



IN THIS ISSUE

- *Update: Warm Mix Asphalt In Colorado*
- *From White To Black In Town Of Castle Rock*
- *Pavement Management: Why Deferred Maintenance Doesn't Work*
- *Innovations In Using Recycled Materials*

BUILDING BETTER ROADS



BW11RH



MPH364R-2



BW284AD

BOMAG
FAYAT GROUP



gobomag.com
www.power-equip.com

Update: Warm Mix Asphalt A Hot Item In Colorado

Use of Warm Mix Asphalt continues to grow in Colorado. Many more demonstration projects were done for local agencies in 2011, resulting in several local agencies allowing the use of WMA in their paving programs as a standard procedure with a submittal from the paving contractors requesting the use of WMA. While CDOT is always a leader in product or technology advancements, use of WMA to date has been driven primarily by Local Agencies. Local Agencies have found the technology to be very easy to adapt to their current specification requirements by adding a simple specification change statement which states, "Warm mix asphalt (WMA) is allowed as an alternate to hot mix asphalt (HMA) provided that all material requirements and specification standards are met and as approved by the Agency."

CAPA, along with Brannan Sand and Gravel Co. and City of Centennial, held an open house in June that was attended by 30 people from many agencies. Some other localities where demonstrations were done in 2011 include cities of Denver, Colorado Springs, Loveland, Fort Collins, Grand Junction and Aurora. WMA demonstrations were also held at Arapahoe, Boulder and Larimer counties.

City of Lakewood allowed APC Construction Co. to place a percentage of the City's CIP paving program in

2010 to be WMA. Based on successful results from 2010, in 2011 the City again allowed APC, at the contractor's discretion, to place WMA for the entire CIP program. As a result, more than 60,000 tons of WMA were placed as part of Lakewood's 2011 overlay program. Representatives from APC indicated that being able to utilize WMA provided some flexibility in certain overlay locations. When paving in residential areas, using WMA is a benefit because it cools at a much slower rate than HMA, which means it stays workable for a much longer time. Cul-de-sacs are perfect for WMA, as trucks generally sit for a longer period of time while the paver is maneuvered around the bubble. APC did not alter its paving train for placement of WMA, but the compactive effort was altered slightly due to the fact that WMA requires



Warm Mix Asphalt placement by APC Construction Co., hosted by the City of Lakewood during the Sustainable Asphalt tour as part of the 2011 APWA National Congress. Pictured in the inset, left to right, are Ed McClure, Inspector, City of Lakewood; Keary Brown, Project Manager, APC Construction Co. LLC; and Chris Jacobsen, Infrastructure Maintenance Engineer, City of Lakewood.

CONTRACTORS APPROVED TO PLACE WMA IN CDOT PROJECTS (9-2011)

Contractor	Technology Name	Approval Date	Re-evaluation Date	Contact Name	Contact Phone
A & S Construction Company	Evotherm 3G (J1 and M1)	3/9/11	3/9/14	Chuck Reavis	719-429-3825
APC Construction	Gencor Ultrafoam GX2	9/2/11	9/2/14	Stan Opperman	303-279-6611
B&B Excavating	Gencor Ultrafoam GX2	9/29/11	9/29/14	Chip Bair	970-328-1734
Brannan Sand and Gravel	Evotherm 3G (J1 and M1)	9/2/11	9/2/14	Jarrett Welch	303-455-8873
Brannan Sand and Gravel	Gencor Ultrafoam GX2	9/2/11	9/2/14	Jarrett Welch	303-455-8873
Coulson Excavating	Evotherm 3G (J1 and M1)	5/27/11	5/27/14	Ken Coulson	970-667-2179
Everist Materials	Evotherm 3G (J1 and M1)	5/27/11	5/27/14	John O'Hara	970-468-3697
Lafarge West, Inc	AquaBlack Solutions	4/14/11	4/14/14	Todd Genovese	303-210-3804
Premier Paving Inc	Evotherm 3G (J1 and M1)	9/2/11	9/2/14	Lyman Wilkinsen	303-940-3668
Rocky Mountain Materials & Asphalt	AquaBlack Solutions	4/14/11	4/14/14	Alan Trzyna	719-492-0858
Rocky Mountain Materials & Asphalt	Evotherm 3G (J1 and M1)	4/14/11	4/14/14	Alan Trzyna	719-492-0858
Schmidt Construction	Evotherm 3G (J1 and M1)	5/27/11	5/27/14	Rueben Roberts	719-392-4207

TECHNOLOGIES APPROVED TO BE PLACED IN CDOT PROJECTS (9-2011)

Technology Name	Technology Type	Supplier	Approval Date	Re-Eval Date	Contact Name	Contact Phone	Notes/Restrictions
Advera	Warm Mix Asphalt	PQ Corporation	4/14/11	4/14/14	Annette Smith	610-989-0563	
AquaBlack Solutions	Warm Mix Asphalt (Foam)	Maxam	4/14/11	4/14/14	Ron Murphy	800-292-6070	< 5,000 tons/project
Cecabase RT 945	Warm Mix Asphalt	Arkema Group	9/2/11	9/2/14	Erik Jordan	610-205-7245	< 10,000 tons/project
Evotherm 3G (J1 and M1)	Warm Mix Asphalt	Mead Westvaco	12/8/10	12/8/13	Everett Crews	843-697-5509	
Evotherm DAT (F6 and H5)	Warm Mix Asphalt	Mead Westvaco	12/8/10	12/8/13	Everett Crews	843-697-5509	
Evotherm ET (asphalt emulsion)	Warm Mix Asphalt	Mead Westvaco	12/8/10	12/8/13	Everett Crews	843-697-5509	
Green System	Warm Mix Asphalt (Foam)	Astec, Inc	4/14/11	4/14/14	Daniel Edwards	423-240-6379	< 5,000 tons/project
Ultrafoam GX2	Warm Mix Asphalt (Foam)	Gencor Industries	5/27/11	5/27/14	Dennis Hunt	407-970-2600	< 5,000 tons/project

fewer passes to achieve the specified compaction than HMA requires. With the WMA placed, APC generally achieved compaction quicker than HMA, and that allowed the street to be opened sooner to minimize delays for citizens. All in all, the paving crews felt the use of WMA was a benefit to the project and did not result in any significant differences in their work.

During the 2010 paving season, the City was provided substantial amounts of laboratory and field testing results which showed the WMA materials being placed were the same as the HMA materials. Mr. Jacobsen indicated that allowing the contractor to utilize WMA was an easy decision based on the field and lab test results and the workability of the materials placed in 2010.

CDOT has continued to approve more contractors to place WMA on CDOT projects around the State, and more technologies have been approved as well. CDOT will allow the use of additive technologies without restriction as to tonnage on projects, while continuing to monitor the use of foaming technologies (allowing this technology only in 5000 ton or less quantities). CDOT Region 2 Maintenance placed WMA utilizing the foaming process on Wilkerson Pass, hauling the materials for 90-120 minutes out of Colorado Springs to the top of the pass at Elevation 10,000 feet. A few other CDOT projects were also completed in whole or part using WMA technologies for asphalt paving in 2011.

The list of approved contractors and technologies in the CDOT system is an ever changing list and continues to grow. The current lists of approved technologies and contractors are shown above.



Warm Mix Asphalt Open House hosted by the City of Centennial and Brannan Sand and Gravel Co. This event was attended by more than 50 people representing cities, counties, DIA, contractors and consultants. The attendees were given a tour of the production facility, observing the load out procedure where they could view the WMA temperatures in the trucks as they were being loaded. Many then visited the paving site to observe placement of WMA to get a first-hand view of the temperatures of placement and during compaction.

Asphalt
Pavements:
the

Flexible
Solution

Conference Info:

Sue Wagner-Renner
Tel: 970.222.4459
sue@rmaces.org

Exhibitor Info:

Danny Robinett
City of Loveland
Tel: 970.962.2531
robind@ci.loveland.co.us

Reservations:

Crowne Plaza
15500 East 40th Ave.
Denver, CO 80239
Tel: 303.371.9494
Fax: 303.375.1808

Conference Rates:

\$175 by February 8, 2012
\$200 after February 8, 2012

39TH ANNUAL
ROCKY MOUNTAIN



February 22-24, 2012

Crowne Plaza
Denver International Airport
Denver, Colorado

www.rmaces.org

Asphalt Paving Leading To Smoother Roads

Contractors Exceeding Specification Requirements

CDOT has summarized HRI smoothness data from 2011 CDOT paving projects. The good news is that for the fourth of the last five years, asphalt paving projects have achieved over 40% average of incentive earned for Category I smoothness. Nineteen projects were included in the analysis in 2011 and 18 projects in 2010. For 2011, the average % Incentive for asphalt projects using Category I is 54% and the average % Incentive for Category II is 15.4%. Concrete paving, on the other hand, has a combined HRI Category I & II disincentive of -18.31%. This is the second year in a row that the average % Incentive achieved for concrete paving has been a negative (disincentive) value.

"I'm not surprised by the results," stated Tom Clayton, Director of Training, CAPA. "We routinely see paving best practices being followed in the field. This includes

equipment operation, equipment maintenance, and keeping a steady even speed of paving. One quality control check we now see regularly is contractors keeping a constant head of material at the spreading augers. Constant changes in the head of material impact roadway smoothness and make waves in the mat. It is important to maintain a constant head of material in the paver and we are seeing that by more and more contractors."

Contractors appear to be focused on achieving the smoothness requirements and exceeding them to achieve the incentive payments. According to Eric Prieve with CDOT, "Overall, the asphalt contractors are doing well. There are some asphalt contractors that regularly do very, very well. The incentive payment rewards the quality contractor who focuses on paving smooth."

The CDOT 2011 HRI Smoothness Summary Report



2010 "Best in Colorado" Smoothest Pavement, New or Reconstruction, State Highway 14, Muddy Pass. Contractor: Lafarge West Inc, Owner/Agency: CDOT Region 3.



2010 "Best in Colorado" Smoothest Pavement, Resurfacing, I-70 Overlay, Steele Street to Dahlia Street. Contractor: Brannan Sand & Gravel, Co. Owner Agency: CDOT Region 6.



2011 Project Smoothness Data

Hot Mix Asphalt HRI Category I

19 projects • Earned Incentive: \$1,485,489.86 • Available Incentive: \$2,757,856.13
Average Percent Earned: 53.86%

Hot Mix Asphalt HRI Category II

10 projects • Earned Incentive: \$101,194.37 • Available Incentive: \$663,824.02
Average Percent Earned: 15.24%

Portland Cement Concrete HRI Category II

7 projects • Earned Incentive: -\$63,345.09 (disincentive) • Available Incentive: \$345,986.01
Average Percent Earned: -18.31% (disincentive)

is available from the CAPA website. For more information on the CDOT roadway smoothness requirements contact Eric Prieve at Eric.Prieve@dot.state.co.us or 303-398-6542.

Smoothness Matters!

Smooth Pavements Save Fuel – And Even Small Changes Can Make A Big Difference

Pavement Smoothness affects rolling resistance by influencing friction between tire and pavement. The most thorough investigation of this issue was a full-scale field study conducted by the Federal Highway Administration at the WesTrack pavement test track in Nevada. This study indicated that trucks running on slightly smoother pavement could reduce fuel consumption by 4.5%. Other studies show similar or sometimes greater fuel savings with cars running on smoother pavements. The savings are even greater when one compares the roughest pavements in a highway network with the smoothest. Some experts estimate that it is possible to reduce fuel consumption by as much as 10% by rehabilitating the roughest pavements. Simply stated, the smoother the pavement, the less fuel consumed by the vehicle. For more information, visit www.asphaltroads.org.



Paving on State Highway 91, north of Leadville in CDOT Region 3, above, by contractor APC Southern Construction Co. LLC. Below, Coulson Excavating paves a smooth asphalt runway at Fort Collins - Loveland Municipal Airport.



Suggested Best Practices For Pavement Smoothness

PAVER OPERATIONS – BEST PRACTICES and INNOVATIONS

Keep the hopper full: If you are not using a hopper insert leave as much surge as possible between truck exchanges and do not run the hopper empty. This will minimize "truck fans" by allowing hot, uniform material from the next truck to blend with mix from the previous dump. Keeping your mat as thermally uniform as possible will result in better densities.

Controlled hopper wing cycling: The wings are where the large, cooler stone tends to collect if not properly reintroduced back to the mix. Regular cycling, where allowed by spec, will reduce large buildups of this segregated material. Don't wait until you are "out of material" to cycle the wings.

Use a hopper insert

If you are using pick up machines and windrow paving use a hopper insert. It will reduce or eliminate segregation

Keep a constant head of material at the spreading augers: A consistent flow of material to the spreading augers will prevent them from spinning too fast or too slow, which can cause longitudinal segregation. As a rule of thumb a proper head of material is 1/2 up the spreading auger. Constant changes in the head of material make waves in the mat. If allowed to rotate too fast, longitudinal stripes will occur in line with the reversing augers; too low a rate and the larger stone will drop and collect at the bearing support

Time the conveying and spreading systems: Ensure the ratio pots or flow gates are set to deliver enough material to the spreading augers to keep them running continuously. Set your sonic feeds and leave them there.

Keep your paver speed steady: Drag race paving may be entertaining but stops and starts cause the head of material to rise and fall changing the mat thickness. This not only affects ride but can detrimentally affect density

Correct lead crown setting and proper strike off adjustment: Equipment fine-tuning issues will help eliminate longitudinal segregation. String line your screed before every job and introduce the correct amount of lead crown; usually 1/8 - 1/4 inches. Make sure your strike offs are correctly aligned. Refer to your owner's manual for the recommended procedure.

Correct spread auger length: Once you have the job planned out if you need to build up the spreading augers then DO IT. Trying to compensate for spreading augers that are too short by running them faster will only result in segregation. This only gets worse with more gap graded mixes. If you have a 20' screed and the job calls for wide paving then BUILD UP THE SCREED; use the auger extensions, wide mat grade supports and the outboard bearing supports. The finished jobs will more than compensate for the time involved in the build up. Then plan the layout so you can maximize the use of the built up screed.

Use Thermal guns: Equip your paver operator and roller hands with thermal (infrared) handheld thermometers and use them to monitor changes in the mat temperature.

Establishment of a thermal range during the test strip process gives you a working range to be used through out the paving project.

Don't broadcast material across the mat: This just gives the appearance of a segregation problem. Don't rake material off the joint onto the new mat. Don't walk on the fresh mat.

Train your personnel: not only in the operation of the equipment but in the art of reading mat defects. The sooner these defects are identified the sooner remedial action can be taken. Remember when the only tool you have is a hammer every problem looks like a nail.

JOB SET UP – BEST PRACTICES

Partnering

All personnel involved in the construction planning and design need to meet before the job so we can all "be on the same page" and resolve possible problems before they arise.

Pre Paving Planning Meeting

Meet with your crew every day to review the plan for the days construction and expectations

Plan the truck route, plan the job layout, assign people to required tasks

Communication

Constant communication with all the elements of the paving process from design engineers to the lute man. This keeps all phases of the job on schedule and free of "Uh Ohs"

Mix Selection

Insure the mix is of an adequate design for both strength and workability
Mind your temperatures

Machine Maintenance

Not only does well maintained iron contribute to a more pleasant work environment it shows your people that you care enough about them to give them the best tools. It provides for a safer work environment and a more productive and profitable organization

Smoothness-Thickness-Yield

The inspectors and field personnel need to be aware of the paving fundamental that yield, minimum thickness, and smoothness can not be obtained at the same time.

Crew Training

not only in the operation of the equipment but in the art of reading mat defects. The sooner these defects are identified the sooner remedial action can be taken. Remember when the only tool you have is a hammer every problem looks like a nail.

Know the Consequences

of improperly operating the machines
Improper principles and techniques of paving, rolling and trucking
of poor safety awareness, designate a "job site safety man"
know the way to emergency medical care



Castle Rock: From White . . .

Street improvements in Town of Castle Rock this year has involved complete reconstruction of three different roadway sections constructed of concrete in the mid-1980s. Asphalt was the pavement material specified and delivered on these improvement projects as the old concrete was nearing the end of its expected life cycle.

“We were spending quite a bit of time and money on maintenance,” explains Aaron Monks, Senior Construction Inspector for Castle Rock, “replacing concrete panels that have sunken and cracked. These roads were constructed while the Town was experiencing unprecedented growth, so I’m sure some short cuts were taken. Pavement thickness varied from 5 – 7 ½ inches. Still, the concrete performed well but was now ready for replacement.”

These roads also suffered from dips in the pavement panels caused by the naturally-poor existing soils that exhibit movement – compounded in some spots by settling of utility trenches due to improper backfilling. The

rigid concrete pavement was unable to flex, resulting in cracking and water infiltration resulting in even further sinking. Again, after all these years, rapid population growth and minimal construction specifications from the 1980s was catching up with the Town.

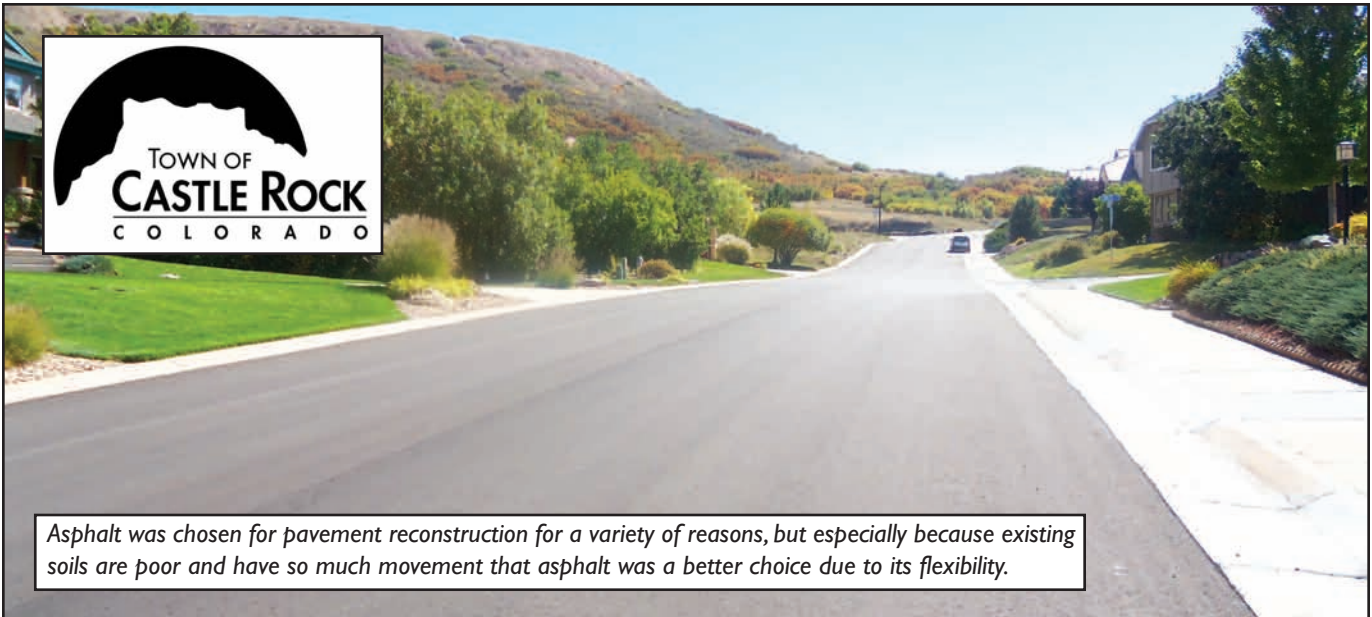
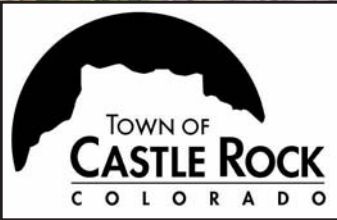
Approximately 2400 feet of the two eastbound Plum Creek Parkway lanes was reconstructed with the help of Federal grant money administered through CDOT. Asphalt was paved to a full depth of 12 inches, with 20 percent RAP allowed in the mix. The concrete parkway had been widened with asphalt in 2000 in this reconstruction area. Woodlands Boulevard, a 4-lane arterial, was reconstructed at a length of 3000 feet with a composite pavement section of 6 inches of aggregate base and 6 inches of HMA. And approximately 1700 feet of Cherry Plum Way, a 2-lane residential street, was reconstructed with 4 inches of asphalt over an 8-inch aggregate base.

“We chose asphalt pavement on these projects for

. . .To Black



A portion of Cherry Plum Way, left, a two-lane residential street, and a portion of Plum Creek Parkway, right, a four-lane arterial, were both completely reconstructed with asphalt in 2011 in Town of Castle Rock. Original concrete pavement, top of page, was removed and recycled to make way for a base/asphalt composite section and full-depth asphalt section, respectively.



Asphalt was chosen for pavement reconstruction for a variety of reasons, but especially because existing soils are poor and have so much movement that asphalt was a better choice due to its flexibility.

several reasons,” Monks says. “The Town has miles of asphalt pavement, and we’re better equipped to provide regular maintenance on asphalt. We also benefit from the fact that snow melts more quickly on asphalt pavements. And asphalt always has a competitive initial cost, especially on smaller projects like these three. On these projects, asphalt was also a better choice due to its ability to

flex with the natural movement of the soils.”

CAPA members Schmidt Construction Co. and Brannan Sand & Gravel Co. performed the work for Castle Rock, with Schmidt reconstructing Cherry Plum Way and Woodlands Blvd. and Brannan reconstructing Plum Creek Parkway.



McCANDLESS TRUCK CENTER LLC.

16704 E. 32nd Ave. Aurora

(303) 739-9900 • (800) 888-1452

Henderson • Colorado Springs • Pueblo



mctrux.com



Colorado Asphalt
Pavement Association
Associate Member

A Case Study of Success: End Result Focus On Urban Roadway Resurfacing

The 1.1-mile long section of Belleview Avenue – SH 88 – between Broadway and Santa Fe Drive in Englewood is characterized by one long dip. Driving west from Broadway, Belleview drops over 80 feet before rising back another 50. The asphalt pavement through this stretch, a primary regional arterial that supports about 32,000 vehicle trips per average day, had outlived its service life and appeared in need of a simple “mill and fill.”

Field inspections conducted by Design, Construction and CM engineers prior to commencing construction told a different story, however, bringing to light a problem sometimes seen in urban resurfacing – the roadway simply did not drain. Standing water and/or sediment deposits with resulting potholes and dislodged asphalt was prevalent throughout the project. Maintenance of the roadway over the years had resulted in over paving, with the asphalt in many areas as much as 2.5 inches higher than the elevation of the curb pans. The team of engineers concurred that the roadway cross-slopes had been compromised, creating these drainage issues.

Correction of cross slope and resulting drainage issues is not part of a typical mill/fill plan, nor was it in CDOT’s budget for major street reconstruction, so plans in the RFP reflected a standard resurfacing project. The engineers could not turn their backs on the problem, of course, so they set out to cooperatively solve the problem.

“The engineer, Jacobs, and the contractor, Aggregate Industries, figured out how to reintroduce a crown into the new pavement profile,” says CDOT Region 6 Resident Engineer, Rick Erjavec, PE. “Their cooperation is why this project was successful. They did an excellent job with the

money available.”

“The first accolade is that this team recognized cross slope and drainage issues,” stated Paul Reinsma, PE, Projects Engineer for consultant Jacobs. “The crew followed through by carefully monitoring milling depth to assure that subsequent resurfacing would restore appropriate cross slopes. The roadway now drains great and the standing water problems have been solved.”

Ponding issues were no so much a matter of safety as they were pavement deterioration. There are sufficient storm inlets along this stretch of Belleview, but the pavement was not allowing an effective flow of stormwater to reach them.

Milling, performed by subcontractor Alpha Milling Co., was critical to not just create a crown, but to remain within the HMA tonnage quantity specified. CDOT’s estimated required tonnage was 6861; actual use was 6177. To reduce cold joints in the mat, Aggregate Industries paved each half of the pavement width, two of the avenue’s four lanes, in echelon without interruption between project limits – all while handling the heavy traffic of this busy corridor. What was expected to require 12 days of lane closures under a normal production rate was reduced to a mere four.

All incentives on the project were with respect to materials, not to time or smoothness. Obviously though, lessening impacts to the public by speeding the project was a primary objective; and while smoothness is always a goal, it was resigned that restoring cross slopes would likely skew any apples-to-apples comparison between pre- and post-construction high-speed profiles. A careful





Echelon paving without interruption between project extremes minimized cold joints on CDOT's Belleview resurfacing project between Broadway and Santa Fe in Englewood. Contractor Aggregate Industries earned 100 percent of the available incentive on the project.

walking inspection, however, indicated no pavement errors resulting in must-grinds.

“Aggregate Industries is very proud that we achieved 100 percent on the incentive/disincentive criteria,” explains John Cheever, Agg Industries QC Manager for Asphalt and Aggregates. “CDOT has tight QC standards and we were able to maximize the pay factor for all QC aspects of the project.”

“CDOT typically contracts on a end-oriented results basis,” Erjavec says, “as we did on the Belleview project. We don’t specify means and method, we specify results. This is a perfect example of letting the contractor and engineer do their jobs and has resulted in an example of excellence in urban highway resurfacing.”



ASPHALT
THE SMOOTH QUIET RIDE



21 Organizations Welcomed Into CAPA Membership In 2011

Even in these tough economic times, organizations see the value of being a member of the Colorado Asphalt Pavement Association. We are pleased to welcome 21 organizations to CAPA membership in 2011, including

the City of Pueblo Public Works Department as our newest Affiliate Agency Member organization. Our Affiliate Agency member list now includes 63 cities, towns and counties from throughout Colorado.



Quality Asphalt Emulsions

Asphalt Emulsions

CSS-1h (Cationic Slow Setting)

for Tack Coat & Mixing Grade

CRS-2 (Cationic Rapid Setting)

for Chip & Sand Seals

CQS-1h (Cationic Quick Setting)

for Slurry Seals

Specialty Products

Reclamite®

Asphalt Rejuvenating Agent for
Surface Seals & Recycling RAP

Coherex®

Dust Control Agent

www.COBITCO.com

(303) 296-8575 • (800) 783-8575

Since 1960

Polymer Modified Emulsions

CRS-2P (Cationic Rapid Setting, SBS Modified)

for Chip Seals

CRS-2R (Cationic Rapid Setting, SBR Modified)

for Chip & Fog Seals

CQS-1hL (Cationic Quick Setting, SBR Modified)

for Slurry Seals

COBITCO
INC
EMULSIFIED ASPHALT

5301 Bannock St. Denver, CO 80216

20th Annual Golf Tournament & Scholarship Fundraiser

CAPA and the APWA Colorado Chapter would like to thank all who attended and supported the 20th annual CAPA CUP Scholarship Fund Raising Golf Tournament. We have once again, because of all of your support, been successful in raising funds to send recipients to the NCAT Technology Program at Auburn University early in 2012 as well as supporting other educational opportunities locally, such as at CSU and Colorado Mesa University.

CAPA and APWA are excited and thankful to be able to continue to participate in helping promote increased knowledge in asphalt technologies. Your continued support is what makes this possible and in these times we congratulate you and acknowledge your sacrifice for continuing to contribute to this program.



Congratulations, Team Brannan!

Congratulations to the Cup Champions for 2011, Team Brannan: Dean Rossi, Bob Allison, Robb Moss and Fred Marvel. This team has now won the Cup in back to back years. Pictured, L-R: Robb Moss, Dean Rossi and Bob Allison.

We Thank Our Sponsors!

Title Sponsor



MOODY
INSURANCE AGENCY



Lunch Sponsors



Shirt Sponsor



ADOBE
Truck & Equipment



FARIS
MACHINERY
COMPANY



Ball Sponsor

Circle Betting Hole Sponsor: Power Equipment Co.

Croquet Hole Sponsor: HollyFrontier Corporation

Heckle Hole Sponsor: TXI

Contest Hole Sponsors:

Closest to the Pin (co-ed): Mark Ryan Inc.
Longest Drive (Men): Coulson Excavating
Longest Putt (co-ed): Wright Asphalt Prods.
Longest Drive (Women): APC Const. Co.

Silent Auction:

Vance Brothers Inc., Wynkoop Holdings LLC, HollyFrontier Corp., Honnen Equipment Co., Faris Machinery Co.

Tournament Sponsors:

Beverage Carts: CEI Enterprises Inc., Sakai, Power Motive Corp., Mead Westvaco – Evotherm.

ACE Sponsor: Suncor Energy USA

EAGLE Sponsor: Wagner Equipment Co.

BIRDIE Sponsors: AECOM, Honnen Equipment Co., Lafarge West Inc.,

GOODIE Bags: Award & Sign Connection, TXI, BG Chemical LP, PGA Golf Superstore

Step Up Your Asphalt Game – Consider NCAT Short Course

Interested in an in-depth asphalt training course second to none? Wanting to learn more about all the new asphalt technologies that could help improve performance of your roadways? One very unique and worthwhile training opportunity available to Public Works officials and consulting engineers in Colorado is the Short Course in Asphalt Technology at the National Center for Asphalt Technology (NCAT) – Auburn University (Auburn, AL). Funding for attendees from Colorado is provided by a Scholarship Program established by CAPA and the Colorado Chapter of APWA.

2011 scholarship recipients listed below will be attending the week-long Short Course in Alabama.



2011 APWA/CAPA Asphalt Technology Scholarship Recipients

*Mike Conner, City of Centennial; Pete Brezall, City of Thornton;
Donna Schaal, Schmidt Construction Co.; Britney Guggisberg, Lafarge West Inc.;
Shelley Aschenbrener, City of Loveland.*



To apply, visit the Resources section of the CAPA website:

www.co-asphalt.com

Warm Mix Asphalt From Around The State



A&S Construction paves WMA on Highway 50, left. CDOT Region 2 Maintenance, right, placing warm mix asphalt on US24 on Wilkerson Pass. WMA was supplied by Lafarge West Inc. in Colorado Springs.

United Companies of Mesa County placing WMA on a County road.



Possibilities with Warm Mix Asphalt (CDOT September 2009)

- Extend the paving season (compact at lower T)
- Improve workability (easier to get compaction)
 - Reduce fuel consumption at the plant
 - Reduce emissions at the plant
 - Increase haul distance
 - Reduce fume and improve safety at paver
- Reduce aging of the binder (improve performance)
 - Pave at lower temperatures



McAtee Construction placing warm mix asphalt on streets in the City of Sterling. All mixes contained 20% RAP.

PAVING THE WAY

Cat® AP555E Asphalt Paver is Powerful and Precise

Caterpillar continues to lead the industry in highway-class pavers. Reliability, durability, ease of use and simplified service have helped our customers reach production goals and maximize bonus pay.

Now Caterpillar is making an imprint on the commercial paving business with the introduction of the new AP555E asphalt paver.

This new machine delivers all of the high-production qualities found in larger Cat pavers, in a smaller package.

The compact, extremely mobile design is equipped with features that help contractors reach their daily performance objectives on the highway as well as in the parking lot.

Features

Commercial paving applications require equipment that is powerful, mobile, and equipped with easy-to-use features that minimize handwork and increase job site efficiency; the AP555E meets these objectives and more.

Excellent Power and Mobility

The Cat C4.4 engine provides excellent power for pushing haul trucks, while the Mobil-trac undercarriage delivers the tractive effort and mobility required on inclines and loose base materials.

Convenient Operation

The Cat material delivery system with independent control of each auger and each conveyor ensures that flow to the screed is smooth and consistent for high quality, good looking mats.

Visibility

Communicating with haul trucks, adjusting mix height in the auger chamber and optimizing run time without running the hopper empty requires good visibility.

Quality Screeds

Whether you prefer screeds with front-mounted extenders or rear-mounted extenders, Cat screeds are easily adjustable and deliver unmatched stability with high quality results.



Locations throughout Colorado, New Mexico,
and Far West Texas.

www.wagnerequipment.com

 WAGNER

 CAT



Asphalt Lab At CSU Getting Plenty Of Use

Undergraduate asphalt technology education continues at CSU – CM. CON 370 Principles of Asphalt Materials and Construction is taught in both the fall and the spring semesters. Professor Scott Shuler and Instructor Kevin Jones have developed a course that routinely has 45 students per semester.

“The Asphalt Lab provides an opportunity to combine the classroom lecture with the hands laboratory instruction of materials engineering, stated Scott Shuler. “It all comes together for the students when they can work with the material in the lab.”



Tyler Newland, a recent CSU – CM graduate, shown left with Larry Schneider, City of Ft. Collins Streets Superintendent, is working as a Project Inspector for the city. He was involved in the paving work on both Horsetooth Rd. and S. Shields Road this summer.

ASPHALT *The Sustainable Pavement*

Cam McNair New CSU CM Heavy Civil Endowed Chair

After finally achieving the first phase of its fundraising goal, the Colorado State University Construction Management department has hired Champney “Cam” McNair to fill the position of Endowed Heavy Civil Chair. The appointment will support the CM Department’s goal of establishing a heavy civil focus in the curriculum. Prior to coming to CSU, Cam spent 20 years with the Army Corps of Engineers and was City Engineer for Peachtree City, Georgia, Ft. Collins and the last five years in Colorado Springs.

“I am extremely pleased and fortunate to be embarking on a third career



as the Heavy Civil Endowed Chair at CSU,” said McNair.

“With years of experience and numerous contacts in the construction industry in Colorado, I am looking forward to the challenge of helping to train the next generation of heavy civil construction managers. I hope to bring to CSU the public agency perspective of the heavy construction business, and to pass along some of the keys to successful project management that I have learned in my previous two careers.”

McNair can be contacted by email at cam.mcnair@colostae.edu.

Industry Joins Forces For CM Program At Colorado Mesa

Important to any industry is the future of its workforce. Important to the future workforce is that they learn what will be useful in their chosen profession.

At Colorado Mesa University, every attempt possible is made to match industry needs with the CM program learning. This includes internships, labs, demonstrations, industry guest speakers, field trips and accredited curriculum topics.

CAPA and CMU have joined together in partnership to teach, inspire and attract committed students who want to become future professionals in Colorado's Heavy Civil industry.



COLORADO MESA UNIVERSITY

SCHOLARSHIP AWARD

We, the Colorado Asphalt Association, Elam Construction and United Companies of Grand Junction presented to Tyler Schnell and Holly Martin scholarship in recognition of their academic performance in the CM Program and professional work in Heavy Civil construction.

Students were awarded a combined Scholarship in the total amount of \$1,500 towards tuition and fees at Colorado Mesa University.






CONSTRUCTION MANAGEMENT PROGRAM

For more information or to become involved, contact:

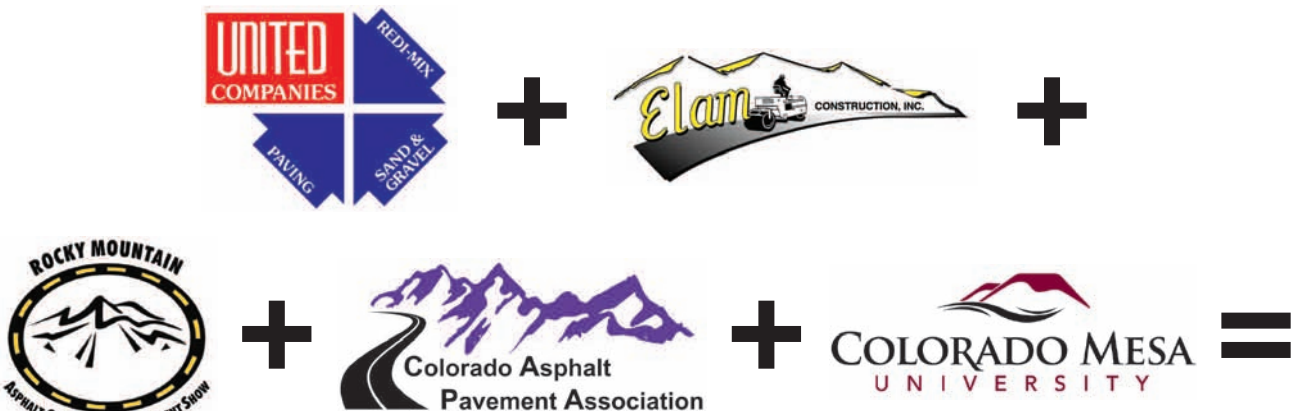
Charlie Gains, Director of Construction Management, at: cgains@coloradomesa.edu or 970-248-1551



Holly Martinez receives \$1500 Scholarship Award from Charlie Gains, Director, CMU CM Program as United Companies of Mesa County's Kyle Alpha, left, and Bob Eckstrom look on.



Tyler Schnell receives \$1500 Scholarship Award from Todd Bauer, left, Elam Construction Inc. and Charlie Gains, Director, CMU CM Program.



STUDENT SUCCESS!

CAGE Presents New Asphalt Pavement Design Guidelines

With the AASHTO Mechanistic-Empirical Pavement Design Method being implemented in the next several years by CDOT, local municipalities will still be using the current AASHTO pavement design procedures for years to come. In 2009, the Colorado Association of Geotechnical Engineers was approached by industry stakeholders to develop a general guide to the procedural processes used in Colorado when designing flexible pavement sections. At the time the committee was formed and the document was being developed, several municipalities were considering revising their current pavement design standards. One purpose of the document was to assist municipalities in developing a standard that is consistent with the philosophy and practice recommended by geotechnical engineers practicing in this area. The draft document has already been used by the Town of Castle Rock to revise its current standards. The revised standards are in draft form and are under Town review.

A few key guidelines included in the DRAFT document are the following:

- *Pavement Section Alternatives:* Full-depth asphalt pavement sections may be problematic on cohesive subgrade materials without additional design considerations. Thickness of full depth asphalt will generally range from 5 to 10 inches. If additional structural capacity is needed above 10 inches, considerations should be taken for the structural requirement to be achieved by the addition of a base layer.
- *Flexible Composite:* Thickness of a composite base material may range from 6 to 12 inches. The minimum general guideline for thickness of aggregate base course to asphalt pavement is on a ratio of 2:1 to 2.5:1.
- *Asphalt Mix Selection:* Modified asphalt binders are generally restricted to top mat of paving. PG 64-22 is the most common asphalt binder for most applications. The most common gyration level is 75 gyrations. 25 percent recycled asphalt pavement (RAP) is normally allowed in the bottom and inter-

Members of the CAGE/CAPA Asphalt Pavement Design Guide Work Group include, from left, Tom Peterson, CAPA; CAGE President Mark Vessely, Shannon & Wilson; Matt Best, Kumar & Associates; Tom Hastings, A.G. Waasenaar Inc.; and Jim Noll, Kumar & Associates.



Jim Noll, Kumar & Associates.

mediate lifts of paving with 20 percent RAP allowed in the top mat of paving. Warm mix asphalt is an acceptable alternative to hot mix asphalt provided that all material requirements and specification standards are met and as approved by the governing agency.



VÖGELE VISION 5200-2

MOST INNOVATIVE PAVER TECHNOLOGY
WITH ERGOPLUS® OPERATING CONCEPT
FOR COMFORT AND VISIBILITY



Close to
our customers

- ▶ 10-Foot Class
- ▶ High Horsepower Tier III CUMMINS Engine
240 h.p. at 2,000 rpm
- ▶ Screed Options
With front-mounted or rear-mounted extensions
- ▶ ErgoPlus® Operating Concept
For simplicity and unobstructed operator visibility
- ▶ Daily Maintenance-Free Paver
- ▶ Highly Efficient Cooling
For longevity of all paver components



ERGOPLUS



ROAD TECHNOLOGIES

www.wirtgenamerica.com

HE HONNEN
EQUIPMENT

1-800-646-6636
www.Honnen.com

COLORADO - WYOMING - UTAH - IDAHO

Reducing Expenses:

Why Deferred Maintenance May Not Be The Best Option

by: Dave Zelenok, Director of Public Works, City of Centennial

With the recent downturn in the economy, many Colorado municipalities are under increasing pressure to reduce spending to meet the new realities of revenue shortfalls and declining budgets. Not surprisingly, there is often political will and community support to continue to fully fund emergency services (primarily police and fire) and at the expense of other services — often thought to be “discretionary.”

Unfortunately for the managers of those “discretionary” programs, citywide budget reductions seldom are done “peanut butter style.” That is, cuts often are not spread evenly over the full spectrum of the municipal government, and the “hits” are imposed on what many believe to be “deferrable” spending — which often includes public works and other departments’ maintenance programs.

Simple math, though, reveals the impact of budget reductions on “discretionary” maintenance programs can be difficult, if not impossible, to absorb without long-term consequences. For example, in a municipality with a \$10 million annual budget in which police and fire services consume half, a 10 percent citywide cut might mean a disproportionate 20 percent cut in the remaining half of the city’s services, and those hits may in turn be disproportionately assigned to impact maintenance programs — in some cases, completely eliminating them.

Difficult decisions

Some financially strapped cities have dealt with this problem by virtually obliterating some entire departments, and often parks and recreation and community service-related budgets are viewed as an “easy take.” After all, it is true that some of these programs (read, “adult softball”) can generate revenue by increasing fees to offset their expenses. Better yet, in some cases, they can even be removed from the balance sheet if they are converted to enterprises — following the lead that many public works’ utilities have taken — under a true “user pay” philosophy.

Other approaches to reducing budgets are related to a perception that certain services that are related to aesthetics (read, “fresh flowers and irrigated parks”) and maintenance (e.g., street resurfacing) are less important and thus can be eliminated or at least deferred. Many municipalities have imposed their cuts in a targeted fashion and have opted to defer maintenance, a practice commonly known as “pushing the wreck down the track.”

As a result, some street department managers have had their paving and maintenance budgets zeroed out or left with enough money to adequately repair only a few streets per year. If one of those streets is Main Street, running through the heart of the central business district, and needs a full reconstruction (probably



Dave Zelenok is City of Centennial's Public Works Director. He is also incoming President of the Colorado Chapter of the American Public Works Association for 2012.

due to a lack of recurring annual maintenance), it will probably get repaired, while other streets will have their problems and maintenance deferred.

Unfortunately, the consequence of deferring maintenance to the point where a reconstruction is required means it is probably too late to avoid the much more costly repair, and by that point, the dilemma leaves the city’s leadership with few options — and some huge expenses.

Pavement management programs

All street maintenance managers engage in a decision-making process to best assign their limited resources. Some managers prepare a short list of streets by hand detailing an annual list of streets needing repaving; other (usually larger) cities contract a detailed and sophisticated inspection of every mile of their streets. Those “pavement condition” surveys are usually done every few years, since the conditions do not change much from year to year. The surveys in turn will generate a number of maintenance options for every street in the city and can even predict the cost in future years of deferring maintenance.

Usually, pavement condition surveys evaluate surface conditions, such as rutting, oxidation, smoothness, and crack propagation patterns, to establish a maintenance strategy. Unfortunately, experience often shows that pavement condition surveys do not penetrate beyond the pavement surface. As a result, problems with a pave-

ment's load bearing capacity – often resulting from a pavement “mat” that is too thin to support the weight of heavy trucks – may be hidden from the surface inspection. Subsequently, the survey's results may be somewhat skewed, often leading to a more conservative prediction, but at other times overestimating the problems, urgency, and cost of repairs.

Deferred maintenance

Another point of agreement among pavement managers is that much maintenance, in fact, can be deferred for a year or two, often with virtually no significant consequences, unless a “bad spring thaw” hits. Under the right freeze/thaw, moisture, and weather conditions, a seemingly “smooth as silk” street that was

not built properly or has not had much preventative maintenance for years can be reduced to a sea of potholes in a single springtime pothole season.

To address this problem, most pavement managers will agree that something – a preventative maintenance technique, perhaps an overlay, a surface treatment, and/or complete reconstruction – should be done to about 10 percent of the city's street system every year. What that goal equates to is, for example, in a city of 25,000 people with 100 “centerline” miles of streets, an annual program should treat about 10 miles of streets – every year.

So, the questions are: What is proper maintenance technique? What are the consequences of deferring that maintenance? And what will it cost – this year and in the future – if we don't?

Greeley Constructs Sustainable Asphalt Test Strip

Lafarge West in conjunction with City of Greeley constructed a Sustainable Asphalt pavement test strip over two days in early November. The materials were placed on 10th Avenue between 10 and 16th streets in downtown Greeley. This roadway section is a high profile area as it is in the main parade route for each year's Greeley Independence Stampede parade as it progresses through downtown.

Pavement placement began after minor preparation of the existing roadway was completed by milling the existing asphalt 2-2½ inches and placing a layer of paving fabric over the entire area. Once the installation of the paving fabric was complete, a leveling course was placed so the wearing course, when placed, will be a uniform 2 inches over the entire project limits.

The wearing course consists of four different mix designs, including Recycled Asphalt Pavement (RAP), Ground Tire Rubber (GTR), and Recycled Asphalt Shingles (RAS). The four mix designs utilized a base stock binder so the final binder grade would be equal to a PG 64-28 as required by specification.

Lafarge designed the mixtures using the aggregates available at their Greeley plant. The base stock binder

was supplied by Suncor Energy USA. The mix designs used both 75 and 100 gyrations levels to allow for comparison during the evaluation period of three years.

The first mixture placed was a S-100 design with 20% RAP. The following designed mixture consisted of a S-75 mix with 20% RAP and 3% RAS. The next day, Lafarge started with another S-100 mixture with 20% RAP and GTR. The final mix placed was a S-75 mix with 20% RAP, GTR and 3% RAS. Each of the constructed test sections is approximately 600-700 tons, estimated at 1500 feet long.

The binder blend which contained the GTR was blended locally eliminating the need for trucking from a isolated terminal.

Dr. Scott Shuler from Colorado State University will be doing evaluations of the four sustainable paving sections over the three year period. Dr. Shuler performed an initial evaluation of the existing street surface prior to the milling for rutting, cracking and other defects. He and several CSU students were present during the placement of the subsequent layers, documenting the installation so they have accurate data during the evaluation period.



Industry-Preferred Paving Equipment!



**Don't Settle
For Less!**



Commerce City
5770 E. 77th Ave.
303-289-5743
800-551-7768

Colorado Springs
2269 Commercial Blvd.
719-527-1016
866-527-1016

Grand Junction
772 Valley Ct.
970-242-4997
888-842-4997

FARIS MACHINERY CO.

farismachinery.com



For High Quality Asphalt Paving and Professional Services – Call a CAPA Member today!

ASSOCIATES

A-One Chipseal Company, Westminster	303-464-9267	Kumar & Associates Inc., Denver	303-742-9700	BJ Chemical Services, Erie	303-466-7027
A.G. Wassenaar Inc., Denver	303-756-2920	Macdonald Equipment Company, Commerce City	303-287-7401	Bohannon Huston, Englewood	303-799-5103
Acord Asphalt, Inc., Granby	970-887-0363	Maxam Equipment Inc., Kansas City, MO	816-241-7380	Borstad Consulting Services LLC, Fort Collins	970-227-6480
Acura Engineering Colo. LLC, Sheridan	303-799-8378	McCandless Truck Center, Aurora	303-739-9900	CH2M HILL, Centennial	303-325-8000
Adobe Truck & Equipment, Commerce City	303-286-7000	McDonald Paving & Chip Sealing, Colorado Springs	719-590-1680	ChemStation of the Rockies, Denver	303-288-8500
Aggregate Designs Corp., Grand Junction	303-286-7000	Metro Pavers Inc., Henderson	303-427-1039	Collins Engineers Inc, Boulder	303-447-0090
Albert Frei & Sons, Henderson	970-245-2435	MHC Kenworth, Denver	720-941-0833	Colorado Public Works Journal, Denver	720-205-4681
Alpha Milling Co. Inc., Denver	303-428-2899	Mountain Engineering & Testing, Salida	719-539-2312	Deery American Corporation, Grand Junction	970-858-3678
Antigo Construction Inc., Antigo, WI	715-627-2222	New West Paving, Denver	303-427-0550	Denver Industrial Sales & Service, Denver	303-935-2485
A-Peak Asphalt Inc., Vail	970-476-8855	Ninyo and Moore, Greenwood Village	303-629-6000	EcoPATH Industries LLC, Scottsdale, AZ	480-991-0450
ARS Inc., Littleton	303-791-7404	Northwest Colorado Consultants, Steamboat Springs	970-879-7888	Ellis Profiling, Mapleton, UT	801-380-7832
Asphalt Recovery Specialists, Colorado Springs	719-597-1963	P&H Equipment, Denver	303-339-3191	Felsburg Holt & Ullevig, Centennial	303-721-1440
ASAP Companies, Colorado Springs	719-495-9013	Pavement Maintenance Services Inc., Poncha Springs	719-539-1400	FMI Corporation, Denver	303-377-4740
Asphalt Specialists and Supply, Grand Junction	970-242-8487	Paveover, Inc., Albuquerque, NM	505-839-1000	Hartwig and Associates, Englewood	720-733-1821
Astec Inc., Chattanooga, TN	423-867-4210	Pete Lien and Sons, Rapid City, SD	605-342-7224	HDR Engineering Inc., Denver	303-765-1520
Atlas Copco Rocky Mountain Store, Brighton	303-288-3258	Power Equipment Company, Colorado Springs	888-690-8292	IB Associates LLC, Firestone	720-272-1463
Avery Asphalt Inc., Colorado Springs	719-471-0110	Power Motive Corporation, Denver	303-355-5900	InstroTek Inc., Raleigh, NC	919-875-8371
Black Gold Construction Inc., Littleton	303-791-8300	Propane Transport International, Houston, TX	281-552-4024	Integrated Striping Systems, Wheat Ridge	303-271-9249
Bobcat of the Rockies, Golden	303-215-1402	Quality Paving Co., Henderson	303-288-1036	Iron Planet, Pleasanton, CA	888-433-5426
BOMAG Americas Inc., Kewanee, IL	800-782-6624	Recycled Aggregate Products Inc., Colorado Springs	719-575-0785	J2 Development / Management LLC, Westminster	720-890-0113
Brasier Asphalt Inc., Montrose	970-249-2553	RoadScience LLC, Monument	303-888-2245	Kolbe Striping Inc., Castle Rock	303-688-9516
Brown Brothers Asphalt & Concrete, Englewood	303-781-9999	Roadtec Inc., Grand Junction	970-270-5026	Liberty Tire Recycling, Pittsburgh, PA	412-562-1700
Caterpillar Inc., Brooklyn Park, MN	303-336-3693	Robinson Grading & Profiling, Gillette, WY	307-682-2422	Lyman Henn, Denver	303-534-1100
CEI Enterprises Inc., Albuquerque, NM	800-545-4034	RockSol Consulting Group, Inc., Westminster	303-962-9300	Mark Ryan Inc., Conifer	303-674-4754
Cobitco Inc., Denver	303-296-8575	Rocky Mountain Chipseal LLC, Fairplay	719-836-7060	McGrath Group Inc., Elizabeth	303-881-1472
Colorado Machinery LLC, Fort Collins	719-475-1100	Rocky Mountain Pavement Maintenance, Denver	303-650-9653	Moody Insurance Agency Inc., Denver	303-824-6600
Cox & Associates, Golden	877-269-1669	Rocky Mountain RotoMilling, Colorado Springs	719-579-0720	MVW Corp., North Charleston, NC	800-845-1983
CPP Engineering, Highlands Ranch	303-662-9533	Roofs To Roads Colorado, Boulder	720-333-7416	Noite Vertical 5, Centennial	303-220-6400
CTL/Thompson Inc., Denver	303-825-0777	Seal Master, Neuss Corp., Denver	303-394-2220	OSCS Inc., Fort Worth, TX	817-834-5411
CTS "The Lab", Centennial	303-783-9965	Son-Haul Inc., Fort Morgan	970-867-4401	Pavement Solutions LLC, Gillette, WY	307-686-2066
Cutler Repaving Inc., Lawrence, KS	785-843-1524	Stanstee Asphalt Plant Products, Louisville, KY	502-245-1977	PFS Insurance Group LLC, Johnstown	720-413-3057
De-Rey Engineering Inc., Lakewood	303-238-1770	Stars & Stripes Parking Lot Maintenance, Centennial	303-882-5483	PQ Corporation, Monument	719-433-8377
Dillman Equipment, Norman, OK	888-818-4807	Terex Roadbuilding, Oklahoma City, OK	405-787-6020	Precise Striping LLC, Commerce City	303-462-2800
Dustrol Inc., Albuquerque, NM	505-891-8342	Terracare Associates LLC, Centennial	720-587-2590	PRI Asphalt Technologies, Tampa, FL	813-621-5777
Earth Engineering Consultants Inc., Windsor	970-224-1522	Terracon Consultants Inc., Wheat Ridge	303-423-3300	Ritchie Bros. Auctioneers, Longmont	303-881-1399
Entech Engineering Inc., Colorado Springs	719-531-5599	Trax Construction, Colorado Springs	719-638-8729	R.J. Pagan & Associates Inc., Castle Rock	303-663-5800
Faris Machinery Company, Commerce City	303-289-5743	TXI, Boulder	303-499-1010	RoadTrac Inc., Henrietta, TX	303-228-3710
Foothills Paving and Maintenance Inc., Golden	303-462-5600	Vance Bros., Denver	303-341-2604	Rocky Mountain Lasers, Commerce City	303-291-1359
Gencor Industries Inc, Conifer	303-670-5456	Van's Equipment Co., Dacono	303-828-9600	Rocky Mountain Profilograph Inc., Pueblo	719-250-5556
Geocal Inc., Centennial	303-337-0338	Wagner Equipment Company, Aurora	303-739-3000	Rush Truck Centers, Denver	303-292-3170
Goltz Asphalt Company, Loveland	970-663-2343	Western Technologies Inc., Farmington, NM	505-327-4966	Russell Planning and Engineering, Durango	970-385-4546
Groendyke Transport, Henderson	303-289-3373	WestTest, Denver	303-975-9959	Schmueser Gordon Meyer, Glenwood Springs	970-945-1004
Ground Engineering Consultants, Commerce City	303-289-1989	World Wide Rental Services (WRS), Aurora	303-341-5555	Sprint!, Denver	303-521-8229
Hall-Irwin Corporation, Milliken	970-352-6057	Wright Asphalt Products Co., Houston, TX	281-452-9084	Stantec Consulting Inc., Denver	303-285-4514
Hepworth-Pawlak Geotechnical Inc., Parker	303-841-7119	Yeh and Associates Inc., Denver	303-781-9590	TDS/GCR Bridgestone Americas, Commerce City	303-287-0126
Honnen Equipment Company, Commerce City	303-287-7506	AFFILIATES		Tensor International Corp., Broomfield	303-429-9511
JA Cesare & Assoc / CTS, Centennial	303-220-0300	AECOM, Denver	303-376-2900	Tsiouvaras Simmons Holderness, Inc., Greenwood Village	303-771-6200
Jacobs Engineering, Denver	303-820-5240	Armstrong Consultants, Grand Junction	970-242-0101	The EZ Street Company, Doral, FL	800-734-1476
Kalco Express, Denver	303-293-8664	Atkins, Denver	303-221-7275	Troxler Electronics Laboratories, Lakewood	303-969-0950
Kleinfelder Inc., Golden	303-237-6601	Award & Sign, Englewood	303-799-8979	TST Inc. of Denver, Lone Tree	303-792-0557
Koehlein Consulting Engineers Inc., Lakewood	303-989-1223	Banks and Gesso LLC, Lakewood	303-274-4277	URS Corporation, Denver	303-694-2770
Kolbe Striping Inc., Castle Rock	303-688-9516	BG Chemical LP, Dallas, TX	800-725-8470	Vale View Development Co., Mead	970-535-9200
				Willis, Denver	303-722-7776

PECO & CAPA

Partners in Building Highway Infrastructures!



POWER EQUIPMENT CO.

Serving Rocky Mountain Contractors Since 1936

Denver
303-288-6801
800-883-9284

Colorado Springs
719-392-1155
888-690-8292

Grand Junction
970-243-0722
800-898-7319

Casper
307-577-9700
800-883-9275

Albuquerque
505-344-9466
800-880-2320

www.power-equip.com