

Estimating road and street improvement projects



ROAD CONSTRUCTION costs have seen big increases in the past three years. Gone are the days of price stability when it was easy to assume project costs would rise only a few percentage points annually.

Estimating road and street improvement projects is harder today given substantial increases in material and transportation costs, and volatility in the price of improvements. One way to minimize surprises is to follow

good practices for estimating project quantities and costs.

Preliminary vs. detailed

Preliminary estimates of construction costs come in handy when developing a road-improvement plan and budget. If you do this planning in WISLR, the Wisconsin Information System for Local Roads that has a built-in cost database, you need to modify your numbers in WISLR to account for price increases and local differences in

costs. Also adjust for the type of maintenance and construction activities you plan to implement. Consider including a contingency of 5-to-10 percent in estimates to anticipate unseen price increases or additional work.

Numbers used in a preliminary estimate represent an average, or typical project. Many projects, however, differ from the average. Before putting a project out for bid, make a more-detailed cost estimate of actual construction costs on the project. ►

Idea EXCHANGE

Brine-making facility speeds process

REDUCE THE AMOUNT of salt spread on icy roads and bridges, and improve the effect of what you *do* lay down. The Dane County Department of Public Works, Highway and Transportation took up that challenge two plowing seasons ago and now treats its roads by a process of prewetting with a salt-brine solution that mixes with the salt—an application that saves salt and acts more quickly. To supply its brine needs, the Department built a new facility at its Madison headquarters to house a precision-run brine-making process.

The set-up includes computerized controls for programming the process, a 2.5-yard container for

mixing the brine solution, and two 4,000-gallon holding tanks adjacent to a truck port where vehicles stop to “fuel up” with the solution. The county also transfers brine to 3,000-gallon storage tanks at six outlying facilities as needed.

Crew Leader Gary Keegan describes the brine-making process as fast and efficient. “It makes it easy to meet our needs and even supply other counties.” After his crew loads a measure of rock salt into the container and programs the brine-making run, water sprays on the salt from overhead. Spray sensors monitor flow to achieve an exact 23 percent solution, the salinity Keegan says addresses

most county winter road conditions. Sensors guard against overflow and shut the spray down when the salt gets too low.

Brine making in this operation is a continuous process that produces approximately 8,000 gallons of brine in two hours. With greater water velocity, Keegan predicts they could speed production substantially. The facility produced 130,000 gallons of brine last year.

The county piloted the in-house process in 2005 and ran it full out in 2006. Its anti-icing operation involved two trucks equipped with 1,800- and 1,000-gallon tanks to treat bridge decks on state routes and county routes with heavy traffic. The trucks go out when there are predictions of frost or light snow with pavement temperatures at 10-to-35 degrees.

Twenty-five trucks are equipped for prewetting. The county expects to put six more in service this year, all assigned to state routes. Costs amount to approximately \$7,000 per truck for retrofitting and \$5,000 to equip a new truck.

Dane County Highway Commissioner Gerald Mandli says the Department anticipates over time the cost-effective operation will reach its goal to reduce salt use up to one third and improve road safety. ■

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Gary Keegan uses touch-screen controls to program salinity and view the progress of the run. *INSET* The large 2.5-yard mixing bin is mounted in an enclosure adjacent to computer controls.