

Hello, welcome to the InfraTalk Podcast, brought to you by Infrastructure Ventures. Come listen in as we talk with policy experts on how we can advance the use of innovative technology in the infrastructure and transportation industry. Why? Because we know we can do better. So, sit back or walk the dog, go for a run, or grab a cup of coffee and join us for this episode of the InfraTalk Podcast.

GREG:

Hello, I'm Greg Nadeau, publisher of InfraTalk America. Join me for a conversation with Dr. Audrey Copeland, president and CEO of the National Asphalt Pavement Association. This is the InfraTalk America Podcast.

NAPA has been quite involved in advancing e-Ticketing as a technology opportunity throughout your industry.

So, I'd like to talk to you about why that is.

AUDREY:

Yeah, sure. I think probably where to start is kind of — let's go back before COVID and before the pandemic and just think about things and what we saw in the industry is, so we have associate members that support the industry. So, several of those, of course, are the technology providers that provide e-Ticketing. Companies that were interacting with these providers and starting to use their services were seeing the benefits to their operations and to how they can manage their business; but it hadn't necessarily taken on a full, you know, national, you know, where we were dedicating national resources to it.

And then along comes the pandemic. Okay. And then it was like, all right, how can we continue to conduct business in a safe manner given that we're wanting to socially distance? And given that there is this possibility that they could even shut down construction sites. So how can we make a construction site as safe as possible, and be able to communicate this to those making those type of decisions? And so, then it really took on, you know, a critical implementation phase. And so that's when a lot of contractors began to look at it and to realize the benefits.

So, I think overall, it started out as safety. Getting folks out of the way of the trucks. You know, you had to get out of your truck. You actually had to hand off a ticket. And then they saw the benefits to having that data and information in a faster manner. The impact on, you know, their accounting. The impact on their knowledge of the quantities of materials that they've used, and how that can impact decisions moving forward, you know, in terms of future bidding and things like that.

Having that information at your fingertips, you know, and then —

GREG:

Efficiency in billing.

AUDREY:

Exactly. I know, you know, just simple things like that. And then I think it also took on a life in terms of trucking efficiency. And so, then there was also like, okay, so now we have this information at our fingertips in terms of material quantities, timing, amounts, things like that. How can we use that to even become more efficient in terms of our trucking?

And so that has even implications into the climate and things like that. So, I guess kind of to wrap it up, I think initially it was just certain members who kind of were like, "Oh, you know, I'm in on something, you know, I see the benefits of this. I'm willing to invest in it."

But then COVID, it really took on, oh my gosh, this is a solution to a challenge right now because I don't want, you know, my folks touching each other, handing things off out of their truck, things like that. So, and that's when we realized what a game changer this could be. And so that's why we were willing during the pandemic, we went to Federal Highway Administration [FHWA], and we said, "This is really important. We need your support here. The industry is behind this. How can we work together to work with the state department of transportations?"

GREG:

And I have to give Federal Highway loads of credit. The EDC-6 Initiative and including a digital initiative that included E-Ticketing as a very specific subset. And then digital as-built, which is more in the family of BIM for infrastructure and the movement that that kind of commitment has initiated. Of course, Every Day Counts as a program. I've always called it the Every Day Counts Partnership with the States. That's key.

AUDREY:

Exactly.

GREG:

And 43 states adopted the e-Ticketing initiative, which, of course, is an EDC record.

AUDREY:

Right. Yeah.

GREG:

So, literally a movement is the other way I like to describe it. Having NAPA become so engaged in it so early. An issue I hear about across the country in meetings of state departments of transportation – this chronic challenge of recruiting and retention of staff and workers and technicians. It's the same story throughout the private sector. So, the question is, from your vantage point as a national industry leader, can you leverage that technology to both attract the next generation of talent into the industry, along with bridging the gap on how we do more with less?

AUDREY:

So, I think we have to, you know. The unique thing about our industry is that we're building something, right? And so, at the end of the day, you can see what you've constructed. You know, we still have members tell us, colleagues, that I'm able to take my family down a road and say I paved that road. So, there's a lot of pride in our industry.

There's a competitive edge, you know, among our members in terms of the jobs they do. And so, but at the same time, with this younger generation, they're also — they're not going to be passive. They're going to want to be part of solutions. They're going to want to be part of the process. And so, if you are not doing something in the most efficient manner, or if you are not considering digital technologies, I'm not sure your company's going to be able to keep up in terms of being competitive in the workspace.

The younger generation is a lot more in tune with inefficiencies, you know, especially in the digital world. You know, they're growing up not knowing anything but the digital world. So —

GREG:

And even — I mean the millennials —

AUDREY:

Yes.

GREG:

— are, you know, achieving a certain place in the organization that is a higher degree of responsibility. And in some in some cases, management roles.

AUDREY:

Right.

GREG:

And the millennials grew up —

AUDREY:

Yes.

GREG:

— with technology and wouldn't know how to conduct themselves without it. So that influence is already being felt in institutions and companies across the country.

AUDREY:

Yeah. And I think —sorry if I could add —

GREG:

Yeah. Please.

AUDREY:

— one more thing to that?

GREG:

Please.

AUDREY:

Sure. I think, too, there's opportunities for, you know — there's going to be disruptions to our industry in terms of things that are coming at us, in terms of whether it's electric vehicles, autonomous vehicles, smart cities.

And so, if we're already if we're being able to implement technologies that are going to help us be more efficient, help us be more productive — which we all know the construction industry lags behind in terms of production — then that is going to help us be able to overcome the hurdles that some of these disruptions present and will make our industry a lot more exciting in terms of: Can pavements be used

beyond just being surface transportation? Can they be used to house energy production? How do we accommodate the autonomous vehicles and things like that?

So anyways, I think as we become more adept at implementing technology, it will continue to make our industry more attractive in terms of what we can do with our infrastructure and then also getting those younger generations into our industry.

GREG:

And the benefits. I mean — you know, going back to sort of e-Ticketing specifically — when I first really understood it, when I began to drill down on e-Ticketing a couple of years ago, I mean, I spent 15 years, you know, at the state and federal level administering the Federal Aid Highway Program. And so, I wasn't exactly a novice, but the intricacies of what this technology can do, I have to confess, I didn't fully understand it.

And I remember in a prior interview, when I was trying to sort of describe what I had learned and the impression I had, I used a line that sort of just came naturally, which was paper tickets are where data go to die. And in the piece that we produced, our brilliant videographer had a drone shot. It sort of came over the horizon and presented these four or five freight containers.

And inside those freight containers were hundreds of boxes, layers of them stacked five, six, 10 high. And right on the box it said, "destroy 2025." So literally, they look like tombs. And literally the place where paper tickets go to die.

AUDREY:

Yeah.

GREG:

So, the technology is going to take that data and digitize it. And that data is now going to be available to the institution or the DOT for their asset management systems in the future, which is something that the federal government has certainly encouraged, and states have adapted to and are now utilizing extensively.

So, a partnership between industry. In this case the producers, the truckers –

AUDREY:

Right.

GREG:

– the contractors, all of whom are also benefiting from the use of that data, whether it's to make billing more efficient or their operations more efficient. We've had interviews with contractors on the ground who are just saying things like, “I used to have to walk a mile to figure out where that last load was or whether they were still there.”

AUDREY:

Yep.

GREG:

So, from the standpoint of I mean, I kind of want to look at it from the standpoint of you have members, producers, all shapes and sizes is my guess. The larger in some cases may be better resourced or certainly just operationally it's more of a priority. But how are you, sort of as an industry leader, a trade association leader, how can the owners of public infrastructure, the DOTs, your institutional partners, Federal Highway, how can they help ensure that small producers can participate –

AUDREY:

Sure.

GREG:

– and not have the technology, you know, from their perspective viewed as some sort of a burden –

AUDREY:

Right.

GREG:

– but really looked at as the performance and safety booster and operational booster that it can be, you know, that's good for their business. Is that part of the conversation you're having with your members?

AUDREY:

You know. Yeah.

GREG:

How can that partnership with the public institutions help facilitate?

AUDREY:

Right. I think it's definitely worth giving thought to. I mean, we actually haven't seen much of a barrier so far. For example, if you look at XBE, who's one of the technology providers for e-Ticketing, they have a great suite of videos where they have all different sized companies represented. We represent producer companies all the way from the largest, that operates in 43 to 45 states, all the way down to a person who has one plant. So, I think what the DOTs can do is help create an environment where it's encouraged. I don't want to go so far as to say incentivized. I'm not sure that's what's needed. I don't know it in detail enough but encouraging it and making sure that there is a level playing field, you know, because the challenge, and this is for any technology, is that we still operate in a low bid environment.

So, if the DOT can identify where that brings some value and they can somehow build that into the expectations or provide encouragement for that, I think that's where you can start to see it help the smaller companies. And then also educating them. A lot of times, our smaller companies or even the larger companies are so focused on the present, you know, getting the project done, meeting the specifications or the standard, that it is hard to look beyond and look at what will benefit them. So, I think helping educate them, helping them realize the return on investment and the value they will get out of this technology. And so, I think what I'll say there is that our associate members that are the ones that support the industry and the technology providers, I have found that they are so knowledgeable in this area. They are so willing to go and work with these companies and educate them that I think that's where the opportunity is. The states somehow being part of that conversation where you're bringing the private industry together with the contractor to educate them, and then also have state DOT involved.

GREG:

A great example of that. We recently were in Columbus, Ohio. It was a meeting with a number of producers in the aggregate, and it was a wonderful conversation. It was the DOT saying, "bring us your challenges, your obstacles. Let us help you understand what we're after and help us understand what you're after, because only in this collaboration will we be successful."

AUDREY:

Exactly.

GREG:

So, they're having meetings like that with trade organizations and their members. They have a weekly morning meeting every Tuesday and it's blocked off. Any producer or contractor who has an issue can call into that meeting

AUDREY:

Wow, that is great. Yeah.

GREG:

— and have the issue shared and dealt with literally on the spot. It's a great example of what you're talking about. Where that outreach, education and engagement is essential to advancing innovation. Particularly, in what I call the Federal Aid Highway Program Marketplace, —

AUDREY:

Right.

GREG:

— which involves obviously the Federal Highway Administration as a funder, state DOTs as the principal agency administering the state program and overseeing the administration of the local programs.

AUDREY:

Right.

GREG:

So that engagement is critical. And we're seeing that kind of commitment on behalf of the DOTs working with the industry folks like that. Is that something your members are seeing or would like to see more of?

AUDREY:

Oh yeah.

GREG:

Do you see that example in other places in the country?

AUDREY:

Oh yeah, definitely, all across the country. We see that there can be success with bringing everyone to the table at the beginning. Whether it's a project, whether you're getting ready to implement a new technology policy, whatever it is. And so that's where we have state asphalt pavement associations. There's 39 across the country. They are not chapters of us. They are all independent, but that is where they become so critical. We obviously work very closely with them, but they truly help develop that relationship between the contractors and the DOTs. And that is where we see a lot of success.

So, for example, back when I was with Federal Highway Administration, I remember we were pushing recycled asphalt pavements and we were pushing warm-mix asphalt. We decided to host a meeting between the DOT and the contractor for one of the court projects. The contractor wanted to go use higher reclaimed asphalt pavement and the DOT okayed it. You know, once you were able to sit in the same room, have a conversation about, you know, this is the benefits, again, the value this will provide, it really worked out and it made for a successful project. And so, through our state asphalt pavement associations, that's where we really see that playing out.

I'll add one more thing. We've got user producer groups across the regions that bring industry as well as the DOTs together, and those have proved to be very successful in terms of advancing technologies, getting the word out about e-Ticketing, things like that. Also, academics are brought into the room as well.

GREG:

Is that something unique to your organization? It's a brilliant idea.

AUDREY:

No, actually, it's probably more the DOTs and FHWA that does it.

GREG:

It's really them. Oh right.

AUDREY:

They're actually the ones.

GREG:

So, they're engaging you.

AUDREY:

Industry helps plan it and it depends on the region. In some regions it's more planned by a DOT. For example in the Northeast, I think the Connecticut DOT was a leader in it. In the Southeast, it's run by an industry person. In the North Central region, we were actually just asked through our Asphalt Pavement Alliance to help support that. So, it varies by region, but it is a brilliant idea. And with help from the government to support these, it really can go a long way in terms of implementing technology.

GREG:

What a great segway. I want to talk about climate and some amazing work that you're leading and NAPA's leading, but I want to segway into that. You just brought up warm-mix asphalt, which was when I became Deputy Administrator at Federal Highway. We had with my old boss, Administrator Victor Mendez. He had come in as the former Director of Arizona DOT and I was Deputy Commissioner at Maine DOT. So, we had both come from DOTs. We knew who administered projects and it wasn't even the DOTs. It was contractors. It was the private sector. That partnership was critical, and we understood that. The focus was on how do we engage with private sector, with public sector, with DOTs, in this case, to advance innovation and technology. Basically, that process yielded what became Every Day Counts.

And in the first round of Every Day Counts in 2010, you were a materials engineer at Federal Highway. Your first job, as I recall, out of college and that was before you got your PhD. I remember the conversations early on and being so impressed with the notion of warm-mix asphalt. It would reduce greenhouse gas emissions in production. It enabled paving later into the season, and being from Maine, one of the colder weather states, I could appreciate that. The benefits were just extraordinary. Of course, my reaction was, "what are we waiting for?" And the key was the collaboration among the states, which state DOTs have an extraordinary and unique ability to make a market overnight. And 52 state institutions decide to do something and make a commitment to using warm-mix asphalt, for whatever reason, whether it's a good business decision because you can pave longer in cold weather states or simply to reduce greenhouse gas emissions and a number of other benefits. The key was creating that market demand, which, of course, made it easier for producers to make investments in plant and equipment to make it happen.

So, in a very few years, I remember first at that time in 2010, warm-mix asphalt represented about 4% of total asphalt production. Can you sort of describe as an example of government and private sector collaboration and advancing a technology, what has happened since? What has been the impact of that collaboration?

AUDREY:

Sure. And actually before I get to that, just speaking to one thing. One of the things I've learned, because you went back to when I was a materials engineer. One of the things I've learned over the years, especially working with the state DOTs, is in some cases, if you can get to the leadership, such as the chief engineer or maybe even higher up and show them value, you know, or how is it going to save them time or save them money? They're interested.

And I think that's really what EDC has done, is been able to get these technologies to that level of decision makers. Where states can actually open up to these technologies sooner and faster. And so, warm-mix was the original example. You know, the industry had first identified this as a possibility when there were concerns about the environment, worker safety, things like that in the plant. We wanted to start looking for technologies where we could reduce temperatures and things like that.

So, the industry identified this as a technology and started implementing it maybe on the commercial side. But the challenge was the state DOTs weren't knowledgeable of it, and their specs weren't really open to it. And so, Federal Highway Administration realized the benefit of this. And so what happened is, something that we've done over the years, is establish a joint industry government task force. And FHWA at the time was doing a really good job of putting those together. So, they had put together one for warm-mix asphalt, but it was still a challenge getting some traction with the state DOTs. And so, I think that's where EDC came in again. It elevated this technology to those decision makers and policymakers, whether they're at the national level or whether they were at the DOT level or local level. So, the specs started opening up. So, it was that partnership to educate folks on it, to flush out the technology, because that's another thing, at one time it was an unknown. So, there needed to be some research done to make sure that you would still get performance. There needed to be considerations in terms of cost and the different technologies and things like that. What is the effect on the pavement performance long term? And so that's where that technical working group came in. There was money dedicated through the National Highway Cooperative Program for the Transportation Research Board. I don't think any of that would have happened in terms of all those resources, in terms of having that information readily available, without that partnership and then, without the push from Every Day Counts.

Which was really what you had originally envisioned, you and Victor. I think at the time there was this challenge where whatever was being researched was not getting implemented. You know, it was kind of left on a shelf. And so that's what Every Day Counts created. I'll admit, because I was an engineer at FHWA at the time and I had not been at FHWA long, but you know, an administrator comes in and a deputy administrator and you're kind of like, "okay, is this just their thing?" You know? But I have to give you kudos. I mean, Every Day Counts has endured and it is still such a relevant program. I mean, look, here we were talking about warm-mix asphalt, which is now 40% of the market. That is unheard of in the pavement industry for a technology to become 40% of a market within ten years or so, 10-15 years. And then now we're talking about e-Ticketing. You said yourself, it went from just, you know, less than 10 states just two to three years ago, and now it's 43 states. So, you know, kudos to you and Victor.

GREG:

In two to three years, I think it's going to be standard.

AUDREY:

Right.

GREG:

And that is remarkable. It is. And I give the DOTs a lot of credit because that's where it happens.

AUDREY:

Right.

GREG:

But Federal Highway's leadership continues to be extraordinary. Kat Weisner is the lead person on the e-Ticketing initiative and David Unkefer who's doing the digital as-built initiative. You know, they've been part of EDC initiatives, you know, from the resource center since the beginning. I think Kat said she's been involved in every round of EDC except the first and I think David is similar. So, it's the institutional commitment the Federal Highway made that continued after we were gone was critically important. So, but you know, that collaboration with the states, the AASHTO Innovation Initiative, the collaboration between that organization that's chaired by Deputy Secretary of Delaware, it's the ongoing institutional commitment that's critical because you need that consistency going forward.

But thank you for sharing that example. If you look back at all of these initiatives and you start measuring the benefits, in the case of warm-mix asphalt, how would you measure the benefits? Let's just take one element, the reduction in greenhouse gas emissions. What sort of measure do we have to demonstrate what impact it has?

AUDREY:

Yeah, no, I think that's great. And actually what I would say is it's almost a two-phase thing. So, with the initial implementation of warm-mix asphalt, what we really saw, the unexpected benefit was being able to get compaction. Where you can maybe take a roller off or you can extend the paving season. And so, I think that initially took it to where it's 30 to 40% of the market.

The second phase, which is what I'm getting to your question in terms of greenhouse gases, is where we really need to focus on reducing the temperatures. So right now, we're at a little over 40% of the market. If you combine warm-mix asphalt use with the use of reclaimed asphalt pavement, in just one year, you're taking 600,000 cars off the road. That's with minimal temperature reduction. Right now.

GREG:

That's extraordinary.

AUDREY:

Yeah. So, let's say we can get the temperature reduction up to 20 degrees lower, 30 degrees, which we know we can. We know we can. So, this next push of really realizing the benefits of temperature reduction, you're just going to magnify that, double it, more.

GREG:

And is that ongoing research?

AUDREY:

Yes.

GREG:

Long term pavement program.

AUDREY:

Exactly. Yeah. Well, and we have the capabilities now to do it. So, it's just a matter of, you know, making sure you get the performance you need. And I guess it's more the DOTs again, opening up their specs because some DOTs have put limitations in terms of temperature reduction.

GREG:

Right.

AUDREY:

And so, again, opening up those specs to where, you know, really what it boils down to Greg, is as an industry, we would really like to get to the point where the DOT can focus on the end product. What do you want at the end? And then let us focus on how we get you there. Let's build that trust and you focus on what you want in the end, the quality, the performance, and then let the industry figure out what temperature, what materials, things like that.

GREG:

There are a lot of elements to the Federal Aid Highway Program that are essential, but it's hard to name something that is more fundamental and basic than asphalt. It is one of the principal responsibilities of state and local highway agencies. You have a program called the Road Forward. Can you tell us about

that? I'd describe it as an extraordinary commitment to the climate that you've just recently launched. Can you tell us about that?

AUDREY:

Exactly. Yeah, we just unveiled it in February of this year, and it is the asphalt pavement industry's commitment to going net zero by 2050. So, and you're right, it is huge. It is a member driven process where we have identified four goal areas that are going to get our industry to net zero, and that's whatever we can do in our process, that's whatever we can do within the supply chain, in terms of the energy we use, whatever we may need to do in the future also to fill the gaps. And so I guess what that boils down to is we may not have all the answers today, but as an industry we have committed to working towards net zero by 2050.

And like I said, this was a member driven process. Our members have embraced this. They realize that it is the right thing to do for our country, for our world, and then it's also vital to our industry to continue to be a solution and to continue to be competitive. So, yes, it's something that we are extremely excited about. I must give kudos. The leader of that was Ron Sines with CRH. He led our member task force on that and then our Head Engineer Richard Willis and our Director of Sustainability Joseph Shackett. They all demonstrated superior leadership, not only in the development of the program but also in the rollout and education of our members. Even our partners are excited about this—talking with the state DOTs, talking with Federal Highway Administration. They now can, you know, they have the knowledge that asphalt is a low carbon pavement solution and they know how we can help them achieve their goals in terms of climate change and reducing carbon as well.

GREG:

What you're doing is amazing. I'm just so pleased, as we've all back in the day at Federal Highway and watch you advance in this industry. Just, you know, if you could reflect, you know as we close, I could keep talking to you about this all day, but we don't have all day. Just kind of reflect where you are now leading this industry. You're obviously part of a broader network of industry leaders across the country.

We now have this, you know, finally this amazing infrastructure bill and some impressive funding, notwithstanding inflation and how it might impact some of the production. That's you know, I'm quite sure that's a temporary situation and it's a five-year bill. So, it sounds a little bit selfish, but we've just got this major infrastructure bill and funding for five years, but five years will become four years very soon. And all of a sudden, we're going to be looking at another reauthorization period.

From the standpoint of funding, what's your take on what we ought to be preparing for? A similar kind of investment, which is, frankly, what I believe is at a minimum necessary. We simply, you know, if this is you know, this ought to be the new baseline, which is always difficult. But as an industry, are you already engaged with your fellow industry members thinking about preparing for that next conversation about major infrastructure investment?

AUDREY:

Oh, yes, yeah, yeah. We are part of the Transportation Construction Coalition, and we are already thinking about the future. And I think, I think you're right. I think this kind of establishes a baseline. We can't, we don't want to go backwards. I mean, we're already at a crisis in some ways in terms of our infrastructure and our nation values our mobility and things like that.

I think the hard question, of course, is going to be how to fund it moving forward. We as an industry used to say, "hey, we'll just support any solution." We were a bit ambiguous. What we've been talking about among the transportation CEOs and material CEOs, is maybe we do need to get a little bit more serious and put our weight behind a certain solution. So those are part of our discussions.

GREG:

Which is, of course, a funding solution. An ongoing funding solution.

AUDREY:

Exactly, moving forward. I mean, obviously, we'd love it if they would increase the gas tax. But then it's still getting eaten into by electric vehicles and stuff like that.

GREG:

Right. Right.

AUDREY:

But yeah, but for this bill right now, we're extremely excited. It is significant funding. It is also a game changer in terms of how we think of infrastructure, whether it's advancing technologies like you say or thinking about the climate. So, there's a lot of opportunities that DOTs as well as contractors are going to have to think about in terms of the funding available; even in the most recent, the Inflation Reduction Act as well.

So, so anyway, so yes, inflation tough right now. Supply chain tough, the labor market is always very tough, but there is a lot of optimism in terms of what we're going to accomplish over the next five years. We are positioned well in terms of providing the solutions to meet the goals of that legislation.

GREG:

Terrific. Just to thank you, Dr. Copeland and NAPA. I mean, I remember back in the day, it was one of my early experiences working with an industry group, and I've worked with many, many sets and learned to appreciate the value of that collaboration. And I've long advocated that, certainly at Federal Highway

and in other roles I played in government, but that collaboration with the private sector is just so critical. More critical than most cases when you understand how projects are delivered. The private sector is essential to that process. Materials, the project delivery and the technology side of the business is capturing such significant attention from all concerned. Your explanation of NAPA's role and commitment to this is just extraordinary.

AUDREY:

We completely believe in the partnership. That's where we've seen the most success. At the end of the day, we all want the same thing. We all want to provide sound infrastructure pavements for the traveling community and if there's ways to realize efficiencies there, we are all game. So yeah, we appreciate being a partner in this and providing solutions.

GREG:

Well, you've been CEO of NAPA for three years now.

AUDREY:

Yes.

GREG:

I'm quite sure this industry is in terrific hands as you become the next generation of leadership for an organization like this, and that's critically important. You're bringing an amazing perspective, given your background and the activities that you spend. Thank you very much.

00:38:45:22 - 00:38:46:17

Speaker 3

Well thank you, Greg.

Thank you for listening in to our first three episodes of the InfraTalk Podcast. We invite you to join us in the new year when we will continue our season with compelling and new conversations with industry leaders and experts who are working to advance the future of transportation infrastructure in America. In the meantime, we hope this discussion inspires you to ask your own questions and encourages you to have discussions with policymakers and your peers. If you want to know more about InfraTalk America, visit us at infratalkamerica.com or follow us on social media at [@InfraTalkUSA](https://twitter.com/InfraTalkUSA) or subscribe to the

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