

National Pavement Warranty Summary

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Outline

- **Pavement Scan 2002**
- **NCHRP 10-68 Efforts**
- **FHWA Efforts**
 - ▶ **Recommended Procedures**
 - ▶ **Workshop**
 - ▶ **Long-Term Warranties**
- **SE States Efforts**

**European Pavement
Warranty Scan September
14-28 2002**

Warranty Definitions

- **Warranty**
 - ▶ **Performance-based contract**
 - ▶ **Guarantees the integrity of a product**
 - ▶ **Contractor responsible for replacement of defects**
- **Warranty Period**
 - ▶ **Pre-specified for repair defects in the product**
 - ▶ **Provide assurance of performance, but not to unnecessarily inflate contract prices**

Warranty Definitions

- **Materials and Workmanship**
 - ▶ **Method specifications**
 - ▶ **Includes distresses resulting from defective materials and/or workmanship**
- **Performance**
 - ▶ **Performance specification**
 - ▶ **Contractor designs some level of structural pavement and/or mix decisions**
 - ▶ **Includes full responsibility for pavement performance**

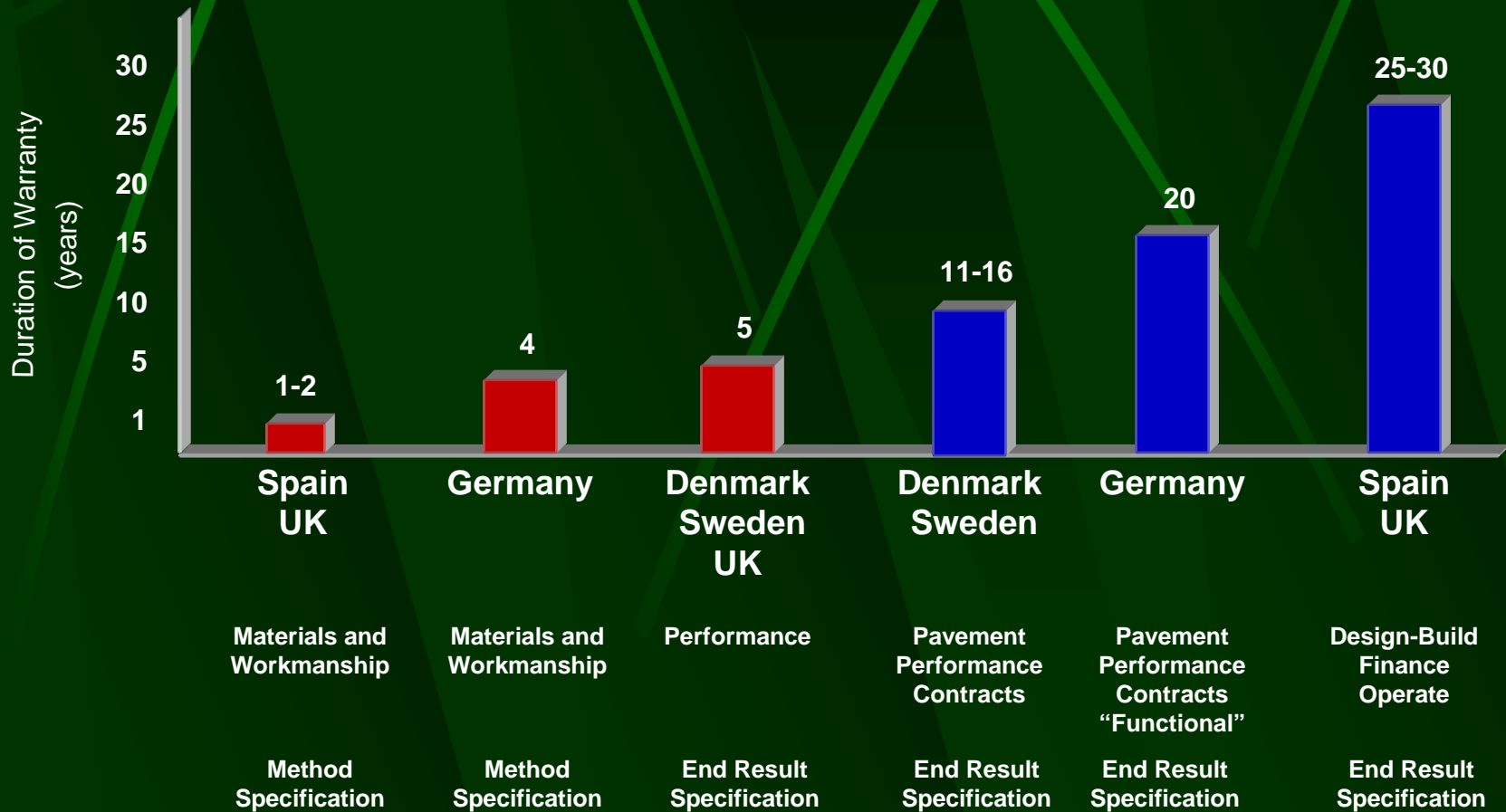
Summary Observations

- **Most European countries have a history warranties on pavement construction**
- **All have at least 1 to 4 year warranties of materials and workmanship**
- **Several have 5 year performance warranties**
- **Many countries trying 10 to 18 year Warranties**

Summary Observations

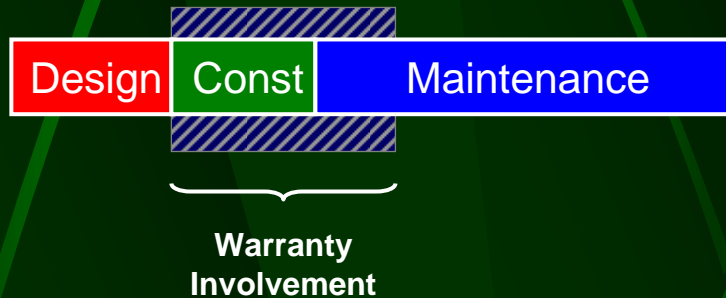
- **Motivation for Warranty Programs**
 - ▶ **Originally created between owners and industry**
 - ▶ **Recent change in European agencies from service providers to owners**
 - ▶ **Agencies staff size generally decreasing**

Summary Observations

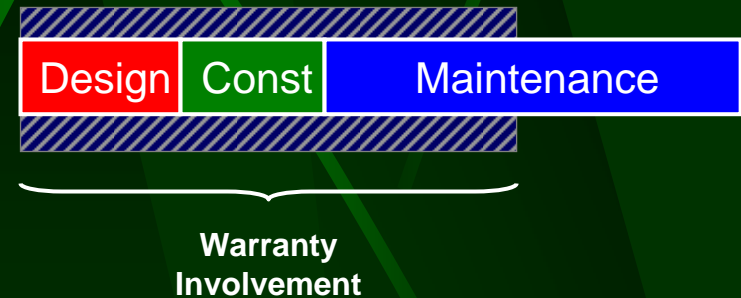


Summary Observations

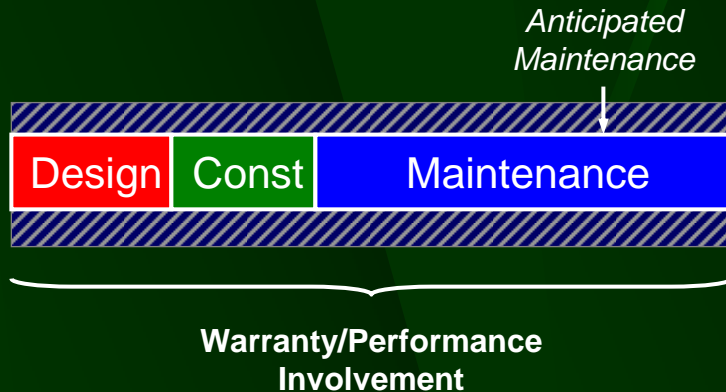
Material & Workmanship



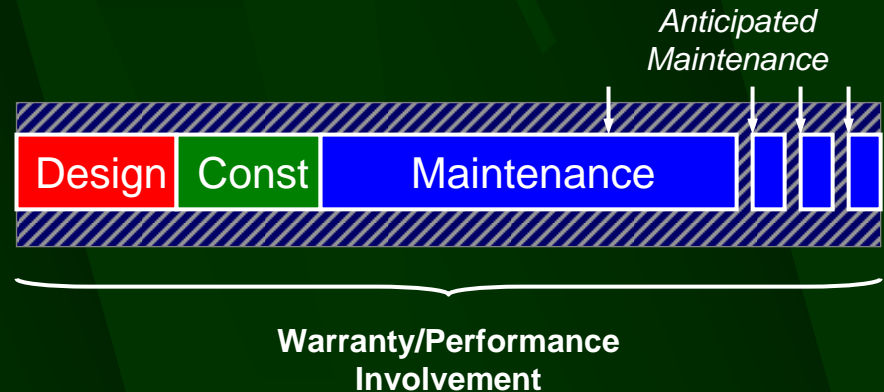
Short-Term Performance



Long-Term Performance



Design-Build Finance Operate



Summary Observations

- **Performance warranties typically cover ride, friction, rutting, cracking, and durability**
- **The contractor designs the materials and structure to meet performance criteria**

Summary Observations

- **No countries use low bid to award large project contracts**
- **Prequalification and Best-Value used by all countries**
 - ▶ **Criteria include design, safety, innovation, environment, and extended warranties**
 - ▶ **Panels evaluate the tenders based on set and transparent procedures**

Summary Observations

- All host countries believe warranties have improved quality
- Performance warranties have allowed some innovation by the contractor over materials and workmanship

Project Scope Definition

- **New, resurfacing, and reconstruction**
- **Dependent primarily on size of project**
- **Owner determined traffic loads and pavement condition data**
- **Prime contractor responsibility**
- **Some user delay costs**

Pre-Contract Award

Procurement Similar in all Countries

- **Pre-qualification processes**
- **Best-value selection**

Noted as key to success in all countries

Bonding

Construction and warranty bonds were used, but varied in length

- **Examples**

- ▶ **Germany – 5% const. & 2% warranty**
- ▶ **Denmark – 15% const., 10% year 1 and 2% for remaining warranty**
- ▶ **Sweden – 10% construction**

Design-Methods

- **Both method and end results specifications are used**
- **Performance warranties involved more contractor design**
- **Concessions involved the most freedom of design**

Operation and Maintenance

- Maintenance is “implicitly” included for material & workmanship and short-term performance contracts
- Maintenance is “explicitly” included for long-term performance and concession contracts

Corrective Action

- In all countries, prime contractor is responsible for corrective action
- In Denmark, corrective action is paid for in an prorated amount
- Conditions to void warranty exist (i.e. heavy traffic loads, owner error, etc.)
- In all countries, corrective action is noted in the next bid

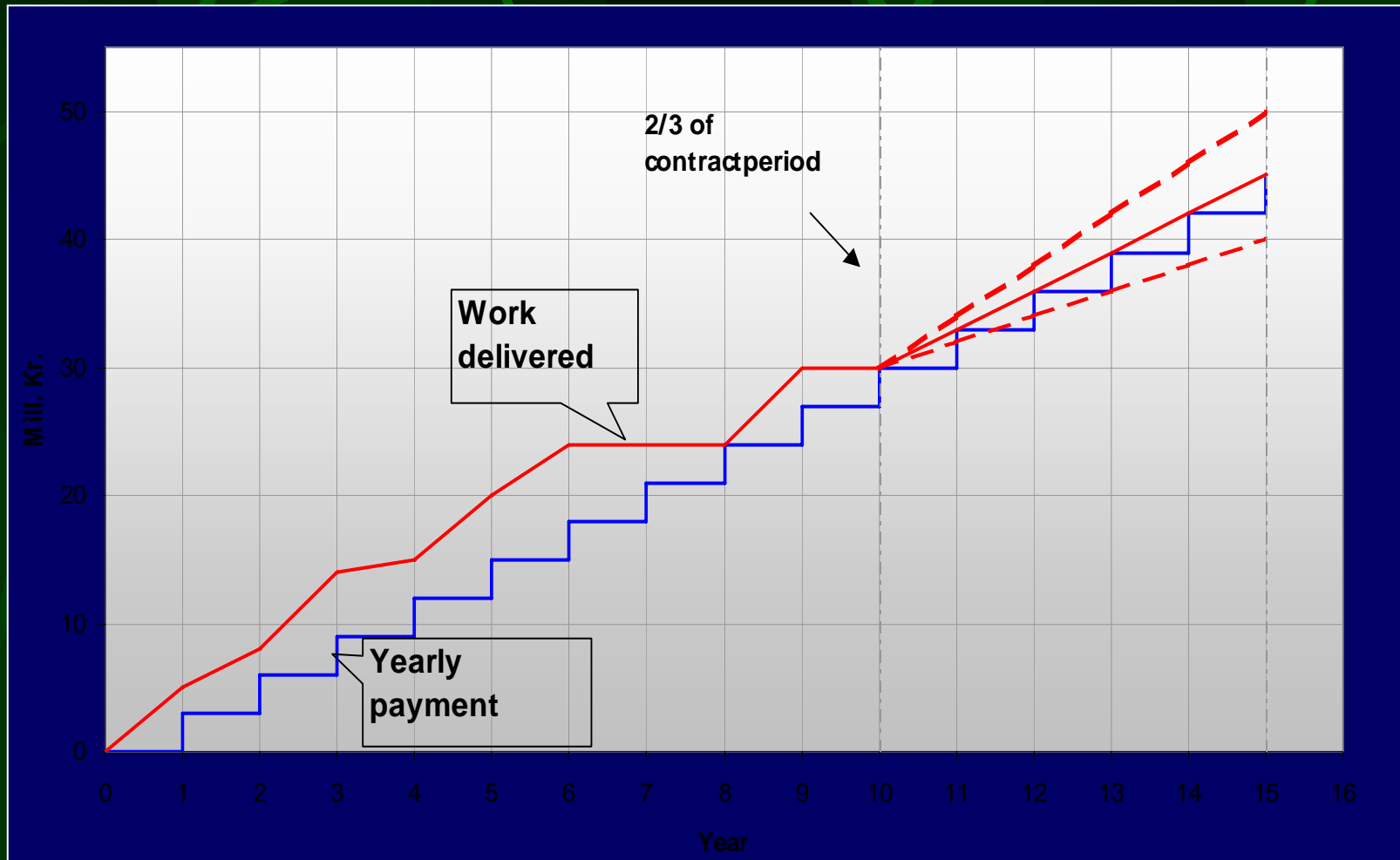
Project Performance

- **Warranty performance measurements varied, but are similar to US**
 - ▶ **IRI**
 - ▶ **Friction**
 - ▶ **Rutting**
 - ▶ **Longitudinal Cracking**
 - ▶ **Transverse Cracking**
 - ▶ **Faulting**

Pavement Performance Contracts

- PPC are long-term resurfacing and maintenance contracts
- Length varied by country
 - ▶ Sweden – 5-8 years
 - ▶ Denmark – 11-18 years
 - ▶ Germany – 20 years
- Contractor is responsible for design, construction, maintenance, and some financing

Payment Model Long-Term



Long term Performance Contracts in the US

- Can we use them in the US?
- Can we use the European Model?
- What changes do we need to make them work?
- Performance Period?
- Performance Indicators?

NCHRP 10-68

**“Guidelines for the Use of
Highway Pavement
Warranties”**

NCHRP 10-68

- Trauner Consulting Services
 - ▶ Sid Scott – PI
- Started 7/7/05, Completed 3/31/07
- Objective
 - ▶ “..is to develop guidelines for the project-level application of pavement warranties.”
- Initial Panel Meeting – March 1-2, 2006

Panel Members

- Texas DOT
- Washington DC
- North Carolina
- Virginia
- Wisconsin
- Indiana DOT
- California DOT
- Maryland DOT
- New Mexico DOT
- FHWA
- TRB
- Industry & Agency

FHWA Efforts

FHWA Efforts

- **Three Guidance Papers being developed.**
 - ▶ **Background for Pavement Warranties**
 - ▶ **Selection Procedures for Pavement Warranties**
 - ▶ **Management of Pavement Warranties**
- **Warranty Workshop – Fall 06-Spring 07**
- **Long-Term Pavement Warranties**

Background for Pavement Warranties

- **Who's tried warranties - 35 States**
- **Definitions**
 - ▶ **Materials and Workmanship 2-4**
 - ▶ **Short Term Performance 5-10 yrs**
 - ▶ **Long-Term Performance 10-20 yrs**
- **International Scan Results**
- **Warranty Considerations : Cost Effectiveness, Improved Performance, Industry and Agency Concerns**

Selection Procedures for Pavement Warranties

- Specifications Development
 - ▶ Contractor
- Bonding or Guarantee Issues
- Project Selection
- Acceptance Procedures
- Warranty Evaluations
- Warranty Experiences

Management of Pavement Warranties

- **DOT Management of a Warranty Program**
 - ▶ **Who needs to do what during the warranty period**
 - ▶ **Recommended Warranty Data collection**
 - ▶ **Field Verification Process**

SE States Efforts

SE States Efforts

- **Virginia, West Virginia, North Carolina, South Carolina, Florida, Mississippi, Tennessee, and Louisiana**
- **Mostly Limited to M&W, Except Virginia**
- **Florida DOT Standard includes existing QC/QA requirements plus 3 yr warranty on certain elements**

Thank You!

