function description of the commands contained in the model. In the sections which follow, the functions of the Modules are described and the Submenus for each Module are given. The operation of each subfunction within a Module is then described in detail, including all steps and internal prompts and commands. For sections which describe subfunctions for the input of data, a separate section on the data input procedure is included.

GENERAL NOTE TO USERS: To provide a check on the input data provided by the user, error detection routines have been programmed into the model at various points. The restrictions on data entry because of these routines are discussed in the following sections. In addition, throughout the model, the LOTUS 1-2-3 program provides certain error detection routines. If an input is provided which is detected by these routines (for example, a letter is entered for an input which can only be numeric), the program will provide an error flag to the user. This error flag consists of a flashing "ERROR" message in the upper right corner of the screen. If this occurs, the user should press the [ESCAPE] key. The flashing "ERROR" message will be cleared and the model will resume operation at the point where the illegal input was provided. No data will be lost in this process.

4.1 MODULE 1 - INPUT BASIC HARD COSTS

When the user enters 1 from the Main Menu, Module 1 will be loaded. If the user has just loaded AUTO, Module 1 is already loaded and need not be entered again. Module 1 is used to enter hard cost data for the project. Module 1 contains seven subfunctions, each of which is used to input a specified set of data to cost items contained in the Module.

When Module 1 is loaded, the Module 1 Submenu will be displayed at the top of the screen:

MAIN-MENU	TITLE	STRUCTURE	PARKING	NOT-SITE	LAND	IMPROV.&CONT	OUTPUT
-----------	-------	-----------	---------	----------	------	--------------	--------

In Module 1, these subfunctions may be executed in any order. The user may choose to execute any or all of the subfunctions in the Module, depending upon the data to be entered. The user may choose the subfunction desired by either moving the cursor to the option and pressing [ENTER] or by typing the first letter of the desired option. If the user chooses MAIN-MENU, the model will return to the Main Menu (see Section 3 of this manual for instructions regarding operation of the Main Menu.) The following sections describe the operation of the subfunctions of this module.

4.1.1 The TITLE Subfunction

Purpose

This subfunction allows the user to provide a name and date for the run.

Operation

When this subfunction is chosen, the user will be prompted to provide the project name and the date of the run. The project name is selected by the user. The date must be entered in mm-dd-yy format. After the name and date have been entered, the model will return to the Module 1 submenu and the message "LAST STEP WAS TITLE" will be displayed.

4.1.2 The STRUCTURE Subfunction

Purpose

This subfunction allows the user to enter data on improvement construction costs for the project. The user may input unit costs for up to three types of construction (for example, office, retail, residential or other uses may have different unit costs associated with them). This subfunction is used to enter or change data in the following cost items of Module 1: STRUCTURE A; STRUCTURE B; STRUCTURE C.

Operation

When this subfunction is chosen, the model will set the cursor to CONSTRUCTION NO. OF TYPES and the following submenu will appear at the top of the screen:

```
1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?
```

The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data in the cost items of this subfunction. The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will return to the Module 1 Submenu and the message "LAST STEP WAS STRUCTURE" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will return to the Module 1 Submenu and the message "LAST STEP WAS STRUCTURE" will be displayed.
- 4.MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the STRUCTURE Subfunction

To input or change data entered in the cost items of this subfunction, after selecting the 1.INPUT option as described above, the model will enter the INPUT mode and provide the prompt:

```
HOW MANY STRUCTURES(3 MAX)?
```

The user may enter a number from 1 to 3, depending upon the number of different types of construction associated with the project. If 0 or a number greater than 3 is entered, the model will provide the prompt again. After entering the number of construction types and pressing [ENTER], the model will provide the prompt:

STRUCTURE NO. ?

In this subfunction, the three STRUCTURE cost items can be updated in any order. It is not necessary that they be accessed in sequence (A, B, C). The user should provide the number of the structure (1 to 3). These numbers correspond to STRUCTURE A, B and C in the worksheet (e.g., entering 1 means the user wishes to enter data for STRUCTURE A). If the user enters a number greater than 3, the model will provide the prompt again. If the user enters 0, the model will return to the Module 1 Submenu. After entering the structure number, the cursor will go to the selected cost item (STRUCTURE A, B or C) and the submenu will again appear:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. When in the INPUT mode, the options of this submenu are used as follows:

To input data to the user-selected cost item, enter 1 and press [ENTER]. The user will be prompted to provide the following cost item information in turn:

- UNITS - enter the number of units to be constructed (number of square feet, number of residential units, etc.)
- COST PER UNIT - enter the unit construction cost in dollars (construction cost per square foot, per residential unit, etc.). The unit cost should be entered in current dollars. The model will adjust these figures for inflation in Module 4.
- START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.
- END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., grading and demolition) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

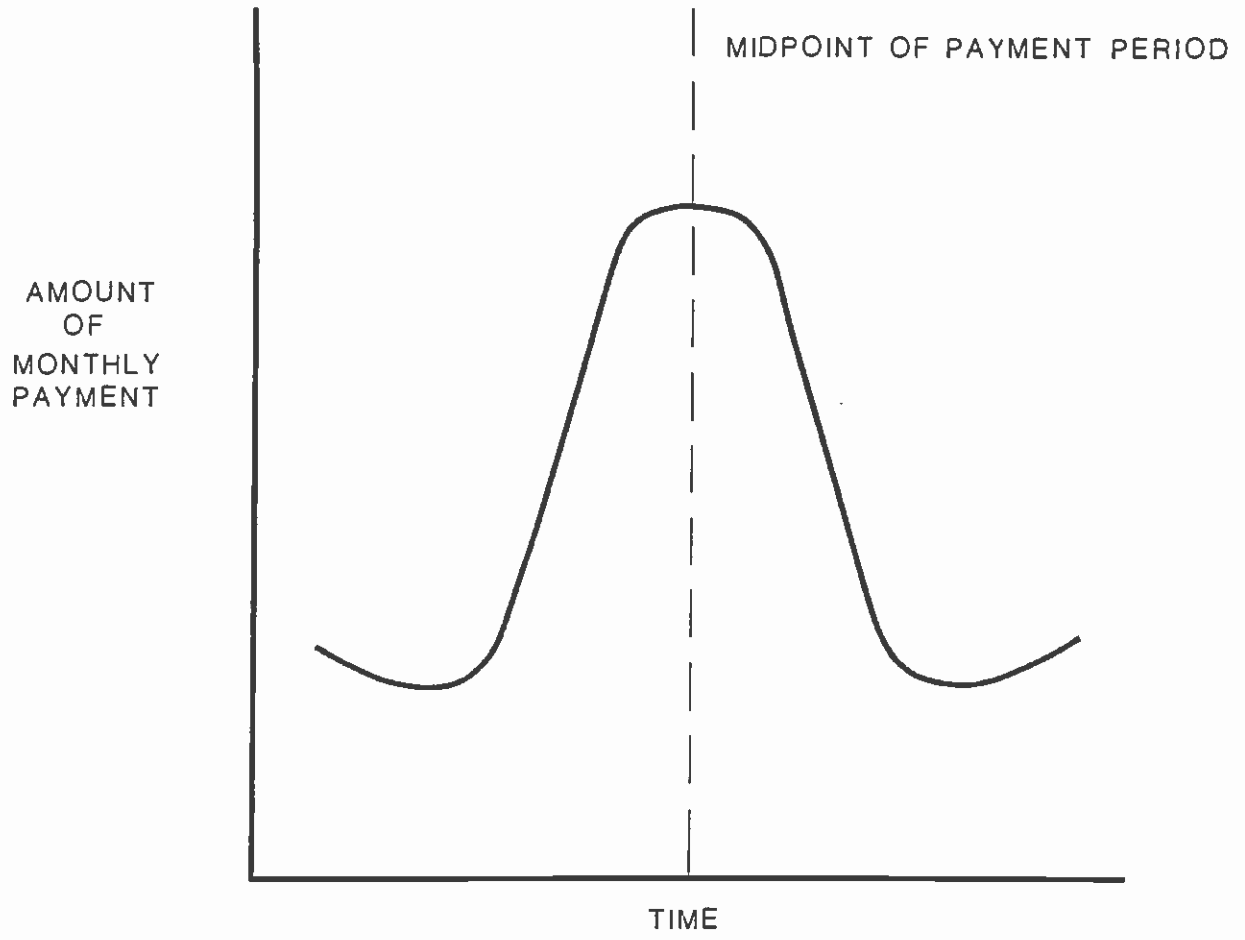
11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

FIGURE 3

BELL-SHAPED DISTRIBUTION OF PAYMENTS



NOT TO SCALE

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered, the model will provide the prompt STRUCTURE NO. ?. Enter 1, 2, or 3 to enter additional data on the appropriate cost item and the model will return to the 1. INPUT 2. NEXT 3. CLEAR 4. MANUAL ? submenu. If there is no additional data to be entered in this subfunction, enter 0. The model will return to the Module 1 Submenu and the message "LAST STEP WAS STRUCTURE" will be displayed.

To skip to the next line without inputting data, enter 2 and press [ENTER]. The model will return to the STRUCTURE NO. ? prompt.

To clear information on a cost item, enter 3 and press [ENTER]. The model will clear the information contained on that cost item and return to the STRUCTURE NO. ? prompt.

To switch to manual mode, enter 4 and press [ENTER]. This function is used to stop the automatic operation of the model and return to the LOTUS 1-2-3 program. Manual allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

To exit the INPUT mode, after all data entry is complete, enter 0 at the prompt STRUCTURE NO. ? to return to the Module 1 Submenu. The message "LAST STEP WAS STRUCTURE" will be displayed.

4.1.3 The PARKING Subfunction

Purpose

This subfunction allows the user to enter data on parking construction costs for the project. The user may input unit costs for two types of parking, on-site and off-site. This subfunction is used to enter or change data in the following cost items of Module 1: ON SITE PARKING (STALLS); OFF SITE PARKING (STALLS).

Operation

When this subfunction is chosen, the model will set the cursor to ON SITE PARKING (STALLS). Unlike the STRUCTURE subfunction, where the cost items could be accessed in any order in response to user inputs, in this subfunction the model cycles through the two cost items in a fixed order. The model will go first to ON SITE PARKING, then to OFF SITE PARKING and will then return to the Module 1 Submenu. If the user wishes to return to ON SITE PARKING, the PARKING subfunction must be selected again from the Module 1 Submenu.

When the PARKING subfunction is selected from the Module 1 Submenu, the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the two cost items in this subfunction in order (first ON SITE PARKING, then OFF SITE PARKING). If the cursor is on ON SITE PARKING when this option is chosen, the model will move the cursor to the OFF SITE PARKING cost item and provide the submenu again. If the cursor is on OFF SITE PARKING when this option is chosen, the model will return to the Module 1 Submenu and the message "LAST STEP WAS PARKING" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on ON SITE PARKING, the model will clear the data, move the cursor to the OFF SITE PARKING cost item and provide the submenu again. If the cursor is on the OFF SITE PARKING line, the model will clear the data and return to the Module 1 Submenu. The message "LAST STEP WAS PARKING" will be displayed.
- 4.MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or

values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the PARKING Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the user will be prompted to provide the following information in turn for that cost item:

- UNITS - enter the number of parking stalls to be constructed
- COST PER UNIT - enter the unit construction cost per stall in current dollars. The model will adjust this cost for inflation in Module 4.
- START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.
- END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., grading and demolition) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE -

enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for a cost item, the model will move to the next line in the sequence. If the user has just entered data for ON SITE PARKING, the model will move the cursor to OFF SITE PARKING and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the data has been entered for OFF SITE PARKING, the model will return to the Module 1 Submenu and the message "LAST STEP WAS PARKING" will be displayed.

4.1.4 The NOT-SITE Subfunction

Purpose

This subfunction allows the user to enter data on off-site construction costs for the project. The user may input unit costs for two types of off-site construction: construction for RTD and other off-site construction. This subfunction is used to enter or change data in the following cost items of Module 1: CONSTRUCTION FOR RTD; OTHER OFF SITE CONSTRUCTION.

Operation

When this subfunction is chosen, the model will set the cursor to CONSTRUCTION FOR RTD. Unlike the STRUCTURE subfunction, where the cost items could be accessed in any order in response to user inputs, in this subfunction the model cycles through the two cost items in a fixed order. The model will go first to CONSTRUCTION FOR RTD, then to OTHER OFF SITE CONSTRUCTION and will then return to the Module 1 Submenu. If the user wishes to return to CONSTRUCTION FOR RTD, the NOT-SITE subfunction must be selected again from the Module 1 Submenu.

When the NOT-SITE subfunction is selected from the Module 1 Submenu, the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the two cost items in this subfunction in order (first CONSTRUCTION FOR RTD, then OTHER OFF SITE CONSTRUCTION). If the cursor is on CONSTRUCTION FOR RTD when this option is chosen, the model will move the cursor to the OTHER OFF SITE CONSTRUCTION cost item and provide the submenu again. If the cursor is on OTHER OFF SITE CONSTRUCTION when this option is chosen, the model will return to the Module 1 Submenu and the message "LAST STEP WAS NOT-SITE" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on CONSTRUCTION FOR RTD, the model will clear the data, move the cursor to the OTHER OFF SITE CONSTRUCTION cost item and provide the submenu again. If the cursor is on the OTHER OFF SITE CONSTRUCTION line, the model will clear the data and return to the Module 1 Submenu. The message "LAST STEP WAS NOT-SITE" will be displayed.
- 4.MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar

with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT)-(M).

Data Input in the NOT-SITE Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the user will be prompted to provide the following information in turn for that cost item:

STATION/FACILITIES COST enter the construction cost for the off site construction, in millions of current dollars. The model will adjust this cost for inflation in Module 4.

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., grading and demolition) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE -

enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for a cost item, the model will move to the next line in the sequence. If the user has just entered data for CONSTRUCTION FOR RTD, the model will move the cursor to OTHER OFF SITE CONSTRUCTION and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the data has been entered for OTHER OFF SITE CONSTRUCTION, the model will return to the Module 1 Submenu and the message "LAST STEP WAS NOT-SITE" will be displayed.

4.1.5 The LAND Subfunction

Purpose

This subfunction allows the user to enter data on land acquisition and site preparation costs for the project. The user may input the total cost of property and easements needed for the project and the total cost of preparing the site for development in this subfunction. The user may input the cost of property and site preparation as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 1: PARCEL COSTS; EASEMENT; GRADING & DEMOLITION.

Operation

When this subfunction is chosen, the model will set the cursor to PARCEL COSTS. Unlike the STRUCTURE subfunction, where the cost items could be accessed in any order in response to user inputs, in this subfunction the model cycles through the three cost items in a fixed order. The model will go first to PARCEL COSTS, then to EASEMENT, then to GRADING & DEMOLITION and will then return to the Module 1 Submenu. If the user wishes to return to PARCEL COSTS, the LAND subfunction must be selected again from the Module 1 Submenu.

When the LAND subfunction is selected from the Module 1 Submenu, the following submenu will appear at the top of the screen:

```
1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?
```

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the three cost items in this subfunction in order (first PARCEL COSTS, then EASEMENT, then GRADING & DEMOLITION). If the cursor is on PARCEL COSTS when this option is chosen, the model will move the cursor to the EASEMENT cost item and provide the submenu again. If the cursor is on EASEMENT when this option is chosen, the model will move the cursor to the GRADING & DEMOLITION cost item and provide the submenu again. If the cursor is on GRADING & DEMOLITION when this option is chosen, the model will return to the Module 1 Submenu and the message "LAST STEP WAS LAND" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on PARCEL COSTS, the model will clear the data, move the cursor to the EASEMENT cost item and provide the submenu again. If the cursor is on EASEMENT, the model will clear the data, move the cursor to the

GRADING & DEMOLITION cost item and provide the submenu again. If the cursor is on the GRADING & DEMOLITION line, the model will clear the data and return to the Module 1 Submenu. The message "LAST STEP WAS LAND" will be displayed.

4. MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the LAND Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1. RELATIVE INPUT 2. ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: PERCENT ? The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: AMOUNT ? The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust this amount for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a

construction preparation cost item (e.g., grading and demolition) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for a cost item, the model will move to the next line in the sequence. If the user has just entered data for **PARCEL COSTS**, the model will move the cursor to **EASEMENT** and return to the **1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?** submenu. If the user has just entered data for **EASEMENT**, the model will move the cursor to **GRADING & DEMOLITION** and return to the **1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?** submenu. If the data has been entered for **GRADING & DEMOLITION**, the model will return to the Module 1 Submenu and the message "LAST STEP WAS LAND" will be displayed.

4.1.6 The IMPROV.&CONT. Subfunction

Purpose

This subfunction allows the user to enter data on site improvement costs and contingency allowance for the project. The user may input the cost of site improvements and contingency allowance as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 1: SITE IMPROVEMENTS, CONTINGENCY.

Operation

When this subfunction is chosen, the model will set the cursor to SITE IMPROVEMENTS. Unlike the STRUCTURE subfunction, where the cost items could be accessed in any order in response to user inputs, in this subfunction the model cycles through the two cost items in a fixed order. The model will go first to SITE IMPROVEMENTS, then to CONTINGENCY and will then return to the Module 1 Submenu. If the user wishes to return to SITE IMPROVEMENTS, the IMPROV.&CONT. subfunction must be selected again from the Module 1 Submenu.

When the IMPROV.&CONT. subfunction is selected from the Module 1 Submenu, the following submenu will appear at the top of the screen:

```
1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?
```

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the two cost items in this subfunction in order (first SITE IMPROVEMENTS, then CONTINGENCY). If the cursor is on SITE IMPROVEMENTS when this option is chosen, the model will move the cursor to the CONTINGENCY cost item and provide the submenu again. If the cursor is on CONTINGENCY when this option is chosen, the model will return to the Module 1 Submenu and the message "LAST STEP WAS IMPROV.&CONT." will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on SITE IMPROVEMENTS, the model will clear the data, move the cursor to the CONTINGENCY cost item and provide the submenu again. If the cursor is on the CONTINGENCY line, the model will clear the data and return to the Module 1 Submenu. The message "LAST STEP WAS IMPROV.&CONT." will be displayed.
- 4.MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar

with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the IMPROV.&CONT. Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1.RELATIVE INPUT 2.ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: **PERCENT ?** The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: **AMOUNT ?** The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust the cost for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., grading and demolition) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and

ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for a cost item, the model will move to the next line in the sequence. If the user has just entered data for SITE IMPROVEMENTS, the model will move the cursor to CONTINGENCY and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the data has been entered for CONTINGENCY, the model will return to the Module 1 Submenu and the message "LAST STEP WAS IMPROV.&CONT." will be displayed.

4.1.7 The OUTPUT Subfunction

Purpose

This subfunction allows the user to print the data currently contained in Module 1.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the data in Module 1. Figure 4 is an example of the output for Module 1. After all data has been transmitted to the printer, the model will return to the Module 1 submenu and the message "LAST STEP WAS OUTPUT" will be displayed. To return to the Main Menu, press [ENTER].

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 4
H A R D C O S T S

PROJECT NAME: TEST

DATE: 05-02-88

COST ITEM	UNITS	COST PER UNIT	COST (MIL)	START MONTH	P A Y M E N T S			DURATION YEAR (MONTHS)	EXPENDY. PATTERN	% LUMP SUM
					YEAR	ENDIN MONTH	YEAR			
1.CONSTRUCTION NO. OF TYPES:	3									
STRUCTURE A	100000	75.00	7.50	7	1988	9	1989	15	12	10.00
STRUCTURE B	250000	84.31	21.08	7	1988	9	1989	15	11	10.00
STRUCTURE C	175500	97.42	17.10	7	1988	9	1989	15	1	0.00
ON SITE PARKING (STALLS)	200	1200.00	0.24	1	1989	6	1989	6	2	25.00
OFF SITE PARKING(STALLS)	150	500.00	0.08	1	1988	7	1988	7	1	0.00

CONSTRUCTION COSTS 45.99 GROSS BUILDING AREA 525500 PARKING STALLS 350

2. OFF SITE CONSTRUCTION										
CONSTRUCTION FOR RTD			1.59	2	1989	9	1989	8	2	20.00
OTHER OFF SITE CONSTR.			0.50	3	1989	5	1989	3	1	20.00

OFF SITE CONSTRUCTION 2.09

TOTAL CONSTRUCTION COSTS 48.08

COST ITEM	PERCENT OF CONSTRUCTION COSTS	COST (MIL)	START MONTH	YEAR	ENDIN MONTH	DURATION YEAR (MONTHS)	EXPENDY. PATTERN	% LUMP SUM	
3. LAND									
PARCEL COSTS	7.61	3.50	4	1988	6	1988	3	1	0.00
4. ADDITIONAL COSTS									
EASEMENT	10.00	4.60	5	1989	5	1989	1	1	100.00
GRADING & DEMOLITION	1.09	0.50	4	1988	6	1988	3	2	0.00

TOTAL LAND & SITE PREP. COSTS 8.60

TOTAL LAND AND CONSTRUCTION 56.68

COST ITEM	PERCENT OF CONSTRUCTION COSTS	COST (MIL)	START MONTH	YEAR	ENDIN MONTH	DURATION YEAR (MONTHS)	EXPENDY. PATTERN	% LUMP SUM	
5.SITE IMPROVEMENTS									
% OF CONSTRUCTION COSTS	12.00	5.52	7	1989	10	1989	4	1	0.00
6.CONTINGENCY									
% OF CONSTRUCTION COSTS	5.00	2.30	7	1988	9	1989	15	1	0.00

TOTAL H A R D C O S T S 64.49

4.2 MODULE 2 - INPUT BASIC SOFT COSTS

When the user enters 2 from the Main Menu, Module 2 will be loaded. Module 2 is used to enter soft cost data for the project. Module 2 contains seven subfunctions, each of which is used to input a specified set of data to cost items contained in the Module.

When Module 2 is loaded, the Module 2 Submenu will be displayed at the top of the screen:

```
MAIN-MENU  ENG/ARCH  LEGAL  FINANCIAL  PERMITS  SUPERVISE  ADMIN.  OUTPUT
```

In Module 2, these subfunctions may be executed in any order. The user may choose to execute any or all of the subfunctions in the Module, depending upon the data to be entered. The user may choose the subfunction desired by either moving the cursor to the option and pressing [ENTER] or by typing the first letter of the desired option. If the user chooses MAIN-MENU, the model will return to the Main Menu (see Section 3 of this manual for instructions regarding operation of the Main Menu.) The following sections describe the operation of the subfunctions of this module.

4.2.1 The ENG/ARCH Subfunction

Purpose

This subfunction allows the user to enter data on total costs for engineering and architectural services for the project. The user may input the cost of engineering and architecture services as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 2: ENG/ARCH FEES.

Operation

When this subfunction is chosen, the model will set the cursor to ENG/ARCH FEES and the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will return to the Module 2 Submenu and the message "LAST STEP WAS ENG/ARCH" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the ENG/ARCH line and return to the Module 2 Submenu. The message "LAST STEP WAS ENG/ARCH" will be displayed.
- 4.MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the ENG/ARCH Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1.RELATIVE INPUT 2.ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: **PERCENT ?** The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: **AMOUNT ?** The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust the cost for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., design costs) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN - enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1. UNF 2. UNF* 11. BL 12. BL*

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for this cost item, the model will return to the Module 2 Submenu and the message "LAST STEP WAS ENG/ARCH" will be displayed.

4.2.2 The LEGAL Subfunction

Purpose

This subfunction allows the user to enter data on total costs for legal and accounting services for the project. These costs may be entered for two separate time periods, pre-construction and during construction. The user may input the cost of legal and accounting services as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 2: LEGAL/ACCOUNTING FEES (PRE CONST.); LEGAL/ACCOUNTING FEES (DURING CONST.).

Operation

When this subfunction is chosen, the model will set the cursor to LEGAL/ACCOUNTING FEES (PRE CONST.). In this subfunction the model cycles through the two cost items in a fixed order. The model will go first to LEGAL/ACCOUNTING FEES (PRE CONST.), then to LEGAL/ACCOUNTING FEES (DURING CONST.) and will then return to the Module 2 Submenu. If the user wishes to return to LEGAL/ACCOUNTING FEES (PRE CONST.), the LEGAL subfunction must be selected again from the Module 2 Submenu.

When the LEGAL subfunction is selected from the Module 2 Submenu, the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the two cost items in this subfunction in order (first LEGAL/ACCOUNTING FEES (PRE CONST.), then LEGAL/ACCOUNTING FEES (DURING CONST.)). If the cursor is on LEGAL/ACCOUNTING FEES (PRE CONST.) when this option is chosen, the model will move the cursor to the LEGAL/ACCOUNTING FEES (DURING CONST.) cost item and provide the submenu again. If the cursor is on LEGAL/ACCOUNTING FEES (DURING CONST.) when this option is chosen, the model will return to the Module 2 Submenu and the message "LAST STEP WAS LEGAL" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on LEGAL/ACCOUNTING FEES (PRE CONST.), the model will clear the data, move the cursor to the LEGAL/ACCOUNTING FEES (DURING CONST.) cost item and provide the submenu again. If the cursor is on the LEGAL/ACCOUNTING FEES (DURING CONST.) line, the model will clear the data and return to the Module 2 Submenu. The message "LAST STEP WAS LEGAL" will be displayed.

4. MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the LEGAL Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1.RELATIVE INPUT 2.ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: PERCENT ? The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: AMOUNT ? The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust this cost for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., design costs) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for a cost item, the model will move to the next line in the sequence. If the user has just entered data for LEGAL/ACCOUNTING FEES (PRE CONST.), the model will move the cursor to LEGAL/ACCOUNTING FEES (DURING CONST.) and return to the **1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?** submenu. If the data has been entered for LEGAL/ACCOUNTING FEES (DURING CONST.), the model will return to the Module 2 Submenu and the message "LAST STEP WAS LEGAL" will be displayed.

4.2.3 The FINANCIAL Subfunction

Purpose

This subfunction allows the user to enter data on total costs for financial and marketing services for the project. These costs may be entered for two separate time periods, pre-construction and during construction. The user may input the cost of financial and marketing services as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 2: MARKETING FEES (PRE CONST.); MARKETING FEES (DURING CONST.).

Operation

When this subfunction is chosen, the model will set the cursor to MARKETING FEES (PRE CONST.). In this subfunction the model cycles through the two cost items in a fixed order. The model will go first to MARKETING FEES (PRE CONST.), then to MARKETING FEES (DURING CONST.) and will then return to the Module 2 Submenu. If the user wishes to return to MARKETING FEES (PRE CONST.), the FINANCIAL subfunction must be selected again from the Module 2 Submenu.

When the FINANCIAL subfunction is selected from the Module 2 Submenu, the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the two cost items in this subfunction in order (first MARKETING FEES (PRE CONST.), then MARKETING FEES (DURING CONST.)). If the cursor is on MARKETING FEES (PRE CONST.) when this option is chosen, the model will move the cursor to the MARKETING FEES (DURING CONST.) cost item and provide the submenu again. If the cursor is on MARKETING FEES (DURING CONST.) when this option is chosen, the model will return to the Module 2 Submenu and the message "LAST STEP WAS FINANCIAL" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on MARKETING FEES (PRE CONST.), the model will clear the data, move the cursor to the MARKETING FEES (DURING CONST.) cost item and provide the submenu again. If the cursor is on the MARKETING FEES (DURING CONST.) line, the model will clear the data and return to the Module 2 Submenu. The message "LAST STEP WAS FINANCIAL" will be displayed.

4. MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the FINANCIAL Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1. RELATIVE INPUT 2. ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: **PERCENT ?** The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: **AMOUNT ?** The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust this cost for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., design costs) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for a cost item, the model will move to the next line in the sequence. If the user has just entered data for PERMITS (PRE CONST.), the model will move the cursor to PERMITS (DURING CONST.) and return to the **1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?** submenu. If the data has been entered for PERMITS (DURING CONST.), the model will return to the Module 2 Submenu and the message "LAST STEP WAS FINANCIAL" will be displayed.

4.2.4 The PERMITS Subfunction

Purpose

This subfunction allows the user to enter data on total costs for permits and interim property taxes for the project. These costs may be entered for two separate time periods, pre-construction and during construction, for each cost item. The user may input the cost of permits and property taxes as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 2: PERMITS (PRE CONST.); PERMITS (DURING CONST.); INTERIM PROPERTY TAX (PRE CONST.); INTERIM PROPERTY TAX (DURING CONST.).

Operation

When this subfunction is chosen, the model will set the cursor to PERMITS (PRE CONST.). In this subfunction the model cycles through the four cost items in a fixed order. The model will go first to PERMITS (PRE CONST.), then to PERMITS (DURING CONST.), then to INTERIM PROPERTY TAX (PRE CONST.), then to INTERIM PROPERTY TAX (DURING CONST.) and will then return to the Module 2 Submenu. If the user wishes to return to PERMITS (PRE CONST.), the PERMITS subfunction must be selected again from the Module 2 Submenu.

When the PERMITS subfunction is selected from the Module 2 Submenu, the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the four cost items in this subfunction in order (first PERMITS (PRE CONST.), then PERMITS (DURING CONST.), then INTERIM PROPERTY TAX (PRE CONST.), then INTERIM PROPERTY TAX (DURING CONST.)). If the cursor is on one of the first three cost items when this option is chosen, the model will move the cursor to the next cost item and provide the submenu again. If the cursor is on INTERIM PROPERTY TAX (DURING CONST.) when this option is chosen, the model will return to the Module 2 Submenu and the message "LAST STEP WAS PERMITS" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on one of the first three cost items, the model will clear the data, move the cursor to the next cost item and provide the submenu again. If the cursor is on the INTERIM PROPERTY TAX (DURING CONST.) line, the model will clear the data and return to the Module 2 Submenu. The message "LAST STEP WAS PERMITS" will be displayed.

4. MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the PERMITS Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1. RELATIVE INPUT 2. ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: PERCENT ? The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: AMOUNT ? The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust this cost for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., design costs) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN -

enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1.^UNF 2.UNF^ 11.^BL 12.BL^

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for a cost item, the model will move to the next line in the sequence. If the user has just entered data for one of the first three cost items, the model will move the cursor to the next cost item and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the data has been entered for INTERIM PROPERTY TAX (DURING CONST.), the model will return to the Module 2 Submenu and the message "LAST STEP WAS PERMITS" will be displayed.

4.2.5 The SUPERVISE Subfunction

Purpose

This subfunction allows the user to enter data on total costs for construction management services for the project. The user may input the cost of construction management services as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 2: CONSTRUCTION MANAGEMENT.

Operation

When this subfunction is chosen, the model will set the cursor to CONSTRUCTION MANAGEMENT and the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will return to the Module 2 Submenu and the message "LAST STEP WAS SUPERVISE" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the CONSTRUCTION MANAGEMENT line and return to the Module 2 Submenu. The message "LAST STEP WAS SUPERVISE" will be displayed.
- 4.MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the SUPERVISE Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1.RELATIVE INPUT 2.ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: **PERCENT ?** The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: **AMOUNT ?** The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust this cost for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., design costs) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN - enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1. UNF 2. UNF* 11. BL 12. BL*

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for this cost item, the model will return to the Module 2 Submenu and the message "LAST STEP WAS SUPERVISE" will be displayed.

4.2.6 The ADMIN. Subfunction

Purpose

This subfunction allows the user to enter data on total costs for administration and overhead for the project. The user may input the cost of administration and overhead as either an absolute amount or as a percentage of construction costs. This subfunction is used to enter or change data in the following cost items of Module 2: ADMINISTRATION & OVERHEAD.

Operation

When this subfunction is chosen, the model will set the cursor to ADMINISTRATION & OVERHEAD and the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will return to the Module 2 Submenu and the message "LAST STEP WAS ADMIN" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the ADMINISTRATION & OVERHEAD line and return to the Module 2 Submenu. The message "LAST STEP WAS ADMIN" will be displayed.
- 4.MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the ADMIN Subfunction

To input or change data entered in the cost items of this subfunction, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the model will provide the prompt:

1.RELATIVE INPUT 2.ABSOLUTE AMOUNT ?

Data in this subfunction may be input as either a percentage of construction costs or as an absolute amount. For this purpose, construction costs are defined as the sum of building construction costs and parking facilities costs. The user should enter 1 or 2 and press [ENTER] as desired.

If the user enters 1, the model will ask: **PERCENT ?** The user should enter the percentage of the total construction cost which the cost item represents. The model will then calculate the absolute amount of the cost item.

If the user enters 2, the model will ask: **AMOUNT ?** The user should enter the absolute amount of the cost item, in millions of current dollars (the model will adjust this cost for inflation in Module 4). The model will then calculate the percentage of construction cost which this item represents.

The user will then be prompted to provide the following information in turn for the cost item:

START MONTH and YEAR - enter the starting month and year for payments on this cost item. If the user enters 0 or a number greater than 12 for the starting month, the model will provide the prompt again. The starting year must be greater than 1900.

END MONTH and YEAR - enter the ending month and year for payments on this cost item. The combination of the inputs for start month/year and end month/year defines the payment period, or the time period in which expenditures are expected to be made for the cost item. The payment period may or may not be the same as the construction period. For instance, while the payment period for a construction cost item would be more likely to coincide with the construction period, the payment period for a construction preparation cost item (e.g., design costs) would most likely be completed prior to the commencement of construction.

The payment period entered cannot exceed 10 years. If the user enters an ending month and year for this cost item which exceeds ten years (120 months), the model will provide the prompts for starting month/year and ending month/year again. If the user enters an ending month/year which is prior to the starting month/year, the model will provide the prompts for starting month/year and ending month/year again. In addition to these constraints, the aggregate payment period for the project (i.e., the total time frame encompassing the payment periods of all individual cost items of the project) cannot exceed 12 years. If any cost item falls outside this 12-year envelope, an error message will be generated in the printout for Module 3 for that cost item.

EXPENDITURE PATTERN - enter the payment schedule. This function allows the user to specify the expected pattern of payments for this cost item. Four options are provided by the model:

1. UNF 2. UNF* 11. BL 12. BL

1.^UNF is uniform distribution of payments (equal monthly payments) with a lump sum payment at the beginning of the payment period.

2.UNF^ is uniform distribution of payments (equal monthly payments) with a lump sum payment at the end of the payment period.

11.^BL is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the beginning of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

12.BL^ is a bell-shaped distribution of payments (see Figure 3, page 13) with a lump sum payment at the end of the payment period. This distribution may only be used when the payment period is 12 months or greater. If a payment period of less than 12 months is used with this expenditure pattern, the model will display an error message in the printout for Module 3 on this line.

The user should enter either 1, 2, 11 or 12 depending upon the payment schedule desired. If an input other than 1, 2, 11 or 12 is provided, the model will provide the prompt for this input again. For more detail concerning these payment schedules, consult the Joint Development Cash Flow Model Technical Documentation.

LUMP SUM PERCENTAGE - enter the percentage of the total payment which the lump sum payment represents. The user may input a number from 0 to 100. If a number greater than 100 is input, the model will provide the prompt again. If the user does not desire to reflect a lump sum payment in the payment schedule, enter 0.

After all data have been entered for this cost item, the model will return to the Module 2 Submenu and the message "LAST STEP WAS ADMIN" will be displayed.

4.2.7 The OUTPUT Subfunction

Purpose

This subfunction allows the user to print the data currently contained in Module 2.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the data in Module 2. Figure 5 is an example of the output for Module 2. After all data has been transmitted to the printer, the model will return to the Module 2 submenu and the message "LAST STEP WAS OUTPUT" will be displayed. To return to the Main Menu, press [ENTER].

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 5

S O F T C O S T S

PROJECT NAME:	TEST	DATE: 05-02-88							
COST ITEM	PERCENT OF CONSTRUCTION COSTS	COST (MIL)	START MONTH	P A Y M E N T S			DURATION (MONTHS)	EXPENDT. PATTERN	% LUMP SUM
				YEAR	ENDIN MONTH	YEAR			
1.ENG/ARCH FEES									
% OF CONSTRUCTION COSTS	4.00	1.84	1	1988	5	1988	5	2	0.00
2.LEGAL/ACCOUNTING FEES									
% OF CONST.(PRE CONST.)	1.00	0.46	1	1988	6	1988	6	1	0.00
% OF CONST.(DURING CONST.)	1.50	0.69	7	1988	9	1989	15	2	0.00
TOTAL LEGAL/ACCOUNTING FEES		1.15							
3.MARKETING FEES									
% OF CONST.(PRE CONST.)	0.87	0.40	1	1988	6	1988	6	1	0.00
% OF CONST.(DURING CONST.)	2.00	0.92	7	1988	9	1989	15	2	10.00
TOTAL MARKETING FEES		1.32							
4.PERMITS AND PROP. TAXES									
A.PERMITS									
% OF CONST.(PRE CONST.)	0.50	0.23	1	1988	6	1988	6	1	10.00
% OF CONST.(DURING CONST.)	2.50	1.15	7	1988	9	1989	15	11	0.00
TOTAL PERMITS		1.38							
B.INTERIM PROPERTY TAX									
% OF CONST.(PRE CONST.)	1.09	0.50	1	1988	6	1988	6	2	50.00
% OF CONST.(DURING CONST.)	1.00	0.46	7	1988	9	1989	15	12	10.00
TOTAL INTERIM PROPERTY TAX		0.96							
TOTAL PERMITS AND PROP. TAXES		2.34							
TOTAL COMMITTED SOFT COSTS		6.65							
5.CONSTRUCTION MANAGEMENT									
% OF CONSTRUCTION COSTS	5.00	2.30	7	1988	9	1989	15	1	0.00
6.ADMINISTRATION & OVERHEAD									
% OF CONSTRUCTION COSTS	15.00	6.90	1	1988	9	1989	21	2	25.00
TOTAL S O F T C O S T S		15.85							

4.3 MODULE 3 - EXPENDITURE SCHEDULE BY MID-YEAR

When the user enters 3 from the Main Menu, Module 3 will be loaded. Module 3 calculates the payment schedule for the cost items in Modules 1 and 2 by taking the costs, expenditure patterns and lump sum payment percentages and converting them to a schedule of expenditures by semi-annual period for each cost item. Module 3 contains four subfunctions, which allow the user to initiate the calculations, print the output of the calculations and save the data which is to be carried forward to Module 4.

When Module 3 is loaded, the Module 3 Submenu will be displayed at the top of the screen:

```
MAIN-MENU  BEGIN  HARD OUTPUT  SOFT OUTPUT  FINISH
```

In Module 3, the BEGIN subfunction must be executed first and the FINISH subfunction must be executed last. The remaining subfunctions, HARD OUTPUT and SOFT OUTPUT, may be executed in any order, or the user may choose not to perform them at all. The user may choose the subfunction desired by either moving the cursor to the option and pressing [ENTER] or by typing the first letter of the desired option. If the user chooses MAIN-MENU, the model will return to the Main Menu (see Section 3 of this manual for instructions regarding operation of the Main Menu.) The following sections describe the operation of the subfunctions of this module.

4.3.1 The BEGIN Subfunction

Purpose

The purpose of this subfunction is to calculate the expenditure schedule from the inputs provided by the user in Modules 1 and 2. The model will input the distribution tables which are used to calculate semi-annual expenditures and the worksheets which contain the formulas for the calculations. This subfunction must be executed first when Module 3 is selected.

Operation

When this subfunction is chosen, the model will first load the worksheet AA31 which contains the distribution tables and the hard cost expenditure schedule calculation. The model will display the message "LOADING A FILE" on the screen as the worksheet is being loaded.

The model will then provide the prompt:

```
MANUAL ? 1: YES 2: NO
```

To enter manual mode at this point, enter 1 and press [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

To continue with the automatic operation of the model, enter 2 and press [ENTER]. The model will begin the calculations and display the message "CALCULATING PLEASE WAIT" on the screen. The calculations performed by the model at this point require approximately 3 to 4 minutes to complete.

After the hard cost calculations are complete, in order to keep from exceeding the capacity of the LOTUS 1-2-3 program and to control the calculation time for this Module, the model will automatically extract a set of data, clear the worksheet, reenter the extracted data and then load worksheet AA32 which contains the soft cost expenditure schedule calculations. Once this process is complete, the model will begin the remaining calculations and display the message "CALCULATING PLEASE WAIT" on the screen. The calculations performed at this point require approximately 3 to 4 minutes to complete. Once the calculations are complete, the model will return to the Module 3 Submenu and the message "LAST STEP WAS BEGIN" will be displayed. The entire sequence of the BEGIN subfunctions requires approximately 10 minutes to complete.

4.3.2 The HARD OUTPUT Subfunction

Purpose

This subfunction allows the user to print the results of the hard cost expenditure schedule calculations. The BEGIN subfunction for Module 3 must be executed prior to performing this subfunction.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the hard cost expenditure schedule data from Module 3. Figure 6 is an example of this output. After all data has been transmitted to the printer, the model will return to the Module 3 submenu and the message "LAST STEP WAS HARD OUTPUT" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 6

SEMI-ANNUAL EXPEND. DISTRIBUTED PAYMENTS	YEAR-> HALF->	1987 2	1988 1	1988 2	1989 1	1989 2	1990 1	1990 2	1991 1	1991 2	1992 1	1992 2	1993 1	1993 2	1994 1	1994 2	1995 1	1995 2	1996 1	1996 2	1997 1
COST ITEMS:																					
STRUCTURE A		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STRUCTURE B		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STRUCTURE C		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ON SITE PARKING		0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF SITE PARKING		0	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONSTR. FOR RTD		0	0	0	5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF SITE CONSTR.		0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAND COSTS		0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EASEMENT		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRADING & DEMOL.		0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT		0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONTINGENCY		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LUMP SUM PAYMENTS																					
COST ITEMS:																					
STRUCTURE A		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STRUCTURE B		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STRUCTURE C		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ON SITE PARKING		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF SITE PARKING		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONSTR. FOR RTD		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF SITE CONSTR.		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAND COSTS		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EASEMENT		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRADING & DEMOL.		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SITE IMPROVEMENT		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONTINGENCY		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL SEMI-ANNUAL PAYMENTS																					
COST ITEMS:																					
STRUCTURE A		0.00	0.00	2.69	2.58	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STRUCTURE B		0.00	0.00	9.66	7.25	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STRUCTURE C		0.00	0.00	6.84	6.84	3.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ON SITE PARKING		0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFF SITE PARKING		0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONSTR. FOR RTD		0.00	0.00	0.00	0.79	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFF SITE CONSTR.		0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LAND COSTS		0.00	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EASEMENT		0.00	0.00	0.00	4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRADING & DEMOL.		0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SITE IMPROVEMENT		0.00	0.00	0.00	0.00	5.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONTINGENCY		0.00	0.00	0.92	0.92	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL HARD COSTS		0.00	4.06	20.11	23.72	16.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.3.3 The SOFT OUTPUT Subfunction

Purpose

This subfunction allows the user to print the results of the soft cost expenditure schedule calculations. The BEGIN subfunction for Module 3 must be executed prior to performing this subfunction.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the soft cost expenditure schedule data from Module 3. Figure 7 is an example of this output. After all data has been transmitted to the printer, the model will return to the Module 3 submenu and the message "LAST STEP WAS SOFT OUTPUT" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 7

SEMI-ANNUAL EXPEND. DISTRIBUTED PAYMENTS	YEAR-> HALF->	1987 2	1988 1	1988 2	1989 1	1989 2	1990 1	1990 2	1991 1	1991 2	1992 1	1992 2	1993 1	1993 2	1994 1	1994 2	1995 1	1995 2	1996 1	1996 2	1997 1

COST ITEM:	ENG/ARCH	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEGAL/ACCOUNTING(PRE-CONS.)		0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEGAL/ACCOUNTING(CONSTRUCTION)		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MARKETING(PRE-CONS.)		0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MARKETING(CONS.)		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERMITS(PRE-CONSTRUCTION)		0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERMITS(CONSTRUCTION)		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAXES(PRE-CONSTRUCTION)		0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAXES(CONSTRUCTION)		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONSTRUCTION MANAGEMENT ADMINISTRATION & OVERHEAD		0	0	6	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LUMPSUM PAYMENTS																					

COST ITEM:	ENG/ARCH	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEGAL/ACCOUNTING(PRE-CONS.)		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEGAL/ACCOUNTING(CONSTRUCTION)		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MARKETING(PRE-CONS.)		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MARKETING(CONS.)		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERMITS(PRE-CONSTRUCTION)		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PERMITS(CONSTRUCTION)		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAXES(PRE-CONSTRUCTION)		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAXES(CONSTRUCTION)		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONSTRUCTION MANAGEMENT ADMINISTRATION & OVERHEAD		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTAL SEMI-ANNUAL PAYMENTS																					

COST ITEM:	ENG/ARCH	0.00	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LEGAL/ACCOUNTING(PRE-CONS.)		0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LEGAL/ACCOUNTING(CONSTRUCTION)		0.00	0.00	0.28	0.28	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARKETING(PRE-CONS.)		0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARKETING(CONS.)		0.00	0.00	0.33	0.33	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERMITS(PRE-CONSTRUCTION)		0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERMITS(CONSTRUCTION)		0.00	0.00	0.46	0.44	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TAXES(PRE-CONSTRUCTION)		0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TAXES(CONSTRUCTION)		0.00	0.00	0.16	0.15	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONSTRUCTION MANAGEMENT ADMINISTRATION & OVERHEAD		0.00	0.00	0.92	0.92	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TOTAL SOFT COSTS		0.00	4.91	3.63	3.60	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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4.3.4 The FINISH Subfunction

Purpose

The purpose of this subfunction is to extract data to be passed to Module 4. The files and worksheets which comprise Module 3 approach the capacity of the LOTUS 1-2-3 program. Because not all the data from Module 3 is needed in future Modules, this subfunction allows the pertinent data to be carried forward while the remaining data is discarded. This subfunction must be executed prior to proceeding to Module 4.

Operation

The model will first provide a message to the user that it is necessary for the user to provide four file names which must be reentered in the same order in the next Module. The model will provide the prompt HIT [ENTER] TO CONTINUE at the top of the screen.

When the user is ready to proceed, press [ENTER] and the model will provide the LOTUS 1-2-3 command:

Enter xtract file name:

The user should enter the name of the first file. The model will then provide the command again. The user should enter the name of the second file and so on until all four file names have been entered. The model will then clear the worksheet and reload the AUTO program. The user must press [ALT]-[M] to return to the Main Menu, then enter 4 and press [ENTER] to continue with the model.

NOTE TO USERS: Do not use file names which have previously been used and which are stored in the directory where the model resides. If a duplicate file name is used, the model will abort. To recover, if the user inadvertently enters a previously used file name, press [ESCAPE], then [ALT]-[M], then select FINISH again to resume automatic operation of the model. No data will be lost in this process.

The following file names are already used by the Joint Development Cash Flow Model and therefore restricted from use as file names in this subfunction:
AUTO, A1, A2, A3, A4, A5, A6, A7, AA31, AA32, AA41, AA51, AA61, AA71, ZTEMP2.

4.4 MODULE 4 - SHORT TERM LOAN CALCULATIONS

When the user enters 4 from the Main Menu, Module 4 will be loaded. Module 4 adjusts the expenditure schedule calculated in Module 3 for inflation and calculates the amount of the construction loan for the project. Module 4 contains seven subfunctions, which allow the user to enter the inflation rates to be used by the model, specify the costs eligible for loan financing and enter the parameters of the construction loan, calculate the loan and print the output of the calculations.

When Module 4 is loaded, the Module 4 Submenu will be displayed at the top of the screen:

```
MAIN-MENU  BEGIN  INFL.  HARD-COSTS  SOFT-COSTS  LOAN  CALC.  PRINT
```

In Module 4, the BEGIN subfunction must be executed first. The next four subfunctions: INFL., HARD-COSTS, SOFT-COSTS and LOAN, may be executed in any order. The INFL. and LOAN subfunctions are required to be performed at some point in the execution of Module 4. The HARD-COSTS and SOFT-COSTS subfunctions are not required, but may be performed at the user's option. If not performed, the default values for these subfunctions will be used by the model (see sections 4.4.3 and 4.4.4). The CALC. subfunction must be performed after these four subfunctions are completed and before the PRINT subfunction is executed. The PRINT subfunction may be performed at the user's option, but must be executed after all other subfunctions of this Module are completed. The user may choose the subfunction desired by either moving the cursor to the option and pressing [ENTER] or by typing the first letter of the desired option. If the user chooses MAIN-MENU, the model will return to the Main Menu (see Section 3 of this manual for instructions regarding operation of the Main Menu.) The following sections describe the operation of the subfunctions of this module.

4.4.1 The BEGIN Subfunction

Purpose

The purpose of this subfunction is to reenter the data saved at the end of Module 3 and load the worksheet for the calculations which are performed by the model in Module 4. This subfunction must be executed first when Module 4 is selected. The FINISH subfunction of Module 3 must be executed prior to this subfunction.

Operation

When this subfunction is chosen, the model will first prompt the user to provide the four file names provided in the FINISH subfunction of Module 3. These file names must be entered in the same order in which they were entered in Module 3. The model will provide the LOTUS 1-2-3 command:

Name of file to combine:

The user should enter the name of the first file. The model will then provide the command again. The user should enter the name of the second file and so on until all four file names have been entered. The model will then load the worksheet AA41 which contains the calculations to be performed in Module 4. After the worksheet is loaded, the model will return to the Module 4 Submenu and the message "LAST STEP WAS BEGIN" will be displayed.

4.4.2 The INFL. Subfunction

Purpose

The purpose of this subfunction is to allow the user to enter the inflation rates to be used by the model. The BEGIN subfunction for Module 4 must be executed prior to performing this subfunction.

Operation

When this subfunction is chosen, the model will provide the prompt:

PRESENT YEAR ?

The user should enter the base year for purposes of calculating the effect of inflation on project costs. For instance, if construction costs are expressed in 1988 dollars, the base year would be 1988. The present year must be greater than 1900. If an illegal input is provided, the model will provide the prompt again.

The model will then provide the prompt:

PRESENT MONTH ?

The user should enter the base month for inflation calculations. The user should enter a number from 1 to 12. If 0 or a number greater than 12 is provided, the model will recycle through the PRESENT YEAR and PRESENT MONTH prompts again.

The model will then provide the prompt:

HARD COSTS INFLATION ?

The user should enter the inflation rate for hard costs. If the user does not wish to reflect any effects of inflation on the cost of the project, enter 0.

The model will then provide the prompt:

SOFT COSTS INFLATION ?

The user should enter the inflation rate for soft costs. If the user does not wish to reflect any effects of inflation on the cost of the project, enter 0.

After entering this data, the model will adjust the expenditure schedule calculated in Module 3 for inflation and return to the Module 4 Submenu. The message "LAST STEP WAS INFL." will be displayed.

4.4.3 The HARD-COSTS Subfunction

Purpose

The purpose of this subfunction is to allow the user to specify which hard cost items can be financed by the construction loan. The user may specify that a hard cost item may be completely financed by the construction loan, may not be financed by the construction loan or any percentage in between. The BEGIN subfunction for Module 4 must be executed prior to performing this subfunction.

Operation

When this subfunction is chosen, the model will split the screen. The hard cost items from Module 3 will be listed on the left side of the screen. The portion of cost eligible for construction loan financing for each cost item is listed on the right side of the screen. For default values, the model assumes that all hard costs are 100% eligible for construction loan financing, except for CONSTRUCTION FOR RTD and OTHER OFF SITE CONSTRUCTION. The model assumes that none of these costs are eligible for construction loan financing.

The model will cycle through each hard cost item whereupon the user may change any of these default values. At each step, the model will provide the prompt:

* ELIGIBLE FOR LOAN (0<=<=<1)

The user should enter the percentage of the cost item, expressed in decimal form (a number between 0 and 1), which represents the proportion of the cost item which can be financed through the construction loan. If the user enters a number less than 0 or greater than 1, the model will provide the prompt again. For instance, if 100% of the item is to be financed by the construction loan, enter 1. If 50% of the item is to be financed by the construction loan, enter .5. If none of the item is to be financed by the construction loan, enter 0. An input must be provided for each cost item. After the input is provided by the user, the model will step down to the next cost item.

NOTE TO USERS: In this subfunction, it is essential that the user step through each cost item and return to the Module 4 Submenu automatically. Do not use [CTRL] [BREAK] and [ALT]-[M] to break the program and return to the Module 4 Submenu. The subfunction must be completed automatically in order to close the split screen and prevent it from being carried forward to the next subfunction. In the event that the user inadvertently breaks automatic operation in the middle of this subfunction, use [ALT]-[M] to return to the Module 4 Submenu, select the HARD-COSTS subfunction and cycle completely through until the model performs the automatic return to the Module 4 Submenu. Then run the HARD-COSTS subfunction again to ensure that the model has the correct inputs for this subfunction.

After cycling through the last hard cost item, the model will return to the Module 4 Submenu and the message "LAST STEP WAS HARD-COSTS" will be displayed.

4.4.4 The SOFT-COSTS Subfunction

Purpose

The purpose of this subfunction is to allow the user to specify which soft cost items can be financed by the construction loan. The user may specify that a soft cost item may be completely financed by the construction loan, may not be financed by the construction loan or any percentage in between. The BEGIN subfunction for Module 4 must be executed prior to performing this subfunction.

Operation

When this subfunction is chosen, the model will split the screen. The soft cost items from Module 3 will be listed on the left side of the screen. The portion of cost eligible for construction loan financing for each cost item is listed on the right side of the screen. For default values, the model assumes that none of the soft costs are eligible for construction loan financing.

The model will cycle through each soft cost item whereupon the user may change any of these default values. At each step, the model will provide the prompt:

* ELIGIBLE FOR LOAN (0<=*=<1)

The user should enter the percentage of the cost item, expressed in decimal form (a number between 0 and 1), which represents the proportion of the cost item which can be financed through the construction loan. If the user enters a number less than 0 or greater than 1, the model will provide the prompt again. For instance, if 100% of the item is to be financed by the construction loan, enter 1. If 50% of the item is to be financed by the construction loan, enter .5. If none of the item is to be financed by the construction loan, enter 0. An input must be provided for each cost item. After the input is provided by the user, the model will step down to the next cost item.

NOTE TO USERS: In this subfunction, it is essential that the user step through each cost item and return to the Module 4 Submenu automatically. Do not use [CTRL] [BREAK] and [ALT]-[M] to break the program and return to the Module 4 Submenu. The subfunction must be completed automatically in order to close the split screen and prevent it from being carried forward to the next subfunction. In the event that the user inadvertently breaks automatic operation in the middle of this subfunction, use [ALT]-[M] to return to the Module 4 Submenu, select the SOFT-COSTS subfunction and cycle completely through until the model performs the automatic return to the Module 4 Submenu. Then run the SOFT-COSTS subfunction again to ensure that the model has the correct inputs for this subfunction.

After cycling through the last soft cost item, the model will return to the Module 4 Submenu and the message "LAST STEP WAS SOFT-COSTS" will be displayed.

4.4.5 The LOAN Subfunction

Purpose

The purpose of this subfunction is to allow the user to enter the key parameters for the construction loan for the project. The BEGIN subfunction for Module 4 must be executed prior to performing this subfunction.

Operation

When this subfunction is chosen, the model will provide the prompt:

STARTING YEAR ?

The user should enter the starting year for the construction loan period. The year must be greater than 1900.

The model will then provide the prompt:

STARTING MONTH ?

The user should enter the starting month for the construction loan period. This input must be a number between 1 and 12. If 0 or a number greater than 12 is entered, the model will provide the prompt again.

The model will then provide the prompt:

DURATION MONTH ?

The user should enter the length, in months, of the construction loan period. The construction loan period must be at least 7 months in duration. If a number less than 7 is provided, the model will provide the prompt again.

The model will then provide the prompt:

UPFRONT POINTS ?

The user should enter the loan fee percentage for the construction loan.

The model will then provide the prompt:

ANNUAL INTEREST ?

The user should enter the annual interest rate for the construction loan. After this input is provided, the model will return to the Module 4 Submenu and the message "LAST STEP WAS LOAN" will be displayed.

4.4.6 The CALC. Subfunction

Purpose

The purpose of this subfunction is to calculate the costs of the project which are actually financed by the construction loan using the eligibility for financing and construction loan period parameters provided by the user in the previous subfunctions. This subfunction will also calculate the total amount of the construction loan, including interest and fees. This subfunction must be performed after the INFL., HARD-COSTS (if selected), SOFT-COSTS (if selected) and LOAN subfunctions to correctly represent the construction loan in future Modules.

Operation

When this subfunction is chosen, the model will calculate the costs financed by the construction loan and the total amount of the construction loan, including interest and fees, and will return to the Module 4 Submenu. The message "LAST STEP WAS CALC" will be displayed.

The construction loan is essentially a line of credit for a specified period of time against which the developer can make withdrawals as costs are incurred. In order for a withdrawal to be made, the cost must be 1) eligible for construction loan financing and 2) fall within the construction loan period specified by the user. The construction loan calculated by the model includes only those costs which are expended (per the user's schedule entered in Modules 1 and 2) during the time period that the user designates for the construction loan (subfunction LOAN) and that the user has indicated are eligible for financing (subfunctions HARD-COSTS and SOFT-COSTS). All costs not meeting these criteria fall outside the construction loan and constitute the developer's investment (equity) in the project. Detailed descriptions of the calculation of the construction loan are contained in the Joint Development Cash Flow Model Technical Documentation.

4.4.7 The PRINT Subfunction

Purpose

This subfunction allows the user to print the results of the inflation adjustment and construction loan calculations performed in Module 4. All other subfunctions in this Module (required and selected optional) must be performed prior to executing this subfunction.

Operation

When this subfunction is chosen, the model adjust some column widths to correctly format the output and will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the hard and soft cost expenditure schedules (adjusted for inflation) and the construction loan calculations from Module 4. Figure 8 is an example of this output. After all data has been transmitted to the printer, the model will return to the Module 4 Submenu and the message "LAST STEP WAS PRINT" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 8

INFLATION AND LOAN ELIGIBILITY INFORMATION

DATE OF "PRESENT" DOLLARS		1988	2	1																					
INFLATION INFORMATION		RATE	SEMI-ANNUAL RATE																						
HARD COSTS		5.00	0.024695																						
SOFT COSTS		6.00	0.029563																						
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
INFLATION COEFFICIENTS					0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
					0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
HARD COSTS		1.000	1.000	1.025	1.050	1.076	1.103	1.130	1.158	1.186	1.214	1.246	1.276	1.308	1.340	1.373	1.407	1.442	1.477	1.514	1.551				
SOFT COSTS		1.000	1.000	1.030	1.060	1.091	1.124	1.157	1.191	1.226	1.262	1.300	1.338	1.378	1.419	1.460	1.504	1.548	1.594	1.641	1.689				
SEMI-ANNUAL EXPEND.	YEAR->	1987	1988	1988	1989	1989	1990	1990	1991	1991	1992	1992	1993	1993	1994	1994	1995	1995	1996	1996	1997				
DISTRIBUTED PAYMENTS	HALF->	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1				
TOTAL SEMI-ANNUAL PAYMENTS																									
COST ITEMS:	STRUCTURE A	0.00	0.00	2.75	2.71	2.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	STRUCTURE B	0.00	0.00	9.90	7.61	4.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	STRUCTURE C	0.00	0.00	7.01	7.18	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	ON SITE PARKING	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	OFF SITE PARKING	0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	CONSTR. FOR RTD	0.00	0.00	0.00	0.83	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	OFF SITE CONSTR.	0.00	0.00	0.00	0.53	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	LAND COSTS	0.00	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	EASEMENT	0.00	0.00	0.00	4.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	GRADING & DEMOL.	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	SITE IMPROVEMENT	0.00	0.00	0.00	0.00	5.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	CONTINGENCY	0.00	0.00	0.94	0.97	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
TOTAL HARD COSTS		0.00	4.06	20.61	24.90	17.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
TOTAL SEMI-ANNUAL PAYMENTS																									
COST ITEM:	ENG/ARCH	0.00	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	LEGAL/ACCOUNTING(PRE-CONS.)	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	LEGAL/ACCOUNTING(CONSTRUCTION)	0.00	0.00	0.28	0.29	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	MARKETING(PRE-CONS.)	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	MARKETING(CONS.)	0.00	0.00	0.34	0.35	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	PERMITS(PRE-CONSTRUCTION)	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	PERMITS(CONSTRUCTION)	0.00	0.00	0.47	0.47	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	TAIES(PRE-CONSTRUCTION)	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	TAIES(CONSTRUCTION)	0.00	0.00	0.17	0.17	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	CONSTRUCTION MANAGEMENT	0.00	0.00	0.95	0.97	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	ADMINISTRATION & OVERHEAD	0.00	1.48	1.52	1.57	2.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
TOTAL SOFT COSTS		0.00	4.91	3.73	3.82	4.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
FINANCIAL SUMMARY																									
HARD COSTS ELIGIBLE FOR LOAN		0.00	2.96	5.10	10.02	6.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
TOTAL COSTS ELIGIBLE FOR LOAN		0.00	7.01	8.04	13.03	9.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

FIGURE 8 (cont)

COSTS NOT ELIGIBLE FOR LOAN 0.00 1.96 16.31 15.69 11.95 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

CONSTRUCTION FINANCING LINE OF CREDIT INFORMATION	BEGINNING			ENDING		ANNUAL MONTHLY		POINTS(%)	INTEREST	INTEREST
	YEAR	MONTH	DURATION(MONTH)	YEAR	MONTH	INTEREST	INTEREST			
	1987	12	21	1989	8	4.00	12.00	0.01	1.01	
		2			2	1				

SEMI-ANNUAL CREDIT SCHEDULE	YEAR->	1987	1988	1988	1989	1989	1990	1990	1991	1991	1992	1992	1993	1993	1994	1994	1995	1995	1996	1996	1997	
	HALF->	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	
CREDIT DUE (WHOLE PERIODS)		0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CREDIT DUE (FIRST PERIOD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CREDIT DUE (LAST PERIOD)		0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CREDIT WITHDRAWAL		0.00	7.01	8.04	13.03	4.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NON-FINANCED COSTS		0.00	1.96	16.31	15.69	17.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PAYMENTS FROM BEGINNING PERIOD		0	20	14	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRINCIPAL+INTEREST		0.00	8.35	9.01	13.76	4.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POINTS DUE		1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRINCIPAL+INTEREST+POINTS DUE		1.31	8.35	9.01	13.76	4.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.5 MODULE 5 - OPERATING COST & REVENUE ANALYSIS

When the user enters 5 from the Main Menu, Module 5 will be loaded. Module 5 allows the user to enter data concerning operating costs and revenues for the project and calculates the long term mortgage for the project from the operating cost and revenue analysis and from parameters entered by the user. Module 5 contains seven subfunctions, which allow the user to enter operating cost and revenue data for the project, enter the parameters for the long-term loan, calculate the amount of the long-term loan, print the results and save the data to be carried forward to Module 6.

When Module 5 is loaded, the Module 5 Submenu will be displayed at the top of the screen:

```
MAIN-MENU  BEGIN  INCOME  EXPENSES  DATA-MORTGAGE  ANALYZE  OUTPUT  FINISH
```

In this Module, the subfunction BEGIN must be executed first. The subfunctions INCOME, EXPENSES, and DATA-MORTGAGE may be executed in any order. However, these three subfunctions are required and must be executed prior to performing the ANALYZE subfunction. The subfunction FINISH must be executed after the subfunction ANALYZE and prior to proceeding to Module 6. The user may choose the subfunction desired by either moving the cursor to the option and pressing [ENTER] or by typing the first letter of the desired option. If the user chooses MAIN-MENU, the model will return to the Main Menu (see Section 3 of this manual for instructions regarding operation of the Main Menu.) The following sections describe the operation of the subfunctions of this module.

4.5.1 The BEGIN Subfunction

Purpose

The purpose of this subfunction is to load the worksheet for the calculations which are performed by the model in Module 5. This subfunction must be executed first when Module 5 is selected.

Operation

When this subfunction is chosen, the model will load the worksheet AA51 which contains the calculations to be performed in Module 5. After the worksheet is loaded, the model will return to the Module 5 Submenu and the message "LAST STEP WAS BEGIN" will be displayed.

4.5.2 The INCOME Subfunction

Purpose

This subfunction allows the user to enter data on operating income generated by the project. The user may input the income generated by up to three land uses for the project as well as revenues contributed to the project by the transit agency. This subfunction is used to enter or change data in the following revenue items of Module 5: LAND USE A; LAND USE B; LAND USE C; REVENUES FROM RTD.

Operation

When this subfunction is chosen, the model will set the cursor to LAND USE A. In this subfunction the model cycles through the four revenue items in a fixed order. The model will go first to LAND USE A, then to LAND USE B, then to LAND USE C, then to REVENUES FROM RTD and will then return to the Module 5 Submenu. If the user wishes to return to LAND USE A, the INCOME subfunction must be selected again from the Module 5 Submenu.

When the INCOME subfunction is selected from the Module 5 Submenu, the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

This submenu will also appear each time the model moves the cursor to a new revenue item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the revenue item where the cursor is placed. If the cursor is not on the desired revenue item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the four revenue items in this subfunction in order (first LAND USE A, then LAND USE B, then LAND USE C, then REVENUES FROM RTD). If the cursor is on one of the first three revenue items when this option is chosen, the model will move the cursor to the next revenue item and provide the submenu again. If the cursor is on REVENUES FROM RTD when this option is chosen, the model will return to the Module 5 Submenu and the message "LAST STEP WAS INCOME" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the revenue item where the cursor is located. If the cursor is on one of the first three revenue items, the model will clear the data, move the cursor to the next revenue item and provide the submenu again. If the cursor is on the REVENUES FROM RTD line, the model will clear the data and return to the Module 5 Submenu. The message "LAST STEP WAS INCOME" will be displayed.

4. MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the INCOME Subfunction

In this subfunction, the model contains two input routines, one for the LAND USE A, B, and C lines and one for the REVENUES FROM RTD line. The model will execute the correct input routine for the line where the cursor is located when the 1.INPUT option is chosen as described above.

Data Input - LAND USE A, B, and C

To input or change data entered in these revenue items, after the cursor is on the revenue item desired by the user and the user selects the 1.INPUT option as described above, the user will then be prompted to provide the following information in turn for the revenue item:

- SQ FT ? - enter the amount of square footage which is occupied by the land use (e.g., office, retail, etc.) for which data is being entered.
- INCOME/SQ FT ? - enter the annual income per square foot for the land use. This input should be in current dollars. The model will automatically adjust this input for inflation later in Module 5.
- % OCC 1ST YEAR ? - enter the projected occupancy rate for the land use for the first year of operation of the project.
- % OCC 2ND YEAR ? - enter the projected occupancy rate for the land use for the second year of operation of the project.
- % OCC 3RD YEAR ? - enter the projected occupancy rate for the land use for the third year of operation of the project.
- % OCC 4TH YEAR ? - enter the projected occupancy rate for the land use for the fourth year of operation of the project. This occupancy rate will be applied to all following operating years as well.
- % INFLATION ? - enter the assumed inflation rate to be applied to the annual income per square foot for the land use. If the annual income is fixed for the life of the project and the user does not wish to reflect any inflation, enter 0.

5 YEAR MARKUP ? - enter the assumed 5-year markup percentage for the land use. The 5-year markup percentage allows the user to reflect an increase in lease rate over inflation every five years. This increase generally corresponds to the signing of new tenants for that land use. If the user does not wish to reflect any increase in lease rates over inflation, enter 0.

After all data have been entered for a revenue item, the model will move to the next line in the sequence. If the user has just entered data for LAND USE A or LAND USE B, the model will move the cursor to the next revenue item and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user then selects the 1.INPUT option, the process described in this section will be repeated. If the data has been entered for LAND USE C, the model will move the cursor to REVENUES FROM RTD and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user selects the 1.INPUT option at this point, the input process described in the following section will be executed.

Data Input - REVENUES FROM RTD

To input or change data entered in this revenue item, after the cursor is on REVENUES FROM RTD and the user selects the 1.INPUT option as described above, the user will then be prompted to provide the following information in turn for this revenue item:

ANNUAL COST (\$M) ? - enter the amount of revenue, in millions of current dollars, to be contributed to the project annually by SCRTD.

% INFLATION ? - enter the assumed inflation rate to be applied to the annual revenues to be contributed to the project annually by SCRTD. If the amount of transit agency contribution is fixed and the user does not wish to reflect any inflation, enter 0.

After all data have been entered for REVENUES FROM RTD, the model will return to the Module 5 Submenu and the message "LAST STEP WAS INCOME" will be displayed.

4.5.3 The EXPENSES Subfunction

Purpose

This subfunction allows the user to enter data on operating costs for the project. The user may input expenses as a percentage of income for up to three different land uses for the project, or the user may enter line item costs, or a combination of the two. In this subfunction as well, the user may enter the parameters of ground or air rights lease payments paid by the developer to the transit agency as part of a joint development agreement. These costs may be entered as fixed or variable, or a combination of both. This subfunction is used to enter or change data in the following revenue items of Module 5: OP COST AS % OF REVENUES (LAND USE A, B, C); BUILDING MAINTENANCE; SECURITY; PROPERTY TAX; BENEFIT ASSESSMENT; MANAGEMENT FEES; CONTINGENCY; UTILITIES; LEASE PAYMENTS TO RTD (ANNUAL FIXED AMOUNT; 1ST PERIOD % OF GROSS INC.; LENGTH OF 1ST PERIOD; 2ND PERIOD % OF GROSS INC.; % OF ADJUSTED GROSS INCOME).

Operation

When this subfunction is chosen, the model will set the cursor to OP COST AS % OF REVENUES (LAND USE A). In this subfunction the model cycles through the 15 cost items in the fixed order outlined above and will then return to the Module 5 Submenu. If the user wishes to return to OP COST AS % OF REVENUES (LAND USE A), the EXPENSES subfunction must be selected again from the Module 5 Submenu.

When the EXPENSES subfunction is selected from the Module 5 Submenu, the following submenu will appear at the top of the screen:

1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ?

This submenu will also appear each time the model moves the cursor to a new cost item line. The user should select the desired option by entering 1, 2, 3 or 4 and pressing [ENTER]. The options of this submenu operate as follows:

- 1.INPUT - Press 1 and [ENTER]. This allows the user to input or change data on the cost item where the cursor is placed. If the cursor is not on the desired cost item, it can be moved using the 2.NEXT option (see following). The process of data input is discussed below.
- 2.NEXT - Press 2 and [ENTER]. The model will cycle through the 15 cost items in this subfunction in order. If the cursor is on one of the first 14 cost items when this option is chosen, the model will move the cursor to the next cost item and provide the submenu again. If the cursor is on LEASE PAYMENTS TO RTD - % OF ADJUSTED GROSS INCOME when this option is chosen, the model will return to the Module 5 Submenu and the message "LAST STEP WAS EXPENSES" will be displayed.
- 3.CLEAR - Press 3 and [ENTER]. The model will clear the data contained on the cost item where the cursor is located. If the cursor is on one of the first 14 cost items, the model will clear the data, move the cursor to the next cost item and provide the submenu again. If the cursor is on the LEASE PAYMENTS TO RTD - % OF ADJUSTED GROSS INCOME line, the model will clear the data and return to the Module 5 Submenu. The message "LAST STEP WAS EXPENSES" will be displayed.

4. MANUAL - Press 4 and [ENTER]. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

Data Input in the EXPENSES Subfunction

In this subfunction, the model contains five input routines:

- o one for the OP COST AS % OF REVENUES (LAND USE A, B, and C) lines
- o one for the BUILDING MAINTENANCE; SECURITY; PROPERTY TAX and BENEFIT ASSESSMENT lines
- o one for the MANAGEMENT FEES and CONTINGENCY lines
- o one for the UTILITIES line
- o one for the set of LEASE PAYMENTS TO RTD lines (ANNUAL FIXED AMOUNT; 1ST PERIOD % OF GROSS INC.; LENGTH OF 1ST PERIOD; 2ND PERIOD % OF GROSS INC.; % OF ADJUSTED GROSS INCOME).

The model will execute the correct input routine for the line where the cursor is located when the 1.INPUT option is chosen as described above.

Data Input - OP COST AS % OF REVENUES (LAND USE A, B, and C)

These cost items are expressed as a fixed percentage of the revenue generated by the different land uses which make up the project. To input or change data entered in these cost items, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the user will then be prompted to provide the following information for this cost item:

% OF REVENUES - enter the percentage of income from the specific land use which the cost item represents.

Since the income stream from which this cost item is already adjusted for inflation, no inflation rate is applied to this cost item. After this data has been entered for a cost item in this category, the model will move to the next line in the sequence. If the user has just entered data for LAND USE A or B, the model will move the cursor to the next cost item and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user then selects the 1.INPUT option, the process described in this section will be repeated. If the data has been entered for LAND USE C, the model will move the cursor to BUILDING MAINTENANCE and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user selects the 1.INPUT option at this point, the input process described in the following section will be executed.

Data Input - BUILDING MAINTENANCE, SECURITY, PROPERTY TAX, BENEFIT ASSESSMENT

These cost items are expressed as line item cost per square foot of improvement. The model multiplies the cost per square foot entered by the user by the total improvement square footage of the project to calculate these costs. To input or change data entered in these cost items, after the cursor is on the cost item

desired by the user and the user selects the 1.INPUT option as described above, the user will then be prompted to provide the following information in turn for this cost item:

- COST PER SQ FT ? - enter the cost per square foot for this cost item, in current dollars.
- % INFLATION ? - enter the assumed inflation rate to be applied to the cost per square foot for the cost item. If the cost is fixed for the life of the project and the user does not wish to reflect any inflation, enter 0.

After all data have been entered for a cost item in this category, the model will move to the next line in the sequence. If the user has just entered data for BUILDING MAINTENANCE, SECURITY or PROPERTY TAX, the model will move the cursor to the next cost item and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user selects the 1.INPUT option, the process described in this section will be repeated. If the data has been entered for BENEFIT ASSESSMENT, the model will move the cursor to MANAGEMENT FEES and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user selects the 1.INPUT option at this point, the input process described in the following section will be executed.

Data Input - MANAGEMENT FEES, CONTINGENCY

These cost items are expressed as a percentage of stabilized annual income (annual income in the year in which the occupancy rate stabilizes, without adjustment for inflation). To input or change data entered in these cost items, after the cursor is on the cost item desired by the user and the user selects the 1.INPUT option as described above, the user will then be prompted to provide the following information in turn for this cost item:

- INPUT VALUE ? - enter the cost of this cost item as a percentage of stabilized annual income.
- % INFLATION ? - enter the assumed inflation rate to be applied to the calculated cost for the cost item. If the cost is fixed for the life of the project and the user does not wish to reflect any inflation, enter 0.

After all data have been entered for a cost item in this category, the model will move to the next line in the sequence. If the user has just entered data for MANAGEMENT FEES, the model will move the cursor to the next cost item and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user selects the 1.INPUT option, the process described in this section will be repeated. If the data has been entered for CONTINGENCY, the model will move the cursor to UTILITIES and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user selects the 1.INPUT option at this point, the input process described in the following section will be executed.

Data Input - UTILITIES

This cost item is expressed as an absolute annual amount. To input or change data entered in this cost item, after the cursor is on the cost item and the user selects the 1.INPUT option as described above, the user will then be prompted to provide the following information in turn for this cost item:

- ANNUAL COST (\$M) ? - enter the annual cost of utilities for the project, in millions of current dollars.
- % INFLATION ? - enter the assumed inflation rate to be applied to the cost of utilities. If the cost is fixed for the life of the project and the user does not wish to reflect any inflation, enter 0.

After all data have been entered for UTILITIES, the model will move the cursor to LEASE PAYMENTS TO RTD - ANNUAL FIXED AMOUNT and return to the 1.INPUT 2.NEXT 3.CLEAR 4.MANUAL ? submenu. If the user selects the 1.INPUT option at this point, the input process described in the following section will be executed.

Data Input - LEASE PAYMENTS TO RTD

These cost items are expressed in terms of one or any combination of the following formats:

- 1) as an annual fixed amount
- 2) as a percentage of gross income (in this option, the user may select two different percentages of gross income for two different time periods)
- 3) as a percentage of adjusted gross income (adjusted gross income is equivalent to gross income less operating expenses).

The user may select any or all of these options for the project as follows:

- 1) To enter data for an annual fixed amount, move the cursor to the cost item ANNUAL FIXED AMOUNT, enter 1 and press [ENTER]. At the prompt:

- ANNUAL COST (\$M) ? - enter the annual fixed lease payment, in millions of current dollars.
- % INFLATION ? - enter the assumed inflation rate to be applied to the annual fixed lease payment. If the annual payment is fixed for the life of the project and the user does not wish to reflect any inflation, enter 0.

After all data have been entered for ANNUAL FIXED AMOUNT, the model will move to the line 1ST PERIOD % OF GROSS INC.

- 2) To enter data for variable lease payments which are determined as a percentage of gross income, move the cursor to the cost item 1ST PERIOD % OF GROSS INC., enter 1 and press [ENTER]. At the prompt:

INPUT VALUE ? - enter the percentage of gross income in the first time period which is to be used to calculate the variable lease payment.

After entering this data, the model will move the cursor to the line LENGTH OF 1ST PERIOD (YEARS) and provide the 1. INPUT 2. NEXT 3. CLEAR 4. MANUAL ? submenu. If a variable lease payment based on percentage of gross income is part of this project, an entry must be made on this line. Therefore, the user should enter 1 and press [ENTER]. At the prompt:

INPUT VALUE ? - enter the length, in years, of the first time period during which the percentage entered under 1ST PERIOD % OF GROSS INC. is to be applied to the gross income to calculate the lease payment. If the joint development agreement is to reflect only one percentage for determining variable lease payments over the life of the project, enter the duration of the joint development agreement. If the joint development agreement is to contain the option of reflecting two different percentages for determining variable lease payments in different time frames over the life of the project, enter the time frame during which the first percentage is to be used to determine the annual lease payment.

After the data has been entered for LENGTH OF 1ST PERIOD, the model will move the cursor to the line 2ND PERIOD % OF GROSS INC. and provide the 1. INPUT 2. NEXT 3. CLEAR 4. MANUAL ? submenu. If the joint development agreement is to reflect only one percentage for determining variable lease payments over the life of the project, enter 2 and press [ENTER] to skip to the next cost item. The model will move the cursor to the line % OF ADJUSTED GROSS INCOME.

If the joint development agreement is to contain the option of reflecting two different percentages for determining variable lease payments in different time frames over the life of the project, enter 1 and press [ENTER]. The model will provide the prompt:

INPUT VALUE ? - enter the percentage of gross income in the second time period which is to be used to calculate the variable lease payment. This percentage will be used to calculate the variable lease payment from the end of the first time period to the end of the project.

After entering this data, the model will move the cursor to the line % OF ADJUSTED GROSS INCOME.

3) To enter data for variable lease payments which are determined as a percentage of adjusted gross income (gross income less operating expenses), move the cursor to the cost item % OF ADJUSTED GROSS INCOME, enter 1 and press [ENTER]. At the prompt:

INPUT VALUE ? - enter the percentage of adjusted gross income which is to be used to calculate the variable lease payment.

After this data has been entered for % OF ADJUSTED GROSS INCOME, the model will return to the Module 5 Submenu and the message "LAST STEP WAS EXPENSES" will be displayed.

4.5.4 The DATA-MORTGAGE Subfunction

Purpose

The purpose of this subfunction is to allow the user to enter the parameters for the long-term mortgage loan for the project which are to be used by the model to calculate the long-term mortgage information for the project. The model calculates two mortgage limits for the project. The first is equal to the size of the construction loan. The second is based on the income generated by the project which is then constrained by the debt coverage ratio required by the mortgage lender. This determines the maximum mortgage payment which the project can support which is then used to calculate the maximum long-term mortgage which the project can support. The model selects the lower of these two limits as the long-term mortgage amount for the project.

Operation

When this subfunction is chosen, the model will provide the prompt:

REQUIRED DEBT RATIO ?

The user should enter the assumed debt coverage ratio for the long-term mortgage loan. The debt coverage ratio is used to determine the maximum mortgage payment which the mortgage lender will allow based on a proportion of the stabilized income in a future operating year of the project.

The model will then provide the prompt:

IN THE YEAR ?

The user should enter the future operating year in which the debt coverage ratio is to be applied. In general, this is the year in which the occupancy rate for the project is assumed to stabilize. The user should enter a number from 1 to 30 (representing operating years 1 through 30 for the project). If 0 or a number greater than 30 is provided, the model provide the prompt again.

The model will then provide the prompt:

DOWN PAYMENT (%) ?

The user should enter the down payment percentage required for the mortgage loan by the lender. The user should enter a number from 0 to 100. If the user does not wish to reflect a down payment for the mortgage loan, enter 0. If the user enters a number greater than 100, the model will provide the prompt again.

The down payment specified in this input is in addition to the cost which is not covered by the construction loan. When the model calculates the down payment amount, the down payment percentage is added to the non-financed costs from the construction loan calculation (see section 4.4.6) and the amount of the construction loan which is not covered by the long term mortgage (if any). If the user desires only to reflect these non-financed costs as the down payment amount, the down payment percentage should be entered as 0. The model will then automatically reflect the total non-financed costs (developer's equity) as the down payment amount.

The model will then provide the prompt:

DURATION YEARS ?

The user should enter the term of the mortgage loan.

The model will then provide the prompt:

UPFRONT POINTS ?

The user should enter the loan fee percentage for the mortgage loan.

The model will then provide the prompt:

ANNUAL INTEREST ?

The user should enter the annual interest rate for the mortgage loan.

After entering this data, the model will return to the Module 5 Submenu. The message "LAST STEP WAS DATA-MORTGAGE" will be displayed.

4.5.5 The ANALYZE Subfunction

Purpose

The purpose of this subfunction is to calculate the operating income, operating expenses and mortgage information for the project. This subfunction must be performed after the INCOME, EXPENSES and DATA-MORTGAGE subfunctions to correctly represent the mortgage loan in future Modules.

Operation

When this subfunction is chosen, the model will calculate the operating income, operating expenses and mortgage information for the project and return to the Module 5 Submenu. The message "LAST STEP WAS ANALYZE" will be displayed.

4.5.6 The OUTPUT Subfunction

Purpose

This subfunction allows the user to print the data currently contained in Module 5. This subfunction will automatically print the operating income, operating expenses and mortgage information calculated by the model from the inputs provided in this Module by the user. In addition, the user will be provided the option of printing the input information.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the operating income, operating expenses and mortgage information calculated in Module 5. Figure 9 is an example of this output.

After all this data has been transmitted to the printer, the model will provide the prompt:

TO PRINT INPUT INF. ?

If the user desires to print the input parameters for operating income and expenses which have been entered in Module 5, enter 1 and press [ENTER]. The model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the input parameters for operating income and operating costs entered in Module 5. Figure 10 is an example of this output.

If the user does not wish to print the input parameters, enter 2 and press [ENTER] in response to the TO PRINT INPUT INF. ? prompt.

After all data has been transmitted to the printer, or if the user has elected not to print the input parameters, the model will return to the Module 5 Submenu and the message "LAST STEP WAS OUTPUT" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 9

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17										
A. OPERATING INCOME																													
INCOME	BASE INFLATION	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006										
LAND USE A	1.05	1.31	3.31	6.95	10.94	14.55	16.80	17.65	18.53	19.45	20.43	23.59	24.77	26.01	27.31	28.68	33.12	34.78	36.32										
LAND USE B	1.05	1.22	3.06	4.29	6.38	7.09	7.45	7.82	8.21	8.62	9.05	9.51	9.98	10.48	11.00	11.55	12.13	12.74	13.37										
LAND USE C	1.03	0.00	0.00	0.00	0.11	0.23	0.30	0.31	0.32	0.33	0.34	0.43	0.45	0.46	0.47	0.49	0.63	0.65	0.67										
INCOME FROM RTD	1.00	0.21	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50										
TOTAL GROSS INCOME		2.74	6.97	11.73	17.93	22.37	25.05	26.27	27.55	28.90	30.31	34.03	35.70	37.45	39.29	41.22	46.38	48.66	51.06										
B. OPERATING EXPENSES																													
EXPENSES	BASE INFLATION	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006										
BUILDING MAINTENANCE	1.05	0.17	0.43	0.46	0.48	0.50	0.53	0.55	0.58	0.61	0.64	0.67	0.71	0.74	0.78	0.82	0.86	0.90	0.95										
SECURITY	1.00	0.33	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79										
PROPERTY TAX	1.02	0.45	1.09	1.12	1.14	1.16	1.18	1.21	1.23	1.26	1.28	1.31	1.33	1.36	1.39	1.41	1.44	1.47	1.50										
BENEFIT ASSESSMENT	0.99	0.07	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.13	0.13										
MANAGEMENT FEES	1.00	1.07	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57										
CONTINGENCY	1.05	0.38	0.95	0.99	1.04	1.09	1.15	1.21	1.27	1.33	1.40	1.47	1.54	1.62	1.70	1.78	1.87	1.97	2.06										
UTILITIES	1.03	0.32	0.80	0.82	0.84	0.87	0.90	0.92	0.95	0.98	1.01	1.04	1.07	1.10	1.13	1.17	1.20	1.24	1.28										
OPERATING EXPENSES-LINE ITEM		2.78	6.79	6.90	7.02	7.14	7.27	7.40	7.54	7.68	7.83	7.99	8.15	8.32	8.50	8.68	8.88	9.08	9.28										
LAND USE A		0.39	0.99	2.08	3.28	4.36	5.04	5.29	5.56	5.84	6.13	7.08	7.43	7.80	8.19	8.60	9.94	10.43	10.95										
LAND USE B		0.15	0.37	0.51	0.77	0.85	0.89	0.94	0.99	1.03	1.09	1.14	1.20	1.26	1.32	1.39	1.46	1.53	1.60										
LAND USE C		0.00	0.00	0.00	0.04	0.08	0.10	0.11	0.11	0.11	0.12	0.15	0.16	0.16	0.17	0.17	0.22	0.23	0.23										
OPERATING EXPENSES % OF INCOME		0.54	1.36	2.60	4.09	5.30	6.04	6.34	6.65	6.98	7.33	8.37	8.79	9.22	9.68	10.16	11.61	12.19	12.79										
ADJUSTED GROSS INCOME		-0.59	-1.27	2.24	6.83	9.94	11.74	12.53	13.36	14.23	15.15	17.67	18.76	19.91	21.11	22.37	25.89	27.40	28.98										
LEASE PAYMENTS-FIXED TO RTD	1.04	0.11	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42	0.43	0.45	0.47	0.49	0.51										
LEASE PAYMENTS-VARIABLE TO RTD		0.55	1.37	2.46	6.62	8.33	9.36	9.82	10.31	10.83	11.37	12.79	13.43	14.10	14.81	15.54	17.53	18.40	19.32										
LEASE PAYMENTS-TOTAL TO RTD		0.66	1.64	2.74	6.91	8.63	9.67	10.15	10.65	11.18	11.74	13.18	13.83	14.52	15.24	15.99	18.00	18.87	19.83										
NET OPERATING INCOME		-1.24	-2.92	-0.50	-0.08	1.31	2.07	2.38	2.71	3.05	3.41	4.49	4.93	5.39	5.97	6.38	7.90	8.51	9.15										
MORTGAGE REQUIREMENTS	DEBT COVERAGE RATIO	1.15	FOR YEAR 4																										
MORTGAGE INFORMATION	DOWN PAYMENT(%)	0.00	DURATION(YEARS)	30	ENDING YEAR	2019	MONTH	8	ANNUAL POINTS(%)	3	MONTHLY INTEREST	10.00	0.01	360															
SENT-ANNUAL CREDIT SCHEDULE	YEAR->	1987	1988	1988	1989	1989	1990	1990	1991	1991	1992	1992	1993	1993	1994	1994	1995	1995	1996	1996	1997								
	HALF->	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1								
COSTS QUALIFIED FOR MORTGAGE	37.10	DEBT RATIO BASED QUALIFIED MORTGAGE 10.78																											
FINAL MORTGAGE GRANTED	10.78	QUALIFIED FOR MORTGAGE 10.78																											
MONTHLY PAYMENT	0.09	= \$94,607																											
TOTAL PAYMENT	34.06																												
EQUITY INVESTMENT	0.00	18.27	0.00	59.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									

FIGURE 10

OPERATING INCOME & EXPENSE ANALYSIS(\$)

A. OPERATING INCOME

REVENUE ITEM	Sqft	ANNUAL REVENUES PER Sqft	% OCCUPANCY-YEARS				ANNUAL INC.(\$M)	INFLATION RATE	5 YEAR MARKUP RATE		%P. COST AS % OF REVENUES	
			FIRST	SECOND	THIRD	FOURTH						
LAND USE A	400000	30.00	25.00	50.00	75.00	95.00	11.40	5.00	10.00	LAND USE A	30.00	
LAND USE B	95000	65.00	45.00	60.00	85.00	90.00	5.56	5.00	0.00	LAND USE B	12.00	
LAND USE C	5000	40.00	0.00	0.00	50.00	100.00	0.20	3.00	25.00	LAND USE C	35.00	
		500000	STABILIZED ANNUAL INCOME (UNINFLATED)				17.16					

B. OPERATING EXPENSES

COST ITEM	COST PER Sqft	ANNUAL COSTS(\$M)	INFLATION RATE
BUILDING MAINTENANCE	0.75	0.39	5.00
SECURITY	1.50	0.79	0.00
PROPERTY TAX	2.00	1.05	2.00
BENEFIT ASSESSMENT	0.30	0.16	-1.00
COST ITEM	% OF STABILIZED ANNUAL INC.	ANNUAL COSTS(\$M)	INFLATION RATE
MANAGEMENT FEES	15.00	2.57	0.00
CONTINGENCY	5.00	0.86	5.00
UTILITIES		0.75	3.00
TOTAL OPERATING EXPENSES (UNINFLATED)		6.57	

C. LEASE PAYMENTS TO RTD

COST ITEM	PERCENT	ANNUAL COSTS(\$M)	INFLATION RATE
ANNUAL FIXED AMOUNT		0.25	4.00
1ST PERIOD % OF GROSS INC.	20.00		
LENGTH OF 1ST PERIOD(YEARS)	3.00		
2ND PERIOD % OF GROSS INC.	35.00		
% OF ADJUSTED GROSS INCOME	5.00		

D. REVENUES FROM RTD

COST ITEM	ANNUAL COSTS(\$M)	INFLATION RATE
ANNUAL FIXED AMOUNT	0.50	0.00

4.5.7 The FINISH Subfunction

Purpose

The purpose of this subfunction is to extract data to be passed to Module 6. The files and worksheets which comprise Modules 4 and 5 approach the capacity of the LOTUS 1-2-3 program. Because not all the data from these Modules is needed in future Modules, this subfunction allows the pertinent data to be carried forward while the remaining data is discarded. This subfunction must be executed before proceeding to Module 6.

Operation

The model will first provide a message to the user that it is necessary for the user to provide a file name which must be reentered in the next Module. The model will provide the prompt **HIT [ENTER] TO CONTINUE** at the top of the screen.

When the user is ready to proceed, press [ENTER] and the model will provide the LOTUS 1-2-3 command:

Enter xtract file name:

The user should enter the name of the file. The model will extract the required data and return to the Module 5 Submenu.

NOTE TO USERS: Do not use a file name which has previously been used and which is stored in the directory where the model resides. If a duplicate file name is used, the model will abort. To recover, if the user inadvertently enters a previously used file name, press [ESCAPE], then [ALT]-[M], then select FINISH again to resume automatic operation of the model. No data will be lost in this process.

The following file names are already used by the Joint Development Cash Flow Model and therefore restricted from use as file names in this subfunction:
AUTO, A1, A2, A3, A4, A5, A6, A7, AA31, AA32, AA41, AA51, AA61, AA71, ZTEMP2.

4.6 MODULE 6 - FINANCIAL ANALYSIS

When the user enters 6 from the Main Menu, Module 6 will be loaded. Module 6 performs the final financial analysis for the project from the inputs and analysis conducted in the previous five Modules. Module 6 contains seven subfunctions, which allow the user to enter the interest rate, project life span and pertinent tax information concerning the project, perform the financial calculations and print the results.

When Module 6 is loaded, the Module 6 Submenu will be displayed at the top of the screen:

```
MAIN-MENU  BEGIN  INTEREST  CALCULATE  RESULTS  OUTPUT  TAX  WITH-TAX-RESULTS
```

In Module 6, the seven subfunctions build on each other and must be executed in the order they appear on the Module 6 Submenu, with one exception. The CALCULATE subfunction must be executed again after the TAX subfunction in order to properly reflect the results of the financial analysis with tax considerations. The user may choose the subfunction desired by either moving the cursor to the option and pressing [ENTER] or by typing the first letter of the desired option. If the user chooses MAIN-MENU, the model will return to the Main Menu (see Section 3 of this manual for instructions regarding operation of the Main Menu.) The following sections describe the operation of the subfunctions of this module.

4.6.1 The BEGIN Subfunction

Purpose

The purpose of this subfunction is to reenter the data saved at the end of Module 5 and load the worksheet for the calculations which are performed by the model in Module 6. The FINISH subfunction of Module 5 must be executed prior to performing this step. This subfunction must be executed first when Module 6 is selected.

Operation

When this subfunction is chosen, the model will first prompt the user to provide the file name provided in the FINISH subfunction of Module 5. The model will provide the LOTUS 1-2-3 command:

```
Name of file to combine:
```

The user should enter the name of the file saved at the end of Module 5. The model will then load the worksheet AA61 which contains the calculations to be performed in Module 6. After the worksheet is loaded, the model will return to the Module 6 Submenu and the message "LAST STEP WAS BEGIN" will be displayed.

4.6.2 The INTEREST Subfunction

Purpose

The purpose of this subfunction is to allow the user to enter the discount rate to be used in the calculation of present value, the life span of the project, and the capitalization rate to be used to calculate the residual value of the project at the end of the project life span.

Operation

When this subfunction is chosen, the model will provide the prompt:

INTEREST RATE ?

The user should enter the discount rate to be used in the calculation of the present value of the income stream generated by the project.

The model will then provide the prompt:

PROJECT LIFE SPAN ?

The user should enter the assumed operating life of the project for purposes of defining the income stream generated by the project. The model can reflect up to a 35-year life span for the project. The user should enter a number from 1 to 35. If 0 or a number greater than 35 is provided, the model will provide the prompt again.

The project sale value will be reflected at the end of the time period defined by this input. Therefore, the project life span need not reflect only the physical life span of the project, but may also be used to reflect the expected duration of ownership by the developer. The results can then be calculated for that time period.

The model will then provide the prompt:

PROJECT CAPITALIZATION RATE ?

The user should enter the capitalization rate to be used to calculate the sales price of the project at the end of the project life span. The model will automatically calculate the resale value of the property based on the project income in that year. If the user does not desire to reflect a resale value in the income stream for the project, the following procedure should be employed:

1. Enter any number greater than zero in response to this prompt.
2. Run the CALCULATE subfunction (see following section).
3. Switch to MANUAL mode by pressing [CTRL]-[BREAK]. Move the cursor to the INCOME FROM SALE line in the FINAL FINANCIAL ANALYSIS WITHOUT TAX CONSIDERATIONS section of the worksheet. Then move the cursor to the cell where the model has calculated the resale value and manually change this value to 0.
4. Move the cursor to the cell in the FINAL FINANCIAL ANALYSIS WITH TAX CONSIDERATIONS section of the worksheet where the model has calculated the resale value and manually change this value to 0.

5. Press [ALT]-[M] to return to automatic operation and run the CALCULATE subfunction again.

After entering this data, the model will return to the Module 6 Submenu. The message "LAST STEP WAS INTEREST" will be displayed.

4.6.3 The CALCULATE Subfunction

Purpose

The purpose of this subfunction is to perform the financial analysis calculations for the project. This subfunction must be executed after the INTEREST and TAX subfunctions are executed.

Operation

When this subfunction is chosen, the model will provide the prompt:

INITIAL GUESS ?

The user should enter an estimate of the internal rate of return for the project. This initial guess is necessary because the internal rate of return is calculated by trial-and-error. The initial guess provides the model with the starting point for this process. If the model is unable to reach a solution for internal rate of return within 20 iterations, it will return an ERR message in the output produced in the RESULTS subfunction. The user must then repeat this procedure and provide another initial guess if the correct internal rate of return is desired.

After entering this data, the model will perform the financial calculations and return to the Module 6 Submenu. The time to complete these calculations is approximately one minute. The message "LAST STEP WAS CALCULATE" will be displayed.

4.6.4 The RESULTS Subfunction

Purpose

This subfunction allows the user to print the results of the financial calculations for the project without tax considerations. The user should ensure that the CALCULATE subfunction has been run prior to execution of this subfunction.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the results of the financial calculations without tax considerations calculated in Module 6. Figure 11 is an example of this output.

After all data has been transmitted to the printer, the model will return to the Module 6 Submenu and the message "LAST STEP WAS RESULTS" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 11

FINAL FINANCIAL ANALYSIS WITHOUT TAX CONSIDERATIONS(MILLIONS)

INTER. RATE FOR PRESENT VALUE	15.00	0.15
PROJECT LIFE SPAN	20 YEARS	
PROJECT CAPITALIZATION RATE	9.50	
GUESS OF RATE OF RETURN	12.00	0.12

ITEM	YEAR->	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
PRE-TAX CASH FLOW		0.00	-18.27	-61.26	-4.05	-1.64	-1.22	0.17	0.94	1.25	1.57	1.92	2.28	3.36	3.79	4.25	4.73	5.24	6.76	7.37	8.02
CASH FLOW (CUMULATIVE)		0.00	-18.27	-79.53	-83.58	-85.22	-86.44	-86.27	-85.33	-84.09	-82.51	-80.60	-78.32	-74.96	-71.17	-66.92	-62.18	-56.94	-50.18	-42.80	-34.79
ACCUMULATED EQUITY		0.00	18.27	77.93	77.99	78.06	78.14	78.22	78.31	78.41	78.53	78.65	78.79	78.94	79.11	79.29	79.50	79.72	79.97	80.25	80.55
PERCENT EQUITY		0.00	20.60	87.87	87.94	88.01	88.10	88.19	88.30	88.41	88.54	88.68	88.83	89.01	89.19	89.40	89.63	89.89	90.17	90.48	90.83
INCOME TO MORTGAGE RATIO		0.00	0.00	-159.15	-1.12	1.97	6.01	8.75	10.34	11.04	11.77	12.54	13.34	15.57	16.52	17.53	18.59	19.71	22.81	24.13	25.53
NET INCOME TO FULL OWNERSHIP		0.00	-1.69	-5.68	-0.38	-0.15	-0.11	0.02	0.09	0.12	0.15	0.18	0.21	0.31	0.35	0.39	0.44	0.49	0.63	0.68	0.74
NET INCOME TO INVESTMENT RATIO		0.00	-0.36	-1.19	-0.08	-0.03	-0.02	0.00	0.02	0.02	0.03	0.04	0.04	0.07	0.07	0.09	0.09	0.10	0.13	0.14	0.16
NET PRESENT VALUE TO THE YEAR	2008																				
INCOME FROM SALE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CASH FLOW INCLUDING SALE		0.00	-18.27	-61.26	-4.05	-1.64	-1.22	0.17	0.94	1.25	1.57	1.92	2.28	3.36	3.79	4.25	4.73	5.24	6.76	7.37	8.02
NET PRESENT VALUE DEVELOPER	-46.1341																				
NET PRESENT VALUE RTO	48.5682																				
INTER. RATE OF RETURN TO YEAR	2008																				
INTERNAL RATE OF RETURN		0.0436																			

4.6.5 The OUTPUT Subfunction

Purpose

This subfunction allows the user to print a summary of the total income and total expenditures for the project.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the summary of total income and expenditures for the project. Figure 12 is an example of this output.

After all data has been transmitted to the printer, the model will return to the Module 6 Submenu and the message "LAST STEP WAS OUTPUT" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 12

FINANCIAL ANALYSIS (MILLIONS \$)

YEAR	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
EQUITY INVESTMENT	0.00	18.27	59.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT SERVICE	0.00	0.00	0.38	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
OPERATING EXPENSES	0.00	0.00	3.32	8.15	9.50	11.10	12.44	13.31	13.74	14.19	14.67	15.16	16.36	16.94	17.54	18.18	18.84	20.49	21.26	22.08
LEASE PAYMENTS-TOTAL TO RTD	0.00	0.00	0.66	1.64	2.74	6.91	8.63	9.67	10.15	10.65	11.18	11.74	13.18	13.83	14.52	15.24	15.99	18.00	18.89	19.83
TOTAL EXPENDITURE	0.00	18.27	64.00	10.93	13.37	19.15	22.20	24.11	25.03	25.98	26.99	28.04	30.67	31.91	33.20	34.55	35.97	39.62	41.29	43.04
ACCUMULATED EXPENDITURE	0.00	18.27	82.27	93.19	106.56	125.71	147.92	172.03	197.06	223.04	250.03	278.06	308.74	340.64	373.84	408.39	444.37	483.98	525.27	568.31
TOTAL GROSS INCOME	0.00	0.00	2.74	6.87	11.73	17.93	22.37	25.05	26.27	27.55	28.90	30.31	34.03	35.70	37.45	39.29	41.22	46.38	48.66	51.06
ACCUMULATED INCOME	0.00	0.00	2.74	9.61	21.34	39.27	61.65	86.70	112.97	140.53	169.43	199.74	233.77	269.47	306.92	346.21	387.43	433.81	482.47	533.52

4.6.6 The TAX Subfunction

Purpose

The purpose of this subfunction is to allow the user to enter data to be used to evaluate the project feasibility with tax considerations.

Operation

When this subfunction is chosen, the model will provide the prompt:

RTD FACIL. QUALIFIES FOR DEP. ?

The user should enter 1 and press [ENTER] if the developer's contribution to transit facilities qualifies for inclusion in the depreciation schedule for the project. The user should enter 2 and press [ENTER] if the contribution does not qualify for depreciation.

The model will then provide the prompt:

DEPRECIATION PERIOD ?

The user should enter the duration of the depreciation schedule period for the project.

The model will then provide the prompt:

MARGINAL TAX RATE ?

The user should enter the developer's marginal tax rate. The user should enter a number from 1 to 100. If 0 or a number greater than 100 is provided, the model will provide the prompt again.

After entering this data, the model will return to the Module 6 Submenu. The message "LAST STEP WAS TAX" will be displayed.

4.6.7 The WITH-TAX-RESULTS Subfunction

Purpose

This subfunction allows the user to print the results of the financial calculations for the project with tax considerations. Prior to executing this subfunction, the user should ensure that the TAX subfunction has been executed, followed by the CALCULATE subfunction.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the results of the financial calculations with tax considerations calculated in Module 6. Figure 13 is an example of this output.

After all data has been transmitted to the printer, the model will return to the Module 6 Submenu and the message "LAST STEP WAS WITH-TAX-RESULTS" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 13

FINAL FINANCIAL ANALYSIS WITH TAX CONSIDERATIONS(MILLIONS)

INTER. RATE FOR PRESENT VALUE	15	0.15
PROJECT LIFE SPAN	20 YEARS	
RTD FACILITIES DUAL FOR DEP	1 (1. YES;2. NO)	
DEPRECIATION PERIOD STR. LINE	17 YEARS	STRUCTURE VALUE FOR DEP. 82.66
MARGINAL TAX RATE(%)	35.00	0.35
GUESS OF RATE OF RETURN	15	0.15

ITEM	YEAR->	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	
INTEREST TAX REFUND		0.00	0.00	0.13	0.38	0.37	0.37	0.37	0.37	0.36	0.36	0.35	0.35	0.34	0.34	0.33	0.33	0.32	0.31	0.30	0.29	
DEPRECIATION		0.00	0.00	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	0.00
AFTER TAX CASH FLOW		0.00	-18.27	-36.27	1.18	3.60	4.02	5.40	6.16	6.47	6.79	7.13	7.49	8.56	8.99	9.45	9.92	10.42	11.93	12.54	8.31	
AFTER TAX CASH FLOW (CUM.)		0.00	-18.27	-74.54	-73.36	-69.76	-65.75	-60.35	-54.18	-47.71	-40.92	-33.79	-26.30	-17.74	-8.74	0.70	10.63	21.05	32.99	45.52	53.83	
ACCUMULATED EQUITY		0.00	18.27	77.93	77.99	78.06	78.14	78.22	78.31	78.41	78.53	78.65	78.79	78.94	79.11	79.29	79.50	79.72	79.97	80.25	80.55	
PERCENT EQUITY		0.00	20.60	87.87	87.94	88.01	88.10	88.19	88.30	88.41	88.54	88.68	88.83	89.01	89.19	89.40	89.63	89.89	90.17	90.48	90.83	
AFTER TAX NET INCOME/MORTGAGE		0.00	0.00	-149.70	0.04	2.17	2.54	3.76	4.43	4.70	4.98	5.28	5.60	6.54	6.92	7.32	7.74	8.18	9.51	10.04	6.32	
AFTER TAX NET INCOME/OWNERSHIP		0.00	-1.69	-5.22	0.11	0.33	0.37	0.50	0.57	0.60	0.63	0.66	0.69	0.79	0.83	0.88	0.92	0.97	1.11	1.16	0.77	
AFTER TAX NET INCOME/INVEST.		0.00	-0.36	-1.10	0.02	0.07	0.08	0.11	0.12	0.13	0.13	0.14	0.15	0.17	0.18	0.18	0.19	0.20	0.23	0.24	0.16	
NET PRESENT VALUE TO THE YEAR	2008																					
INCOME FROM SALE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
AFTER TAX CASH FLOW INCL. SALE		0.00	-18.27	-36.27	1.18	3.60	4.02	5.40	6.16	6.47	6.79	7.13	7.49	8.56	8.99	9.45	9.92	10.42	11.93	12.54	8.31	
NET PRESENT VALUE DEVELOPER	-22.3882																					
NET PRESENT VALUE RTD	48.5882																					
INTERNAL RATE OF RETURN TO	2008																					
INTERNAL RATE OF RETURN		0.0932																				

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4.7 MODULE 7 - PRINT SUMMARY REPORT

When the user enters 7 from the Main Menu, Module 7 will be loaded. Module 7 allows the user to print a two-page Development Cost Summary report for the project. Module 7 contains four subfunctions, which allow the user to print the report and save the final worksheet for the run.

When Module 7 is loaded, the Module 7 Submenu will be displayed at the top of the screen:

```
MAIN-MENU  BEGIN  FIRST-PAGE  PAGE-TWO  SAVE
```

In Module 7, the BEGIN subfunction must be executed first. The remaining three subfunctions may be executed in any order. It is not necessary to execute all of the three remaining subfunctions in this Module. The user may choose the subfunction desired by either moving the cursor to the option and pressing [ENTER] or by typing the first letter of the desired option. If the user chooses MAIN-MENU, the model will return to the Main Menu (see Section 3 of this manual for instructions regarding operation of the Main Menu.) The following sections describe the operation of the subfunctions of this module.

4.7.1 The BEGIN Subfunction

Purpose

The purpose of this subfunction is to load the worksheet containing the format of the Development Cost Summary Report. This subfunction must be executed first when Module 7 is selected.

Operation

When this subfunction is chosen, the model will load the worksheet AA71 which contains the format of the Development Cost Summary Report to be printed in Module 7. After the worksheet is loaded, the model will load data from previous modules into the format and return to the Module 7 Submenu. The message "LAST STEP WAS BEGIN" will be displayed.

4.7.2 The FIRST-PAGE Subfunction

Purpose

This subfunction allows the user to print the first page of the Development Cost Summary Report.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the first page of the Development Cost Summary Report, which contains a summary of hard and soft costs for the project, the construction loan amount and the costs not covered by loan. Figure 14 is an example of this output.

After all data has been transmitted to the printer, the model will return to the Module 7 Submenu and the message "LAST STEP WAS FIRST-PAGE" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 14

PAGE 1

TEST

DEVELOPMENT COSTS SUMMARY
 0.5255 MILLION SQUARE FEET
 (in Millions)

1. SITE COSTS		NOMINAL	ACTUAL
LAND		3.50	3.50
EASEMENT		4.60	4.83
DEMOLITION & GRADING		0.50	0.50
SITE IMPROVEMENTS		5.52	5.94
TOTAL SITE COSTS		14.12	14.77
2. CONSTRUCTION COSTS			
BUILDING			
BUILDING A	(100000 SqFt x \$75 /SqFt)	7.50	7.86
BUILDING B	(250000 SqFt x \$84 /SqFt)	21.08	22.00
BUILDING C	(175500 SqFt x \$97 /SqFt)	17.10	17.87
ON SITE PARKING	(200 STALLS @ \$1,200 /STALL)	0.24	0.25
OFF SITE PARKING	(150 STALLS @ \$500 /STALL)	0.08	0.08
TOTAL CONST. COSTS		45.99	48.06
3. SOFT COSTS			
ENG/ARCH	(4.00 %)	1.84	1.84
LEGAL/ACCOUNTING	(2.50 %)	1.15	1.19
MARKETING	(2.87 %)	1.32	1.37
PERMITS/FEEES	(3.00 %)	1.38	1.44
PROPERTY TAX	(2.09 %)	0.96	0.99
CONSTRUCTION MANAGEMENT	(5.00 %)	2.30	2.42
ADMINISTRATION/OVERHEAD	(15.00 %)	6.90	7.26
CONST. LOAN INTEREST/POINTS	(12.00 interest, 4.00 points)		4.42
CONTINGENCY	(5.00 %)	2.30	2.40
TOTAL SOFT COSTS		18.15	23.33
4. OTHER COSTS			
RTD FACILITIES		1.59	1.69
OFF SITE CONSTRUCTION		0.50	0.53
TOTAL PROJECT COSTS		80.34	88.37
CONSTRUCTION LOAN AMOUNT	37.10	COSTS NOT COVERED BY LOAN	51.27

4.7.3 The PAGE-TWO Subfunction

Purpose

This subfunction allows the user to print the second page of the Development Cost Summary Report.

Operation

When this subfunction is chosen, the model will provide the prompt:

PLEASE ALIGN THE PAPER

When the paper has been aligned in the printer, press [ENTER] and the model will print the second page of the Development Cost Summary Report, which contains a summary of the annual income and costs and a summary of the financial feasibility analysis for the project. Figure 15 is an example of this output.

After all data has been transmitted to the printer, the model will return to the Module 7 Submenu and the message "LAST STEP WAS PAGE-TWO" will be displayed.

NOTE: By default, the model is set up to work with the EPSON FX-series of printers. Use of another printer may require adjustment of the printer set-up string in order for printouts to fit on a page as formatted. Consult your printer manual for the correct settings to ensure proper printing with LOTUS 1-2-3.

FIGURE 15
DEVELOPMENT COST SUMMARY

MORTGAGE AMOUNT	10.78	at INTEREST RATE	10.00	DOWN PAYMENT	26.64	DEBT RATIO	10.78								
YEAR	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
TOTAL GROSS INCOME	0.00	0.00	2.74	6.87	11.73	17.93	22.37	25.05	26.27	27.55	28.90	30.31	34.03	35.70	37.45
OPERATING EXPENSES	0.00	0.00	3.32	8.15	9.50	11.10	12.44	13.31	13.74	14.19	14.67	15.16	16.36	16.94	17.54
LEASE PAYMENTS-TOTAL TO RTD	0.00	0.00	0.66	1.64	2.74	6.91	8.63	9.67	10.15	10.65	11.18	11.74	13.18	13.83	14.52
NET OPERATING INCOME	0.00	0.00	-1.24	-2.92	-0.50	-0.08	1.31	2.07	2.38	2.71	3.05	3.41	4.49	4.93	5.39
EQUITY INVESTMENT	0.00	18.27	59.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT SERVICE	0.00	0.00	0.38	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
PRE-TAX CASH FLOW	0.00	-18.27	-61.26	-4.05	-1.64	-1.22	0.17	0.94	1.25	1.57	1.92	2.28	3.36	3.79	4.25
CASH RETURN ON INVESTMENT	0	-0.23450	-0.78627	-0.05204	-0.02102	-0.01562	0.002185	0.012031	0.015999	0.020179	0.024585	0.029227	0.043085	0.048679	0.054571
ASSUMED OCCUPANCY	1ST YEAR	31.45	2ND YEAR	52.82	3RD YEAR	78.09	4TH YEAR AND ON	93.37							
NET PRESENT VALUE DEVELOPER(PRE TAX)	-46.1540														
NET PRESENT VALUE RTD	48.56818														
INTERNAL RATE OF RETURN	0.043614														

4.7.4 The SAVE Subfunction

Purpose

The purpose of this subfunction is to save the final worksheet for the project.

Operation

When this subfunction is chosen, the model will provide the LOTUS 1-2-3 command:

Enter xtract file name:

The user should enter the name of the file. The model will save the worksheet and return to the Module 7 Submenu.

NOTE TO USERS: Do not use a file name which has previously been used and which is stored in the directory where the model resides. If a duplicate file name is used, the model will abort. To recover, if the user inadvertently enters a previously used file name, press [ESCAPE], then [ALT]-[M], then select SAVE again to resume automatic operation of the model. No data will be lost in this process.

The following file names are already used by the Joint Development Cash Flow Model and therefore restricted from use as file names in this subfunction:
AUTO, A1, A2, A3, A4, A5, A6, A7, AA31, AA32, AA41, AA51, AA61, AA71, ZTEMP2.

4.8 MODULE 8 - FINISH

When the user enters 8 from the Main Menu, the model will ensure that the user wishes to exit LOTUS by providing the options:

```
NO - Do not end 1-2-3 session; return to READY mode  
YES - End 1-2-3 session.
```

If the user wishes to exit the model, place the cursor on YES by pressing the space bar once, then press [ENTER]. The model will exit LOTUS 1-2-3 and return the computer to DOS.

If the user wishes to continue with the model, press [ENTER] while the cursor is on NO and the model will provide a menu with one option: MAIN MENU. Press [ENTER] to return to the Main Menu and continue with the model.

4.9 MODULE 9 - MANUAL MODE

When the user enters 9 from the Main Menu, the model will switch to Manual Mode. This will stop the automatic operation of the model and return to the LOTUS 1-2-3 program, leaving the worksheet intact. Manual mode allows the user who is sufficiently familiar with the LOTUS program to enter data manually or change formulas or values as desired. When in MANUAL, the model will provide no prompts nor perform any calculations. To recalculate the worksheet while in MANUAL mode, the user must press the F9 key. To return to automatic operation, the user must press [ALT]-[M].

5. SAVING INPUT DATA

A typical run using the Joint Development Cash Flow Model will involve the input of one set of data and assumptions for a project and the completion of the financial analysis using those data and assumptions. In these cases, the user will begin the model at Module 1 and execute each Module in turn, finishing with Module 7. There may be times, however, when the user may wish to modify the data and assumptions for a specific joint development project and conduct multiple financial analyses for the same project, using these different data. This section describes the procedures whereby a user may save input data at differing points in the model so that it may be changed and the analysis of multiple scenarios conducted without the need to always start at Module 1.

This section is designed for the user who is familiar with the structure and organization of the model. The user should be thoroughly familiar with the preceding sections of this Manual before attempting to use these procedures.

To save hard and soft cost input data (Modules 1 and 2)

Hard cost data are entered in Module 1 and soft cost data are entered in Module 2. The user may save these inputs so that they may be changed later by saving the worksheet after entering the data in Module 2. The data must be saved after Module 2 because in the normal execution of Module 3, some needed formulas are extracted.

1. To save the data at the end of Module 2, first press [CTRL]-[BREAK] to switch to Manual Mode. Then press "/" (to bring up the LOTUS Menu), followed by "F" (for File), followed by "S" (for Save). The LOTUS prompt: Enter save file name: will appear on the screen. The user should enter the name which the data is to be saved under.
2. To change the data previously saved and resume execution of the Model, load the worksheet previously saved by first pressing [CTRL]-[BREAK] if not already in Manual Mode. Then press "/" (to bring up the LOTUS Menu), followed by "F" (for File), followed by "R" (for Retrieve). The LOTUS prompt: Name of file to retrieve: will appear on the screen. The user should enter the name of the previously-saved file which is to be changed.
3. Once the file has been retrieved, press [ALT]-[M] and the Module 2 Submenu will appear on the screen. The user may then resume with normal operation of the model. To change hard costs data, return to the Main Menu, press 1 and [ENTER] and make the changes desired using the normal Module 1 subfunctions as described in this Manual. To change soft costs data, from the Main Menu press 2 and [ENTER] and make the changes desired using the normal Module 2 subfunctions as described in this Manual.
4. After the changes are made, the user may save the changes using the procedure described in paragraph 1 in this section. When the user desires to proceed with the analysis using the new input data, return to the Main Menu, begin with Module 3 and proceed normally with the remainder of the Modules.

To save inputs for inflation, construction loan, operating expenses and income and mortgage loan (Modules 4 and 5)

Inflation and construction loan parameters are entered in Module 4. Operating costs, operating income and mortgage loan parameters are entered in Module 5. The user may save these inputs so that they may be changed later by saving the worksheet after entering the data in Module 5. The data must be saved after Module 5 because in the normal execution of Module 6, some needed formulas are extracted. The procedure described in this section will allow the user to change input data for Modules 4 and 5 which are associated with a fixed set of inputs for Modules 1 and 2. It is not possible to make changes to data in Modules 1 and 2 at this point in the execution of the model. These changes must be made in accordance with the procedure described in the previous section.

1. To save the data at the end of Module 5, first press [CTRL]-[BREAK] to switch to Manual Mode. Then press "/" (to bring up the LOTUS Menu), followed by "F" (for File), followed by "S" (for Save). The LOTUS prompt: Enter save file name: will appear on the screen. The user should enter the name which the data is to be saved under.
2. To change the data previously saved and resume execution of the Model, load the worksheet previously saved by first pressing [CTRL]-[BREAK] if not already in Manual Mode. Then press "/" (to bring up the LOTUS Menu), followed by "F" (for File), followed by "R" (for Retrieve). The LOTUS prompt: Name of file to retrieve: will appear on the screen. The user should enter the name of the previously-saved file which is to be changed.
3. Once the file has been retrieved, press [ALT]-[M] and the Module 5 Submenu will appear on the screen. The user may then resume with the operation of the model. To change inflation and construction loan data, return to the Main Menu, press 4 and [ENTER]. When the Module 4 Submenu appears, do not execute the BEGIN subfunction as this will clear the data already contained in Module 4. The user should make the changes desired using the normal Module 4 subfunctions as described in this Manual, except for BEGIN. To change operating cost and income and mortgage data, from the Main Menu press 5 and [ENTER]. When the Module 5 Submenu appears, do not execute the BEGIN subfunction as this will clear the data contained in Module 5. The user should make the changes desired using the normal Module 5 subfunctions as described in this Manual, except for BEGIN.
4. After the changes are made, the user may save the changes using the procedure described in paragraph 1 in this section. The user must end this procedure by executing the FINISH subfunction in Module 5. When the user desires to proceed with the analysis using the new input data, return to the Main Menu, begin with Module 6 and proceed normally with the remainder of the Modules.

To save results of different financial analyses (Module 6)

Financial analysis is conducted in Module 6. The user may save the results of any financial analysis for a fixed set of inputs for Modules 1, 2, 4 and 5. The user may save these calculations so that the financial analysis inputs may be changed later and the analysis conducted again using the changed inputs. It is not possible to make changes to data in Modules 1, 2, 4 and 5 at this point in the execution of the model. These changes must be made in accordance with the procedures described in the previous sections.

1. To save the data at any point in Module 6, first press [CTRL]-[BREAK] to switch to Manual Mode. Then press "/" (to bring up the LOTUS Menu), followed by "F" (for File), followed by "S" (for Save). The LOTUS prompt: Enter save file name: will appear on the screen. The user should enter the name which the data is to be saved under.
2. To change the data previously saved and resume execution of the Model, load the worksheet previously saved by first pressing [CTRL]-[BREAK] if not already in Manual Mode. Then press "/" (to bring up the LOTUS Menu), followed by "F" (for File), followed by "R" (for Retrieve). The LOTUS prompt: Name of file to retrieve: will appear on the screen. The user should enter the name of the previously-saved file which is to be changed.
3. Once the file has been retrieved, press [ALT]-[M] and the Module 6 Submenu will appear on the screen. The user may then resume with the normal operation of the model. To change the parameters for financial analysis, the user should make the changes desired using the normal Module 6 subfunctions as described in this Manual. The user should then execute the CALCULATE subfunction to perform the financial analysis calculations using the changed inputs.
4. After the revised analysis is complete, the user may save the results using the procedure described in paragraph 1 in this section. When the user desires to produce a new Development Cost Summary Report reflecting the revised analysis, return to the Main Menu, begin with Module 7 and proceed normally with Module 7.
5. The SAVE subfunction described in this Manual under Module 7 will save the last financial analysis performed by the model. The procedure described in this section need only be employed if the user desires to save the results of other financial analyses.

APPENDIX A

CHANGES TO JOINT DEVELOPMENT CASH FLOW MODEL FROM PREVIOUS VERSION - FEBRUARY, 1986 - REFLECTED IN THIS DOCUMENT

1. Modules 5 and 6 from the previous version of the model have been reordered in order to more accurately calculate the long term mortgage cost. Module 6 in the previous version has now been merged into Module 5. Operating income and costs are now calculated prior to the calculation of the long term mortgage and the results are used to constrain the maximum amount of mortgage which a developer can obtain. The financial analysis previously conducted in Module 7 is now conducted in Module 6.
2. Module 1 now contains the option of reflecting contributions by a developer to station construction and other off-site construction.
3. Module 1 now contains the capability to reflect three different structure construction types and costs for grading and demolition.
4. Module 2 now contains the capability to reflect costs for administration and overhead.
5. In Module 2, costs may now be entered either as an absolute value or as a percentage of construction costs.
6. Module 5 now contains the capability of expressing operating costs as a percentage of gross revenues.
7. Module 5 now contains the capability to reflect ground lease or air rights lease payments by a developer. These payments may be expressed as fixed, as a percentage of gross income or as a percentage of net income.
8. Module 5 now contains the capability to reflect varying occupancy rates during the first four years of project operation.
9. Module 6 (Financial Analysis) now contains the capability to reflect some tax effects on project cash flow, including depreciation and deduction of mortgage interest.
10. Module 6 now contains the capability to reflect a variable project life span for purposes of calculating net present value and internal rate of return.
11. Module 6 now contains the capability to automatically calculate the resale value of the building at the end of the project life span, deduct the remaining mortgage principal and reflect the net sale price in the project cash flow.
12. A new Module 7 was added which allows the printout of a two-page Development Cost Summary.
13. In all modules, the model will now provide a message to the user as to the last subfunction which was executed.