

BAXTER & WOODMAN NEWS

Consulting Engineers

Making a positive difference through innovative engineering solutions

A CLOSER LOOK AT PAVEMENT REJUVENATORS

With government agencies everywhere facing tight budgets and deteriorating infrastructures, pavement rejuvenators offer another tool to consider when it comes to asphalt road preservation.

A pavement rejuvenator is a pavement surface treatment that replenishes the asphalt binder that is lost through oxidation, weathering, and aging. Rejuvenators provide a simple, early method for asphalt preservation by restoring plasticity and durability of the asphalt binder.

There are two common types of pavement rejuvenators on the market today.

- **Reclamite®** – Maltene-Based Asphalt Rejuvenator
- **CRF®** – Maltene-Based Restorative Seal

HOW DOES RECLAMITE® WORK?

Reclamite® is an in-depth seal. Once applied, the sealer penetrates through the top layer of pavement and brings the Maltene and Asphaltene ratio back into balance. By doing this, Reclamite® is able to stop pavement deterioration where it starts by keeping the pavement flexible, so cracking and road fatigue are reduced. Reclamite® also seals the pavement from air and water, slowing the oxidation process and reducing the loss of small aggregate.

WHEN SHOULD RECLAMITE® BE APPLIED?

Ideally, Reclamite® should be applied to new construction before the pavement has been overly-exposed to

the elements. Reclamite® is most effective when applied on pavement 0-5 years old.

HOW DOES CRF® WORK?

CRF® is an emulsified product comprised of a special asphalt emulsion and asphalt rejuvenating agent that provides several asphalt repair options. Following application of CRF®, a dusting of sand is placed to cover the asphalt repair area during the initial curing period. As a Restorative Surface Seal, CRF® was developed to help fill the gap between early preventive maintenance and total replacement.

WHEN SHOULD CRF® BE APPLIED?

CRF® is most effective when applied on pavement between 0 - 5 years old. CRF® is a potential asphalt repair choice once a pavement gets distressed to the point where rejuvenation alone is not enough and you need to begin to think of corrective maintenance.

Protecting one of your communities most valuable assets, it's transportation network, is critical. Treating your road with a rejuvenator could potentially add 3-5 valuable years to your pavement. Contact Lou Haussmann at lhaussmann@baxterwoodman.com or 815.444.3261 to discuss if using a pavement rejuvenator is a good solution to help maintain your roads.

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Consider a Project Funding Mechanism that Guarantees Results

PERFORMANCE CONTRACTING



A performance contract offers an alternate project delivery method to fund capital improvement projects with demonstrated operational savings. Money saved as a result of new, efficient technology is used to offset the cost of financing, installing, and operating the improvements.

HOW DOES A PERFORMANCE CONTRACT WORK?

A contract is created between the organization and an Energy Service Company (ESCO) based on guaranteed project savings and backed by the ESCO.

WHAT ARE THE KEY COMPONENTS OF PERFORMANCE CONTRACTING?

- **Project Funding:** An ESCO may fund the initial study (no cost) and preliminary design, providing an economically viable alternative to traditional project funding.
- **Selection Flexibility:** A process that provides flexibility in selecting the best value with a track record of performance, not low bid.
- **Guaranteed Results:** Engineering work estimates the projected energy, labor, and deferred capital savings. An ESCO guarantees the projected savings and agrees to pay any difference between projected and actual savings in the event that the guaranteed savings fall short.
- **Complete, Single Source Project Implementation & Management:** The Performance Contracting model provides a no change order single source of responsibility for the project.
- **Long Term Project Monitoring:** Performance Contracting provides an ongoing measurement and verification phase that measures and validates projected energy savings throughout the project life cycle.

WHAT PROJECTS MIGHT BE A GOOD FIT FOR PERFORMANCE CONTRACTING?

- System-wide water meter replacement
- Water storage and pumping optimization
- Water pressure zone modifications
- Wastewater Aeration and Digester Gas Utilization Improvements
- SCADA Upgrades and Modernization
- Street Lighting Improvements
- Building HVAC Improvements

WHY CONSIDER PERFORMANCE CONTRACTING?

A Performance Contract can be another tool for achieving infrastructure modernization, budget reduction, efficiency, and sustainability goals without the need for upfront capital expenditure.

For additional information or to discuss how your project might benefit from the Performance Contract delivery model contact Amanda Sheposh at asheposh@baxterwoodman.com.

Baxter & Woodman partners with national Energy Service Companies (ESCOs) to provide proven cutting edge and innovative design solutions resulting in guaranteed savings.

APWA Launches Sustainability Toolkit!

The APWA's Center for Sustainability (C4S) has recently launched a new online Sustainability Toolkit. The online depository contains over 100 tools, case studies, guides and resources relevant to sustainability in public works.

The toolkit features an easy-to-use "Search" function allowing you to search according to type, topic, focus and geographic location. Use

the toolkit to search for high level topics such as General Sustainability or search for specific sustainability reports, tools, or rating systems.

The Sustainability Toolkit is loaded with resources and ideas to support your upcoming sustainable initiatives! Check it out at <http://sustainabilitytoolkit.apwa.net/>





Case Study

VILLAGE OF MUNDELEIN PERFORMANCE CONTRACT

The Mundelein Wastewater Treatment Plant (WWTP) Energy Efficiency Project was an innovative private-public partnership focusing on planning, delivering and guaranteeing cost reductions for both the water distribution system and the WWTP via reduced energy consumption and streamlined operations. Through use of a performance contract, the Village was able to develop advanced solutions for reducing operating costs at its water and wastewater utilities while limiting capital expenditure.

SOLUTIONS IMPLEMENTED

- Plant & Lift Station SCADA Automation;
- Comprehensive Aeration System Improvements;
- Sludge Pump Automation;
- Digester Mixing Optimization; and
- Water System Operation Optimization Improvements.

The Village of Mundelein, like many Lake Michigan water communities, receives its potable water from the supplier at given pressure. The Village stored that water in above-ground and elevated storage tanks via dump-and-pump operations. In other words, the pressurized water is dumped into an open-air or unpressurized storage vessel and later pumped again to the Village's supply pressure. Facilities that operate continuously can often waste energy by not being tailored to fluctuating daily demands. As part of the Performance Contract project, an "inline booster" pump was installed. The booster pump allows the Village to take advantage of incoming water pressure and maintain the highest level of electrical efficiency. This, along with improved controls, will avoid wasting pumping energy.

Other water system opportunities for operation optimization were also evaluated, including shifting to off-peak operations to take advantage of more favorable energy rates. For water utilities that operate large pumps in deep or shallow wells, often the time of day that the pump(s) are operated can have as big a cost implication as the total energy used throughout the day. In this type of utility, a simple evaluation of pumping operations, water

system storage, and energy rates can yield improvements that can save water utilities as much as tens of thousands of dollars each month.

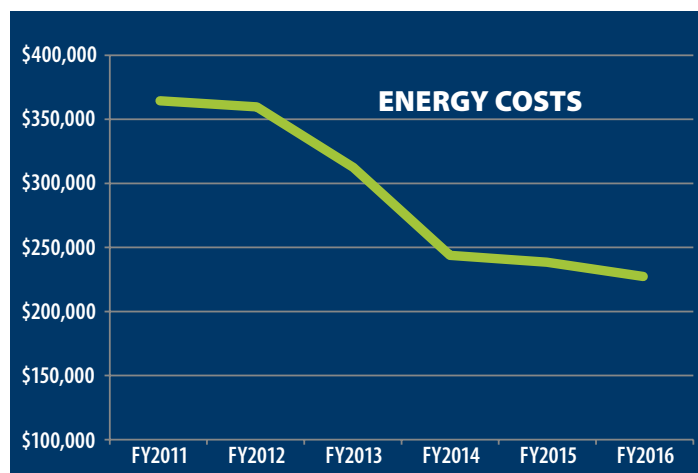
RESULTS

The capital cost for this project was approximately \$1,900,000. Approximately \$220,000 of grant funding was secured for this project.

The guaranteed annual savings per the performance contract were as follows:

- Energy : \$93,700 (3.5% annual increase)
- Operational Resource: \$44,700 (1.5% annual increase)
- Capital Cost Avoidance (future equipment purchase): \$26,200 (1.5% annual increase)
- Total Initial Annual Savings: \$164,600 (\$2,000,000 after 11 years)

We continue to monitor the project to ensure the guaranteed savings are being met and to review additional efficiency opportunities. Since project implementation four years ago, the Village has realized \$424,000 in energy savings, exceeding the original guarantee. The chart below depicts the energy usage since project implementation.



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Pros and Cons

JOINT MUNICIPAL BIDDING

In search of a fresh approach to save money on your next infrastructure project? Consider joint municipal bidding. Joint municipal bidding involves grouping projects together with neighboring communities in hopes of reducing costs. Here are some of the potential benefits and pitfalls of this approach.

POTENTIAL BENEFITS

- Lower construction costs through economies of scale
- Reduced design engineering effort
- Reduced upfront project administration
- Opportunity to learn new best practices from your neighbor communities

POTENTIAL PITFALLS

- Bid specification and standards differences between joint bidders
- Construction scheduling constraints between joint bidders

Baxter & Woodman has successfully facilitated joint municipal bidding projects for multiple communities. Contact Lou Haussmann at 815.444.3261 or lhaussmann@baxterwoodman.com for additional information and to discuss if joint municipal bidding is an option for your upcoming projects.

