User Manual

MDOT
Michigan Department of Transportation

PROGRAM/PROJECT MANAGEMENT SYSTEM

PROGRAM/PROJECT
PPMS
MANAGEMENT SYSTEM

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Chapter 1 Overview

The Michigan Department of Transportation is facing many management challenges due to the growing responsibility for expanding, improving and maintaining a highway system that includes more than 9,500 roadway miles. These responsibilities are affected by:

- Business Process Redesign
- Increased Federal requirements to meet schedules
- Product delivery demands
- Increased funding with limited work force.

In recognition of these ongoing challenges, the Department has implemented a system to assist managers in the management of preconstruction phases of jobs and multi-job projects and of the extensive Department highway program.

This manual provides a working-level description of that system: the **P**rogram/**P**roject **M**anagement **S**ystem (P/PMS). It describes how the information system is used by MDOT Project Managers, Program Managers and Organizational Unit Managers to assist in planning, scheduling, budgeting, and controlling preconstruction jobs in the Department's highway program. The P/PMS is an automated planning and scheduling tool, tailored to the MDOT business process. It is designed to allow department personnel to be most productive and effective in managing the planning, design and right of way activities of the Department's highway program from both short and long-term perspectives, reflecting the Department's priorities in a world of funding constraints and rapidly changing funding requirements.

The P/PMS application is a customized software solution for scheduling, reporting progress, and tracking status of jobs, built upon the Control and Analysis Tool (CAT) developed by Robbins-Gioia, Inc. This application includes the following unique features:

- A network generator which will automatically generate a job schedule using a generic template network and a set of characteristics which define the job's scope and create a tailored activity network specific to each job.

- The capability to establish job versions which enable MDOT Project Managers to perform "what-ifs" by varying the job's characteristics easily and quickly and/or making changes to the network without impacting the original network.

- Data entry screens and reports which enable Project Managers working with Organizational Unit Managers to refine networks before approval and incorporation into the authorized Program Area of the system.

- Security and access permissions which manage the review and approval mechanisms throughout the application.

- Fully integrated menu structures for the above development tasks.
- The capability to build selected jobs into job/project and program views.
- The capability to provide management with a reporting capability which provides program visibility with multiple views of the program information.
- The capability to link to MPINS for Job Number and actual date's retrieval and schedule date reporting and to retrieve actual payroll hours and cost from financial files.

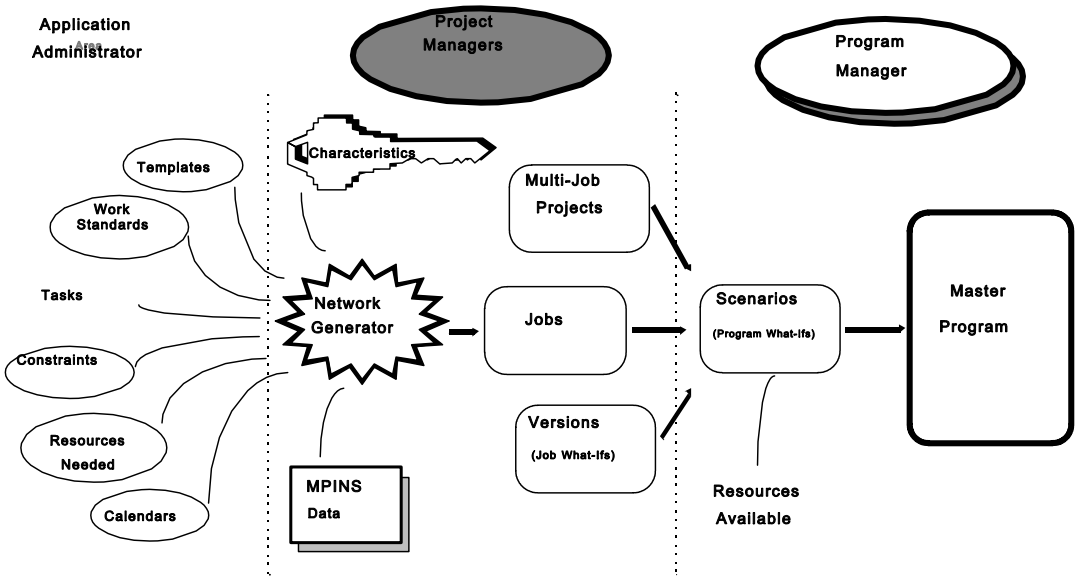
The P/PMS is simple to use because of its easy-to-understand menus and on-line assistance that can walk a user through the procedures necessary for managing a job or multi-job project, yet it is powerful enough to provide advanced analytical tools that supply critical information for informed decision making. Whether a user is a novice or an experienced project planner, the P/PMS will equip the user with the capability to manage jobs/projects with ease, flexibility, and power.

In addition to improving its automated processes, the Department has formalized its pre-construction business processes regarding the Highway Program. These are explained in the **Concept of Operations** which is attached to this document. This User Manual should be used together with the Concept of Operations to plan, schedule, budget, and control the pre-construction phases of jobs in the Department's highway program.

To fully realize the possible benefits of using the P/PMS, the user needs to understand the three P/PMS user areas and how they relate to one another as well as the business processes of the Department.

The P/PMS is organized into three working areas that are interdependent. A picture view is shown in Figure 1. Jobs and multi-job projects are initiated, planned and controlled in the **Job/Project Area**. They are aggregated together and controlled as the Department's highway program in the **Program Area**. System housekeeping functions such as work standards and data validation capabilities are entered and controlled in the **Administration Area**. Availability of menu options in each of the areas is determined by the security access for the user.

Figure 1



In the **Job/Project Area** Project Managers create, plan and control jobs, versions of jobs ("what-if" copies of jobs), and multi-job projects. Networks are created using scheduling network templates. After characteristics describing the job are entered into the system, the system selects either an "early study job" template or the appropriate network template from a set of twelve templates (including a master template called the global network template). The templates include all possible tasks required for a particular job. Once the system selects the template, the system calculates the duration of each task in the template and the resources (the organizational units' labor hours) required to complete the task. The job can then be tailored by the job owner or Project Manager with access permissions to the job. Tailoring can include modifying, adding or deleting tasks, constraints or resources. Jobs may also be combined into multi-job projects. Furthermore, a user may test changes to a job network by creating a version of the job before actually incorporating the changes into the master. The processes conducted in this area include the following:

- Creating a New Job
- Modifying an Existing Job
- Creating a New Version
- Modifying an Existing Version
- Creating a Multi-Job Project, and
- Modifying an Existing Multi-Job Project.

In the **Program Area** the overall MDOT Highway Master Program, scenarios ("what-if" copies of the program), and resource (organizational unit) availability profiles are created and maintained. The jobs and multi-job projects created in the Job/Project Area are aggregated together to form a scenario which is tailored, analyzed with a resource availability profile from the organizational units, approved by the program manager, and then used to create a Master Program. Jobs in the Master Program have a status of "Programmed" or "Active". When the jobs are put into "Active" status they are "base lined" and a set of start and finish dates for the job is saved. These baseline dates are used to compare with actual start and finish dates as a measure of performance. Also, a four-month schedule from the Master Program is released periodically as the production schedule. The resource assignments in the production schedule are used to direct the work effort of the organizational units. The following processes are conducted in this area:

- Creating a Program
- Creating a Scenario
- Modifying an Existing Scenario
- Base lining a Job
- Creating a Resource Availability Profile
- Modifying a Resource Availability Profile
- Resource Scheduling a Program or Scenario, and
- Archiving Jobs.

In the **Administration Area** the Application Administrator maintains the underlying structure and data which the P/PMS uses to generate scheduling networks. Templates used to build networks, calendars, and validation tables on which the templates are based are created and manipulated in this area. The processes conducted in this area include the following:

- Creating a New Template
- Modifying an Existing Template
- Creating a New Calendar
- Modifying an Existing Calendar
- Modifying Reference Tables and Standards, and
- Controlling Job Ownership/Access.

The three P/PMS areas provide the tools (analysis algorithms, reports, listings, etc.) which allow Project Managers and the Program Manager to plan and control the pre-construction phases of the Department's highway program and ensure that the program contains realistic time lines and is based on actual organizational unit resource requirements and availabilities. Proper use of the system is expected to help provide a leveling of Department work loads. In addition, the system will provide cost, schedule and earned value information about the highway program that was previously not available.

The remainder of this section briefly explains the processes for each of the three P/PMS areas. Sections two through five describe the operation of the system in detail.

Job/Project Area

This is the first of the three areas identified above in the overview. The Job/Project Area includes the processes which are used to create a new (or modify an existing) job, version or multi-job project.

Creating a New Job

Figure 2 provides a flow chart of the basic actions required to create a new job.

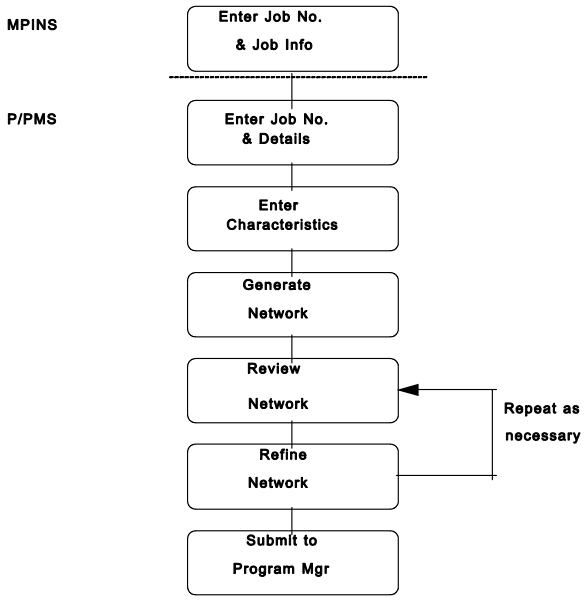


Figure 2 - Project Manager Job Network Development

The following is a narrative describing the process in Figure 2.

To create a new job, a Project Manager (PM) or Scheduling Specialist first enters the MPINS program to **obtain a Job Number and to enter job information in MPINS**. At this stage the job will normally be in "proposed" status, meaning that the job is in the early stages of planning. The next step is to begin planning the job using P/PMS. The information must be transferred from MPINS to P/PMS. This may be an overnight process. If all the required characteristics are entered into MPINS, the network will be automatically generated when the information is transferred into P/PMS.

To begin a new job in P/PMS the user chooses "FILE New Job" in the Job/Project Area. All jobs which have just been transferred from MPINS to P/PMS will appear on a menu. **Select the new job number** (the job number previously obtained from MPINS) and enter two of the three target fields: target start/finish dates and target float. The target start date is the desired start date for the job. The target finish date is the desired completion date of the job (contract award date). The target float is used to insert additional slack time into the schedule to allow some late completions of tasks without affecting the final job completion date. The three target fields are used together. When the user sets two of the three fields, the system calculates the third. For example, if the user enters the target start and float, the system will calculate the target finish date. If target start and finish dates are entered, the system calculates the float. If the desired completion date is known, it is entered as the target finish date. Target float can be included as a buffer, and the system will calculate the target start date. The creation date of the job in the system is set to the date that the process is taking place.

When the new job number has been initiated in P/PMS, a "session" is established and all data entered into the system will be entered against that job until the session is closed. During this initial session the job status field is set by the system from the EPE and PE status obtained from MPINS. The user can now begin to **enter the job characteristics** in P/PMS. Not all characteristics need to be entered at this time. Additional inputs can be added later by "Opening" an existing job. However, until all the job's characteristics have been entered, the user cannot generate a customized job network based on the characteristics. There is one exception to the requirement to have all characteristics entered in the system before generation: When an "Early Study Network" (see the attached Concept of Operations for an explanation of Early Study Networks) is desired, only Job Number and the following characteristics are needed:

Control Section	Number of Medium Structures
Route	Number of Large Structures
Construction Length	Number of Other Structures
Work Type	Road Type
District	Environmental Type
Traffic ADT	Development Class
Number of Small Structures	Project Manager
Project Development Unit	Environmental Lead Unit
Project Design Unit	Project Development - Design

Structure Design Unit	Project Development - Planning
Survey Unit	Consultant Management - Design

The values of these characteristics are used along with default values for the remaining characteristics for the Early Study Network. If all the characteristics have been input during this session, the user can then **generate a network** (schedule and resources) which has been customized to the characteristics entered into the system. The system will use the input characteristics combined with standard factors including task base durations and labor hours, duration and labor hour multipliers, switches and additives. These will be used to generate a scheduling network which includes tasks, task durations, the resources required to complete the tasks and constraint rules between tasks. There are four P/PMS constraint types: finish-to-start, finish-to-finish, start-to-finish, and start-to-start. If, for example, one task must finish before the succeeding task can start, this is a finish-to-start constraint.

Once the user generates a network using the characteristics and standards in the system, the user can **review the network** using the reports in the Job/Project Area, and **refine the network** to tailor the results to meet the specific needs of this particular job. This is done by changing individual task durations using "EDIT tasks and constraints" or changing resource requirements using "EDIT job resources" or, infrequently, by deleting unwanted tasks or constraints. At any point in this process the user can close the session, saving the changes made, and exit from the application, returning to the login prompt. Once the job is refined to the satisfaction of the Project Manager, he or she can **submit the job to the Program Manager** for inclusion in the Master Program. If changes need to be made after the first submittal, a DOT form #2604 must be entered into MPINS.

Modifying an Existing Job

The "FILE New Job" option is one way the user can develop a new job in P/PMS from the point of creating a new job through generating and refining a job network. However, it is not always convenient to enter all the job characteristics in the initial job session. When a job has previously been established and some initial job characteristics have been entered into the system and the user has exited the system, at a later time the user can reopen the job by choosing "FILE Open Job" and selecting the appropriate job. The user is then placed in a session in which the options available include the entry and modification of characteristic information, tabular reporting of job-related information and the ability to run processing options such as generating a new schedule from the characteristics information. Using the "EDIT" menu, the user can now finalize the selected job's characteristics, generate a job schedule and labor hour estimate, and tailor task durations and resource requirements.

Note that once a job's network has been generated, changing characteristics and generating a new network from the modified characteristics will overwrite the previously created network. Any tailoring that was performed after network generation

will be lost when the old network is overwritten. To see how changes affect the network without losing the previous information, a "version" can be used.

Creating a New Version

Versions (job-level "what-ifs") provide the Project Manager with the ability to evaluate changes to a job's characteristics or network without affecting the master job. At any point in the development of a job network, the user can create a copy of the job's characteristics and/or network and tailor the inputs to test the potential changes in a new version. To start a new session and create a new job version, the user would choose "FILE New Version" from the menu.

When this option is chosen, the user is prompted to select a master job. The new version will be attached to this master. First, the system asks to copy characteristics and network from an existing job or version of the master job. You must choose the master job or a version of it in order to preserve any existing charges, hours, and costs incurred. After that, a version detail screen is presented to the user. Target fields may be changed. When the user exits from the detail screen, the system copies the characteristics and network from the chosen job or version. Once copied, the version can be started from scratch if the user wishes, by changing any desired characteristics and running Process Generate Network. Available options in the session include:

- Entry and modification of the job characteristics
- Fine tuning schedule information
- Reporting of job related information
- Processing options such as generating a schedule from the job characteristics, and
- Comparing schedule differences between the version and the master.

Both the characteristics and the network are copied for the new version. This gives the user the ability to either make gross changes to the job network by modifying the characteristics and re-generating the network, or making smaller changes by changing only specific task or resource information on the version network. Deciding whether the newly created version will be based on changed characteristics or on minor changes to the network will require some forethought, since previous fine tuning changes will be overwritten if a new schedule is re-generated from the characteristics. Minor changes may only require schedule re-analysis.

Every time that a network is copied to a new version, a version number is assigned. This allows the user to have multiple copies of a job network and to choose which copy to work on. The submittal of a version is the same as the submittal of a job network to a program manager. When a version is submitted to programming it will overwrite the information that is stored in the program for a particular job number. Once a new version is created, the user may use the "EDIT" options to alter the job and evaluate the effects.

Modifying an Existing Version

Modifying an existing version of a job allows the user to continue to make changes against a version. In this instance the user selects the "FILE Open Version" option from the main menu in the Job/Project Area.

When this option is selected, the user is presented with a list of all jobs which have a version. The user selects the job to access and chooses the version from the list of versions for the job. When the selection is made the user is placed in a session where the available options include the entry and modification of characteristics, fine-tuning of network information, tabular reporting of job-related information, and the ability to run processing options like generating a new network from the characteristics.

The intent of this session might be to finalize a version's characteristics or to change schedule information for inclusion into a scenario. Modifications to the existing version are done through the "EDIT" options.

Creating a Multi-Job Project

At any time in the life-cycle of a job several jobs can be combined to form a multi-job project. The owner of the jobs to be combined would start a session by selecting the “FILE New Multi-Job Project” from the main menu in the Job/Project Area. The user can then add jobs to the multi-job project using the “EDIT’ options. The “EDIT’ options will allow the owner to add or modify constraints between the combined jobs but it will not allow modification of tasks and constraints within each job. Modifications within each of the jobs in the project must be done by opening the individual job.

Multi-job projects provide Project Managers with the ability to view project data across a set of related jobs. The manager will be able to roll-up scheduling information, task information, and resource or cost information to the multi-job level. Multi-job projects can be brought as a whole into a program scenario for inclusion into the Department's Master Schedule

Modifying an Existing Multi-Job Project

Modifying an existing multi-job project allows the user to continue to make changes against a project; it is started by selecting the "FILE Open Multi-Job Project" option from the main menu in the Job/Project Area.

When this option is selected, the user is presented with a list of all multi-jobs projects. The user selects which multi-job project to access and then uses the "EDIT" options to make the desired modifications.

Program Area

In the Program Area jobs, versions of jobs, or multi-job projects can be aggregated into the Department's Master Program or into program scenarios (what-ifs). In addition a user can create and modify resource availability profiles, job schedules, balance the required resources against the available resources, as well as baseline and archive jobs.

Creating a New Program

A new program may be created by selecting an existing program scenario (see “Creating a New Scenario” for the steps in creating a scenario) and designating that scenario to be the current program. Authority to create a new program is limited to the planning office. New programs are first created, tested and reviewed as scenarios before they are approved.

The first step in the process of creating a new program is the user choosing "FILE New Program" in the Program Area. The system presents a menu of all existing program scenarios. The user selects the scenario that is to become the current program and is prompted with a warning that the existing base lined departmental program is about to be replaced. If this is accepted and the selected scenario passes certain exception checking, the scenario becomes the Master Program. The jobs in the new program are then copied to the master jobs (version 1) in the Job/Project Area, the jobs from the old program are saved, and all scenarios are deleted. The resource availability profile that was linked to the selected scenario becomes the program resource availability profile (the "master"). In addition, the production start and finish dates for each task in each job and any changes in task priority, duration, or labor hours are automatically transferred to the job networks in the Job/Project Area.

The user can close the session at any time prior to responding positively to the warning prompt and no changes will occur to the program.

Modifying an Existing Program

The existing departmental program can be modified only by creation of a new program scenario (see “Creating a New Scenario”, below) and replacing the existing program with the scenario.

Creating a New Scenario

Program scenarios (program-level "what-ifs") provide the means to develop alternative programs and test them for their fit against the resource availability profile and other departmental requirements.

The first step in this process is to select "FILE New Scenario" from the main menu in the Program Area. If the scenario limit has not been reached (available scenario identifiers are A, B, C, and D), the scenario details screen is presented to the user using the next scenario identifier. The user enters a scenario description and selects a resource availability profile.

When the user exits from the scenario detail screen, the system asks if it should create the scenario by copying the current program or an existing scenario. If the user selects "Cancel," all jobs and multi-job projects must be entered by the user. If the user selects "OK," jobs and multi-job projects are copied from the program or existing scenario network. The job list can then be adjusted by deleting and adding individual jobs, job versions or multi-job projects. The network for the scenario is changed whenever the job list is changed, with new jobs, job versions or multi-job projects being copied from the Job/Project Area. The scenario can be adjusted further by changing the priority of any job to give it first access to the available resources. There are one hundred such high priority jobs. In addition, after first consulting with a Project Manager, the resource requirements or the duration for any task may be altered. Constraints between jobs can be modified in the Job/Project Area using a multi-job project.

Following any of these modifications, the scenario must be analyzed and have resources from the resource availability profile scheduled. See "Resource Scheduling a Program Scenario" later in this section. Program level reports can now be generated to assess how well this scenario meets the requirements for which it was created.

Modifying an Existing Scenario

This option allows for making changes to an existing program scenario. The user selects "FILE Open Scenario" in the Program Area. The system presents a menu screen for selection of the existing scenario to be modified. Once that selection is made the user is placed in a session that permits addition and deletion of individual jobs, job versions or multi-job projects, time analysis and resource scheduling processes, and generation of program level reports. The scenario can be modified in various ways using the "EDIT" options. The user can continue to modify a scenario through an indefinite number of sessions over any period of time.

Baselining a Job

Baselining is the process of capturing schedule dates and resource requirements as a basis against which actual status dates can be compared as the job progresses. When a job becomes active for the first time, the original baseline is saved by the P/PMS. This original baseline is retained for the life of the job, even if the job should become inactive at some point. Changes to the job's schedule will not change the original baseline. Job/Project Area menu options allow rebaselining a job, adding a "current" baseline. This will allow job performance to be analyzed in the context of both the original plan and the revised plan. Rebaselining a subsequent time would replace the current baseline with a

new current baseline and the current baseline would be held as an "intermediate" baseline. As an option, a current baseline from Time Now forward can be created, retaining the old baseline for tasks completed.

Creating a Resource Availability Profile

Developing alternate approaches to accomplishing a program often requires alternate resource plans to be tested against the program scenario. In the Program Area, resource availability profiles can be created by selecting "FILE New Resource Availability Profile" and selecting one of four different resource availability profile tables (A, B, C, and D) to use in conjunction with a selected scenario. A new profile can be created by copying and modifying an existing resource availability profile (including the resource availability profile from the current program) or by generating a new profile from scratch. Once the user makes a selection, he or she may use the "EDIT" options to modify the newly created profile. A Resource Availability Profile is assigned to the Master Program by first attaching it to a scenario, then bringing it into the Master Program with the selected scenario.

Modifying a Resource Availability Profile

The user modifies an existing resource availability profile by first selecting "FILE Open Resource Availability Profile" within the Program Area. The system presents a menu screen for selection of the Resource Availability Profile. Once the profile is selected the user is placed in a session that permits addition, deletion or modification of the resources, quantities available, and the periods of availability using the various "EDIT" options.

After the Resource Availability Table has been modified another resource schedule process will have to be performed on the scenario to generate valid reports and charts using the new table.

Resource Scheduling a Program Scenario

Any existing program scenario can be evaluated to determine how well the resource requirements of the scenario fit the program resource availabilities profile or an alternate resource profile. Should the resources required by the basic schedule exceed the planned resource availabilities, a scenario can be "resource-constrained" scheduled, which adjusts the schedules of the individual job tasks to fit the availability of resources, taking into account that some jobs have been given high priority and these jobs will have first use of resources. A job can be given a high priority (1), or a default priority (2). A scenario can also be "time-constrained" scheduled, which adjusts the schedules to fit availabilities, but will not delay tasks beyond the date determined by adding the total float to the early finish to resolve overloads.

The program manager selects "FILE Open Scenario" in the Program Area. A menu is presented from which the program scenario to be resource scheduled is selected. The user is then placed in a session in which scenario-related menu options are available. The resource availability profile linked to the open scenario can be changed if necessary through an entry in the "EDIT Scenario Details." The resource availability profile remains identified with that scenario for further summarizations and reports until it is changed. The user can then choose "PROCESS Resource Schedule."

The resource schedule process orders each of the jobs contained in the scenario according to job priority followed by a user-selectable priority sequence which includes: job target finish date, job total float, job target start date, job status code and job number. As the resource scheduler process comes to each task within a job, it determines whether sufficient resources remain within the task's time frame to meet the requirements of the task. If so, the task is scheduled, and the resources expended are subtracted from the remaining available resources for that period. If resources are not sufficient, the resource scheduler determines the earliest period in which all of the required resources are available and schedules the task for that time frame. The system will split a task, if necessary, to use intermittent resource availability. This process sets the production schedule start and finish dates associated with each job task. The resource scheduler then moves on to the next task and repeats the process.

When the resource scheduling process is complete, the user can generate the system reports and graphics, including comparisons of the resource schedule against the basic, non-resource schedule.

At this point, the resource summarization process can be used to aggregate the resource requirements and availability data by days. Resource overloads can then be quantified and addressed.

Archiving Jobs

All jobs which have been completed, have had a contract awarded, or have been suspended prior to a user-entered date can be archived using the "UTILITIES Archive Jobs" option in the Program Area.

A list of all jobs marked for archive, including the jobs individually flagged for archive by the Project Manager, is then presented. The user has the option of continuing the process at this point. Several steps are performed when the user elects to continue with the archive process. These steps include removing the flagged jobs from the Job/Project Area (except for job details) and placing the jobs' networks, resources and characteristics in the archive.

Administration Area

Managing the underlying structures upon which the P/PMS is built including templates, calendars, reference tables and job ownership and access is handled in the Administration Area by the Application Administrator.

Creating a New Template

Template networks drive the schedule generation algorithm and are the basis for every job schedule in the system. Within the P/PMS, multiple templates have been established to reflect the grouping of various types of work classifications. Only the **P/PMS Application Administrator** has authorization to define the work classifications that relate to a specific template.

The Application Administrator selects "FILE New Template" to create a new template. He or she is then presented with an entry screen in which a system-generated template number is displayed. The user enters a name for the new template. After exiting the screen, the user is asked whether to copy an existing template. If the user responds "OK", a menu is presented from which to choose the template to be copied. Tasks and constraints from the source template are then copied to the new template. The user will choose "EDIT Template Tasks and Constraints" to add/delete tasks and constraints. Only tasks from the Global Network Template are allowed in any other template. When the user leaves the entry screen, the new template must be analyzed ("PROCESS Analyze Template") before it can be used by the system. A new template will not be added to the available templates list nor can it be used to create or modify a work type if there are logic errors (dangling constraints, duplicate constraints, or isolated tasks) when the template is analyzed.

The user may suspend work on a template before actually adding it to the available templates and then return to complete it at a later time.

Modifying an Existing Template

The P/PMS Application Administrator has the ability to modify the logical relationships of a template network or the tasks included in the template. Only the P/PMS Application Administrator may carry out this function.

To modify an existing template, the user chooses the "FILE Open Template" option from the menu system. The user is prompted to select the template network he or she wishes to modify. When this selection is made, the user is placed into a working session in which the available options include only those pertaining to a template. The user may select "EDIT Tasks and Constraints" to change the template. When this option is selected, the user is placed into an entry screen that allows addition and deletion of tasks and constraints.

As with creation of a new template, the user must analyze the template network before the updated template can be used to create or modify a work type characteristic used in the Job/Project area to generate job networks. Changing an existing template could cause confusion if a Project Manager unknowingly generates a job version using a modified template and compares it to the master job which used the previous template. Care must be taken to coordinate changes made to existing templates.

Creating a New Calendar

The P/PMS system enables the user to define up to 90 calendars for scheduling work. This ability allows MDOT to define individual calendars to accommodate differences in resource availabilities, work hours per day or shifts. The P/PMS Application Administrator will add and maintain these calendars. The P/PMS system allows the user to create a new calendar by copying and modifying a previously defined calendar.

Two calendars are currently defined in the P/PMS, a Federal Calendar (which specifies holidays and rest days according to the Federal Government calendar) and an MDOT calendar (which specifies holidays and rest days according to the Michigan Government calendar). In addition to these defined calendars, the CAT software provides a standard calendar which is defined as a standard seven day work week (no rest days or holidays).

When the P/PMS Application Administrator selects "FILE New Calendar", the system asks if another calendar is to be copied. If requested, the calendar to be copied is selected and the copy process is done. The Administrator is then presented with a screen displaying a system-generated calendar number and fields for entering a description of the calendar, a number designating the number of base units per period of time and the base unit of time, i.e. (d)ays, (w)eeks, (m)onths, (y)ears, or number of periods (p)er day. The user is then presented with screens for entering/modifying holidays and rest days/periods. See the following "Modifying an Existing Calendar" discussion.

Modifying an Existing Calendar

The system allows a P/PMS Application Administrator to modify an existing calendar ("EDIT Calendar"). It is supported by three entry screens - one for calendar details, one for holiday information and one for rest days/periods information. Scheduling calculations performed in the P/PMS are based on work periods only. Holidays and rest days/periods are excluded from the calculations.

On the calendar details screen, the user can change the calendar description, number of base units, or base unit of time. The user must select the "update" button on the bottom of the calendar details screen to reach the holiday screen, and select the "exit" button on the bottom of the holiday screen to reach the rest days/periods screens.

The holiday screen is a two-part screen with descriptive information, including the calendar number, description, and period and time unit information in the read-only top portion and a spreadsheet entry form for holiday dates on the bottom. For each holiday the user will enter the date in one of the following formats: MM-DD-YY (for example, 12-25-94) or DD-MMM-YY (for example, 25-DEC-94.) When the user exits the holiday screen, the rest days/periods screen will appear.

The rest days/periods screen is also a two-part screen with descriptive information (read-only) and break date in the top portion and a spreadsheet entry form for rest days/periods on the bottom. Rest days are regular days during the week when work is not performed. The user will add a rest day's entry with a blank break date for standard rest days (such as Sat and Sun) for the calendar. If the rest days change periodically, the user can add another break date to identify when the rest days change, and then enter the new rest days. If the calendar has more than one rest period per day, the user will be allowed to indicate which period(s) in the specified day to designate as rest periods.

Modifying Reference Tables

Within the P/PMS application, reference tables are used to drive the scheduling algorithm (work standards), manage job structure information (WBS, OBS structures), and to validate certain data elements (Work Type, Road Type, Units, etc.) for proper format and range.

The P/PMS Application Administrator selects "EDIT," the appropriate table group and then the table name. He or she may then proceed to enter or modify validation or standards table data and produce the tabular reports which support each entry.

The Application Administrator can also maintain the Work and Organizational Breakdown Structures using the Modify WBS and OBS options under the "EDIT" menu. With these options, the administrator can add, remove, or reassign a structure element to another structure level. A parent WBS element with no task assigned can be added here; however, those which are tied to a task can only be added using "EDIT Template Tasks and Constraints" with the Global Network Template.

Controlling Job Ownership/Access

The P/PMS Application Administrator controls job/project access by selecting "EDIT Job/Project Ownership/Access." The user is presented with a split entry screen. The top of the screen will display the job/project and the job owner. The bottom of the screen will display those additional users who have write access permission to the job/project. The user will be able to add, delete, or modify entries in the bottom of the screen to specify the write access to the job/project displayed. The P/PMS Application Administrator will be able to modify ownership or permissions on any job in P/PMS using this screen. In addition, Project Managers who are job owners can authorize other Project Managers or Project Scheduling Specialists access to their jobs or delete such authorization using "EDIT Job/Project Access" in the Job/Project Area

Chapter 2 Operating Guidelines

Conventions used in this manual

Information is presented in this manual in a standard format described below:

- Text to be typed by the user will be presented in italics.
  e.g. Type the year, *1993*

- Keys on the keyboard are in bold upper case.
  e.g. Press **ENTER**

- Buttons chosen by a mouse click or a combination of **ALT** and the letter identified by an underline are shown as they would appear on the screen.
  e.g. Select <u>E</u>xit

- Menu names are shown in upper-case letters
  e.g. FILE menu

- Window names and options have initial upper-case letters
  e.g. FILE New

- Field names are in italics with initial upper-case letters.
  e.g. *Funding Type*

Menus can be displayed and options executed using keystrokes rather than mouse clicks. Hold down the **right ALT** key and type the underlined letter in the main menu to pull-down the menu (the left alt key is reserved for Microsoft Windows functions). After the menu is displayed, type the underlined letter to select/execute a menu option without the **ALT** key.

Conventions used in the P/PMS

The P/PMS windows are presented as an application within an application. The encapsulating application is an MS Windows X Terminal emulation application called Xoftware/32. This application uses standard Microsoft (MS) Windows 3.x borders and title bars. The borders can be used to size windows and windows can be cascaded, selected, minimized and maximized just like any Microsoft Windows application. In this windowing environment, the user may access the P/PMS while simultaneously working in other Microsoft Windows applications, within the memory limitations of the user's PC workstation. There is one difference, however, between the proper use of the P/PMS using Xoftware/32 and the use of other MS Windows applications**. It is not good practice to close the P/PMS windows using the close option available in the control-**

menu box at the top left corner of the Xoftware/32 window. This will leave a CAT session running after the user has quit from the MS Windows application. This has been known to cause unusual results, especially in cases where the user is at a data entry screen. The proper exit procedure is to choose "Exit" from the "FILE" menu.

Within the Xoftware/32 border, the P/PMS X Windows environment uses the X Windows MOTIF user interface. This user interface operates much like the MS Windows interface and is explained in detail below.

The Main Menu structure within the P/PMS application is formed by menu bars for each of the distinct areas of the application. Located beneath the title bar, menu bars present the top-level menus. These menus are File, Edit, Process, Listings, Reports and Utilities in the Program and Job/Project Areas. The Administration menu is added to the Administration Area. Menu options available to the user at any time during the P/PMS sessions will appear in normal text. Menu options that are not available will be "ghosted" (lighter color) or restricted.

To use the mouse with the main menus, the user clicks once on the menu heading on the menu bar, thus opening up that menu and making the options on it available to the user. Clicking on the option will select and begin that option. In cases where the option has a small triangle at the right edge of the menu, the user will be presented with a cascade menu with more options when the option is selected. This functionality is the same as that in Microsoft Windows.

Pop-up menus in the P/PMS are also presented in standard Microsoft Windows style and will provide the user with a list of valid options to answer questions or fill in data elements. Pop-up menus can be minimized or maximized, although neither function will be of significant value except in cases where several selections are available. In these cases enlarging or maximizing a window will allow the user to see more of the selections on the screen.

A session is a presentation mechanism which controls the system capabilities available to the user at any one time. A session is managed by the system according to the security access permissions assigned to an individual user. A session is opened when a job, job version, multi-job project, program, scenario, resource availability profile, template or calendar is created or opened for modification. When a session is open a message is displayed on the bottom of the screen indicating the name and type of the open session.

CAT provides a series of Function keys and X Windows provides Buttons and Menu Bars that you can use to perform data entry operations such as adding, searching for and updating records.

The P/PMS uses two forms of entering data into tables: screen form and spreadsheet. Screen form displays a screen consisting of data entry fields for a single record. To enter data, position the cursor in the appropriate field and enter the information requested by the field label. Spreadsheet displays information in rows and columns. Each row represents a record and each column represents a field.

MOUSE OPERATIONS

Click with the left mouse button. The right mouse button has no function.

Use the mouse to single-click buttons, menu items, table entries, select a field for data entry, etc.

MOUSE POINTER FORMATS

Arrow can select a menu item, move a window, or click a button.

Hourglass or **watch face** indicates that the system is busy processing a request, please wait.

I-beam indicates a field where text can be entered on data forms. Click to place the insertion point in the text entry box.

Blinking vertical bar is the insertion point for text on data forms. Click the I-beam cursor to locate the insertion point in a field on a data form.

Thick cross on tables indicates the cursor is over a data cell. Click in a cell or box in the table. The individual cell will be surrounded by a dashed/highlighted line indicating it is the active cell.

FUNCTION KEYS

Function Keys in Screen Form data entry screens:

- F1 Exit the data entry screen. If elements on a screen have been modified and the record has not been written to the table, the user will be asked to verify quitting without saving the current record.
- F2 Go to the previous record in the current list.
- F3 Go to the next record in the current list.
- F4 Enter FIND mode. When in FIND mode, the following keys change function:
  - F1 Exit FIND mode.
  - F2 Find a specific record number.
  - F4 Find records where elements match those entered.
  - F5 - Clear data from all elements on the screen.

- F5 Clear data elements - offers a new record.
- F6 Add the current record or sub record appearing on the screen.
- F7 Update the current record.
- F8 Delete the current record.
- F9 Display the first sub record belonging to the current record when in the parent table. Display the parent record when in the sub-table. In split-screen data entry screens, F9 moves back and forth between the tables on the top of the screen and sub-tables on the bottom. Not available if the table has no sub-table.

Function Keys in Spreadsheet data entry screens:

- F1 Exit the data entry screen. If elements on a screen have been modified and the record has not been written to the table, the user will be asked to verify quitting without saving the current record.
- F2 Go to the first field of the current record. If the cursor is already on the first field, go to the first field of the first record in the table.
- F3 Go to the last field of the current record. If the cursor is already on the last field, go to the first field in the last record in the table.
- F4 Enter FIND mode. When in FIND mode, the following keys change function:
  - F1 Exit FIND mode.
  - F2 Find a specific record number.
  - F4 Find records where elements match those entered.
  - F5 Clear data from all elements on the screen.
- F5 Present a new, empty record.
- F6 Copy the current record to a new record.

F7 Restore all fields on the current record to the values prior to data entry.

F8 Delete the current record.

F9 Display the first sub record belonging to the current record when in the parent table. Display the parent record when in the sub-table. In split-screen data entry screens, F9 moves back and forth between the tables on the top of the screen and sub-tables on the bottom. Not available if the table has no sub-table.

BUTTONS

Buttons in Screen Form data entry:

Exit	Exit the data entry screen.
Clear	Clear data from the window.
Add	Add the current record or sub record appearing on the screen.
Update	Update the current record or sub record.
Delete	Delete the current record or sub record.
Subrec	Enter the sub-table at the first sub record. Not available if the current table is a sub-table or no sub-table exists.
Rec	Enter the parent table if in the sub-table.

Buttons available in Spreadsheet data entry:

Exit	Exit the data entry screen.
New	Present a new, empty, record at the bottom of the screen.
Copy	Copy the current record into a new record at the bottom of the screen.
Delete	Delete the current record.
Subrec	Enter the sub-table at the first sub record. Not available if the current table is a sub-table or no sub-table exists.
Rec	Enter the parent table if in the sub-table.

MENU BAR

Menu bar options for both Screen Form and Spreadsheet data entry:

File menu

Print Screen	Prints the screen contents.
Field Type	Displays the data type and length of the current field.
Exit	Exit data entry.

Edit menu

Edit Field	Access text editor (vi.) Opens a full screen editing session.
Erase from BOL	Erase current field from the cursor position to the beginning of the line.
Erase to EOL	Erase current field from the cursor position to the end of the line.
Restore Field	Restore current field to last saved value.
Restore Record	Restore all fields on the current record to last saved values.

Goto menu

First Record	Move cursor to the first record.
Last Record	Move the cursor to the last record
Goto RN:	Find a record by record number.
First Field	Move the cursor to the first field on the current record.
Last Field	Move the cursor to the last field on the current record.
First Character	Move the cursor to the beginning of the field.
Last Character	Move the cursor to the end of the field.

Find menu

Enter find mode	Clear all field values and allow entry of search values.
Start Search	Search the table for records matching the entered field values.
Exit Find Mode	Exit find screen.

Help menu

About Data Entry	Information on using data entry.
About CAT	Information on using CAT.
About Windows	Information on using Windows.

SCROLLBARS

Scrollbars on data entry screens let the user move through records and fields in tables.

Scrollbars in Screen Form data entry:

Vertical scrollbar

Click on down arrow	Move down one screen.
Click below slider	Move down one screen.
Click on up arrow	Move up one screen.
Click above slider	Move up one screen.

Horizontal scrollbar

Click on right arrow	Goto next record.
Click right of slider	Goto next record.
Click on left arrow	Goto previous record.
Click left of slider	Goto previous record.

Scrollbars in Spreadsheet data entry:

Vertical scrollbar

Click on down arrow	Goto next record.
Click on up arrow	Goto previous record.

Click below slider	Move down one screen.
Click above slider	Move up one screen.

Horizontal scrollbar

Click on right arrow	Move the screen one field right.
Click right of slider	Move one field right
Click on left arrow	Move the screen one field left.
Click left of slider	Move one field left

NAVIGATING IN THE P/PMS

Move Between Fields or Cells

The ENTER key is used to move forward from field to field. The TAB key is used to move backwards between fields. The cursor can also be repositioned using the mouse.

Select Item from a Pull-down

Open a pull-down (drop down pick list window) by one click on the list button. Use scroll bars to view list.

DIALOG AND PROMPT BOXES

Move Between Fields or Cells

The TAB key is used to move forward from button to button.

Perform Action

The ENTER key performs the action on the default button.

Default Button

The button outlined in black and/or with a dotted line around the label on the button

DATA FORMAT

Login Name

First seven letters of your last name followed by the first letter of your first name. All in lower case and with no spaces.
e.g. Jane Doe's login is: doej

Password

At least 8 characters including at least 1 number and 2 letters.
e.g. Jane Doe's password is believe1

Date Format

Dates are entered as:

- DD-MMM-YY where DD is the day date, MMM is a three-character abbreviation for the month, and YY is the last two digits of the year.
  e.g., 12-DEC-93

- MM-DD-YY where MM is the month date, DD is the day date, and YY is the last two digits of the year.
  e.g., 12-25-93

- "today" or "tod" for today's date

Types of Users and Obtaining User Access

Access to the P/PMS will depend on the type of user attempting to access the system. Ten types of users will have access to the system. They are:

- PROGRAM MANAGER - This user is the manager of the Department's Highway Program. The Program Manager will have read and write access to all information in the Program Area and the Job/Project Area.

- SCHEDULING SPECIALIST - PROGRAM MANAGER ASSISTANT - The Program Scheduling Specialist is dedicated to working on the Department's program. This user is responsible for generating and modifying program scenario networks. The Program Scheduling Specialist will have read and write access to all information in the Program Area and the Job/Project Area.

- PROJECT MANAGER - The Project Manager user type is the focus of the P/PMS application. The Project Manager who initiates the job will be the job owner and will have full read and write access to his or her jobs in the Job/Project area. The job owner can grant read and write access to the owned job to other Project Manager users. Project Managers also have read access to jobs of other Project Managers and to the Program and Administration Areas.

- SCHEDULING SPECIALIST - PROJECT MANAGER ASSISTANT - The Scheduling Specialist is dedicated to working on one or more jobs. This user is responsible to the Project Manager for generating and modifying job networks. The Scheduling Specialist will have full read and write access to his or her jobs in the Job/Project menu system. Scheduling Specialists also have read access to jobs of other Project Managers and to the Program and Administration Areas.

- The P/PMS APPLICATION ADMINISTRATOR - This access type is given to individuals with P/PMS administration responsibilities. This assignment will give permission to a user to control, from within the P/PMS Administration Area, user IDs, accesses, and user classification categories. The Application Administrator will have access to the CAT command level to perform administrative and operational tasks interactively with the CAT command language. Additionally, the Application Administrator will have access to the P/PMS source code in order to make permanent modifications to the functionality of the P/PMS. The Application Administrator has full read and write access to all areas of the P/PMS.

- The P/PMS SYSTEM ADMINISTRATOR - The System Administrator is responsible for Unix machine and operating system administration, including user additions and deletions; peripheral device additions and deletions; system backup and recovery; and upgrades to hardware, operating systems and applications.

- REAL ESTATE USER - The Real Estate user works wither in Lansing or Region Real Estate. They have access to change durations on the real estate tasks.

- COST & SCHEDULING ENGINEER - The Cost & Scheduling Engineer is responsible for the entire program in a TSC or Region and is given access as a Project Manager. The Cost & Scheduling Engineer will have read and write access to all information in the Program Area and the Job/Project Area.

- ACTUAL DATES ONLY – The Actual Dates Only user will have read access to all three areas (Administration, Job/Project, and Program) but will be only able to add/change actual dates for any job in the Job/Project area.

- READ-ONLY USER - The Read-Only User will have read access to all three areas (Administration, Job/Project, and Program) but will be unable to change any of the information in the system.

Organizational units are responsible for entering actual start, actual finish and estimated completion dates for the tasks that they are responsible for. Since the organizational unit personnel will not have access to the P/PMS, they will perform this function by entering the start and finish dates into the MPINS system. This information will then be transferred into the P/PMS on a nightly basis.

Users will be allowed access to areas in the P/PMS based on the type of access approved on the "Request for System Access" form. This form will be submitted by the new user to the System Administrator who will set up a new Unix user account, providing access

to the SUN machine. The System Administrator configures Xoftware/32 for Windows on the new user's PC to provide access to the X Window environment. See the System Operations Manual for details on configuration of Xoftware/32 for Windows and configuration of a P/PMS user's environment.

Michigan Department of Transportation

Program/Project Management System
Request for System Access

Requestor's Name: _____
MDOT Division/Section: _____
Unit: _____
Phone: _____ GroupWise name: _____
Nearest Printer (ie, des_d21_lj): _____
'Authorized' User Type (see below): _____
Access required: ___PPMS ___CSS (Const.) ___Assessments (Prog. Overview)

'Authorized' User Types

Program Manager (PGM): Responsible for managing the PPMS Program of jobs, ensuring that it is as complete and up-to-date as possible.
Program Scheduling Specialist (PGS): Responsible for assisting the Program Manager by examining and balancing the Program schedule as needed.
Cost and Scheduling Engineer: Responsible for the entire program in a TSC or Region; given access as a Project Manager.
Project Manager (PRJ): Responsible for managing a job's design and its schedule, also listed as Manager in MPINS.
Scheduling Specialist (PJS): Responsible for assisting the Project Manager in generation and maintenance of job networks.
Real Estate (RE): Anyone needing PPMS in the Real Estate Division.
Read-Only User (RD): Anyone needing access only to view information in PPMS.

AGREEMENT

The user agrees to be responsible for the following:

1. Using access to this system for MDOT related business only.
2. Maintaining system work space, deleting unneeded versions, files, directories, etc. promptly.
3. Keeping their login name and password secure from other users.
4. Notifying the Application Administrator and/or System Administrator when access is no longer needed.

Date: _____

Logging in

Once the user's login name, password, and other pertinent information have been added to the P/PMS and his or her PC has been properly configured, the user will be able install P/PMS using instructions provided. This will enable users to access P/PMS via a web-browser interface, and allow them to quickly access P/PMS via a bookmark. Their username, password, and server address will be saved. The user will then be presented with the Bridges for Unix dialog box which requires a valid login name/password combination to access the P/PMS computer. The Unisys Unix system requires the password be at least eight characters with at least two letters and at least one number. Upon entering the password, control will be passed to P/PMS and the user will be presented with the main menu for the area identified by his or her user type. Users identified as Application Administrators are presented the Administration Area window. For users identified as Project Managers or Scheduling Specialists, the Job/Project Area menu appears. The Program Manager or Program Scheduling Specialists see the Program Area main menu. This will be transparent to the user. Users without access to the P/PMS will be logged off the P/PMS computer and returned to the MS Windows Program Manager.

The following section of the Operating Guidelines has been extracted from the following manual:

CAT Compass, Setting the course in Business Engineering. Robbins-Gioia, Inc. Alexandria, VA, August, 1993, Version 2.4X.

This section has been included here for the convenience of the P/PMS user.

Adding Records and Sub Records

When you access a data entry screen for the first time, the cursor is located at the first character position of the first field in which you can enter information. You can enter data only in the fields you can access with the cursor.

Some data entry screens require that you enter information in certain fields called mandatory fields. If you fail to make an entry in a mandatory field, CAT does not let you proceed until you have entered the required information.

Some data entry screens contain fields that display information that you cannot modify. These fields are called read-only fields. Read-only fields are used to identify the record, to repeat information displayed on previous data entry screens, or to show the results of calculations made from other fields.

To enter data in a field:

- Enter the information identified by the field label.
- Press <Enter> to move the cursor to the next field where data can be entered.
- When you have completed data entry on a screen, move the pointer to the Add push button and click to add the record to the database.
- If there is a sub record linked to the screen, move the pointer to the Subrec push button and click to access the sub record screen.

Many fields have a built-in error-checking function which requires that you enter valid information for a particular field. For example, a field for entering a numeric data will not accept alphabetic characters. If you enter incorrect information, CAT displays an error message; you must enter valid data to continue.

Finding Records and Sub Records

The scrollbars, the Find menu, and several options on the Goto pull-down enable you to locate records in the database for viewing, modification, or deletion. You can move forward and backward through the entire record set, or you can use the FIND capability to specify only records matching the criteria you enter. CAT assigns a number to each record when it is created; if you know the number of a particular record, you can display the record by entering its number.

- In Screen form data entry, to move forward through the records or sub Records in the database, click on the right arrow or to the right of the slider in the horizontal scrollbar.
- In Spreadsheet data entry, to move forward through the records or sub Records in the database, click on the down arrow or below the slider in the vertical scrollbar.
- In Screen form data entry, to move backward through the records or sub Records in the database, click on the left arrow of the slider in the horizontal scrollbar or to the left of the slider in the horizontal scrollbar.
- In Spreadsheet data entry, to move backwards through the records or sub Records in the database, click on the up arrow or above the slider in the vertical scrollbar.

The FIND Capability

To use the FIND capability to display records or sub Records matching criteria you specify:

- Click on the Find menu title and then click on the Enter Find Mode option.
- The Find screen is displayed. It is similar to the data entry screen except that all push buttons but Clear are ghosted.
- Enter the field value(s) which you want to match and click on the Start Search option.
- If CAT finds a match, a message is displayed reporting the number of records found matching the value(s) specified. The first record matching the value(s) is displayed. If applicable, click on the scrollbar to display additional records matching the value(s) specified.
- If you are in the Find screen and you decide that you do not wish to conduct a search, click on the Exit Find Mode option.
- To locate items by record number click on the Goto RN... option. A dialog box is displayed. Move the pointer to the Find Record Number space and click. Type the desired record number in the space and press <Enter>. The record corresponding to the record number is displayed.
- To move to the first or last record or sub record in the database, click on the Goto menu bar option and then click on the First Record or Last Record option on the pull-down menu.

Updating Records and Sub Records

You can edit or update information by typing over displayed data. To update a record:

- Locate the record requiring modification by using one of the methods described above.

  CAT displays the records requested.

- Use the special keys and/or the Goto pull-down menu options to position the cursor on the field requiring the change.

- To insert characters at the cursor position without over striking existing characters, use <Ctrl-O> to toggle between insert and overstrike. Overstrike is the default.
- Type the correct information. You can only update those fields that can be accessed with the cursor.

- Click the pointer on the Update push button to store the new information in the database.

Deleting Records and Sub Records

In addition to adding and modifying records, CAT enables you to delete records and sub Records. If you delete a record, all of its associated sub Records are also deleted. If you delete a sub record, only that sub record is deleted. Be aware that once you delete a record, it is gone from the database; you cannot restore it. To delete a record:

- Locate the record to be deleted by using one of the methods described above.

- CAT displays the records requested.

- Click on the Delete push button to initiate the deletion process. A dialog box is displayed for you to confirm the action before the record is actually deleted from the database.

Chapter 3 Job/Project Area

The Job/Project Area is the heart of the P/PMS system. Tailored scheduling networks for MDOT preconstruction jobs are created in the Job/Project Area. These networks consist of tasks with their associated durations and resource requirements. Tasks are tied together into a scheduling network using constraints. *Each network is identified by a job (and control) number. A Critical Path Analysis is done on the network to determine task start and finish dates. A project can have multiple jobs linked together and is referred to as a multi job project in the P/PMS.

Generation of the network for a specific job begins when a user enters new job information and characteristics. The characteristics are used first to select a model network (template). The network generation process then uses predefined task standards, the characteristics, and a network duration/resource algorithm to calculate task durations and resource requirements.

The Job/Project Area will provide schedule dates and resource requirements without consideration for resource availability, and will allow for the creation of job "versions" in order to view the effects of changing requirements in the job's characteristics. It will also allow aggregating information such as resource requirements, costs, and scheduling information (dates) over multiple jobs.

Key Elements

The key elements of the Job/Project Area are as follows:

- JOB CHARACTERISTICS - Job characteristics are used to define the scope of a job and the tasks and resources required to accomplish the design effort for letting of a construction contract. These characteristics will be used to generate a customized network based on the appropriate template and standards.

- NETWORK GENERATOR - The Network Generator takes the job characteristics, applies the input values against the reference data sets and tailors the template network information to create a customized job network.

Constraints are dependencies between tasks and can be one of four types dictating the following conditions:

1. that the succeeding task can not be started until the preceding task has finished (finish-to-start),
2. that the succeeding task can not be started until the preceding task has started (start-to-start),
3. that the succeeding task can not be finished until the preceding task is finished (finish-to-finish) or
4. that the succeeding task can not be finished until the preceding task is started (start-to-finish).

By far, the most commonly used constraint is finish-to-start.

- MULTI-JOB PROJECT - The multi-job project capability enables the user to connect more than one job into a project. This allows the Project Manager to view a logically connected set of jobs as a whole project and produce roll-up reports and graphs which show the schedule and resource set for the entire project.

- JOB VERSION - The version allows a Project Manager to create different views of a job by allowing the user to change the characteristic values for each version. It will also allow a Project Manager to refine a job network by adding, deleting, or changing the job characteristics and regenerating the network with the appropriate version number. This option provides the user with the ability to change the job network without impacting the original or master network for the job. Once the user has determined that a version network is preferred over the original network, the user can replace the original with the version. The original cannot be replaced with a version if the status of the job is Active, Inactive or Completed.

- BASELINE - Base lining is the process of capturing schedule dates and resource requirements as a basis against which actual status dates are compared as the job progresses. When a job becomes active for the first time, the "original" baseline is saved by the system. The Program Manager can re-baseline at his or her discretion, creating a "current" baseline in addition to the original. Optionally, the current baseline can also be created from Time Now forward retaining the old baseline for activities completed. Rebaselining a second time would move the previous current baseline to an intermediate baseline and establish a new current baseline. Subsequent rebaselining would:
    1. Move the old current baseline to the intermediate baseline overwriting the previous intermediate baseline and
    2. Establish a new current baseline.

Menus

Depending on the selections made and the permissions of the user, the application will "ghost-out" certain options from the menu structure, preventing users from accessing them. For example, when no job, version, or multi job project session is open, all EDIT, PROCESS, and REPORTS options are "ghosted." This clarifies the capabilities available to the user.

Menus are denoted in the following manner:

- Main Menu Options
  - Sub-Menu Options
    - Sub-Sub-Menu Options

The Job/Project Area menus are as follows:

- FILE
  - New
    - Job
    - Version
  - Open
    - Job
    - Version
  - Close Session
  - Delete
    - Job
    - Version
  - Go to Program Area
  - Go to Administration Area
  - Main Menu
  - Exit
- EDIT
  - Details
  - Characteristics
  - Consultant Checklist
  - Network Logic Editor
  - Tasks and Constraints
  - Add Task and Constraints
  - Delete Task and Constraints
  - Responsible Units
  - Resources and Durations
  - Advanced Network Planning
  - Actual Start and Finish Dates
  - Job Access
  - Project Status Comments

- PROCESS
  - Generate Network
  - Analyze Schedule
  - Resource Summarize
  - Assign Mgt Units
  - Re-Assign All Resources
  - Rebuild Task/Milestone
  - Submit Refined Network
  - Retract Refined Network
- LISTINGS
  - Details
  - Characteristics
  - Consultant Checklist
  - Tasks
  - Tasks and Constraints
  - Responsible Units
  - Resources
  - Resource Totals
  - Advanced Network Planning
  - Job Access
  - New Jobs
- REPORTS
  - Jobs
    - Job Status
    - PC and Letting
    - Job Performance
    - Cost Performance
      - By Task
      - By Resource
    - Earned Value of Work Performed
      - By Hours
      - By Costs
  - WBS/OBS
    - Work Breakdown Structure (WBS)
    - WBS Roll-up
    - WBS Roll-up Gantt Chart
    - Organizational Breakdown Structure (OBS)
    - OBS Roll-up
    - OBS Roll-up Gantt Chart
  - Tasks
    - Task Status
    - Late Tasks
    - Completed Tasks
    - Task Gantt Chart
    - Predecessors/Successors
    - Version Changes Gantt Chart

- Network Logic Diagram
- Network Changes
- Milestone
  - Milestone Status
  - Late Milestones
  - Completed Milestones
  - Milestone Gantt Chart
  - Milestone Summary
  - Milestone Summary Gantt Chart
- Resources
  - Responsibilities Work Schedule
  - Responsibilities Work Schedule Gantt Chart
  - Management Work Schedule
  - Management Work Schedule Gantt Chart
  - Resource Histogram
  - Resource Summary
  - Work Plan and Labor Estimates
  - Resource Changes
- Payroll
  - DCDS
  - PPMS

UTILITIES

- User Environment
- Directory Listing
- Select Data Entry Type
  - Screen Form
  - Spreadsheet
- Change Password
- View a File
- Delete a File
- Work Days Calculator

HELP

- About P/PMS

FILE Options

This menu is used to control the manipulation of files in the Job/Project area. Starting a new job or opening an existing job is accomplished in this menu.

FILE New Options

The sub-options under "New" allow a user to define a new job, version, or multi job project.

FILE New Job

This option allows a user to establish a new job and enter characteristics for the new job.

When this option is selected, the user can select a new job number from MPINS from a pop up menu. The user will then be taken to a data entry screen on which the job number, control section, and route have been filled in. Additional fields are available for data entry. A creation date is preset to the date that the process is taking place.

Four target fields (target start, plan completion, and letting dates and target float) are presented for input. The target start date acts as the start date for the network to be generated. The completion date is 1) for informational purposes to compare the scheduled completion date generated by the system and the input target finish date or 2) to set the completion of the job. The target float is used to establish an overall amount of float or the amount of time the entire job can slip from its early dates without pushing the completion of the job beyond the target finish date. Any two of these fields can be set by the user, and the system will calculate the third. Either a target start or target finish date must be entered in order to save the record and exit from the screen.

When the new job is created in P/PMS, the job status field is set to the status in MPINS, and the user can now begin entering characteristics for the job. Not all inputs need to be entered at this time. Additional inputs can be added later by "Opening" an existing job. However, until all the job's characteristics have been entered, the user cannot generate a customized job network based on the characteristics.

If all the characteristics have been input during this session, the user can generate a customized network. The system will use the input characteristics combined with several factors including task base durations and labor hours, multipliers, switches, and additives to generate the network. The system will use the task templates referenced by the Work Type field, which is brought over from MPINS.

Once a network is generated the user can fine-tune the results by deleting unwanted tasks, altering individual task durations, or changing the resource requirements and task constraints. These changes can be made using the EDIT Job/Project Tasks and Constraints menu option by either searching for the task or constraint to be changed using the Find capability or by sequencing through the tasks or constraints until the one in question is reached. Once the task or constraint to be changed is on the screen, it can be deleted or modified. Resources can be modified, added, or deleted using the EDIT Job Resources menu option.

Critical Path Method (CPM) analysis can now be performed to obtain a job schedule and to verify correctness of results.

At this point, or at any point in this process, the user can close the session and return to the menu system or exit from the application to the login screen.

FILE New Version

Additional networks for the same job can be created to perform trade-off analyses. These "what-if" views of a job's characteristics are called "versions." They allow the user to modify the characteristics and regenerate the scheduling network, or to fine-tune the schedule information of a job.

Up to nine versions can be created for a given job at any one time including the master version, version 1. If there are nine versions active for the selected job and another is attempted, an error message is displayed and the user is returned to the menu.

Version numbers 2-9 are assigned as they are available. If a job has version numbers 1, 2, 3, 4, 5, 6, 8, and 9, and the user chooses to create another version, the version number assigned will be the number 7. The characteristics for the new version are copied from the original job or from another job or version as requested by the user.

When the New Version option is selected, a pop up window is displayed on which the user can select a master job for the version. A dialog box displays the existing master and any existing versions of that job. Once one is selected to copy, then a data entry screen is displayed with a new system generated version number for entering the job version details for that version. A creation date is preset to the date that the process is taking place. If the user doesn't copy from another job or job version, the system returns to the Job/Project Area menu.

Three main target fields (target start, plan completion, and letting) are presented for possible input. The target start date acts as the start date of the job for the network and schedule to be generated. The plan completion date is the target date

for the full plans to be ready for Quality Assurance review. The letting is the target date for the job to be let for bidding purposes.

The target finish is automatically calculated as one month from the letting; this is the typical time before award occurs. In addition, the target float is used to establish an overall amount of float or the amount of time the entire job can slip from its early dates without pushing the completion of the job beyond the target finish date. Between Target Start, Target Float, and Target Finish, any two of these fields can be set by the user, and the system will calculate the third (usually upon analysis). Either a target start or target finish date must be entered in order to save the record and exit from the screen.

When the user has saved the version record and exited from the data entry screen, the system will return to the Job/Project Area with that version open. All editing and processing capabilities will be available.

At this point, the user can begin fine tuning the version's task details (if the version is based on another job or version) or entering characteristics for the new version (if building the version from scratch, or providing major modifications).

When a version is copied the user can make gross changes to the job schedule by adjusting the characteristics and re-generating the network. Minor adjustments can be made by changing only specific task or resource information and analyzing without regenerating.

Deciding whether the newly created version will be based on changed characteristics or on minor changes to the network will require some forethought, since fine tuning changes will be lost when a new schedule is regenerated from the characteristics.

Critical Path Method (CPM) analysis is performed on the version to obtain an overall picture of the job schedule and to compare differences between the base job schedule and the version.

FILE New Multi-Job Project

Multi job projects are used to connect multiple jobs for cost, schedule, and resource roll-ups. All jobs in the multi job project must be owned by the user creating the project. Combined processing will be limited to establishing or editing constraints between jobs and analyzing the multi job project schedule. All other processing will be done on individual jobs within the project. A job can only be associated with one multi-job project. Once a multi job project has been created, it can be brought into the highway program as an entire unit (see Program Area).

When this option is selected, the system generates and displays the next multi-job project number. The user is prompted to enter a multi-job project title for that number. A creation date is preset to the date that the process is taking place.

Target start and finish dates may be entered.

When the new multi job project number has been established, the user can enter the job numbers that are to be associated with the multi-job project.

FILE Open Options

The sub-options under Open allow a user to open existing jobs, versions or multi-job projects so they can be manipulated using the EDIT menu selections and reports can be run for them.

FILE Open Job

This sub-option allows a user to enter or modify job related data including characteristics. It also allows a user to fine tune the schedule information of a job if a schedule has been generated from its characteristics. If the user requests a regeneration of the schedule based on the characteristics, all the fine tuned information will be overwritten by the new schedule.

When this option is selected, a pop up window is displayed with a list of jobs by job number. The user selects one of the jobs from the list or closes the window to return to the menu. If a job has been opened, the user can modify job details and characteristics. When the job selected has an Active, Inactive, or Completed status, no modifications are allowed to the characteristics or network.

When a job is opened, the menu options as defined in the "New Job" option can be accessed by the user. The intent of this session might be to finalize the existing job's characteristics and generate a job schedule and labor hour estimates.

Once a network is generated, the user can fine tune the results by deleting unwanted tasks, altering individual task durations, or changing the resource requirements and task constraints. The task changes can be made using the EDIT Job/Project Tasks and Constraints menu option by either searching for the task or constraint to be changed using the Find capability or by sequencing through the tasks or constraints until the one in question is reached. Once the task or constraint to be changed is on the screen, it can be deleted or modified. Resources can be modified, added, or deleted using the EDIT Job Resources menu option.

Critical Path Method (CPM) analysis can then be performed to obtain an overall picture of the job schedule and to verify correctness of results.

FILE Open Version

This sub-option allows a user to modify version details and characteristics and to fine tune the detailed schedule of the version.

It is recommended that this option be used to either modify the original inputs of an existing job's characteristics, or to modify the detailed schedule information supplied with the job. If fine tuning is done in this session and the user requests a regeneration of the schedule based on the characteristics, all the fine tuned information will be overwritten by the new schedule.

When this option is selected, a pop up window is displayed with a list of jobs that have versions. The user can select one of the jobs or cancel the request and return to the menu. When a job is selected, a second pop up window is displayed listing the current versions for that job. The user then selects the desired version.

At this point the user can begin modifying version details and characteristics, or fine tuning the generated schedule information by deleting unwanted tasks, altering individual task durations, or changing the resource requirements and task constraints. The task changes can be made using the EDIT Job/Project Tasks and Constraints menu option by either searching for the task or constraint to be changed using the Find capability or by sequencing through the tasks or constraints until the one in question is reached. Once the task or constraint to be changed is on the screen, it can be deleted or modified. Resources can be modified, added, or deleted using the EDIT Job Resources menu option.

When a version is opened, the menu options as defined in the "New Version" option can be accessed by the user.

FILE Open Multi-Job Project

This option allows the user to open an existing multi job project to modify the details of the project and the constraints between the jobs within it, to analyze or resource summarize the project network, or to run reports.

When this option is selected, a pop up window is displayed with a list of multi job projects by project number. The user can select one of the multi job projects from the list or cancel the request and return to the menu.

When a multi job project is opened, the menu options as defined in the "New multi job project" option can be accessed by the user.

FILE Close Session

This option closes the current working session and returns the user to the menu structure.

FILE Delete

Jobs, versions, or multi job projects are removed from the Job/Project Area with this menu option. Due to the critical nature of job deletion, certain types of data may only be deleted by specific authorized persons.

FILE Delete Job

Jobs which have a status of Proposed may be deleted by the job owner. The Program Manager can delete jobs with the status of Proposed or Programmed.

When this option is selected, a pop up window is displayed of all jobs with the status of Proposed in the Job/Project Area. The user can select a job to be deleted or cancel the request and return to the menu. If a job is selected, a verification prompt is displayed by which the user validates the request. If the response is "Yes," the job and all its versions and baselines are deleted; otherwise the user is returned to the menu.

FILE Delete Version

Versions may be deleted by the job owner.

When this option is selected, a pop up window is displayed with a list of jobs that have versions. The user can select one of the jobs or cancel the request and return to the menu. When a job is selected, a second pop up window is displayed listing the current versions for that job. If a version is selected, a verification prompt is displayed by which the user validates the request. If the response is "Yes," the version is deleted; otherwise the user is returned to the menu.

FILE Delete Multi-Job Project

Multi-job projects may be deleted by the multi-job project owner.

When this option is selected, a pop up window is displayed with a list of current multi-job projects. The user can select one of the multi-job projects or cancel the request and return to the menu. If a multi-job project is selected, a verification prompt is displayed by which the user validates the request. If the response is "Yes," the multi-job project is deleted, leaving the related jobs intact; otherwise the user is returned to the menu.

FILE Go to Program Area

When this option is selected, the system will exit the Job/Project Area, enter the Program Area, and place the user in the main menu of that area. The current session must be closed in order to select this option.

FILE Go to Administration Area

When this option is selected, the system will exit the Job/Project Area, enter the Administration Area, and place the user in the main menu of that area. The current session must be closed in order to select this option.

FILE Main Menu

Selection of this option will take you back to the main menu screen where the user can choose from CAT Prompt, Assessments, P/PMS, Construction, or Exit the system.

FILE Exit

When this option is selected, the application will check the state of the user's session. If a job, version or multi-job project session is still open, then the system will close the open session prior to exiting. After the user is prompted to confirm that they want to exit, the application will log out of CAT and return to the P/PMS login screen. The user can then exit to the MS Windows Program Manager.

EDIT Options

Entry, modification and deletion of job related information are managed under this menu. Edit capabilities that affect job or task start or completion dates are available only on jobs that have a job status of Proposed.

EDIT Details

The Job/Project Details option permits modification of target dates, job ownership and related information. This option is not available for jobs with the status of Active, Inactive or Completed.

The user may enter values for two of the three fields: target start, target finish and target float. The third will be calculated by the system. Either the start or finish date must be present in order to analyze the job. If no target start date has been supplied, the system will use the target finish and target float to calculate a start value. If no target float value has been supplied, a value of zero will be assumed. The user may change any one of the three parameters after an analysis and re-analyze. If all three fields are present, the system will ask the user to clear the value the system should calculate.

Job ownership can be changed by either the job owner or the Application Administrator by changing the Job Owner field. When this is done, the user is presented with a pop up window asking for confirmation. If confirmed, the system will move the job's records from the old owner to the new owner. The new owner must have an access type of Project Manager.

The job number and status fields will be displayed on the screen, but they are read-only fields.

If a multi-job project session is open when this option is selected, the user can add or delete individual jobs.

EDIT Characteristics

When this option is selected the user is presented with three screens which emulate the MDOT "P/PMS Job Data" form. The following fields will be carried over from MPINS and will be read only: job number, version number, route, control section, work type and district. All other fields except those requiring numerical input allow the user to enter a question mark (or any other non-valid entry) and press ENTER to display a pop up menu containing a list of valid entries. The user can then click on the appropriate entry. The user must make an entry for all job characteristics before a network and associated schedule can be generated (see below). If data entry is interrupted before the last screen or if some characteristic is not known, all previous characteristics entered are saved and the

user is returned to the main menu. The job characteristics entry can be completed at any time. The user can avoid updating the characteristics by pressing "Exit" instead of "Update."

There is one exception to the requirement to have all characteristics entered in the system before generation. When an "Early Study" Network is desired, only job number and the following characteristics are needed:

Control Section	Environmental Type
Route	Development Class
Construction Length	Project Manager
Work Type	Project Development Unit
District	Project Design Unit
Traffic ADT	Structure Design Unit
Number of Small Structures	Environmental Lead Unit
Number of Medium Structures	Survey Unit
Number of Large Structures	Project Development - Design
Number of Other Structures	Project Development - Planning
Road Type	Consultant Management - Design

The values of these characteristics are used along with default values for the remaining characteristics for the "Early Study" Network.

Job characteristics are validated as they are entered into the system. Codes for organizational units and classifications for road, development, environmental, and traffic are checked against validation tables. The EDIT Job Characteristic option allows the user to modify the characteristics of proposed jobs. For any other status, this option will not be available.

EDIT Consultant Checklist

When this option is selected, the user is presented with a screen on which they may select and edit which tasks on the job are to be performed by consultant, as well as identifying the contract type. Often, a whole phase is designated to be done by consultant. This gives the user the opportunity to make changes for exceptions.

EDIT Network Logic Editor

The Network Logic Editor (NLE) has its own menu structure. Instructions for use for most of the menu options are found by choosing EDIT Network Logic Editor and then choosing Help About NLE from the NLE menu.

- File
  - Exit NLE
- Edit
  - Undo
  - Cut
  - Copy
  - Find
    - Activity (Task) Code
    - Description
  - Refresh
- Data
  - Network
  - Form
  - Information
- Tools
  - Route All
  - Analyze
  - Navigate
  - Zoom
    - 50%
    - Normal
    - 150%
    - 200%
    - Variable
- Options
  - Box Legend
- Help
  - About NLE
  - About X Windows

NLE - Moving About

Networks with many tasks may not fit in the edit window. Use these tools to view different areas of the entire network:

- Horizontal and vertical scroll bars - to view different area of the entire network.
- Zoom menu option (under Tools) - to control the size of the task boxes in the window.
- Navigate menu option (under Tools) - to view a large portion of the network in a separate window.

NLE - Searching for a specified task

Create the search code using job number, task number and version number in the form jjjjj-tttt-v where jjjjj is the job number, tttt is the task number, and v is the version number. Use search code with the NLE Edit Find Activity Code option to display the specified task on the screen.

NLE - Deleting a task or constraint

Select the task or constraint desired by clicking on the box or line and then choose the Cut option from the NLE Edit menu. Edit Undo can be used to return a deleted task immediately after it is deleted.

Note: Deleting a task or constraint with NLE removes the item from the network completely. It will not appear on REPORTS Tasks Version Network Change Report for P/PMS nor will it appear as a deleted task or constraint in the EDIT Tasks and Constraints screen.

NLE - Adding a constraint

Add a constraint by placing the pointer at the edge of a task box, dragging the mouse to the second task box and releasing it. A line connecting the two boxes will remain. The type of constraint is determined by the position of the pointer at the beginning and end of the drawing process. When creating a constraint, the status message at the bottom of the window indicates the type. Release the pointer when the status message indicates the desired type. The following chart shows the relationships:

Constraint Type	Begin at the	End at the
FS	Right side of start box	Left side of finish box
SS	Left side of start box	Left side of finish box
FF	Right side of start box	Right side of finish box
SF	Converted to FS by NLE	

EDIT Tasks and Constraints

When editing a specific job network, this option presents the user with a two section screen with task information on the top portion and constraint information on the bottom.

The top portion of the screen contains fields for the task identifier, task description, task duration, deletion flag, calendar and WBS code. The task description and WBS code are read-only fields presented for information. The user can add a task or milestone using a pop up menu of all available tasks and milestones, change the task duration, or mark the task for deletion. Tasks marked for deletion will not be included in the network.

Constraint information is presented in a separate section of the screen. The system presents the user with a screen format for the task identifiers of the preceding and succeeding tasks, the constraint type, and the constraint delay. The user can delete the constraint, create a new constraint, and change the constraint type or delay. Lead times are accommodated by using a negative delay. The resultant network will have to analyze with no logical errors before any further network processing can occur.

The user may use only one portion of the screen at a time, to input either task information or constraint information. The portion of the screen which is not being used for input must be cleared for the other section to accept data.

EDIT Add Tasks and Constraints

This option allows the user to add individual tasks and constraints to a job network without using the EDIT Tasks and Constraints screen.

The user can enter a task number, or a ? to be presented with a pop-down menu of available tasks that are not currently in the network. The system then adds the task, calculates the duration, makes the appropriate constraint connections, calculates required labor hours, and makes the correct resource assignments. If the system cannot make the automatic constraint connections, it may be necessary to connect constraints through the EDIT Tasks and Constraints screen.

EDIT Delete Tasks and Constraints

This option allows the user to delete individual tasks and constraints from a job network without using the EDIT Tasks and Constraints screen.

The user can enter a task number, or a ? to be presented with a pop-down menu of available tasks that are currently in the network. The system then deletes the task, duration, constraint connections, required labor hours, and removes any resource assignments.

EDIT Responsible Units

With a Job or Version open, this option presents the use with a screen showing all Task Numbers, Task Descriptions and Responsible Units for each task. The use can edit the Responsible Unit for each individual Task.

EDIT Resources and Durations

When editing a specific job network this option presents the user with a split screen which shows the relevant task information -- job number, task identifier, task description, task duration -- at the top of the screen, and that task's resource information -- resource code (organization code), resource description, and labor hours and quantity required -- in a scrollable "spreadsheet" style screen in the lower half. The user can increase or reduce the duration and labor hour requirements for any or all resources assigned to any task and can completely delete any resource requirement.

If the user makes an entry in task duration, the resource quantity per day for each resource record for the current task is set equal to the resource labor hours divided by eight times the new task duration (resource quantity per day = resource labor hours / (8 * task duration.)) If the resource quantity is less than ".01", it is set equal to ".01".

If the user makes an entry in resource labor hours, the resource quantity per day for the current resource record is set equal to the new resource labor hours value divided by eight times the task duration. If the resource quantity is less than ".01", it is set equal to ".01".

If the user makes an entry in resource quantity per day, the resource labor hours field for the current resource record is set equal to the resource quantity times eight times the task duration.

EDIT Advanced Network Planning

With a Job or Version open, this option presents the use with a screen showing all Task Numbers, Task Descriptions and Task Durations for tasks that do not have an Actual Start or Actual Finish date entered. The user can edit the Task durations or enter a planned Start and/or Finish date for a selected Task to further refine their network. When Planned Start and Planned Finish dates are entered, the Task Duration is automatically updated to reflect the time frame entered.

EDIT Actual Start and Finish Dates

The user is able to enter the actual start, actual finish, and estimated completion dates here. This option will be available only until MPINS can be modified to accept this information.

EDIT Job Access

Refer to the EDIT Job/Project Ownership/Access description under the Administration Area for information on this option.

EDIT Project Status Comments

The user is presented with a screen that shows the control section, job number, manager, route, let date, P/PMS status and MPINS status for the open Job. The user can add, modify or delete project status comments for the selected job.

PROCESS Options

Process options are available for a job, version, or multi-job project which has been opened using the FILE menu options. Process options allow users to perform calculations on information supplied to the system in the job details, job characteristics, tasks and constraints, and resources screens in order to build networks, make schedules, schedule resources, capture approved dates, and analyzes performance. Having used the process options, users can produce the reports and graphs that are used for planning and analysis.

PROCESS Generate Network

Note:

This option will generate an entirely new network using the characteristics entered in the system. It will overwrite the current network including any tasks and/or constraints added or modified by the user in Edit Tasks and Constraints. If the user wishes to retain tasks and constraints manually entered into the network, DO NOT USE THIS PROCESS.

Job network generation uses a rule based concept and consists of a global network, algebraic formula, the unique job characteristics and a set of reference standards for duration and resource requirements that are determined according to the job's characteristics.

Each of the characteristics has a value chosen from a set of possible classes and categories or a numerical value reflecting the quantity of some item (e.g., number of miles).

The algebraic formula for the network generator uses four sets of key reference standards:

- Base Standards
- Multipliers
- Additives
- Switches

"Base Standards" are the first estimates for the duration and labor-hours required to complete a task for a given job type (Improve, Expand [new route, relocation, other], Preserve [resurface/restructure, reconstruct/widen, other] and Highway Preservation Program). These first-step base standards are increased by adding modifiers for construction length, and type and number of structures.

"Multipliers" are values used to adjust the base value up or down to account for differences in the type of roadway, terrain, and other factors which determine job complexity. A multiplier is a factor by which the base standard is multiplied.

"Additives" are typically influences that increase the task's duration or labor hours based on the number of occurrences of an item in the characteristics. Additives include such items as the number of ROW parcels, number of signal locations, etc.

"Switches" are values (usually 0 or 1, but occasionally a multiplier value) which are applied to the task duration after the multipliers and additives have been applied. A switch value of zero will "turn-off" a task if the job characteristics are such that the task is not needed. Zero duration tasks are deleted after the algorithm is run.

This computer process selects and modifies a generic template schedule and assigns the appropriate resources based on characteristics entered for a job. This creates a network schedule from the generic template that is unique to the job. The tasks, constraints, and resources are then stored.

The network generator uses an algorithm to calculate the duration of each task. If a task has a zero duration, the task is dropped from further consideration and the constraints of its predecessors and successors are linked. Any duplicate constraints are also deleted.

A second pass of the network is made to calculate and assign resource requirements for each task. An algorithm similar to the one used to generate the duration is used to calculate the total resource requirement for each task. The total resource requirement is then apportioned to appropriate organizational units based on the percentages defined in the resource standards tables.

The current P/PMS Additives are:

Number	Additive Description
01	Wetlands
02	Stream Crossings/Flood Plains
03	Navigable Waters
04	Local Variances
05	Railroad Companies
06	FHWA Involvement
07	Local Agreement
08	Private Utility Company
09	Outside Consultant - EPE/Individual Contract
10	Outside Consultant - PE/Individual Contract
11	Right of Way Parcels
12	Relocation Units
13	Signals
14	Noise Walls
15	Topographic Survey: Field
17	Topographic Survey: Combination
18	Railroad over Highway
19	Constructed under Traffic
20	Coastal Zone
21	Sub-Grade Work
23	Outside Consultant - EPE/As Needed
24	Outside Consultant - PE/As Needed
25	Municipal Utility Company
26	Airport Involvement
27	EPE Corridor Mapping
28	Right of Way Consultant
29	Bridge Hours on Road Job
30	Electrical Involvement
31	Work Type = 110
32	Work Type = 113 or 114
33	Work Type = 111
34	Work Type = 112
35	Grading Permits
36	Relocation + Urban
37	Work Type = 137 or 138
38	Grading Permits + Outstate, ROW = 0
39	Metro + Urban
40	Grading Permits + Metro, ROW = 0
41	Relocation + Metro + Urban

Number	Additive Description
42	Metro + Rural
43	Metro + Relocation + Rural
44	Relocation + Rural
45	Outstate + Rural
46	3510 Assigned to PE Consultant as Independent Contract
47	3510 Assigned to PE Consultant in As Needed Contract

The current P/PMS Switches are:

Switch ID	Switch Description
100011	Job Type = Highway Preservation Program
100021	Job Type = Preserve: Resurface/Restore
100031	Job Type = Preserve: Reconstruct/Widen
100041	Job Type = Preserve: Other
100051	Job Type = Expand: New Routes
100061	Job Type = Expand: Relocation
100071	Job Type = Expand: Other
130014	Work Group = Structures & Job Type = Preserve: Resurface/Restore OR Preserve: Reconstruct/Widen OR Preserve: Other
130022	Work Group = Structures & Job Type = Highway Preservation Program
130032	Work Group = Structures & Job Type = Preserve: Other
150012	Job Type = Preserve: Resurface/Restore & Environmental Type = Categorical Exclusion
150022	Job Type = Preserve: Reconstruct/Widen & Environmental Type = Categorical Exclusion
150032	Job Type = Preserve: Other & Environmental Type = Categorical Exclusion
150042	Job Type = Highway Preservation Program & Environmental Type = Categorical Exclusion
170001	Turn Off Structure Study

Switch ID	Switch Description
200014	# of Small Structures = 0 & # of Medium Structures = 0 & # of Large Structures = 0 & # of Other Structures = 0
200015	# of Small Structures = 0 & # of Medium Structures = 0 & # of Large Structures = 0 & # of Other Structures = 0 & # of Noise Walls = 0
200016	# of Other Structures = 0
300011	Work Group = Landscaping
300021	Work Group = Rest Areas
300031	Work Group = Traffic
300041	Work Group = Safety
300051	Work Group = Structures
500011	Environmental Type = Categorical Exclusion
500021	Environmental Type = Environmental Assessment
500031	Environmental Type = Environmental Impact Statement
900011	# of Municipal Utilities = 0
900022	# of Signal Locations = 0
900032	# of Utility Companies = 0
900041	# of Right of Way Parcels = 0
900042	# of Right of Way Parcels = 0 & # of Relocation Units = 0
900051	Local Agreement Required = No
900071	# of Railroad Companies = 0
900082	# of Private Utilities = 0 & # of Municipal Utilities = 0 & # of Railroad Companies = 0
900091	# of Relocation Units = 0
900102	EPE Consultant = No
900121	# of Right of Way Parcels > 0 (duration increased by 60%)
900132	PE Consultant = No
900141	Topographic Survey = Field Survey
900142	Topographic Survey = No Survey

Switch ID	Switch Description
900151	EPE Corridor Mapping Required = Yes (multiply by .9)
900163	# of Stream Crossings/Flood Plains = 0 & # of Navigable Waterways = 0 & Coastal Zone Involvement = No
900167	# of Stream Crossings/Flood Plains = 0 & # of Navigable Waterways = 0 & Wetlands Involvement = No & Coastal Zone Involvement = No
900171	# of Stream Crossings/Flood Plains = 0
900181	Subgrade Work/Work Outside Existing Shoulders = No
900192	# of Municipal Utilities = 0 & Freeway Lighting = No
900193	Permanent Signing = Yes and Road Class = DM, ML, or TL
900194	Permanent Signing = Yes and Road Class = CA
900195	Permanent Signing = No
900196	Signing = Yes and Road Class Non-Fwy and Work Group = 6
900201	Right of Way Consultant = No
900212	Right of Way Parcels = 0 and PE Consultant = No
900215	Value Engineering = No

PROCESS Analyze Schedule

The time analysis option for the Job/Project Area performs the basic critical path method (CPM) analysis functions which are inherent in the CAT application.

These functions include logic checking, forward time analysis to calculate the earliest possible start and finish dates for each task, and backward time analysis to calculate the latest possible start and finish dates (the latest a task can be started or finished and still complete a predetermined milestone on time). The total float for each task in a job is also calculated.

To begin this process, the Project Manager selects a job, version or multi-job project under the Open menu option. The user is then placed in a session in which job/project related menu options are available. The Project Manager selects "Analyze Schedule" under the PROCESS menu option.

Once a time analysis has been performed, the early start and finish dates and the late start and finish dates are stored in the network for use in reporting. The

Project Manager can request reports and graphics, including comparisons of current job status to the stored job schedules.

This option is the basic analysis upon which all other analyses build and must be run once successfully before any other analyses can be performed or reports generated. This option is valid only for jobs with a generated network. At all other times, the option will be "ghosted" or restricted.

PROCESS Resource Summarize

The Resource Summarize option for the system performs a roll-up of resource requirements (if available) by task.

This option is valid for jobs, versions, or multi-job projects. The user is able to summarize by Month or Year. This process must be run on the open job, version, or multi job project in order for a Resource Histogram or Resource Summarization Report to be run.

PROCESS Assign Mgt Units

This option is generally run on a Generic Job (unknown characteristic management units) to assign the proper work units to tasks after they have been entered via the 'Edit' – 'Characteristics' option, and thus replace the generic work units.

PROCESS Re-Assign All Resources

This option is generally run when any Characteristic Management Units have been changed, or when tasks have been added or resources for tasks changed. This assures that tasks will have the correct resources assigned to them.

PROCESS Rebuild Task/Milestone

This option rebuilds the task/milestone based on the job characteristics.

PROCESS Submit Refined Network

This option alerts programming that all refinements are complete and that a job is ready for programming in the Statewide Master Program. In most cases, these changes are accompanied by a Program Revision Request (Form 2604) documenting major changes and referencing the job version for verification. When this step is completed, the status of the job at the bottom of the screen will change to 'Refined'.

PROCESS Retract Refined Network

If, after a network has been refined and submitted, but has not yet been approved and added to the Statewide Master Program, a mistake is found or another refinement is found to be necessary, choose this option to remove the job's network from the refinement list in order to make changes and then resubmit.

LISTINGS Options

The LISTINGS options display basic information about jobs, job versions, and multi-job projects. When listing options are selected, the listing is displayed on the user's screen in a CAT utility called "view file." This utility permits the user to view the listing on the screen with both scroll and page capabilities. If the Print button is selected while viewing the file, the listing is sent to a printer selected by the user. The "view file" utility also gives the user the option of saving the listing to a file so that it may be retrieved at a later time with UTILITIES View A File.

The results of the various P/PMS processes are available to the user under the REPORTS options.

LISTINGS Details

This option lists the job or project details. Displayed is the Job Details Listing for the open job, version, or multi-job project, which include: control section, job number, version number route, location description, target start date, target plan completion date, target letting date, target finish date, target float, project manager, scheduling specialist, construction cost, fund template, consultant name, remarks and MPINS status.

LISTINGS Characteristics

This option displays the job characteristics. For the job/version, it shows all of the entries on the "P/PMS Job Data Form" in a format emulating that form. A separate form is produced for each job in a multi-job project.

LISTINGS Consultant Checklist

This item allows the user to display a list of all tasks selected to be done by consultant, and the contract type selected.

LISTINGS Tasks

This option will display a list of all of the tasks slated to be completed in the job’s network, including the Baseline, Scheduled, and Actual Start and Finish dates, plus the task duration and float (lateness).

LISTINGS Tasks and Constraints

This option lists the task and constraint information for the open job, version or multi-job project. For each task it shows the task identifier and description, WBS code, duration, calendar, preceding tasks, succeeding tasks, constraint type, and constraint delay. The listing is sorted by the task number within job number (for multi-job projects).

LISTINGS Responsible Units

This option presents the user with a list of the current in-house and consultant responsible units for each task in the P/PMS Global Network.

LISTINGS Resources

The user selects the task number to be displayed (or all tasks) and an organization code (or all organization codes). This option lists each task number, duration, and description followed by the resources with their organization code, description, labor hours, quantity and calendar. The listing is sorted by task identifier and resource code within job number (for multi-job projects).

LISTINGS Resource Totals

This option will, for a particular open job/project, list the total labor hours and quantity for each organization listed as a resource on any task(s) in that job/project.

LISTINGS Advanced Network Planning

This option will, for a particular open job/version, list the Task Number, Task Description, Duration, Planned Start and Planned Finish Date for any task in the selected Job/version that has Planned Start/Finish dates entered for tasks.

LISTINGS Job Access

The Job Ownership/Access Listing displays the job number, job owner, and all users having access to the job. The listing shows the job owner and all users with access to that job.

LISTINGS New Jobs

This option allows the use to obtain a print out on all jobs in P/PMS that network generation has not started yet.

REPORTS Options

When report options are selected, the report is displayed on the user's screen in a CAT utility called "view file." This utility permits the user to view the report on the screen with both scroll and page capabilities. If the Print button is selected while viewing the file, the report or graph is sent to a printer or plotter selected by the user. The "view file" utility also gives the user the option of saving the report to a file so that it may be retrieved at a later time with UTILITIES View A File.

REPORTS Job

The following reports are available for any job in the system. The user is required to select a job, job version or multi-job project from the FILE Open option prior to running these reports.

Job Status

Selection of this menu option presents a pop-down menu from which the user can pick a job owner/project manager. A prompt box is displayed that asks the user if the report should be based on Plan Completion dates or Letting dates. The pop-down list that follows includes all users, and not just job owners. Only job owner's jobs and the job status will be shown (new, un-generated, generic, unrefined, and in the program). The list includes, where applicable, the date of Approval, the Scheduled Date, the Target Date, and the current float.

PC and Letting

Selection of this menu option presents a pop-down menu from which the user can pick a job owner/project manager. A list of all that owner's programmed jobs will then appear, including the Scheduled Plan Completion Date, the Target Plan Completion Date, the Scheduled Letting Date, and the Target Letting Date to meet, plus the current float.

Job Performance

Selection of this menu option presents a pop-down menu from which the user can pick a job owner/project manager. The Job Performance Report displays region, control section, job number, version, project manager, route, location/description, work type, job status, approved letting, scheduled letting, current float and construction cost for all jobs listed for the chosen job owner/project manager. This report also gives the cost and letting status by the quarter and the schedule status for all jobs for the specified job owner/project manager.

Cost Performance Report

The Cost Performance Report displays planned, earned and actual costs for each task in the open job or version. Costs may be sorted by either Task or Resource. Cost totals are displayed both for the previous month and cumulative to date. These include planned, earned, and actual costs as well as schedule and cost variances. This option is not available for multi-job projects

Earned Value of Work Performed Chart

The Earned Value of Work Performed Chart displays plots of the budgeted hours of work performed (BHWP) and the budgeted hours of work scheduled (BHWS) for the open job or version. Comparison of the two plots indicates whether the job is on schedule. This option is not available for multi-job projects.

REPORTS WBS/OBS

Work Breakdown Structure (WBS) Report

The WBS Report displays WBS codes and their corresponding descriptions for each task in the open multi-job project, job or version. The report is sorted by job for a multi-job project.

WBS Schedule Rollup Report

The WBS Schedule Rollup Report summarizes schedule and cost information for each level in the work breakdown structure hierarchy and rolls it up to the next WBS level for the open job, version, or multi job project. For each task, scheduled start and finish dates, actual start and finish dates, and total hours and costs are shown. The report is grouped by job number for a multi-job project.

WBS Roll-Up Gantt Chart

The WBS Schedule Gantt Chart shows early start and finish dates for each task in the open job, version or multi-job project. Tasks are identified by WBS code. The chart displays the variances among the following dates: current schedule, original and current approved dates, and in-progress/actual schedule. The chart is grouped by job number for a multi-job project.

Organizational Breakdown Structure (OBS) Report

The OBS Report displays OBS codes and their corresponding descriptions and levels for the open multi-job project, job or version. The report is sorted by job for a multi-job project.

OBS Schedule Roll-up Report

The OBS Schedule Roll-up Report summarizes schedule and cost information for each level in the organizational breakdown structure hierarchy and rolls it up to the next OBS level for the open job, version, or multi job project. For each organizational unit, scheduled start and finish dates, actual start and finish dates, and total hours and costs are shown. The report is grouped by job number for a multi job project.

Organizational Breakdown Structure (OBS) Roll-up Gantt Chart

The OBS Schedule Gantt Chart shows early start and finish dates for each resource in the open job, version or multi-job project. Resources are identified by OBS code. The chart displays the variances among the following dates: current schedule, original and current approved dates, and in-progress/actual schedule. The chart is grouped by job number for a multi-job project.

Organizational Breakdown Structure (OBS) Diagram

The Organizational Breakdown Structure (OBS) Diagram shows OBS codes and descriptions for the selected job or version in a graphic format. Boxes identify each organizational function. The functions are arranged and connected in a tree structure, with higher-level functions located above the lower-level functions. The horizontal scroll bar controls vertical movement of this report. This option is not available for multi-job projects.

REPORTS Tasks

Task Status

Selection of this report provides task status for all tasks in the selected job where the task has an actual start date, but not the actual finish date. The report includes information on the task number, description, relevant dates (approved start and finish, scheduled start and finish, and actual start and finish), responsible reporting unit and the current float. Tasks which have a Planned Start or Planned Finish entered on them will be indicated by an asterisk.

Late Tasks Report

The Late Tasks Report lists all tasks that are behind schedule in an open job or multi job project. Tasks are identified by job, task number, and task description. For each task, the current approved, scheduled and actual start and finish dates, and the number of days the task is behind schedule is displayed. This report is sorted by organizational code and then by control section and job number.

Completed Tasks

The Completed Tasks Report lists all tasks that are completed in an open job or multi-job project. Tasks are identified by job, task number, and task description. For each task, the duration, responsible unit, the approved, scheduled and actual start and finish dates and float is displayed. This report is sorted by Job Section, Job Number, Schedule Start and Task Number.

Task Gantt Chart

Selection of this report shows, in graphical format, task status for all tasks in the selected job. The criteria are determined using the selection screen that is presented to the user when the report is first selected. The report includes information on the task number, description, duration, relevant dates (approved start and finish, scheduled start and finish, and actual start and finish), and the current float.

Network Predecessor/Successor Report

The Network Predecessor/Successor Report displays, by task number, all preceding and succeeding constraints for each task in an open job, version, or multi job project. For each task, it shows the task number, task description, duration, current approved dates, current schedule dates, actual dates, and total float for the task. For each constraint, the following information is displayed: constraint flag (an indication of whether it is a predecessor or successor constraint), constraint description, constraint type, and constraint delay. For multi job projects, the report is sorted by control section and job number.

Version Changes Gantt Chart

The Version Changes Gantt Chart enables the user to determine the difference between a version's schedule and the job's approved schedule. The report shows the variances between the current approved dates and version schedule for all tasks in an open version. Task number, description, duration, percent completion and float are displayed for each task.

Network Logic Diagram

The Network Logic Diagram is a graph showing the logical sequence of network tasks, their interrelationships, and those tasks that make up the critical path for an open job or version. If a task has started, a line will be drawn from the lower left corner to the upper right corner of the task box. If the task has finished, an X will be drawn through the box. The diagram can be formatted for a large plotter or a laser printer, depending on the detail the user would like to see. The laser print will show only the task numbers and relationships. This option is not available for a multi job project.

Network Changes

This option presents the user with a list of all changes made to the current version's network from the original, including added/deleted tasks, constraint changes, and duration changes.

REPORTS Milestone

Milestone Status Report

The Milestone Status Report displays all milestone tasks for selected criteria in a job. The criteria are determined using the selection screen that is presented to the user when the report is first selected. The following information is displayed: Task Number, Description, Responsible Unit, Approved, Scheduled and actual dates for milestone tasks and current floats in the selected job.

Late Milestones Report

This report is similar to the Milestone report; however, it displays only the late milestones for the selected criteria. The criteria are determined using the selection screen that is presented to the user when the report is first selected. The following information is displayed: Approved, Scheduled and actual dates for milestone tasks in the selected job.

Completed Milestones Report

This report is similar to the Milestone Status Report; however, it displays only the completed milestones for the selected criteria. The criteria are determined using the selection screen that is presented to the user when the report is first selected. The following information is displayed: Task Number, Description, Responsible Unit, Approved, Scheduled and actual dates for milestone tasks in the selected job.

Milestone Gantt Chart

Selection of this report shows, in graphical format, milestone status for all milestones in the selected job. The criteria are determined using the selection screen that is presented to the user when the report is first selected. The report includes information on the task number, description, duration, relevant dates (approved start and finish, scheduled start and finish, and actual start and finish), and the current float.

Milestone Summary Report

The Milestone Summary Report displays the schedule dates for all milestones in the open job, version, or multi job project. Milestones are grouped under the following Work Breakdown Structure task groups:

Job Scoping
EPE Scoping Analysis
EPE Draft Analysis
EPE Final Analysis
Contamination Investigation
Design Scope Verification
Base Plans Preparation
Preliminary Plans Preparations
Utilities/Railroads
Mitigation/Permits
Final Plan Preparation
Letting
Right Of Way Work
ROW Acquisition
ROW Relocation

Schedule start and finish dates are shown for each roll-up work breakdown structure activity. Only WBS activities that have associated milestones will appear on the report. The report is grouped by job number for a multi-job project.

Milestone Summary Gantt Chart

The Milestone Summary Gantt Chart gives the same information as in the Milestone Summary Report in graphic form. Schedule dates for each milestone are represented as diamonds placed against a time line. Schedules for each WBS task group are shown as horizontal bars. The report is grouped by job number for a multi-job project.

REPORTS Resources

Responsibilities Work Schedule Report

The Responsibilities Work Schedule Report displays scheduled and actual start and finish dates for each task in the open job or version, sorted by responsible units. If a task is not scheduled to be worked on during the period chosen (typically four months), it will not appear on the report.

Responsibilities Work Schedule Gantt Chart

The Responsibilities Work Schedule Gantt Chart shows the Responsibility Work Schedule in graphical format. User selects to create report by Task Number, Time Frame, Resource Unit or Resource Group.

Management Work Schedule Report

The Management Work Schedule Report displays scheduled and actual start and finish dates for each task in the open job or version. If a task is not scheduled to be worked on during the period chosen (typically four months), it will not appear on the report. The report is sorted by organization code and can be displayed for a single organization, several organizations, or all organizations working on the task. This option is not available for multi-job projects.

Management Work Schedule Gantt Chart

The Management Work Schedule Gantt Chart displays in graphical format the current schedule for each task in the open job or version. If a task is not scheduled to be worked on in the time frame selected, it will not appear on the chart. The user selects a single organization, several organizations, or all organizations. The chart displays in-progress tasks with the scheduled and approved dates. Also, included are the budgeted and actual hours for each task. The report is sorted by organization code and task number.

Resource Histogram

The Resource Histogram graphically displays the resource quantity required, available, and overloaded over time for an open job, version or multi job project. The user selects a date range and an organization code for the histogram. PROCESS Resource Summarization must have been run last on the open job, version or multi-job project. Time units shown on the x axis of the histogram will be those selected when the Resource Summarization was run.

Resource Summarization Report

The Resource Summarization Report enables the manager to monitor resource consumption over time to help optimize resource allocation. The report displays required, available, overloaded, and under loaded resources over time for the open job, version or multi-job project. The user selects a single organization, several organizations, or all organizations to appear on the report. PROCESS Resource Summarization must have been run last on the open job, version or multi-job project. Time units shown on the report will be those selected when the Resource Summarization was run. The report is sorted by organization code and "from" and "to" dates within job number (for a multi-job project).

Work Plan Schedule and Labor Estimates Report

The Work Plan Schedule and Labor Estimates Report displays the resources assigned to each task in the open job, version or multi-job project. For each organization working on the task, resource quantity and labor hours are shown. Information displayed for each task includes: task number, task description, duration, schedule start and finish dates, total float, and total labor hours being provided by the specified organizations. The report is grouped by job number for a multi-job project.

Resource Change Report

The Resource Change Report provides an audit trail of added, deleted, and revised resources for an open job, version, or multi job project. The report shows for each affected task, the task number, task description, task duration, organization code and description, resource quantity and labor hours, and the date the change was made to the resource.

REPORTS Payroll

P/PMS Payroll Reports

The payroll reports can either be generated by month or cumulative for a job. Both reports use data imported from finance files to the P/PMS system's Unix server. The following paragraphs explain each option.

Payroll Data From DCDS Downloads

The user selects, from a pop-up menu, data from DCDS by Payroll Year/Quarters, Manager/Employee, Task Number, Resource Unit, Resource Group and Sort order. Data presented is hours and costs for individual employees.

Payroll Data from P/PMS

Payroll information from P/PMS is not as detailed, and will contain information rolled up to the organizational level.

The user selects, from a pop-up menu, data from PPMS by Task Number, Resource Unit, Resource Group and Sort order. Data presented is hours and costs for individual employees.

UTILITIES Options

The UTILITIES options allow the user to check the status of output requests, printer and plotter queues, the output spooler and the contents of the current file system directory. For options that display system information, the report is captured in a file with title and header information then presented on the screen in a flexible "view file" window. This capability also allows the user to send the output to a file or to the printer.

UTILITIES User Environment

The UTILITIES Current User Environment option shows the user's name, access type, local printer and plotter and the open item.

UTILITIES Select Data Entry Type

The UTILITIES Select Data Entry Screen Type option allows the user to specify the type of screen to use for entering data throughout the P/PMS. The options on this menu are mutually exclusive: one option will be selected at all times and selecting one option de-selects all others. This Select Data Entry Type utility is also available under UTILITIES in both the Job/Project and Program Areas.

Screen Form

Selecting this option presents the user with standard screen form data entry screens in which only one record is visible at a time. This type of data entry is useful for entering new data.

Spreadsheet Form

Selecting this option presents the user with all data entry screens in a spreadsheet format, listing fields in columns and records in rows. It shows many records on the screen at one time allowing rapid updating of multiple records.

UTILITIES Change Password

The Change Password utility enables the user to change his or her P/PMS password. The new password must differ in at least 3 positions form the old password.

UTILITIES View a File

The View a File utility enables the user to view a file that was previously saved. If the user is not an Administrator, then the user can only view his or her own files. If the user is an Administrator, then the user can view anyone files.

UTILITIES Delete a File

The Delete a File utility enables the user to delete a file that was previously saved. If the user is not an Administrator, then the user can only delete his or her own files. If the user is an Administrator, then the user can delete anyone's files.

UTILITIES Work Days Calculator

This option allows the user to calculate the number of work days between any two given dates, which can provide a means for calculating durations, among other uses. The user inputs the start date, then the finish date, and regardless of the order, the system calculates the number of work days between them.

HELP Options

HELP

About P/PMS

This option will present the user with a dialog box containing information about the current version of the P/PMS.

Chapter 4 Program Area

Jobs or versions of jobs are combined into Departmental programs or program scenarios (what-ifs) in the Program Area. Programs are created and managed in the Program Area.

This sub-system is the top-level program control area of the application. It retrieves job networks from the Job/Project Area and makes them available for program level time analysis, resource scheduling, running reports and for program scenarios.

Key Elements

The key elements of the Program Area are as follows:

- PROGRAM DEVELOPMENT - Programs are developed by first creating a program scenario and then replacing the current program with an approved scenario. Once a program is approved, information about each of the jobs in the program is written back to the jobs. Program information is also used to direct the actions of the organizational units.

- PROGRAM SCENARIOS - Program scenarios are program-level "what-ifs" that are created in the Program Area. New releases of the overall program are first created as a program scenario by copying the current program to a scenario and modifying it. Alternate scenarios can be created to determine the best plan to accommodate changing requirements, whether long or short term.

- RESOURCE ANALYSIS - Job schedules which have been combined into a departmental program or program scenario can be analyzed for resources required against availability for the existing schedule. They can, in a program scenario, be "resource scheduled," which adjusts the scenario schedule to meet the Department's resource availability profile.

- PROGRAM REPORTING - Management reporting is performed from the Program Area. The long-range, annual, and four month views of the program schedule are captured here, as is analysis of schedules against the available resources.

Menus

Depending on the selections made the application will "ghost-out" or restrict users from accessing certain options from the menu structure. For example: When a user creates a new scenario from the FILE New option, all PROCESS options except for analyze schedule are restricted or "ghosted" until the new scenario passes a network logic check. This approach navigates the user to specific options, allowing an almost intuitive flow in application processes.

The **Program Area** menu options are as follows:

- Main Menu Options
  - Sub-Menu Options
    - Sub-Sub-Menu Option
- FILE
  - New
    - Statewide Master Program
    - Scenario
    - Resource Profile
  - Open
    - Statewide Master Program
    - Scenario
    - Resource Profile
  - Close Session
  - Delete
    - Scenario
    - Resource Profile
  - Go to Job/Project Area
  - Go to Administration Area
  - Main Menu
  - Exit
- EDIT
  - Scenario Details
  - Scenario Jobs
  - Resource Profile Details
  - Resource Profile Availabilities
  - Project Status Comments
- PROCESS
  - Analyze
  - Resource Schedule
  - Resource Summarize
  - Hours/Cost Summarize
  - Schedule New Program

- LISTINGS
  - Scenario Jobs
  - Program/Scenario Access
  - Job Involvement
  - Programmed Jobs
  - Refined Jobs
  - Un-Refined Jobs
  - New Jobs
  - Resource Profile Availabilities
  - Critical Resource Availabilities
  - Jobs for Archiving
  - Jobs for Un-archiving
  - Jobs for Deleting
  - Jobs for Programming
  - Project Status Comments
- REPORTS
  - Program/Project
    - Project Status
      - Custom Report
      - Historical Report
      - Changes Report
    - Program Status
      - Custom Report
      - Combined Report
      - Historical Report
      - Combined Historical
    - Benchmark Status
      - Partial – Job/Cost Data by Month
      - Full – Job/Cost Data by Month
      - Cumulative Cost Data Line Chart
      - Job/Cost Data by Region
      - Monthly Job Data by Region
    - Network Status
    - Program Performance
    - PC and Letting
    - Cost Performance
      - By Task
      - By Resource
    - Earned Value of Work
      - By Hours
      - By Cost
  - WBS/OBS
    - Work Breakdown Structure (WBS)
    - WBS Roll up
    - WBS Roll-up Gantt Chart
    - Organizational Breakdown Structure (OBS)

- OBS Roll up
- OBS Roll-up Gantt Chart
- Tasks
  - Task Status
  - Late Tasks
  - Three Month Late Tasks
  - Completed Tasks
  - Task Gantt Chart
- Milestones
  - Milestone Status
  - Late Milestones
  - Completed Milestones
  - Design Length Gantt Chart
  - Milestone Gantt Chart
  - Milestone Summary
  - Milestone Summary Gantt Chart
- Resources
  - Responsibilities Work Schedule
  - Responsibilities Work Schedule Gantt Chart
  - Management Work Schedule Report
  - Management Work Schedule Gantt Chart
  - Resource Histogram
  - Resource Summary Report
  - Hours/Cost Summary
- Payroll
  - DCDS
  - PPMS

UTILITIES

- User Environment
- Select Data Entry Type
  - Screen Form
  - Spread Sheet
- Change Password
- Mark Jobs for Archive
- Archive Jobs
- Un-Archive Jobs
- View a File
- Delete a File

HELP

- About P/PMS

FILE Options

This menu is used to control the manipulation of files in the Program Area. Creating a new program or scenario or opening an existing program, scenario or resource availability profile is accomplished in this menu. Changes can be made in the Program Area only by Program Manager, Scheduling Specialist - Program Manager Assistant, and Application Administrator access types.

FILE New

The sub-options under New allow the user to create a new program, program scenario or resource availability profile.

FILE New Statewide Master Program

This option pops up a screen stating that the user is about to replace the current Departmental program with a new plan, and asks whether to continue. If the response is "Cancel," the user is returned to the main Program Area menu.

If the response is "OK," a list of the existing multi-job scenarios (sorted by scenario characteristic: A, B, C or D) is displayed from which to the user selects the one that will become the new current program. The user is again prompted that the current departmental plan is about to be replaced by the selected plan and is asked whether to continue. If the response is "Cancel," the user is returned to the main Program Area menu; otherwise exception checking takes place and the selected job scenario replaces the current program if it passes the checks. All existing scenarios are deleted when this option runs.

The user can close the session at any time in this process. If this is done before responding positively to the prompt after the warning, no changes will occur to the program.

FILE New Scenario

This option presents the user with a data entry screen containing the scenario detail fields and a scenario designator field. The next available scenario ("A," "B," "C" or “D ") is displayed. The user enters a scenario description and a resource availability profile identifier. If all four scenarios exist, the option is not available and one must be deleted to create a new one. The system sets the scenario generation date.

The user then chooses whether to copy the current Program or one of the existing scenarios as a starting point for modifications. If this choice is made a window appears which allows the user to select the current program or scenario or "return to menu." If the user wants to begin with a list of all the jobs with the status of

"programmed" or "active," then the current program should be selected. The new scenario is built by copying schedule networks, status, and resource records from the program or scenario selected.

At this point the user selects EDIT Job/Project Add/Delete, EDIT Job Priority or EDIT Job-Task Details by job to make further modifications to the new scenario. This is also the selection required in order to build the scenario manually by selecting individual jobs.

FILE New Resource Profile

This option presents the user with a data entry screen which shows the resource availability profile detail fields and a resource availability profile designator field. The next available profile ("A," "B," "C" or “D ") is displayed and the user enters a profile description. If all four profiles exist, the option is not available and one must be deleted to create a new one. The availability profile for the current program cannot be selected. The system sets the availability generation date.

The user then chooses whether to copy the current program profile or one of the existing profiles as a starting point for modifications. If this choice is made a window appears which allows the user to select the current program profile or another availability profile or "return to menu." When the user makes a selection, the new profile is from the selected availability table.

At this point the user selects EDIT Resource Availability Profile Details in order to make further modifications to the new availability profile. This selection can also be used to enter the new profile manually.

FILE Open

The sub-options under Open allow the user to select an existing program, scenario or resource availability profile for editing, processing, listings or reports.

FILE Open Statewide Master Program

The current Department program can be opened only to run reports or to summarize resources. It cannot be opened for editing or other processing since it is base lined. If a change to the current program is required, it must be done by copying the program to a scenario, making the changes and creating of a new program.

Menu options available after FILE Open Program include the LISTINGS and REPORTS options. The PROCESS sub-options Analyze Schedule and Resource Scheduling and EDIT are not available since the program is base lined at the time it is created. FILE Delete is not available since the program is deleted only by creation of a new program.

FILE Open Scenario

This option presents a list of the available scenarios from which the user can select. Upon selection of a scenario the menu options restricted under FILE Open Scenario are EDIT for a resource availability profile. Constraints between jobs can be modified using EDIT with a multi-job project in the Job/Project Area. Individual jobs can be added or deleted, with the provision that the same job cannot exist twice in the same scenario. FILE Open Scenario is not available if no scenarios exist.

FILE Open Resource Profile

This option presents a list of the existing resource availability profiles from which the user can select. Upon selection of a resource availability profile, the user menus allow options and sub options under EDIT, LISTINGS and REPORTS. Open is not available if no profiles exist.

The resource availability profile that is attached to the Department program cannot be opened; it can only be viewed. This is done with LISTINGS Resource Availabilities Table when the current program is open.

FILE Close Session

This option closes the active program, scenario or resource availability table and returns the user to the Program Area menu.

FILE Delete

Scenarios and resource availability profiles are removed from the Program Area with this menu option. Due to the critical nature of deletion, certain types of data may only be deleted by specifically authorized persons.

FILE Delete Scenario

Scenarios may be deleted only by an authorized user. Delete is not available if no scenarios exist.

This option can be selected directly from the FILE menu; the scenario need not be "opened" in order to delete it. When this option is selected, a window appears showing all existing scenarios. The user can select any of the scenarios for deletion. Upon selection, verification prompt is displayed to the user which confirms the request. If the response is "Yes," all records are deleted from the selected scenario network and resources.

FILE Delete Resource Profile

Resource Availability Profiles may be deleted only by an authorized user. Delete is not available if no profiles exist.

When this option is selected, a window appears showing all existing resource availability profiles except the profile attached to the current program. The user can select any of the resource availability profiles on the list. Upon selection, a verification prompt is displayed to the user which confirms the request. If the response is "Yes," all records are deleted for the selected resource availability profile.

FILE Go to Job/Project Area

When this option is selected the application will exit out of the Program Area, enter the Job/Project Area, and place the user in the Job/Project Area main menu. If a program, scenario or resource availability profile is still open, the option is not available.

FILE Go to Administration Area

When this option is selected the application will exit out of the Program Area, enter the Administration Area, and place the user in the Administration Area main menu. If a program, scenario or resource availability profile is still open, the option is not available.

FILE Main Menu

Selection of this option will take you back to the main menu screen where the user can choose from CAT Prompt, Assessments, P/PMS, Construction, or Exit the system.

FILE Exit

When this option is selected, the application will check the state of the user's session. If a program, scenario or resource availability profile is still open then the open item will be closed, then the application will log out of P/PMS and return to the Unix Login prompt.

EDIT Options

The Program EDIT functions are used to change the contents of a scenario or resource availability profile.

EDIT Scenario Details

The user is presented with a screen showing the open scenario identifier, description, generation date, and resource availability profile identifier. The user can modify the description field, and the resource availability profile the scenario uses.

The resource availability profile is identified with the scenario for further summarizations and reports until changed in this screen.

EDIT Scenario Jobs

The user is presented with a screen showing the open scenario and the jobs associated with it. The user can add or delete jobs to the open scenario.

EDIT Resource Profile Details

The user is presented with a screen showing the resource availability profile identifier, description, and generation date. The user can modify only the description field.

EDIT Resource Profile Availabilities

A data entry screen is presented that shows the organization code, organization description, quantity, calendar, and beginning and ending availability dates for resources.

The user determines the available quantity of a given resource in each time period (defined by the beginning and ending dates) by creating a record for each period. The quantity available is treated as additive for each day of overlap if multiple records exist for a given resource code within the same time period.

EDIT Project Status Comments

The user is presented with a selection screen from which they may identify more specifically what data they wish to view, including combinations of that data. These include: Fiscal Year, Project Manager, Organization Code, Region, Work Type, Work Group, Job Type and Task Number. Jobs meeting the criteria are selected and Project Status Comments are presented for selected jobs.

PROCESS Options

The PROCESS options provide the capability to perform the various processes required to develop a schedule, schedule resources, roll up cost and schedule performance, roll up information by organizational structure, etc.

PROCESS Analyze

The Analyze e option for the Program Area performs critical path method (CPM) analysis functions on a scenario.

These include logic checking, forward time analysis to calculate the earliest possible start and finish dates for each task, and backward time analysis to calculate the latest possible start and finish dates (the latest a task can be started or finished and still complete a predetermined milestone on time) and the total float for each task in a job against the job's planned completion date.

To begin this process, the user selects "Scenario" under the File Open menu option. A dialog box is then presented from which the program scenario to be analyzed can be selected. Once the specific scenario is chosen the user is placed in a session in which scenario-related menu options are available. The user then selects PROCESS Analyze.

PROCESS Analyze first performs a check on the schedule network to ensure that all required information exists and that the tasks and constraints in the network are linked in a logically complete and valid way.

The earliest possible start and finish dates are determined through a forward time analysis, beginning at the target start date for each job. Each task is addressed in logical order, beginning with the first task in the network. The first task is assigned an earliest starting date equal to either the job's target start date or the most recent status update date, whichever is later; or the actual start date reported for the task, which over-rides all other dates. The task is assigned an earliest completion date equal to either the earliest starting date plus the duration of the task or the actual finish date reported for the task, if available. The rest of the tasks are treated in logical order in the same manner, except that their earliest possible dates are dependent on the dates for the tasks which immediately precede them.

The latest possible start and finish dates are determined through a backward time analysis, which functions in the same way as the forward analysis, except that the "first" task in this analysis is the last task in the network, and the job target completion date is the "starting point."

The difference between the earliest and the latest dates for each task determines the "float" or the amount of time each task can slip from its early dates without pushing the completion of the job beyond the target completion date. If the job has slipped so much that the target completion will be missed, then the "earliest possible" dates are later than the "latest allowable," and the float will be a negative number which represents the amount of time that must be recovered in order to complete the job by the target date.

Once a time analysis has been performed, the early start and finish dates and the late start and finish dates are put into the scenario network for reporting. The user can generate the system reports and graphics, including comparisons of new schedules to the stored job schedules.

This option is the basic analysis upon which all other analyses build and must be run once successfully before any other analyses can be performed or reports generated. This option is valid only when scenarios have been selected under the FILE New or Open menu options.

PROCESS Resource Schedule

The resource scheduling option for the Program Area performs resource-constrained or time-constrained resource schedule analysis. If no resource availability profile is specified for the scenario or the open item is not a scenario, this option is not available.

The user can "time-constrain" schedule an existing program scenario to determine how well the resource requirements of the scenario fit the selected resource availability profile. Should the resources required by the basic schedule exceed the planned resource availabilities, a scenario can be "resource-constrain" scheduled, adjusting the schedules of the individual job tasks to fit the availability of resources, taking into account the relative priorities that have been assigned to each job.

To start the process the user selects "Scenario" under the FILE Open menu option. A screen then appears from which the user selects the program scenario. Once the specific scenario is chosen, the user selects PROCESS Resource Schedule.

The user can specify the order by which the resource scheduler will assign available resources to tasks for each of the jobs/versions and multi-job projects contained in the scenario. The default order is the following:

1. priority of the job or project (which puts the top 50 jobs/projects first)
2. job or project target completion date
3. job total float
4. job target start date
5. job or project status code (in inverse order)

6. job number.

Within each job, tasks are scheduled against the resource availabilities in order of each task's:

7. total float (those with the least float are scheduled first)
8. early start
9. early finish
10. forward rank
11. record number.

The user can either accept the default order (above) or redefine the order priority by selecting and ordering the fields in 2, 3, 4 and 5 above.

The user chooses whether the schedule process will be "time-constrained" or "resource-constrained." If the user selects "time-constrained," no task will be delayed beyond its total float in order to resolve resource overloads. If the user selects "resource-constrained," then the user must enter an integer which specifies the maximum delay in network durations that the entire schedule can slip. That is, an entry of "2" limits the total duration of the resulting schedule to two times the original schedule duration.

By default, all task resources are set such that the duration will be split, if necessary, to accommodate periods where there are no resources available. If a resource exists which cannot be split, or which, once begun, must be continued for a minimum period, the "maximum splits" and "minimum split duration" values must be set for the resource in the Job/Project Area using EDIT Job Resources.

Starting with the first job in the user-defined priority list (see above), the resource scheduler looks at each task in each job. As the resource scheduler addresses the task, it determines whether sufficient resources are available within the task's time frame to meet the requirements of the task. If so, the task is scheduled and the resources expended are subtracted from the remaining available resources for that period. If not, the resource scheduler determines the earliest period in which all of the required resources are available and schedules the task for that time frame. If all required resources are not available for the full duration required but are available intermittently for periods equaling the full duration, the task is scheduled around that intermittent availability. This is continued until all tasks for the job are scheduled. The resource scheduler then moves on to the next job and repeats the process. This whole process is dependent upon whether the process is "time-constrained" or "resource-constrained."

When the resource scheduling process is completed, early start and finish dates for each task will have been set to the dates allowed by the resource availabilities.

These dates are saved into the scheduled date fields. After this, the information is available for the resource summarization (see PROCESS Resource Summarize, below) to be run, summarizing the requirements for any period (days, weeks, months,) for any time frame, and for any group of resources. The user can then run the system reports and graphics, including comparisons of the resource schedule against the basic, non-resource schedule.

This option is not available if the PROCESS Analyze Schedule is not current. The Analyze Schedule is "not current" if anything has been done to the network data that would change the results of that analysis. In the Program Area, this could involve a change in duration or resource availability or addition/deletion of jobs or projects.

PROCESS Resource Summarize

The resource summarizes option for the Program Area performs resource summarization. This option is not available when PROCESS Analyze Schedule has not been run. It can be requested for the current program or for a scenario.

The resource summarization calculates the requirement for each resource against the availability of that resource and determines the overloads and under loads for each resource for each period after either a schedule analysis or a resource schedule has been performed.

To start the process, the user selects either "Program" or "Scenario" under the FILE Open menu option. A screen is then presented from which the program or scenario to be summarized can be selected. The user is placed in a session in which program or scenario-related menu options are available. The user can then select PROCESS Resource Summarize.

A pop-up screen appears which allows the user to select the time frame to be summarized (months or years).

When the resource summarization process has completed, the user can run the Resource Histogram and Resource Summarization Report, which compare the resource requirements against the resource availabilities. The resource requirements used in the reports will be those generated by the most recent schedule analysis or resource schedule process performed.

PROCESS Hours/Costs Summarize

Summarize Hours/Costs computes the actual labor hours and associated costs against the available or planned labor hours and associated costs within each period specified by the user. This information is organized by calendar period, rather than by function/element. This option can be run for the current program or for a scenario. It is not available when PROCESS Analyze has not been run.

To initiate this process, the user selects "Program" from the FILE Open menu option. The user can then select PROCESS Hours/Cost Summarize. The user must enter Summarization Start Date, Summarization Finish Date, Time Span of Summarization (day, week, month, quarter, year) and the number of time spans to be included in the summary.

When the process has finished, the system will display a completion message, and the user can generate the Hours/Cost Summarization Report.

PROCESS Schedule New Program

Choosing this option allows user to schedule the New Program updates at a later date in time. A pop-up screen is presented allowing you to choose the day of the week, time of the day, New Program Scenario and Resource Profile.

LISTINGS Options

The LISTINGS options display basic information about the program and scenarios. When listing options are selected, the listing is displayed on the user's screen in a CAT utility called "view file." This utility permits the user to view the listing on the screen with both scroll and page capabilities. If the Print button is selected while viewing the file, the listing is sent to a printer selected by the user. The "view file" utility also gives the user the option of saving the listing to a file so that it may be retrieved at a later time with UTILITIES View A File.

LISTINGS Scenario Jobs

The Scenario Jobs listing displays all jobs, versions and multi-job projects included in the open scenario or for each program scenario by identifier ("A", "B", "C" or "D") if no scenario is open.

LISTINGS Program/Scenario Access

Selecting this option returns a listing of all users who have read/write access to scenarios and the current program. This lists Application Administrators, Program Managers and Scheduling Specialists.

LISTINGS Job Involvement by Unit

Selecting this option, when a program or scenario is open, presents the user with the opportunity to list all jobs in the current program or scenario that are involved in by a specific organizational unit in MDOT, with the option of a pop-down menu to select the organization from.

LISTINGS Programmed Jobs

Selecting this option returns a listing of all jobs in the current program. It shows the job section, number, route, location, target start, target Plan Completion, Target Letting, target finish, target float, priority code, and Project Manager for each job.

LISTINGS Refined Jobs

This option lists all refined jobs (versions) which have not yet been added to the Statewide Master Program, including the job section, number, version, route, location, target start, target Plan Completion, target Letting, target finish, target float, and Project Manager for each job.

LISTINGS Un-refined Jobs

This option lists all un-programmed jobs (versions) which have not yet been added to the Statewide Master Program or a Scenario, including the job section, number, route, location, target start, target Plan Completion, target Letting, target finish, target float, and Project Manager for each job.

LISTINGS New Jobs

Selecting this option returns a listing of all new jobs in the current program. It shows the Control Section, Job Number, Route, Location, Work type, Region, Target Plan Completion, Target Letting, Construction Cost, MPINS Status, and Project Manager for each job.

LISTINGS Resource Profile Availabilities

The Resource Profile Availabilities listing displays the resources which are available for all tasks in the open program or scenario. The report is ordered by resource code, the beginning and ending dates of each availability period and the quantity allocated. All records are displayed by default.

LISTINGS Critical Resource Availabilities

The Critical Resource Availabilities listing first presents the user with the option to choose a specific resource code from the open program or scenario. Leaving this blank will pull information for all resources. The user is shown the resource code, resource description, people per day, beginning availability, end availability and month remaining for all resource that are beyond capacity.

LISTINGS Jobs for Archiving

The Jobs for Archive listing displays the jobs which have been marked for archive or are Inactive or Completed. The fields displayed include job number, version, route, control section and job status.

LISTING Jobs for Un-Archiving

The Jobs for Un-Archive listing displays the jobs which have been marked for un-archiving. User can sort results by Control Section, Job Number, Project Manager, Target Letting or Archive Date. The fields displayed include control section, job number, project manager, route, description, target letting, MPINS status, archive date and project status comments.

LISTING Jobs for Deleting

The Jobs for Deleting listing displays the jobs which have been marked for deletion. User can sort results by Control Section, Job Number, Project Manager, Target Letting or Archive Date. The fields displayed include control section, job number, project manager, route, description, target letting, Non-Let Job Status, Local Job status, MPINS status, PPMS status and project status comments.

LISTING Jobs for Programming

The Jobs for Programming listing displays the jobs which have been submitted for programming. The search criteria are determined using the selection screen that is presented to the user when the report is first selected. The report includes information on the control section, job number, version, project manager, route, location description and submitting date. The report also shows approval or denial details and program change request information.

LISTING Project Status Comments

The user is presented with a selection screen from which they may identify more specifically what data they wish to view, including combinations of that data. These include: Fiscal Year, Project Manager, Organization Code, Region, Work Type, Work Group, Job Type and Task Number. Jobs meeting the criteria are selected and Project Status Comments are presented for selected jobs.

REPORTS Options

When a report is selected in the Program Area it is displayed on the user's screen using a CAT utility called "view file."' The features in the "view file" utility are described in REPORTS under the Job/Project Area. Many of the reports available may be tailored to specific data through the usage of the Reporting Selection Criteria Screen, whether or not it is specifically mentioned.

REPORTS Program/Project

The following reports are available for any scenario or the current program in the P/PMS. The user selects a scenario or the current program from the FILE Open option prior to running these reports.

Project Status

The Project Status Report first presents the user with a selection screen from which they may identify more specifically what data they wish to view, including combinations of that data. These include: Fiscal Year, Project Manager, Organization Code, Region, Work Type, Work Group, Job Type and Task Number. Jobs meeting the criteria are selected and status presented with regards to the major milestones of ROW, Base Plans, the Plan Review, OEC, Plan Completion and Letting.

Custom Report

This report creates a Project Status Report based on user defined criteria.

Historical Report

This report creates a Project Status Report, based on Historical Data in the system, for selected time frame only.

Changes Report

This report allows the user to pick a date range and compare the changes in the jobs in that range.

Program Status

The Program Status Report first presents the user with a selection screen from which they may identify more specifically what data they wish to view, including combinations of that data. These include: Fiscal Year, Project Manager, Organization Code, Region, Work Type, Work Group, Job Type and Task Number. Jobs meeting the criteria are selected and status presented with regards to the major milestones of ROW, Base Plans, the Plan Review, OEC, Plan Completion and Letting. The original date, approved date and actual dates are displayed along with job costs.

Custom Report

This report displays all the selection criteria in table form.

Combined Report

This report displays the information by Program, the top of the report displaying the totals and the bottom displays the construction dollars per month.

Historical Report

This report creates a Program Status Report, based on Historical Data in the system, for selected time frame only.

Combined Historical

This report displays the information by Program, the top of the report displaying the totals and the bottom displays the construction dollars per month based on historical data.

Benchmark Status

Partial – Job/Cost Data by Month

Top of the Report

This report is comprised of three sections: Historical Data – based on a user supplied historical date and selection criteria, Current Data – based on user supplied selection criteria, and All Data.

For each letting month and for each section, this report shows the number, budgeted cost and cumulative budgeted cost of jobs that were approved to be let versus the number, obligated cost and cumulative obligated cost of jobs that were actually let. The report also shows the number and cost of jobs added/deleted between the user supplied historical date and the date the report was run. The low bid costs are shown last to highlight differences with the obligated costs.

Bottom of the Report

Gives the user the job detail information to back up the numbers and costs on the top section of the report.

Full – Job/Cost Data by Month

Top of the Report

This report is comprised of thee sections: Historical Data – based on user supplied historical date and selection criteria, Current Data – based on user supplied selections criteria, and All Data.

For each letting month and for each section, this report shows the number, budgeted cost, cumulative budgeted cost, percent of budgeted cost total and cumulative percent of budgeted cost total of jobs that were approved to be let versus the number, obligated cost, cumulative obligated cost, percent of obligated cost total and cumulative percent of obligated cost total of jobs that were actually let (the actual letting data is displayed in tow ways: 'Actual Letting = Approved Letting' and 'Total Actual Lettings'). The low bid costs and cumulative low bid costs are shown last to highlight differences with the obligated costs.

Bottom of the Report

Gives the user the job detail information to back up the numbers and costs on the top section of the report.

Cumulative Cost Data Line Chart

This chart is comprised of three sections: Historical Data – based on user supplied historical date and selection criteria, Current Data – based on user supplied selection criteria and All Data.

For each letting month and for each section, this chart graphs the cumulative budgeted cost of jobs that were approves to be let versus the cumulative obligated cost of jobs that were actually let versus the cumulative low bid cost of jobs that were actually let.

Job/Cost Data by Region

For each region, this report shows Historical data for the number and cost of jobs that were approved to be let versus the number and cost of jobs that were actually let. It also shows percentages let by job and by cost. The low bid costs are shown last to highlight differences with the obligated costs.

Monthly Job/Cost Data by Region

Top of the Report

For each region, this report show Historical Data for the number of jobs that were approved to be let in a letting month versus the number of jobs that were actually let in that letting month.

Bottom of the Report

For each region, this report shows Historical data for the budgeted cost of jobs that were approved to be let in a letting month versus the obligated cost of jobs that were actually let in that letting month.

Network Status

The Network Status Report shows the overall status of the Program as divided into the five major job groups (Road Sides, Enhancements & other; Rehab/Reconstruct & Passing Relief; Increased Capacity & Expand; Bridge; traffic & Safety; Capital Preventative Maintenance). For job group there is listed the number of current archived, new jobs, un-refined jobs, refined jobs, the number of programmed jobs, and the number of late and on -time jobs. Percentages of jobs in that group that are programmed and percentages are also shown.

Program Performance

The Program Performance Report provides schedule and cost summaries for a specified district during a specified fiscal year. The top part of the report shows start dates and costs for each job awarded to the district during the selected fiscal year. The middle part of the report displays quarterly and overall totals for number of jobs awarded, the number of those jobs that are on schedule and the total dollar amount awarded.

PC and Letting

Selection of this menu option presents a pop-down menu from which the user can pick a job owner/project manager. A list of all that owner's programmed jobs will then appear, including the Scheduled Plan Completion Date, The Scheduled Letting Data, and the Target Letting Date to meet, plus the current float.

Cost Performance

The Cost Performance Report displays budgeted and actual costs for each task in the open program/scenario. Costs may be sorted by either TASK or RESOURCE CODE. Displayed are budgeted, actual costs and cost variances. Cost totals are displayed cumulative to date.

Earned Value of Work Performed

The Earned Value of Work Performed Chart displays plots of the budgeted hours of work performed (BHWP), the budgeted hours of work scheduled (BHWS) and actual costs of work performed (ACWP) for jobs in the open program or scenario. Comparison of the plots can be used to see whether jobs are on schedule and at budget. PROCESS Analyze Earned Value must first be run on the open program or scenario in order to generate this report.

REPORTS WBS/OBS

Work Breakdown Structure (WBS)

The WBS Report displays WBS codes and their corresponding descriptions for each task in the open program or scenario. The user selects all records or a grouping of codes starting with a particular WBS level. The report is sorted by job.

WBS Roll-up

The WBS Roll-up Report summarizes schedule and cost information for each level in the Work Breakdown Structure hierarchy and rolls it up to the next WBS level. For each task in the open program or scenario, scheduled start and finish dates, actual start and finish dates, and total hours and costs are shown. Tasks are grouped by job number.

The WBS Roll-up Report can be sorted by WBS code, WBS level and code, or WBS level and current start and finish dates. PROCESS OBS/WBS Schedule Roll-up must be run on the open program or scenario before this report can be generated.

WBS Roll-Up Gantt Chart

The Work Breakdown Structure (WBS) Gantt Chart shows early start and finish dates for each task in the open program or scenario. Tasks are grouped by control section and job number and identified by WBS code. For an open scenario, the chart displays the variances among the following dates: current schedule, original, current, and intermediate baselines, and in-progress/actual schedule. For the current program, the intermediate baseline is not shown.

Organizational Breakdown Structure (OBS)

The OBS Report displays OBS codes and their corresponding descriptions and levels for the open program or scenario. The report is sorted by job.

OBS Roll-up

The OBS Roll-up Report summarizes schedule and cost information for each level in the Organizational Breakdown Structure hierarchy and rolls it up to the next OBS level. For each organizational unit working on tasks in the open program or scenario, scheduled start and finish dates, actual start and finish dates, and total hours and costs are shown. Tasks are grouped by job number.

PROCESS OBS/WBS Roll-up must be run on the open program or scenario before this report can be generated.

OBS Roll-Up Gantt Chart

The OBS Gantt Chart shows early start and finish dates for each resource in the open job, version or multi-job project. Resources are identified by OBS code. The chart displays the variances among the following dates: current schedule, original and current approved dates, and in-progress/actual schedule. The chart is grouped by job number for a multi-job project.

REPORTS Tasks

Task Status

Selection of this report provides task status for all tasks of all jobs in the program where the task has an actual start date, but not the actual finish date. The report includes information on the task number, description, relevant dates (baseline start and finish, actual start, scheduled finish), responsible reporting unit, and the current float.

Late Tasks Report

Refer to REPORTS Tasks - Late Tasks (Task Schedule Exception Report) in the Job/Project Area for a description of the information contained in this report. Information in the Program Area is for the entire program, scenario, or other selected criteria rather than for a particular job.

Three Month Late Tasks

The Three Month Late Tasks Report identifies all job tasks that are late for the current 3-month period, from the previous month to two months ahead. Selection criteria may include jobs to be let in a certain time frame and/or tasks that are the responsibility of a certain resource group. Late tasks include those that should have started/finished in the previous month or in the next 2 months and have not done so. This report identifies the responsible unit, job & letting, project manager, task, actual start or not, and days late. The report is sorted by responsible unit, job letting, job section, job number, task scheduled start, and task number.

Completed Tasks Report

Refer to REPORTS Tasks- Completed Tasks in the Job/Project Area for a description of the information contained in this report. Information in the Program Area is for the entire program, scenario or other selected criteria rather than for a particular job.

Task Gantt Chart

Selection of this report shows, in graphical format, task status for all tasks in the entire program, scenario or other selected criteria. The criteria are determined using the selection screen that is presented to the user when the report is first selected. The report includes information on the task number, description, duration, relevant dates (approved start and finish, scheduled start and finish, and actual start and finish), and the current float.

REPORTS Milestones

Milestone Status

Refer to REPORTS Tasks Network Milestone Report in the Job/Project Area for a description of the information contained in this report. Information in the Program Area is for the entire program or scenario rather than for a particular job.

Late Milestones

This report lists all late milestones. The late milestones may come from all jobs, by Project Manager, Squad, etc. The report is similar to the Late Tasks Report, but consists of Milestones only.

Completed Milestones

Refer to REPORTS Tasks Completed Milestones report in the Job/Project area for a description of the information contained in this report. Information is the Program Area is for the entire program or scenario rather that for a particular job.

Design Length Gantt Chart

This report displays the milestones of 0000- Design Start, 352M- THE Plan Review, 380M- Plan Completion and 392M- Letting in a graphical format and highlights the completion dates of each milestone. The report displays jobs by control section and job number, and graphically displays the milestone dates.

Milestone Gantt Chart

Refer to REPORTS Tasks Milestone Gantt Chart report in the Job/Project area for a description of the information contained in this report. Information is the Program Area is for the entire program or scenario rather that for a particular job.

Milestone Summary

Refer to REPORTS Tasks Milestone Summary report in the Job/Project area for a description of the information contained in this report. Information is the Program Area is for the entire program or scenario rather that for a particular job.

Milestone Summary Gantt Chart

Refer to REPORTS Tasks Milestone Summary Gantt Chart in the Job/Project area for a description of the information contained in this report. Information is the Program Area is for the entire program or scenario rather that for a particular job.

REPORTS Resources

Responsibilities Work Schedule

The Responsibilities Work Schedule Report displays scheduled and actual start and finish dates for each task in the open job, version or scenario, sorted by responsible units. A task will not appear on the report if it is not scheduled to be worked on during the period chosen (typically four months).

Responsibilities Work Schedule Gantt Chart

The Responsibilities Work Schedule Gantt Chart graphically displays scheduled and actual start and finish dates for each task in the open job, version or scenario, sorted by responsible units. The search criteria are determined using the selection screen that is presented to the user when the report is first selected.

Management Work Schedule Report

The Management Work Schedule Report displays tasks in the open program or scenario to be worked on in the selected time frame. Several sorting options are available to the user. Included is the activity duration, budgeted hours and actual hours for each task. The approved, scheduled and actual start and finish dates are displayed, along with the float for each task.

Management Work Schedule Gantt Chart

The Management Work Gantt Chart displays in graphical format the current schedule for each task in the open job, version or scenario. If a task is not scheduled to be worked on in the time frame selected, it will not appear on the chart. The user selects a single organization, several organizations, or all organizations. The chart displays in-progress tasks with the scheduled and approved dates. Also, included are the budgeted and actual hours for each task. The report is sorted by organization code and task number.

Resource Histogram

The Resource Histogram graphically displays the resource quantity required, available, and overloaded over time for an open program or scenario. The user selects a date range and an organization code for the histogram. PROCESS Resource Summarization must have been run last on the open program or scenario. Time units shown on the x axis of the histogram will be those selected when the Resource Summarization was run.

Resource Summary Report

Refer to REPORTS Resource Summary Report in the Job/Project Area for a description of the information contained in this report. Information in the Program Area is for the entire program or scenario rather than for a particular job. A PROCESS Resource Summarization must have been run last on the open program or scenario. Time units shown on the report are those selected when a Resource Summarization was run.

Hours/Cost Summary

This report provides hours and cost figures for all organizational units working on the Program. It displays for each organizational unit the "from" and "to" dates for each reporting period, and the budgeted cost, actual cost, variance cost, budgeted hours, actual hours, and variance hours for that period. The reporting period is that selected when the Summarize Actual Hours process is run on the Program. A Summarize Actual Hours must be run before this report can be generated.

REPORTS Payroll Reports

The payroll reports can either be generated by month or cumulative for a job. Both reports use data imported from finance files to the P/PMS system's Unix server. The following paragraphs explain each option.

Payroll Data from DCDS Downloads

The user selects, from a pop-up menu, data from DCDS by Job, individual employee, by Task or by resource (org code). Data presented is hours and costs for individual employees.

Payroll Data from P/PMS

Payroll information from P/PMS is not as detailed, and will contain information rolled up to the organizational level.

UTILITIES Options

The UTILITIES options allow the user to check the status of output requests, printer and plotter queues, the output spooler and the contents of the current file system directory. For options that display system information, the report is captured in a file with title and header information then presented on the screen in a flexible "view file" window. This capability also allows the user to send the output to a file or to the printer.

UTILITIES User Environment

The UTILITIES User Environment option shows the user's name, access type, local printer and plotter and the open item.

UTILITIES Select Data Entry Type

The UTILITIES Select Data Entry Type option allows the user to specify the type of screen to use for entering data throughout the P/PMS. The options on this menu are mutually exclusive: one option will be selected at all times and selecting one option de-selects all others. This Select Data Entry Type utility is also available under UTILITIES in both the Job/Project and Program Areas.

Screen Form

Selecting this option presents the user with standard screen form data entry screens in which only one record is visible at a time. This type of data entry is useful for entering new data.

Spreadsheet Form

Selecting this option presents the user with all data entry screens in a spreadsheet format, listing fields in columns and records in rows. It shows many records on the screen at one time allowing rapid updating of multiple records.

UTILITIES Change Password

The Change Password utility enables the user to change his or her P/PMS password. The new password must differ in at least 3 positions form the old password.

UTILITIES Mark Job for Archive

This option allows users to Mark a Job for Archive. This may include jobs that have been awarded, cancelled or suspended. The user is presented with a pull-down menu with all jobs listed to make their selection.

UTILITIES Archive Jobs

This option allows the user to archive all jobs which have been completed or suspended prior to a user-entered date. Jobs that have been marked for archive by the Project Managers are also included.

A list of all jobs marked for archive appears, and the user has the option of continuing or stopping at this point by clicking on the Exit button. When the user selects "Continue," several steps are performed which move the selected job(s) into the archive and delete it (them) from the Job/Project Area.

UTILITIES Un-Archive Jobs

This option allows users to Un-Archive a job. The user is presented with a pull-down menu with all jobs that have been marked to make their selection..

UTILITIES View a File

The View a File utility enables the user to view a file that was previously saved. If the user is not an Administrator, then the user can only view his or her own files. If the user is an Administrator, then the user can view anyone files.

UTILITIES Delete a File

The Delete a File utility enables the user to delete a file that was previously saved. If the user is not an Administrator, then the user can only delete his or her own files. If the user is an Administrator, then the user can delete anyone's files.

HELP Options

HELP

About P/PMS

This option will present the user with a dialog box containing information about the current version of the P/PMS.

Chapter 5 Administration Area

The P/PMS Administration Area is used by the Application Administrator(s) to manage user access to the P/PMS, maintain the network templates and maintain the reference validation and standards data used in the system. The Application Administrator will also have the ability to access the CAT command level and the P/PMS application code from the FILE Exit to CAT option in the Administration Area.

Key Elements

The key elements of the Administration Area are as follows:

USER ACCESS - In the user access portion of this area, the P/PMS Application Administrator can manipulate the user environment and user access permissions. Here the Administrator assigns a user's login name, full name, phone number, an access type, specifies the user's organization and identifies printers and plotters located physically near the user as his or her default devices. The Administrator can also allow access to a job or project by users other than the job's or project's owner.

TEMPLATE NETWORKS - The "Global Network" is the template which contains the set of all tasks available in the P/PMS and used in MDOT pre-construction jobs. It defines all tasks, with default durations, resources, constraints, and work breakdown structure and organizational breakdown structure assignments. The Global Network is the model used to create sub-set model networks which are, in turn, used to create all individual job schedules. Full capabilities are provided to change, add, or delete job network templates and to change the global network template using data entry screens.

REFERENCE VALIDATION AND STANDARDS TABLES - Numerous tables exist in the P/PMS which are used for such processes as selecting a template network, validating data entered and calculating task durations and labor estimates based on characteristics entered into the Job/Project Area. Capabilities are provided to change, add, and delete entries in the tables.

STANDARDS VALIDATION - Capabilities are provided for the Administrator to review actual durations and resource usage against planned performance on those tasks that exceed a specified variance from that which was planned. He can then review the characteristics that affected those tasks and modify the standards to "fine tune" the planning parameters to better reflect actual performance.

CALENDARS - The system enables the user to define and modify up to 90 calendars for scheduling work.

UTILITIES - Utilities provided in this area allow the Application Administrator to investigate the status of printers and plotters and their spooler queues and the contents of

the file directory. The Administrator can also identify a printer or plotter for temporary use. These Utilities are also available in the Job/Project and Program Areas.

ADMINISTRATION - The administration options provided in this area provide the Administrator with the ability to create and print the data dictionary and update the printer or plotter tables.

Menus

The Administration Area menu options are as follows:

- Main Menu Options
  - Sub-Menu Options
    - Sub-Sub-Menu Options
- FILE
  - New
    - Template
    - Calendar
  - Open
    - Template
    - Calendar
  - Close Session
  - Delete
    - Template
    - Calendar
  - Go to Job/Project Area
  - Go to Program Area
  - Main Menu
  - Exit to CAT
  - Exit P/PMS
- EDIT
  - Template Details
  - Template Tasks and Constraints
  - Validation Tables
    - Job Group
    - Job Type
    - Work Group
    - Work Type
    - Region
    - TSC
    - County
    - Environment Type
    - Road Class
    - Traffic ADT
    - Development Class
    - Topographic Survey Type
    - Project Manager Unit

- Project Development Unit
- Road Design Unit
- Structure Design Unit
- Survey Unit
- Project Development - Design Unit
- Project Development - Planning Unit
- Generic Units
- Additives
- Switches
- Network Templates
- Funding Templates
- Access Types
- Wayne County Control Sections

Standard Tables

- Task Base
- Work Group
- Region
- Environmental Type
- Road Class
- Traffic ADT
- Development Class
- Task Additives
- Task Switches
- Resources Assigned
- Responsible Units
- Resource Rates

Work Breakdown Structure (WBS)

Organizational Breakdown Structure (OBS)

Calendars

Job Access

Data Dictionary Descriptions

PROCESS

Analyze Template

LISTINGS

Template Tasks

Template Tasks and Constraints

Validation Tables

- Job Group
- Job Type
- Work Group
- Work Type
- Region
- TSC
- County
- Environmental Type
- Road Class

- Traffic ADT
- Development Class
- Topographic Survey Type
- Project Manager Unit
- Project Development Unit
- Road Design Unit
- Structure Design Unit
- Survey Unit
- Project Development - Design Unit
- Project Development - Planning Unit
- Generic Units
- Additives
- Switches
- Network Templates
- Funding Templates
- Access Types
- Wayne County Control Sections

Standards Tables
- Task Base
- Work Group
- Region
- Environment Type
- Road Class
- Traffic ADT
- Development Class
- Task Additives
- Task Switches
- Resources Assigned
- Responsible Unites
- Resource Rates

Assignments
- By Task
- By Resource

Archived Jobs

Archived Job Tables
- Details
- Characteristics
- Tasks and Constraints
- Resources

Work Breakdown Structure (WBS)

Organizational Breakdown Structure (OBS)

Calendars

Job Access
- By Job
- By User

System User Information

- Data Dictionary Descriptions

REPORTS
- Template Network Logic Diagram
- Standards by Task
- Standards Validation
- Data Dictionary

UTILITIES
- User Environment
- Select Data Entry Type
  - Screen Form
  - Spreadsheet
- Cancel Print/Plot Job
- Spooler Status
- Printer Status
- Plotter Status
- User Status
- Directory Listing
- Export Data
- Change Password
- View a File
- Delete a File

ADMINISTRATION
- Generate Data Dictionary
- Update Printer/Plotter Tables
- Set FY Benchmark Date
- Load New Jobs from MAP
- Compare PC/Let Dates to MAP

HELP
- About P/PMS

FILE Options

Options that the user will be able to select will be determined by their access permissions. Options not available to a user will be "ghosted out" or not available.

FILE New Options

The FILE New options include the capability to create new templates and new calendars.

FILE New Template

This option provides the capability to define a new generic template schedule. Template entry and modification is only allowed if the user has Administrator permissions. The user can create a new template by either selecting tasks from the global network or by copying and modifying an existing template.

Upon selecting FILE New Template, the user will be presented with a window (screen) displaying a system generated template number and an entry field for entering a title for the template. A creation date is set by the system to the date that the process is taking place. Upon adding the record and exiting from the data entry screen, the user will be asked whether to base the new template on an existing template. If the user selects "Base on Existing Template," a pop up menu containing the existing templates will be presented. Selecting one of the existing templates will create a copy of the selected template making the tasks, constraints, resources, and break down structures available for tailoring. Menu options available during a template session will be those that apply to a template.

FILE New Calendar

Using this option the P/PMS Administrator can create additional calendars as needed to cover scheduling needs. Upon selecting FILE New Calendar option, the user will be asked whether to base the new calendar on an existing calendar.

If the user selects "Base on Existing Calendar," a pop up menu containing the existing calendars appears. Selecting one of the existing calendars will create a copy of the selected calendar. The user is asked to verify the calendar number and whether any modification is desired. If the calendar is to be modified, the calendar details screen is presented. The user can change calendar description, time units or time period. If the user clicks Update, a screen for changing holidays will appear. Upon exiting from the holidays screen, the rest day’s screen will appear. The user may change rest period break date and click Update or click Rec to change the calendar rest days at the bottom of the screen.

If the user does not select "Base on Existing Calendar," the system will show a screen displaying a system-generated calendar number and entry fields for a description for the calendar, a number designating the number of base units per period of time, and the base unit of time, i.e. (d)ays, (w)eeks, (m)onths, (y)ears, or number of periods (p)er day. A creation date is set by the system to the date that the process is taking place. The user will then be presented screens for entering holidays and rest days/periods as described in Administration Area EDIT Calendar.

FILE Open

FILE Open operates on templates and calendars.

FILE Open Template

This option allows the user to modify existing template schedules.

Template entry and modification is only allowed if the user has Administrator permissions set in the Administration area.

Selecting the FILE Open Template option will display a window (screen) with a list of existing templates. The user can select one of the templates or cancel the request by closing the dialog box and return to the menus. The user must open a template in order to modify it using the EDIT Template Tasks and Constraints option.

When a template is selected, the menu options as defined in the "New Template" option are accessible by the user. All other options are "ghosted" or restricted.

FILE Open Calendar

By selecting this option, the user will be presented with a pop up menu that lists all calendars that are presently defined. The user can select one of the calendars or cancel the request by closing the dialog box and return to the menus. The user must open a calendar in order to modify it using the EDIT Calendar option.

FILE Close Session

FILE Close Session closes the current session. This option operates on both templates and calendars.

FILE Delete Options

The FILE Delete option operates on templates and calendars.

FILE Delete Template

When this option is selected a window (screen) is displayed of all current template networks. The user can select a template network to be deleted or cancel the request and return to the menus. If a template is selected, verification prompt is displayed for the user to validate the request. If the response to the request for verification is "Yes" the template is deleted; otherwise the user is returned to the menus.

FILE Delete Calendar

This option is used to delete a calendar that is no longer needed. Upon selecting this option, the user is presented with a pop up menu listing the current calendars. The user will be prompted to confirm deletion of the calendar. After confirmation, if the calendar is not used by any record set, the calendar will be deleted. If there are record sets in the system which use the calendar to be deleted, a screen will be displayed showing which record sets are using the calendar. The calendar will not be deleted.

FILE Go to Job/Project Area

When FILE Go to Job/Project Area option is selected, the user is transferred to the Job/Project Area.

FILE Go to Program Area

When FILE Go to Program Area option is selected, the user is transferred to the Program Area.

FILE Main Menu

Selection of this option will take you back to the main menu screen where the user can choose from CAT Prompt, Assessments, P/PMS, Construction, or Exit the system.

FILE Exit to CAT

When FILE Exit to CAT option is selected, the user will be presented with the CAT prompt. If the user does not have the P/PMS Application Administrator access permission, this option will not be available.

FILE Exit P/PMS

When FILE Exit P/PMS option is selected, the user's P/PMS session will be terminated and control returned to the UNIX prompt for Administrators. All other users will be logged off the P/PMS system and returned to the Windows Program Manager.

EDIT Options

Selecting this option will display a pull-down menu from which the user can select: User Access, Job/Project Ownership/Access, Template Tasks and Constraints, Validation Tables, Task Base and Multiplier Standards Tables, Additive Standards Table, Switches Standards Table, WBS and OBS Tables, Calendars, Access Types and Data Dictionary Descriptions. After selecting any of these menu options the system will present the user with data entry screens for modification, addition, and deletion of data. The menu options that users will be able to select will be determined by their access permissions. All other options will not be available.

EDIT Template Details

With a template open, when EDIT Template Details option is selected, the user is presented with a data entry screen with the option to change the template number or edit the description.

EDIT Template Tasks and Constraints

When EDIT Template Tasks and Constraints option is selected, the Administrator is presented with a data entry screen to add, change or delete tasks (or milestones) and constraints in the open template. The screen has two parts. Only one part of the screen can be used at one time. To switch to the other part of the screen, click the Clear button at the bottom of the screen.

Task number (milestone identifiers are tasks which end in "M"), task description and WBS Code are shown in the top part of the screen. The user can delete the task or create a new task in the template network using a pop up menu of all available tasks in the Global Network.

Constraint information is presented in the bottom portion of the screen. This shows preceding and succeeding tasks, constraint type, and constraint delay. Before inputting constraints, the user must first add the task information to the network. The user can delete a constraint, create a new constraint, or change the constraint type or delay. Lead times are accommodated by using a negative delay. The resultant network will have to analyze with no logical errors using PROCESS Analyze Template before the template can be assigned to a work type and be used to generate a network.

Only tasks which exist in the Global Network template may be added to one of the other templates. Tasks can be added to the Global Network when the Global Network is opened with FILE Open Template before using this option. When a new task is added to the Global Network, the user must also add a WBS code corresponding to the task number. The user will be prompted for the WBS description and WBS parent code using the EDIT Work Breakdown Structure (WBS) Table screen. Parent WBS codes must already exist in the WBS Table prior to their entry here.

EDIT Validation Tables

The Validation Tables are look-up tables used by the P/PMS system to create pop up menus and validate user entries. These tables can be edited only by a P/PMS Application Administrator. For all other users this option is "ghosted" or restricted.

EDIT Validation Tables- Job Group

When editing the Job Group Validation Table, the user is presented with a screen for the job group code, description and funding template. The user can add or delete codes or modify the descriptions.

EDIT Validation Tables - Job Type

When editing the Job Type Validation Table, the user is presented with a screen for the job type code and the code description. The user can add or delete codes or modify the description.

EDIT Validation Tables - Work Group

When editing the Work Group Validation Table, the user is presented with a screen for the work group code and description. The user can add or delete codes or modify the description.

EDIT Validation Tables - Work Type

When editing the Work Type Validation Table, the user is presented with a screen for the work type code and description, the work group, job type, and the template number which are used as the basis for generating a job network. When entering or changing the template number for a work type, the user will be presented with a pop up menu containing selections for only those templates in the system that have been successfully analyzed. The user can add or delete work type codes or modify any other field.

EDIT Validation Tables - Region

When editing the Region Validation Table, the user is presented with a screen for the district code and the code description. The user can add or delete codes or modify the description.

EDIT Validation Tables - TSC

When editing the Transportation Service Center (TSC) Validations Table, the user is presented with a screen for the TSC code and the code description. The user can add, delete codes or modify the description.

EDIT Validations Tables- County

When editing the County Validations Table, the user is presented with a screen for the County Code and Code Description (Including region code, region description, TSC Code and TSC Description for each county). The user can add, delete or modify codes and description.

EDIT Validation Tables - Environmental Type

When editing the Environmental Type Validation Table, the user is presented with a screen for the environmental study type code and the code description. The user can add or delete codes or modify the description.

EDIT Validation Tables - Road Class

When editing the Road Class Validation Table, the user is presented with a screen for the road class code and the class description. The user can add or delete codes or modify the description.

EDIT Validation Tables- Traffic ADT

When editing the Traffic ADT Validation Table, the user is presented with a screen for the Traffic Level Code, Description, Minimum and Maximum ADT for each code. The user can add, delete or modify codes and descriptions.

EDIT Validation Tables - Development Class

When editing the Development Class Validation Table, the user is presented with a screen for the development class code and the class description. The user can add or delete codes or modify the description.

EDIT Validation Tables - Topographic Survey Type

When editing the Topographic Survey Type Validation Table, the user is presented with a screen for the survey type code and description. The user can add or delete codes or modify the description.

EDIT Validation Tables - Project Manager Unit

When editing the Project Manager Unit Validation Table, the user enters the code for the Project Manager Unit that will perform management of consultants. The user can add or delete codes.

EDIT Validation Tables - Project Development Unit

When editing the Project Development Unit Validation Table, the user enters the code for the Project Development Unit that will perform management of consultants. The user can add or delete codes.

EDIT Validation Tables - Road Design Unit

When editing the Road Design Unit Validation Table, the user enters the code for the Road Design Unit that will perform management of consultants. The user can add or delete records.

EDIT Validation Tables - Structure Design Unit

When editing the Structure Design Unit Validation Table, the user enters the code for the Structure Design Unit that will perform management of consultants. The user can add or delete records.

EDIT Validation Tables - Survey Unit

When editing the Survey Unit Validation Table, the user enters the code for the Survey Unit that will perform management of consultants. The user can add or delete codes.

EDIT Validation Tables - Project Development - Design Unit

When editing the Project Development - Design Unit Validation Table, the user enters the code for the Project Development - Design Unit that will perform management of consultants. The user can add or delete codes.

EDIT Validation Tables - Project Development - Planning Unit

When editing the Project Development - Planning Unit Validation Table, the user enters the code for the Project Development - Planning Unit that will perform management of consultants. The user can add or delete codes.

EDIT Validation Tables - Generic Units

This option provides the opportunity to add or delete organizations and codes represented by the Generic Unit labels under generic jobs and in the standard units assigned to tasks.

EDIT Validation Tables- Additives

When editing the Additives Validation Table, the user is presented with a screen for the Additive Code and Description. The user can add, delete or modify codes and descriptions.

EDIT Validation Tables- Switches

When editing the Switches Validation Table, the user is presented with a screen for the Switches Code and Description. The user can add, delete or modify codes and descriptions.

EDIT Validation Tables – Network Template

When editing the Network Template Validation Table, the user is presented with a screen showing the template code, description, and creation date. The user can modify only the description. A new template is added in FILE New Template. A template can be modified in EDIT Template Tasks and Constraints.

EDIT Validation Tables – Funding Templates

When editing the Funding Template Validation Table, the user is presented with a screen showing the Funding Template Code and Description. The user can modify the code and/or description. Funding templates can be added or deleted here as well.

EDIT Validation Tables - Access Types

When editing the Access Types Validation Table, the user is presented with a screen for the Access Type Code and Description. The user can add, delete or modify codes and descriptions.

EDIT Validation Tables – Wayne County Control Sections

When editing the Wayne Country Control Sections, the user is presented with a screen for the Wayne County section number, TSC code and TSC description. The user can add, delete or modify codes and descriptions.

EDIT Standards Tables

The Standards Tables are look-up tables used by the P/PMS system to store the values used by the duration and labor hours' algorithm when generating a job network based on the user-entered job characteristics.

EDIT Standards Tables - Task Base

When editing the Task Base and Multipliers Standards Table, the user is presented with a screen for any selected task/job type combination showing the task number, job type, base duration, and base labor hours. Also shown are duration and labor hour's multipliers for construction length and for small, medium, large, and other structures. The user can modify any duration or labor hour's multiplier, and can add or delete a task/job type combination. Values for a newly created task can be entered for each job type.

EDIT Standards Tables - Work Group

When editing the Work Group Standards Table, the user is presented with a screen for any selected task/job type/work group combination showing the task number, job type, work group, work group base duration, and work group labor hours. The user can modify any duration or labor hour's multiplier, and can add or delete a task/job type/work group combination. Values for a newly created task can be entered for each job type and work group.

EDIT Standards Tables - Region

When editing the Region Standards Table, the user is presented with a screen for any selected task/job type/region combination showing the task number, job type, region, region base duration, and region labor hours. The user can modify any duration or labor hour's multiplier, and can add or delete a task/job type/region combination. Values for a newly created task can be entered for each job type and region.

EDIT Standards Tables - Environmental Type

When editing the Environmental Study Type Standards Table, the user is presented with a screen for any selected task/job type/environmental study type combination showing the task number, job type, environment study type, environment class duration, and environmental class labor hours. The user can modify any duration or labor hour's multiplier, and can add or delete a task/job type/environmental study type combination. Values for a newly created task can be entered for each job type and environmental study type.

EDIT Task Base and Multiplier Standards Tables - Road Class

When editing the Road Class Standards Table, the user is presented with a screen for any selected task/job type/road class combination showing the task number, job type, road class type, road type duration, and road type labor hours. The user can modify any duration or labor hour's multiplier, and can add or delete a task/job type/ road class combination. Values for a newly created task can be entered for each job type and road class.

EDIT- Standards Tables- Traffic ADT

When editing the Traffic ADT Standards Table. The user is presented with a screen for any selected task/job type/traffic level combination showing the task number, job type, traffic level, traffic level duration, and traffic level labor hours. The user can modify any duration or labor hour's multiplier and can add or delete a task/job type/road class combination. Values for a newly created task can be entered for each job type and traffic level.

EDIT Standards Tables - Development Class

When editing the Development Class Standards Table, the user is presented with a screen for any selected task/job type/development class combination showing the task number, job type, development class type, development type duration, and development type labor hours. The user can modify any duration or labor hour's multiplier, and can add or delete a task/job type/development class combination. Values for a newly created task can be entered for each job type and development class.

EDIT Standards Tables- Task Additives

When editing the Task Additives, the user is presented with a split screen. The top part shows the task identifier, additive code, and the additive duration and labor hour's values. The bottom part shows organization code, in house percentage, and consultant percentage in spreadsheet form. This screen shows the relative distribution in decimal multipliers of additive duration and labor hours to different organization units within a task. For any task/additive code combination, the distribution must add up to 100%. The user can modify any duration, labor hours or percentage value, and can add or delete organization code and additive code records. To enter a percentage, the user must type a decimal (i.e., .28 = 28%). For a description of the existing additives, see PROCESS Generate Network in the Job/Project Area.

EDIT Standard Tables- Task Switches

When editing the Switches Standards Table the user is presented with a screen showing the task number, switch identifier, and switch multiplier. The user can

add or delete switches for each task. The switch identifier usually corresponds to a condition (like Wetlands Involvement) and the multiplier is usually set to zero, indicating that the task is not necessary for the condition. For a description of the existing switches, see PROCESS Generate Network in the Job/Project Area.

EDIT Standards Tables - Resources Assigned

Prior to choosing this option, the user should choose UTILITIES Set Data Entry Screen Type - Spreadsheet. When editing the Units Assigned Labor Hours Standards Table, the user sees for each task/work group/organization code combination the task number, work group, organization code, in house percent, and consultant percent. This screen shows the relative distribution in decimal multipliers of computed duration and labor hours to the different organization units within a task/work group combination. For any task/work group combination, the distribution must add up to 100%. The user can add or delete a task/work group/organization code combination, and can modify the relative distribution percentages within any work group. Values for a newly created task can be entered for each work group and organization code. To enter a percentage, the user must type a decimal (i.e., .28 = 28%).

EDIT Standards Tables- Responsible Units

When editing the Responsible Unites Standards Table, the user is presented with a screen which shows the task number, description, In-House and Consultant Codes. The user can change the responsible unit here.

EDIT Standards Tables - Resource Rates

When editing the Resource Rates Standards Table, the user is presented with a screen which shows the organization code and the generic labor hour cost for that resource. The user can add or delete an organization code or change the generic labor hour rate. The labor hour cost for a newly created organization code should be entered here.

EDIT Work Breakdown Structure (WBS)

When editing the Work Breakdown Structure Table, the user is presented with a screen showing the WBS code, description, parent code, and task number. The user can change the description of, add or delete WBS codes which are not attached to task numbers. This screen is used to add parent WBS codes or to delete them when they are no longer needed. Adding, changing or deleting a WBS code which is attached to a task must be done in EDIT Template Tasks and Constraints when the Global Network is open.

EDIT Organizational Breakdown Structure (OBS)

When editing the Organizational Breakdown Structure Table, the user is presented with a screen showing the OBS code, description, parent code and organization code. The user can modify description or organization code, and add or delete OBS codes.

EDIT Calendars

This option is supported by three data entry screens for calendar period definition, holiday information and rest periods information. Scheduling calculations performed in the P/PMS are based on work periods only. Holidays and rest days are excluded from the calculations.

The calendar period definition screen displays calendar number, description, a number designating the number of base units per period of time, and the base unit of time, i.e. (d)ays, (w)eeks, (m)onths, (y)ears, or number of periods (p)er day. The user can change all but the calendar number. When the Update button is clicked, the holidays screen will appear.

The holidays screen is a two-part screen with calendar definition information in the read-only top portion and a data entry form for declaring holidays on the bottom. For each holiday the user will enter the date in one of the following formats: MM-DD-YY (for example, 12-25-94) or DD-MMM-YY (for example, 25-DEC-94.) When the Exit button is clicked, the rest day's screen will appear.

The rest day's screen is also a two-part screen with calendar period definition information in the top portion and a data entry form for declaring rest periods on the bottom. The top portion of the screen is read-only except for the Rest Period Break Date, the date when the current rest periods are to change. A record must be created for each value given to Rest Period Break Date.

Standard rest days for the calendar are entered with Rest Period Break Date blank. Rest days are regular days during the week when work is not performed. The user should first enter standard rest days such as Saturday (sat) and Sunday (sun) for the calendar.

If the rest days change periodically, the user can enter a break date to identify when the rest days change, and then enter the new rest days. If the calendar has more than one rest period per day, the user will be allowed to indicate which period(s) in the specified day to designate as rest periods.

EDIT Job Access

When editing the Access Type Table, the Administrator is presented with a screen for entering the code and description for the user access type. When a user is assigned an access type, it is used to determine what menu options are available for the user. Using this option the Administrator can add or delete a user access types or modify the description. The Administrator will be prompted to assign a new access type to any user identified as having a deleted type.

EDIT Data Dictionary Descriptions

When editing the Data Dictionary Descriptions, the Administrator is presented with a screen showing data elements and descriptions. The element description may be changed.

PROCESS Options

The PROCESS options perform system functions and prepare data for either view or for additional functions.

PROCESS Analyze Template

Selecting this option will perform a network logic analysis on the open template. This option must be used after creating a new template or changing the logic of an existing template. If the template passes analysis without logic errors, the template is marked as successfully analyzed so that it may be assigned to a work type.

LISTINGS Options

The LISTINGS options display basic information about templates, calendars and tables. When listing options are selected, the listing is displayed on the user's screen in a CAT utility called "view file." This utility permits the user to view the listing on the screen with both scroll and page capabilities. If the Print button is selected while viewing the file, the listing is sent to a printer selected by the user. The "view file" utility also gives the user the option of saving the listing to a file so that it may be retrieved at a later time with UTILITIES View A File.

LISTINGS Template Tasks

This option lists the task information for the open template. For each task in the template it shows the task identifier and description, and WBS code. The listing is sorted by task code.

LISTINGS Template Tasks and Constraints

This option lists the task and constraint information for the open template. For each task in the template it shows the task identifier and description, WBS code, preceding task identifiers, succeeding tasks identifiers, constraint type, and constraint delay. The listing is sorted by the preceding and succeeding task codes.

LISTINGS Validation Tables

The LISTINGS Validation Tables option presents the user with complete listings of the valid options and entries for each of the categories below.

LISTINGS Validation Tables – Job Group

This option lists all Job Groups in P/PMS, their descriptions and funding templates associated with each group. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Job Type

This option lists all the permissible values for the job type code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Work Group

This option lists all the permissible values for the work group code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Work Type

This option lists all the permissible values for the work type code and description, as well as the corresponding work group code, job type and template number. The listing is sorted alphanumerically by work type code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Region

This option lists all the permissible values for the region code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- TSC

This option lists all the permissible values for the Transportation Service Center (TSC) Codes and descriptions. The listing is sorted numerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- County

This option lists all the permissible values for the County codes and descriptions, including region code, region description, TSC Code and TSC description for each county. The listing is sorted numerically by County Code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Environmental Type

This option lists all the permissible values for the environmental study type code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables-Road Class

This option lists all the permissible values for the road class code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Traffic ADT

This option lists all the permissible values for the Traffic level codes and descriptions. The listing is sorted numerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Development Class

This option lists all the permissible values for the development class code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Topographic Survey Type

This option lists all the permissible values for the survey type code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Project Manager Unit

This option lists all the permissible values for the project manager unit code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Table- Project Development Unit

This option lists all the permissible values for the project development unit code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Road Design Unit

This option lists all the permissible values for the road design unit code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Structure Design Unit

This option lists all the permissible values for the structure design unit code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Survey Unit

This option lists all the permissible values for the survey unit code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Project Development - Design Unit

This option lists all the permissible values for the project development - design unit code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Project Development - Planning Unit

This option lists all the permissible values for the project development - planning unit code and description. The listing is sorted alphanumerically by code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Generic Units

This option lists all generic unit codes and their descriptions. Besides the obvious district representations, the user may find which units are covered under a generic unit heading by referencing the generic unit description within the remaining Validation Tables menu items.

LISTINGS Validation Tables- Additives

This option lists all additive codes in P/PMS and their descriptions. The listing is sorted numerically only, by additive code. These additives modify the duration and/or labor hours and resources on tasks according to the special situations in the descriptions. For information on which tasks they apply to, see LISTINGS - Task Base and Multiplier Standards Tables - Task Additives.

LISTINGS Validation Tables- Switches

This option lists all switches in P/PMS and the description for each, sorted numerically by the switch code. These switches turn certain tasks off when the situation in the description exists. For information on which

tasks they apply to, see LISTINGS - Task Base and Multiplier Standards Tables - Task Switches.

LISTINGS Validation Tables- Network Template

This option lists all the permissible values for the template number, description, and template creation date. The listing is sorted by template number. There are no other selections or sorting criteria.

LISTINGS Validation tables – Funding Templates

This option lists all Funding Templates in P/PMS and the description for each, sorted numerically by the funding template code. There are no other selections or sorting criteria.

LISTINGS Validation Tables- Access Types

This option lists all the permissible values for the Access Type codes and descriptions. The listing is sorted alphanumerically by code. There is no other selection or sorting criteria.

LISTING Validation Tables – Wayne County Control Sections

This option lists all the control sections, TSC Code and TSC description for Wayne County. There are no other selections or sorting criteria.

LISTINGS Standards Tables

The LISTINGS Standards Table option presents the user with complete lists of the duration and labor hour's values used by the P/PMS algorithm when generating a job network from the user entered job characteristics.

LISTINGS Standards Tables-Task Base

This option lists the duration and labor hour's standards for the task base, construction length, and for small, medium, large and other structures. The list is sorted by task identifier and job type. The user can select for a specific task identifier or job type.

LISTINGS Standards Tables-Work Group

This option lists the duration and labor hours standards associated with each combination of task identifier, job type, and work group. The list is sorted by task identifier, job type, and work group, in that order, and the user can select for any specific value in those three fields.

LISTINGS Standards Tables- Region

This option lists the duration and labor hours standards associated with each combination of task identifier, job type, and region. The list is sorted by task identifier, job type, and region, in that order, and the user can select for any specific value in those three fields.

LISTINGS Standards Tables -Environmental Type

This option lists the duration and labor hours standards associated with each combination of task identifier, job type, and environmental study code. The list is sorted by task identifier, job type, and environmental study code, in that order, and the user can select for any specific value in those three fields.

LISTINGS Standards Tables- Road Class

This option lists the duration and labor hours standards associated with each combination of task identifier, job type, and road class. The list is sorted by task identifier, job type, and road class, in that order, and the user can select for any specific value in those three fields.

LISTINGS Standards Tables- Traffic ADT

This option lists the durations and labor hours standards associated with each combination of task identifier, job type, and traffic level code. The list is sorted by task identifier, job type, and traffic level code, in that order, and the user can select for any specific value in those three fields.

LISTINGS Standards Tables- Development Class

This option lists the duration and labor hours standards associated with each combination of task identifier, job type, and development class. The list is sorted by task identifier, job type, and development class, in that order, and the user can select for any specific value in those three fields.

LISTINGS Standards Tables- Task Additives

This option lists the duration and labor hour's standards associated with each combination of task identifier and additive code, as well as all of the organization codes and in-house and consultant distribution percentages for the combination. The list is sorted by task identifier and additive code, in that order, and the user can select for any specific value in those fields.

LISTINGS Standards Tables- Task Switches

This option lists the switch identifiers associated with each task identifier. The list is sorted by task identifier, and the user can select for any specific value in either field.

LISTINGS Standards Tables- Resources Assigned

This option lists the in-house and consultant distribution percentages for each set of organization codes assigned to each work group for each task identifier. The list is sorted by task identifier, work group, and organization code, in that order, and the user can select for any specific value in those three fields.

LISTING Standards Tables- Responsible Units

This option lists the in-house and consultant codes for all tasks. The list is sorted by task code.

LISTINGS Standards Tables- Resource Rates

This option lists the generic labor hour rate for each of the valid resource codes that might be assigned to any task, from the record set "res-rates." The list is sorted alphanumerically by organization code, and the user can select for any code or range of codes.

LISTINGS Assignments

This option lists all tasks to which one or more specified units (from a pop-down menu) are typically assigned to according to P/PMS standards. The list is arranged by Task and Resource. It also includes the percentage the chosen unit is involved in completing the task (for both in-house and consultant cases), and encompasses additive tasks performed in special situations.

LISTINGS Archived Job Tables

The LISTINGS Archived Job Tables options below display information about archived jobs. They are all available for screen display or hard copy output.

LISTINGS Archived Job Tables

Archived Job Details

This option lists the archived job details. For each archived job, it shows the job number, creation date, target start, target completion, priority code, job status, and comments. The listing is sorted by job number by default, but the user can choose a sort based on job creation date, target start or completion dates, priority code or any combination thereof. The user can select a listing for any range of job numbers or dates, or for any specific job priority code or status.

Archived Job Characteristics

This option lists the archived job characteristics. It shows for each archived job all of the entries on the "P/PMS Job Data Form" in a format emulating that form. The listing is sorted by job number by default, but the user can choose a sort based on district, work type, or any of the organization units. The user can select a listing for any range of job numbers, work type or unit codes or for any specific district.

Archived Job/Project Tasks and Constraints

This option lists the basic task and constraint information for the tasks and constraints. For each task it shows the task number and description, and WBS code. It also shows the original, intermediate, and most recent

baseline dates for each task, as well as the actual start and finish dates. For each constraint, it shows the preceding task number, succeeding task number, constraint type, and constraint delay. The listing is sorted by job number and the preceding and succeeding task codes, in that order. The listing can also be requested showing all preceding task identifiers for each succeeding task.

Archived Job Resources

This option lists, by task identifier and work group, the required resources and the quantity for each resource code. The listing is sorted by task identifier, work group, and resource code. The user can select a listing for any specific job.

LISTINGS Work Breakdown Structure (WBS)

This option presents the user with a hierarchical listing of the work breakdown structure for the Global Network. It contains the WBS code and description and the code of the parent record.

LISTINGS Organizational Breakdown Structure (OBS)

This option presents the user with a hierarchical listing of the organizational breakdown structure for the Global Network. It contains the OBS code and description and the code of the parent record.

LISTINGS Calendars

This option lists the open calendar. It shows its time unit period and its defined holidays and rest periods.

LISTINGS System User Information

This tabular listing contains all users of the P/PMS with their login identifier, full name, phone number, access type, organization, and assigned printer and plotter sorted by last name.

LISTINGS Job Ownership/Access

The Job Ownership/Access Listing displays the job number, job owner, and all users having access to the job. Upon selecting this option, the user will be asked if the listing is to be for the job numbers or users. If the listing by job number is selected, the user selects a specific job or all jobs. The system will return all users with access to the job(s). If the listing by user is selected, the user selects a specific user or all users. The system will return all jobs which can be accessed

by the user(s). Multi-job projects will be shown on the all jobs option or on the listing for the project owner.

LISTINGS System User Information

The System User information listing displays the name, phone number, organization, printer, employee ID, e-mail address, access type and plotter for all users with access to the P/PMS System.

LISTINGS Data Dictionary Descriptions

The LISTINGS Data Dictionary Descriptions option allows the user to print or display a tabular listing of the fields that make up the P/PMS data dictionary including the field name, data type, size, a textual description of the field and the table definitions of which the field is part. The data dictionary is generated from table and field definitions present in the system at the time the option is selected (pre-saved when the data dictionary is generated.).

REPORTS Options

REPORTS Template Network Logic Diagram

The Template Network Logic Diagram is a graphic showing the logical sequence of network tasks, their interrelationships, and those tasks that make up the critical path for an open job or version. The diagram can now be formatted for a large printer (plotter) or a laser printer; depending on the detail you want (task numbers & constraints, or numbers, descriptions, & constraints).

REPORTS Standards by Task

This report lists the duration and labor hour standards for each task in the Global Network. The listing is presented in the same way as the "Task Calculation Data" listing currently maintained by MDOT. The User can select for and specific task.

REPORTS Standards Validation

This report lists the contents of the tables created during the last PROCESS Standards Validation. Listed will be the job number, task number, baseline duration, actual duration and variance for each task in the archive with duration in excess of tolerable variance sorted by job number then task number. Under each task, resource code, original labor hours and actual labor hours will be listed for resources with actual labor hours that differ from original values greater than the specified tolerable variance. This option will not be available until the first standards validation has been processed or if no tasks or resources in the archive have exceeded the tolerance.

Upon generation of this list, archived job characteristics will be used to identify the set of characteristics that had impact on the duration or labor hours for each task/resource.

REPORTS Data Dictionary

This report allows the user to print or display a tabular listing of the fields that make up the P/PMS data dictionary including the field name, data type, size, a textual description of the field and the table definitions of which the field is part. The data dictionary is generated from table and field definitions present in the system at the time the option is selected (pre-saved when the data dictionary is generated.).

UTILITIES Options

The UTILITIES options allow the user to check the status of output requests, printer and plotter queues, the output spooler and the contents of the current file system directory. For options that display system information, the report is captured in a file with title and header information then presented on the screen in a flexible "view file" window. This capability also allows the user to send the output to a file or to the printer.

UTILITIES User Environment

The UTILITIES Current User Environment option shows the user's name, access type, local printer and plotter and the open item.

UTILITIES Select Data Entry Type

The UTILITIES Select Data Entry Type option allows the user to specify the type of screen to use for entering data throughout the P/PMS. The options on this menu are mutually exclusive: one option will be selected at all times and selecting one option de-selects all others. This Select Data Entry Type utility is also available under UTILITIES in both the Job/Project and Program Areas.

Screen Form

Selecting this option presents the user with standard screen form data entry screens in which only one record is visible at a time. This type of data entry is useful for entering new data.

Spreadsheet Form

Selecting this option presents the user with all data entry screens in a spreadsheet format, listing fields in columns and records in rows. It shows many records on the screen at one time allowing rapid updating of multiple records.

UTILITIES Cancel Print/Plot Job

Upon selecting this menu option, the user selects a print/plot request for cancellation from a pop up list of print/plot requests. The list will contain only those output requests owned by the user which have not already been sent to the MDOT computer network. Only the System Administrator can terminate a request belonging to another user. After selecting a request from the pop up menu and giving confirmation that the cancellation is desired, the request will be cancelled and the remaining requests will be presented. The user will be returned to the menu system upon pressing the "Cancel" button or when all requests owned by the user have been canceled.

UTILITIES Display Spooler Status

The UTILITIES Display Spooler Status option shows any printer or plotter output in the printer and plotter queues.

UTILITIES Display Printer Status

The UTILITIES Display Printer Status option shows any printer output in the printer queues.

UTILITIES Display Plotter Status

The UTILITIES Display Plotter Status option shows any plotter output in the plotter queues.

UTILITIES Display User Status

The UTILITIES Display User Status option shows all users that are currently logged into the P/PMS system.

UTILITIES Display Directory Listing

The UTILITIES Display Directory Listing option shows all the files available in the current directory. This can be used prior to the View a File and Delete a File options below.

UTILITIES Export Data

The Export utility enables the user to send (export) formatted data from a P/PMS record set for use in other software programs or CAT applications. Two data formats are available: CAT export files and "flat" (ASCII text) files.

The user must first specify the name of the record set (from LISTINGS Data Dictionary) from which data is being copied. The user then indicates (for CAT files only) whether he or she wants the record set definitions associated with the exported data included by entering a "Y" or "N" in the Include Definition field. Next, the destination file name is specified and the desired file format is selected. The user exports a flat ASCII text file by typing an "F" or a CAT file by typing a "C" in the File Format Field. For an ASCII file, the user enters field names (from LISTINGS Data Dictionary) and field lengths for those fields to be exported. When the user has completed inputting the export parameters, he or she clicks on the "Exit" button and the export is processed to a file named by the user.

UTILITIES Change Password

The Change Password utility enables the user to change his or her P/PMS password. The new password must differ in at least 3 positions from the old password.

UTILITIES View a File

The View a File utility enables the user to view a file that was previously saved. If the user is not an Administrator, then the user can only view his or her own files. If the user is an Administrator, then the user can view anyone files.

UTILITIES Delete a File

The Delete a File utility enables the user to delete a file that was previously saved. If the user is not an Administrator, then the user can only delete his or her own files. If the user is an Administrator, then the user can delete anyone's files.

ADMINISTRATION Options

Options available under the Administration menu offer data dictionary capability and a mechanism for updating the printer and plotter tables.

ADMINISTRATION Generate Data Dictionary

The Generate Data Dictionary option gives the Application Administrator the ability to generate a new dictionary table containing the definitions for all fields in the P/PMS. Each dictionary table entry contains a text description of the field and all tables that use it. Other information in the data dictionary cannot be manipulated, since it is extracted by the system from data input by the CAT programmer when each data element is declared.

Upon selection of this option, the data dictionary table is updated with current data element definitions. When the system finishes updating the table, a data entry screen will be presented to allow the Application Administrator to modify element descriptions. When the table update is completed, the system generates a listing which is used when LISTINGS Data Dictionary is selected

ADMINISTRATION Update Printer/Plotter Tables

Once a new device has been configured on the P/PMS computer and set up in CAT by the System Administrator, the Application Administrator can make the device available to the P/PMS users by updating the P/PMS Printer/Plotter tables using this option.

Upon selecting this option, the Application Administrator is presented with prompts to add devices configured in CAT but not yet available to the P/PMS users. A pop up menu appears containing all the devices that are configured on the machine but have not yet been added to the P/PMS. Tables in the P/PMS are updated if the new device is selected. Users will then be able to select the new device using UTILITIES Select Printer/Plotter option. Additionally, the Application Administrator can assign the new device to be a user's default output device using the EDIT User Access option. When all devices configured in CAT are available in the P/PMS, a message is displayed.

ADMINISTRATION Set FY Benchmark Date

This option presents the user with a list of historical dates and the option to add the fiscal year benchmark date. This will be the data set that is used to compare for the whole fiscal year.

ADMINISTRATION Load New Jobs from MAP

This option allows the user to clear all new jobs in P/PMS and loads all new jobs into P/PMS from MAP.

ADMINISTRATION Compare PC/Let Dates to MAP

The Compare PC/Let Dates to MAP option allows the use to compare Plan Completion Dates and Letting dates for all jobs in P/PMS to the Plan Completion and Letting dates to all jobs in MPINS. When the Plan Completion dates and/pr the Letting dates do not match, they will appear on this report. Information displayed is project manager, control section, job number, PPMS plan completion, MPINS plan completion, PPMS Letting, MPINS letting, PPMS status and MPINS status. Data is sorted alphanumerically by project manager.

HELP Options

HELP About the P/PMS

This option will present the user with a dialog box containing information about the current version of the P/PMS.

APPENDIX A: Menu Maps

The next three pages contain fold-out reference charts for the menu structure in **the Job/Project Area, Program Area**, and **Administration Area**.

The Job/Project Area menu options are as follows:

- File
  - NEW
    - Job
    - Version
  - OPEN
    - Job
    - Version
  - CLOSE Session
  - DELETE
    - Job
    - Version
  - Go to Program Area
  - Go to Administration Area
  - Main Menu
  - EXIT
- Edit
  - Details
  - Characteristics
  - Consultant Checklist
  - Network Logic Editor
  - Tasks and Constraints
  - Add Task and Constraints
  - Delete Task and Constraints
  - Responsible Units
  - Resources and Durations
  - Advanced Network Planning
  - Actual Start and Finish Dates
  - Job Access
  - Project Status Comments
- Process
  - Generate Network
  - Analyze Schedule
  - Resource Summarize
  - Assign Mgt Units
  - Re-Assign All Resources
  - Rebuild Task/Milestone
  - Submit Refined Network
  - Retract Refined Network
- Listings
  - Details
  - Characteristics
  - Consultant Checklist
  - Tasks
  - Tasks and Constraints
  - Responsible Units
  - Resources
  - Resource Totals
  - Advanced Network Planning
  - Job Access
  - New Jobs
- Reports
  - JOBS
    - Job Status
    - PC and Letting
    - Job Performance
    - Cost Performance
      - By Task
      - By Resource
    - Earned Value of Work Performed
  - WBS/OBS
    - Work Breakdown Structure
    - WBS Roll-up
    - WBS Roll-up Gantt Chart
    - Organizational Breakdown Structure
    - OBS Roll-up
    - OBS Roll-up Gantt Chart
  - TASKS
    - Task Status
    - Late Tasks
    - Completed Tasks
    - Task Gantt Chart
    - Predecessors/Successors
    - Version Changes Gantt Chart
    - Network Logic Diagram
    - Network Changes
  - MILESTONE
    - Milestone Status
    - Late Milestones
    - Completed Milestones
    - Milestone Gantt Chart
    - Milestone Summary
    - Milestone Summary Gantt Chart
  - RESOURCES
    - Responsibilities Work Schedule
    - Responsibilities Work Schedule Gantt Chart
    - Management Work Schedule
    - Management Work Schedule Gantt Chart
    - Resource Histogram
    - Resource Summary
    - Work Plan and Labor Estimates
    - Resource Changes
  - PAYROLL
    - DCDS
    - PPMS
- Utilities
  - User Environment
  - Select Data Entry Type
    - Screen Form
    - Spreadsheet
  - Change Password
  - View a File
  - Delete a File
  - Work Days Calculator
- Help
  - About the Job/Project Area
  - About P/PMS
  - Frequently Asked Questions
  - User Manual

The Program Area menu options are as follows:

- File
  - NEW
    - Statewide Master Program
    - Scenario
    - Resource Profile
  - OPEN
    - Statewide Master Program
    - Scenario
    - Resource Profile
  - CLOSE Session
  - DELETE
    - Scenario
    - Resource Profile
  - Go to Job/Project Area
  - Go to Administration Area
  - Main Menu
  - EXIT
- Edit
  - Scenario Details
  - Scenario Jobs
  - Resource Profile Details
  - Resource Profile Availabilities
  - Project Status Comments
- Process
  - Analyze
  - Resource Schedule
  - Resource Summarize
  - Hours/Costs
  - Summarize
    - Schedule New
  - Program
- Listings
  - Scenario Jobs
  - Program/Scenario Access
  - Job Involvement
  - Programmed Jobs
  - Refined Jobs
  - Unrefined Jobs
  - New Jobs
  - Resource Profile
  - Availabilities
    - Critical Resource
  - Availabilities
  - Jobs for Archiving
  - Jobs for Un-Archiving
  - Jobs for Deleting
  - Jobs for Programming
  - Project Status Comments
- Reports
  - PROGRAM/PROJECT
    - Project Status
      - Custom Report
      - Historical Report
      - Changes Report
    - Program Status
      - Custom Report
      - Combined Report
      - Historical Report
      - Combined Historical
    - Benchmark Status
      - Partial
      - Full
      - Cumulative Cost Data Line
    - Chart
      - Job/Cost Data by Region
      - Monthly Job Data by Region
    - Network Status
    - Program Performance
    - PC and Letting
    - Cost Performance
      - By Task
      - By Resource
    - Earned Value of Work
      - By Hours
      - By Cost
  - WBS/OBS
    - Work Breakdown Structure
    - WBS Schedule Rollup
    - WBS Schedule Rollup Gantt Chart
    - OBS Breakdown Structure
    - OBS Schedule Rollup
    - OBS Schedule Rollup Gantt Chart
  - TASKS
    - Task Status
    - Late Tasks
    - Three Month Late Tasks
    - Completed Tasks
    - Task Gantt Chart
  - MILESTONES
    - Milestone Status
    - Late Milestones
    - Completed Milestones
    - Milestone Gantt Chart
    - Milestone Summary
    - Milestone Summary Gantt Chart
    - Design Length Gantt Chart
  - RESOURCES
    - Responsibilities Work Schedule
    - Responsibilities Work Schedule Gantt Chart
    - Management Work Schedule
    - Management Work Gantt Chart
    - Resource Histogram
    - Resource Summary Report
    - Hours/Cost Summary
  - PAYROLL
    - DCDS
    - PPMS
- Utilities
  - User Environment
  - Select Data Entry Type
    - Screen Form
    - Spread Sheet
  - Change Password
  - Mark Jobs for Archive
  - Archive Jobs
  - Un-Archive Jobs
  - View a File
  - Delete a File
- Help
  - About P/PMS

The Administration Area menu options are as follows:

- File
  - NEW
    - Template
    - Calendar
  - OPEN
    - Template
    - Calendar
  - CLOSE Session
  - DELETE
    - Template
    - Calendar
  - Go to Job/Project Area
  - Go to Program Area
  - Main Menu
  - Exit to CAT
  - EXIT P/PMS
- Edit
  - Template Details
  - Template Tasks and Constraints
  - Validation Tables
    - Job Group
    - Job Type
    - Work Group
    - Work Type
    - Region
    - TSC
    - County
    - Environmental Type
    - Road Class
    - Traffic ADT
    - Development Class
    - Topographic Survey Type
    - Project Manager Unit
    - Project Development Unit
    - Road Design Unit
    - Structure Design Unit
    - Survey Unit
    - Project Development - Design Unit
    - Project Development - Planning Unit
    - Generic Units
    - Additives
    - Switches
    - Network Templates
    - Funding Templates
    - Access Types
    - Wayne County Control Sections
  - Standards Tables
    - Task Base
    - Work Group
    - Region
    - Environmental Type
    - Road Class
    - Traffic ADT
    - Development Class
    - Task Additives
    - Task Switches
    - Resources Assigned
    - Responsible Units
    - Resource Rates
  - Organizational Breakdown Structure
  - Calendars
  - Job Access
  - Data Dictionary Descriptions
- Process
  - Analyze Template
- Listings
  - Template Tasks
  - Template Tasks and Constraints
  - Validation Tables
    - Job Group
    - Job Type
    - Work Group
    - Work Type
    - Region
    - TSC
    - County
    - Environmental Type
    - Road Class
    - Traffic ADT
    - Development Class
    - Topographic Survey Type
    - Project Manager Unit
    - Project Development Unit
    - Road Design Unit
    - Structure Design Unit
    - Survey Unit
    - Project Development - Design Unit
    - Project Development - Planning Unit
    - Generic Units
    - Additives
    - Switches
    - Network Templates
    - Funding Templates
    - Access Types
    - Wayne County Control Sections
  - Standards Tables
    - Task Base
    - Work Group
    - Region
    - Environmental Type
    - Road Class
    - Traffic ADT
    - Development Class
    - Task Additives
    - Task Switches
    - Resources Assigned
    - Responsible Units
    - Resource Rates
  - Assignments
    - By Task
    - By Resource
  - Archived Jobs
    - Archived Job Table
      - Details
      - Characteristics
      - Tasks and Constraints
      - Resources
    - WBS
    - OBS
    - Calendars
    - Job Ownership/Access
      - By Job
      - By User
    - System User
  - Information
    - Data Dictionary Descriptions
- Reports
  - Template Network
  - Logic Diagram
  - Standards by Task
  - Standards Validation
  - Data Dictionary Report
- Utilities
  - User Environment
    - Select Data Entry Screen Type
      - Screen Form
      - Spreadsheet
    - Cancel Print/Plot job
    - Spooler Status
    - Printer Status
    - Plotter Status
    - User Status
    - Directory Listing
    - Export Data
    - Change Password
    - View a File
    - Delete a File
- Administration
  - Generate Data Dictionary
  - Update Printer/Plotter Tables
  - Set FY Benchmark Date
  - Load New Jobs from MAP
  - Compare PC/Let Dates to MAP
- Help
  - About P/PMS

Work Breakdown Structure

APPENDIX B: Glossary

Active job

A status assigned when a job is in the current program and work has begun. The job is "chargeable." Access to key job data is limited to "read only" since changes could impact the highway program. An "Active" job has a P/PMS Job Status of "2".

Annual Call-For-Projects

The Annual Call-For-Projects is the mechanism by which preservation Project Concept Statements are forwarded annually to the Project Screening Committee for job selection and assignment to construction years. The Project Screening Committee reviews each district's jobs and priorities and how they relate to the statewide strategy with the respective district engineer. This is done before the selected jobs are placed in the schedule.

Archived job

A status assigned when the job is removed from the system into the job archive. The job data can be listed in the Administration Area. The job data will be used to validate network planning standards.

Approved

When a job's status is first set to Active, the latest start and completion dates for on-time delivery are saved and used as the approved start and finish dates for comparison purposes. These first approved dates are also set as the original dates.

Approved dates

The desired late start and finish dates for the tasks of a job. They are generally produced from the CPM analyzed dates. These dates are saved in a special file for future use in comparing with actual progress. They can only be modified by the user for specific and deliberate reasons, e.g., change in scope or revised contract letting date. The user can "re-approve" at his or her discretion, saving the "current" approved dates in addition to the "original" approved dates. After the first re-approval, the subsequent re-approvals save the resulting "current" approved dates, and the previous approved dates are gone. Approved dates can be seen in several of the P/PMS schedule reports and screens.

Bi-monthly work schedule

The Schedule for organizational units for the upcoming four-month period. The Bi-Monthly Work Schedule reflects the Department's priorities, funding commitments and available resources. It is the end result of running the Scheduler and is available by accessing the P/PMS. This report is distributed every two months.

Characteristics

A set of job-oriented parameters which define the overall scope or level of effort required to implement a job. Examples are: length of road, number of structures, type of work, etc.

Completed job

A status assigned when all job tasks have been completed. The job is held on the system for a period of time for reference. A "Completed" job has a P/PMS Job Status of "6".

Constraint

Defines the sequence of tasks and determines how they relate to each other in a network. Four possible types of constraints exist in a Precedence Diagram; start-to-start, start-to-finish, finish-to-start, and finish-to-finish.

CPM

See Critical path method.

Critical path method (CPM)

A method of analyzing task networks to determine early and late start and finish dates, durations, float and critical path.

Exception report

A report giving information about thresholds exceeded, eg., tasks ahead or behind schedule by more than a designated amount of time.

Improve/Expand job

"Improve" jobs increase the capacity of a road or facility and may require additional right of way. The threshold for an "Improve" job is a road widening of one lane's width or longer than a half mile, or greater than $500,000. An "Expand" job builds a new facility where none currently exists, relocates a current facility, or adds a road currently under local jurisdiction to the trunk line system.

Inactive job

A status assigned to a job that was once funded and in the MDOT Master Program, but is no longer in either category. Inactive jobs have a P/PMS Job Status of “4”.

Job

A series of tasks grouped into phases that lead to the accomplishment of a body of work.

Job type

A job classification including Preserve Resurface Restore, Preserve Reconstruct/Widen, Preserve Other, Improve All, Expand New Routes, Expand Relocation, Expand Other, and Highway Preservation Program that is used to select a network template and to calculate duration and labor hours required on a job.

Management unit

An established group of employees responsible for completing a unique set of job development tasks (see "Organizational unit"). It is associated with a specific organizational code.

Master Program

A set of all jobs with a status of Programmed or Active. The Master Program is the basis for the next four-month or annual schedule, and it provides continuity and consistency in the Department's development effort and to reduce the amount of redesign.

Milestone

A task where the task number ends with a 'M' and the task has zero duration.

Network

A work flow plan consisting of all tasks and events that must be completed or accomplished to reach program objectives, showing their planned sequence of accomplishment and logical relationships.

Network generator

The computerized subsystem within the P/PMS that generates job schedules. As input, it uses certain job characteristic information and a set of standard templates which are made up of tasks and are subsets of the Global Network. By applying a precisely designed algorithm, it is able to compute estimates of durations and resource requirements for all tasks within a network.

Organizational breakdown structure (OBS)

A hierarchical organizational matrix which defines the relationships of all MDOT organizational units involved in the P/PMS jobs. This data is used primarily for summarizing labor data and producing customized reports.

Organizational unit

Any organizational function within the Department which is responsible for completing work included in a P/PMS job, e.g., district, section, squad, or unit. Corresponds to an organizational code

PINS

MDOT's Project Information System. PINS is used for data entry of project information and actual start and finish dates. PINS is also used to present a Gantt chart showing job progress and a tabular report of job resources to users that do not have access to P/PMS.

Proposed job

A status describing a job which is being considered for inclusion into the Master Program. Proposed jobs will have a P/PMS Job Status of “0".

PPF

See Project planning file.

Preserve job

A job that is geared toward correcting deficiencies along an existing road and usually does not require right of way acquisition. Resurfacing, recycling, and safety jobs are

examples of preservation work types. Replacement "in-kind" is considered preservation. The addition of passing lanes is also considered preservation because they improve traffic flow and safety but do not increase the overall capacity of the road.

Production schedule

The proposed plan of the Michigan Department of Transportation for developing and constructing highway improvement jobs for a specific multi-year period of time, e.g., five-year program. It is the schedule of the Master Program. The Annual Program and the Bi-Monthly Work Schedule are subsets of it.

Program

A group of jobs oriented toward a common objective, usually to be carried out in a specified time frame. Usually refers to the MDOT Master Program.

Programmed job

A status describing a job that has been approved by the Screening Committee (Preserve Job) or the Steering Committee (Improve/Expand Job) and a detailed network has been developed for the job. The job is in the current MDOT Master Program, but has not yet been funded. A "Programmed" job has a P/PMS Job Status of "1".

Project

An undertaking with specific parameters and a goal of satisfying one or more transportation needs is assigned an identifier called a Project Identifier. Projects can consist of one or several jobs. In P/PMS project usually refers to a multi-job project.

Project manager

The Project Manager plays a leadership role in job development and is responsible for coordinating the tasks of participants on the job team and for keeping the job on schedule and within budget. The Project Manager works cooperatively with team members to set priorities with each person contributing to job development by obtaining an estimate of the time and dollars needed for each major job development function (design, right of way, traffic control plans, traffic estimation, and environmental clearance.) Project Managers coordinate job tasks to assure that the job remains consistent with the Project Concept Statement, and is within the estimated cost reflected in the long range program. It is also the Project Manager's responsibility to make sure that all team members are informed of changes that will influence their participation in the job.

Project planning file

MDOT's database of job information that is currently being phased out.

Project status

Current standing of a job within the Master Program. Possible values are:

- Proposed
- Programmed
- Active
- Inactive
- Completed/Archived

See the entry for each individual status code in this appendix for further explanation.

Resource leveling

The adjustment of job schedules to balance the job workload with available labor-hours given the job priority. Multiple-job scheduling levels resources for the master program or scenarios.

Rollup

The summarizing or "rolling-up" of job-related data along OBS or WBS lines.

Scenario

An alternative to the Master Program, which demonstrates the effect on the Schedule of running a different mix of jobs (Program "what-if").

Schedule

The set of expected start and finish dates for the tasks within a job based on resource requirements and availability. (See "Bi-Monthly Work Schedule").

Task

A specific work responsibility performed by a management unit. Tasks include both labor-hour resource and duration commitments. A task is usually composed of several steps performed by an individual or group of individuals.

Version

A "what-if" of a job which allows the Project Manager to change values of inputs such as characteristics and determine the effect of the changes on the network schedule.

Work breakdown structure (WBS)

A hierarchical job matrix which defines relationships of tasks, phases, etc. This data is used primarily for summarizing task data and producing customized reports. Task is the lowest unit in the WBS.

Work steps

One or more specific actions which are performed to complete a work task.

Work group

A classification of jobs including Landscaping, Rest Areas, Roadway, Safety, Structures, and Traffic that is used to select a network template and to generate durations and resources required on a job.

APPENDIX C: Assessments Area

The assessments application allows program managers to monitor the status of various programs by providing high to low level information using an easy-to-use point and click graphical interface.

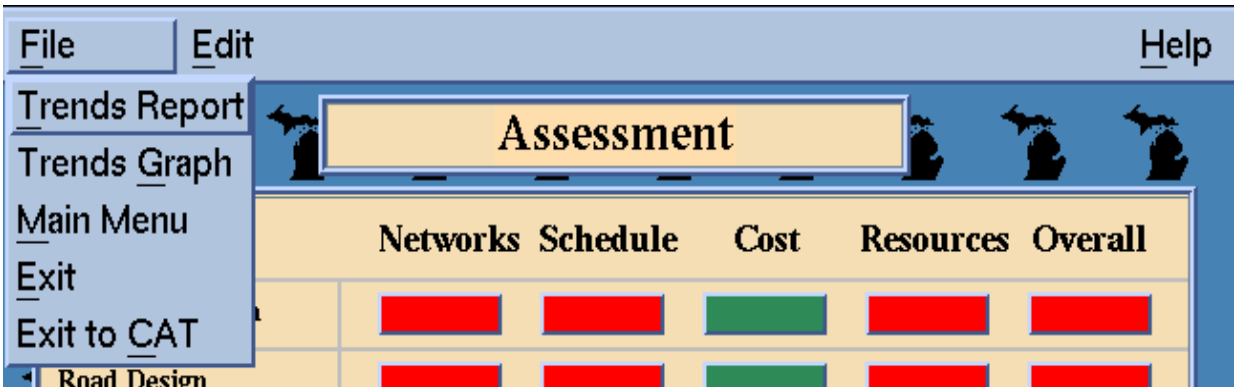
The assessments application interfaces with the P/PMS application. The application generates a program assessment chart (stoplight chart) by accessing data in the P/PMS application. Once the program assessment chart is generated you can click on the Networks, Schedule, Resources, Cost and Overall buttons to review graphs and reports detailing program status information.

Menus

EXECUTIVE INFORMATION SYSTEM (EIS)
MENU BAR OPTIONS
File
- Trends Report
- Trends Graph
- Main Menu
- Exit
- Exit to CAT

Edit
- Categories
- Overall Assessments
- Refresh

FILE OPTIONS



Trends report:
The trends report shows various P/PMS job status data. This data is shown for any three data dates in the system. The information displayed shows job schedule status, job refinement status, and the differences between MAP and P/PMS.

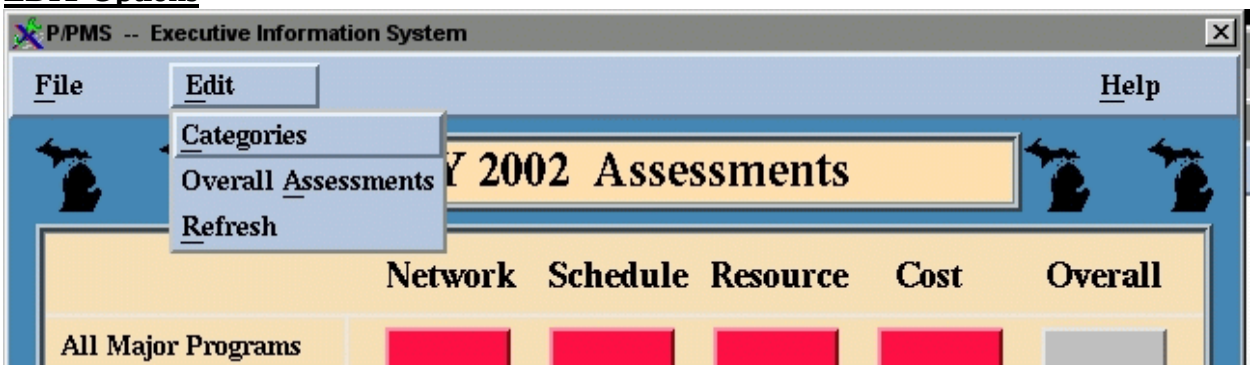
Trends graph:
The trends graph plots Active Jobs in P/PMS, Programmed Jobs in P/PMS and Active Jobs in MAP on an XY type line graph

Main Menu:
The Main Menu option returns the user to the main menu system which allows the user to go to P/PMS or CSS.

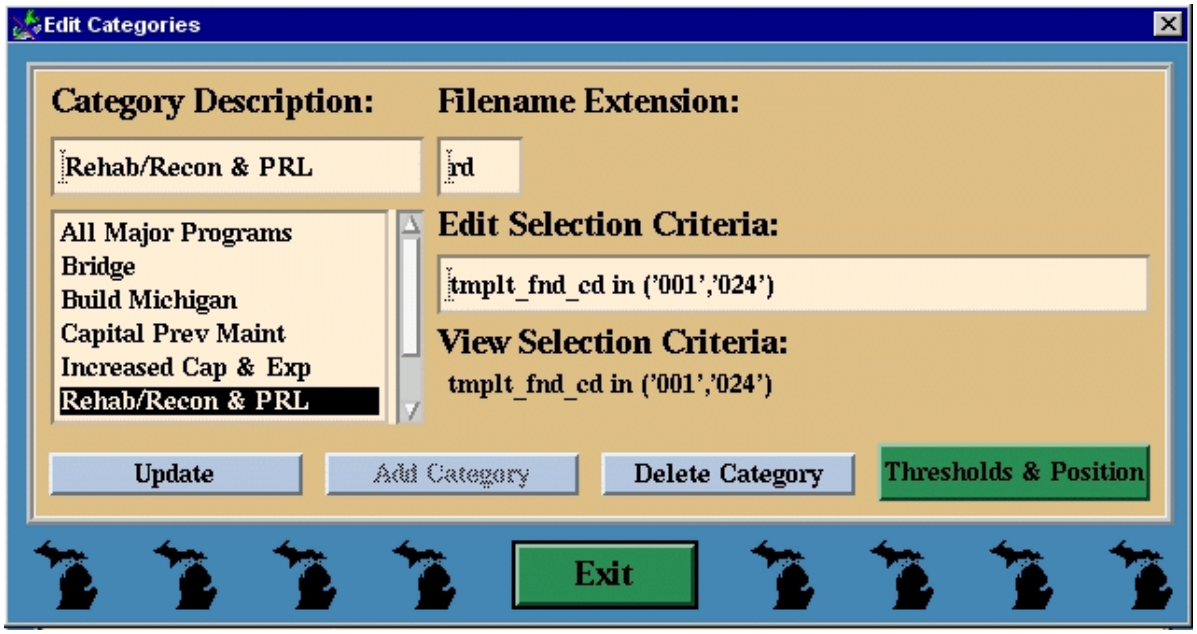
Exit:
This option allows the user to exit from the system.

Exit to CAT:
Available only to Application Administrators to allow direct access to the Assessments database.

EDIT Options



Categories:
This menu option allows the user to update, add or delete categories that can show up on the main stoplight chart. The categories are generally defined by Funding Templates, but can be defined by any valid job detail field. This option also allows the user to change the thresholds which control to color of the push buttons on the stoplight chart and select different positions for each category.



To update:
Select a category, make the changes, and push the update button.

To Add:
Enter the data in the various data entry windows and push the Add button.

To Delete:
Select the category to be deleted and push the Delete button.

To modify the category Thresholds & Positions, push the Threshold & Position button and the following menu will appear:

The area labeled position identifies the order on the main menu for a particular category. For each of the threshold parameters there is a marginal value which will give a yellow button on the main menu and there is a critical value which will give a red button. The threshold parameters are as follows:

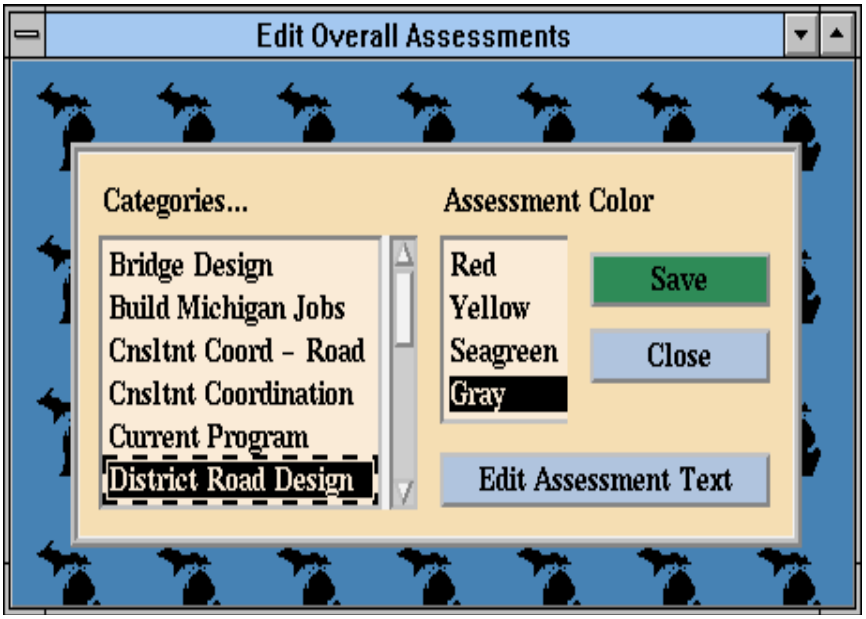
% Jobs un-programmed are the amount of jobs that do not have their baselines set.

% Late Jobs is the amount of jobs which are in jeopardy of missing any of their major milestones. Such as letting or plan completion.

% Resource Overloads are resources that have more work to be done on them than there are resources available to work on them.

% Over Budget Jobs is the amount of jobs which have a greater actual cost than budgeted cost.

Overall Assessments:
When this option is selected the following screen appears.

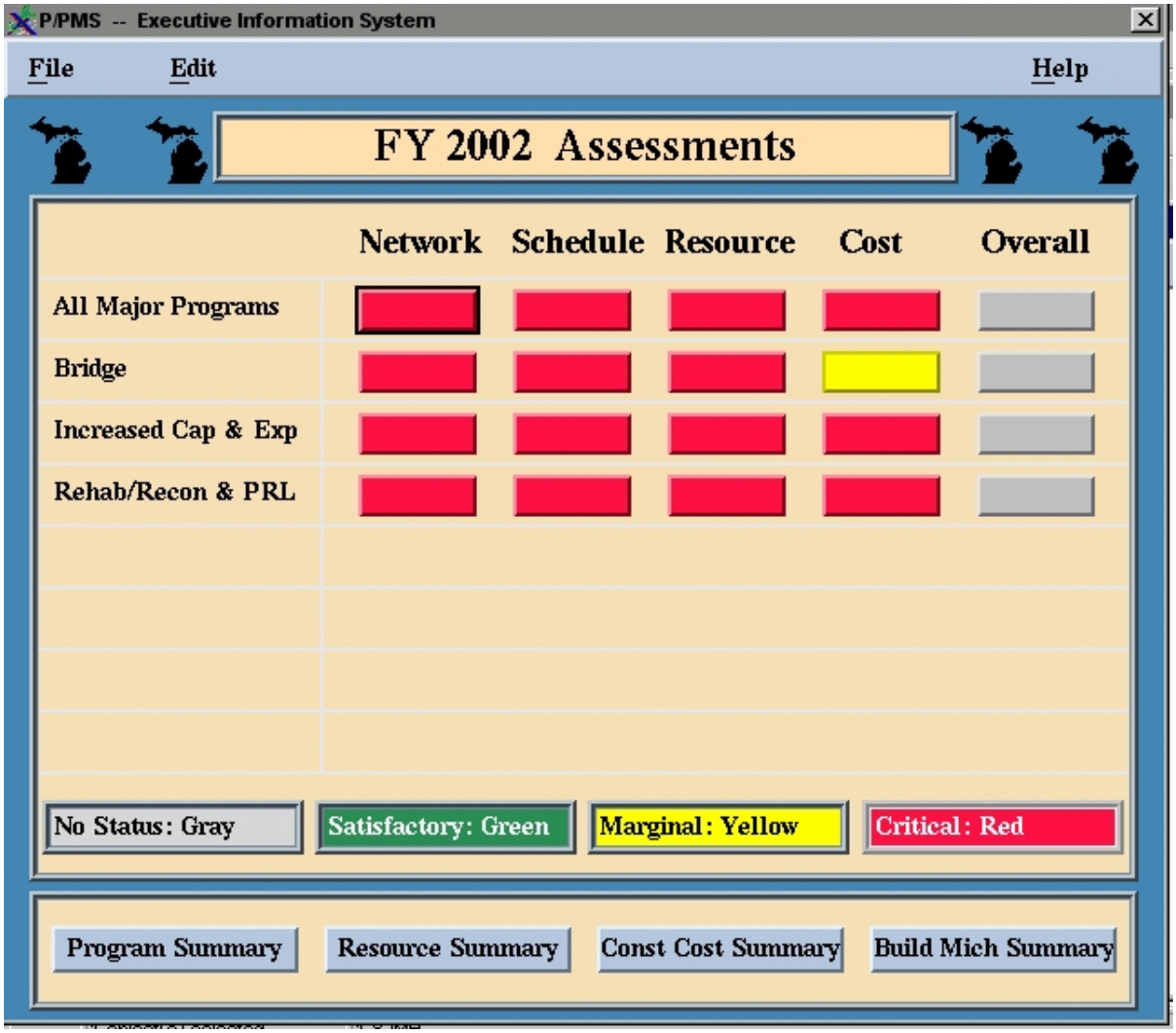


This option allows the user to subjectively select Assessment Colors for the category "Overall" buttons. Selecting a category with the mouse will enable the color list (with current color selected) and the 'Edit Assessment Text' button. Use the mouse to click on a new color, then use 'save' to apply the color change to the Assessment window.

The Edit Assessment Text button brings up a text editor that allows the Program Manager to create the report available under the 'Overall' button on the assessment chart. Start each entry in the text editor with the date of the change. This report will be a running history of the overall life of the category. Click 'Text Editor' under 'Help' on the Assessment window menu to read more about text edit commands.

Refresh:

Updates the Assessments Stoplight Chart screen with all changes made in the Categories and Thresholds window.



The assessments chart is broken up into 5 different sections, which are as follows;
Network
Schedule
Resources
Cost
Overall

Network
Under the network button, the user may view the current network status report for the category selection. This report indicates work group breakdowns including the number of unassigned jobs, the number of jobs in the system from this work group, the number of programmed jobs in this group, the number of late jobs in this group, the percentage of jobs in the system that are programmed and the percentage that are on time. Click exit to return to Assessment window.

Schedule

First Level

This button activates a Gantt chart including schedule and baseline dates for major milestones. For each job in the category, control section, job number and letting dates will appear in red if the job is scheduled to let after the current baseline letting date. Click a job number to proceed to the milestone summary Gantt chart for the job. Click exit to return to Assessment window.

Second Level

The second level Gantt chart shows milestones and milestone summary group descriptions for the job selected from the major milestone chart. Solid blue bars indicate completed task groups for that job. Click a summary description to proceed to the next level. Click exit to return to the previous window.

Third Level

The third level Gantt chart displays the progression of specific tasks within the selected summary group. Solid green bars indicate completed tasks within the selected job and summary group. Click anywhere on the chart to proceed to the next level. Click exit to return to the previous window.

Fourth Level

The fourth level displays a task group summary report indicating start and finish dates for each task within the job. The report highlights the summary group selected at level 2. Click exit to return to the previous window.

Cost

First Level

The actual cost of work performed bar graph compares the total budget for a job to its current cumulative cost and indicates jobs that are over budget. Click on the job number to proceed to the next level. Click exit to return to Assessment window. CAUTION WHEN PRINTING! The print option will output the complete file (in some cases more than 15 pages) of selected graphs.

Second Level

The cost performance report indicates the current financial status for all tasks within a job of the category selection. Click exit to return to the previous window. The print option will output the complete file of selected reports (several pages).

Resources

First Level

The resource histogram compares hours required to labor hours available and indicates resource overloads for each organization in the category. Click the organization and year at the bottom of the chart to proceed to the next level. Click exit to return to Assessment window.

Second Level

The second level resource histogram compares resource labor hours to hours available for the organization selected. Overloads are indicated in red. Click the month to proceed to the next level. Click exit to return to the previous window. CAUTION WHEN PRINTING! The print option will output the complete file (in some cases more than 50 pages) of selected graphs.

Third Level

The resource schedule report indicates resource hours required for each task for the unit and month selected. The report includes labor hours required actual dates, approved dates and schedule dates. Click exit to return to the previous window.

Overall

The overall assessment button presents a subjective report detailing the history of the category. This report contains significant information about the overall health of the category and supports the color assigned to the assessment button. The overall assessment text may be manipulated by selecting the 'Overall Assessment' button on the Edit menu on the menu bar. Click exit to return to Assessment window.

Quick Look Status Buttons

The quick look status buttons reside at the bottom of the assessments main screen. The buttons are as follows:

Program Summary
Resource Summary
Const Cost Summary
Build Michigan Jobs

Program Summary

The program summary button provides a quick look at the schedule status of the programmed jobs. This feature indicates the total number of jobs in the program, the number and percent of jobs with on time letting and the number and percent of jobs with a late letting. Buttons on the right side of the window allow the user to view the corresponding list of jobs for each of the summary groups. In addition, the letting/month button presents a chart showing the number of the lettings scheduled for each month contained within the program. To exit the Program Summary window and return to Assessment window click exit.

Resource Summary

The resource summary button provides a quick look at the resource status of the programmed jobs. This feature indicates the number of resources required, the number and percent of resources greater than 95% loaded and the number and percent of resources greater than 80% loaded. Buttons on the right side of the window allow the user to view the corresponding list of resources for each of the summary groups. The resource utilization button presents a chart of all resources working on the program, comparing resource requirements to resource availability and indicating overloads. Click any resource code to view the unit's requirement and availability over time. To exit the Resource Summary window and return to Assessment window click exit.

Const Cost Summary

The const cost summary button provides a quick look at the construction cost status of the programmed jobs. This feature presents “view chart” buttons for the six major program categories. Selecting a category displays a pie chart showing approved construction cost vs. scheduled construction cost by quarter. Clicking on “i.e.: Breakout Reports” displays same data in tabular form. To exit the Const Cost Summary window and return to Assessment window click exit.

Build Michigan Jobs

This window is similar to the “Program Summary” but reports only on the Build Michigan Jobs in the current program. To exit the Build Michigan summary window and return to Assessment window click exit.

User's Notes

* CAUTION WHEN SIZING WINDOWS! EIS windows may be disabled when sized.

* CAUTION WHEN PRINTING! The print option will output the complete file (in some cases more than 50 pages) of selected charts and graphs.

* Only one click is required to move from one level to the next within the Schedule, Cost and Resource Assessment columns.

* Within all charts, text may be enlarged by clicking on desired text and dragging the mouse. The zoom out button shrinks any enlargements. The tabular reports at the lowest level in Schedule, Cost and Resource as well as Overall Assessment cannot be enlarged.

* Within the Category Parameters window, after making a selection move mouse outside of selection area to enable screen.

* Only eight categories may be viewed on the Assessment window at one time.

* Refresh updates category rows based on changes to thresholds and positioning

* Changing categories, adding categories, deleting categories, and changing overall assessment color and text are options available only to certain users.