

THE ROAD AHEAD



Fall 2019



Supplement to Colorado Public Works Journal Fall/Winter 2019

Meet our Members - 260 and Growing

Colorado's Largest Ever Design Build Project is Asphalt

CAPA Congratulates the 2019 APWA Award Recipients

The New (Old) Norm for Opposing Land Use Applications

Best Practices for Cold Weather Paving

CDOT's first rubblized project ... performing great 20 years later

Cover Photo: Cottonwood Pass approaching the summit



Introduction



Tom Peterson

Welcome to *THE Road Ahead!*

Welcome to the Fall 2019 issue of *The Road Ahead* – CAPA's news magazine that is published twice per year (Spring and Fall) as an insert into the Colorado Public Works Journal. 2019 has flown by and as an industry, we have much to be proud of and celebrate. Our membership continues to grow (see pages 4 and 5) and this has been another banner year for LabCAT and the Rocky Mountain Asphalt Education Center. The CAPA Board of Directors elected a new President in June. Brenda Shuler of Aggregate Industries, see page 7. We are very proud of all the paving going on in the state (see pages 16 and 17) and the state's largest design/build project, the Central 70, is well underway with over 100,000 tons of asphalt placed this year alone. We congratulate the APWA Annual Award recipients and have highlighted several projects

on page 12. It's hard to believe it has been 20 years since the first rubblization and asphalt overlay project in Colorado. Constructed on I-76, east of Sterling, the pavement is still functional and has received only routine maintenance, see pages 22 and 23 for more. The asphalt industry of Colorado is vibrant and leaning forward. Let us know how we can be of assistance and support.



Thomas Peterson, P.E.
Executive Director, Colorado Asphalt Pavement Association
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(303) 741-6150 x 152

Asphalt Lunch & Learns: A Great Way to Prepare for 2020

The CAPA Asphalt Lunch & Learn training is a **"No Cost"** service provided to member companies and affiliate agencies that provides training on the latest information, technology, and applications for asphalt pavements.

Presentations are tailored to meet your needs. Generally, sessions last 1 to 1.5 hours depending on the information requested. Sessions can take place at any time of day – whatever is convenient for you and your colleagues. These sessions are typically at your place of business or at a designated location of your choice, or we can host the session in our training center. Presenters can include Mike Skinner, P.E., CAPA Director of Engineering and / or Tom Clayton, SET, CAPA Director of Training.

Review the list of topics we offer, contact us and we will schedule your session. PDH/CEU's are available. If you find yourself asking these or any other questions related to asphalt, we have just what you and your organization need - CAPA's Lunch & Learn Series.

Topic for consideration may include any of these or topics you have come up with for discussion.

ASPHALT PAVEMENT TOPICS

- Design Considerations
- Mix Specs, Methods & Quality Control
- Maintenance – pothole patch, infrared repairs
- Inspection
- Warm-Mix Asphalt
- Thin Overlays
- Pavement Forensics



- Porous Asphalt
- Life Cycle Cost Analysis
- Pavement Management and preservation
- Question/Answer Forum

KEEPING UP WITH ASPHALT PAVEMENTS

- What is Warm Mix Asphalt?
- What 'best practices' should be followed for contracting and bid document requirements?
- Is there information on the performance of asphalt?
- What specs should I use?
- What's new in asphalt technology?
- What are the current rehabilitation options?

Contact Tom Clayton, CAPA Director of Training at (303) 741-6150 ext 151 or via e-mail at tomclayton@co-asphalt.com to schedule a session or to learn more information about this program. A letter of education may be issued upon completion of seminar at the request of the attendees who need PDH or CEU documentation.

INDUSTRY NEWS

November Election Results

PASSED

Congratulations! Local Agencies continue to see strong support from their citizens for infrastructure and increasing local street funding programs.



Issue 2B



Issue 3C



Issue 1A



Issue 2C



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November 2019

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AFFILIATE AGENCY MEMBERS

CAPA has an Affiliate-Agency Member List that includes 79 city, county, town and other government agencies (including the E-470 Public Highway Authority and the Northwest Parkway Public Highway Authority) that have joined to benefit from training and education, technical assistance, and specification development.

ASPHALT PRODUCER & SUPPLIER MEMBERS



INDUSTRY NEWS

Changes Planned for the 47th Annual Rocky Mountain Asphalt Conference & Equipment Show, February 19-20, 2020



“Asphalt Proud & Strong!” Is the theme of the 47th Annual Rocky Mt. Asphalt Conference & Equipment Show planned for February 19-20, 2020 at the Crowne Plaza, DIA. The event includes high energy opening and closing general sessions; a 60,000 square foot trade show with over 80 exhibitors; 24 breakout sessions on engineering, materials, construction, maintenance, and leadership of asphalt pavements; and 21 Back to Basics educational sessions on asphalt materials, equipment, and maintenance; The 47th Annual includes the following new features:

- A streamlined 2-day format over Wednesday the 19th and Thursday the 20th.
- A 1-day Asphalt Plant Academy held on Wednesday the 19th featuring instruction from Gencor, Astec, and Stansteel.
- A renewed focus on innovations, new technology, and best practices.
- “Ask the Expert” sessions with our featured speakers to allow participants one-on-one time with the key instructors of the conference.

There is something for everyone! Whether new or seasoned, contractor or agency, crew level or management. Registration is open for attendees and exhibitors at www.maces.org

Don't Miss Wally Adamchik – The Featured Leadership Speaker



Wally Adamchik, President of Firestarter Consulting Inc., will be leading three breakout sessions on Thursday, February 20 in the Leadership Track. The sessions are as follows:

Session #1:

7 in 70: Seven Keys to Culture in 70 Minutes. In this fast-paced session attendees will get seven tips in seventy minutes that they can immediately put to use when they get back to work. These easy to implement, high-impact actions are the building blocks of a great place to work characterized by trust, pride and camaraderie.

Session #2

Emotional Intelligence-Misunderstood and misused, not a mistake – Much has been written about the need for emotional intelligence in the workplace but what does that mean? This has nothing to do with being softer and everything to do with being more effective. Learn the five elements of EQ and how to be a better leader.

Session #3:

No Yelling The Nine Secrets of Marine Corps Leadership YOU MUST Know to WIN in Business US Marines are known and respected the world over for their leadership ability. How do they do it? This presentation reveals the nine essential behaviors that make up the foundation of leadership.

REGISTER TODAY at
www.maces.org

INDUSTRY NEWS

CAPA Board of Directors Elect Brenda Shuler as President

We thank Holmes Murphy for your support!



Brenda Shuler, General Manager of Asphalt & Contracting — Aggregate Industries West Central Region, has been elected President of the Colorado Asphalt Pavement Association (CAPA) Board of Directors. The election was held as a result of a vacancy created when Dave Lemesany, Vice President - Martin Marietta retired. Brenda had been serving the association in the role of Vice President.



CAPA Executive Board

- President: Brenda Shuler, Aggregate Industries
- Vice President: Mike McDonald, Kiewit Infrastructure
- Secretary: Ken Coulson, Coulson Excavating Co.,
- Treasurer: John Paul Ary, A & S Construction
- 1st Past President: Kyle Alpha, United Companies
- Officer: Russ Larsen, Elam Construction
- Officer: Grant Cruseturner, Brannan Sand & Gravel
- Officer Proxy: Scott Davis, Schmidt Construction Co.
- Officer Proxy: John Pinello, Simon Constructors



Many thanks to Danny Gryzmalla, President of A-1 Chipseal Company, for serving on the CAPA Board of Directors, 2015 – 2019. Danny completes his term as the CAPA Associate Contractor Member at the end of 2019.

New Honorary Members

We welcome two new Honorary Members. Many thanks to both Dave and Charlie for their long-time support of CAPA and the asphalt industry of Colorado. Enjoy retirement!



Charlie Atherton
formerly with Road Science, a Division of Armazz
charlieatherton6@gmail.com



Dave Lemesany
formerly with Martin Marietta
Lemesany5@msn.com

INDUSTRY NEWS

Colorado's Largest Ever Design Build Project is Asphalt

Widening Interstate 70 (Source: Kiewit)



In 2015 the Colorado Department of Transportation began working with the High Performance Transportation Enterprise (HPTe) to evaluate different contracting options for I-70 East, including a public-private partnership. In February 2015, the HPTe Board and CDOT Transportation Commission decided to pursue a Design-Build-Finance-Operate-Maintain delivery model for the I-70 East project (later rebranded the Central 70 Project). This delivery model transfers risk to a private partner and minimizes cost overruns for CDOT through availability payments – an annual payment to the private partner that is based on progress.

In August 2017, CDOT selected Kiewit Meridiam Partners (KMP) to design, build, and help finance Central 70, as well as operate and maintain the completed project for 30 years. Construction began in Summer 2018 with a groundbreaking ceremony on August 3rd and will reach substantial completion in 2022.

Kiewit Meridiam Partners innovative design and approach for the project included rehabilitating, widening and new construction with asphalt pavement because of asphalt's reduced costs to construct and maintain, maximum flexibility in construction phasing and quality long term performance.

The total cost of the full construction for the Central 70 project is approximately \$1.7 billion. The Colorado Department of Transportation (CDOT) and the High Performance Transportation Enterprise (HPTe) have identified enough funds to build Phase 1 of the project, including:

- Complete reconstruction of I-70 from Brighton Boulevard to I-270, including the addition of one Express Lane in each direction
- Removing the viaduct and lowering the interstate between Brighton and Colorado Boulevards
- Construction of a new 4-acre cover over the interstate between Clayton and Columbine Streets
- Widening the remaining stretch of I-70 from I-270 to Chambers Road to accommodate one Express Lane in each direction
- Restriping I-70 from I-25 to Brighton Boulevard to accommodate one additional Express Lane in each direction.

To date, the project is approximately 32% complete with ongoing paving to widen the interstate between Colorado Boulevard and Chambers Road.

INDUSTRY NEWS



To date, approximately 81,000 tons of asphalt has been placed. To provide the asphalt required for the project, Kiewit is operating a new state of the art Astec double drum 450 tons per hour plant in Aurora. This plant fills a void in the metro area of not having an asphalt production facility on the east side of Denver. The plant will be heavily utilized during the reconstruction of the Central 70 corridor over the next few years.



Central 70 Groundbreaking
(Source: CDOTKiewit)



New Asphalt at the I-270 flyover (Source: Kiewit)

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INDUSTRY NEWS

Improving Your Lot's Life - Understanding Parking Lot Performance



by **Scott Sounart, PE; Kimley Horn & Assc.**

Parking lots play a vital role in the success of the buildings they serve, serving as a de-facto lobby and delivering the initial impression of the property. A run-down parking lot creates an unattractive and unwelcoming image that makes the entire complex seem less appealing and inviting. Perhaps more importantly, a derelict lot can also pose potentially hazardous conditions for visitors and employees and their vehicles.

A parking lot's pavement undergoes a great deal of wear and tear every day from multi-ton vehicles, rain and snow, and even the rays of the sun. As such, it's essential to have an assessment and maintenance plan to preserve the property's aesthetics, ensure customer and tenant safety, and extend the service life of the pavement.

There are seven primary types of asphalt distress, any one of which can require repair. The good news is that a pavement evaluation program, led by a trained and experienced pavement assessor, can identify potential problems before they require major overhauls, saving owners and their property managers tens of thousands of dollars.

Seven Signs Of Trouble

There are seven common types of asphalt deterioration, and they tend to progress from one to another. The first sign of trouble appears in the form of longitudinal cracks. Longitudinal cracks typically appear along joints, which are the weakest part of the pavement. They can result from poor joint construction or location, or they may be an indication of fatigue within the stabilizing base below.

The next common form of deterioration is transverse cracking, which extends across the pavement perpendicular to longitudinal joints. Transverse cracking usually results from shrinkage of the stabilizing base below and is often related to low temperatures impacting the asphalt. As longitudinal and transverse cracking increase in magnitude and density, they form block-like patterns called block cracking. Block cracking is a series of interconnected cracks that appear as rectangular pieces, or blocks.

When aggregate or asphalt binder materials wear away at the surface, raveling results. Raveling is the disintegration of the asphalt surface causing pieces of the pavement to come loose. This can lead to gaps within the pavement surface, roughening of the surface, and loss of binder, and thus protection from moisture.

While these first four types of deterioration are signs of trouble, they can often be treated with inexpensive preventative maintenance procedures such as a crack seal or seal coat. Unfortunately, many owners and their maintenance consultants unnecessarily utilize more costly reconstruction, and as a result end up spending thousands more than necessary to fix what are essentially simple and common issues.

That said, higher density cracking and higher severity raveling often do require more involved and costly interventions. For instance, rutting is a permanent deformation of the pavement that occurs when ruts appear in the subgrade beneath the pavement. The formation of ruts can lead to ponded water, which can lead to vehicle hydroplaning and other related problems. When the subgrade is no longer able to support the pavement structure, fatigue cracking will set in. Fatigue cracking, or alligator cracking, resembles an alligator skin's diamond-shaped pattern. Left untreated, these issues cause the pavement to settle or depress, which ends up forming a pothole.

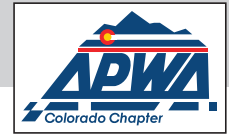
It is imperative to identify the warning signs and resolve early premature distress before these major—and much more expensive—problems appear. Parking owners and their operators should be vigilant about monitoring the condition of the pavements.

About the Author

Scott J.M. Sounart, PE, is a qualified expert on asphalt and related pavement engineering technologies. He also conducts ADA design and assessments, pavement management, and permitting services. contact Scott Sounart at Scott.Sounart@kimley-horn.com



APWA AWARD UPDATE



CAPA Congratulates the 2019 APWA Award Recipients

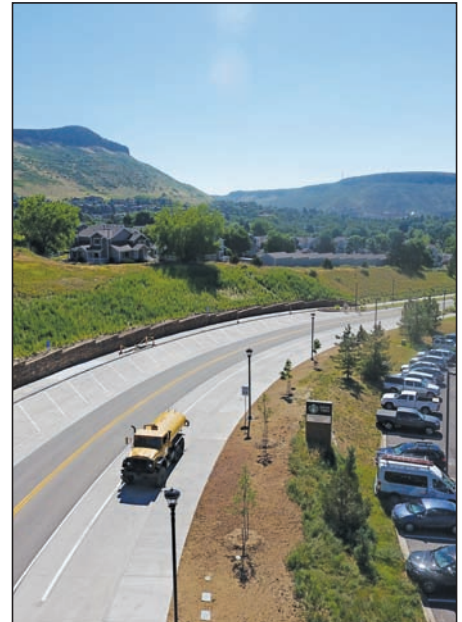
The recipients of the 2019 Colorado APWA Awards were announced at the APWA Annual Conference in Arvada on 29th of October. All award recipients are highlighted in the Fall 2019 issue of the Colorado Public Works Journal. We would like to congratulate all of the nominees and we're especially proud of the numerous projects involving asphalt pavement, a few of which we have shown here.

CAPA is proud to highlight these project and proud to be partner of APWA Colorado.



TRANSPORTATION
MEDIUM COMMUNITY

City of Loveland - Wilson Avenue Flood Mitigation Project



TRANSPORTATION
SMALL COMMUNITY

City of Golden - North Washington Complete Street Project



OPERATIONS & MAINTENANCE
SMALL COMMUNITY

City of Cherry Hills Village - 2018 Capitol Improvement Chip Seal Project



STRUCTURES
MEDIUM COMMUNITY

City of Northglenn - Northglenn Justice Center

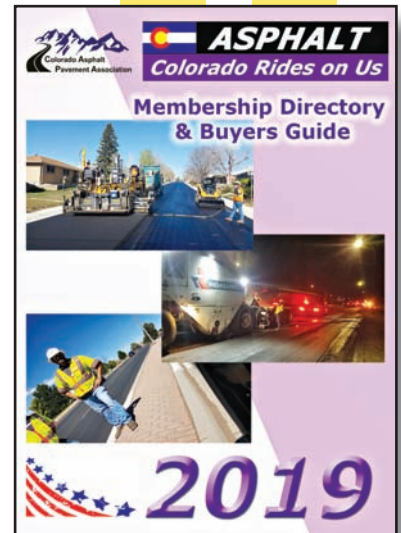
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NCAT Comes to Colorado with Asphalt Training

The National Center for Asphalt Technology (NCAT) conducted a week-long asphalt training course on November 4-8, in Lakewood. The course was sponsored by CAPA and was attended by close to 100 professionals from city, county, state government and contractors, consultants, and suppliers. NCAT instructors Mike Heitzman and Don Watson covered all aspects of asphalt pavement design, construction, and maintenance. One of the course highlights was asphalt pavement rehabilitation and pavement forensics.



INDUSTRY NEWS

The New (Old) Norm for Opposing Land Use Applications



Greta Thunberg has made international news for her presentation at a United Nations forum <https://youtu.be/TM-rtLsQbaok>. The 16-year old student from Sweden provided passionate comment as part of a climate change panel. She accused international diplomats of betrayal, failing her, stealing her dreams and her childhood. She quoted statistics and scientific data and went on to say that science is crystal clear, people are suffering, and dying, and ecosystems are collapsing. She said it was all wrong (her having to miss school to speak to them), that she will never forgive them, they are evil, and ended with a threat of activism. Her anger boiled over at one point as she glared at them (and for all the cameras) in tears and said, “How dare you!”

The use of children to speak out on public policy issues is not limited to the United Nations. We have seen it for years in Colorado as it relates to local land use. Children as young as 11 years old have nervously gone up to the microphone at hearings for new gravel pits or asphalt plants and say, “Please vote No, I want things to stay like they were when my grandmother was a little girl.” Or recently at one in Douglas County, a young girl stated, “Please vote No, When I play in the park, I want to just have fun with my friends and not be worried about getting poisoned.”

The county code of requirements, the lists of standards, and all of the restrictions on the applications are one thing, but teary-eyed testimony from a scared 5th grader is another. The thought behind the child activism is that, “only an evil

capitalist would vote in favor of a land use that is opposed by school children.” There is often very little room for fact checking or questioning the truthfulness of the child testimony.

Not In My Backyard (NIMB) opposition to land use applications is transitioning to Build Absolutely Nothing Anywhere Near Anything (BANANA). You can’t use solar energy or wind energy to fix potholes or pave parking lots at new schools. Asphalt does not come in a bag from Home Depot or Lowe’s and you can’t put a new gravel pit in a middle of a corn field (or in Colorado, a hemp field).

America has been built with gravel pits, ready mixed concrete operations and asphalt plants scattered throughout our communities. Colorado is a state with a rich history of surface mining. There are 65 stationary asphalt plants in 42 Colorado counties. Nearly all them are near something – homes, businesses, trails, rivers, roads, etc. Asphalt plants operate very effectively in a people environment.

The tearful comments by children (like Greta) tug at your emotions and are usually met with a round of applause and supportive hugs from those in the audience who also oppose the proposed land use application. The general theme of their comments is that life as we know it will come to an end and we are all going to die if the gravel pit or the asphalt plant is approved. When you consider the facts, you will be surprised at how very low the impact is of an asphalt plant and that they do not present a health concern to the surrounding community.

QUICK FACTS – Asphalt Plants & Air Quality

- Since 1973, the production of asphalt materials has increased 250% and the total stack emissions has decreased by 97%. The improvement has been so great that the US EPA has delisted asphalt plants from the list of major polluters, and we have been recognized by the Colorado Department of Public Health and Environment (CDHPE) with their prestigious Environmental Leadership Award.
- Our industry is closely regulated. The CDHPE has published a three-page Fact Sheet on how asphalt plants are regulated. It includes operating restrictions, permit and reporting requirements and inspection standards.
- The most common question regarding asphalt plants is, “Is that smoke I see coming from the top? No, it is steam from the heating and vaporization of the moisture in the aggregates.”
- The magnitude of emissions from an asphalt plant are dependent on production level, distance from the source, facility controls and operating practices. A recent study (Sanborn Head, 2018) compared emissions from an asphalt plant operating for an entire year to emissions from other common community and industrial sources. It is remarkable how low emissions from an asphalt plant are when compared to common uses such as gasoline filling stations, a bakery, etc.
- To further reduce an asphalt plant’s environmental footprint, advances in technology and best management practices have been implemented. Amongst these are the use of natural gas as a fuel source and the use of top of silo recovery systems to incinerate the fumes and odor.
- The website Safe Asphalt (www.safeasphalt.org) has been developed to answer questions and address concerns.

INDUSTRY NEWS

Fact-Checking Greta

1. "For more than 30 years, the science has been crystal clear." For more than 30 years the climate models have failed, over-estimating how high temperatures would be. Dramatic climate predictions like New York City being underwater or disappearing polar ice caps have also failed.

2. "Entire ecosystems are collapsing." Ecosystems are expanding. Increased CO2 production increases foliage, as plants breath CO2. Increased plantlife feeds more animals. All of which expand ecosystems.

3. "People are suffering." Quality of life worldwide has never been better than it is today. In the last 25 years, 1 billion people have been lifted out of poverty, the most ever. This has been due, in part, to expansion of effective energy sources.

4. "People are dying. We are at the beginning of a mass extinction." The opposite is true, the world's population is at all times highs and average life-spans continue to increase.

On the other hand, the activities of climate change activists in

limiting energy consumption is responsible for the deaths of an estimated six million people per year.

A staggering \$400 billion is spent on climate change every year. World hunger could be solved for \$300 billion per year. Real environmental problems like contaminated water and plastic in the oceans could also be solved.

No sources mentioned.

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INDUSTRY NEWS

Best Practices for Cold Weather Paving!

Often time's specifications will require thinner lifts to be placed (1.5-inches) as the owner/specifier feels the compaction may be better achieved with thinner lifts. In cold weather conditions this may actually work against the contractor, and end result user. The cold weather will cool the mat before a contractor has the opportunity to complete compaction. Compaction of a mat happens from the bottom up and not the top down. If a thin lift of asphalt is placed on cool or cold surfaces the temperature is drawn out very quickly when placing thin lifts. By increasing the lift thickness from 1.5-inches to 3-inches, the mat will cool slower as not as much heat is drawn out into the subsurface area and the invective action of the asphalt will hold heat longer, thus allowing the contractor the opportunity to achieve the required compaction.

What factors affect the time it takes for the APM to cool below 175 degrees F? All weather factors affect this time: air temperature, wind speed and the presence or absence of sunlight. The type and temperature of the surface on which the HMA is to be placed is a factor too. But, the two most important factors are the temperature of the mix and the thickness of the course being placed. It is generally accepted that, if conditions do not permit 10 minutes of time for compaction, adequate density can probably not be achieved.

Time for Compaction

Cold weather compaction depends upon having enough time and enough rollers to obtain adequate density while the temperature of the HMA mix being placed is still within the compaction temperature range, approximately, 275 to 175 degrees F.

Example: At a Mix temperature of 275 degrees F, Course thickness 1.25-inches. The time available for compaction is seven minutes, too short to realistically achieve density. If the mix temperature is raised to 325 degrees F and all others factors are the same, the time available for compaction is 12 minutes. Now you have a chance of getting it compacted before it cools. If the mix temperature is held at 275 degrees F, but the course thickness is increased to 2-inches, the time available for compaction is 17 minutes. It can be readily

demonstrated using PaveCool that for any cold weather temperature there is a combination of mix temperature and course thickness that will provide adequate time for compaction. (down load PaveCool at www.mrr.dot.state.mn.us/research/mnroad_project/restools/cooltool.asp) With the PaveCool software one can quickly determine the time available for compaction for any set of conditions and quickly compare the effects of changes in course thickness and mix temperature.

Summary and Conclusions: Asphalt Paving Materials can be successfully accomplished in cold weather without compromising the performance of the pavement, but costs will be higher. The goal is to obtain adequate time to finish compacting the mix, while it is still in the compaction temperature range (275 to 175 degrees F). Time available for compaction is most dependent upon the temperature of the mix and the thickness of the layer being placed and less dependent upon the environmental conditions. Making adequate time available for compaction can be accomplished by taking steps to alter these dependent variables and to minimize the time of exposure of the mix between mixing and compaction.

Specific actions may include any or all of the following as necessary:

- Increase the mix temperature
- Increase the layer thickness
- Minimize the time/length of haul
- Work the rollers as close to the paver as possible
- Use more and/or higher capacity rollers
- Use WMA (Workability Mixture Additive)

Handwork and feathering can probably not be adequately performed in cold weather and, so, these operations should be avoided or, if necessary, the results should be considered as temporary surfaces to be replaced in suitable conditions. Of course, placing a thin APM course in cold weather should be avoided, if possible. Placing a relatively thick intermediate course, that can be used as the temporary wearing surface until proper conditions return for placing a thin surface course, will involve little change to construction procedures and little additional risk of poor performance.



Cold Weather paving... 35 degrees and getting mat densities between 93.53% to 95% For more information visit the CAPA website at www.co-asphalt.com

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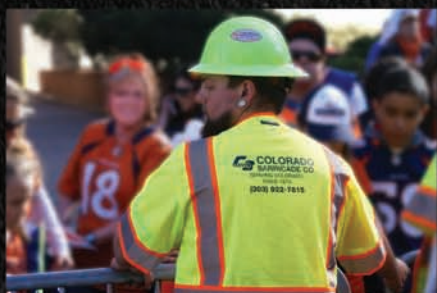


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INDUSTRY NEWS

CDOT's first rubblized project...performing great 20 years later



In 1999, the Colorado Department of Transportation undertook a new process to rehabilitate a 3-mile segment of PCCP along I-76 northeast of Sterling. Twenty years later (2019), that 3-mile section is still performing very well with only minimal maintenance having been performed.

CDOT decided to rubblize the existing concrete evaluating two different methods (multi-head hammer and resonant breaker) then overlay with asphalt. One of the major benefits of these alternatives was the ability for the work to be performed adjacent to existing traffic and to eliminate the potential for reflective cracking. Both westbound lanes were completely rubblized in a very impressive two working days. "We actually stretched the process out so that we weren't done before the project open house (hosted by CDOT, CAPA and the FHWA) the following day," stated Phil Kirk of Resonant Machines, Inc. Kirk also stated that a highway reconstructed by rubblizing and asphalt overlay can be completed in 20% of the time and save 25%-35% of the cost of the concrete reconstruction alternative.

When the project was completed in 1999, CDOT Region 4 Project Engineer Jeff Vickers explained some of the advan-



tages that the rubblization plus asphalt overlay had over CDOT's traditional approach used on I-76. "What drew us to this technology initially was that the rubblization process was 67% of the cost of the concrete reconstruction option. To handle the extensive loading of interstate traffic, a Superpave mix design was selected. Three 2-inch lifts of Grading S (109 Gyration) with PG70-34 was placed by APC Construction of Golden along with underdrains along the side of the highway."

According to Vickers, three of the advantages of the rubblization plus asphalt overlay are reduced cost, shorter time of construction, and the ability to be performed under traffic thus eliminating the need for expensive traffic control and reducing the hazard to the traveling public.

After 31 years with CDOT, Vickers retired in July 2019 as CDOT's Resident Engineer in Sterling. CAPA had a chance to catch up with Jeff in his new role as Senior Transportation Engineer with RockSol Consulting and asked him to share his thoughts about how the project has performed over the last twenty years. "Its been a very successful project. That was the first time CDOT used that process, and in fact, because of the success on I-76, it led to that technology being used on I-25 North. As far as longevity of the road, it has had some maintenance issues in the form of minimal top down cracking, but that was due to our selection of the high gyration mix design ultimately reducing the amount of binder in the mix. It still rides very well, but in 1999 CDOT didn't have our current longitudinal joint density specification, so there has been some joint maintenance performed. We haven't seen any structural cracking or rutting over the 20 years, it's performing very successfully and it was originally only a 15-year design. Today, if you were to go out and mill and 2-inch overlay the road would be right back to excellent condition. This technology works and with the advancements we've made over the last 20 years in paving materials, mix design and construction it would work even better."

CDOT has not rushed to use this technology on other projects statewide as they are monitoring the long-term performance of this process. However, in 2006, CDOT published a research report about the performance of Colorado's first rubblization project near Sterling. The report's summary of findings includes:

- Rubblization of PCCP followed by an appropriate thickness of hot mix asphalt will provide another alternative for consideration by CDOT in the rehabilitation of concrete pavements.

INDUSTRY NEWS



- After five years of performance, the only distresses that have appeared are either asphalt mix or construction related. Not related to the rubblization technology.
- Both the resonant breaker and multi-head hammer methods of rubblization are effective and should be allowed on future projects.
- The use of rubblization and overlay with hot mix asphalt was recommended be incorporated into the CDOT Pavement Design Manual.
- Many agencies around the country have found that, based on life cycle cost comparisons, the difference of 25% to

50% has been found when comparing PCCP rehabilitation to rubblization and an HMA overlay. The performance of these projects has also been extremely successful. Based on Colorado's experience at the I-76 research and evaluation project, rubblization of PCCP followed by an appropriate HMA overlay will provide an alternative for consideration in the rehabilitation of concrete pavements. With the recent experiences with the use of Stone Matrix Asphalt pavements, longitudinal joint density, and other improvements to the materials properties and construction of HMA pavements, the rubblization performance life should be much greater than current projections.

Rubblization works!



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INDUSTRY NEWS

Balanced Mix Design A New Approach for Improved Performance!



Overview

Balanced mix design (BMD) is an enhanced approach to designing asphalt paving mixtures to achieve a satisfactory balance between rutting resistance and cracking resistance. Unlike the Superpave design approach, BMD focuses on optimizing mixture performance using simple mixture performance tests. BMD is expected to open the door to utilizing innovative materials and technologies to design asphalt pavements while providing agencies with a more reliable way to accept mixtures.

The Process

Today, asphalt mixes are primarily designed under the Superpave system, where proportioning of the aggregates and the asphalt binder relies primarily on empirical aggregate quality characteristics and mix volumetric properties such as air voids, voids in the mineral aggregate (VMA) and voids filled with asphalt (VFA).

Mixes designed with too much asphalt may be susceptible to rutting, while those with too little asphalt may be prone to cracking, raveling or other durability related pavement distresses. Concerns about the accuracy of aggregate specific gravity determinations increase with the incorporation of reclaimed asphalt pavement (RAP) and recycled asphalt shingles (RAS).

BMD used testing and design techniques to optimize the available materials to provide the best mixture utilizing the available materials. The evaluation and design processes are required to evaluate mixes for Air Voids (Va), Voids in Mineral Asphalt (VMA) for cracking potential and to Tensile Strength Retained (TSR). The process of completing a BMD is total end result and takes the control of the mixture away from the Local or State DOT and shifts the performance back to the designers.

Observations

The BMD is the process is the way all APM pavements should be designed. This method addresses the issues being put forth by State and Local agencies about cracking, dry mixes and longevity. The BMD method provides a preconstruction method for doing analysis on the mixture in the lab and during production using plant produced mixtures with very prescribed and specific testing methods. This will require the performance testing limits be set and be reasonable.

What mix design variables can be changed to improve?

- Rutting resistance
- Cracking resistance
- Moisture susceptibility

BMD may allow for an increase in the use of RAP. This would occur if during the initial design and subsequent performance testing the mixtures met the BMD criteria. The use of materials will totally be up to the contractor and the designer provided they meet the individual materials requirements.

The issues implementing BMD

The approving agencies will have to be willing to release control of how the engineers are designing the mixtures. The designs will be required to meet specific criteria and the designer MUST create a mixture that fits into the specified criteria. The implementation of BMD will require a total shift in thought process by Local and State DOT's for mixture design approval. They will need to be understanding and willing to accept mixes with different air voids (generally lower), VMA, and binder contents (typically slightly higher) than are being produced currently.

Engineering firms or others who are designing APM designs may be required to have some financial outlay for new or different equipment to perform some of the required tests for the cracking performance tests which will be required.

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Women of Asphalt - Colorado Branch



The Colorado branch of the "Women of Asphalt (WofA) — Colorado. The Colorado Branch had a FREE mixer this Fall. The date was October 24th at Honnen Equipment offices. The event was open to the first 40 to register and more than 25 attended the event.

Women of Asphalt - Colorado will have a presence at the 47th annual Rocky Mountain Asphalt Conference and Equipment show. co-asphalt.com/rmaces.org There will be two presentations during the two day conference. The first will be a part of the opening general session as a teaser followed by a full session on February 19th from 3:30 until 4:45pm.

We will have a booth and a breakout session at the rmaces.org 47th Annual Rocky Mountain Asphalt Conference and Equipment Show. We will need help in having people at the booth for the entire two day conference. If you are interested in helping to staff the booth for the conference on February 19th or 20th, contact one of the people listed below.

The Colorado Branch of WoA will have presence along with the National WoA at Con-Expo in Las Vegas in March. Tammy Buck is scheduled to be a booth monitor, if any of you will be attending Con-Expo and would like to help out, contact Tammy Buck tbuck@yeh-eng.com. For more information, or to get involved with the Colorado Branch of WofA, contact Nicki Upright, at nicole.upright@state.co.us, (970) 350-2316, Tammy Buck at tbuck@yeh-eng.com, 303-358-4185, Natalie Ulven, at nulven@pyramidconstruction.com, 719-355-0150, or Jo Taylor, at jo@coloradopublicworksjournal.com, 720-360-6737



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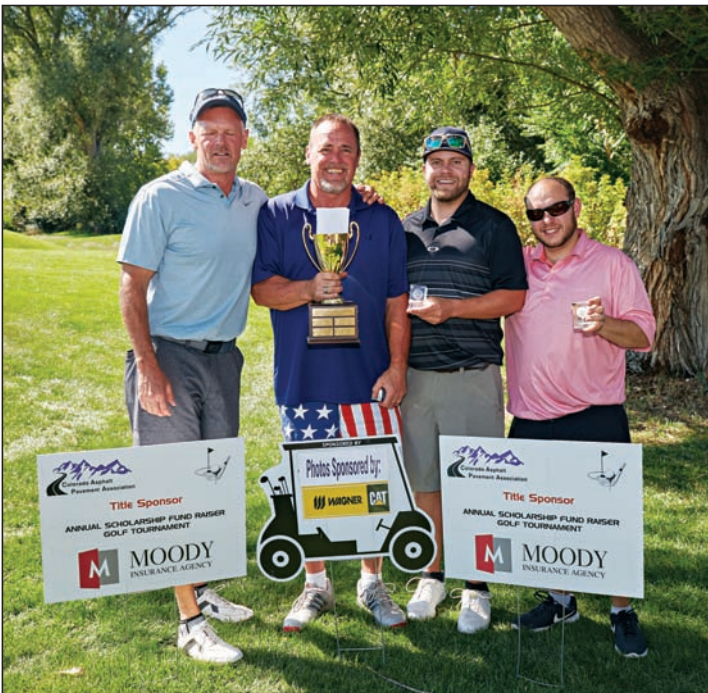
28th Annual Golf Tournament & Scholarship Fundraiser



28th Annual CAPA Scholarship Fund Raiser Golf Tournament

CAPA and the APWA Colorado Chapter would like to thank the 216 players and volunteers who attended and supported the 28th Annual CAPA Scholarship Fund Raiser Golf Tournament on a picture-perfect day on September 13. The golf courses at Fox Hollow in Lakewood were in great shape and gave the players a run for their money. The rough was long and the greens were fast.

Through the support of our players, sponsors, and volunteers we were successful in raising nearly \$12,500 to support our CAPA/APWA/NCAT Asphalt Technology Scholarship at Auburn University, Alabama. CAPA along with our partners from the APWA Colorado Chapter are excited and thankful to be able to continue to participate in helping promote increased knowledge in asphalt technologies. Your continued support is much appreciated, and we thank you!!



Congratulations to the CAPA Cup Champions for 2019, the team from Vance Brothers consisting of Dan Stephens, Mike Wright, Cody Vance and Nate Allen.

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Committee members and volunteers selling mulligan and 50/50 raffle tickets. (Left to right) Dan Stephens, Tammy Buck, Mike Scardina, Keary Brown and David Barthel, Karen Unger and Joleigh Doudy.



Tom Clayton (CAPA) and his wife Susan with their grandson Dante



The carts are loaded and lined up to head out for the shotgun start



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