

MINUTES
MICHIGAN STATE TRANSPORTATION COMMISSION WORKSHOP:
WARRANTIES
June 24, 2010
Lansing, Michigan

Meeting noticed in accordance with Open Meetings Act, Public Act 267 of 1976.

Present: Ted B. Wahby, Chair
Linda Miller Atkinson, Vice Chair
Maureen Miller Brosnan, Commissioner
Steven K. Girard, Commissioner
Jerrold M. Jung, Commissioner
James S. Scalici, Commissioner

Also Present: Kirk T. Steudle, Director
Frank E. Kelley, Commission Advisor
Marneta Griffin, Commission Executive Assistant
Jerry Jones, Commission Auditor, Office of Commission Audit
Patrick Isom, Attorney General's Office, Transportation Division
Greg Johnson, Chief Operations Officer
Leon Hank, Chief Administrative Officer
Mark VanPortFleet, Bureau Director, Highway Development
Myron Frierson, Bureau Director, Finance and Administration
Susan Mortel, Bureau Director, Transportation Planning
Mark Chaput, University Region Engineer
Randy Van Portfliet, Superior Region Engineer
Roger Safford, Grand Region Engineer
Bill Shreck, Director, Office of Communications
Kevin Kennedy, Capital Preventive Maintenance Engineer

A list of those people who attended the workshop is attached to the official minutes.

Chair Wahby called the meeting to order at 10:00 a.m. in the Bureau of Aeronautics and Freight Services Auditorium in Lansing, Michigan.

The topic of this workshop was Warranties and was conducted by Greg Johnson, Chief Operations Officer, Dan DeGraaf, Michigan Concrete Association, Mark Chaput, University Region Engineer, and Kevin Kennedy, Capital Preventive Maintenance Engineer. The following objectives were discussed:

Setting the Stage

Warranties in Transportation – Greg Johnson

Manufacture warranty – These are unique as the manufacture has complete control over the entire process from product inception to final production. Design, materials selection, application of the product, production sequencing, quality control and testing are all under the manufactures control.

Public Works warranty – The public agency controls the front half of the process, the design, application and materials selection. In most cases the agency staff determines the scope of the needed repairs. There is no control of the existing ground (soil) conditions and the environmental factors, i.e. on the project. At the award of the contract, the construction contractor is in control over the materials selected to meet the specifications, the quality control to insure proper handling and placement, and the construction sequencing and staging to build the project.

Transportation warranties: 1) Materials and Workmanship (M&W) warranty (building pavement sections on existing materials, control of the materials selection and all production processes, still method specifications in place for pavement sections and mix designs, longer term fixes); 2) Performance warranty (work is predominantly materials applications, contractor has control of material production and application processes, or they are for short term fixes such as some of the CPM work). Whatever the warranty type you decide upon, the FHWA won't allow MDOT to hold contractors liable for things outside of their control. This is one of the main factors in determining whether the warranty should be an M&W or a Performance warranty.

There were a number of anticipated benefits and assumptions regarding the presence of warranties on transportation projects that were identified. These include protection against catastrophic failures, build quality into our projects, ensuring work gets built according to specifications, increase the life of our products, and transfer of risk from owner to contractor.

Aside from the anticipated benefits, a primary reason that we have warranties in transportation is due to the legislative mandate implemented in 1997. Legislative mandate - Public Act 79 of 1997 (effective July 28, 1997) states "Of the amounts appropriated for state trunk line projects, the department shall, where possible, secure warranties of not less than 5-year full replacement guarantee for contracted construction work." Although no other states had a significant warranty program at the time, the warranty concept and approach proposed by MDOT was supported and endorsed by the FHWA with the approval to utilize federal aid to fund the program.

Since the warranty program was initiated in 1997, Michigan has been pretty aggressive in placing warranties on projects. To date we have a total warranty inventory of 1,941: 462 Pavement Reconstruct/Rehabilitation, 1,291 Road Preventive Maintenance, and 188 Bridge Painting. We currently have 600 active warranties consisting of 40 bridge projects, 250 recon/rehab projects, and 300 CPM projects.

In general, we have three types of work products where we have applied warranties here in Michigan: 1) performance warranty is possible on Bridge Painting projects since the Contractor has control over a majority of the factors affecting the work product. These warranties are for two years, which is ample time to assess the quality of the product. Significant defects usually show themselves within the first two years of the product; 2) The CPM program has a variety of work types with a variety of proposed fix lives. Therefore, both warranty types are utilized across our CPM program. For example, chip seals, micro-surfacing and crack treatments utilize 2-year performance warranties, whereas the HMA overlays and mill and fills utilize a 3-year M&W warranty; 3) Our traditional pavement rehab and reconstruction projects (both HMA and Concrete) utilize a 5-year M&W warranty.

Michigan and National Warranty Picture – Mark Chaput

Of the total of 1,941 warranties, we have a rolling number of about 600 active warranties year to year. These numbers reflect annual averages as the actual numbers of warranty project varies year to year. Breakdown by work category: pavements (about 50 project/year for 5-year term) 250, CPM (about 60+ projects/year at 2-year term and 60+ projects/year at 3-year term) 310, and bridge (about 20 projects/year at 2-year term) 40.

The Commission asked us to look around and compare our warranty experiences with those of the adjacent Midwest states. We found the following numbers of warranties per state (including Florida): Minnesota 29, Wisconsin 180, Indiana 35, Illinois 31, and Michigan 1,941 (legislative mandate), Ohio 557 (legislative mandate), and Florida 675 (legislative mandate).

Commissioner Girard asked why it is so costly to manage these warranties.

Mr. Chaput replied, referring ahead to slide #15, that the cost to administer is really not where the major costs of these programs come in. The main cost of the Warranty Program is in the bonding. When we bond a project we are asking that contractor to secure a bond to cover that work. The costs of those bonds against the program average in the area of \$1 - \$1.5 million annually. Those costs are the contractors purchasing bonds from a surety company—all of those costs get transferred back into our bids somewhere. The personnel time to do administration, inspections, etc., is \$140,000, and the State Warranty Administrative Database (SWAD) maintenance is \$30,000.

Continuing... There is a definite disparity among the states in the use of warranties. The only states with a significant number of warranties are those where warranties are legislatively mandated. The limited use of warranties by states outside of the legal requirement may suggest a lack of merit for warranties on a technical basis. There also may be an uncertainty on the cost effectiveness of a warranty program. Every project in Michigan that comes out for bid in the heavy maintenance work has a warranty on it. We don't do some projects with and some without. We don't have an off-set or a question as to what we are saving but we know what it does cost.

Commissioner Jung commented that he use to work for a bonding company. We not only have to consider the cost of the bonds but we should consider that bonding companies will only extend so many bonds to any one contractor. If a contractor has these warranties hanging out for five years, it affects his ability to bid new work because a bonding company will typically put a cap on how many bonds he'll issue to one contractor.

Michigan Warranty Program Effectiveness – Kevin Kennedy

There were various reports and recommendations by the state Office of Auditor General (OAG), MDOT, and FHWA. The OAG evaluation was done at the request of the legislature and was concluded in 2006 (another will be released in 2010). The audit objective was to assess the effectiveness of MDOT's efforts in evaluating whether warranties have improved the quality of pavement construction projects. The auditors report essentially concluded that MDOT was moderately effective in the administration of the warranty program and that MDOT should conduct an internal Warranty Program Effectiveness Evaluation assessing the link of warranties to improved product quality.

MDOT's response to this was to do an overall effectiveness evaluation of our program, and while the audit focused on road projects we decided to also include bridges in the evaluation. Conclusions from the evaluation were that bridge paint warranties extend the paint system life, and performance warranties on CPM projects have documented cost savings. When we first established the Warranty program we had certain objectives and we found that we were meeting some of them—compliance with state legislation, high quality bridge painting, and protection against catastrophic failures. Another initial objective was to lower pavement lifecycle costs; however the evaluation concluded that pavement M&W warranties have not been confirmed to extend pavement life.

The FHWA Process Review focused on risk analysis, construction quality and acceptance, and whether the warranty program administration was effective. The conclusions that they found were that warranty thresholds and corrective action measures should be reevaluated, the warranty term lengths appear appropriate, and that we were effective with our administration. Their recommendations were that warranties for CPM one course HMA overlays and one course mill and resurface were inappropriate as currently applied and that changes to acceptance procedures were needed—these have been addressed.

Chair Wahby stated, regarding MDOT's evaluation conclusion that pavement M&W warranties have not been confirmed to extend pavement life, that this tells him that there is no effective benefit from having a warranty on these roads because we're saying that we have no confirmation that they have proven to extend the life or give us the life expectancy of what we think a road should be.

Mr. Chaput replied that we are trying to assess how much the presence of the warranty is making that impact. We feel that we're gaining long-term pavement life, we're extending the quality of our products based on the specifications we have in place, but it hasn't been proven that additionally having that warranty on a contract is adding anything more than what we're gaining from our standard processes.

Chair Wahby stated that that is important because if we are injecting the warranty end of it, then we're injecting additional costs into the project. By having the warranty there, when we inject the warranty into a job, it's going to cost us something because of the bonding or whatever else has to be done. However, we're not getting any benefit from it.

Mr. Chaput replied that that appears to be the connection at this point in time.

Continuing... To summarize the Warranty Program recommendations: some warranty thresholds and corrective action measures should be reevaluated, warranties for CPM one course HMA overlays and one course mill and resurface were inappropriate as currently applied, and changes to acceptance procedures are needed.

Additional summary recommendations generated from the internal MDOT program evaluation and the FHWA process review include: ensuring continued compliance with applicable state law continues, begin tracking negotiated or post award warranties—making sure they are cost effective (if we are going to continue with warranties we want to make sure they are applied in the right manner, they are a value for the taxpayer), and requiring MDOT to make that

assessment in that evaluation over time to assure that is what we want to build in as an expectation for the future.

Chair Wahby, referred back to the additional recommendation of “discontinuing ‘lower pavement lifecycle costs’ as an objective of the warranty program”, said he understood that we used this process when we determine which way we were going to go with the road—whether concrete, asphalt, etc. He asked how this ties in.

Mr. Kennedy replied that we are not changing the lifecycle cost process because that is a law that’s in place. There was an early assumption that we’d be getting longer life on our warranty programs and therefore we’d be getting lower lifecycle costs regardless of the pavement that we were using. We have since found that we are not getting that longer pavement life so therefore it should not be an objective of the Warranty Program.

Mr. Chaput added that we didn’t want to tie that expectation to warranties because we concluded that it’s not a result.

Commissioner Scalici said he was now confused and asked if they expected it to be.

Mr. Chaput replied yes. The initial assumption was that placing a warranty would lower those lifecycle costs. We’ve confirmed that that does not happen so we don’t want to make that as an assumption or an expectation of the Warranty Program.

Chair Wahby asked if they would change the process when the jobs are analyzed.

Mr. Chaput replied no, not at all.

Continuing... The costs of warranty bonds average in the area of \$1 - \$1.5 million annually. This number is an estimate as each company has different financial ratings with the bonding companies and their bond costs vary. With input from the industry we have developed these average annual costs based on our average annual Warranty Program size. Personnel time is \$140,000 annually, and Statewide Warranty Administration Database (SWAD) maintenance is \$30,000. In addition to all the staff time previously invested in the development and administration of the Warranty Program we know that the SWAD development contract cost \$1.4 million for initial development and \$520,000 maintenance costs from 2004-2009.

An assessment of our corrective action needed to be done to determine how many failures and defects there are on our projects that have warranties. For bridges (not projects), 62% need corrective action with the average fix being \$5,500; the range of corrective action is \$500 to \$20,000. The cost of the original warranted work can be anywhere from \$50,000 for a small structure to \$14 million for a structure like the Rouge River Bridge.

Commissioner Atkinson wanted to know the total number of bridges the 62% is derived from

Mr. Chaput replied that they did not quantify the total number of bridges because they vary across the entire contract. We would have to go all the way back to 1997 for this detail. What we are trying to do is monitor the projects we have going—we do about 20 bridge projects a year that have warranties and every year they are different.

Commissioner Atkinson asked if the 62% was derived by looking at history since 1997.

Mr. Chaput replied yes; over this 13 year period, 62% of the bridges we put a warranty on have some level of defect during the warranty period.

Commissioner Atkinson asked if the “average fix” was within the 62% or is it an average obtained by using the total number of bridges and the total amount of fixes.

Mr. Chaput replied that within the 62% that have some level of defect within the warranty period, the average cost of making that corrective repair is about \$5,500.

Commissioner Atkinson asked if the divisor in that averaging number is the 62%.

Mr. Chaput replied yes. We don't know the exact number of bridges—we'd have to do a lot of research to get into those details.

Commissioner Atkinson commented that someone must have known it at some time in order to figure out 62%.

Mr. Kennedy added that they looked at some recent numbers and he thinks it was between 60-80 bridges per year. Generally they are looking at 20-25 contracts but then those contracts usually contain multiple bridges.

Continuing... For Capital Preventive Maintenance (CPM), 4% of projects need corrective action (96% of projects did not) with the average fix being \$30,000 on a \$500,000 job. The range of corrective action is \$3,000 to \$160,000. If you separate crack sealing, average fix (on the 4%) becomes \$19,000 on a \$500,000 job, and \$33,000 average fix on a \$500,000 job for all other CPM. For Rehabilitation and Reconstruction (R&R), 11% of projects need corrective action (89% of projects did not) with the average fix being \$32,000 on a \$7 million job (average of \$2 million of warranted work on \$7 million job). The range of corrective action is \$4,500 to \$200,000. With over \$ 1.2 million being paid out each year, we are protecting ourselves against an average failure rate of \$565,000 resulting from corrective action activities.

Commissioner Jung asked if the bond was limited to 10% of the contract amount, thinking that that would increase the bonding capacity of contractors, would this limit the corrective action very much. The average numbers appear to fall well under the 10% of the total job.

Mr. Chaput replied yes. For our pavement projects we warranty about \$1 million or 5% of the total contract. When you look at putting a \$50 million road project, you may have pavement costs of \$8-\$10 million of pavements. We're already having a less bond amount. The concern in working with the surety companies and discussing with them is if they are still liable for complete product failure, we have to have a bond in place that is covering enough of what's at risk—you have to hedge a little bit on that bond amount.

Commissioner Jung asked if the face amount of the bond is less than the dollar amount of the contract already.

Mr. Chaput replied yes. We may be able to make some more progress—based on what we’re experiencing as defects, we may be able to reduce that a little more and not put a substantial amount of our program, so that’s an assessment we’d like to make.

Continuing... From our analysis, the warranties are necessary and effective on the Bridge projects as we are insuring that the frequent corrective action is performed and protecting against catastrophic failures. The 96% success rate on the CPM projects is a demonstration of effectiveness, there is confirmation that contractors are emphasizing their materials and workmanship efforts to improve success rates for the products. As far as the R&R pavement warranties there is an inconclusive determination on whether warranties lower pavement life cycle costs. In addition, pavement M&W warranties have not been confirmed to extend pavement life. At this time we question the effectiveness of applying warranties to our pavement projects.

Recent Industry Developments

The following factors are not directly related to warranties and are evolving our industry partnership with an overall focus on quality. The shift in business model is a national trend, the financial climate although national in reach has unique circumstances here in Michigan. The accomplishments and quality initiatives are a demonstration of our growing partnership throughout the industry here in Michigan.

Paradigm Shift in Transportation – Dan DeGraaf

DOT’s use to put “recipes” (means and method specifications) out there to the industry to say what materials should be used; this is how you build the project—same road, same design, year in and year out. The contractor followed the instructions and had no responsibility and accountability other than following the “recipe”. We began to transfer some of the risk over to the contractor (end-product specifications), getting them a little more flexibility on process and materials selection. We are moving to a joint continual quality process control where it is a true partnership between the contractors and the owners developing specifications together—this is more of a shared responsibility by all and not just strictly with the owner.

From the industry perspective, new and innovative ideas are needed; we can’t keep building the same old mouse trap because we need some innovation. There is also a public demand to hold people accountable for what they do. We have to have crews that are capable of doing more than one thing (multi-disciplined) because tomorrow they are going to do something different. We must enhance our training and have a feedback group as this transition from DOT being a solid only engineer on the job, to the contractor having responsibility in function—we have to have the knowledge that’s learned during a project back into the design of the next project. Additionally, we should get paid for performing. If we don’t perform, a payment should be affected. Lastly, we don’t want to be using all of our resources as virgin aggregates and virgin materials; we need to start recycling more—we have to be green.

What is getting in our (industry) way of making this change? The owner (MDOT) has to give up total control of the process—there must be some contractor input and try something new. The contractors, on the other hand, have to take responsibility—it’s no longer “waiting for the inspector”. The contractor must fully understand their product. Over the last few years, through the programs we’ve done, they have learned a lot more about their product than they knew 10-15

years ago. They understand how these materials go together, why certain materials work better at certain times, and why it's a different game in December than it is in January or July. We have to accelerate our workforce training and we must invest in new equipment and methods. How are we making this change? Warranties were and have been a very critical part of this because with them, you did transfer some financial risk. You got people's attention—they no longer could say "I did what you told me to do". The answer now is "I did what I had to do because that's the right thing to do".

The ultimate goal of CQP is a certification program where you have to go through the training, have certified people and have certified contractors, but there is also a de-certification as part of that. There will be audits done and if people are found to be not in compliance they have the potential of losing their certification—their ability to bid work. You want everyone building work in Michigan to be qualified and certified. Ultimately, if we get to that point where we're that fully implemented, that will take a lot of the heat off the need for warranties because you won't have people out there building your work that don't know what's going on.

Joint Industry Accomplishments – Mark Chaput

We recognize that a key component to this Paradigm Shift is working together as an industry partnership. We have a successful partnership and we are working together to improve the quality of our products, processes and relationship. Some of the accomplishments we have achieved together include: Warranty Task Force—adjustments to our bonding requirements, developed a warranty use matrix, pilot incentive programs for innovation that leads to longer lasting pavements, and development and roll out of the statewide SWAD database; Design Issues Task Force—revision of scoping manuals and design guidelines, and instituting constructability reviews; Contracting Issues Task Force—worked with industry to establish Pass through Bonding, and working with how we're engaging utility companies that provide information on our design plans.

Quality Initiatives in Michigan – Mark Chaput

There are three specific areas where we feel there has been some major quality initiatives implemented: Quality Control/Quality Assurance Requirements—contract requirements, contractor quality control plans, contractor plant certifications, MDOT inspections and acceptance testing; Evolutions of Pavement Design Specifications—key item is something that really measures things that actually control the work, the measures should be statistically based, have less variability of material, incentives for material/pavement uniformity, and are jointly developed by MDOT and industry; and, Construction Quality Partnership—goal is to continually enhance construction quality, retain various task forces, focus on current and future workforce skills, produce training and skills to enhance value to taxpayers, and use certifications as a measure of qualification.

The Commission asked that we inquire as to what other states are doing to insure quality is being built into their work. We have this inquiry out and are still awaiting responses. Here in Michigan we are doing the following: continuing to evolve our specifications, working to increase our inspection and testing requirements to insure specifications are followed, continuing to improve our risk based acceptance procedures (Michigan is in the 'Advanced Category' for our pavement materials and products), and continuing our commitment to CQP and industry wide training efforts.

Current Financial Climate – Mark Chaput/Dan DeGraaf

The struggling economy in Michigan means that transportation revenues are down (we'll have a smaller program); contractors are finding that contracts are less profitable, and company asset values are down. The financial markets being in turmoil makes it difficult to get loans, the cost of loans are higher and insurance and bond markets are impacted. An example was given where the sub-contractors to the low bidders on two major projects were unable to achieve their bond making it necessary for the prime to go back and find a replacement sub-contractor. We had never experienced this level of impact in the past but we're seeing it firsthand this year.

Chair Wahby asked if you have a major contractor, he has the bonding, and if he has sub-contractors does he bond for them or do they have to have their own bonding.

Mr. Chaput replied that most sub-contractors get their own bonds; it's very risky for a prime to bond someone else's work unless they have a real close business relationship.

Mr. DeGraaf added that contractually right now you have a contract with a contractor and you have one bond that you rely on. We do have a provision for the warranties for a pass through bond that a major sub can make a direct link with MDOT for the warranty period. You also need to realize that the bonding companies, in some respects, are a partner with you and they provide you with a little bit of a credit check.

Continuing... One of the things we discussed with Surety Company input was the fact that the warranty bond is actually like a rider to their overall performance bond. It was mentioned that a number of warranty bonds could put a company at risk, financially, but what it will also effect their ability to get more warranty bonds and their ability to get an overall performance bond which is something they need to bid for any work—warrantied or not. To that end, a couple of the surety companies looked at our 5-year warranties for pavements and they said that may not even be a product they offer in the future—knowing that our programs are going to be lower and the financial viability of these companies coming into question. They may limit that term to 3 years to protect their own risk. If those products aren't available, we can't require them on our contracts and expect to have bidders. That is a dynamic that will be outside of MDOTs' control, and knowing how the surety companies are viewing this market is going to be critical to how we work forward with warranty bonds in the future. The key to this program being very successful—all the projects let and the ARRA money coming out—was due to the size and quality of this contracting force in this state. As the financial constraints come down, it's going to be harder and harder.

Future Direction/Next Steps

Short Term Considerations – Mark Chaput

The committee felt that from a short-term consideration it made sense to retain the current Warranty program for Bridge Paint Performance Warranties and CPM Performance Warranties, eliminate warranties on One Course HMA Overlay Projects (60/year), revise warranty requirement thresholds for pavement products and corrective action fixes, and evaluate the appropriate bond value for the projects to protect against what's at risk.

Long Term Considerations – Mark Chaput

Continue to explore bonding/insurance alternatives (i.e., Florida DOT has warranties on projects, do not have a warranty bond but still hold the contractor accountable during that warranty period), evaluate current warranty requirements, determine what the future warranty program should look like, collective recognition between MDOT and the industry that we are engaging in a commitment to quality with CQP with an evolution of our specs.

Commissioner Jung commented that he doesn't think we are building roads as well today as we were 20 years ago and there are a lot of factors involved in that. The industry needs to accept some responsibility for this. While driving the roads himself, the overlays are peeling and concrete roads that should be lasting 15-20 years are lasting half as long. There are a lot of great contractors in this state but they are under financial pressure. There should be feedback from contractors as to the specifications that go into the job, but MDOT can't in any way pass off its responsibility for good specs and good construction practices that assure that roads live a long time. MDOT is your customer—not your partner. Industry serves MDOT and MDOT serves the people of the state. MDOT needs to be focused on writing good specs that live a long time, and making sure that compaction and other things are in place—this is where the checks and balances occur. He sympathizes with the burdens that the warranties are creating, however if we had better specs and better inspection by MDOT employees (not engineers of the contractors), this would eliminate the need for warranties and other concerns down the road.

Regarding paradigm shifts, Commissioner Atkinson asked for an example of “tougher specifications” and what it means.

Mr. DeGraaf replied using the example of aggregate gradation control. Suppliers of aggregate would manufacture it in a pit and produce a stockpile of material. The department would come and test then accept the material that was in the pile. That pile was then shipped to the project, produced into asphalt or concrete, and placed into service. There was no other test for gradation put on that material throughout its other handling and as we handle material, we can mess it up—break it down, segregate it, make it inferior by the way we handle it. What we are doing now in both industries is currently moving to an area where we have figured out that by controlling our processes to keep that material as good as it was the day it was made, throughout our handling of it, we can make our product much more consistent, uniform, and we can meet tougher specifications by controlling that material. It means we have to have more people testing, watching, and trained to handle the material; but in the long-run it makes our operations and pavements better. Specifications now have extra requirements, extra testing, extra control requirements that weren't there before. It gives us a better tool to control our work and this is going into all projects now.

Mr. Johnson gave another example using pavement markings. We use to trek behind the pavement truck making sure that the paint quantity line thickness was right. Now we go back and take a statistical approach to look at the retro-reflectivity of that line to assure that we are getting the product that we wanted. It's those types of improvements to our specs that we think are going to get us to that next level of quality.

Mr. Chaput added, referring to Mr. DeGraaf's reply and the consistency of the material, the more variable the material is the more susceptible it is to act differently when it gets out into the

roadway dealing with temperature conditions. We have tightened up our tolerances—instead of having something that was plus or minus 5% it may be now plus or minus 3%. So we are requiring the contractors to build this material to a more consistent level and that will really contribute to long-term quality of that product.

Commissioner Atkinson asked, when talking about quality characteristics and specification developments being statistically based, and new controls being used, those are examples of what she wanted.

Mr. Chaput replied yes. The new controls are things that the contractors are building into those plans to ensure that that variability is tighter.

Commissioner Jung commented that you have tighter specs but often times you have tighter specs on a poor specification. What you're doing in many cases is reducing the number of material suppliers that can bid on the project. You should definitely have minimal specs but sometimes by tightening the variance and coming up with some complicated mixes, you're not serving the public nor are you helping to make sure that a lot of people are in the game and you've got good competition.

Commissioner Scalici asked, when materials fail, if the material supplier offered a warranty.

Mr. DeGraaf replied that there are some materials that you can have a supplier provide a material warranty on—sometimes that's specified in the contract. As a contractor, you bid the work so you have to provide the owner with a warranty. This is not largely done.

Mr. Chaput gave an example using cake baking. You've got a recipe and it may not be of any value to warranty the flour because you can't determine if that's the failing—it's really how it's all put together and that's really the control of the contractor in how they're running that plant and how they're mixing things together. It may be tough to have any one element of that product be determined as what's wrong.

Commissioner Scalici asked if the flour in the cake fails and we know it's the flour that failed, shouldn't someone be held accountable for it.

Mr. DeGraaf replied that it may not be the flour. We can take great products and screw them up as we put them together; and then we'll have problems. Or, we can take inferior products and do them well and probably have acceptable performance. The thing that we have to tie together is the process with the materials.

Commissioner Scalici, using a bowling analogy, asked if we are pro bowlers or are we still amateurs.

Mr. DeGraaf replied that we are becoming pro bowlers. We are not there yet but have made significant strides in the last 10 years. A little bit of the reason we have made strides is the warranty program. It forced people to pay attention to things they didn't think was their problem to begin with. The hands-off attitude is no longer there. People are now asking how they can do things better.

Commissioner Atkinson asked what the databases they rely on give them in terms of measuring lifecycle. One of the problems she's wrestling with on this inconclusivity of pavement issue is that the lifecycle of the sub-materials is shorter or longer than other materials.

Mr. Kennedy replied that it is not just a warranty database; we have a pavement management section that looks at all of our pavements and is evaluating the life of all the pavements as part of the lifecycle process for preparing some of the long-term fixes. They are also looking at the fixed life we're getting out of various fixes and updating those curves. For our evaluation, they specifically examine warranty projects and non-warranty projects for the same fixes and analyze the performance of those pavements—this is where they were determining that we were not getting any longer life out of the warranty versus the non-warranty pavements.

Mr. Chaput added that there are things we're doing—monitoring lifecycle costs, monitoring the evolution of our specs—all of that is adding quality to our products. What we're determining in this evaluation is that warranties aren't adding anything more. He doesn't want this determination to indicate that what they are doing on lifecycles is not working and what they are doing with their specs is not working. All we're saying is that we have not confirmed that adding a warranty on top of all that is doing anything more—that's the inconclusiveness.

Commissioner Atkinson clarified his statement for her understanding: "...adding a warranty on top of 'specifications and lifecycle monitoring' as far as they can tell has not added to the life of the road".

Mr. Chaput replied yes. We are getting benefits from our lifecycle analysis; we're getting benefits from evolving our specs. All of that is improving quality and adding life, but additionally adding the warranty isn't adding to that.

Commissioner Atkinson stated that it's this conclusion that she's still trying to understand and why she's asking what kinds of lifecycle data they were using. If you put down concrete at the time you tell the contractor that's what you want, how long did they both reasonably expect the concrete to last as compared to how long the warranty period is or when it actually fails—how do you know? If you take that back and say we want you to use ground up tires and the lifecycle we expect out of that is X and the warranty we want is XX, how long do you have to live in order to find out when it reasonably fails?

Mr. Chaput replied that some of the things they struggle with are, when they're building 20 and 25 year pavements, it takes 20 or 25 years to monitor success. What they try to do is determine what happens in year 2, 3 or 4 that may give us an indication that it's not going to last that 25. This is where we feel the protection against catastrophic failure is going to happen within the first 2, 3 or 5 years for those products that we're placing those warranties on.

Mr. Kennedy added that for this comparison we're trying to compare apples to apples so we're looking at projects that are similar fixes—one has a warranty, the other doesn't. We're not looking at one that had "this type" of material and no warranty, and this one had a warranty but "that type" of material, etc.

Commissioner Atkinson commented that the only reason she used those two examples was that it seems to be some absolute yardsticks as between one material and another. When you say 5 years out, 10 years out, you begin to feel like you're not going to get catastrophic failure. With some materials after being 3 years out and other materials it might be 10. She then commented, regarding the handout titled "Summary of State Warranty Evaluations/Survey Responses" (attachment 5D), that Indiana was not one of the states with a legislatively mandated warranty program and their DOT had total governmental immunity for liability for its roads, therefore two of the major preferences on quality don't exist. Subsequently, the handout states that "Indiana HMA warranties have accomplished the initial goals of...DOT and HMA...providing smoother and safer pavements with fewer defects over a longer period of time, which reduces delays and congestion. ...the economic benefits of warranted pavements are significant".

Mr. Chaput replied that that is what Indiana reported to us. You can also see that Indiana has 35 warranties total, so if this was true, why wouldn't they be doing it on everything? These are things we just don't know yet.

Mr. Kennedy added that some of those 35 are not CPM fixes.

Commissioner Jung, regarding legislative mandate, asked if we have any flexibility here or is it all legislatively determined.

Mr. Chaput replied that we do have some flexibility. If you read the language, they talk about putting warranties in place where possible. He thinks there is some subjectivity for us on application and this cost effectiveness evaluation we made is going to help us decide. This is something we need to investigate with the legislature to see how much flexibility we really have. We've been doing a pretty aggressive approach, with the numbers, compared to other states. If a more appropriate application was provided where we had some decision flexibility within the law, we may have that and just haven't exercised it yet.

Commissioner Jung commented that he would encourage the department to use their best judgment as long as they are not getting sideways with the law. It sounds like they do have some leeway to do what they think is right, predicated on their findings.

Chair Wahby asked, when you design a road, if you have a life expectancy that you design the road around.

Mr. Chaput replied yes.

Chair Wahby asked what the life expectancy is when they design.

Mr. Chaput replied that it depends. We have our whole mix-of-fix approach; when we do our reconstructs and total replacements we are looking for 20-25 years. On some of our CPM jobs we may only be looking for 5-7 years at a ride quality factor we're approaching—looking to hold it together until we can get in there and do a more substantial product. A lot of that has to do with the amount dollars we have as an overall program. As our program funding is in jeopardy, our ability to do the right work and to do significant work on a majority of our system gets reduced over time.

Chair Wahby asked, regarding the majority of these warranties we have in action right now, if very few of those were new roads.

Mr. Chaput replied that very few are new roads because we've built very few new roads.

Chair Wahby asked, for instance if you're going to design, build and warranty a road, what would you warranty it for—what would be the expectation.

Mr. Chaput replied that part of it would entail the products that are out there—what are the surety companies willing to bond for. We are hearing, with the financial climate, that they may not even be willing to warranty for 5 years. We can say we want a 25 year warranty, but if that product is not available on the market we won't get it.

Mr. Johnson added that as you start stepping out into longer term warranties, you start going into the realm of public private partnerships where if I ask a contractor to build a road and warranty it for 20 years, I'm going to give him the means to maintain that road over that time period so he has control over whether he seals joints at a certain time or that he fixes cracks at a certain time, then he can tell me, yes, that road is going to last for 25 years.

Commissioner Scalici asked if “warranty” is simply a bond or insurance policy that says that an insurance company will pay the bill to repair the road if it fails.

Mr. Chaput replied yes; the other thing is that the warranty bond that we get is not assurance against product failure. This is a document that says if this contractor goes bankrupt the bonding company will step in and build that work. If we build up our relationships and our contractors continue to be responsive (which they are to the tune of \$565,000 a year in corrective action), they are being responsive. Every bond that we've purchased has never had to be cashed in.

Commissioner Jung, regarding certification, asked if we could write more rigorous standards for MDOT's certification that would essentially say that MDOT has the discretion to de-certify a contractor.

Mr. Chaput replied absolutely; that is part of our pre-qualification process. We are looking in our CQP efforts to link those contractor certifications into our pre-qualification. That's more of a long-term goal.

Commissioner Jung added that part of the certification would be that if there is a defect in materials or workmanship, you make good on it; and if you don't have a track record of making good on that, then you lose your certification.

Mr. Chaput replied that that is what they heard back from Florida. They do not have a warranty bond in place but they do have a warranty time period. If a contractor fails to perform corrective action, they lose their bidding rights and they're out of business.

Commissioner Jung commented that, to him, it makes more sense than this bonding requirement in the form of warranty requirements as long as MDOT has that hammer to show that they want to deal with good-faith contractors.

Mr. Chaput added that one thing to remember is that if we don't put a warranty bond in place and we still have that warranty responsibility for those contractors, the surety companies are still going to look at that as a liability. That will increase their performance bond costs.

Commissioner Jung commented that there is probably a line to walk there where you can get what you want without jeopardizing the financial health or the ability of the contractors to get work.

Mr. Chaput added that additional meetings with the surety companies to talk about the products they have and how we may utilize those tools which may give us some flexibility to do things a little differently.

Commissioner Scalici, regarding old roads versus new roads, asked if there were any engineering studies that say if we go in and rip this road out and put a new foundation over the top of where the old road was, is there any advantage or disadvantage to that—is there any more of a life expectancy.

Mr. Chaput replied probably no. What you'd end up getting down to is bare earth when you take the whole pavement section out. You'd deal with water tables and the type of soil that's there. Whether you start in a field where you take trees out and start new, or you take an old road in an existing roadbed, you're still getting down to soil conditions. Then you have to evaluate those soil conditions and then design accordingly to build that pavement on top.

Commissioner Scalici stated he just wanted clarification because there was reference made to no new roads being built, however in his mind, if you tear a road out and consider the explanation just given, that's a new road.

Mr. Chaput added that reconstructions are a new road if we go and build a brand new road in the same place we have an old road, but again, we are still doing less of those at the program level than we have in the past.

Mr. DeGraaf added that a lot of the work that's being done is not a total re-build. A lot of the work is taking what's there and trying to do a fix, leaving most of that in place in order to extend the life of that road.

Director Steudle interjected that the portion of road between Williamston and Okemos, and the portion coming in from Grand Rapids, are essentially new roads—they've been taken all the way down to dirt and built back up again—a full reconstruction that's designed for a 20-25 year lifespan. To clarify something that people may tend to forget, just because it's got 25 years doesn't mean that we walk away and don't do anything to it for the next 25 years. We're going to be back to do preventive maintenance all the way through the life of that 25 years and hopefully extend that 25 years to 35 years.

Commissioner Atkinson, looking at the "Recommendations for MDOT Warranty Program", stated that those will need more study by her to understand each one. However she asked, regarding the "Warranty Decision Tree" handout (attachment 3B), if everything across the top is a "No" leading to the decision to "do not warranty", what else is there that doesn't include construction.

Mr. Chaput replied that there are safety projects and intersection work. When you look at the full program with our signs and signals, there is a lot of other work that's not just pavement.

Commissioner Atkinson suggested that the statement located at the bottom of that page "project should include a warranty unless the project specifics justify not having a warranty" be included in the recommendations for the program.

Mr. Chaput agreed that that is a great point and ties in with what Commissioner Jung was saying regarding looking at the legislation to see what the real requirement is for applying warranties and the flexibilities we have.

Commissioner Atkinson stated that what she likes about the statement is that it is a philosophy in favor of warranties because we recognize that they have, in our state, produced better roads and they work as an incentive.

Mr. Chaput replied that the reason why that statement is in the decision tree is because we have that legislative mandate and that we are required to apply warranties where possible. If we worked with the legislature and had more flexibility on appropriate application, that language would change a little bit and it wouldn't say you always should have them, it would say you really need to look at the circumstances and make sure they're appropriately applied, if you apply them.

Commissioner Atkinson commented that they have some philosophical differences on that and added that she thinks it should say the project must include a warranty unless the specifics justify otherwise. That gets the engineering and contractor judgment into a process that isn't stuck in 1997 or 2010. That is a statement of warranty programs that she could get behind.

Mr. Chaput stated that we also don't want to apply warranties just to apply warranties. If they're not cost effective, don't reduce lifecycle costs, don't add quality and we're going to pay out all that money, we need to understand that a little bit more completely before we say we shouldn't do any warranties—we're not here to make that proposal.

Commissioner Atkinson commented that it's hard to measure cost effectiveness because lifetimes are pretty tough. What you've brought out today is the full concept that the warranty program itself functions in a set of ways that maybe don't figure into your cost assessment. The corrective action summary (slide 16 within the presentation) was very interesting but she really would want to know a lot more. She does not like averages because in her experience they at least get your attention and give you idea of the territory, but they can really lie a lot and cause you to miss things. She'd like to know more about specifics rather than averages.

Chair Wahby commended the panel on a job well done.

Mr. Chaput asked for some guidance on where to go from here. He doesn't expect to get that today but it would help them understand what their next steps are and the expectations of the Commission on this issue.

Director Steudle suggested that there be some conversation between the Commissioners. This was intended to present some initial information. Now it's best to think about it, contemplate it, talk about it amongst each other then let's figure out a time to come back together.

Chair Wahby stated he feels they need some more input from just the Commission right now.

Commissioner Atkinson commented that the warranty questions sent to them in May were very helpful in getting some orientation to where they'd be today.

Director Steudle responded that that was the intent.

Commissioner Atkinson suggested that there be another set of questions now that they have this presented information—what more do you need to know, what other analyses go into this project, where do you want us to go next.

Chair Wahby expressed the desire to have a discussion between just the Commissioners, Director Steudle, Greg Johnson and the others from MDOT to figure out what they (the Commission) wants to see next.

Mr. Isom cautioned for the necessity to have it as an open meeting if there will be a quorum.

Chair Wahby stressed that everyone was welcome to stay and asked each Commissioner if they were satisfied with the explanations that the department and industry have given, or if they had any other concerns.

Commissioner Jung stated he was not satisfied that we are achieving the quality of roads that we need to have. There are a lot of other things that enter into it besides warranties. As it pertains to warranties, in his experience it's hard to delegate gray areas and we've learned today that this is a pretty gray area. One thing not talked about was the difficulty of assessing a warranty. Contractors could say that when they designed the road you didn't tell me that you were going to have 50 overweight trucks go over it and you didn't tell me you were going to build a factory. So it's kind of tough to apply these warranties and there's a lot of judgment that needs to be applied as to when and where they are applied. This makes it tough as a Commission to give a mandate or policy statement to MDOT saying you need to do warranties, or you can't do warranties. What's appropriate is to give MDOT as much flexibility as they feel they can take to apply these on a case by case basis.

Chair Wahby commented that years ago when we first started talking about warranties, we had discussion with some of the contractors that if you expect us to warrant a road and expect us to build it to last 10, 15 or 20 years, then we want to have something to say about how the road is built. There's got to be input from the guy building the road because you're holding him responsible for it.

Commissioner Jung commented that if you're going to hold them responsible like that, you've got a good point. Because they've got profit pressures, from a practical matter they will come in and say, well, if you want this road to live 15 years, you have to guarantee it and then they say, okay then you ought to let us write the specs. When the road doesn't live that long they say

we're just going to spec or that the road wasn't intended as used or wasn't properly maintained by MDOT. It's pretty problematic which is why he's old fashioned that way. He thinks MDOT should write tight specs. We've been building roads in this country for over 100 years and we know what works. MDOT has this responsibility. We need to make sure that we inspect to make sure that the specs are adhered to, construction workmanship and materials. That's how we were doing it 20 years ago and we could make a strong case that we had better roads then than we have now.

Mr. Chaput commented that one of the things that we're learning is in getting the contractors involved in helping us write the specs they are sharing their lessons learned and expertise on building the projects, the materials they're using and how they're working their prices.

Commissioner Jung added that that feedback loop is very important—he supports this. However the point he's making is that it's MDOT's responsibility; there shouldn't be divided responsibility. He'd hate to see MDOT say, well the contractor said this would work—you need to listen to them but you need to continue to use the best judgment and experienced you've had.

Mr. Johnson commented that we are never going to get to that point. As long as there is an MDOT, we are the bottom line responsible party for the performance of our roadways. We partner and take input from the industry because they can bring good ideas to the table.

Chair Wahby asked, regarding the public private partnerships, how warranties were going to work in this type of instance.

Director Steudle responded that under that type of scenario, all of that goes with whoever the concessionaire is. If the concessionaire is Company XYZ from Michigan, Indiana, Ohio that come together to build this and the concession contract says we want you to design this, build it, finance it and operate it for a set number of years and maintain it, that's their responsibility. If the concession contract goes for 20 years and our turn back requirements at the end of the contract says the road will be in a particular condition (this type of life left, etc.), then it's up to the concessionaire to meet the specs before it's turned back in. What will drive this is what's in the operations manual.

Chair Wahby asked if this would be backed up with a performance bond.

Director Steudle replied that it wouldn't be a performance bond and there are a couple different ways that those work. If it is a toll structure where there's revenue coming in, they basically don't get the revenue—if they don't meet what's in that operations manual, they don't get the revenue for that period whether it's a month, week, day or a year. If it's an availability payment which says we will give you so many dollars per year for the next number of years and here's what you have to maintain it to, if they don't meet those thresholds they withhold the payment.

Chair Wahby commented that that's a toll road with revenue to it; not everything we're going to be doing is a toll road.

Director Steudle replied correct. The other aspect of that is if you do a contract that says we're going to pay you a certain amount of money for this concession period (say 20 years) and you tell us what that minimum number we have to pay you per year is for that 20 years—and by the

way you have to meet these performance requirements (operations manual), and if you don't meet them we are going to keep your payment.

Chair Wahby surmised that the "hammer" would be not paying them everything up front, but paying them over a course of years.

Director Steudle replied yes. What these types of projects enable you to do is take a huge capital project and advance it much quicker and pay for it over a number of years with an operational standard that says it must look like this and if it doesn't, you're not going to get paid.

Commissioner Atkinson asked if this was essentially the Florida program where it says they are held responsible for the warranty period.

Director Steudle replied no. In the Florida program that's a regular construction project. In this particular case it would be a yearly payment that you are making to that concessionaire—it's almost like a payment on a bond.

Mr. Chaput added that the contractor paid for the whole thing up front at his cost, but as he's receiving those payments, he starts to fail on those operational requirements and you need to take the road back, he's out all the money he paid out up front.

Director Steudle added that there are a couple of instances where that happened in Virginia—the concession contractor, engineer and financier all came together and the financing went belly-up—it didn't work or generate enough money. The state of Virginia got that whole road back. They didn't take on any of the debt, any of the equity—that stayed with the private equity firms up front.

Commissioner Scalici asked if we currently have roads like that.

Director Steudle replied no. This is the current legislation being debated right now about public private partnerships. Everything we've just talked about in the last 10 minutes we can't do.

Chair Wahby stated that when you talk about the warranties adding costs, public private partnerships, etc., all costs are going to be in that job.

Director Steudle replied that there is nothing free.

Mr. Johnson added that you're incentivising the guy who thinks he can build a better project at less cost.

Chair Wahby asked what, specifically, they wanted direction on.

Mr. Chaput replied that ultimately they wanted support in moving forward in tackling the short-term considerations and working those into the current warranty program as it is, recognizing we're not ready to change yet. Also, some guidance on the long-term considerations recognizing these are going to take investigation, looking nationally for different models that are out there, continuing to meet with the surety companies and understanding what tools and options are available.

Chair Wahby surmised that what he's saying is that if we all agree, we'd tell you to go ahead and pursue these things then you'd come back to us with a meeting down the road once you have your information all put together. That would probably be the best way to handle it unless there were any objections from the other Commissioners; no objections were given. He then informed the department to proceed on that basis.

Mr. Chaput noted that Commissioner Atkinson had asked for a breakdown on some of the corrective action items and therefore suggested that if there were other analyses they want the department to perform and provide to them, to think about them and submit their request.

Mr. Johnson stated they would provide to all the Commissioners the complete FHWA analysis referred to in their proposal.

Director Steudle suggested that all information be provided to Mr. Kelley and he would forward it to the Commissioners.

Chair Wahby noted that what came from this is the question of whether we need to justify the warranty for cost; that information needs to be expanded.

Commissioner Atkinson asked that two things be added to the "wish list": 1) under short-term considerations you say "revise the warranty requirement thresholds"—I'd like to know what those are.

Mr. Chaput replied that, in their discussion with FHWA, they are not fully comfortable that the level of deterioration that we're monitoring (at which point it kicks in the corrective action) is at the appropriate level. For example, they want us to re-evaluate whether less cracks are really the threshold where we need to do work. On the other end of that is whether the corrective action we do perform is the proper fix to make up for that.

Commissioner Atkinson stated that they frequently get a report from the Asset Management Council that includes pictures and lists criteria. She asked if it were fair to assume that they are talking about the same thresholds.

Mr. Johnson replied that those are different thresholds they are looking at. What we would look at is if we paved a mile of roadway, and in a 1/10 of a mile segment there were 10 cracks, that may trigger us to go in and do corrective action on that segment.

Mr. Chaput added that the thresholds we would be looking at are thresholds that are indicators that may affect long-term data.

Commissioner Atkinson asked if it were written down someplace where they can be looked at.

Mr. Chaput replied yes.

Commissioner Atkinson continued her "wish list": 2) under long-term considerations you say "continue to explore bonding and insurance alternatives"—it would be helpful to have a description of the kinds of alternatives (present and imaginative) that you're talking about.

ADJOURNMENT

There being no further business to come before the Commission, Chair Wahby declared the workshop adjourned at 12:17 p.m.

Frank E. Kelley
Commission Advisor