

Planning, Budgeting, and Reporting Maintenance Activities

State Highway System

ODOT is responsible for, among other things, the operation and maintenance of the 8,000 miles of roadway on the State Highway system. Other agencies, including the federal government and local agencies, operate and maintain the remainder of the over 83,600 miles of public roads in Oregon.

The Transportation Data Section of the Transportation Development Division maintains maps that show the highways that comprise the State Highway system, including Region and District boundaries, names of the Region Managers and District Managers, and other information. Review the maps on their website on the ODOT Intranet.

For reference and record purposes, each highway on the State Highway system has a unique number. The highway number, as well as most of the beginning and ending locations for each highway, is different from the United States and Oregon principal route numbers assigned for traffic signing purposes.

Highways classed as primary highways on the State Highway system are numbered in the 1 to 100 series in this system. Those classed as secondary highways are numbered in the 101 to 499 series. A list of the number and name of each highway on the State Highway system, in both numerical and alphabetical order is available online from Transportation Development Division, Transportation Data Section.

The Transportation Development Division also prepares and maintains other maps, including State of Oregon maps, straight line charts, and others. The District Manager should periodically review those maps and notify the Transportation Development Division of any errors or mistakes on the maps. Also, the District Manager should notify the Transportation Development Division of any changes to the State Highway system, within the District, so those changes can be reflected on the maps.

Refer to the Organization section of this Guide for discussion on the ODOT organization responsible for the Maintenance program that maintains the State Highway system.

Role of Maintenance

1. Maintenance

In ODOT, the term “maintenance” encompasses the activities associated with keeping up, preserving, repairing, or restoring existing transportation infrastructure, generally on the State Highway system. Those activities, and related work, comprise the Maintenance program for ODOT.

Maintenance may include replacing components of the infrastructure necessary to make it usable (such as signs).

Maintenance does not generally include activities intended to enhance existing transportation infrastructure as a whole (by providing more capacity, improving traffic flow, etc.). The Maintenance program, however, may include funding for betterment and other activities and work that improve or enhance the existing facilities as discussed below.

In ODOT's Maintenance program, ODOT may use contract methods to accomplish, or assist in accomplishing, some maintenance work. Although "preservation overlays" are classed as maintenance, ODOT will generally use contract forces to accomplish that work. Often, those projects are developed and performed as part of ODOT's Statewide Transportation Improvement Plan. See discussion in the Maintenance Role in ODOT Project Delivery Process section of this Guide.

Since it is not always cost effective for ODOT to possess the necessary resources for all required activities, ODOT may choose to use contract methods to perform activities, such as guardrail repair or pavement marking, or may rent special equipment, with or without operators.

Also, since it is not always cost effective for ODOT to possess the resources necessary to produce products, including crushed aggregates, asphalt concrete mixture, concrete, etc., ODOT will generally acquire maintenance materials from commercial suppliers or by using contract methods.

ODOT maintenance forces may perform some improvements or enhancements to the State Highway system, classed as betterment, along with required maintenance activities. Refer to the discussion on Betterment Orders later in this section of this Guide. Before performing public improvements, as defined in ORS 279.011(8), a District Manager or Transportation Maintenance Manager must follow the least cost policy described in ORS 279.023. (Note: As of March 1, 2005 these statutory references will become ORS 279A.010(1)(aa) and ORS 279C.305 respectively; however the intent remains the same.)

Some personnel in ODOT's Maintenance offices are more involved with operating the State Highway system, rather than maintaining it. Their duties include:

- Administering permits to perform activities on the State Highway system. Refer to discussion in the Use of ODOT Property by Permit section of this Guide.
- Activities of the District Manager and others in coordinating and planning activities involving local governments, in working with regulatory agencies, and in participating in activities related to ODOT's Project Delivery program.
- Activities involving signal timing.
- Activities involving drawbridge operation.

2. Types of Maintenance

Generally, maintenance activities can be classed as one of two types:

- **Reactive.** Reactive activities are incident driven. They are performed to correct or respond to an immediate problem, such as a pothole or a vehicle crash, or to react to weather conditions or associated problems, such as snowfall, ice, heavy rainfall, flooding, slides, etc.
- **Proactive.** Proactive activities are generally planned in advance and are performed to forestall significant concerns or damage to the transportation infrastructure and to reduce lifecycle costs. They involve inspection, upkeep, preservation, or restoration activities. Proactive activities may require spending money now to perform an activity in order to require less future work, reduce the amount or cost of future work, or to postpone the more costly work.

3. Priority of Maintenance Activities

The District Manager and Transportation Maintenance Manager should utilize the performance budget to generally determine and plan the amounts of each maintenance activity to be performed annually. The performance budget should generate activity levels needed to maintain desired conditions and levels of service consistent with available funding for the Maintenance program.

The District Manager and Transportation Maintenance Manager should plan and assure the performance of maintenance activities such that activities of the highest priority are performed timely and appropriately. Criteria to consider in determining the highest priority include:

- **Public Safety.** A principal ODOT responsibility is to minimize risk of loss or harm to the public. Social values and public expectations generally assign the highest priority to protection of life, property, and the environment.

Some activities that generally would have a high priority, regarding public safety, are unpredictable and/or highly variable and require prompt action to restore normal operations or to reduce the risk of damage or loss. Those activities include cleanup of crashes and repair of resulting damage, emergency maintenance, slide removal, and pothole repair.

Other activities, relating to public safety, allow more time to plan, organize, and decide the appropriate course of action. Those activities may have lower priority for safety, but may still require action within a relatively short timeframe.

- **Public Use.** Since ODOT's mission involves providing a safe system of transportation, a key criterion to determine priority of maintenance activities is how much the activity contributes to keeping the facility open and in use by the public.

The priority, based on public use, depends on how well the facility must be maintained relatively free of hazards and incidents that hamper, slow, block, or impede the use of the facility. For example:

- A high priority activity must be performed with urgent concern for restoring public use.
 - A medium priority activity would have significant concern for restoring or maintaining public use, but the activity could be performed under less urgent conditions.
 - A low priority activity would have relatively less concern for restoring or maintaining public use.
- Return on Investment. Sound business practices dictate that ODOT invest its limited resources in activities that yield the greatest value. High priority for this item usually indicates that performing the activity as routine preventive maintenance will avoid a more costly problem.

This is especially true with physical systems such as road surfaces, foundations, drainage, and structures. As each of those systems deteriorates, the cost to restore the deterioration increases dramatically. Early repair and preventive maintenance on the system will postpone the need for more significant repairs or replacement and generally will reduce the probability of related deterioration and maintenance.

In order to maintain good public relations, the priority may be changed for activities that generally result in stronger community support, enhanced partnerships, reduced liability, or greater public trust.

- Weather. Weather can help to determine the priority of maintenance activities as follows:
 - Reactive Maintenance. Inclement weather, such as snow, ice, or heavy rainfall or runoff, generally establishes a high priority to the activities needed to maintain or restore use of the roadway or to allow water to properly drain.
 - Proactive Maintenance. Weather can establish a higher priority to:
 - Maintenance activities that follow a significant weather event, such as cleaning up sanding material, etc.
 - Maintenance activities needed before an anticipated weather event or conditions, such as stockpiling sanding material, cleaning ditches, etc.
 - Timing of Activities. Some activities need dry conditions, such as paving, others are best done during damp conditions or need watering, such as sweeping, and timing of others may depend on water height or restrictions due to fish or endangered species.

4. Involvement of Contract Resources in Maintenance Activities.

In general, ODOT should possess sufficient resources to respond to urgent needs in a timely, appropriate manner and to perform other activities in a cost effective manner.

A corollary to that statement is that ODOT should also perform other maintenance activities, generally those that do not require urgent response, in the most cost effective manner. That may require work by, or involvement of, contract resources.

The District Manager and Transportation Maintenance Manager may plan to utilize contract resources for several types of work, including the following:

- Major activities or projects, such as pavement overlays, painting bridges, replacing guardrail or fence, traffic line striping, etc., for which the District does not have adequate or available staff or equipment. Contract forces generally would perform the entire project unless ODOT chooses to perform selected functions such as flagging, etc.
- Activities that require special equipment, such as repairing damage to guardrail, etc. Contract forces could perform the spot repairs or ODOT could rent the needed equipment, with or without operators.
- Flaggers. For activities that require use of flaggers and that extend over several days, ODOT may use contract forces or personnel from temporary personnel agencies to perform flagger duties, so that maintenance forces could be utilized for the maintenance activity. This may also apply to flaggers needed for emergency traffic control, such as for slides or floods.

Performance Budget

Annually, the Office of Maintenance and the Maintenance Management System (MMS) Unit of the ODOT Highway Finance Office work with the District Managers to prepare a performance budget for the Maintenance program. This process is discussed in the *Maintenance Field Operations Manual*.

Basically, the performance budget process apportions available funding in the Maintenance program to each Region, District, maintenance area, or responsible crew, as well as funding for the Office of Maintenance and other programs in the Maintenance program.

The District Manager must update information on maintenance features, especially whenever a roadway is reconstructed or modified, by March 1 of each year so the performance budget uses current information. Refer to the *Maintenance Field Operations Manual* and the Maintenance Role in ODOT Project Delivery Process section of this Guide.

The performance budget process initially describes the level of funding that would be needed in order to maintain the State Highway system at the desired condition. The desired conditions of maintenance are depicted in the *Desired Conditions of Maintenance Features on State Highways*.

By comparing the desired funding to available funding, the Office of Maintenance and each Region and District Manager can determine the level of service that ODOT will be able to achieve for each maintenance activity with available funding. The District Manager may modify the planned accomplishments or budget amounts in the performance budget to not exceed available funding, so that the District Manager and Transportation Maintenance Manager may better plan the activities for and during the upcoming year.

The District Manager must be familiar with the process for preparing the performance budget, in order to assure that proper resources, frequencies of activities, and other information are appropriate.

When the performance budget that reflects available funding is produced, the District Manager and Transportation Maintenance Manager should plan how to distribute the planned workload during the year. The Maintenance Management System has a computerized Workload Distribution process to assist in this process. By this process, the District Manager and Transportation Maintenance Manager may:

- Plan when each activity should be performed to assure that the entire planned workload is accomplished.
- Determine when additional or special resources or personnel are needed to perform the planned work.

The Workload Distribution information will also help the District Manager and Transportation Maintenance Manager modify their planned work when unplanned events result in more or less work under selected activities.

On an annual basis, the State Maintenance Engineer and other designated persons should evaluate the levels of maintenance on the State Highway system. That evaluation should:

- Determine the level of maintenance, for the activities included in the Desired Conditions of Maintenance on State Highways and other designated activities, in comparison to the described desired level. If the actual level is significantly above or below the desired level, the District Manager, Region Manager, and State Maintenance Engineer should consider changes to bring the actual level of maintenance closer to the desired level.
- Identify any Desired Conditions that do not reflect realistic conditions and implement needed changes.

- Identify needed changes in the performance budget procedures, including those involved in developing planned accomplishments for each activity, and implement the needed changes.
- Provide other information that may help in planning other maintenance activities, needed betterments, or identifying potential projects for inclusion in the Statewide Transportation Improvement Program (STIP).

Planning and Budgeting Maintenance Activities

The District Manager and/or Transportation Maintenance Manager should review the status of the performance budget accomplishments and available funds and plan upcoming maintenance activities at several times during the year, including:

1. Annually, during preparation of the performance budget and when the performance budget is produced. Purposes for this review include:
 - Compare the performance budget to the desired budget to determine the levels of maintenance for each activity that will be achievable and should be planned.
 - Perform Workload Distribution to determine what period of the year that each activity can and should be performed, based on available personnel and equipment as well as on acceptable conditions. This will help minimize a “feast or famine” work situation.
 - Identify the need to use contract methods to perform, or help perform, selected activities.
 - Identify when and what personnel and/or equipment must be moved or loaned to or borrowed from other maintenance areas or Districts in order to perform selected activities.
2. Monthly. Purposes for this review include:
 - Compare planned work and budget to the accomplished work and expenditures. If expenditures do not closely resemble the budget, modify the planned work accordingly. This may involve modifying activities to decrease spending or may allow the District Manager to accomplish different or other work, possibly in different areas or activities than originally planned.
 - Review the work, needed resources, and timing of activities planned for the upcoming month or more. If conditions, resources, or budget are not appropriate or available, modify the activities accordingly.
 - Coordinate work activities that may impact each other. For instance, generally perform major surface repairs before striping and legend work is to be performed. Also refer to discussion in the Reports and Management section of the *Maintenance Field Operations Manual*.
3. Weekly. If necessary to:
 - Assure that resources will be available when needed,
 - Modify the planned activities depending on accomplishments and expenditures, or on availability of needed resources,

- Assure that activities are being accomplished to the intended level of service or desired condition.

4. Daily. If necessary to:

- Assure that resources are available when needed, including when equipment must be repaired,
- Modify the planned activities for unplanned, higher priority activities, completed activities, and other events including repair of equipment or unacceptable weather conditions,
- Assure that workers know the desired level of service or condition to result from each work activity. Do not exceed the desired level or condition, since it may cause excessive expenditures and/or may cause environmental damage.

When planning for work and as it progresses, the Transportation Maintenance Manager must also:

- Assure that planned activities will accommodate the requirements of endangered species in the area. Also refer to the discussion in the Control of Erosion, Sediment, and Pollutants and Contaminants section of this Guide.
- Coordinate work activities that may impact each other. For instance, generally perform major surface repairs before striping and legend work is to be performed.
- Assure that assigned personnel have reviewed safety concerns and have defined safe methods to accomplish the work, including operation of equipment. Other considerations include:
 - Identify particularly dangerous situations or locations in the involved work and plan the work to minimize the danger.
 - If special protective devices are needed, assure that the devices are available and workers are properly trained in their use.
 - Assure that a person on site is properly trained in first aid, etc.
 - Identify the location of emergency medical services and how to contact if needed.
 - Establish a method for someone to periodically check on employees who are operating equipment alone or otherwise working alone.
 Also refer to the Safety section of this Guide.
- Assure that the workers:
 - Have defined what traffic control will be needed for each work activity.
 - Have traffic control plan on-site.
 - Have sufficient and proper traffic control devices available.
 - Know how to set up and place that traffic control.
 - Will review the traffic control frequently to determine how well it is working and will modify or improve it as needed.

Use traffic control methods and devices as described in the *Traffic Control on State Highways for Short Term Work Zones* handbook. For unique situations, involve the Region Traffic representative. Also refer to the Safety section of this Guide.

- Review what methods or devices will be needed to properly control erosion, sedimentation, and other pollutants or contaminants for each activity. Assure that the workers:
 - Know how to implement each control method.
 - Have appropriate materials or control devices available at the work site.
 - Will periodically assure that the control devices or methods are acceptable and will modify, maintain, or improve the methods or devices as needed.Also refer to the discussion in the Control of Erosion, Sediment, and Pollutants or Contaminants section of this Guide and the *ODOT Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices*.
- Assure that each permit, required by other agencies or jurisdictions to perform the work, is on site and available for review when needed.
- Assure that the work activities are accomplished with appropriate methods, materials, and procedures and are achieving the intended objectives and finished product.

Recording of Use and Accomplishment

As discussed above, the performance budget allocates funding and identifies accomplishments for the Maintenance Management System (MMS) budgeting activities listed in the performance budget. ODOT has also established “TEAMS” activities, within the limit of the MMS budgeting activities, to record some costs in more detail than the MMS budgeting activities.

The accounting system will record costs for each TEAMS activity and reports from the accounting system will show costs charged to each TEAMS activity. The MMS information, however, “rolls up” the accounting system information, for each TEAMS activity, into the appropriate MMS budgeting activities for comparison to the performance budget information.

Refer to further discussion and descriptions of the MMS budgeting and the TEAMS activities in the Activities sections of this Guide. Also refer to discussion in the *Maintenance Field Operations Manual*.

The Maintenance program uses the Employee Daily Time Card form to record information on activities performed by maintenance personnel. The Transportation Maintenance Manager must record the following information and must assure that it is entered into the Automated Time Capture (ATC) computer system (the ATC links to both MMS and TEAMS):

- **Activity.** For each activity performed on each day, the Transportation Maintenance Manager must assure the entry of the expenditure account (EA), MMS budgeting activity number and TEAMS activity if different, appropriate sub-job if needed, and the accomplishment for the activity. Refer to the Maintenance Activity Directory, located at the front of the Activities section of this Guide, and the discussion on each activity following that.
- **Labor.** For each worker, the Transportation Maintenance Manager must assure the entry of the amount of time, designating whether regular or overtime, worked on each activity for the day. This information is used to distribute each employee's payroll costs to the appropriate TEAMS activity on which work was performed.
- **Equipment.** For each piece of equipment used during the day, the Transportation Maintenance Manager must assure entry of the amount of time that each piece of equipment was used on each activity. This information allows equipment costs to be charged to the appropriate activity.
- **Material.** If the material is owned by ODOT and is in stockpile, the Transportation Maintenance Manager must assure the entry of the appropriate material location, quantity used, and material code/EA of each material used. This allows the cost of the stockpiled material to be charged to the work activity.

The MMS provides several reports, including a monthly Work Progress Report that shows accomplishments and accrued costs, as well as other information. The District Manager and Transportation Maintenance Manager should use the information on the Work Progress Report to determine the status of accomplishment and the budget, as well as to modify remaining or upcoming work to accommodate differences from the planned budget.

Refer to the *Maintenance Field Operations Manual* for further instructions and discussion on recording and entering information on activities of maintenance personnel and for reports produced by the MMS or TEAMS.

Stockpiled or Produced Materials

The District may maintain stock of many maintenance materials so that the materials are available for use when needed. Refer to the Purchase and Acquisition of Goods and Services section of this Guide. Also refer to the Recording of Work and Costs section of the *Maintenance Field Operations Manual*.

If a material is acquired and used immediately in a work activity without being stockpiled, charge the material cost directly to the work activity.

If the material will not be used immediately in a work activity, the Transportation Maintenance Manager must "stockpile" the material by using Activity 081, or produce material by using Activity 083, on the Daily Time Card, to record the value of the material. The value of the material, through information recorded on the Daily Time

Card, will include the cost of the material plus the cost of the labor, equipment, and other resources involved in acquiring and stockpiling it.

When the material is used and recorded as such on subsequent Daily Time Card, the value of the material will be charged to the activity in which it was used.

The District Manager must also measure all materials in each stockpile site, on March 1 of each year, so the MMS Unit can reconcile each stockpile inventory and update the value of each material at each site. Refer to discussion in the Reports and Management section of the *Maintenance Field Operations Manual*.

Work For Others

The term "Work For Others" includes all work, that is performed by maintenance personnel, for which the funding will come from sources other than Maintenance, including:

- Other ODOT programs. These normally involve performing work on a construction project, as requested by the Project Manager on an Order for Force Work, but may also involve other programs.
- Orders to Render Service, under which the costs will be billed to outside agencies or entities.
- Claims Against Others (CAO). These generally involve repair of damage caused by crashes. Refer to further discussion and the Damage to Highway Structures procedure in the Crashes, Injuries, and Damage to Property section of this Guide.
- Work for other public agencies as part of an agreement or governmental partnership. Refer to discussion on governmental partnerships in the Organization section of this Guide.

Do not perform any of this work without written documentation that includes:

- Name and telephone number of contact person requesting the work (for Orders for Force Work and Orders to Render Service especially).
- Location of the work, including dimensions as appropriate.
- Accurate, complete description of the work to be done with estimate of costs.
- Identification of materials to be used, including appropriate quality requirements.
- Complete expenditure information to charge all costs incurred. Be sure to include the full expenditure information on the ATC and other appropriate reports.

Roughly estimate the cost of the work before starting it. If the estimate is more than that in the written documentation, obtain further approval of the contact person before starting the work. If the contact person does not have authority to authorize the additional cost, do not start the work.

As work is performed, the Transportation Maintenance Manager must properly and accurately record all costs daily in the ATC system and must complete other records as required by the entity or group funding the work. When the work is completed, notify the contact person to advise that the work is complete and request ODOT Finance to bill the requesting entity or group for all costs incurred.

Also refer to Activity 305 in the Activities sections of this Guide and discussion in the Reporting of Work and Costs section of the *Maintenance Field Operations Manual*.

Betterment Orders

Whenever the District Manager or Transportation Maintenance Manager plans to construct any betterment or improvement, including improvement to a building or other facility, or intends to use special funds to performing any work:

- Complete form 734-3440, Betterment Order, and submit for approval of the District Manager or other authority and assignment of a special expenditure account (EA) by the MMS Unit if needed.