



Research

Use of Design/Build and Warranties in Highway Construction



Minnesota Local
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16. Abstract (Limit: 200 words) This report presents information about requiring warranties on roadway construction. Nationwide, several states have implemented short-term pavement warranty projects, and several models are outlined that have successful warranty programs. Both the Wisconsin and Michigan Departments of Transportation have instituted very successful warranty programs. Lessons learned from their experiences could be used to initiate programs in Minnesota, both at a state and local level. Advantages and disadvantages of requiring warranties on highway construction are presented. Design/build contracts are different from warranties, and information about them are presented as well. Recommendations are given for steps and considerations in implementing a warranty program for local agencies.			
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USE OF DESIGN/BUILD AND WARRANTIES IN HIGHWAY CONSTRUCTION

Guidelines for Program Implementation

Final Report

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Executive Summary

Agencies are looking for innovative solutions that will enable them to provide a high level of service, while still meeting funding and staff constraints. Staff and funding reductions, along with additional constraints on staff time have created the need for agencies to find alternative contracting methods. Requiring warranties on roadway construction may help to solve this problem.

Nationwide, several states have implemented short-term pavement warranty projects. In our region, Wisconsin, Indiana, Michigan and Ohio have experience requiring typical warranties of five years on both bituminous and concrete projects. Additional curiosity about warranty contracts has recently developed when private industry began promoting long-term warranties of 15 years and more. This type of warranty was recently used in New Mexico on the \$295 million highway project that required the contractor to design, build, and warranty the project. The 20-year pavement warranty for this project cost \$62 million.

Several models are available for successful warranty programs. Both the Wisconsin and Michigan Departments of Transportation have instituted very successful warranty programs. Lessons learned from their experiences could be used to initiate programs in Minnesota, both at a state and local level.

Advantages/Disadvantages of Warranties

There are many advantages and benefits to requiring warranties on highway construction, including motivating the contractor to provide a higher quality product, encouraging innovation by the contractor, and reducing the need for agency resources, including inspection and maintenance. Other potential benefits include:

- Increased product quality with a resulting lower life-cycle cost.
- Lowered risk to the Owner by providing assurance that the contractor will correct early failures from materials or workmanship that may have escaped notice during traditional construction.
- Increased involvement by contractors in the planning and process leads to fewer claims and disputes, better bids, products and reduced risk of liability losses for everyone.
- Encourages the development of better testing equipment and techniques for construction, including more uniform best construction practices.
- Larger, qualified, stable firms may develop to do all tasks for major transportation projects. This may lessen the risk to both owners and sureties for large projects.

Along with the benefits of using warranties, there are also some concerns, including:

- The impacts of warranties on initial and total life-cycle costs of facilities may negate any maintenance savings.

- Agency uncertainty regarding the ability to administer contracts with warranties and to enforce them over extended periods. The length of the warranty period required to catch deficiencies caused by poor materials or construction is also a concern.
- Warranties are only as good as the contractor and the surety company involved. Issues of particular concern include obtaining warranty work action if the contractor goes out of business.
- Uncertainty of whether surety companies will provide long-term bonding guarantees required for warranties on large projects, which carry much larger risks.
- Small or minority contractors may be eliminated from bidding process if they are unable to acquire bonding.

Use of Design/Build in Roadway Construction

Use of Design/Build contracts for roadway construction is not widely used at this time. Changes must be made to current legislation to address those issues before projects can be bid in this way. Other projects, such as bridges or special construction may work with a Design/Build contract.

The construction industry is also interested in this topic. The American Road and Transportation Builder's Association (ARTBA) has created a task force to study the use of design/build contracts in construction. Information about their findings is not available at this time.

Recommendations

Based on information presented in this document, the following recommendations are made:

- Agencies should begin issuing pilot-type contracts requiring a minimum two-year warranty on workmanship and materials for appropriate contract items.
- Agencies should identify projects that are appropriate for use as pilot projects, impose a warranty on those projects, and study the effects of warranties for a trial period.
- The pavement warranty program initiated by the Wisconsin Department of Transportation has worked well to date. The Wisconsin specifications included in Appendix A may be used as a model for local agencies in Minnesota.
- As part of initiating a warranty program, agency staff should be trained to conduct pavement condition surveys. This will allow the condition of the pavement to be monitored and reasons for distress to be understood.
- Bid security for warranty contracts should be large enough to cover the highest reasonable expenditures that can be expected from warranty failure. Requiring warranty bonds to cover the total construction contract cost would result in fewer contractors being able to bid the projects.

- A sample specification should be developed and made available to local agencies for use in developing and letting warranty projects. This specification should include all items subject to warranty, and be easy to use on a variety of projects.
- Projects selected for warranty contracts should focus on the pavement structure, including base and subbase. Other options include customizing the warranty to subgrade or underlying pavement conditions.
- Given present construction conditions, total Design/Build/Warranty programs may offer some solutions. However, in their present form they would be difficult to fund and administer. Additional research should be conducted regarding their use in Minnesota given construction and legal contract constraints.

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Introduction: The Need for Innovative Contract Alternatives

Reduction in the resources available to local governments, including limited funding, reduction in staff, and additional constraints on staff time has created the need to find alternative contracting methods. Agencies are looking for innovative solutions that will enable them to continue providing the level of service their customers have come to expect, while meeting funding and staff constraints. Two approaches that may solve this problem are requiring contractors to provide warranties, either on workmanship or performance, and using design/build contracts.

Under traditional contracting arrangements, the contractor is not responsible for the long-term product performance, and is only required to complete the project in accordance with the plans and specifications. Also, with traditional contracting, the quality of each individual construction item is evaluated based on meeting a specific standard, as specified by the owner without consideration of how the quality of each element relates to one another or impacts the system performance. Traditional contracting also requires extensive agency inspection, and inhibits innovation with materials and/or methods by the contractor.

Product performance, whether it be paint or pavement, is dependent on many factors, including design, materials, construction quality, environmental factors, and actual traffic loading. Requiring contractors to warranty their work is not new; some agencies typically require a one-year performance bond covering workmanship and materials. Longer-term warranties on performance are not as common, but are being used in several states by state and local agencies. Initiating design/build contracts or requiring performance warranties shifts some of the post-construction performance risk to the contractor, and the facility or product can be evaluated based on the overall system performance versus the individual performance of one item.

Warranty work is quite common in Europe. However, because litigation is much less common in Europe, both contractors and public agencies are more willing to enter into warranty agreements. Also, there are fewer construction firms in Europe, but they are much bigger. These larger firms are more able to warranty their work, both for financial reasons and because they have the staff and equipment to engineer and produce a higher quality product than a smaller firm. These two major differences in the US and Europe account for a low incidence of requiring contractors to warranty the performance of their product in the United States. European agencies also often use a contractor qualification and partnership approach that is different from the low bid process used in the United States.

This document is to serve as a guide to agencies wishing to develop a design/build or warranty program. Information regarding the use of warranties and design/build contracts in other states and countries is presented, along with issues to consider and guidelines for use in developing a warranty or design/build program.

Use of Warranties in Highway Construction

The use of warranties in other countries, along with the perception that the use of warranties increases quality has prompted a new interest in warranty construction.

Warranty work in Europe

European pavements have been constructed using warranties for many years. European agencies routinely require warranties for all road construction projects, ranging from high volume thoroughfares to local roads. Warranties typically last five years, are usually prorated and are strictly adhered to by contractors, insurers, and owners.

The use of warranties results in significant differences in the way that projects are built. Contractors are responsible for all of the quality control work, with local and federal government performing quality assurance. Specifications are broad, both method- and performance-based, and allow the contractor great latitude in application, design and innovation.

European contractors assume substantial risk and responsibility by offering a warranty. They must have the technical capability to perform complete quality control on materials, methods, and practices; be innovative with materials and construction methods; be capable of producing and constructing a high-quality durable pavement; and have the financial strength to support the warranty. These requirements have led to many European contractors investing in excellent laboratory facilities, staff and equipment. However, the expense is too great for smaller contractors, leaving only a few large contractors who are highly competent and well financed.

The owner transfers some of the risk of poor performance to the contractor with increased contractor responsibility and warranty. However, when allowing the contractor to assume the additional responsibilities of quality control and warranty, some risk to the owner remains. One way to reduce that risk is more effective screening of bidders through an extensive pre-qualification process. This pre-qualification screening considers the following in determining if contractors are allowed to submit a bid:

- bonding capability
- record on warranties
- technical competence
- production capabilities
- project history
- staff credentials

This extensive screening results in even fewer contractors who are able to perform the work.

Requiring warranties also complicates the bidding process. Bid packages are structured to clearly define the basis of acceptability for innovation, materials or methods, and outline the basis for the final award, as it may not be low bid.

In general, European countries award contracts based on a low bid, but many allow other considerations, such as contractor innovation and alternates. Most require a security equal to 5% of the bid, which is typically not enough to cover the cost of repairing failures. Owners must therefore trust their contractors to meet their warranty requirements.

Two differences exist between Europe and the United States that enable easier use of warranties in European countries. First, litigation is significantly less common in Europe, so both contractors and agencies are more willing to enter into warranty agreements. Secondly, there are fewer construction firms in Europe, but they are much bigger. These larger firms are more able to warranty their work, both for financial reasons and because they have the staff and equipment to engineer and produce a higher quality product than a smaller firm.

Other elements of the European systems that differ from the United States include:

- Bid alternatives are widely encouraged and can be negotiated with the successful bidder to a different contract price, sometimes based on life-cycle cost.
- Completion dates can be bid with price and awards made on the basis of time.
- Contractors have much more input into design, many through bid alternatives for designs and some through design/build contracts.
- Contractors often conduct testing for projects and send reports to the owner, who makes random checks to verify a contractor's testing program.
- Several countries use end-result instead of method specifications.

The use of warranties in the United States is not new, and dates back to 1889. Most warranties cover only materials and workmanship, but some agencies routinely require up to five-year warranties on pavement projects. A 1994 NCHRP study found that many state agencies are beginning to experiment with the use of warranties. Most of the warranties being used were for premanufactured products. Those covering actual work performed were typically one-year maintenance bonds and not long-term performance of pavements.

A survey was sent to all states, and asked what were the major roadblocks to their agency using warranties. The top two issues identified by the 45 respondents were:

- Industry resistance, by contractors and surety companies
- Legal prohibition, including FHWA disallowment for federal-aid projects

Other issues mentioned included organizational problems (internal disagreement over warranties and over eliminating method specifications), and specification development problems. Major benefits of implementing a warranty program included improved quality in road construction, and the potential for a reduction in maintenance costs.

Table 1. Summary of Warranty Practices for European Countries

Country	Bidder Prequalification	Basis of Award	Typical Warranty	Bonding
Austria	Yes	Open bid for standard projects; closed bid to prequalified bidders for special projects	Asphalt concrete: 2-5 years Concrete pavement: 5 years	Warranty bond deducted from final invoice and paid to contractor within 30 days of end of warranty period
Denmark	No	Lowest life cycle costs	5 years	Retain 5% of contract amount
France	Yes	Low bid	5 years	NA
Norway	No	“Best” or lowest bid, allows for some innovation and alternates; considers quality and future maintenance costs	3 years	Surety of 15% of contract during construction required; drops to 3% after one year, 2% after two years, and 1% after three years
Sweden	No	Low bid	Roadways: 2 years Pavements: 3 years Bridges: 5 years	5% surety required
United Kingdom	No	Low bid	Contractor required to provide maintenance for one year; UK is looking into expanding their warranty program	1.5% contract retained
Germany	No	Low bid with consideration given for alternates	Highways: 4 years Bridges and earthwork: 5 years Warranty is required by law	5% of contract retained

Source: Use of Warranties in Road Construction, NCHRP Synthesis 195

Warranty Work in United States

A more recent study conducted by Russell et. al. found that over 23 states are using warranties on a variety of projects. States have found that using warranties has reduced personnel requirements, and gives them the ability to reduce delivery costs and overall construction costs. It also provides a solution for coping with loss of staff and expertise.

Warranty specifications have been used on the following items:

- asphalt pavement
- crack routing and sealing in asphalt pavements
- bridge components
- bridge painting
- chip seals
- concrete pavements
- concrete pavement patching
- ITS components
- landscape and irrigation systems
- microsurfacing
- pavement marking
- roofs

Specific descriptions of other projects requiring warranties are given below:

- The Wisconsin Department of Transportation has completed fourteen asphalt concrete and three Portland cement concrete projects with warranty provisions. A more detailed overview of their program is outlined below.
- The Michigan DOT began using warranties on state-funded bridge painting contracts in 1990, and on a few roadway construction projects beginning in 1991. Michigan has also used warranties on two concrete pavement repair projects bid in 1992. Michigan also uses warranties on nearly all of their pavement preventative maintenance contracts.
- The North Carolina Department of Transportation has used a four-year warranty on an epoxy pavement marking project.
- Missouri has constructed two rubberized asphalt overlay projects, each with a three-year warranty.
- The State of Washington has used a five-year warranty specification for a bridge deck expansion joint system the transition spans of a floating bridge.
- Montana included a four-year warranty on a pavement marking project bid in 1992 and a three-year warranty on another pavement marking project bid in 1995.

- California required a three-year and a five-year warranty on two rubberized asphalt pavement projects bid in 1993.
- Indiana used a five-year warranty on a pavement rehabilitation project and several others.

Wisconsin Department of Transportation

The Wisconsin DOT (WisDOT) pavement warranty program was implemented in 1995. Since then, fourteen asphalt concrete and three Portland cement concrete projects have been bid using warranties. Contractors are generally required to provide a five-year warranty, and are responsible for providing maintenance whenever the threshold is exceeded. WisDOT has found that warranted pavements are performing better than typical pavements, based on a comparison of ride and distress. The program is not old enough to yield adequate cost data for comparisons. However, WisDOT has issued a report indicating their warranty projects are attractive to date.

The warranty program was set up to give contractors as much freedom as possible and assure a quality product. Wisconsin contractors are very supportive of the program, and several have participated in it. The specification was developed to allow contractors the freedom to select their own materials, mix designs, quality management programs, construction techniques, and inspection programs. It is intended to require contractors to provide pavements meeting acceptable performance criteria for five years.

WisDOT provides the contractor with the pavement design and typical section, along with performance requirement, so that bids may be evaluated and awarded based on low bid. The warranty process means that WisDOT pays the contractor to take a certain, but reasonable risk. WisDOT minimizes the risk by selecting projects to include in the warranty that have a high potential for success.

Typically, a 5-year warranty period is required. Pavement performance guidelines are called out in the specification, and the pavement is evaluated annually by WisDOT Pavement Management Staff trained to conduct pavement condition surveys. A conflict resolution team (CRT) consisting of two agency representatives, two contractor representatives, and one representative mutually agreed to by both the agency and the contractor, is called in to mediate only when the contractor and agency disagree on the results of the pavement condition surveys. Remedial action is required when one of the performance indicators crosses the threshold level.

There is concern that the bonding amount required to bid on a warranty project (typically \$200,000 to \$300,000 maximum) may limit the ability of many small contractors to bid warranty projects. Surety companies in Wisconsin recommended that the bond be changed from a performance bond to a warranty bond so as to differentiate from the actual construction performance bond. To be eligible for the warranted contract, each contractor is required to produce proof of a five-year bonded commitment. The bond structure affects the contractor's overall bonding capacity. The contractor has several bonding options: consecutive one-year performance bonds, consecutive two-year performance bonds, or a single five-year bond.

The amount of the warranty bond is established by considering the highest reasonable warranty expenditures. A whole pavement could fail in five years and require total reconstruction, but that is unlikely and would result in a very high bond amount. The most reasonable scenario is a thin overlay may be required, and the warranty bond is valued based on the cost of that work.

If the contractor fails to renew the warranty bond, a 20 percent payment of the face amount of the bond will be paid to WisDOT, and the contractor will be considered in default. The warranty therefore insures that contractors will be in business to stand behind the warranty requirements.

A three-year progress report evaluating WisDOT's pavement warranty program indicated the following results:

- contractors are enthusiastic about the project
- no project disputes or remedial action to date
- increased quality with reduced delivery costs
- the average bid prices are less for hot mix asphalt projects with a warranty
- innovations and new technology being implemented
- public acceptance is good

Lessons learned from WisDOT's pavement warranty program include:

- the state must give up some responsibility and contractor must take on more responsibility
- the state has to give up some control to allow contractor responsibility
- states have to worry about the end product; products may make it through the warranty period but not the project life
- need to be specific about what is being warranted

WisDOT believes that this program allows contractors to be innovative in quality management, paving and use of additives. In the future, WisDOT is considering the following program improvements:

1. Tightening up performance criteria
2. Allowing performance criteria to remain the same, but extending the warranty period
3. Incorporating an incentive provision, either monetary or reduction in the required warranty period.

According to Gary Whited of WisDOT, the main roadblock to local agencies in implementing a warranty program is the lack of trained staff to conduct pavement condition surveys. Gary noted that a consultant or state agency staff could be used to perform those surveys.

WisDOT's entire warranty specification for asphalt pavement is included in Appendix A.

Michigan Department of Transportation

The Michigan Department of Transportation (MDOT) has also had a warranty program in place for several years. Their preventative maintenance program requires contractors to warranty their pavements for typically 2-3 years. Concrete performance criteria is surface distress (cracking, joints/edge faulting, delamination, shattered areas, settlement), map cracking and joint seal integrity, and bituminous pavement criteria is also surface distress (cracking, delamination, flushing, raveling, stripping, rutting). Like WisDOT, MDOT requires a conflict resolution team (CRT) to judge when the pavement is meeting performance criteria. The CRT consists of five people: two from MDOT, two contractors, and one by mutual agreement.

Michigan has been very pleased with their preventative maintenance program, and will continue to require warranties from contractors on that type of work. To allow for a reduction in project inspection, they changed some of their pay items so that the items were verifiable after construction was complete. For example, instead of bidding crack repair by the ton or by the linear foot, they bid it by the "lane-kilometer" and specified that "every crack in the roadway be filled." The inspector was then able to visit the site after work was completed and verify that the contract obligations had been met. Another example is paying for bituminous mixture by the square yard, and requiring contractors to submit weigh tickets. Yield can then be checked and thickness determined without the inspector having been present during paving. MDOT also requires the contractor to submit daily reports. These changes have resulted in significant savings in construction monitoring time.

MDOT requires the contractor to secure a performance bond for 100% of the contract total. To date, they have enforced the warranty requirements on one project, and were successful reaching a settlement with the contractor without using the conflict resolution team.

During the first year of the program, they noted a slight increase (about 6.5%) in prices for surface treatments. That same year, they also noted a significant decrease in prices for crack repair. MDOT attributes this decrease to the change in bid item for crack repair. Since it was bid based on units of lane-kilometers, the contractor was required to estimate quantities prior to bidding. The contractors' estimates were closer to actual quantities, so prices dropped. Prices during the second and subsequent years of the program showed no significant change from prices on projects that did not require a warranty.

In the future, MDOT is considering implementation of a longer-term warranty program on new construction that would require warranties of five years and more. These warranties would be performance-based, unlike the warranties on preventative maintenance items, which mainly cover materials and workmanship.

Participation in Warranties by Local Agencies

Other options are available to local agencies that are interested in alternative contracting. Several local agencies in Michigan, Indiana, Kansas, Illinois, Colorado, New Mexico, Missouri, South and North Carolina now require warranties on their roadway construction projects. The agencies have required contractors to provide a variety of services, including:

- design

- construction
- financing
- warranties
- surface maintenance

Projects range from requiring one or two to all of the above listed services. The level of contractor responsibility is dependent on the agency limitations and needs for each project.

Design can include all elements of the roadway, including horizontal and vertical geometry, or can include just the pavement typical section and mix design. If needed, some contractors are also asked to provide project financing, mainly to expedite the project construction. This also eliminates the agency from having to secure bonds to do the work.

Projects are bid using performance specifications, and warranties are typically five years, but may last as long as 20 years on some projects. The required pavement condition and appearance at the end of the warranty period is outlined in the specification, and performance criteria are determined by the agency.

If the projects are built using federal dollars, they must be bid competitively. However, they can bid and awarded based on a life cycle cost basis.

The benefits to local agencies of bidding projects this way includes:

- All risk is transferred to the contractor.
- The agency is able to lock in maintenance costs, and be guaranteed an end product at the end of the warranty period. These maintenance costs can be paid for in today's dollars.

Franklin County, Kansas recently bid a project that requires the contractor to finance and warranty the roadway construction. The project includes construction of a three-inch overlay on an existing asphalt pavement, and requires a 15-year warranty against ruts and potholes. The contractor will be responsible for all roadway surface maintenance. The County will make annual payments to the contractor for the duration of the warranty. The County could not afford to rehabilitate the road without the innovative contracting approach. For more information on this project, contact Ray DeJulio, Public Works Administrator at (785) 229-3550 or Tom Weigand, County Commissioner at (816) 591-5010.

Another project in Tazwell County, Illinois required the contractor to design, build, and warranty the rehabilitation of five miles of an existing asphalt-surfaced roadway. Contractors were provided with soil borings and performance criteria (no cracks for five years, and an overall warranty on performance for ten years.) Contractors were also asked to finance the project, if necessary. One contractor submitted a bid, which was 3% over the engineer's estimate. The contractor was not asked to finance the roadway construction, but will provide the required warranty.

The County Engineer, Norman Johansen is very pleased with the project, and anticipates doing others like it. The County benefits from reduced maintenance costs for the next ten years, as

well as reduced costs for construction monitoring and contract administration. Illinois counties will be constructing 20 roadways this year using this same contracting method. To obtain more information on this project, contact Mr. Johansen at (309) 925-5532.

Many other projects have been completed in this manner. Two other local administrators with experience in this type of project are listed below:

Bland R. Smith, County Commissioner
Pulaski County, Missouri
116 Dogwood Circle
St. Robert, Missouri 65583
Phone: (573) 774-6609

Daniel Toy, Managing Director
Lapeer County Road Commission
820 Davis Lake Road
P.O. Box 678
Lapeer, Michigan 48446
Phone: (810) 664-6272

Two sample Requests for Proposals for projects requiring the contractor to design, construct, finance and provide a warranty of serviceability (including the one from the Tazwell County project) are included in Appendices B and C.

Since the fall of 1997, Mn/DOT has held several meetings regarding pavement warranties. In the spring of 1998, the Office of Materials and Road Research developed a workplan to explore the feasibility of a long-term bituminous performance warranty project. Special provision elements for a bituminous overlay project with a 15 year warranty, including partial design, build and warranty, low bid were developed. Due to other priorities and the costs of long-term warranties in other states, Mn/DOT has not piloted a long-term warranty project to date.

In 1999, Mn/DOT accepted bids on a statewide micro-surfacing project that included a two-year warranty on performance of the surface treatment. This project will be conducted on eleven different state or interstate highways, and will cover almost 150 lane-miles. The two-year warranty period was selected because all problems that arise from poor application of the micro surfacing should be visible within that two year time period. Initial review of bids received indicates the warranty costs about \$0.20/square yard.

Table 2 gives a list of contacts and summary of warranty construction activities by state Departments of Transportation.

Table 2. State DOT Contacts

State	Name	Position	Phone	Warranty Work
Arizona	Leroy Brady	Roadside Development	602.712.7357	Plant establishment
Colorado	Larry Brinch	Construction Specifications	303.757.9474	2 Pavement projects
Connecticut	Charles Barone	Intermodal Programming and Policy Planning	860.594.2051	Paint
Indiana	David Andrewski	Materials Engineer	317.232.5280	5 Pavement projects
Maine	Ken Swenny	Construction	207.287.2171	2 Pavement projects
Maryland	Samuel R. Miller, Jr.	Deputy Chief Engineer	410.321.3100	Bridge painting
Michigan	Judy Ruskowski	Engineer of Specification	517.322.5869	12 Warranty projects
Minnesota	Roger Olson	Research	651.779.5517	Micro-surfacing projects
Missouri	Tom Keith	Material Section	573.751.3706	3 Asphalt rubber projects
Montana	Jim Stevenson	Maintenance Division	406.444.6009	Paint striping
New Mexico	Max Valerio	Construction	505.827.9862	Warranty project
New York	Zoab Zavery	Materials	518.457.3240	Pavement project
Ohio	David Powers	Asphalt Engineer	614.275.1387	Several warranty projects
West Virginia	Randy Epperty	Engineer of Development	304.556.6266	Plastic pavement markers
Wisconsin	John Volker	Materials	608.246.7930	Several warranty projects

Summary of Current Practice

A summary of current practice with warranties in the United States is as follows:

Bonding issues

Most agencies require a warranty bond to transfer the risk. The value ranges from 10-100% of contract value, maximum cost of replacement or rehabilitation of the warranted work, or a fixed, predetermined amount. They also require proof of bond for entire warranty period, and may also require a lien bond to cover subcontractors. An alternative

to the bonding requirement is a retainage system, in which a percentage of total contract is retained with each payment, and returned in prorated increments based on actual performance over the warranty life.

Maintenance Expectations

Some agencies require that the contractor be responsible for maintenance within 15-45 days after receiving notice that a performance indicator threshold has been crossed. The agency can reserve the right to perform routine or emergency maintenance. Contractors may monitor the product and propose corrective actions, subject to agency approval.

Contract Resolution Team

A Contract Resolution Team (CRT) is needed for items that have many possible causes of failure, and may be difficult to determine a precise cause (like chip seal, microsurfacing). It is not needed for products with easily identifiable failure causes, such as bridge painting and pavement marking.

Typical CRT makeup includes 2 agency, 2 contractor, and one third party agreed to by both the agency and the contractor. The CRT may also include a private consultant or industry representative, and the agency may require special training of CRT members.

Contractor Responsibilities

Agencies require that the contractor be responsible for the job mix formula, Quality Control, provide all Quality Management data to agency, and provide a quality control plan before paving. Most agencies specify a minimum pavement thickness, as well as a performance grade of asphalt cement or a mix design.

Practice

Most agencies provide annual inspections, and notify the contractor of deficiencies. The contractor then has a specified number of days to remedy the deficiency. Agencies pay for the annual inspections.

Performance Indicators

If ESALs exceed design by a certain percentage, if agency design thickness is deficient, or if failure is due to a non-warranty item (like base layer), the warranty can be waived. The warranty may also be waived if damage occurs from coring or utility repairs. Contractors are usually not responsible for “destructive procedures not performed by or under the supervision of the contractor.”

Pay for Performance

Some agencies pay a bonus for performance above a specified level. Others withhold a given percentage as a warranty bond replacement. The contractor is paid a percentage of the retainage each year the performance criteria is met. Another option is to retain 5% from each payment, and at project completion, release a given percentage of the retainage, with the remainder of the retainage released over the warranty period

Advantages/Disadvantages of Warranties

There are many advantages and benefits to requiring warranties on highway construction, including motivating the contractor to provide a higher quality product, encouraging innovation by the contractor, and reducing the need for agency resources, including inspection and maintenance. Other potential benefits include:

- Increased product quality with a resulting lower life-cycle cost.
- Lowered risk to the Owner by providing assurance that the contractor will correct early failures from materials or workmanship that may have escaped notice during traditional construction.
- Increased involvement by contractors in the planning and design process leads to fewer claims, disputes, better bids, products and reduced risk of liability losses for everyone.
- Encourages the development of better testing equipment and techniques for construction, including more uniform best construction practices.
- Larger, qualified, stable firms may develop to do all tasks for major transportation projects. This may lessen the risk to both owners and sureties for large projects.

Along with the benefits of using warranties, there are also some concerns, including:

- The impacts of warranties on initial and total life-cycle costs of facilities may negate any maintenance savings.
- Agency uncertainty regarding the ability to administer contracts with warranties and to enforce them over extended periods. The length of the warranty period required to catch deficiencies caused by poor materials or construction is of particular concern.
- Warranties are only as good as the contractor and the Surety Company involved. Issues of particular concern include obtaining warranty work if the contractor goes out of business.
- Uncertainty of whether surety companies will provide long-term bonding guarantees required for warranties on large projects, which carry much larger risks.
- Small or minority contractors may be eliminated from bidding process if they are unable to acquire bonding.

Another concern is that the premature use of warranties without adequate technology or processes to handle the contracts may lead to increased disputes and costly litigation, and could harm the long-term adoption of using warranties in the US. To avoid this, many issues have to be resolved prior to incorporating a warranty element into a contract. Additional evaluation of current warranty activities or new research studies are needed to address the impact of the use of warranties for highway construction projects and the actions necessary to develop and implement a feasible warranty contracting system. This should include the development of contract documents specific to the use of warranties.

Implementing a Warranty Program

To determine whether to implement a warranty program, the first issue an agency must resolve is the type of warranty it wants to require:

- Workmanship and materials
- Performance

A warranty on workmanship may be very easy to implement, and only require the addition of one short paragraph into the project general conditions, such as:

The Contractor will be required to warranty workmanship and materials on all items for _____ year(s), from the date of final acceptance.

Individual items may also be warranted, and the individual requirements outlined in the special provisions for each item. Several members of the Advisory Panel for this project reported that they have been requiring two-year warranties on items such as crack sealing without an increase in unit costs.

A performance warranty requires more significant changes to the specifications, contract and bidding documents. As noted earlier, example specifications for warranted asphalt pavement and a sample Request for Proposals for performance warranties are included in Appendices A and B.

Considerations

To guide the development of a warranty program, an agency must consider many issues, including:

- What are the program objectives?
 - Reduced maintenance by agency?
 - Better product?
 - Reduced need for construction inspection?
 - Reduced overall life cycle costs?
 - To address funding reductions?
- What items should be covered by warranty?
- What costs can be expected? Will the increased costs be offset by a reduction in life cycle costs?
- What will a warranty program do to competition?
- Should the warranties cover poor performance or defects caused by materials and workmanship? How will the defects be measured?
- What is an appropriate warranty period?
- What surety should be required? How can this surety be outlined out such that it is fair for all contractors? Should it be in the form of a bond, cash deposit, or retainage?
- What input should the contractor have on design?
- How is product performance measured?

- What changes are required to contract documents?
 - Dependent on the type of warranty that is selected (performance or workmanship)
 - May have several standard designs from which the contractor may select
 - May allow the contractor to submit design alternatives
 - Design/Build/Warranty contracts

Upon determination that a warranty will be required as part of a contract, additional consideration may be made regarding the following:

1. Selection of criteria for construction item
 What types of projects or construction items are most appropriate for coverage by warranty?
 Should the warranty cover workmanship and materials, or can it be based on performance?
2. Determination of performance characteristics
 These may include ride, skid resistance, or distress for pavement items. Characteristics should be easy to identify and measure.
3. Traffic loading requirements
 This may include traffic volume and weights, and provisions for comparing actual traffic loading to design.
4. Maintenance
 Outline who is responsible for maintenance on routine wear and tear, premature failures, and accidental damage, damage caused by utility cuts, as well as damage due to product failure
5. Time
 Determine the appropriate time requirement for the warranty. Enough time should be allowed for failures to appear.
6. Bonding requirements
 Bonding requirements for a warranty project are such that they might lead to only large firms being able to secure contracts. Other methods may be selected that that aren't as likely to exclude small firms. The agency must also determine the required value of the bond, based on expected costs if the product fails.
7. Approach to risk allocation
 Under warranty specs, the risk has been allocated to the party who has the most control of the risk (the contractor.) However, the agency must still consider issues such as how to address
 - potential callbacks
 - addressing deficiencies
 - environmental and subgrade conditions that may lead to pavement failure

- ensuring that the product meets its design life (which will probably exceed the warranty period)

8. Award criteria

Will the contract be awarded to the low bidder? What other alternatives exist for awarding the contract based on qualifications, lane closures, maintenance requirements? What are the costs to the public, in terms of construction time and maintenance needs? What costs should be included when evaluating the bids, user costs or life-cycle costs? What is the value and cost of having a warranty? Are the extra construction costs justified? How will extra costs be paid if the project is bid and awarded on the basis of lump sum?

Warranty Specifications

Traditional specifications require the contractor to provide the materials required, constructed in a specified method. With method and materials specifications, the contractor is not responsible for the performance of the end product. This inhibits contractor innovation. Performance based specs allow the contractor more freedom to select methods and materials, provided that the resulting performance meets the specified requirements.

A warranty specification requires the guarantee of the integrity of a product and of the contractor's responsibility for the repair or replacement of deficiencies. A warranty specification can be a combination of QA/QC and performance specs, and often contain QC requirements. The contractor is responsible for performance during and after construction, and has more freedom to select materials and methods, and can develop their own QC program.

Developing a warranty specification may be difficult, and must include many items that are not included with traditional specifications. The key elements of a model warranty specification include:

Description

- describe what the specification covers and the work that is required
- describe the design criteria used, such as traffic load, volumes, design life, work conditions, payment schedule, prevailing wages, DBE participation, and progress schedule

Warranty length

- establish the length of the warranty, which can be fixed or varying using the A-B system
- work with contractors to determine appropriate warranty period
- consider the time required for problems with the end product to show up (about 5 years for pavements)
- consider using an A-B system:
 - A = project costs
 - B = credit for each additional year of warranty that the contractor bids beyond a required period. The credit is used for bid comparison only, not for payment. Determine amount for the credit by estimating the cost to replace work and divide it by length of warranty period.

Bonding requirements

- Establish the penal value of warranty bonds or retainage system. This value should be enough to cover the cost of fixing the worst thing that could happen with one of the warranted items.
- Establish acceptable bond rating.
- Determine acceptable combination of bonds
- Determine bond requirements if Surety Company falls below specified rating
- Determine requirements if contractor fails to renew warranty bond

Maintenance

- Establish who is responsible for maintenance activities
- Establish how maintenance activities will be approved

Conflict resolution

- Determine if a conflict resolution team (CRT) will be established especially for items with many causes for failure, such as asphalt and concrete pavement
- Determine the composition of the CRT
- Determine when CRT will be used
- Determine length of conflict resolution process

Contractor responsibilities

- Warranty the end product for the entire length of the warranty
- Remedial action if any threshold levels are met or exceeded
- Selection of materials and construction methods
- Design of end product
- Establishment and submission of a QC plan and QC data
- Elective/preventative action
- Liability insurance requirements

Agency responsibilities

- Approve liability insurance and bonds
- Periodic inspection of end product
- Determine how and when the end product will be inspected
- Provide an annual written report to contractor on performance of product
- Approve remedial actions and elective/preventative action
- Specify special requirements such as quality control plan
- Establish procedures for emergency situations on warranty project and if contractor cannot remedy within prescribed time period
- Establish length of time that contractor can remedy in an emergency situation
- Establish initial acceptance criteria, such as end of construction and start of warranty period date.

Performance Indicators

- Establish performance indicators and threshold levels. Indicators and levels can be determined from Infrastructure Management System, manufacturer's recommendations, and/or engineering judgement
- Determine what factors that cause distress are beyond contractor control

Requirements for Corrective Action

- Typically agency approves corrective action
- Establishment of remedy period
- Establish what activities are exempt from warranty corrective action by contractor such as destructive testing procedures by the agency or utility work

Method of Measurement

- Establish how warranted end product will be measured: foot, meter, ton, square foot, etc.

Basis of Payment

- Establish how end product will be paid for.
- Determine if any maximum levels of payment
- Establish amount and payment schedule for performance payment system.

Use of Design/Build or Design/Build/Warranty in Highway Construction

Design/build contracts have traditionally been used by the private sector and in the defense industry, and have only recently been used by public highway agencies. A design/build contract consists of provisions for the overall project responsibilities within a single contract for design and construction. The contract may also incorporate provisions for maintenance or warranty of the product.

The Design/Build is an expedited approach that requires the agency to scope and let the project, and a contractor/consultant joint venture selects the pavement design (or conducts the geometric design as well), and constructs the project. Under this type of contract, the agency may award the contract based on technical merit, time to construct, and overall bid prices, or negotiated terms, after reviewing proposals. The agency then reviews and approves design, performs limited inspection, and performs routine maintenance. With Design/Build/Warranty projects, the contractor may be held responsible for performance of the product for an extended period, up to 25 years.

Advantages to the Design/Build contract include allowing agencies to redefine some contracting practices in an effort to produce an improved finished product, potentially reducing overall project time and lowering overall cost. The selection process is altered from traditional approach. Issues other than low bid can be considered when awarding the contract, such as quality, personnel, significant experience, past performance, client satisfaction record, partial project design solution, and assets.

Disadvantages of Design/Build are that it may result in the agency losing some authority when giving a private firm overall project control, and may result in only large contractors are able to bid. In addition, deviating from low bid process may require changes in legislation. For consultants and contractors interested in bidding on a project, the cost of developing detailed preliminary design for selection process may be very large.

Implementing a Design/Build Program

Design/Build (D/B) contracts work best with well-defined projects containing no unknown risks. D/B contracts are useful for large projects that may have tight time schedules, small projects that require only a limited design or have a short timeline, and new projects that include new technologies that exceed the expertise of the project owner or public agency.

When electing to use a D/B contract, the agency must determine the point in project development at which the remaining portion of the project can be turned over to the contractor. The stage in the process when the owner turns the project over determines the overall price of the remaining work. The price will increase with the amount of risk transferred to the contractor. Some logical points at which the use the D/B concept are at project inception, such as on a small project with minimal risk, like a overlay project; after preliminary engineering has identified all environmental factors; or after horizontal and vertical geometry has been designed.

The contractor selection process should evaluate both the quality of proposed construction and proposed design, and should emphasize the technical merit of the total team. All firms involved in the selection process should receive the same, detailed criteria in order for the contractor team to bid on and design equivalent projects. Pre-proposal meetings that include all candidates for selection, would help to avoid misunderstandings. Innovative designs, concepts, procedures, and materials that are proposed by unsuccessful firms must not be used. This would discourage future innovation, as well as destroy credibility.

In general, the contractor is responsible for defective design, however, this is not a guarantee. Two recent lawsuits found that the contracting agency/owner may be liable for information provided to the contractor. The manner in which the information was provided is key, as illustrated by the lawsuits. In the first, the court found that the owner must provide accurate information on existing conditions. This includes as-built drawings provided to the contractor. This provision insures that the bidders can confidently rely on information provided by the government, which avoids the need for large contingencies that would drive up costs. In the second, the courts ruled that the owner must also provide accurate preliminary design data upon which the final design is based.

Design/Build contracts should be paid for by lump sum. If contractor is paid by unit prices, there may be a temptation to over design the pavement, reducing the contractor's risk and receiving more payment as well.

In some instances, modifications to state statutes are needed in order to bid projects based on Design/Build.

Status of Design/Build Projects in Minnesota and Other States

Some of the projects outlined in the previous section fall under the category of Design/Build by requiring that the contractor provide the pavement design for the project, or in the case of the Kansas project, the entire design. Additional examples of public agencies awarding Design/Build contracts for roadway projects on a larger scale (in which local agencies contracted all design to a contractor) were not common.

Mn/DOT completed one Design/Build project in 1996 on I35 near Lakeville. That project, which included a concrete overlay and some new construction, was bid providing only typical sections, a vertical profile, and traffic control requirements to the contractor. The contractor was then required to design the remainder of the project, which was subject to review by Mn/DOT. The contract was awarded to the low bidder, and the design paid for by a contract line item. No warranty was required.

Bidding the project with a design/build did cost more than a typical project, and the time required to complete the project was longer than a typical project as well. However, this was the first project of its kind, and could be expected to have those problems.

The following case study, which highlights the use of Design/Build for a small bridge project illustrates how the process can be used to complete design and construction in a short time period.

Case Study – Design/Build Bridge Replacement

Creek Road Bridge in Pataskala, Ohio was constructed in less than sixty days after contract signing. This project, which used a Design/Build agreement, enabled the small town to replace a bridge that was critical to their town in a very short amount of time, and well under their initial cost estimates.

In May of 1996, the Pataskala bridge was closed abruptly after the south abutment fell into the creek. The existing steel beams could not be reused, and a new bridge was needed. A preliminary engineering estimate was prepared, and totaled \$400,000, including engineering costs of \$84,000. The preliminary estimate also indicated that the project would take a year to build.

The Village applied for emergency funding, but needed to know the costs of the bridge to do so. The council then asked for package proposals including both design and construction. Four proposals were submitted, and the one from CON/SPAN Bridge Systems was selected. CON/SPAN determined that the crossing could be bridged faster and cheaper with modular precast units. A complete design-build proposal was submitted after two weeks, and included all required components, including guard rails and pavement striping. It guaranteed completion of the project in sixty days from contract signing. Construction began the day after the contract was signed.

The final cost of the project was \$217,400, which was \$182,600 below the original estimate. This price included all surveying, site work, design fees, and incidental utility work, as well as

bridge and roadway construction. The engineering fee included in the package was \$20,000, instead of the preliminary estimate of \$84,000.

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Appendix A

Wisconsin Department of Transportation

Item 90016 - Asphaltic Pavement Over Granular Base, Warranted

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 a 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 \$533,500 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 the 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 decisions if the 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 test pavement in question using nondestructive procedures - 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 **	10% 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	10% 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 Cracking	10% of the segment length	Remove and replace 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 lf for cracks which average greater than 1/2". 1000 lf with 25% of the linear feet having band cracking or dislodgment	Rout and seal all cracks with rubber crack filling material, or agreed upon equal. If over 1000 feet, remove pavement and replace for the effected depth. If under 1000 feet, a patch 2 feet longer than the crack length will be placed for the effected depth or agreed upon equal.
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 0.5 inches	Remove ruts by milling surface with fine-tooth mill, overlaying or micro surfacing. 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 <u>partial depth repair</u> .

Transverse Cracking	25 cracks per segment which average greater than ½ inch. 25 cracks per segment with 25% of the linear feet of cracking having band cracking or dislodgment.	Rout and cracks with a rubberized crack filler, or approved equal. Remove and replace the 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 100% 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 the surface layer or place a minimum 1-1/4" overlay.
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 ESALs. 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. Require 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 and 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 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.

Item 90017 - Asphaltic Pavement Over Portland Cement Concrete, Warranted

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 a 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 \$6,500 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 the 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 decisions 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 pavement in question using nondestructive procedures. 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 land(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 **	10% 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	10% 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 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 lf for cracks which average greater than 1/2". 1000 lf with 25% of the linear feet having band cracking or dislodgment	Rout and seal all cracks with rubber crack filling material, or agreed upon equal. If over 1000 feet, remove pavement and replace for the effected depth. If under 1000 feet, a patch 2 feet longer than the crack length will be placed for the effected depth or agreed upon equal.
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 0.5 inches	Remove ruts by milling surface with fine-tooth mill, overlaying or micro surfacing. 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 <u>partial depth repair</u> .
Transverse Cracking	25 cracks per segment which average greater than ½ inch. 25 cracks per segment with 25% of the linear feet of cracking having band cracking or dislodgment.	Rout and cracks with a rubberized crack filler, or approved equal. Remove and replace the 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 100% 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 the surface layer or place a minimum 1-1/4" overlay.
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 ESALs are 50% above the projected fifth year accumulated ESALs. The contractor will only be responsible for mixture and placement problems.

** The contractor will be relieved of the responsibility for remedial action for Transverse Cracking and Patching of the pavement in the area in questions is of proper thickness (not thinner than 0.5 inches form plan thickness) and the Portland cement concrete below the warranted pavement has experienced a blow up, joint disintegration, or similar failure.

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 and 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 Portland Cement Concrete, 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*.

Item 90018 - Maintenance of Existing Shoulder Aggregate

A. Description. This work shall consist of restoring, correcting, and maintaining the existing shoulder aggregate to a condition suitable for traffic in accordance with the pertinent requirements of Subsection 304.6 or directed by the engineer.

B. Construction Methods. All holes, ruts, and other depressions in the existing shoulder aggregate shall be filled with crushed aggregate base course. High places shall be excavated and removed to the existing lines, grade and section. Areas of yielding or unstable materials shall be excavated and back filled with material as directed by the engineer. The contractor shall dispose of all waste and surplus material in the manner provided under Subsection 205.3.11.

C. Method of Measurement. Maintenance of Existing Shoulder Aggregate will be measured along each side of the traveled way in stations of 100 feet and fractions thereof along the centerline of the roadway.

D. Basis of Payment. The quantity of Maintenance of Existing Shoulder Aggregate, measured as provided above, will be paid for at the contract unit price per station, which price shall be payment in full for all restoring, correcting, and maintaining the existing shoulder aggregate, and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

Crushed Aggregate Base Course will be paid for at the contract unit price of crushed aggregate base course, respectively.

Appendix B

City of O'Fallon , Missouri Request for Proposal

The City of O'Fallon, Missouri herewith solicits Requests for Proposals to design, construct, finance and provide a warranty of serviceability to the City for a series of roads located approximately at the intersections of Missouri Route 40/61 and Highway DD in St. Charles County, Missouri.

Project Description.

For purposes of this Proposal, the "Project" includes the design, construction financing of the roads and a written warranty of serviceability for a minimum term of fifteen (15) years. The schematic plans and specifications of the roadway to be constructed are described in Appendix A attached hereto.

This Request for Proposals outlines the minimum qualifications and project selection criteria including any unique capabilities or qualifications which would be required of the proposer.

Response Format.

On pages 1 through 9, proposers are instructed as to the format in which to submit proposals and the minimum information and materials which must be submitted in order for the proposal to be considered complete.

Public Notice.

Public notice of the Request for Proposal will be posted on the following dates:

February 8, 1998
February 15, 1998
February 22, 1998

by publication in a newspaper or newspapers or other publications of general circulation within the State of Missouri so as to provide reasonable notice to the maximum number of proposers that can be reasonably anticipated to submit proposals. Additionally, to the extent possible, a copy of this Request for Proposal will be forwarded to a random sample of vendors qualified to complete the Project.

Proposal Submission.

Proposers submitting a proposal are required to deliver (not by facsimile) five copies of their proposal to the following address:

O'Fallon City Clerk
138 South Main St.
O'Fallon, MO 63366

Proposals are to be sealed in mailing envelopes or packages bearing the proposer's name and address and the words "O'Fallon Winghamen Project" clearly written on the outside. The cover page must include the title of the proposal, the name and address of the proposing entity, the persons authorized to act on behalf of the proposer and his or her telephone and facsimile numbers. Proposals must be completed and received in the office of the O'Fallon City Clerk on or before 2 p.m., March 10, 1998.

Proposal Preparation.

Proposals must be signed by an authorized representative of the firm or consortium making the proposal. All information requested under "Proposal Requirements" should be submitted. Proposers failing to submit all information requested herein may be given an opportunity promptly to submit missing information and/or may be given a lowered evaluation of the proposal. Proposals which lack key information required may be rejected at the discretion of O'Fallon, as may any and all bids.

Proposals should be prepared simply and economically and provide a straightforward, concise description of the proposer's capabilities to complete the Project. In preparing a proposal, emphasis should be placed on completeness and clarity of content.

Proposals submitted for consideration should include a comprehensive scope of work to be performed and provide enough information about how the project will be completed and financed to determine whether it meets criteria stated herein. In addition, the financial plan for the project must contain enough details so that an analysis will reveal whether the project financing proposed is feasible. Also, the material terms and duration of the warranty must be described in sufficient detail so that O'Fallon can perform a comparative evaluation.

Proposals should be organized in the order requested herein. All pages of the proposal should be numbered. Evaluation of the proposal will be facilitated if proposals cross-reference responses by citing the tab number, and subletter, and repeating the text of the requirement. If a response covers more than one page, the tab number and subletter should be repeated at the top of the next page. The proposal should contain a table of contents which cross-references the requirements by category. Information which the proposer desires to present that does not fall within any of the requirements should be inserted in an appropriate place or be attached at the end of the proposal and designated "additional material". Proposals which are organized in this manner risk elimination from consideration.

Each copy of the proposal should be bound or otherwise contained in a single volume. All documentation submitted with the proposal should be contained in that single volume. Loose papers unbound will not be deemed part of the proposal and to the extent salient material is included in such unbound pages, will be disregarded in the evaluation process. Accordingly, the proposal may be deemed deficient by O'Fallon which reserves the right to reject any and all proposals on account of such deficiencies.

Proposals shall be accompanied by a certified check equal to ten percent of the total bid or a bidder's bond executed by an authorized surety company in like amount to guarantee the bidder's willingness to enter a contract with the City of O'Fallon. A proposal that is not accompanied by such a check or bond may be deemed deficient by O'Fallon.

Material Facts to be Considered in Preparing Proposal.

Right of Way.

The City of O'Fallon currently does not have control of the right-of-way/easements described in Appendix A. A proposer's response to this RFP should assume that Novus International will dedicate the right-of-way/easements prior to commencement of construction.

Scheduled Repayment by O'Fallon of Project Costs.

The total amount of principal available from O'Fallon is \$9.2 million to be paid to the winning bidder by 2004. Accordingly, in determining its bid, a proposer should assume that the full amount available for the Project is \$9.2 million. Further, the payments are subject to annual appropriation by the governing body of O'Fallon.

Prevailing Wage.

A proposal should include a Certification of Undertaking executed by the proposer that the Proposer shall pay the prevailing minimum wage at the time the bid is submitted.

Proposal Requirements.

In order to facilitate evaluation by O'Fallon of the proposer's capabilities, a proposal should be as thorough and detailed as possible so that the City may properly evaluate the proposer's capabilities to complete the Project. Proposers are required to submit the following, separated by tabs within the proposal:

TAB 1: Qualifications and Experience:

- a. Identify the legal structure of the firm, or consortium of firms making the proposal and major subcontractors. Identify the organizational structure for the project, the management approach and how each partner and major subcontractor in the structure fits into the overall team.
- b. Describe the experience of each firm and subcontractors and the key principals involved in the Project and complete Appendix B. The lead organization must be identified. The design firm must have a Certificate of Authority to render professional engineering services in Missouri.
- c. Provide the names, addresses and phone numbers of persons within the firm or consortium who may be contacted for further information.
- d. Describe the length of time in business, business experience, public sector experience and other engagements of the firm(s) and major subcontractors.
- e. Provide either a financial statement or evidences of a credit rating of the firm/consortia and each major partner if the firm is a partnership.
- f. Identify the dollar amount and the issuer of the Bid Bond. Identify the dollar amount and the issuer of the Performance and Payment Bonds which shall be posted and shall cover 100% of the bid.

TAB 2: Project Characteristics:

- a. Provide a description of how the Project will be constructed, including the design and all proposed interconnections with other transportation facilities. Describe the assumptions used in developing the Project.
- b. Include a list of all federal, state and local permits and approvals required for the Project and a schedule for obtaining such permits and approvals.
- c. Identify any anticipated adverse social, economic and environmental impacts of the Project.
- d. List the critical factors for the Project's success.
- e. Identify the proposed schedule for implementing the Project, including the start date and the estimated time for completion.
- f. Address liability for design and construction, and assurances for timely completion of the Project.
- g. Include any planned participation of small, women, and minority-owned businesses during project development and implementation.

TAB 3: Project Financing :

- a. Provide a single sum dollar amount bid for the cost of the Project based on the attached schematic plans and specifications, as well as the per unit prices upon which the single sum dollar amount bid is based.
- b. Submit a plan for the development, financing and operation of the project, showing the anticipated schedule on which funds will be required, and proposed sources for such funds, taking into consideration the amounts of O'Fallon funds available for repayment of construction costs described on page 4 above. In that regard, the proposer shall state the term during which it will provide the financing for the Project. Specify scheduled debt service amounts and interest rate to be charged by proposer.
- c. Include a list and discussion of financial assumptions underlying all major elements of the plan of financing.
- d. Identify the proposed risk factors and methods for dealing with these factors.
- e. Identify any local, state or federal resources that the proposer contemplates requesting for the project. Describe the total commitment (financial, services, property, etc.), if any, expected from government sources; and the timing of any anticipated financial commitment.

TAB 4: Project Warranty:

- a. Describe the terms and provisions of the Project warranty, the term of which shall not be less than fifteen (15) years and shall apply to repairs on the roadways which constitute the Project.

Evaluation and Selection Process.

Proposal Review

Each submitted proposal shall be reviewed by such persons as appointed by O'Fallon who will evaluate the proposer's qualifications as well as the technical and financial feasibility of each project.

Purpose

The City will perform the qualification review of each proposal to determine whether the proposer has, in the sole opinion of the City, (i) submitted a complete and responsive proposal; (ii) assembled a team which is qualified and capable of completing the proposed facility; (iii) developed a plan which is technically feasible; (iv) proposed an acceptable warranty of serviceability; and (v) provided a financial plan and financial guarantees necessary to finance the facility.

The City may request formal presentations and/or additional documentation in order to assess project feasibility and proposer's qualifications or any other information deemed necessary by the City.

The City will evaluate all proposals using the criteria listed hereafter under Proposal Evaluation and Selection Criteria and will select the winning proposal.

Proposal Evaluation and Selection Criteria

The following items will be considered, but the weighing and final decision is subject to the sole discretion of the City.

Qualifications and Experience Does the proposer propose a team which is qualified, led, and structured in a manner which will clearly enable the team to complete the proposed project?

Project Construction

1. Experience with Similar Infrastructure Projects

Have members of this team previously constructed, improved or managed transportation infrastructure? Has the lead firm managed, or any of the member firms worked on, a similar project? Do members of the team have the ability, capability and skill to timely perform the Project?

2. Demonstration of Ability to Perform Work

What commitments has the team made to carry out the project? Does the team possess the necessary financial, staffing, equipment and technical resources to successfully complete the project? Do the team and/or member firms have a competing financial or workforce commitments that may inhibit success and follow-through on this project?

3. Quality of Workmanship

Do team members have a good reputation on performance on comparable prior projects? Do team members have a track record for compliance with applicable laws and regulations?

4. Leadership Structure

Is one firm designated as lead on the project? Does the organization of the team indicate a well thought out approach to managing the project? Is there an agreement/document in place between

members? Do team members have the character, integrity, reputation and judgment, and experience to perform the Project?

5. Project Manager's Experience

Is a Project Manager identified, and does this person work for the principal firm? If not, is there a clear definition of the role and responsibility of the Project Manager relative to the member firms? Does the Project Manager have experience leading this *type* and magnitude of project?

6. Management Approach

Have the primary functions and responsibilities of the management team been identified? Have the members of the team developed an approach to facilitate communication among the project participants? Has the firm adequately described its approach to communicating with and meeting the expectations of O'Fallon?

7. Financial Condition

Is the financial information submitted on the firms sufficient to determine the firms' capability to fulfill its obligations described in the project proposal?

9. Participation of Small Businesses and Businesses Owned by Women and Minorities

What is the level of commitment by the proposers to use small, minority, and women-owned business enterprises in developing and implementing the project?

Project Financing Has the proposer provided a financial plan and financial guarantees which will provide the necessary capital to finance the facility?

1. Financing

Did the proposer demonstrate evidence of its ability and commitment to provide the equity for the Project?

2. Financial Plan

Does the financial plan demonstrate a reasonable basis for funding Project development and completion? Are the assumptions on which the plan is based well-defined and reasonable in nature? Are the plan's risk factors identified and dealt with sufficiently? Are the planned sources of funding and financing realistic?

3. Estimated Cost

Is the estimated cost of the facility reasonable in relation to the cost of similar projects?

4. Compliance with Cash Flows

Does the financing plan comport with the scheduled cash available from O'Fallon to repay project construction cost?

Project Warranty

1. Are the quality and nature of the materials consistent with the required fifteen (15) year warranty of serviceability with respect to repairs?

2. Are the financial resources of the bidder consistent and comparable with the giving of the warranty, i.e., can the bidder reasonable perform its contractual obligations on the warranty?

The Comprehensive Agreement

Prior to constructing and financing the Project, the proposer selected must enter into a comprehensive agreement or agreements with O'Fallon. A working group chaired by the Mayor

of O'Fallon will be responsible for negotiating those agreements. Each agreement will define the rights and obligations of O'Fallon and the Proposer.

Any changes in the terms of the comprehensive agreement as may be agreed upon by the parties from time to time, and shall be added to the comprehensive agreement by written amendment.

End of Request for Proposal

Bid Proposal Form

Project:

Bid Date:

The undersigned hereby purposes to design, build, finance, and warranty the specified Interior Roads for a lump sum of _____ Dollars,
(\$ _____)

Appendix C

TAZWELL COUNTY, ILLINOIS REQUEST FOR PROPOSAL

TAZWELL COUNTY, ILLINOIS REQUEST FOR PROPOSAL

The County Commission of Tazwell County, Illinois ("Tazwell County" or "County") herewith solicits Requests for Proposals to design, construct, finance, and provide a warranty of serviceability to Tazwell County for a series of roads located within the County.

PROJECT DESCRIPTION

The County is requesting Proposals for the reconstruction of following listed roads. The County may at its discretion reject all proposals or accept any of the listed roads on a stand alone basis. The roads and their dimensions to which they should be reconstructed are:

<u>Road Description</u>	<u>Approximate Length (ft)</u>	<u>Paved Width (ft)</u>
Springfield Road, Townline Road to Toboggan Ave.	25,344	34

PUBLIC NOTICE

The County shall issue public notice of the Request for Proposals by publication in a newspaper(s) or other publications of general circulation within the State of Illinois so as to provide reasonable notice to the maximum number of proposers that can be reasonably anticipated to submit proposals. Additionally, to the extent possible, a copy of this Request for Proposal will be forwarded to a random sample of vendors qualified to complete the Project.

PROPOSAL SUBMISSION

Proposers submitting a proposal are required to deliver (not by facsimile) five copies of their proposal to the following address:

Tazwell County Commission
Tazwell County Highway Department
21308 IL. RT. 9
Tremont, IL 61568
Attention: Tazwell County Commission

Proposals are to be sealed in mailing envelopes or packages bearing the proposer's name and address and the words "**Springfield Road Reconstruction Project**" clearly written on the outside. The cover page must include the title of the proposal, the name and address of the proposing entity, the persons authorized to act on behalf of the proposer and his or her telephone

and facsimile numbers. Proposals must be completed and received in the office of _____ on or before PM, _____, 1998.

PROPOSAL FORMAT AND PREPARATION

Proposal must be signed by an authorized representative of the firm or consortium making the proposal. All information requested herein should be submitted. Proposers failing to submit all information may be given an opportunity to promptly submit missing information and/or may be given a lowered evaluation of the proposal. Proposals which lack key information required may be rejected at the discretion of the County as may any and all bids. The following items shall be addressed in the proposal:

Project Design and Construction Characteristics A description of how the project will be designed and constructed with an estimated number of working days shall be included in the proposal. Major contractors shall be listed including company qualifications and a representative's name, address, and telephone number.

Project Financing A lump sum dollar amount for each of the listed roads shall be shown on "Appendix A - Bid Proposal Form". The proposer shall offer optional project financing over the term of the warranty to the County. The County requires financing terms included with this proposal which shall be attached to "Appendix A", detailing all terms and conditions including interest rate and repayment schedule. The County may elect to enter into a contract or agreement with the proposer and fund the project under its normal course of business or at its discretion accept the proposers financing terms and conditions.

Project Warranty A description of the terms and provisions of the Project Warranty, the term of which shall not be less than 5 years, shall be included in the proposal. Included in the description shall be any warranty terms and limitations and the responsibilities of both the County and the proposer over the life of the warranty.

COMPREHENSIVE AGREEMENT

Prior to constructing and financing the project, the proposer selected must enter into a comprehensive contract or agreement with the County. A working group authorized by the County Commission will be responsible for negotiating the contract or agreement. The contract or agreement will define the rights and obligations of both the County and the Proposer. Any changes in the terms of the contract or agreement as may be agreed upon by both parties shall be added by written amendment.