

PLANNING AND SCHEDULING MAINTENANCE OPERATIONS

03.01 MAINTENANCE PLANNING

03.01.01 OBJECTIVES

This manual is intended for internal guidance only and is not intended to create a legal or moral duty. Supervisors have discretion, based upon their expertise and the particular circumstances, to deviate from this manual and to conduct additional research or receive input from experts in other areas, as needed.

Planning is the orderly arrangement of a course of action designed to permit the efficient and economical performance of the work on a project or group of projects. A concise list of the general goals or objectives to strive for in attempting to complete any project is as follows:

- 1) To complete the project as quickly as possible without sacrificing the quality of the work.
- 2) To use available manpower, equipment, materials and other resources as sparingly as possible without causing delay.

With a clearly defined set of objectives, planning of a project can begin.

The overall objective in Highway Maintenance planning is to establish an adequate maintenance program capable of accommodating all highway travel in an orderly, safe and efficient manner. All plans must take into consideration the available funds so the project may be completed without requesting supplementary monies. The principle objective is to maintain roads and structures as nearly as possible in their originally constructed or improved condition with the least amount of inconvenience to the traveling public and the greatest degree of safety.

Highway maintenance planning is a difficult job because so many variables are involved in performing the necessary field operations. Often, factors such as weather conditions are beyond the control of the persons responsible for planning the program. Weather is taken into consideration to some extent by making advance plans on a seasonal basis. Other factors that may be controlled are having the correct materials at the job site when needed, scheduling the type and amount of equipment, and having labor available to perform the required tasks. The purpose of making a plan is to utilize controllable factors or resources in the best way possible and to reduce the adverse effects of those factors over which the planners have little or no control. With careful planning it is possible to know in advance what work can be done with the allocated funds.

03.01.02 IMPORTANCE

The importance of planning all maintenance operations and of performing the work in accordance with these plans cannot be over-emphasized. Because of the increased work load placed on maintenance organizations and the increased cost of materials, equipment and labor, each maintenance dollar must return the maximum

results. Effective planning is a major factor in the prevention of waste, duplication, and excessive expenditures of maintenance funds.

The phrase "*Prior Planning Prevents Poor Performance*" adequately describes the importance of planning. Keeping this phrase in mind will greatly reduce the quantity and urgency of Citizens' Requests for Assistance and will lessen the necessity of making changes in the planned program.

03.01.03 PLANNING PROGRAMS

03.01.03.01 TYPES

There are two general types of planning: Advanced Planning and Daily Planning. The maintenance organization at the Division level, District level or County level is concerned with both advanced planning and daily planning, because the plans for several types of maintenance operations will cover various periods of time.

03.01.03.02 ADVANCED PLANNING

Advanced planning is that planning necessary to allocate money, materials, equipment and manpower to meet the present and future needs. In advanced planning, the various projects are placed in order of their importance and the available resources are analyzed to determine which projects can be included and how much work can be done on each project.

Advanced plans must be flexible because changing conditions often require different solutions; therefore, advanced plans must be reviewed from time to time to be sure they are still applicable in the ever-changing highway conditions.

03.01.03.03 DAILY PLANNING

Daily planning is the planning necessary to accomplish the orderly completion of a project.

One project may be the routine maintenance of the entire State Highway System, while another project is the repair of just one short section of shoulder. In daily planning, the scheduling of equipment, the assignment of men and the delivery of materials are put into effect. Guidelines for planning are described as they apply to each operation.

03.01.03.04 DIVISION PLANNING

The Maintenance Division formulates long-range advanced plans which take into consideration the projected needs and show ways of keeping the expenditures within the anticipated allocations. The period included by this type of planning ranges from 1 to 5 years. These long-range plans establish realistic goals toward which the entire maintenance organization is required to work. The Maintenance Division plans also include the broad guidelines that must be followed in the daily planning so the long-range goals or objectives may be attained.

03.01.03.05 DISTRICT PLANNING

The District maintenance organization formulates its advanced plans on a yearly basis. These plans are based on the long-range plans of the Division but they are more detailed. They describe completely what is to be done, where each operation is to be done and how it is to be done. Much of the advanced planning at the District level is based on anticipated funding. Minor revisions in the daily planning are required because of a reduction or an increase in the available funds or because of a change in weather and highway conditions.

The District Engineer's plans are reviewed by the Central Headquarters Managers to determine if they will be within budget limitations and in line with the overall aims and objectives which have been established by the Department and the Maintenance Division.

03.01.03.06 COUNTY/EXPRESSWAY ORGANIZATION

The County Maintenance Superintendent and the Expressway Maintenance Supervisors must prepare advanced plans on an annual or seasonal basis. Since these plans will be based on actual maintenance funding, they only have to be flexible enough to allow for variations in weather, manpower and equipment. Advanced planning at this level will be more detailed than at either the District or Division level. Advanced County/Expressway plans will be reviewed by the Assistant District Engineer - Maintenance to be sure they are realistically based on the District's broad plans. This review will also bring to the District Engineer's attention any revision in his own future plans that may be necessary to correct deficiencies which have developed because of unusual situations occurring in the field.

The County Superintendent and various maintenance personnel from the District, as required, will assist the Maintenance Crew Supervisors in preparing their daily, weekly, and project plans. *Refer to Chapter 20, Section 20.04.05 of this manual for the procedures regarding the Maintenance Plan.*

03.01.04 WEEKLY WORK SCHEDULES

Highway maintenance consists of continually performing all of the many operations involved in routine and specialized maintenance work. Weather, roadway conditions and resource availability will dictate, to a great extent, which operations will be required and performed at certain times. Maintenance functions, however, are cyclical and follow a broad general pattern, based largely on the seasons.

Weekly Work Schedules are utilized by maintenance supervisors to aid in planning maintenance resources and tasks on a weekly basis at the District and County levels. The preparation of Weekly Work Schedules allows the maintenance supervisor to achieve maximum use of his available resources for a period of time (weekly) that can generally be successfully planned. One of the most important tasks of the County Maintenance Superintendent or his designee is the preparation of Weekly Work Schedules.

The preparation of Weekly Work Schedules should always include alternate activities planning. The scheduling of alternate activities affords the maintenance supervisor the degree of flexibility that successful planning requires. An example of scheduling alternate activities is the inclusion of Snow Removal and Ice Control Activities as alternates during a winter weekly period that has been forecast for mild temperature. Another example of alternate planning is the ability to shift a ditching crew to another task, should the District's hydraulic excavator not be available as scheduled. *Refer to Volume VI of the Department's Administrative Operating Procedures for specific procedures and details regarding the preparation of Weekly Work Schedules.*

03.01.04.01 SEASONAL PLANNING

The Maintenance Performance Standards include a monthly/seasonal performance schedule for each maintenance activity. The review and familiarity with the performance schedules will benefit the maintenance supervisors in the task of seasonal planning. The planning of seasonal work objectives is again controlled or dictated by the availability of resources, and a complete plan must allow consideration for the safety and convenience of the public and the protection of Department employees. For example, pavement repairs in an urban area would not logically be attempted during a peak period of daily traffic. *Refer to the Maintenance Performance Standards Manual for specifics regarding seasonal planning.*

03.01.04.02 ALLOWANCE FOR EMERGENCIES IN PLANNING

Plans can be developed for coping with emergencies, although the exact time and seriousness of an emergency cannot be predetermined. Planning for emergencies is often based on past experience and must include provisions for obtaining additional resources from the Department and perhaps even other sources. This type of planning is necessary in preparing for Snow Removal and Ice Control, and during flood events.

03.01.05 CORE MAINTENANCE ACTIVITIES PLAN

03.01.05.01 GENERAL

03.01.05.02 IMPORTANCE

The Core Maintenance Plan (CMP) concept has been established to place emphasis on the performance of the essential, "core" activities of road maintenance. The core activities as defined by the CMP are: mowing, patching, ditching, and snow removal and ice control (SRIC). These activities comprise the core of any successful highway maintenance program and are to be monitored thru the planning, scheduling, and execution of the Core maintenance Plan and Annual Plan. The importance of planning all maintenance activities and of performing the work in accordance with these plans cannot be over emphasized.

03.01.05.03 OBJECTIVE

To ensure that the performance of the CMP activities is consistent statewide, the State Highway Engineer will require, through the Director of Maintenance

Division, that each County/Expressway Supervisor plan and schedule at least 70% of the organization's Annual Plan, the Director, Maintenance Division, will designate those maintenance performance activities approved to be included in the CMP. Performance criteria for these activities are contained individually in the Maintenance manual and Maintenance Performance Standards. The remaining 30% of the Annual Plan resources are to be devoted to other maintenance activities and responses to citizen's request for assistance.

03.01.05.04 PLANNING

03.01.05.04.01 BASIS OF PLAN

The Director, Maintenance Division, will provide each Assistant district Engineer-Maintenance (ADEM) with an electronic spreadsheet of the most recent Roadway Inventory Report for maintenance organizations within his/her respective district. This report will identify, at a minimum, each route within the respective organization by route number, classification, and length.

The CMP shall consist of four individual core maintenance activity sub-plans: patching, ditching, mowing, and SRIC plans. Each county and expressway maintenance organization CMP shall include all routes identified on the Roadway Inventory Report. Each route shall be scheduled in the organization's Core Maintenance Plan at the following frequency:

- All applicable roads in an organization shall be listed for patching a minimum of one time per calendar year.
- All roads in an organization shall be listed for ditching a minimum of one time in a three calendar year period.
- Based on classification of the road (primary, paved secondary, unpaved secondary or other) all roads in an organization shall be listed for mowing three times, two times, or once per calendar year, respectively.

The County/Expressway Supervisor must prepare the CMP based on actual maintenance funding levels and the CMP must be flexible enough to allow for variations in weather, manpower, and equipment.

03.01.05.04.02 FORMAT OF PLAN

The ADEM, or his designee, is to prepare the CMP with the direct assistance of the County/Expressway Supervisor and various district maintenance personnel, as required. One plan for the patching activities, one plan for the ditching activities, and one plan for the mowing activities shall be prepared. The CMP is to be planned on the standardized statewide form provided by the Director, Maintenance Division. No exceptions or alterations to that form will be permitted.

The individual Core Maintenance Plan (CMP) for each activity group will be prepared twice per calendar year; once for the period January-June and once for the period July-December.

The planned accomplishment date of the core maintenance activities on individual routes, or segments of routes, will be further broken-down to one of two periods within each month. The periods will be either the “first half” of the month (1st thru 15th) or the “second half” of the month (16th thru 30th/31st).

SRIC plans are to be submitted separately for review to the Director, Maintenance Division, or his designee, by the first day of October each year.

03.01.05.04.03

PERFORMANCE REQUIREMENTS OF PLAN

All CMP activities are to be performed according to policy and procedures in the maintenance manual, the Maintenance Performance Standards, and to the following criteria:

- All applicable roads are to be reviewed and patched, as needed, at least once per calendar year.
- Ditches are to be reviewed and cleaned, as needed, at least once every three calendar years.
- Mowing for Non-Expressways:

Primary roads are to be mowed a minimum of three times per calendar year with two passes made on each side of the roadway, including one pass behind the ditch, where possible; once prior to Memorial Day, a second time prior to the Fourth of July; a third time prior to Labor Day.

Paved secondary roads are to be mowed a minimum of two times per calendar year with two passes on each side of the roadway made where possible, including one pass behind the ditch.

Unpaved routes are to be mowed a minimum of one time per calendar year with one pass on each side of the roadway behind the ditch.

- Mowing Expressways:

A mowing cycle is to be completed every four weeks, as needed, May through September. The first mowing cycle is to be completed by Memorial Day.

The final cutting is to be planned so there will be no vegetation higher than eight inches in the medians over the winter.

After Labor Day, mowing is to include reasonable mowable areas within the right-of-way that lie outside the regular mowing limits. This mowing is to improve the general appearance of the roadside and control brush and tree growth.

The Maintenance Performance Standards include a month/seasonal performance schedule for each maintenance activity. The County/Expressway

Supervisor should review and become familiar with the Maintenance Performance Standards as a tool to assist in the task of planning.

03.01.05.04.04 PLAN REVIEW

County/Expressway Core Maintenance Plans will be reviewed and approved by the ADEM to ensure they are realistic and based upon the District's goals. The ADEM will submit an approved copy of each maintenance organization's CMP electronically to the Director, Maintenance Division, or his designee, for review to assure the plan meets the overall aims and objectives of the Department.

03.01.05.04.05 PLAN SUBMITTAL

The January-June portion of the Core Maintenance Plan will be prepared by the County/Expressway Supervisor on or before November 1; reviewed and approved by the ADEM by November 15; and submitted electronically to the Director, maintenance Division, or his designee, on or before December 1.

The July-December portion of the Core Maintenance Plan will be prepared by the County/Expressway supervisor on or before May 20; reviewed and approved by the ADEM by June 1; and submitted electronically to the Director, Maintenance Division, or his designee, on or before June 15.

Adjustments to the July-December portion of the CMP may be necessary once annual plan allocations are finalized for the organization. Adjustments shall be made by the Organization Supervisor, reviewed by the ADEM, and submitted to the Director, Maintenance division, or designee.

The county/Expressway Supervisor and ADEM are to retain a copy of the current CMP, and all adjustments, for their use during the applicable period. They are to be able to provide the CMP when requested to do so by management.

03.01.05.05 SCHEDULING ACTIVITIES AND ADJUSTING SCHEDULES

Weekly Work Schedules (Form OM-41) are to be utilized by county/Expressway Supervisors in scheduling maintenance resources and maintenance activities (core maintenance and non-core maintenance) on a weekly basis. The preparation of a weekly work schedule allows the County/Expressway Supervisor to achieve maximum use of his/her available resources for a period of time (weekly) that can generally be successfully planned.

The preparation of Weekly Work Schedules should always include planned alternate activities. Alternate activities afford the County/Expressway Supervisor a degree of flexibility that is required for successful management. The Department's Administrative Operating Procedures, Volume VI, should be referenced for specific procedures and details regarding the preparation of Weekly Work Schedules.

When prolonged inclement weather, the need to perform emergency work, or other external factors significantly interrupts or adversely affects an organization's CMP, the ADEM shall work with the County/Expressway Supervisor to revise the

organization's CMP. The revised CMP shall adhere to the guidelines contained herein and, once approved by the ADEM and submitted to the Director, Maintenance Division will replace the existing CMP in its entirety.

03.01.05.06 DOCUMENTATION OF WORK PERFORMED

County/Expressway Supervisors are to ensure that the completion of core maintenance activities is documented on the CMP standardized forms weekly, or more frequently as required.

03.01.05.07 MONITORING

Monitoring of the progress made by a maintenance organization toward achieving the goals of the CMP is paramount to the success of the CMP. Monitoring increases the efficiency and effectiveness of the organization and helps ensure success of the CMP. Through monitoring any necessary corrective action can be taken in a timely manner, sound practices can be fostered, and areas for improvement can be identified.

The ADEM is to ensure each organization's CMP is reviewed twice weekly. The date and time of those reviews shall be recorded, along with any pertinent comments, and kept with and made a part of the organization's CMP.

03.01.05.08 SUBMITTAL OF DOCUMENTED WORK PERFORMED

The County/Expressway Supervisor is to electronically submit updates of documented completed CMP work to the ADEM within five (5) working days of the end of the "first half" and "second half" of each month.

03.01.05.09 EVALUATION PROCESS

The Director, Maintenance Division, will develop a process and form(s) to be used to evaluate each maintenance organization's adherence to their respective CMP and compliance to directives regarding the CMP process. The timing of the evaluation process will be at the discretion of the Director, Maintenance Division; however, each maintenance organization will be evaluated a minimum of once each January-June plan period and once each July-December plan period.

FOOTNOTE

As more fully set forth in Section 01.01.01, nothing in this manual is intended to create a legal or moral duty and has been created for internal guidance only.