Congratulations and Welcome

EEI would like to recognize the following employees for their milestone anniversaries with the company:

5 Yrs: Matthew Taylor
CAD/GIS Technician

35 Yrs: Denise Migliorini
Chief Financial Officer / Principal

Welcome to our newest employees in our Municipal, Environmental and Transportation Groups:

Kristen Meehan, P.E.
Natasha Woodlock
Ryan Sikes, P.E., PTOE

Did You Know?

According to the National Asphalt Pavement Association there is approximately 18 billion tons of asphalt pavement on America's roads. For other fun facts related to asphalt click the link: *https://www.asphaltpavement.org/uploads/documents/GovAffairs/NAPA%20Fast%20Facts%2011-02-14%20Final.pdf*

Enterprises Trivia Challenge

Q: As of November 30th how many named storms and hurricanes have we seen in the Atlantic this year?

Send your answer to **eei@eeiweb.com** by January 15th to be entered in a drawing for a $50 gift card!

Engineering Enterprises, Inc. (EEI), founded in 1974, is an award-winning consulting engineering firm providing services throughout northeastern Illinois. Our expertise includes water, wastewater, transportation, stormwater, construction management, land surveying, GIS and municipal consulting.

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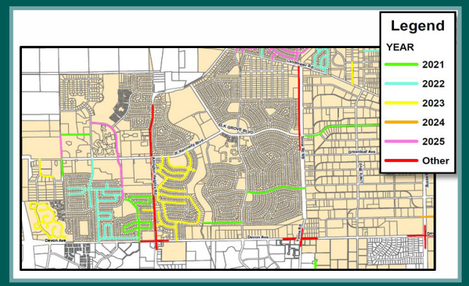
In this Edition:

Bettering Communities Through Pavement Management Programs

Outstanding Service Every Client Every Day

Few things contribute more to the positive image of a community than the condition of its streets. Conversely, few things generate as much attention from residents, boards, and councils than a street that is falling apart. Thus, it is no surprise that in the effort to better their communities, public works managers are constantly searching for ways to improve the overall condition of their streets. Pavement Management Programs (PMPs) offer a solution to this challenge by identifying the most cost-effective way to extend the useful life of a community's pavement assets.



Fall / Winter 2020

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Bettering Communities Through Pavement Management Programs, Cont'd.

The ideas associated with PMPs are not new. They have been used by federal and state DOTs since the 1970s. At the local level, there has been an increase in the use of PMPs over the last 10 years or so. The increased use of PMPs is primarily driven by the improved affordability of pavement condition surveys through the application of new technologies and increased competition. In turn, the lower cost of pavement surveys has improved the return on investment of PMPs.

Communities spend a significant portion of their annual budgets on maintaining their paved assets. An effective PMP produces the best possible results for the money spent on pavement maintenance. It identifies the type of pavement maintenance activities that will result in pavement lasting longer and performing better. It also identifies where and when the maintenance activities should be applied to optimize street maintenance for the entire street network. The typical planning period for PMPs is three to five years. For many communities, spending a small portion of the budget on a PMP once every three to five years to ensure that the remainder of the budget is producing the best possible results, is well worth it.

An effective PMP is built upon quantifying pavement condition and predicting pavement deterioration. The most common pavement condition scoring metric is the Pavement Condition Index (PCI), which is described in ASTM Method D 6433 - 07 Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys. The PCI is a numerical rating of the pavement condition that ranges from 0 to 100 with 0 being the worst possible condition and 100 being the best possible condition. A qualitative description of pavement condition as a function of the PCI value that varies from "failed" to "excellent" is also presented in the ASTM Standard and is shown in Figure 1.

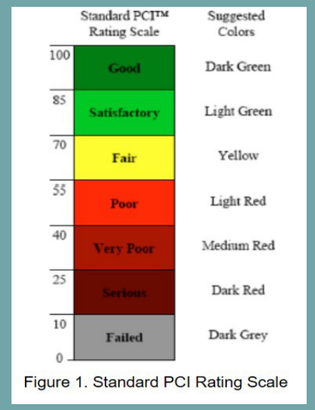

Figure 1. Standard PCI Rating Scale

Not all pavement condition surveys are created equal. Based on a number of factors, the costs associated with these surveys vary from about $100 per mile to almost a $1,000 per mile. Thus, it is crucial that a detailed project plan be developed prior to selecting a pavement condition survey contractor so that the objectives of the PMP are agreed upon, the scope is clearly defined, and the desired outcomes are achievable based on the budget allotted and the type of pavement condition survey being considered.

Pavement condition surveys are based on the pavement condition on a certain date, the date of the survey. By itself, a single pavement condition rating is of limited use. A much greater value of the data is realized when it is combined with an estimate of pavement condition over time, otherwise known as a pavement deterioration curve. The green line on the graph in Figure 2 illustrates a typical deterioration curve for a section of pavement (typically one block).

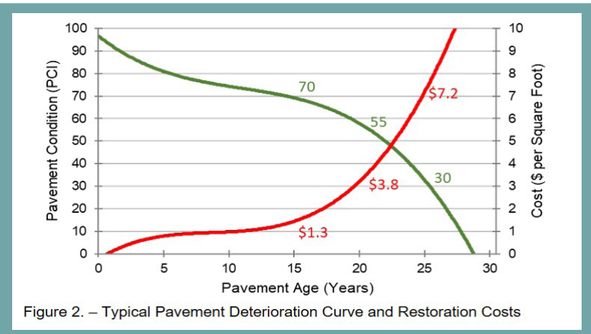

Figure 2. – Typical Pavement Deterioration Curve and Restoration Costs

The graph also shows typical pavement restoration costs (red line). The relationship between deterioration and restoration costs is at the core of how a PMP optimizes maintenance activities for a street network. In general, maintenance activities are more cost-effective when they are applied at or near, the onset of the increase in rate of deterioration or the increase in restoration costs. On Figure 2 this corresponds to year 15.

Software programs, most of which are developed and supported by vendors that conduct pavement condition surveys, are useful in determining the optimal mix of maintenance activities. Outputs from these programs typically include a recommended list of streets to receive maintenance, associated maintenance activities, and costs by year.

The output from software programs should only be used as guidelines so that other factors can be considered in the final PMP. For example, communities frequently obtain better contractor pricing when the streets comprising an annual street maintenance project are located close to one another. Other important aspects of selecting streets and maintenance activities for annual maintenance programs that a computer program cannot perform include accounting for acceptance by policy makers (boards, councils, etc.), public perception and funding opportunities or limitations. Lastly, the PMP should consider other underground projects being planned by the community.

Pavement Management Programs offer public works managers a powerful tool for optimizing annual street maintenance programs for bettering their communities. Although technology plays an important role in developing an effective PMP, it must be combined with thoughtful and experienced oversight to produce the optimal program for a community.

EEI can assist your community in developing an effective PMP. We have been preparing and updating Pavement Management Programs for communities throughout northeastern Illinois for nearly 20 years. Our experience in the design of local street, pavement maintenance, roadway reconstruction projects, and local funding will help you in bettering your community through the development of an effective PMP. Please contact **Joe Cwynar at jcwynar@eeiweb.com** to discuss your alternatives without obligation.

Chairman's Corner


Peter G. Wallers, P.E., CFM

A few years ago, we were traveling around the four corners region (Utah, Arizona, Colorado and New Mexico). You know, back when traveling was normal. Any way we ended up staying in the small town of Blanding, Utah. Blanding is a nice little town at the gateway to Bears Ears National Monument. Now is probably as good a time as any to give you this warning; beware when you travel with an engineer, because you will be investigating all kinds of fun stuff, at least for the engineer. This trip was no different, at the Blanding Visitor Center we (and by we, I mean me) stumbled on a very interesting tale of intrigue and adventure, the story of the Blanding tunnel.

The idea of the tunnel was conceived in 1914 to solve a long-term water supply problem for the town of Blanding. The proposed solution was to dig a 5,400-foot tunnel straight through a mountain to divert crystal clear water from a mountain stream into Blanding. Initially a small group started to build the tunnel, when they sought support for funding it became clear that not everyone in Blanding was on board with this bold project. Tunneling a mile by hand was no small endeavor. A few leaders realized that for Blanding to prosper they needed clean water and despite the challenges, they pushed forward. Most of the visionaries that started the project would not see the project completed.

With fits and starts the project moved forward. Actual construction would take 30 years, span two world wars and the Great Depression. Eventually a small contingent of believers was able to press through. In 1952 they broke through, completed the tunnel and delivered a clean and safe water supply to the residents of Blanding. An epic project even by today's standards. To this day, the Tunnel remains the main water supply for Blanding.

Being a bit of a water geek, I found the tale fascinating and it drove home three parallels that I am seeing in the Chicago Metro Region.

- First, you must have a reliable water supply to have a prosperous city, it is the one essential utility that we can't live without
- Second, bringing water to your city may not always be easy or cheap
- Third, not everyone will agree with your solution

Currently many communities are wrestling with the dilemma of finding a long-term sustainable water supply. Luckily in our region there are solutions available, however they are not cheap or easy. We all know that having enough potable water is critical for the success of our communities and regardless of the challenges must be provided.

Look on the bright side, at least you won't be called upon to hand dig a mile-long tunnel through a mountain.

Have a safe and wonderful Holiday Season!