



PAVING

Minnesota Asphalt
Pavement Association

www.asphaltisbest.com

PROGRESS

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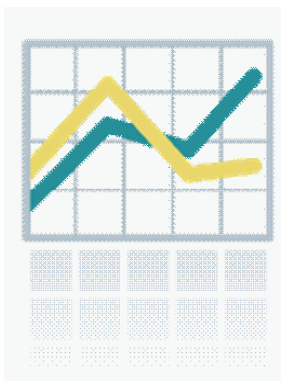
Life Cycle Cost Analysis Made Easy

New software called LCCAExpress is making life easier for engineers who perform life-cycle cost analysis (LCCA) for pavements.

The new software, available free from the Asphalt Pavement Alliance (APA), uses the principles recommended by the Federal Highway Administration (FHWA) to compare the economics of alternative designs for a given road project.

LCCAExpress is a simplified version of the APA's original LCCA software. Geared to less complex projects, it's quick and easy to use. Beyond ease of use, it's important that it is based on the standard principles set out by FHWA. LCCAExpress is unbiased and reliable.

Download LCCAExpress for free at AsphaltRoads.org. This is the Asphalt Pavement Alliance's new web site. While you're there, note that the original LCCA software is still available for more complex projects.



THREE EASY STEPS TO GOOD LCCA ANALYSIS

1. DISCOUNT RATE: The Real Deal

While some have argued in favor of a negative discount rate, the APA points out that the time value of money doesn't work that way. A 2010 dollar is inevitably worth more than a 2030 dollar, or a 2050 dollar. Accordingly, LCCAExpress uses a real discount rate, based on published information from the U.S. government's Office of Management and Budget.

2. INPUTS: Use Real Information

Inputs should come from relevant, historical data on previously bid projects of a comparable scale for a given location. Pavement performance periods (initial, rehabilitation, overlay, etc.) should be determined based on pavement data and historical experience. Don't let promoters tell you what data to use – get it from the historical records.

3. INCLUDE ALL THE COSTS

Life-cycle cost analysis should look at initial costs and discounted

Continued on Page 4

The Asphalt Pavement Alliance has a new web site at
www.asphaltroads.org

Shingle Creek Watershed Porous Asphalt Pavement Study

By Edward Matthiesen, Wenck Associates, Inc.

The Shingle Creek Watershed Management Commission received a federal research grant that is being administered by the Minnesota Pollution Control Agency to evaluate whether less or no salt can be applied to a porous pavement and still maintain road safety in winter driving conditions. The Commission worked with the City of Robbinsdale, Minnesota Department of Transportation (Mn/DOT), and MAPA in developing a specification and assistance in construction and selecting and installing instrumentation.

Two intersections are being monitored for temperature, water depth below the surface, water quality and extent and duration of snow and ice. The intersection at 41st and Zenith was constructed with the traditional street cross section over a sand subgrade while the intersection at 41st and

Abbott (see photo) was constructed with porous asphalt on top of an 18" layer of ballast rock and choker course over the same sand subgrade.



The intersections were constructed in September 2010. Midwest Asphalt Corporation was the paving contractor (see photo above). One complete winter of monitoring and observation has occurred (see photo of snow melted on porous asphalt pavement section to the right) and the results look promising for the use of porous asphalt as a physical means to reduce salt. What we've seen is

that the porous section generally maintains a warmer profile compared to the control section and that when melting conditions occur, water drops through the porous section instead of refreezing at the surface.

The next winter will see the second year of monitoring at 41st and Zenith and Abbott. The second paired intersection will also be constructed over a clay subgrade at another paired intersection also in Robbinsdale followed by two years of monitoring.



Calendar of Events

- **MAAPT 57th Annual Asphalt Conference**
Wednesday, December 8, 2010 • Northland Inn • Brooklyn Park, MN
- **Annual Asphalt Paving Awards Banquet**
Wednesday evening, December 8, 2010 • Northland Inn • Brooklyn Park, MN
- **MAPA 57th Annual Membership Meeting**
Thursday-Friday, December 9-10, 2010 • Northland Inn • Brooklyn Park, MN
- **NAPA 56th Annual Membership Meeting (Note: Dates have changed!)**
Committee Meetings: February 5-6, 2011; Program: February 6-9, 2011 • Waldorf Astoria & the Hilton at Bonnet Creek • Orlando, FL
- **55th Annual Asphalt Contractors' Workshop/Quality Initiative Workshop**
Wednesday, March 2, 2011 • Brooklyn Center, MN
- **AAPT 86th Annual Meeting**
March 27-30, 2011 • Marriott Waterside • Tampa, FL

Smoothness Matters - New APA Publication

Experts say that vehicles consume less fuel when traveling on smoother pavements. This makes sense intuitively. And, lower consumption of fuel conserves natural resources for a healthier environment.

There have been claims from the competition that concrete pavements save fuel. However, because 94 percent of America's roadways are surfaced with asphalt, it is difficult to directly compare asphalt pavements to concrete pavements.

A meaningful comparison would require data from a tightly controlled experiment. Differences in traffic flow, terrain, smoothness, wind, temperature, tire inflation pressure, driver behavior, and a host of other factors must be accounted for in the results.

Over the years, the competition has sponsored research projects to study the effect of pavement type (concrete vs. asphalt) on vehicle fuel consumption. A critical review of these studies, however, reveals that the results are based upon comparisons of apples and oranges – the pavements studied are not equivalent. More importantly, the results of these studies reinforce the well-established fact, consistent with the WesTrack project, that pavement roughness, not pavement type, is responsible for differences in vehicle fuel consumption.

Nearly all states, including Minnesota, have smoothness standards for newly built roads. If the road does not meet the standard, the

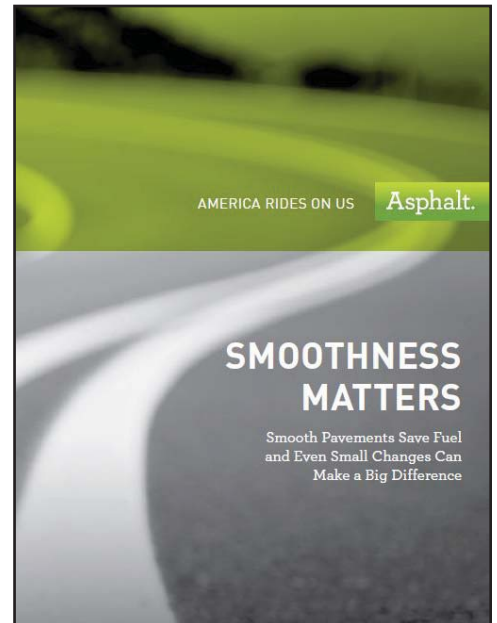
contractor's pay is reduced. Some states have different standards for asphalt and concrete, and in every state where this is the case (MN included), the requirements for asphalt roads are more stringent than for concrete roads.

As noted in a 1999 General Accounting Office report to Congress, "Concrete roads may produce rougher readings than asphalt roads, even if the concrete road is of very high quality. Features such as joints between sections can contribute to the roughness of concrete highways."

BUILDING SMOOTHER TO STAY SMOOTHER & IMPROVE FUEL EFFICIENCY

Keeping a road smooth begins with a well-engineered foundation and pavement structure. An asphalt "perpetual pavement" is designed and built to ensure that the structure lasts virtually indefinitely. Restoration is simply a matter of infrequent overlay or milling with an overlay of the surface with asphalt pavement that includes the recycled millings. Not surprisingly, these periodic improvements in ride quality significantly reduce fuel consumption of vehicles traveling these roads and protect the pavement structure. Bottom line: asphalt pavements are easier to maintain and keep smooth.

Americans burn 175 billion gallons of fuel driving 3 trillion miles a year. If we could make the roads across the nation slightly smoother, we could likely save at least 4 percent of the fuel consumed. This could reduce



annual vehicle fuel consumption by about 7 billion gallons, equivalent to taking over 10 million vehicles off the road every year. This would reduce the amount of fuel and vehicle maintenance required for every traveler on our roads, in addition to conserving our natural resources and benefiting our environment.

After closely examining the available research and investigating a variety of different factors, one thing is clear: of all pavement characteristics, smoothness is the major determinant of vehicle fuel economy. Simply stated, the smoother the pavement, the less fuel consumed by the vehicle. For a full discussion of studies on this topic, see the below-referenced article.

Marks, Howard, PhD. 2009. Smoothness Matters: The Influence of Pavement on Fuel Consumption. Hot Mix Asphalt Technology Vol. 14, No. 6, pp. 18-29, available at www.nxtbook.com/nxtbooks/naylor/NAPS0609/index.php#/18

Life Cycle Cost Analysis Made Easy,

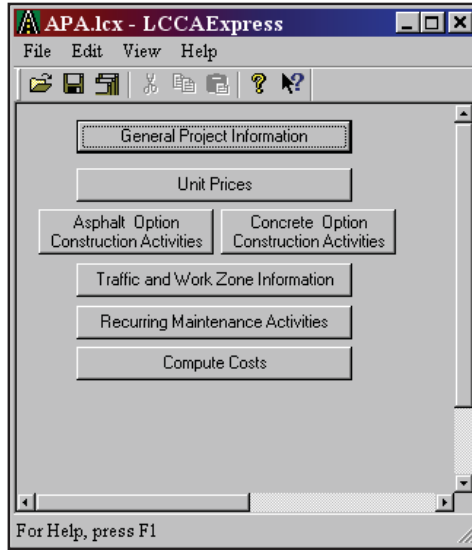
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future costs. Future costs include maintenance, reconstruction, rehabilitation, restoration, and resurfacing over the life of the project. Don't forget to factor in user delay. Even though not borne directly by the agency, user delay costs are real; they reflect the cost of construction delays incurred by the public and disruption of business.

ASPHALT PAVEMENTS YOUR BEST INVESTMENT

We are all taxpayers and the responsibility lies with each generation to invest wisely in our infrastructure. Smooth, durable, safe, quiet pavements constructed with asphalt stand up to the punishment of heavy trucks and other vehicles, significantly reducing initial and total costs over the entire life cycle of a road.

With asphalt pavements, initial construction, maintenance, and



rehabilitation all cost less. And, user delay costs are far less with asphalt because construction, maintenance, and rehabilitation are quicker and can be accomplished in off-peak hours.

When maintenance is needed, asphalt offers the widest variety of alternatives geared to solve the precise problems on the roadway. Asphalt parking lots, runways, and roadways can be repaired and maintained cost-effectively

with overlays rather than a costly removal and reconstruction. Overlays also have the benefit of adding structural capacity to accommodate increased traffic loading.

Asphalt conserves precious natural resources, too. Asphalt can be reused and recycled, saving dollars and preserving nonrenewable natural resources. There are over 18 billion tons of asphalt pavement in place on America's roads today. This material is a resource that our children's children will be able to use for the infrastructure of tomorrow.

Questions? Contact MAPA at info@mnapa.org

For background information on the discount rate, how it works, and what value should be used in life-cycle cost analysis, consult Circular No. A-94 from the White House Office of Management and Budget. www.whitehouse.gov/omb/rewrite/circulars/a094/a094.html

Infrastructure Condition Doesn't Make the Grade

Early in 2009, to provide guidance for the application of stimulus fund allocation, the American Society of Civil Engineers (ASCE) published its Report Card for America's Infrastructure. The rating shows that our overall transportation infrastructure is in very poor shape:

- Aviation* D
- Bridges* C
- Inland Waterways* D-
- Rail* C-
- Roads* D-
- Transit* D

ASCE's report states that "Americans spend 4.2 billion hours a year stuck in traffic at a cost of \$78.2 billion a year (\$710 per motorist). Roadway conditions are a significant factor in about one-third of traffic fatalities. Poor road conditions cost U.S. motorists \$67 billion a year in repairs and operating costs (\$333 per motorist); 33% of America's major roads are in poor or mediocre condition and 36% of the nation's major urban highways are congested. The current spending level of \$70.3 billion for highway capital improvements is well below the estimated \$186 billion needed annually to substantially improve the nation's highways."

NAPA Releases Online Facility-Specific Greenhouse Gas Calculator.

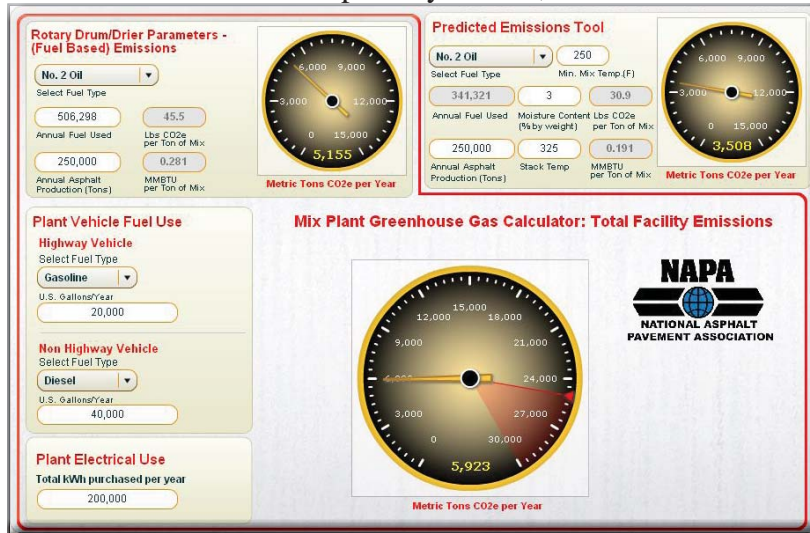
NAPA announced the release of its online Greenhouse Gas Calculator (GHGC), an important new management tool for asphalt plant operators.

come from the combustion of fuel and the release of CO₂ or other greenhouse gases such as chlorofluorocarbons. All greenhouse gases are assessed various potency factors; the

used to heat the liquid asphalt binder and store the finished asphalt pavement mix.

The online Calculator incorporates the look of input and output

As state and federal reporting requirements for industrial sources that release greenhouse gases increase, the Greenhouse Gas Calculator is useful for helping operators to understand the amount of greenhouse gases that their facility releases.



gauges. It is built on a database that calculates CO₂ emissions from a variety of facility sources, including drum/driers, plant vehicles and road paving equipment, and even facility electrical consumption.

This tool will increasingly be useful as federal and state environmental agencies step up reporting requirements.

The Calculator was developed under the leadership of NAPA's ESPOC Emissions Subcommittee. The majority of greenhouse gas emissions at an asphalt plant

universal measure is CO₂ equivalent (CO₂e). Generally, the more fuel combusted or burned, the more CO₂e is emitted. At an asphalt plant, the majority of fuel is combusted to dry the aggregate and make the mix; other fuel is

To use the calculator, visit www.hotmix.org/ghgc.

For further information, contact NAPA's Director of Regulatory Affairs Howard Marks, hmarks@hotmix.org.

New Greenroads Web Site

With so much emphasis on "going green" there is now a web site for "Green Roads" from the University of Washington and CH2MHill.

Greenroads is a sustainability

performance metric, or "rating system," for roadway design and construction. It is applicable to new and reconstructed/rehabilitated roadways. It awards points for approved sustainable choices/practices and can be used to assess roadway project sustainability.

The "Greenroads Version 1.0 Abridged Manual" is available at Greenroads.us. This is the short version (80 or so pages). If you want

the full manual (with examples, strategies, research and citations too) then go to the Manual page on this web site and download it there. They have posted a recent list of Errata (as of 4/19/2010) there too.



Greenroads.us

Spotlight on Christopher Roy, P.E., Director of Mn/DOT's Office of Aeronautics

An interview by Jill Thomas, P.E., Associate Director, Minnesota Asphalt Pavement Association

As the new Director of Mn/DOT's Office of Aeronautics, Chris Roy is using his skills, experiences, and qualified staff to soar into the future.

Civil Engineering was a natural fit for Chris as he excelled in math and science during school. However, he considers working with people and managing projects the most enjoyable part of his career.

A native of Roseville, Minnesota, Chris attended the University of Minnesota-Duluth (U of MN-Duluth) with the added benefit of downhill skiing at Spirit Mountain. However, the U of MN-Duluth did not have a robust Civil Engineering program at the time, so he transferred to the U of MN-Twin Cities to complete his Bachelor of Civil Engineering degree. He also has earned a Masters in Science with emphasis in Infrastructure System Engineering from the U of MN.

Chris began his career with the Minnesota Department of Transportation (Mn/DOT) during college as a Student Worker in the Golden Valley Hydraulics Office. Mn/DOT was not hiring at the time Chris graduated college, so he took a temporary position with the South Dakota Department of Transportation as a Hydraulics Engineer in Pierre. Shortly thereafter, Chris was hired as a Graduate Engineer in District 6 and rotated between the offices of Surveys, Right of Way, Materials, Construction, and Design. After his rotation, he was in the Surveys office

for two years.

Chris temporarily left Mn/DOT to work in the consultant engineering sector and moved to the Twin Cities. During his time at Bonestroo & Associates, he was the Project Manager for preliminary and final design of state highways and municipal state aid highways. He designed traffic signals, inspected traffic signal installations, and prepared municipal state aid reports.

In 2000, he returned to Mn/DOT as a Project Manager in the Metro Office. He managed the design and development of major reconstruction projects and managed the preparation of geometric layouts, environmental documents, and construction documents. His primary project was I-494 from the Minnesota River to I-394 with a budget of approximately \$640 million dollars.

In just over a year, Chris was promoted as the West Metro Area Engineer. He managed the project delivery process for all state highway projects in the west metro area including working with all of the stakeholders and interested parties to ensure that their concerns were being addressed. His projects included I-494, TH 7, I-35W, TH 77, and USTH 12. Chris especially

valued his experiences working with diverse groups in both large and small communities.

Chris took a brief mobility assignment to the Project Coordination Engineer position at Mn/DOT's Central Office and he supervised the Office of Land Management's Project Coordination & Finance Unit. He also managed

their consultant budget, prepared legislative reports and presentations, and acted as the liaison between the districts and Central Office in the Right of Way process.

After his mobility, Chris was promoted as the North Metro

Area Manager, a job he calls "one of the best jobs at Mn/DOT." It was a position that could please the most ardent of adrenaline junkies. Chris said that every day was busy with projects that included "Unweave the Weave" (I-35E/I-694), TH 36 in North St. Paul, the "TH 169 Triangle," TH 610 Design Build, TH 65/TH 242, TH 10 near Anoka and Coon Rapids, and the Lafayette and Cayuga bridges. One of the most fulfilling projects was to restore traffic when the I-35W bridge fell, where \$6.7 Million was used on 22 to 30 projects for scoping, creating and finalizing plans, and letting all within a time period of six weeks.

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Spotlight on Christopher Roy, P.E.,

Continued from Page 6.

Currently, Chris is the Director of the Office of Aeronautics. He has a staff of 40 people that he says he is happy to rely on for their vast experience and passion for their jobs and they have made his transition very easy. His office administers state and federal funds for municipal airport development, maintenance, and operation; regulates, inspects, and licenses aviation operations; enforces statutes and rules relating to aviation; registers aircraft and

assists communities with aviation planning and air service issues. It also provides radio and visual navigational aids; electrical and lighting systems; collects and disseminates weather information for pilots; disseminates aviation education and safety information; conducts several programs to promote aviation; and furnishes air transportation service for state officials and employees performing official business. His office is responsible for a total of 136

public airports in Minnesota, which equates to approximately 940 lane miles of pavement to maintain.

Chris is married with two children, ages five and seven. He enjoys spending time with his family, coaching baseball for his son's team, and boating on nearby lakes and rivers.

Best of luck Chris, and thanks for helping to build 'em black!

Contact MAPA's Contractor Members For All Your Hot-Mix Asphalt Paving Needs!

All Members Are Listed at www.asphaltisbest.com

- Anderson Brothers Construction Co.
- Asphalt Surface Technologies Corp.
- Barton Enterprises, Inc.
- Bemidji Bituminous Inc. Bituminous Paving, Inc.
- Bituminous Roadways
- Commercial Asphalt Co.
- DMJ Corporation
- Duininck Inc.
- FPI Paving Contractors, Inc.

- Hardrives, Inc.
- Hawkinson Construction
- Knife River Corporation - North Central
- Knife River Materials
- Mark Sand & Gravel Co.
- McNamara Contracting, Inc.
- Mesabi Bituminous, Inc.
- Midwest Asphalt Corporation
- Minn-Dak Asphalt, Inc.
- North Valley, Inc.
- Northland Paving, LLC

- Northwest Asphalt, Inc.
- Pine Bend Paving, Inc.
- Plehal Blacktopping, Inc.
- Rum River Contracting Company
- T.A. Schifsky & Sons, Inc.
- Tower Asphalt, Inc.
- Tri-City Paving, Inc.
- Ulland Brothers, Inc.
- Valley Paving, Inc
- Wm. Mueller & Sons, Inc.
- W W Blacktopping, Inc.

Membership Update:

Hardrives, Inc. Has Acquired Tower Asphalt, Inc.

Hardrives, Inc. (Rogers, MN) announced on May 18, 2010 that the company has acquired Tower Asphalt, Inc. (Lakeland, MN).

According to the press release, The acquisition was several years in the making as both companies saw the benefit of aligning resources. "We

have the same set of core values and ethics," says Steve Hall, Hardrives CEO and President.

Hardrives will continue to service Minnesota, North Dakota, and South Dakota, and will now provide services to the east metro and Wisconsin.

MAPA's Associate Members

Accurate Test Systems, Inc.
Aggregate Industries
American Agency, Inc.
American Engineering Testing, Inc.
American Surface Lines, LLC
Anderson Industrial Scales, Inc.
Antigo Construction, Inc.
Area Lakes Testing
Arr-Maz Custom Chemicals
Bomag Americas
Braun Intertec Corporation
Brock White Company LLC
Carlson Paving Products, Inc.
Carlson Tractor & Equipment
Caterpillar Paving Products Inc.
Cedarleaf, Cedarleaf & Cedarleaf, Inc.
Century Fence Co.
Certainteed Corporation
Clarence Richard Company
Cobb Strecker Dunphy & Zimmermann
Construction Bulletin
Crysteel Truck Equipment, Inc.
Custom Welding & Metal Fab, Inc.
Dahl Trucking
Dem-Con Companies
Dillman Equipment; a Div. of Astec Inc.
J.D. Donovan, Inc.
Dresser Trap Rock Company
East Jordan Iron Works
Erickson Engineering Co.
Esch Construction Supply, Inc.
Ess Brothers & Sons, Inc.
EverCore LLC

Fabyanske, Westra, Hart & Thomson, P.A.
T.C. Field & Company
Foth Infrastructure & Environment, LLC
Gencor Industries, Inc.
Grant Thornton LLP
Hayden-Murphy Equipment Co., Inc.
Highway Technologies
HTIF Cameron Filters
Humboldt Manufacturing
Independent Testing Technologies, Inc.
Inspec, Inc.
Interstate Engineering, Inc.
Intex Corporation
Johnson Crushing, Inc.
Kennametal Tricon Metals & Services, Inc.
Kraemer Mining & Materials, Inc.
Laser Control, Inc.
Leonard, Street & Deinard, P.A.
L.G. Everist, Inc.
LHB, Inc.
Lubrication Technologies, Inc.
Marathon Petroleum Company LLC
Martin Marietta Aggregates
Max Steining, Inc.
Maxam Equipment, Inc.
Minnesota Laborers - Employers Cooperation and Education Trust
Minnesota Petroleum Marketers Assoc.
Minnesota Trucking Association
Murphy Oil USA, Inc.
Northern Balance & Scale

Northwest Process Equipment, Inc.
Nuss Truck & Equipment
Olson & Price, Ltd.
Patrick Burns & Associates
PQ Corporation
Prinsco, Inc.
QPR (Quality Pavement Repair)
R & G Construction Company
RDO Equipment Co.
Ritchie Bros. Auctioneers (America) Inc.
RJ Ahmann Company
Road Machinery & Supplies Co.
Roadtec, Inc.
Rotochopper, Inc.
Ruffridge-Johnson Equipment Co., Inc.
RB Scott Company, Inc.
Safety Signs
Shell Oil Products - US
SPC Engineering & Testing, Inc.
Swanston Equipment Companies
TexPar Energy, LLC
Tri-State Aggregate Machinery
Troxler Electronic Lab., Inc.
Truck Utilities, Inc.
Ulteig Engineers, Inc.
Unique Paving Materials Corp.
Vance Brothers
Volvo Construction Equipment
Waddell & Reed, Inc.
Wenck Associates, Inc.
Wheeler Lumber LLC
Widseth Smith Nolting
Ziegler, Inc.



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