



Managing Risk in Rapid Renewal Projects (R09)

July 26, 2013



U.S. Department of Transportation
Federal Highway Administration



TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

Agenda

- SHRP2 Overview
 - What is SHRP2?
 - Focus Areas
 - Implementation Assistance
- Technical Product Description
- Product Implementation
- Implementation Timeline
- Questions?



Source: Iowa DOT

SHRP2 R09 | July 2013

What is SHRP2?

(Second Strategic Highway Research Program)

Save lives. Save money. Save time.



- Products developed from objective, credible research
- Solutions that respond to transportation community challenges – safety, aging infrastructure, congestion
- Tested products, refined in the field

SHRP2 Solutions offer new technologies and processes to enhance the efficiency of transportation agencies

Why is SHRP2 Important?

Tools for the Road Ahead

SHRP2 Solutions have the power to change the way transportation agencies do business.

- ➔ *By providing new research-based tools and innovative products and processes...*
- ➔ *That will create more efficiencies and a smarter use of state and federal investments of taxpayer dollars.*



Focus Areas



Safety: fostering safer driving through analysis of driver, roadway, and vehicle factors in crashes, near crashes, and ordinary driving



Renewal: rapid maintenance and repair of the deteriorating infrastructure using already-available resources, innovations, and technologies



Capacity: planning and designing a highway system that offers minimum disruption and meets the environmental and economic needs of the community



Reliability: reducing congestion and creating more predictable travel times through better operations

Implementing SHRP2 Solutions

Moving Forward

- Approximately 66 high-priority products introduced over the next several years
- Users run the gamut of the transportation industry
- Selected products integrated into current transportation practices



SHRP2 Implementation Assistance Program

Proof of Concept Pilot

- Funds for piloting products to evaluate readiness for implementation
- Contractor support to collect data and evaluate the application

Lead Adopter Incentive

- Funds for early adopters to offset implementation cost and mitigate risks
- Recipients required to provide specific deliverables designed to further refine the product, and possibly “champion” the product to other states and localities

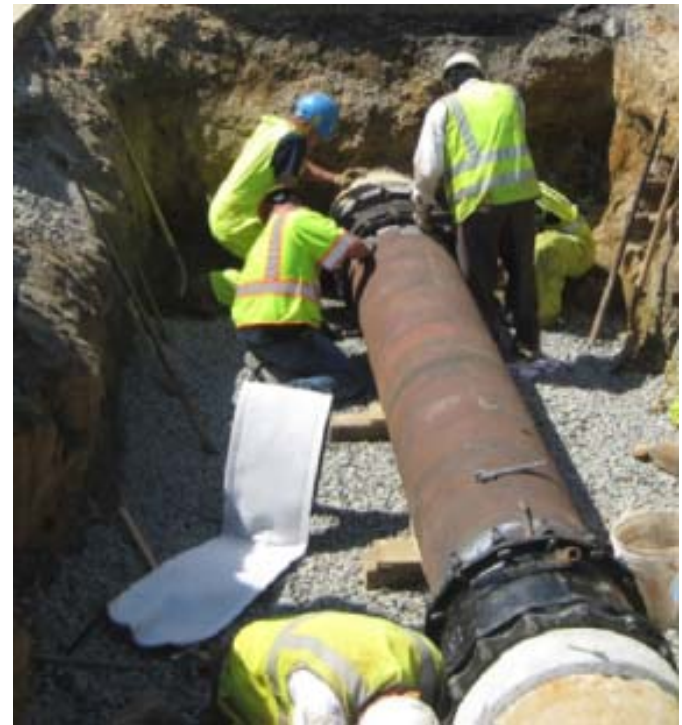
User Incentive

- Funds for implementation support activities after early adopter use
- Used to conduct internal assessments, build capacity, implement system process changes, organize peer exchanges, or offset other implementation costs

Round 1 Implementation Assistance

First Round at a Glance

- 34 states and the District of Columbia
- 6 SHRP2 Solutions at work on 108 transportation projects
- 2 proof of concept pilots
- 74 lead adopter incentives
- 24 user incentives
- Limited technical assistance to 8 states



Round 2 Implementation Assistance



Capacity

- Expediting Project Delivery (C19)



Renewal

- Performance Specifications for Rapid Renewal (R07)
- Managing Risk in Rapid Renewal Projects (R09)
- Railroad-DOT Mitigation Strategies (R16)

Product Implementation Assistance Opportunities

Product	Proof of Concept Pilot	Lead Adopter Incentive	User Incentive
C19: Expediting Project Delivery		5	5
R07: Performance Specifications for Rapid Renewal		4	
R09: Managing Risk in Rapid Renewal		4	
R16: Railroad-DOT Mitigation Strategies		4	4

Implementation Assistance Selection Criteria

General Criteria for Participants (will vary somewhat among products)

- Geographic diversity of participants
- Demonstrated culture to implement new products or processes
- Demonstrated past interest and/or efforts to implement similar products or processes
- High commitment to making institutional/organizational changes
- Commitment to conduct demonstration workshops
- Willingness to share experience by facilitating peer-to-peer activities
- Commitment to dedicate staff to the implementation project

Managing Risk in Rapid Renewal Projects – R09

Challenge

Rapid renewal projects are typically innovative and complex, which can lead to unexpected problems and thus unexpected performance issues.

Solution

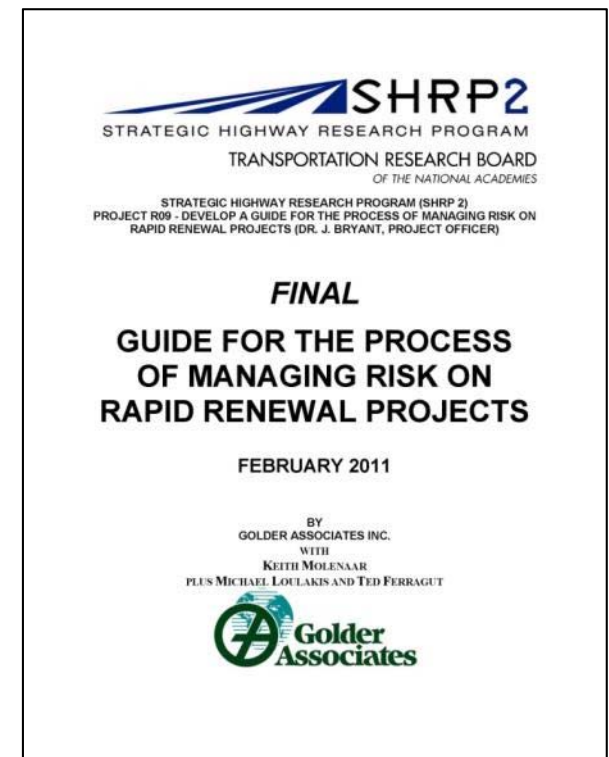
- Objective guidance on implementing risk management procedures that can be applied to various types of projects.
- Tools and training materials to assist in applying techniques to project development process.



Managing Risk in Rapid Renewal Projects – R09

Guide for the Process of Managing Risks in Rapid Renewal Projects

- Formal risk management process
- Practical methods for identifying, assessing, evaluating, mitigating, allocating, monitoring and otherwise managing risk
- Tools include:
 - Risk management materials such as risk/mitigation checklists
 - Implementation tools such as forms and related MS Excel template
 - Course to train DOT staff with complete hypothetical example



Managing Risk in Rapid Renewal Projects – R09

Goal of R09 Risk Management Process:

Optimize project *performance*

- Project delivery (cost, schedule, disruption)
- Longevity (O&M/replacement cost/disruption/life)

Major Concepts:

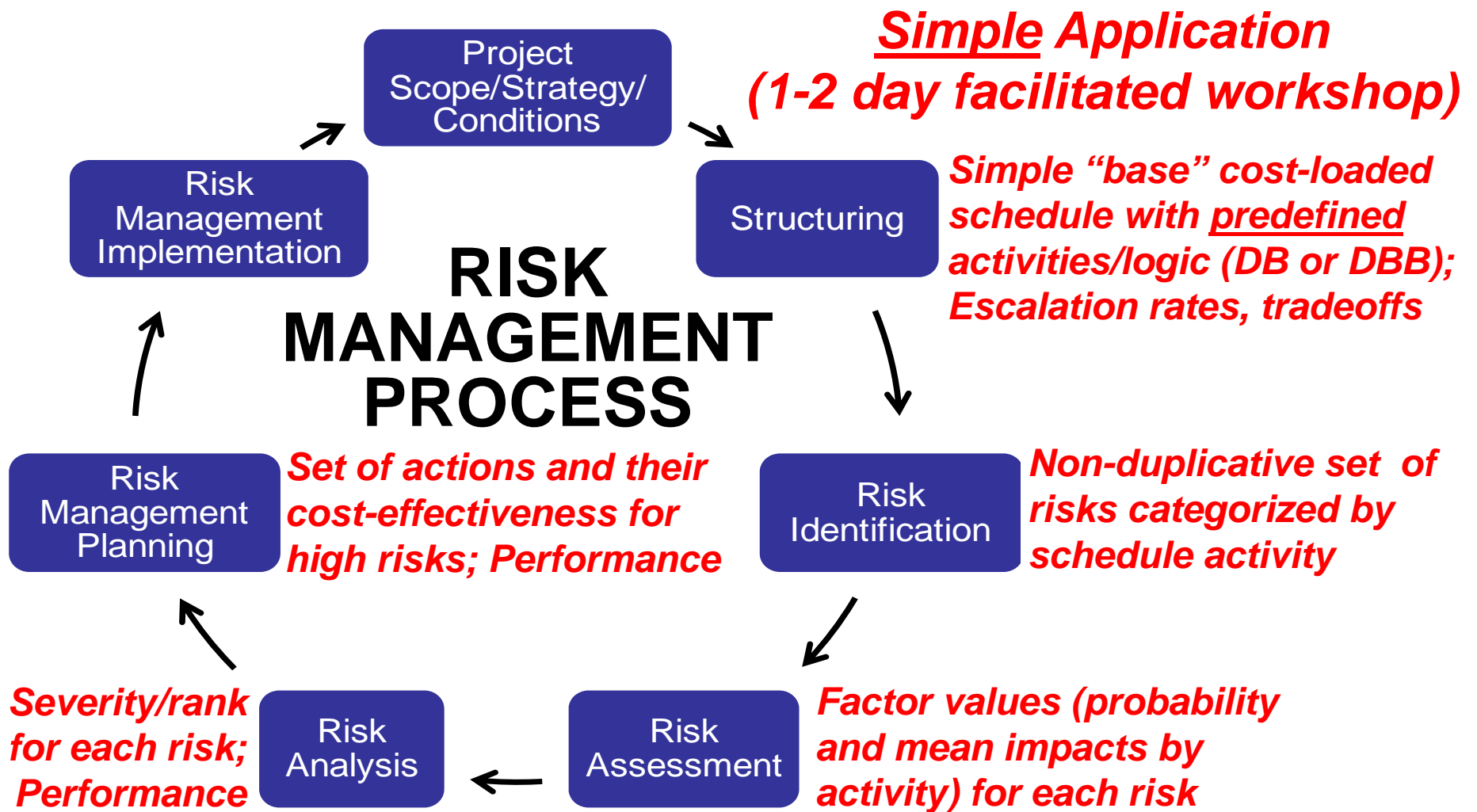
“Base” performance = function of assumptions about planned project (including scope, strategy, conditions, but excluding contingency)

“Risks” = all potential events that differ from assumptions and impact performance

Total performance = base performance + risks

→ Reduce risks to improve total performance

Managing Risk in Rapid Renewal Projects – R09



Managing Risk in Rapid Renewal Projects – R09

Example of one elicited construction risk:

- Risk CN4 – Unable to construct interchange embankments as rapidly as assumed (e.g., due to subsurface conditions, different contractor method, effectiveness of method)
- Risk factor assessments (in terms of ratings = pre-defined ranges of values, instead of mean values or full distributions)

Probability	Cost Impact	Delay	Disruption Impact
M	+L to CN	+M to CN	+L to CN

- Evaluation (pre-mitigation)
 - with base → mean performance impacts → "Severity" (+L)
 - compared to all risks → 5% of total risk → rank (#8)
 - with all risks + base → mean project performance

Managing Risk in Rapid Renewal Projects – R09

Example of one elicited risk action:

- Mitigation of Risk CN4 – Conduct additional site investigation/analysis before selecting method and develop effective contingency plan if selected method doesn't work
- Action cost-effectiveness factor assessments

Implementation Cost	Risk Reduction
+\$0.1M to FD	Reduce probability by half (M→L)

- Evaluation
 - → residual severity(-50%) → action cost-benefit (+90%)
 - compared to all actions → rank (#7) → select / plan
 - with all actions → residual risk severity/rank
 - residual mean project performance → contingencies

Benefits

- Improve project performance and meet project performance expectations (budget, milestones, public satisfaction)
- Better project team understanding and fewer surprises
- Better process
 - done in-house on simple projects (most)
 - with expert help on complex projects (few)



Implementation Strategies

- Train DOT staff on R09 process
- Conduct demonstration workshops that apply R09 process on DOT projects
- Create cadre of expert trainers/facilitators
- Host peer exchanges
- Identify best practices from first users
- Incorporate R09 process into FHWA procedures

Assistance Opportunities

Second Round - Aug 2013	Proof of Concept Pilot	Lead Adopter Incentive	User Incentive
R09 – Managing Risk	0	4	0

- Implementation assistance includes training courses, demonstration workshops, peer exchanges, and technical assistance
- DOT will become champion for product implementation in other DOTs
- Implementation assistance funding to perform other activities as identified by DOT: Up to \$100,000

Implementation Assistance

FHWA

- R09 implementation services provided by FHWA contractor resources
 - Training Course
 - Demonstration Workshop
 - Peer Exchange
 - Synthesis Report
 - Technical Assistance

Value of FHWA
Services to DOT
\$43,500

DOT

- Up to \$100,000 per DOT to perform implementation activities such as:
 - Training Courses
 - Workshops
 - Peer Exchanges
 - Technical Assistance
 - Project Development Manual Updates
 - Other activities as determined by the DOT

Implementation Assistance
Funding to DOT
Up to \$100,000

Recipient Requirements

- Commitment of DOT leadership
- Development of a plan to implement R09 process as part of the DOT project development process
- Identification of one DOT project on which to demonstrate R09
- Willingness to share lessons learned
- Participation in regional/national events to share knowledge about product use (peer exchanges/conferences)

Application Tips

Do	Don't
Make your application clear and concise	Forget to provide a response in each of the fields
Describe any previous DOT efforts related to project risk management	Assume the SHRP2 program is familiar with details about your DOT; narrative should be complete
Describe how the DOT anticipates implementing product including necessary resources	Forget that implementation assistance is to advance project risk management
Describe the outcomes and deliverables you expect to achieve	Apply if you do not represent a state DOT
Expect to share the results of your product implementation	Be late; applications are due by September 6

Round 2 Implementation Assistance Schedule

- Product Webinars held in July

R16 – Railroad-DOT Mitigation Strategies	July 18	2-3:30 p.m.
C19 – Expediting Project Delivery	July 23	12-1:30 p.m.
R07 – Performance Specifications for Rapid Renewal	July 24	12-1:30 p.m.
R09 – Managing Risk in Rapid Renewal	July 26	12-1:30 p.m.

- Implementation Assistant Timeline

– Application period opens	August 2
– Application period closes	September 6
– Awards announced	Mid-October

- More information at www.fhwa.dot.gov/goshrp2

Additional Resources

- State Visits

- SHRP2 Tuesdays

C19 June 4 <http://www.trb.org/PlanningForecasting/Blurbs/168845.aspx>

R07 June 11 <http://www.trb.org/Pavements/Blurbs/168927.aspx>

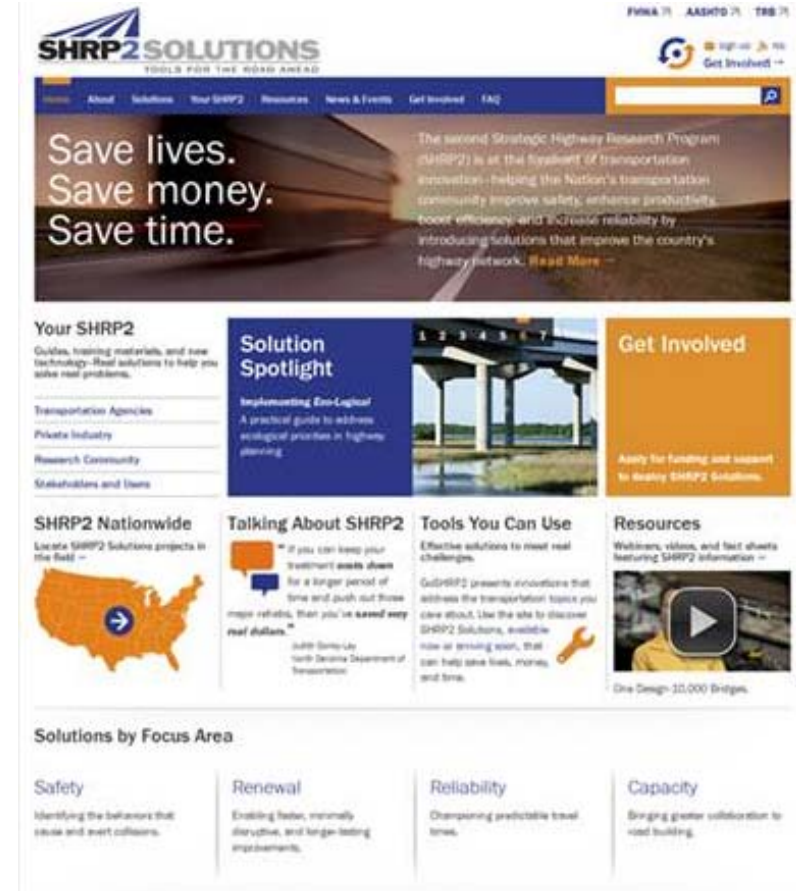
R16 July 9 <http://www.trb.org/Railroads/Blurbs/169188.aspx>

R09 August 20 at 2:00 p.m. ET



SHRP2 on the Web

- **goSHRP2 (launches Aug. 2)**
www.fhwa.dot.gov/goSHRP2
 - Comprehensive information about SHRP2's implementation phase
 - Launch coincides with opening of Round 2 Implementation Assistance
- **SHRP2 @TRB**
www.TRB.org/SHRP2
 - Information about research phase
- **SHRP2 @AASHTO**
<http://SHRP2.transportation.org>
 - Implementation information for AASHTO members



Questions?

R09 Guide: <http://www.trb.org/Main/Blurbs/168369.aspx>

Implementation Assistance: www.fhwa.dot.gov/goSHRP2

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