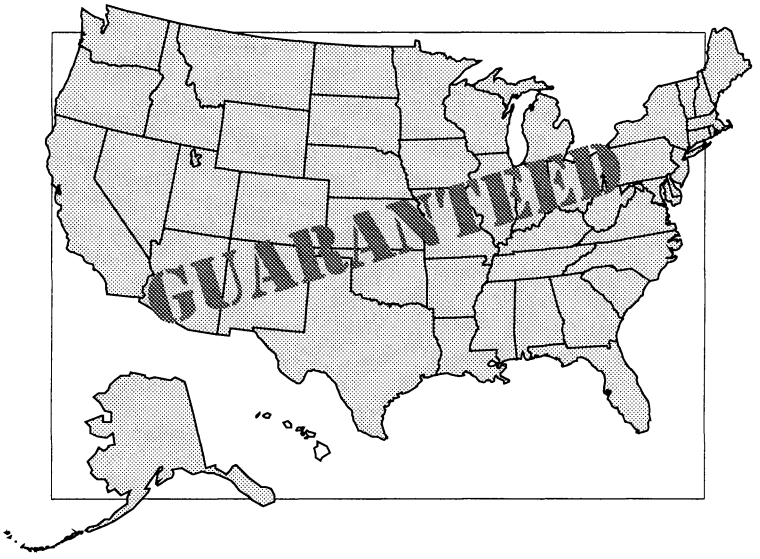
TECHNICAL
ASSISTANCE REPORT

STATE OF THE PRACTICE OF WARRANTY SPECIFICATIONS IN THE UNITED STATES



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Abstract

Warranty contracts (in which the contractor guarantees the product and assumes responsibility for repair and maintenance for a designated period) are either being used or being critically examined for use by many states. In years past, the greatest use of warranties was in areas such as bridge painting, pavement markings, and freeway management. More recently, California, Michigan, and Wisconsin have let warranty contracts for flexible rehabilitation paving projects. Warranty contracts also have been developed for surface treatments and micro-surfacing projects. With the publication of the FHWA Final rule on Warranty Clauses (April 19, 1996), which allows states to develop warranty contracts for many items, more states will take a critical look at the feasibility of warranty contracts. The FHWA and states that have successfully developed warranty contracts, such as Wisconsin, suggest developing these contracts with the input of industry in order to minimize fears of inadequate design, bonding problems, increased costs, etc. Several aspects of Wisconsin's recent experience with warranty contracts for asphalt pavement are discussed.

TECHNICAL ASSISTANCE REPORT

STATE OF THE PRACTICE OF WARRANTY SPECIFICATIONS IN THE UNITED STATES

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(The opinions, findings, and conclusions expressed in this report are those of the author and not necessarily those of the sponsoring agencies.)

Virginia Transportation Research Council
(A Cooperative Organization Sponsored Jointly by the Virginia Department of Transportation and the University of Virginia)
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SUMMARY

Warranty contracts (in which the contractor guarantees the product and assumes responsibility for repair and maintenance for a designated period) are either being used or being critically examined for use by many states. In years past, the greatest use of warranties was in areas such as bridge painting, pavement markings, and freeway management. More recently, California, Michigan, and Wisconsin have let warranty contracts for flexible rehabilitation paving projects. Warranty contracts also have been developed for surface treatments and micro-surfacing projects. With the publication of the FHWA Final Rule on Warranty Clauses (April 19, 1996), which allows states to develop warranty contracts for many items, more states will take a critical look at the feasibility of warranty contracts. The FHWA and states that have successfully developed warranty contracts, such as Wisconsin, suggest developing these contracts with the input of industry to minimize fears of inadequate design, bonding problems, increased costs, etc. Several aspects of Wisconsin's recent experience with warranty contracts for asphalt pavement are discussed.

STATE OF THE PRACTICE OF WARRANTY SPECIFICATIONS IN THE UNITED STATES

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INTRODUCTION

Before discussing warranty contracts, a short background on the evolution of End Result Specifications (ERS) and the subsequent movement toward warranties may be useful. The first major use of ERS was in the AASHO Road Test in the late 1950's. Since this initial use, the popularity of this type of specification has increased dramatically, and the evolution of ERS has been very positive. An AASHTO survey conducted in 1992 found that all but ten states were using or planning to use ERS. Since then, the number of states that have no plans to use ERS has dropped to about a half-dozen. Between 40 and 45 states have either already implemented ERS or plan to.

The increased interest is not just in using ERS, but in developing better performance measures in ERS. For instance, the use of volumetric properties in asphalt mixes is rapidly replacing gradation as a primary specification requirement. A recently published Transportation Research Board report, *Development of Pavement Performance Measures in the Contract Equation*, which was the culmination of a national workshop on Performance-Related Specifications, indicates the importance of relating specifications to performance.[1] Another recent development in this area is NCHRP Study 9-7, *Field Procedures and Equipment to Implement SHRP Asphalt Specifications*. This study is gathering field data using SHRP field tests that will be valuable in establishing tolerances to be used in ERS for SHRP asphalt specifications.

The term ERS has generally been applied to acceptance of an end product, as opposed to an entire project, and the term has sometimes been misapplied. ERS has evolved in many states to the popular form of Quality Assurance in which the contractor is responsible for quality control. One of the reasons for this move has been the downsizing of state DOT's. With the reduction of state testing and inspection personnel, states have found that turning much of the testing over to the contractor/producer has helped reduce the state's manpower requirements. Another rationale is that the contractor/producer now has a greater knowledge of his product than he did several years ago and is better able to control his production than is an external agency.

WARRANTY CLAUSES

Evolution of Warranty Clauses

An alternative to simply turning the quality control over to the contractor is to use a warranty specification where the contractor "... guarantees the integrity of a product and assumes

the responsibility for the repair or replacement of deficiencies."[2] At the 1996 Annual Meeting of the Association of Asphalt Paving Technologists, Mr. John Volker of the Wisconsin DOT (WisDOT), said that, in his opinion, a QA specification is a first step toward a warranty specification and that the development of the warranty specification was a natural evolution of the QA specification. While the use of warranties has gained widespread acceptance in Europe, the U.S. has been slow to initiate them. Previously, the greatest use of warranties was in non-pavement areas like bridge painting and freeway management.[1,2] One of the obstacles to the general use of warranties has been removed by the FHWA, which until just recently had not allowed federal highway funds to be used with warranties except under special conditions. However, the FHWA 1996 Warranty Final Rule allowing warranties under a wide application took effect on April 19, 1996. A copy of this Final Rule and a recently written FHWA Briefing, *Use of Warranty Clauses in Federal-Aid Highway Contracts*, are appended. Both of these documents refer to Special Experimental Project No. 14 (SEP 14) which contained warranties as one possible innovative contracting procedure. The success documented in SEP 14 was one reason that FHWA developed the final rule allowing warranties.

Factors Hindering Implementation

Some still fear that states are not prepared to use warranty clauses. One fear is that insufficient performance measures are available to measure deficiencies. Some contractors are afraid that bonding capacity may be difficult to achieve. The FHWA discussed these concerns in the Final Rule, and found them unpersuasive. WisDOT overcame these worries by actively involving the contracting industry in the development of their warranty specification. This apparently laid the groundwork for a successful implementation of this specification.

The 1994 workshop on *Development of Pavement Performance Measures in the Contract Equation* documented the use of a warranty specification[1] from data in FHWA SEP 14 *Innovative Contracting Activities.* Most of the applications at that time were in the areas of bridge painting and pavement markings. NCHRP Synthesis 195, *Use of Warranties in Road Construction*, presented a survey of states and Canadian Provinces conducted in 1993, finding that work items covered by warranty were similar to the SEP 14 report in type and scope of project.

In the last two years California has let pilot projects for surface treatment and asphalt concrete overlays and Michigan has let a "Pavement Performance Warranty" Special Provision which requires "... warranting the design and construction quality of the pavement." However, Wisconsin has used warranty specifications more extensively than other states for asphalt pavements and a summary of that state's experience is detailed below. Ontario has also developed warranty specifications for surface treatments and micro-surfacing.[3] Apparently, the use of warranty specifications for concrete pavements has not progressed as quickly as for

asphalt, possibly because the typical warranty period of three to five years is not long enough to determine the performance of rigid pavements. No updated summary of the state-of-the-practice of warranty specifications has been done.

One underlying supposition of using a warranty specification is that the contractor must have the freedom to make decisions on equipment and to some extent on materials to provide the level of performance required by the warranty. This means that the state does not exercise the acceptance or contractor quality control procedures of typical quality assurance specifications.

WISCONSIN'S EXPERIENCE WITH AN ASPHALT PAVEMENT WARRANTY SPECIFICATION

Wisconsin, a very active state in the area of Warranty Clauses, let three asphalt rehabilitation projects in 1995 and was sufficiently satisfied with the results that three more were let in 1996.[4,5] The 1995 projects were rehabilitation projects (asphalt concrete over granular base) that required a 5 year warranty, under a $300,000 bond. The DOT specified the location of the projects, the schedule for completion, the thickness of the pavement, and the type of base. The contractor was responsible for asphalt mixture design, materials and quality control. The 1995 warranty projects were on rural two-lane roadways with medium traffic volumes.[5] The conclusions from the 1995 projects were:[4]

- Indications are that a warranty specification for AC pavements can be successfully developed and used on highway construction contracts within the low bid environment.
- Early indications are that the specification has been successful in reducing WisDot's construction engineering costs, giving the contractor more project control and flexibility, and providing a quality pavement.
- Warranties clearly have the potential for giving DOT's another option for administering construction projects and another methodology for coping with rising costs, staffing shortages, and loss of experienced personnel.

Performance Factors

Eight performance factors were initially identified as important to the highway user. Because some of these were beyond the contractor's control and others either could not be measured accurately or threshold values for them could not be established, the performance factors used were rutting, friction, and longevity.

To get an assessment of these three performance factors, 12 distress indicators were selected from the DOT's Pavement Management System (PMS). These are:

- Alligator Cracking
- Block Cracking
- Edge Raveling
- Flushing
- Longitudinal Cracking
- Longitudinal Distortion
- Rutting
- Surface Raveling
- Transverse Cracking
- Transverse Distortion
- Patching
- Disintegrated Areas

Using the PMS, threshold values were established for each distress indicator. One of the reasons that the WisDOT warrantee specification has worked so well is apparently related to their extensive and thorough PMS. Based on the experience of the 1995 projects the threshold values were modified for 1996. The 1996 Special Provisions added a requirement that one crack sealing operation be done by the contractor before the pavement is 4 years old. The 1996 WisDOT Warranty Special Provision is included in the Appendix.

Pavement Performance Surveys

WisDOT's Pavement Distress Manual is the basis for measuring distress. The contractor may monitor the pavement during the warranty period using nondestructive procedures. The surveys evaluating performance are conducted between April 15 and May 15 as a part of the WisDOT Annual Pavement Management program, using a survey procedure based on both random and fixed intervals such that 20 percent of the pavement is surveyed annually.

If any of the threshold values are met or exceeded and the contractor agrees to the validity of the pavement distress survey, the contractor will remedy the distress using mutually agreeable procedures. If any of the threshold levels are met or exceeded and the contractor does not agree to the validity of the pavement distress survey, the Conflict Resolution Team will resolve the dispute within 30 days. Once a threshold level is met or exceeded the specified remedial action must be taken by the contractor. The remedial action is what is warranted. If anytime during the warranty period, 30 percent or more of the project segments (a segment is a 0.1 mile section of

pavement) require or have required remedial action, the entire project will receive remedial action.

Conflict Resolution Team

A Conflict Resolution Team is formed for each contract. The team has final authority to make decisions if conflict occurs. Each team consists of two contractor representatives, two DOT representatives, and a third party mutually agreed upon by both the DOT and the contractor. The cost of the third party is equally shared between the DOT and the contractor.

Warranty Work

During the warranty period the remedial work is performed at no cost to the DOT and is based on the results of the pavement distress surveys. The remedial work to be performed and the materials to be used are decided jointly by the DOT and the contractor. If an impasse develops, the Conflict Resolution Team renders a final decision by majority vote.

The contractor will not be held responsible for distresses caused by factors beyond his control. Two areas where this can have a considerable bearing are in the case of alligator cracking and rutting. In these two cases, if the pavement is of the correct thickness and the asphalt cement is of the proper consistency, then the contractor may be relieved of responsibility if the subgrade is deficient or the accumulated axle loadings are 50% higher than the projected five-year axle loadings.[4]

Warranty Bonds

Either of two types of warranty bonds are required. One is a single 5-year warranty bond that will be in effect for the entire warranty period. The other is the normal contract bond for the project that will remain in effect for one year beyond the completion of the project and will be followed with a two year renewable, non-cumulative warranty bond for two consecutive terms.

Cost Analysis

The costs for the three 1995 warranty projects were $22.14/metric ton ($24.40/ton), $25.79/metric ton ($28.35/ton), and $20.60/metric ton ($22.71/ton). Although the costs are difficult to compare to typical costs for the same product, they compare favorably to statewide costs for 1995.[3]

Contractor's Opinion

WisDOT interviews with contractors who had the 1995 contracts revealed that they assumed in their bids that some maintenance would be necessary. This is one reason for adding one crack sealing operation. Contractors are confident that WisDOT life cycle costs will be reduced by warranties. Contractors have found that bonding is available and the costs of the bonds are reasonable.[5]

REFERENCES

1. *Development of Pavement Performance Measures in the Contract Equation.* (1995) Summary of Workshop Proceedings, Transportation Research Board.

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3. Kazmierowski, T. J., and Bradbury, A. (1997) *Implementation of Micro-Surfacing Warranty Specifications in Canada.* Offered for Presentation at the 1997 Annual Transportation Research Board Meeting.

4. Shober, S. F., Whited, G. C. and McMullen, K. W. (1997) *Asphalt Pavement Warranties (Draft).* Wisconsin Department of Transportation.

5. *Test & Evaluation Project No. TE 14 Innovative Contracting Practices.* (1996) Wisconsin Department of Transportation's Asphaltic Pavement Warranties, Progress Report No. 1.

APPENDICES

Federal Highway Administration

23 CFR Part 635

[FHWA Docket 95-21]
RIN 2125-AD61

General Material Requirements; Warranty Clauses

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Final rule.

SUMMARY: The FHWA is adopting, as final, a current interim final rule that revises the use of guaranty and warranty clauses on Federal-aid highway construction contracts. This final rule permits greater use of warranties in Federal-aid highway construction contracts within prescribed limits.

EFFECTIVE DATE: August 25, 1995.

FOR FURTHER INFORMATION CONTACT: Mr. James Daves, Office of Engineering, (202) 366-0355 or Mr. Wilbert Baccus, Office of the Chief Counsel, (202) 366-0780, Federal Highway Administration, 400 Seventh Street, SW., Washington, DC 20590.

SUPPLEMENTARY INFORMATION: On August 25, 1995, the FHWA published in the Federal Register (60 FR 44271) an interim final rule along with a request for comments, revising its regulation regarding warranty clauses on Federal-aid highway construction contracts. That action permitted the greater use of warranties in Federal-aid highway construction contracts within prescribed limits.

Discussion of Comments

The public comment period for the interim final rule closed on October 24, 1995. The FHWA received 20 written responses from 19 organizations including 11 associations, six State Departments of Transportation (DOTs), and two private companies. The responses concerning this interim final rule are available for review at the Federal Highway Administration, Public Docket Room 4232, Office of the Chief Counsel, 400 Seventh Street, SW., Washington, DC 20590.

Of the 20 responses received, 13 comments did not support the interim final rule and seven did support the interim final rule. The significant comments are summarized in the following discussion.

Requiring Warranties

An association responding to the interim final rule stated that by revising its regulation the FHWA was requiring the use of warranty clauses on Federal-aid highway construction contracts. This statement, however, is inaccurate. The FHWA removed its regulation prohibiting the use of warranty clauses, but left it to the State DOTs to decide when or if they will use warranty clauses. If warranty clauses are used on Federal-aid highway construction contracts, it will be because the State DOT chooses to use them, with FHWA concurrence.

Bonding Capacity

Four associations, two private companies and one DOT commented on the effect of warranty provisions on bonding capacity, particularly on smaller contractors. They noted that requiring warranties of several years typically requires the contractor to provide a performance bond for that period of time. The size of the performance bond could be quite large and, particularly in the case of smaller contractors, the effect on their overall bonding capacity could affect their ability to obtain work. The seven commenters argue that this would effectively stifle competition for contracts and ultimately increase the cost to the taxpayers. One commenter felt that the effect on smaller contractors violates the Regulatory Flexibility Act. Discussion of that comment is included in the following paragraphs, and later under the heading ``Regulatory Flexibility Act."

The FHWA believes that removing the restriction on warranty clauses will not stifle competition or negatively affect smaller contractors' overall bonding capacity and ability to obtain work. In the first place, experience to date has shown no negative effect on the bonding capacity of small businesses. State DOTs have been following their own procedures regarding the inclusion of warranties in non-NHS Federal-aid contracts since the passage of the Intermodal Surface Transportation Efficiency Act of 1991 (Pub. L. 102-240, 105 Stat. 1914). These non-NHS projects constitute approximately one-third of the FHWA's Federal-aid highway program, and have amounted to several billions of dollars worth of construction each fiscal year. The FHWA has not observed any problem with the bonding capacity of smaller contractors who perform work eligible for such warranties. This regulation allows the FHWA simply to extend the option to use such warranty clauses by the State DOTs on the remaining two-thirds of the program, and the FHWA does not believe that this added flexibility will be used to an extent or in such a way as to negatively impact the bonding capacity of small businesses.

Secondly, the warranties allowed by this regulation are limited to a specific construction product or feature. This regulation does not apply to design engineering or full project warranties. The FHWA believes that this fact will limit the warranties given and, in turn, the contractor's exposure.

Thirdly, the FHWA anticipates these warranties will be primarily applied to small specialty or experimental item contracts. As a result, some small businesses may benefit from the ability to offer warranties on specialty or experimental items, either included as one element of the contract or as the main element of the contract. When warranties are prohibited, such items are often limited to experimental item contracts because the contracting agent (State DOT) has no assurance of the item's effectiveness. By removing the restriction on such warranties, the FHWA

believes the smaller contractors may in fact have greater opportunity to enter the market with their experimental items
because they can be guaranteed by a warranty.

Finally, the FHWA believes that the concern over this regulation's effect on the bonding capacity of smaller contractors is overstated. These warranties are expected to be relatively short term--five years or less. Given the type of contracts involved (relatively short term and for a specific product or item), the FHWA expects that the bonding capacity of smaller contractors will not be adversely affected.

Since publication of the interim final rule, one State DOT has proposed a warranty contract provision which eliminates the need for a long term bond and, in turn, the criticism that warranties affect bonding capacity. In this State's proposal, a portion of the contractor's bid amount is retained and paid to the contractor on an annual cycle based on satisfactory performance of the item which has been warranted. Using such an approach, no long term bond is required
by the contractor. The FHWA sees this as a possible alternative to bonding warranties, which deserves monitoring to determine if it is effective.

Increased Flexibility

Six State DOTs (one DOT responded twice) responding to the interim final rule commented on the increased flexibility afforded to contracting agencies by the revision of the FHWA regulation. These commenters saw this as a positive change, and generally supported allowing contracting agencies to decide when to use warranty clauses within the framework of the revised regulation, with concurrence by the FHWA.

Design Liability

Four associations and one private company stated that they opposed the contractor being liable for the design of a project under the umbrella of a warranty. They felt that such design exposure was outside the control of the construction contractor and, therefore, inappropriate. The warranty regulation as revised by the FHWA states that the warranty provision shall be for a specific construction product or feature. There is no mention in the regulation of design being warranted, as these commenters assert. Furthermore, the warranty regulation states that the construction contractor will not be obligated for items over which the contractor has no control. A construction contractor does not typically have any control over the design of a project, therefore a warranty provision could not bind them to the project design.

Administrative Procedure Act

One association commenting on the interim final rule discussed the publication of an interim final rule as it relates to the Administrative Procedure Act (APA). That commenter criticized the FHWA's decision to waive the notice and comment requirements of the APA, 5 U.S.C. 553, and proceed directly to an interim final rule. The commenter stated that the interim final rule imposes ``significant new obligations on the States by granting the government the authority to mandate greater use of warranties on Federal-aid highway projects.'' In fact, the interim final rule relieves

a restriction and imposes no new obligation or requirement on the States. It merely enables the States to include warranty clauses in Federal-aid highway construction contracts if they find such clauses would be beneficial. Warranty clauses have been found to enhance the quality of highway construction projects, so proceeding to an interim final rule in this instance was in the public interest. Moreover, the FHWA did solicit comments on this rulemaking and is considering and responding to those comments to the same extent it would be in the case of a notice of proposed rulemaking.

Semiannual Regulatory Agenda

One association commenting on the interim final rule noted its objection to the FHWA's failure to publish this rulemaking in the DOT's Semiannual Regulatory Agenda (Agenda) prior to publication of the interim final rule. (The current rulemaking was published in the DOT's Semiannual Regulatory Agenda on November 28, 1995.) While the commenter is correct in noting that Executive Order 12866 and the Regulatory Flexibility Act (RFA) (5 U.S.C. 601-612) require the DOT to prepare a semiannual regulations agenda for publication in the Federal Register, neither the Executive Order nor the RFA prevent the FHWA from publishing a rulemaking document which has not previously been listed in the Agenda. Section 602(d) explicitly provides that the requirement to publish such an agenda does not preclude the agency from considering or acting on any matter not listed in such agenda.

Rulemaking Analyses and Notices

Executive Order 12866 (Regulatory Policies and Procedures) and DOT Regulatory Policies and Procedures

The FHWA has determined that this action is not a significant regulatory action within the meaning of Executive Order 12866 or significant within the meaning of Department of Transportation regulatory policies and procedures. The revisions would merely accommodate expanded use of warranty clauses on Federal-aid construction contracts. Therefore, it is anticipated that the economic impact of this rulemaking will be minimal and a full regulatory evaluation is not required.

This final rule makes no changes to the interim final rule and merely informs the public that the interim final rule remains unchanged. Therefore, the FHWA finds that good cause exists to dispense with the 30-day delayed effective date requirement under 5 U.S.C. 553(d).

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (Pub. L. 96-345, 5 U.S.C. 601-612), the FHWA has evaluated the effects of this rule on small entities. Based on the evaluation, the FHWA hereby certifies that this action will not have a significant economic impact on a substantial number of small entities. As stated above, the FHWA made this determination based on the fact that: (1) experience to date with non-NHS Federal-aid projects that allow the use of warranties has shown no negative effect on the bonding capacity of small businesses for non-

NHS Federal-aid projects; (2) some small businesses may benefit from the ability to enter the market with specialty or experimental items,
either included as one element of the contract or as the main element of the contract; and (3) given the type of contracts involved (relatively short term and for a specific product or item), the FHWA expects that the bonding capacity of smaller contractors will not experience any significant adverse effect.

Executive Order 12612 (Federalism Assessment)

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 12612 and it has been determined that this interim final rule does not have sufficient federalism implications to warrant the preparation of a separate Federalism assessment. Nothing in this document preempts any State law or regulation, and no new requirements or obligations are imposed on States or local governments by this action. Instead, this interim final rule provides States with additional discretion to determine for themselves whether to include warranty clauses in Federal-aid highway construction contracts for projects on the National Highway System.

Executive Order 12372 (Intergovernmental Review)

Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.Paperwork Reduction Act

This action does not contain a collection of information requirement for purposes of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501-3520.

National Environmental Policy Act

This rulemaking does not have any effect on the environment. It does not constitute a major action having a significant effect on the environment, and therefore does not require the preparation of an environmental impact statement pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.)

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 635

Government contracts, Grant programs--transportation, Highways and roads.

In consideration of the foregoing and under the authority of 23 U.S.C. 315, the interim final rule amending the authority for 23 CFR part 635 and revising Sec. 635.413 which was published at 60 FR 44271, August 25, 1995 is adopted as final without change.

Issued on: April 3, 1996.
Rodney E. Slater,
Federal Highway Administrator.
[FR Doc. 96-9558 Filed 4-18-96; 8:45 am]
BILLING CODE 4910-22-P

BRIEFING

USE OF WARRANTY CLAUSES IN FEDERAL-AID HIGHWAY CONTRACTS

BACKGROUND:

Prior to 1991, the FHWA had a longstanding policy that restricts the use of warranties on Federal-aid projects to electrical and mechanical equipment. The rationale for the restriction was that such contract requirements may indirectly result in Federal-aid funds participating in maintenance costs, and the use of Federal-aid funds for routine maintenance is prohibited by law.

The 1991 Highway Act, The Intermodal Surface Transportation Efficiency Act - referred to as ISTEA permitted a State to exempt itself from FHWA oversight for Federal-aid projects located off the National Highway System. For projects under these conditions, warranty clauses may be used in accordance with State procedures.

Under Special Experimental Project No. 14 (SEP 14), *Innovative Contracting Practices*, the FHWA has approved State proposed warranty concepts, on an experimental basis, with the objective of encouraging quality and contractor accountability without shifting the maintenance burden to the contractor.

On August 25, 1995, FHWA published an Interim Final Rule (IFR) for warranties for projects on the National Highway System. The IFR states that warranty provisions shall be for a specific construction product or feature. Routine maintenance items are still not eligible. The IFR also prohibits warranties for items not within the control of contractors.

The warranty Final Rule was published in the April 19th Federal Register. The August 25, 1995 interim final rulemaking drew twenty written responses from various agencies. FHWA did not believe that the responses were significant enough to amend the interim ruling and therefore the interim final rule remains unchanged.

TALKING POINTS:

* FHWA received twenty comments during the rulemaking process, seven of which supported the interim final rule. Many of the adverse comments discussed similar issues, including concerns about bonding capacity, restriction of competition, increased costs, design liability and others. In light of the comments received, FHWA does not consider any of these comments to be significant enough to amend the interim final rulemaking. The final rulemaking was published in the Federal Register on April 19, 1996.

* FHWA believes that warranties will help to prevent unnecessary maintenance and repair costs resulting from premature failures due to poor construction methods or quality of

materials.

* The use of warranties should benefit small or specialty contractors. Previously, some states were reluctant to try new products that did not have an adequate performance record. The warranty concept will allow the use of such products with the SHA receiving a specific product warranty for up to five years.

* Eleven states have evaluated the use of warranties under SEP 14. Of these, Michigan has been the forerunner:

  Michigan began using warranties on State-funded bridge painting contracts in 1990; and on a select number of Federal-aid projects, under SEP 14, beginning in 1991. Contracts have been let with 2-year painting warranty for a total of 15 Federal-aid bridges. Michigan has also used a warranty approach on two Federal-aid concrete pavement repair projects. Michigan reports favorable results with the use of warranty provisions to date.

* Other SHA's that have used warranty provisions under SEP 14 include:

  Missouri - 3-yr. warranty for two rubberized asphalt overlay projects

  Washington - 5 year warranty for bridge deck expansion joint system on the transition spans of the I-90 floating bridge across Lake Washington

  Montana - 3-4 year warranties for several pavement marking projects

  California - 3-5 year warranty on rubberized asphalt pavement projects

  Wisconsin - 5 year warranty for three hot mix asphalt projects

  Arizona - warranty for a freeway management system using design/build/warranty

  Indiana - 5 year warranty based on yearly evaluations of asphaltic concrete pavements

  Ohio - 2 year warranty on Ohio's Metro Freeway management system

  North Carolina - 4 year warranty for pavement marking

DRAFT #2
1/8/96

Asphaltic Pavement Over Granular Base, Warranted
900xx

A. Description. This work will consist of the construction of warranted asphaltic pavement in conformance with the lines and grades shown on the plans as directed by the engineer and as follows.

The contractor will be responsible for the asphaltic mixture(s), the pavement performance, and warranty work for the finished roadway for a period of five years following completion of the asphaltic pavement.

The contractor will establish the job mix formula (JMF) and select all materials to be used. Sections 401 through 414 of the Standard Specifications are deleted for this item of work.

Prior to construction, the contractor will provide the engineer with Quality Control Plan which will include the JMF, the method of developing the JMF, all JMF testing and a list of materials. At completion of the project, the contractor will provide a copy of all quality management data to the engineer.

The provisions of the warranty work will apply to all asphaltic mixtures placed as mainline pavement and integrally placed shoulders.

B. Warranty. Upon completion of the placement of all warranted asphaltic pavement, and opening of the warranted pavement to traffic, the combination of the contract bond with the necessary warranty bond(s) for the asphaltic pavement item will be in effect for the total five year warranty period. The bonding company is required to have an A.M. Best rating of "A-" or better and the contractor will provide proof of a five year bond commitment before execution of the contract.

The warranty bond(s) will be $_____ for the warranted asphaltic pavement. The bond(s) will insure the proper and prompt completion of required warranty work following completion of the pavement, including payments for all labor performed, equipment and materials used in accordance with this inspection.

The warranty bond(s) will be one of the following:

1. A single term 5 year warranty bond that will be in effect for the entire warranty period.

2. Acknowledgment that he duration of the contract bond for the project will remain in effect for a period of one year beyond the completion of the project and will

include warranty work as described in Section D. Warranty bonds extending beyond that period will be supplied by the contractor. The contractor will provide a two year renewable, non-cumulative warranty bond for two consecutive terms. Failure on behalf of the contractor or its surety to renew this warranty bond will result in a 20% payment of the face amount of the bond to the Department and the contractor will be considered in default.

All warranty work will be in accordance with Section E. At the end of the warranty period, the contractor will be released from further warranty work or responsibility, provided all previous warranty work has been completed.

C. Conflict Resolution Team. The Conflict Resolution Team may perform a survey of the warranted pavement as defined by this special provision and will have the final authority to make decision if conflict occurs. The team will consist of two contractor representatives, two Department (District & Central Office) representatives, and a third party mutually agreed upon by both the Department and the contractor. The cost of the third party will be equally shared between the Department and the contractor. The team members will be identified in writing prior to the start of paving. the team will receive the standard Department training given to pavement distress raters.

D. Warranty Work. During the warranty period the remedial work will be performed at no cost to the Department and will be based on the results of the pavement distress survey. Remedial work to be performed and materials to be used will be the joint decision of the contractor and the engineer. Should an impasse develop, the Conflict Resolution Team will render a final decision by a majority vote.

During the warranty period, the contractor may monitor the pavement in question using nondestructive procedures. All proposed remedial action(s) will be coordinated with the engineer.

Coring, milling or other destructive procedures may not be performed by the contractor, without prior consent of the engineer. The contractor will not be responsible for damages as a result of coring, milling or other destructive procedures conducted by the Department.

E. Pavement Distress Indicators, Thresholds, and Remedial Action. The Department's Pavement Surface Distress Survey Manual will be used as the basis for determining the distress types to consider for the warranty and the method for measuring distresses.

The pavement distress surveys will be conducted by dividing the highway system into nominal one-mile sections. A one-tenth mile segment in each mile will be evaluated for pavement distress. The segment evaluated will be from 0.3 to 0.4 miles from the start of the section. In addition, in each section, a random one-tenth mile segment will be surveyed. The random one-tenth mile segments will be determined by the Department each year.

Central Office DOT Pavement Research and Performance personnel will conduct the surveys annually. The surveys will be conducted between April 15 and May 15. The contractor will be advised of the survey schedule. the results will be made available to the district, central office, contractor and FHWA within 14 days after completion of the survey. If there is a dispute of the survey findings, written notification of the dispute will be made to the engineer by June 15.

If any of the threshold levels are met or exceeded and the contractor agrees to the validity of the pavement distress survey, the contractor will remedy the distress. If any of the threshold levels are met or exceeded and the contractor does not agree to the validity of the pavement distress survey results, the Conflict Resolution Team will resolve the dispute within 30 days.

Remedial action will be taken in all segments in the project where the threshold level is met or exceeded. If areas outside the survey segments are suspected of meeting or exceeding a threshold level, the Department will divide the entire project into 0.1 mile segments and conduct the distress survey in any, or all, segments to see if a threshold level has been met or exceeded. Remedial action will be taken in the same calendar year of the survey that indicated the threshold level is met or exceeded. Remedial action will be applied to the entire segment(s) in which the threshold level is met or exceeded unless otherwise noted under remedial action. If, anything during the warranty period, 30 percent or more of the project segments require or have received remedial action, then the entire project will receive a remedial action as determined by the contractor and the engineer. Remedial action work required on the mainline roadway will also be performed on the asphaltic concrete shoulders and adjacent lane(s). If an impasse develops, the Conflict Resolution Team will make a final determination.

The contractor will have the first option to perform the remedial work. If, in the opinion of the engineer, the problem requires immediate attention for safety of the traveling public, and the contractor cannot perform the remedial work within eight hours, the engineer can have the remedial work done by other forces and bill the contractor accordingly. Remedial work performed by other forces will not alter the requirements, responsibilities, or obligations of the warranty.

If remedial action work or elective/preventive action work performed by the contractor necessitates a corrective action to the pavement markings, adjacent lane(s) or roadway shoulders, then such corrective action to the pavement markings, adjacent lane(s) and shoulders will be the responsibility of the contractor.

The contractor will not be held responsible for distresses which are caused by factors beyond the control of the contractor. Emergency repairs of distresses caused by such factors will be the responsibility respective maintenance unit or its authorized agent.

DISTRESS TYPE	THRESHOLD LEVELS	REMEDIAL ACTION
Alligator Cracking**	1% of the area in a segment	Remove and replace distressed layer(s). the removal area shall be equal to 150% of the distressed surface to a depth not to exceed the warranted pavement.
Block Cracking	1% of the area in a segment	Remove and replace distressed layer(s). The removal area shall be equal to 110% of the distressed surface to a depth not to exceed the warranted pavement.
Edge Raveling	10% of the segment length	Remove and replace the distressed layer(s). The removal area shall be equal to 110% of the distressed surface.
Flushing	20% of the segment length	Remove and replace distressed surface mixture full depth.
Longitudinal Cracking (shoulder line cracking is excluded from the segment measurements).	1000 linear feet for cracks which average greater than 1/2"	Rout and seal all cracks with rubber crack filling material, or agreed upon equal.
	1000 linear feet with 25% of the linear feet having band cracking or dislodgement	If over 1000 feet, remove pavement and replace for the effected depth. If under 1000 feet, a patch 2 feet in width and 2 feet longer than the crack length, will be placed for the effected depth or agreed upon equal.

DISTRESS TYPE	THRESHOLD LEVELS	REMEDIAL ACTION
Longitudinal Distortion	1% of the segment length	Remove and replace distressed layer(s). The removal area shall be equal to 110% of the distressed surface to a depth not to exceed the warranted pavement.
Rutting*	0.25 inches	Remove ruts by milling surface with fine-tooth mill, overlaying or micro surfacing.
	.5 inches	Remove and replace surface layer.
Surface Raveling	Rating of none: (for segregation, a none rating is less than three segregated areas per segment. A segregated area is 30 square feet or more in size).	Apply a chip seal coat or partial depth repair.
Transverse Cracking	25 cracks per segment which average greater than 1/2 inch.	Rout and seal all cracks with a rubberized crack filler, or approved equal.
	25 cracks per segment with 25% of the linear feet of cracking having band cracking or dislodgement.	Remove and replace distressed layer(s) to a depth not to exceed the warranted pavement.
Transverse Distortion	1% of the segment length	Remove and replace distressed layer(s). The removal area shall be equal to 110% of the distressed surface to a depth not to exceed the warranted pavement.
Patching**	150 linear feet of patching per segment (excluding longitudinal cracking remedial action)	Remove and replace surface layer or place a minimum 1-1/4" overlay.

DISTRESS TYPE	THRESHOLD LEVELS	REMEDIAL ACTION
Potholes, slippage areas and other disintegrated areas.	Existence	Remove and replace the distressed area(s). The removal area will be equal to 150% of the distressed area to a depth not to exceed the warranted pavement.

* The rutting threshold level is waived when the accumulated ESAL's are 50% above the projected fifth year accumulated ESAL's. The contractor will only be responsible for mixture and placement problems.

** The contractor will be relieved of the responsibility for remedial action for Alligator Cracking if the pavement in the area in question is of proper thickness (not thinner than 0.5 inches from plan thickness) and the asphalt cement is of acceptable penetration (average recovered penetration of the surface course is above 30) and one (or more) of the following are true: the base is at least 2.0 inches thinner than plan thickness, or the subgrade density is less than 90% of optimum, or the actual accumulated ESAL's are 50% above the projected fifth year accumulated ESAL's.

F. Elective/Preventive Action. Elective/Preventive action will be a contractor option with the approval of the engineer.

G. Required Preventive Maintenance. Before the pavement is 4 years old, the contractor will route and seal cracks, including shoulder line cracking, which extend through the full depth of the surface course with a rubberized crack filler or approved equal material.

This work is considered incidental to the price of Asphaltic Cement Over Portland Cement Concrete Warranted and will not be measured and paid for separately.

H. Traffic Control. This work will be in accordance with Section 643 of the Standard Specifications and as follows: During warranty work operations, all signing and traffic control will be in accordance with Chapter 6 of the Manual on Uniform Traffic Control Devices.

I. Method of Measurement. Asphalt Cement Over Portland Cement Concrete, Warranted and Asphaltic Shoulders, will be measured for payment by the ton of mixture based on the quantity of mixture placed, completed and accepted. The contractor will present certified records of shipment for the quantities placed under this special provision.

J. Basis of Payments. Asphaltic Cement Over Granular Base, Warranted; asphaltic pavement and asphaltic shoulders, measured as provided above, will be paid for at the contract unit price per ton of mixture, which price will be full compensation for furnishing, preparing, hauling, mixing and placing all materials, including asphaltic materials; for compacting mixtures;

for preparation of foundation, unless otherwise provided; for the warranty, warranty bond(s), and performing warranty work; for the job mix formula, the Quality Control Plan, testing, record keeping and sampling; for traffic control; and for all labor, tools, equipment and incidentals necessary to complete the work.

The contractor will be paid for the quantity of Asphaltic Cement Over Portland Cement Concrete, Warranted; placed or a maximum of 105% of the plan quantity placed, whichever is less.