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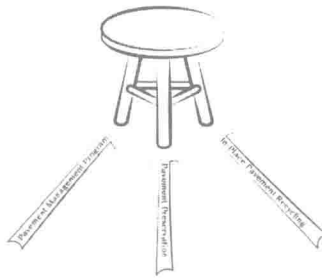
Saving YOUR Crumbling Roads with
Practical Pavement Management



Blair Barnhardt, APM

The Book on Better Roads

How to Save Your Crumbling
Roads with Practical
Pavement Management



by **Blair Barnhardt**, APM

<http://www.thebookonbetterroads.com>

The Barnhardt Group
Kennesaw, Georgia

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Comments from Readers

The Book on Better Roads provides the most comprehensive source of expert information regarding all things pavement management. I highly recommend the book to anyone seeking to expand their knowledge or just become acquainted with pavement management. It's time we all become better stewards of public funds and manage our crumbling infrastructure more wisely!

Brian A. Frix, EIT, MSc, APM, Traffic/Transportation Engineer, Rockdale County, Georgia

Blair has an amazing ability to get people focused and listening about a topic that usually people are not very interested in until they are directly affected by poor road and crumbling infrastructure, which is when it is too late and costs too much to fix. Blair has created an easy read!

Diane Sheesley, Project Engineer, City of Tacoma, Washington

As you travel the nation spreading the word on better roads, don't be discouraged if you look in the rear view mirror and see no one; you are not traveling alone, there is a large convoy behind you headed in the same direction. Some trail behind because they are unfamiliar with the road, others are weighed down by old habits and lack of innovation.

And then some of us actually obey the speed limit

Miguel Valentin, PE, APM, Transportation Director, Rockdale County, Georgia

Blair's straight-forward, no nonsense advice will surely strike a chord with many in our industry who have pleaded with agencies and politicians to challenge "conventional thinking" and "standard approaches" when it comes to pavement management. Public Works Directors and County Highway Supervisors should read this and then read it again! With reduced pavement maintenance budgets becoming the norm for the foreseeable future, agencies must re-think how they are doing things. The leaders among them are the ones always trying new methods or, simply, methods that are "new" to them but used throughout the country for decades.

Patrick Gallagher, Gallagher Asphalt Corporation, Chicago, Illinois

Acknowledgements and Dedications

First of all, thank you . . . **Joy**, . . .

for taking this journey with me and always being the voice of reason, even when I didn't want to hear it. Your love and support is everything.

And **Brooke, Andrew** and **Lyndsey**, the best kids a Dad could ask for. You inspire me every day. I could not be more proud.

Lastly, I'd like to dedicate this book to two men who helped shape my life and taught me to dream big,

John Lawley and **D.L. Stephens**.

Until we meet again.

I would also like to thank my mentors for making this book, as well as our mission, a reality. Here is a bigger than life shout out to **Brendon, Frank, Jeff, Joe, Mike, Paul, and Tim**.

And to all those on **The Book on Better Roads** team: Thank you! **Ben, Brock, Lea, Rocco, Tracey**, and, of course, **Joy!**



**Better Roads Bus Buds —
Jason Sorenson, Montana DOT,
and Blair**

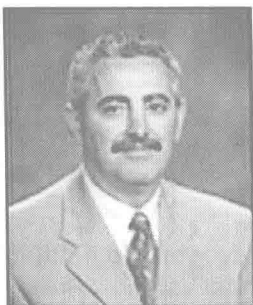
This book is written for:

- All of those struggling city and county engineers, township officials, politicians, and every day residents who are struggling to cope with crumbling roadways in the USA and the World.
- All of these local agencies not knowing where to turn for reliable unbiased information on how to do more with less and who, without better ways, are set up to fail due to the budget constraints they have inherited.



Throughout the book there will be references to the **Three-Legged Stool of Pavement Management**. This is a system, devised over the last decade, which saves local agencies millions of dollars by marrying: 1. a proactive pavement management program with 2. eco-efficient, in-place, asphalt recycling and 3. pavement preservation.

Foreword



I am writing this foreword to acknowledge first and foremost the contribution of Blair Barnhardt to the field of pavement preservation and preventive maintenance.

As the State of California has invested trillions of dollars on the huge network, it is imperative that we acknowledge the importance of preserving our investment and highlighting all the tools that are available in the tool box. Blair's efforts described in this book clearly articulate this Vision.

Basem E. Muallem, P.E.
Director, District 8, California Department of Transportation

District 8 is the largest of the 12 Caltrans districts, with over 7,000 lane miles of roads. District Director Muallem manages a staff of 1,280 with an operating budget of \$181 million. He oversees all facets of design, construction, operation and maintenance of the state highway system in the greater Inland Empire region.

Basem Muallem has been with Caltrans for 29 years (since 1985). He has experience in Construction, Design, Operations/Encroachment Permits, Surveys, Maintenance, Program/Project Management, and Right of Way. He most recently was the District 8 Deputy District Director for Program/Project Management and Deputy District Director for Right of Way.



Blair and Basem Muallem

Previously, he was the Deputy District Director for Maintenance in District 8 and also served as the interim HQ Division Chief for Maintenance and Division Chief for Right of Way.

Mr. Muallem holds a Bachelors of Science degree in biology, and he has Bachelors and Masters of Science degrees in Civil Engineering. Basem began his career in Los Angeles (District 7) as an entry level Civil Engineer.

THE PHOTO AT THE TOP OF THE PAGE AND THE INFORMATION ABOUT DISTRICT EIGHT IS FROM THE CALTRANS WEBSITE.

Free Resources for YOU

Here is a chance to go deeper into all things saving YOUR crumbling roads. Whether you are an elected official simply scanning Part One and handing this book off to your city or county engineer, or a seasoned pavement manager with decades of experience, this simple book registration process will unlock hours of video, audio and written training material for you to further your knowledge.

Because you took the initiative to purchase this book, you are entitled to several FREE gifts, including:

- A free video training series on **The Three Legged Stool System of Pavement Management**.
- A webinar with real life “what’s working now” success stories of elected officials, city and county managers, state DOT officials, and pavement Engineers across the world who are implementing **The Three Legged Stool System** to do more with less money and less carbon footprint.
- PLUS, we promise to continue to lead the world in all of the best practices in pavement management, in-place pavement recycling and pavement preservation. As such, we will always keep you up to date with the most current best practices available to all, but known to few.

Simply click on the following website to register your book to stay current and to receive your free Bonus material: www.thebookon-betterroads.com/register

We promise to never send unsolicited bulk messages (SPAM). We will do our best to keep you current on all the great things that are happening as we work together to resurrect our economy and make better roads for all!

Driving America Drove Me to Write This Book . . .

Along the journey you will take with me as you read this book, there will be several references to the things I do as an entrepreneur. Understand that it is not my intent to barrage you with unneeded, ineffective information, to sway you into hiring me, joining any association, or doing anything you don't want to do.

That being said, I can say that, had I not jumped behind the wheel of my RV and driven 83,000 miles, I never would have had the perspective or passion to share what I discovered. Even with 30 years of heavy, civil construction experience, and with two decades of teaching university and college level curriculum on this book's subject, I wouldn't have had the courage to stand up and say what needs to be said if I hadn't driven the roads and seen it all myself.

Even after several years as a board member on a very influential industry trade association, and routinely dealing with high ranking FHWA (Federal Highway Administration) and state DOT (Department of Transportation) folks, had it not been for the **Driving America for Better Roads** series of videos, I don't think I would have ever had the gumption to stand up and say the things that need to be said.

You see, even after travelling across this country several times, teaching FHWA National Highway Institute curriculum, developing new curricula, helping to write and rewrite the texts that go along with this curricula, it wasn't until I put myself in that seat in the **Better Roads Bus** and forced myself to drive 1,000 miles a day, and saw first hand the billions of dollars being wasted away, that I really, actually, GOT IT.

Our infrastructure is crumbling in this country (and, if you are reading this book in another country, your infrastructure may be crumbling, too). **During my travels, I saw the stupidity of what we are doing first hand.** There, I wrote it, and it feels good to get it out of my system.

I was told a long time ago to go to your boss with a problem only when you have a solution. Well today, as I write this book, I will say that the problem is we are paying for 1956 solutions with today's dollars. We are wasting billions of dollars on rebuilding our 4 million miles of road like it is 1956!

Some state DOTs and trade associations insist on putting up walls around local agencies and limiting the information about innovative technologies. They are keeping the information away from the city and county engineers and elected officials who rely on them for their advice. These local agencies hang on their every word as to what is right for their roads. Well, here it is — I am going to write it once and for all.

Yes, a few states share innovation technology information. And many cities and counties learn about these options themselves. But as long as there are state DOT officials, FHWA officials, trade associations, and naysayers out there limiting the flow of information and sabotaging the efforts of those who want to be better stewards of their infrastructure, then I will continue to fight the fight.

I will continue **Driving America for Better Roads**, until I see change. Until the day comes when every single road that I travel is a road that is recycled in-place, or better yet, preserved from the day it was built so it never falls in to a state of disrepair, I will continue to drive.

And while I have already dedicated this book, here goes a big shout out to the naysayers: **Thank you!** Without you I may have never developed the fire in my gut to put pen to paper and finish this book.

Beware the naysayers, because if you are a local agency waiting to hear from your state DOT officials or trade association about cost effective and innovative ways to take care of your aging infrastructure, you may only hear of one or two methods, even though there are many more.

You may never be introduced to the entire tool box of cost effective methods. And while there may never be enough pages in a single book to direct you to the right resources, know that we have built an entire library of ways for you to get more information as you go forward on your journey to become a better pavement manager or a more educated elected official.

Again, I want to remain on the high road and never want to bash any specific person, state agency, or trade association. But, I also can't be a weak "Casper Milquetoast" or we simply will never see change. That is what driving 83,000 miles does for a person. It has motivated me by forcing me to see both the worst road maintenance programs and the best.

Regarding some of the best: I got to hear the amazing success stories from the **APM Accredited Pavement Managers**. I got to see cities and counties all across the country that are implementing successful pavement management programs and saving millions.

You can hear many of these success stories, too. Stories of in-place pavement recycling like Kenny Horak's from the City of Richmond, VA, in Episode 4, Better Roads Radio, www.betterroadsradio.com. He describes how he did 250,000 SY of hot in-place asphalt recycling and loves the results. Many more case studies are available in Part Two.

But think about this again if you will. How can all of these techniques successfully work in some states and their respective cities, townships and counties, and yet in other states, state DOT officials, local contractors and often industry trade associations are adamant about keeping these same cost saving treatments and contractors out?

Here is what I have learned in my three decades in construction activities and teaching how to maintain better roads: In America, FHWA writes policies. The latest is MAP 21 (Moving Ahead for Progress in the 21st Century), our transportation funding bill, strongly states that we should sustain and preserve our infrastructure. They even go as far as to say local agencies and state DOT officials can hire sole source suppliers and service providers, provided there is an inherent cost saving benefit and the treatments are congruent with MAP 21 and the objectives of the transportation bill.

You can read it yourself. Here is a link to the memo from King W. Gee, Director of Engineering at AASHTO (American Association of State Highway and Transportation Officials): <http://www.preventpotholes.com/fhwa-policy/> and a direct link to the details regarding the US DOT's take on the subject here at the FHWA website <http://www.fhwa.dot.gov/programadmin/contracts/O11106qa.cfm> .

So whether you are just looking to read through Part One as an elected official, or read the book several times over as a pavement manager, you MUST KNOW THIS:

FHWA makes funding policy, but based on my interpretations from conversations I have had with them over my career in the industry, they cannot DICTATE what state DOTs do with their funds. So herein lies the dilemma. While some state DOTs are following MAP 21 and are even re-recycling roads that they recycled 22 years before, some state DOTs are doing everything in their power to KEEP THESE INNOVATIVE TECHNIQUES OUT. Yes, you read it right . . .

Some state DOTs have an entire data base full of proven techniques they share with their staff and encourage their cities and counties to do the same cost effective and eco-efficient treatments. They get it!

And while this is going on, some other state DOT officials haven't changed or added anything significantly new, eco-efficient, or cost saving to their specifications books for decades. You see, these states are not willing to budge. Somehow they think they are different than the rest of the country and the world. They seem to be stuck in 1956.

"How do you know this, Blair?" you may ask. Because I have spent 30 years in this industry and have put the miles in to back it up. I have traveled and taught, walked the walk, and talked the talk. I am not saying this to be boastful or arrogant, but simply to reassure you that each and every page you read in this book is written to be a conduit of change for this country and the world. **We don't have to have crumbling roads.** I am convinced that what we teach as an army of pavement management **RockStars** (you'll learn more about **RockStars** later) across the nation is a win, win, win situation. Nobody suffers as a result of **The Three Legged Stool System of Pavement Management.**

In fact, your agency could be saving millions right now, but you may have to stop listening to the folks whom you think you should be listening to for professional advice. Beware the naysayers. Beware the naysayers, for they are uninformed, misdirected or shortsighted. They will be exposed, thanks to people like you who have dedicated the time to learn new ways.

Again, I want to reiterate there are many pavement management professionals who I regard with great respect and appreciation — I have learned from them, taught them, or worked for them as their pavement manager consultant. They, and others, are fighting the fight and winning the battle, I commend you.

Ben, our webmaster guru, has done an amazing job of putting all of the details about what I do on our websites to promote this movement for better roads. You can find most everything on this website: www.drivingamericaforbetterroads.com. Once you have had the opportunity to read this book and have registered it at www.thebookonbetterroads.com/register, you may want to drop back occasionally to see what is going on at the mothership, **Driving America for Better Roads.**

While I have invested 30 years in this great industry, it really was the past year steering the **Better Roads Bus**, meeting great folks, learning, strategizing, and dreaming about how we could JOIN together and resurrect our flailing economy that made this book come together. A simple plan did it for me!

Take a look at what my friend and colleague Stevan Gorcester, Executive Director of Washington State Transportation Improvement Board, has done with his pavement management challenges: www.tib.wa.gov/tibdashboard.

Here are some quick links to all that we do:

www.drivingamericaforbetterroads.com

www.ipma.co

www.ipmaacademy.com

www.betterroadsradio.com

www.thebookonbetterroads.com

www.thebarnhardtgroup.com

www.blairbarnhardt.com

www.ipma.co/marketplace

www.drivingamericaforbetterroads.com/press

<https://www.youtube.com/user/ipmaTV>

<https://www.youtube.com/user/barnhardtgroup>

<https://www.facebook.com/DrivingAmericaForBetterRoads>

<https://www.facebook.com/blairbarnhardt>

<https://twitter.com/blairbarnhardt>

<https://twitter.com/drivingamerica4>

<http://www.linkedin.com/in/blairbarnhardt>

Comments from Readers

Blair will admit that he's not for everyone. Personally, I like what they are doing over at The International Pavement Management Association (IPMA). I enjoyed going through the Accredited Pavement Manager (APM) program and learned some good practical things - usable things - even though I've been around the industry for a quite a while. As a long-time practicing Pavement Manager, this was right down my alley. Blair is a good presenter and the subject matter does a good job bringing newer folks up to speed, shortening the learning curve, while filling in the blanks, connecting dots and tying things up nicely for those of us that have been around for a while.

I think emphasizing and elevating the Pavement Manager role is a very good thing that can benefit many agencies. I highly recommend the APM accreditation, or other similar program, if you can find one. Thing is, I don't know of anything even remotely similar out there. I've attended quality seminars for years without coming away with nearly as much gain. I found the APM program invigorating and it amped-up my game.

Jon Heese, APM, Arapahoe County, Colorado

Introduction -- What if?

What if we didn't have the trillions of dollars in debt in this great country?

What if we could resurrect our economy and clear up our backlog deficit of crumbling roadways that are never going to get fixed if we keep doing what we are doing now?

What if we didn't have to grind up our paved roads and turn them back into dirt roads any longer because we are literally running out of money to take care of them?

What if we stopped wasting billions of dollars milling up our "worn out" roadways and dumping this valuable resource? We are dumping 200 million-year-old rocks that we bought and paid for into a desert ditch in the middle of nowhere!

What if there is a tried-and-true method of resurfacing/recycling these same roads that take a tenth of the amount of time, cost around 50% less and decreases up to 62% of the normally generated carbon emissions?

What if, going forward, we would stop letting our roadways get to the point of no return, and actually start preserving them early in their life?

Dare to Imagine our network of roads improving instead of watching them crumble before our very eyes. Could we actually see a steady, gradual improvement of our entire network?

We always start early with preservative upkeep on automobiles, buildings and ourselves. We don't wait until things start wearing out. Yes, it's kind of like going to the dentist to get our teeth checked. We all know how important that is to keep our mouths healthy and teeth shiny. In fact, I could go on with many analogies. They all work, and they all save us money, and they all produce better results. But when it comes to taking care of our most valuable transportation asset, many agencies seem to ignore preventive maintenance.

Even though the Federal Highway Administration proved pavement preservation techniques work well and cost substantially less, the majority

of elected officials and pavement engineers that I talk to on a regular basis DO NOT practice, or are not allowed to practice, these very techniques.

While I will do my best to take the high road on this journey, there will be occasions when I have to “tell it like it is” in order for you as a reader (and future torch carrier) to become the best change agent possible in your organization. In taking the positive, high road, I will avoid using specific names of individuals, companies or associations.

It is not my intention to call out specific naysayers that are standing in the way of our country benefiting from better, safer roads at a fraction of the cost of conventional rehabilitation methods, but I will have to give you pertinent information about the walls that must be broken down for the **Three Legged Stool System of Pavement Management** to save our transportation infrastructure.

And, before I take you on this marvelous journey of understanding where we have come from, where we are, and what the solution is, a short disclaimer is needed: The views in this book are those of my own, not that of **IPMA, IPMA Academy, The Barnhardt Group**, or any individuals who are associated with any of the aforementioned firms such as **IPMA** Charter Members and Partners.

There are no affiliate commissions coming our way for any of the products or services mentioned in this book, and I am not writing to endorse or promote any specific firm, product or service. At the time of writing this book we have no corporate sponsors offering tens of thousands of dollars to get us to say nice things about them.

There are great books on the subject of pavement management, but most are very technical and do not cover the balancing act of combining pavement preservation and in-place pavement recycling. The purpose of this book is to give the reader a quick reference on how to save crumbling roads for less money and in less time.

Those seeking more information to enrich their learning experience will have a chance to do so in a live format during **The Book on Better Roads** Book Tour that will be announced to those who register their book at www.thebookonbetterroads.com/register. Also those who register their books will receive all links to the videos, podcasts and other BONUS training material mentioned as well as all new material as it is released.

There is more legalese covered in the final bonus chapters, and you may want to review our terms on our website at www.ipma.com.

The book is divided into two parts. Part One is for the normal, everyday person to get a grip on where we are with our crumbling roadways. Your elected officials, residents and media should read Part One.

Part Two is for YOU, the one who knows there is a better way. And the one who is presently set up for failure with your city, county, township, HOA, state (or wherever). This book is your guide out of the failure spiral and gives you simple steps to implement a plan for a better road network.

Please share and enjoy, and don't forget to register your book before you get started.

Register at: www.thebookonbetterroads.com/register.
