

Asset Management vs. Maintenance Management

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Introduction

In the public works industry, the practices of asset management and maintenance management are used interchangeably and synonymously. Although these practices have some common elements and are both valuable tools for a public works manager, they are both unique. Typically, most public works agencies already have one or more asset management systems and some elements of maintenance management in place. So what are the differences and how are they related? Can an agency be both efficient and effective with just several unlinked asset management practices in place?

Asset Management

Asset management is not just installing computer software that tracks the work performed to an asset (e.g., pavement, sewer or stormwater networks, parks, facilities). The establishment of an electronic inventory database of all your assets alone lacks the ability to effectively manage assets. Although the easy graphical retrieval of your assets, their locations, and attributes from an electronic inventory is an extremely powerful capability, it does not constitute true asset management. These features, however, can be important initial components towards effective stewardship of your infrastructure.

So what is asset management? Generally defined, asset management is a strategically focused approach to make meaningful decisions related to the development, use, maintenance, repair, rehabilitation, and preservation of an agency's infrastructure. One goal is to assist an agency in making critical decisions necessary to achieve a maximum return of investment by extending the useful life of an agency's assets.

Asset management, in general terms, is a process of identifying:

1. What you own or have jurisdiction over,
2. What are your levels of service for these assets,
3. What condition are they in, and
4. What do you fix (or maintain) first?

Timing of repairs, maintenance and rehabilitation are critical to extending the useful life of an asset and the stewardship of the public's investment. The ultimate goal is to maximize the useful life of your assets by making educated decisions regarding the careful maintenance, repair and rehabilitation of infrastructure, focusing on elements that will enhance the public's investment and insure effectiveness.

Some examples of asset management processes and systems would be pavement management. Pavement management systems are commonly used in storing pavement

inventories and condition assessments, assisting in the identification of priorities and budgetary needs based on current condition and desired service levels. This includes evaluating risks and planning of treatment and rehabilitation efforts, at the optimal time, to prolong asset life and preserve the public's investment.

With these systems, agencies have the ability to set and measure condition ratings, prioritize asset rehabilitation based on condition, and then develop work plans based on available funding resources. Another example is a sanitary sewer management system. These systems allow agencies to prioritize projects and funding requirements by identifying repair and maintenance needs through condition assessment and analysis.

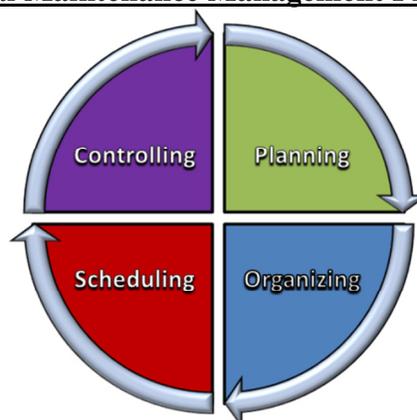
Maintenance Management

As with asset management, the most effective maintenance management systems are not those that only utilize computer software, which tracks resources used (e.g., labor, equipment and materials). Although, easy retrieval of data indicating resources used, where work was completed, and accomplishment of tasks can be an extremely powerful tool, this data does not constitute management of your maintenance organization. This is simply tracking historical information. The true power behind maintenance management is when managers and supervisors use this collected data to make meaningful business decisions, and effect positive change for their organization.

The principle of maintenance management is crucial to an agency's proper use of available resources in providing maintenance and repairs of their infrastructure. In these times of ever shrinking budgets, changing needs and increasing demand for more responsive service, the proper use of the fundamentals of maintenance management is paramount. The appropriate use of these practices will aid public agencies to better manage their maintenance operations and meet these and future challenges.

The premise of the ideal maintenance management process is based on four primary fundamentals. These fundamentals include Planning, Organizing, Scheduling, and Controlling. Each of these fundamentals also has key elements which, if satisfied, have been proven to lead to efficient maintenance and continuous improvement.

Ideal Maintenance Management Process



First through thoughtful planning; establish the desired frequency of maintenance for your activities, determine the best methods to accomplish the work, match your available labor and equipment resources to assets, and project how much you can accomplish targets.

Secondly, organize your planned available resources and apply them to your inventory of assets to achieve the desired service levels. Decide when and on what assets work will be performed, with what staff, equipment, and materials exploring the potential cost benefits of outsourcing. Compare those to competitive unit costs and examine the potential for outsourcing.

Next, through scheduling, planned accomplishments and organized resources the work can be effectively scheduled. This includes work that is based on an annual plan of accomplishment, routines and backlogged work, that has been proactively identified and external requests for services.

Lastly, through controlling, managers and supervisors use collected data from work accomplishment to benchmark against other similar entities to raise the bar and strive for the highest level of quality service at the lowest unit cost and to improve future planning efforts in modifying the annual plan.

Case Study

The Pinellas County (FL) Department of Environment and Infrastructure, Asset Management group is responsible for three programs; pavement, bridge, and stormwater system rehabilitation with future plans to add traffic control devices, and utilities infrastructure assets. The traffic assets of signals and signs are not normally a major part of the Capital Improvement Program (CIP) based on asset management principals, but are more a result of short term observations, inspection, technology change, capacity needs and new mandates. Integration of utilities assets is expected as part of the continued migration resulting from the recent merger of the county's Public Works and Utilities departments.

Prior to this merger, the County contracted with LA Consulting, Inc. (LAC) to conduct an Asset Management Analysis. This was completed in August 2006 with 21 recommendations. The County retained LAC to implement those recommendations in 2007. The main focus of this effort was to provide direct support to help compile a CIP for the asset rehabilitation programs which historically had been done on a more informal ad hoc basis. LAC assisted in processes that not only documented the County's assets but also managed them more efficiently to extend their useful life.

There were five components or basic needs. First, the County had to identify what infrastructure assets it owned including a physical inventory. The County utilized existing asset databases and supplemented them with targeted field identification and verification of some physical inventories to create the information. This required a collective effort by various groups within Public Works, with the support of LAC. Definitions of critical asset attributes and components were determined prior to data compilation. Second, the County established objectives for the assets to be maintained and/or managed. This was done by developing service levels and

condition criteria for each asset class. Third was a condition assessment process that either was affirmed from existing systems and/or developed to assign a specific condition to the various assets. The conditions have been established for roads, storm drains and bridges. The condition effort in all cases was done by a field assessment. The fourth phase was to establish a process for life cycle cost and benefits, and identifying priorities on assets for rehabilitation. The final step was to establish a process to monitor this effort and assure adherence of this process. This document is created to help document this final step effort and institutionalize the process.

Pinellas County's Asset Management Technical Committees: Bridge; Pavement; and Stormwater; as well as an overall Steering Committee, have been working together for more than three years. In addition to developing business processes, decision trees for candidate selections, and work prioritization methods, the County has continued to refine rating procedures as well as communication networks necessary to coordinate simultaneous or staggered work efforts on the different asset types. Nothing stands out more in the public's eye to epitomize the inefficiencies of government than resurfacing a roadway only to dig it up to replace a sewer line a year later.

Since 2009, the County has also instituted a more timely communication process to the owners of other assets so they can do a review of upcoming replacement or rehabilitation work, including a targeted field inspection if warranted. Examples of these proactive inspections performed by the County would be visual inspections of storm sewer culverts under roadways and routine inspections of the sanitary sewer lines through the use of CCTV. Both inspection types are performed in an effort to identify replacement needs prior to road resurfacing.

This established and routine communication of planned work has proven to be extremely beneficial in not only the coordination of the work effort but has assisted in the addition of identifying needed repairs before asset failures.

How Are the Disciplines Related?

Maintenance Management Systems (MMS) and asset management are not mutually exclusive, yet work hand in hand. MMS and Asset Management are like cogs in a great Public Works machine that feed information to one another and preserve physical assets by actively managing people and money. MMS assists in guiding performance of maintenance activities while focusing on efficiency, whereas asset management assists in the analysis of MMS work data for identifying work to be performed on specific assets while focusing on effectiveness. Asset management focuses on the condition of a specific asset, or asset class, and is driven by efficiency.

Both Driven by Assets



The primary element that drives both principles is the organization's assets and the stewardship of these assets. In asset management processes and systems, the main focus is the assets themselves. Similar to asset management, within work management the number and condition of your assets is the largest indicator of workload. As assets are added or subtracted, workload and needed resources also fluctuate. Using the inventories of existing asset management systems, maintenance management systems can be populated, which in turn helps determine the needed resource requirements. In both cases the accurate inventory of an agency's assets and established service levels are essential to the successful application of both practices.

Key Benefits

Although some of the key benefits of both practices working together may be obvious, there are three primary benefits.

The first allows an organization to standardize routine work and set and monitor service levels for their assets. Comprehensive inspection criteria as a defined standard for asset condition and work performance can be achieved and adopted by all levels of the organization (Senior Management, Supervisors, and Maintenance Staff).

The next benefit to an organization is the ability to improve maintenance operations and easily communicate routine work schedules to internal and external customers. This is achieved by allowing an agency to set routines and schedules for performing work. Detailed routine scheduling and frequency of inspections have been developed and can be modified to meet the organization's needs, again based on an accurate asset inventory, resource availability, and the determined level of service.

Lastly, utilizing best management practices will enable an agency to better manage their resources. The use of both maintenance management and asset management systems allows an agency to maximize available labor, equipment, and materials, and more efficiently and effectively plan and project future needs, and ensure stewardship of the public's investment

in the infrastructures. With the effective use of both practices, as an agency's assets or available resources increase or decrease, the level of service can be adjusted to meet the challenges.

Conclusion

Both practices focus on assets as key elements. Maintenance management assists in the guidance of performing maintenance activities, focusing on efficiency. Asset management assists in the identification and prioritization of work to be performed on specific assets, focusing on effectiveness not only in cost benefit for the individual project, but coordination with work identified on other assets to optimize opportunities.

In short, asset management and maintenance management are both valuable tools to make meaningful positive change within an agency responsible for multiple types of infrastructure assets. Both practices can assist a public works manager in making critical decisions to achieve an effective ROI by extending the useful life of an agency's assets.