



**NORTH CAROLINA**  
Department of Transportation

# Managing Risk in Project Delivery

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October 11, 2023

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

# Agenda

## Managing Risk in Project Delivery

- Overview of NCDOT's Risk Management Program
- Organizing Around Risk for NCDOT Projects
  - Lessons Learned from the Kinston Bypass Project
- Findings from Risk-Related Research
- Wrap Up and Reminders on Risk Tools
- Questions



# VMO and Risk

## Our Role in Project and Program Management

- Single Touchpoint for NCDOT on Risk
  - Reach us to us if you have questions or concerns
- Training
  - Equipping PMs with the understanding of how to capture risk and strategies for dealing with it
- Tools
  - Online RAW or Spreadsheet RAW
  - Guides
- Workshops for Programs or Projects
  - Open-X Transition Risk Assessment
- Research



# Organizing Around Risk

## What is risk? Why it is important?

- Risk:
  - “IF-THEN”
    - Is an uncertainty (1%-99%)
    - Is an event that has not happened yet
  - Can be positive or negative
  - Can be known, unknown, or unknowable

The biggest risk is the failure to communicate.

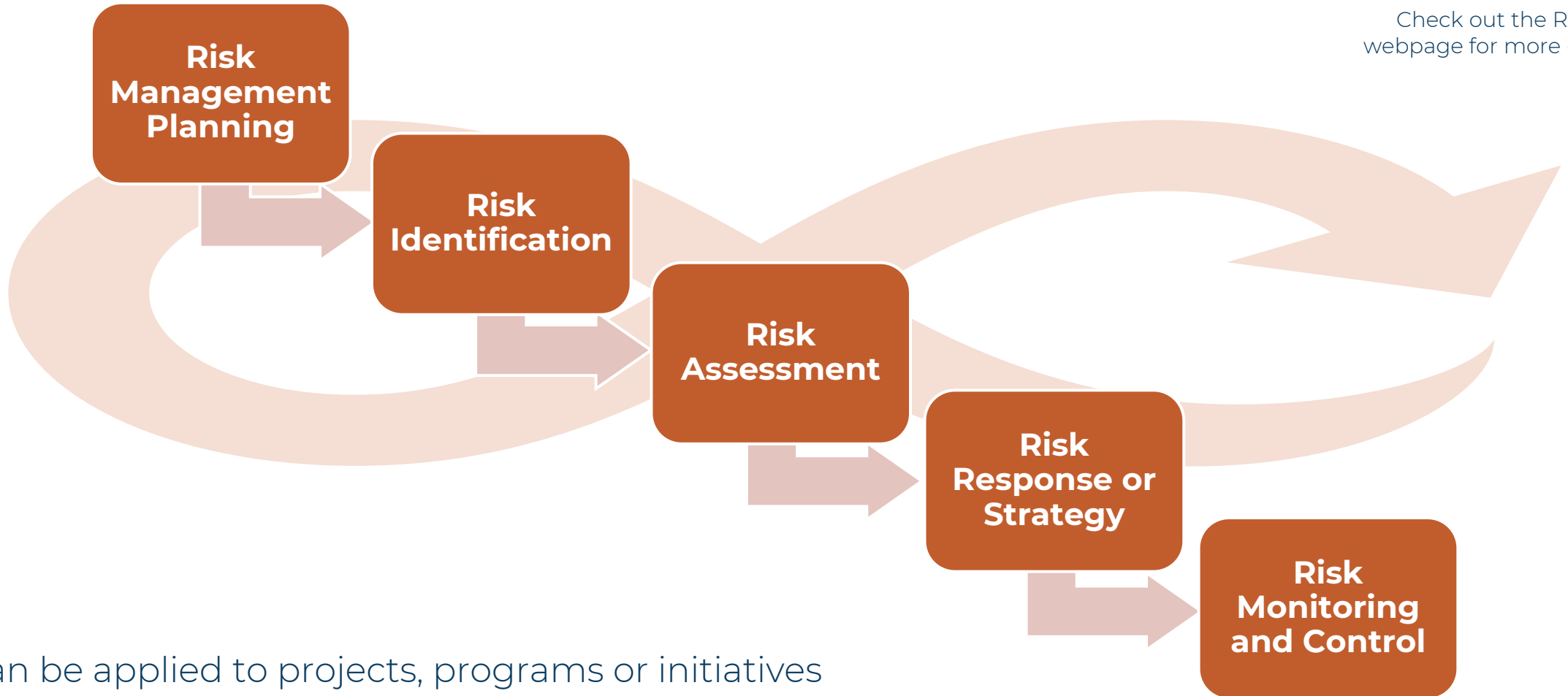


# Risk Management Process

How do we manage risk?



Check out the RMP webpage for more details



Can be applied to projects, programs or initiatives

# Risk Management Guide

Good primer on risk management concepts and best practices

## Additional Resources

- VMO Team Support
- Major Projects – Risk Assessments (CSRAs)
- Consultant Help
- Quantitative Risk Assessments
- Risk Support Tools

# NCDOT Risk Tools



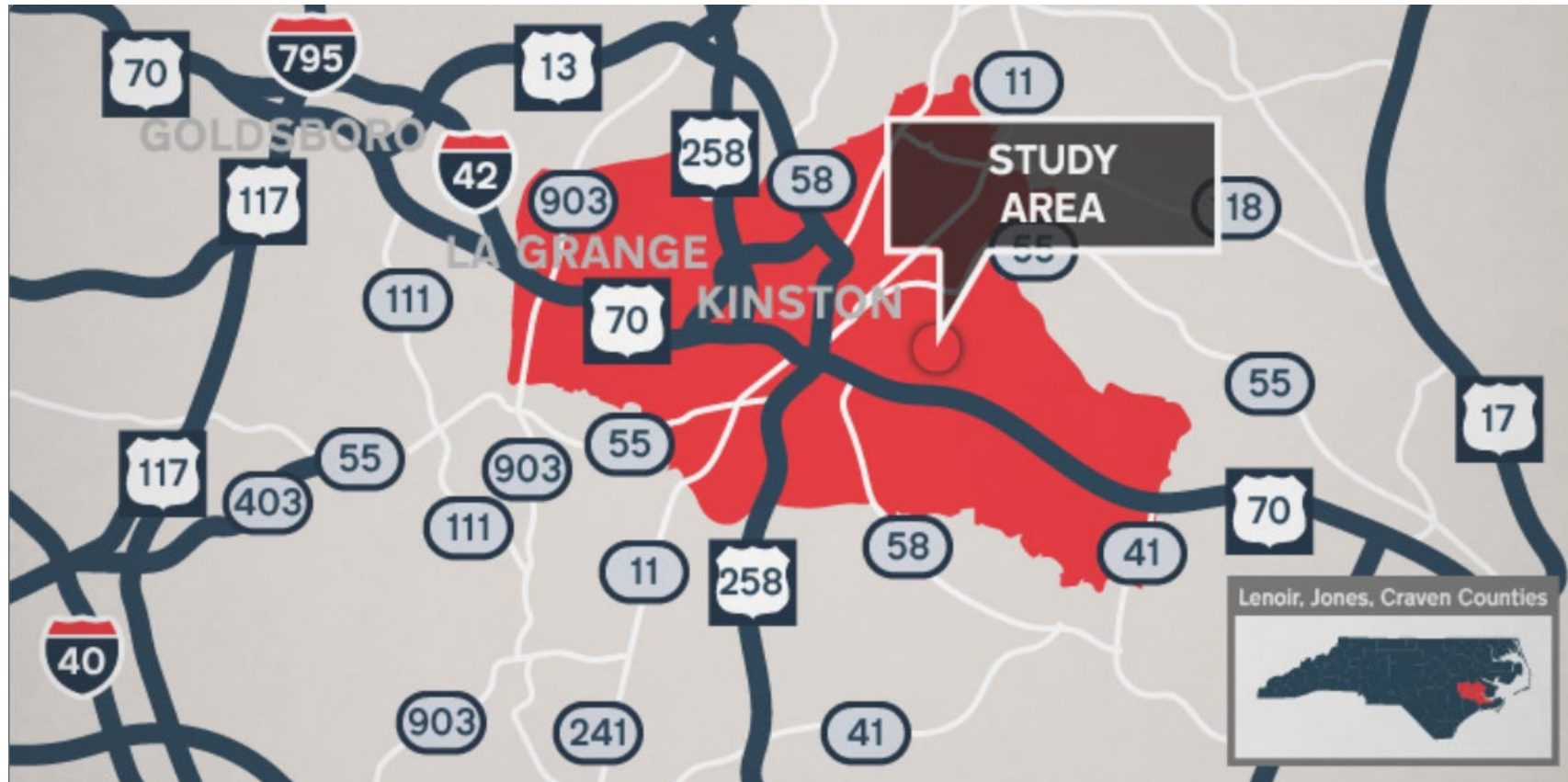
## Risk Assessment Worksheet (RAW) 1

- NEW! Online RAW for Projects
- Excel Tool for Programs / Initiatives

## CLEAR

New Risk discipline available for risk-related knowledge sharing

# Lessons in Managing Project Risk



## R-2553 – Kinston Bypass

Heather Lane, PE, Project Manager

Legend

- Study Area
- R-2553
- Railroad
- US Highway
- NC Highway
- Secondary Road
- Global TransPark (GTP)
- Municipal Boundary
- County Boundary



This map is for reference only.  
Sources: AECOM, CGIA, City of Kinston,  
Craven County, ESRI, HPO, Jones County  
Lenoir County, NCDOT, NCEM, NCEM,  
NCONemap, NRCS, USFWS

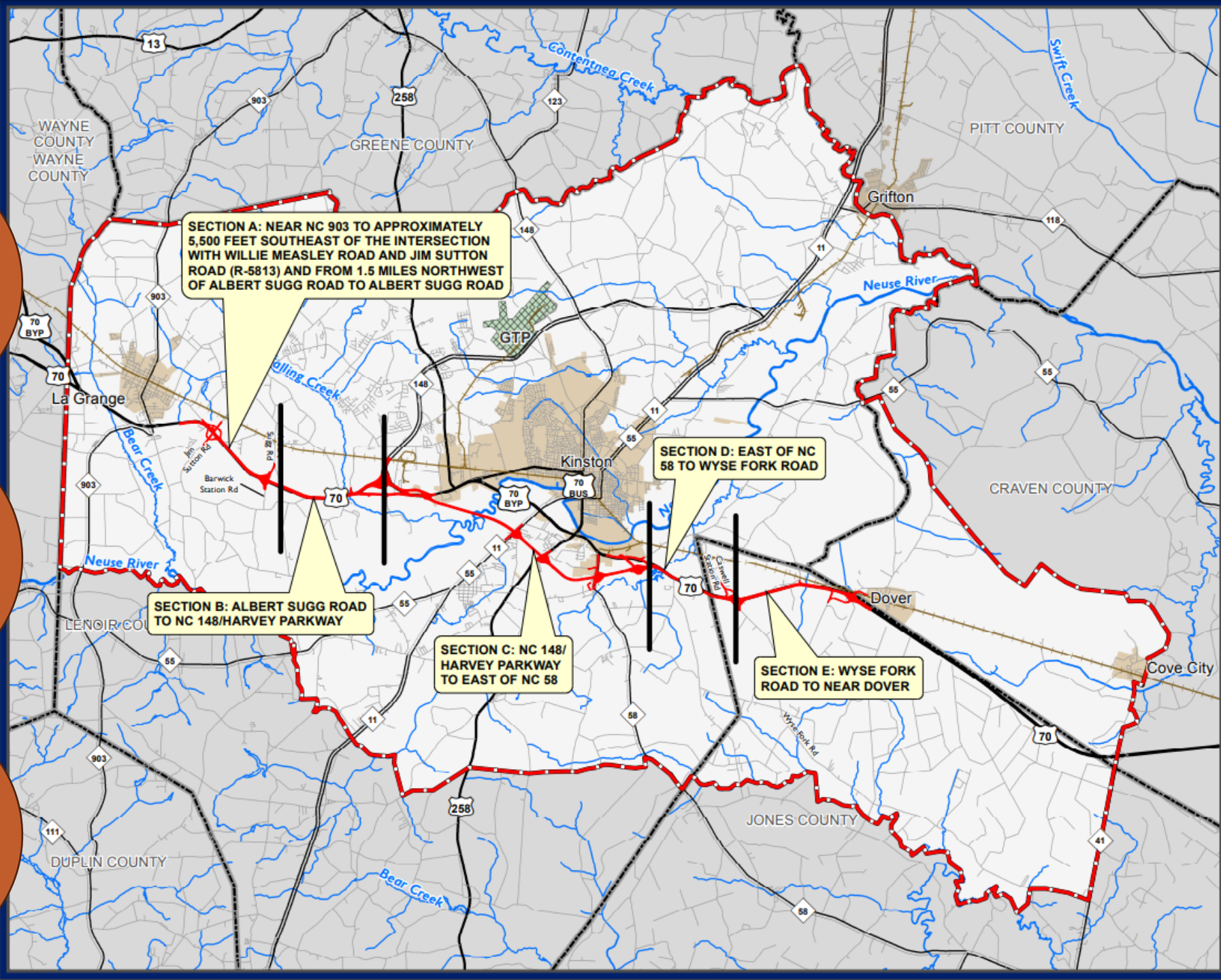


# Project Overview

~ 21 miles  
of U.S. 70

4-lane,  
median  
divided  
freeway

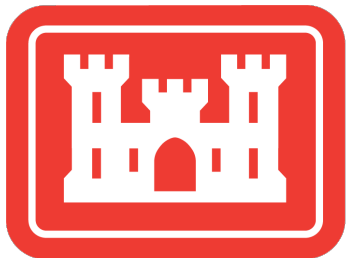
Total Estimated Cost  
\$716.2  
Million





## Who are the key project team members?

- USACE: Lead Federal Agency
- Division 2: Owner
- AECOM: Project Delivery Consultant
- E.L. Robinson Engineering: General Management Services



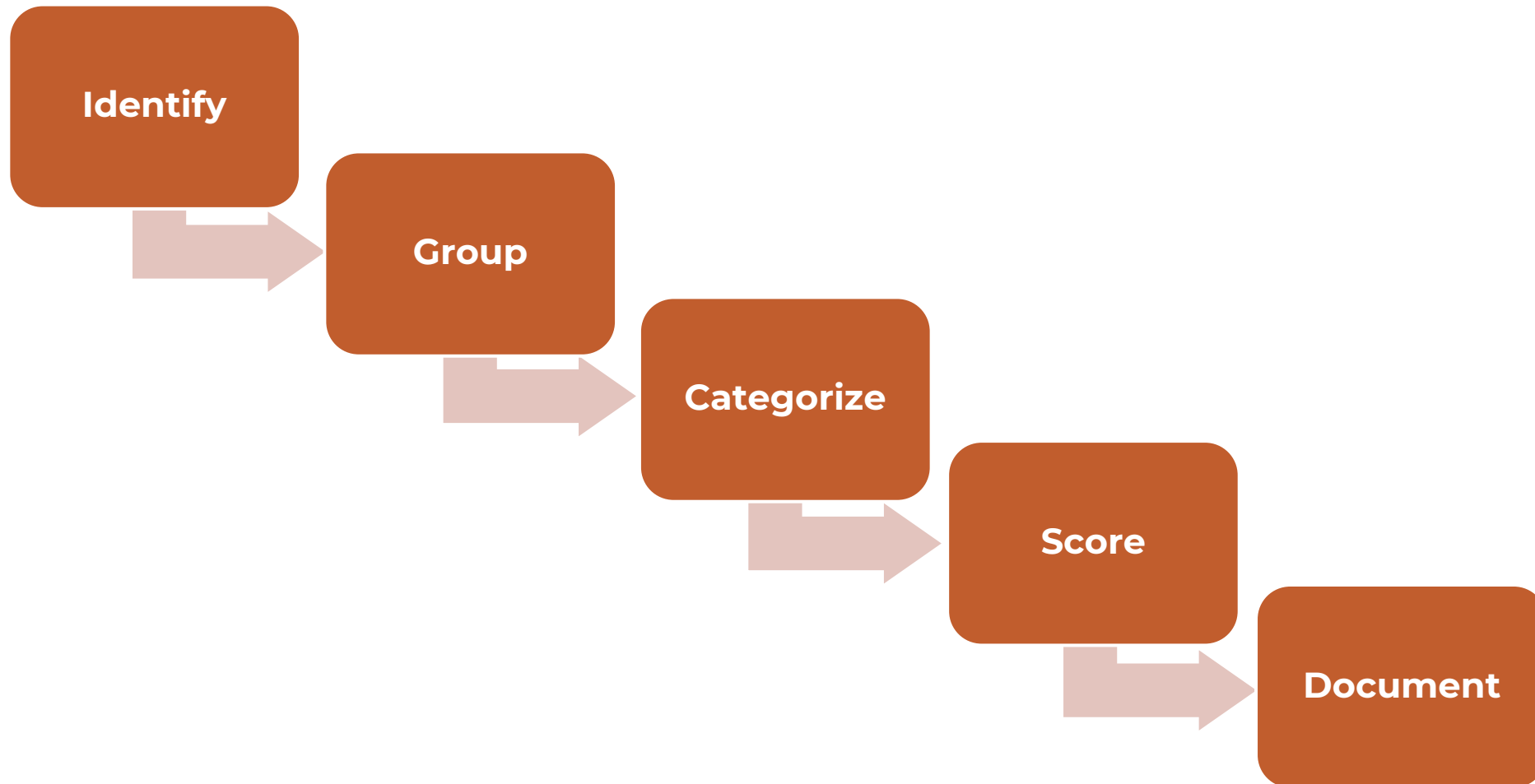
**AECOM**



## Project risk management strategies

- Weekly core project team meetings
- Weekly Action Item Log update and review
- Monthly wide project team meetings
- Special biweekly meetings for high-risk project elements (Section 106)
- Close coordination with resource agencies
- Continuous cross-checking documents for concurrence
- Develop Risk Assessment Worksheet (RAW)
- Quarterly review and update of RAW

## What process did we use to complete the Risk Assessment Worksheet?



## Identifying risk

- Meeting notes
- Action item log
- Agency feedback
- Public comments
- SME input
  
- 90+ individual risks

### Key risk that were identified

- Fully state funded (USACE as lead federal agency)
- Neuse River flooding
- Endangered Neuse River Waterdog
- FEMA HMGP buyout properties
- Environmental Justice communities
- Wyse Fork Civil War Battlefield
  
- Overlapping project- R-5813 Little Baltimore interchange

# Grouping risk

5 broad categories; 12 subcategories

- 1) Environmental
  - 1. Historical (Section 106)
  - 2. Public Involvement
  - 3. Biological
  - 4. Regulatory / Agency Coordination
  - 5. Noise
  - 6. EJ / Title VI
  - 7. NEPA Process
- 2) Regulatory
  - 8. General
- 3) Design
  - 9. ROW / Access
  - 10. Utilities
  - 11. Roadway/ Structure
  - 12. Construction/Constructability
- 4) Organizational Risk
- 5) External Risk



Design - Construction/Constructability	
40	If 2D flood analysis requires lengthening bridge spans
Organizational Risk	
41	If key staff (e.g., NCDOT PM, consultant PM, etc.) changes.
External Risk	
42	If (1) ... (2) ... (3) ...

## Categorizing risk (if/then statements)

- Using the if/then statement to ID true risk
- Project scope, schedule, and budget
- Future legal action
- Work with SME

Risk Identification					Risk Assessment			Sections Impacted					Individual Risks
Risk #	Risk Description IF	Risk Description THEN	Threat / Opp.	Status	Probability	Impact	Score	A	B	C	D	E	(Section) Site / Feature
<b>Environmental - EJ / Title VI</b>													
9	If access is unable to be provided.	then there is a direct community impact. In addition, ROW settlement could be more involved and complicated.	T	Active	Low	Low	●	A		C			(A) Chosen Vessel Ministries (building being directed impacted) (A) Dimensions in Christ Fellowship (no impact) (A) Foss Farm Community (redesign intersection, no impact) (C) 4th Street (C) Aaron Johnson Lane (want to move)
10	If access in unable to provided.	then there is a direct community impact. In addition, this community has directly expressed not wanting to be relocated, therefore there is a Title VI legal risk. In addition, with a strong focus on equity both from NC Governor and at Federal levels the project schedule could be impacted including request for additional design review which could affect delivery schedule.	T	Active	High	High	●			C			(C) Gods House for All People (do not want to move)

## Scoring risk

- Collaborative / multidisciplinary process
- In the example, worked directly with
  - project delivery consultant
  - general management services consultant

Risk Identification					Risk Assessment			Sections Impacted					Individual Risks
Risk #	Risk Description IF	Risk Description THEN	Threat / Opp.	Status	Probability	Impact	Score	A	B	C	D	E	(Section) Site / Feature
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# Documenting risk (adapting the RAW)

## New columns

- Sections Impacted
- Individual Risks

Sections Impacted					Individual Risks
A	B	C	D	E	(Section) Site / Feature
A		C			(A) Chosen Vessel Ministries (A) Dimensions in Christ Fellowship (A) Foss Farm Community (C) Gods House for All People (C) 4th Street (C) Aaron Johnson Lane

## Risk Assessment Worksheet

Project # R-2553

Risk Identification				Risk Assessment			Sections Impacted			Individual Risks	Response Strategy			Management & Monitoring Plan			
Risk	Risk Description IF	Risk Description THEN	Threat / Opp.	Statu	Probabil	Impac	Soo				(Section) Site / Feature	Strate	Action Plan	Risk Owne	Follow-up Date	Update Frequenc	Update & Comments
Environmental - EJ / Title VI	If access is not provided	then the community could file a legal complaint under Title VI and possibly other federal compliance laws such as NEPA	T	Active	Moderate	High	●	A	C		(A) Chosen Vessel Ministries (A) Dimensions in Christ Fellowship (A) Foss Farm Community (C) Gods House for All People (C) 4th Street (C) Aaron Johnson Lane	Mitigate	Targeted outreach activities. Early outreach to church. Involve Office of Civil Rights, Communications, ROW, and Title VI Officers. Re-evaluate roadway designs.	Division 2		Monthly	11/17/21 - South Memorial Open House 12/02/21 - Kinston Community Center Open House 12/21 - Majority of Aaron Johnson Lane community requested relocation (see public comments) 02/22 - Interchange was shifted west to avoid the Foss Farm community, which eliminated impacts 2/15/22 - Initial outreach to God's House for All People to request a meeting 3/17/22 - Initial meeting with God's House for All People leadership 5/10/22 - Meeting with God's House for All People congregation 7/18/22 - Initial meeting with Chosen Vessel Ministries



## Documenting risk (adapting the RAW)

### Update & Comments

- 11/13/19** - Initiate Burial Treatment Plan (CP3 Info Mtg)
- 12/22/21** - Archaeological Report (includes GPR of battlefield to identify areas of archaeological interest)
- 1/22** - Consulting parties invitations
- 2/22** - US 70 Bus interchange redesigned, increasing impacts to Herring Farm; service road redesigned to not cross in front of Cobb-King House (eliminating access for Michael King property)
- 3/24/22** - Second Effects Call Meeting
- 4/11/22** - Herring Farm provided impacts for updated US 70 Business interchange design
- 6/10/22** - Burial Treatment Plan Finalized
- 6/15/22** - Consulting parties meeting (including individual meeting with Cobb-King; Herring deferred on meeting)
- 8/1/22** - Draft MOA
- 7/22 - 8/22** - Move Caswell Station/Wyse Fork Roads interchange 1.1 east evaluated and deemed not practicable; grade separation evaluated and deemed not practicable; compressed full access interchange evaluated and deemed practicable
- 8/31/22** - Jones County Board of Commissioners letter supporting compressed full access interchange Caswell Station/Wyse Fork Roads
- 9/26/22** - Provided memo of above evaluations to USACE for review including Scott Walston memo
- 9/22** - Redesign of CF Harvey Parkway interchange eliminates all impacts to James Parrott House (plantings along Sanderson)
- 10/17/22** - Heather Lane meets with Lenoir County Commissioners to present compressed interchange design
- 10/17/22** - Lenoir County Board of Commissioners letter supporting compressed full access interchange Caswell Station/Wyse Fork Roads
- 10/22** - USACE review and additional documentation for Caswell Station / Wyse Fork Road interchange.
- 11/4/22** - Traffic evaluation memo from Dr. Hummer for Caswell Station / Wyse Fork Road interchange.
- 5/21 to 2/23** - Bi-monthly Section 106 coordination calls
- 3/23 to** - Bi-monthly NCDOT, USACE, HPO in person Section 106 coordination meetings

## What key lessons were learned going through the RAW process?

- Collaboration is very important
- Developing if/then statements can be very challenging
  - Requires someone with subject matter expertise and experience
  - Reach out to the Environmental Policy Unit (EPU) and other DOT units for help
- Scoring requires a multidisciplinary team perspective
- Importance of quarterly RAW reviews

## What were the key benefits of going through the RAW process?

- Documentation
  - Project record
  - Single location
- Efficiency
  - Proactive
  - Early identification and start
  - “Buys” time
  - Limits last minute “surprises”
  - Schedule maintenance
- Creative solutions



**R-2553 US 70 Kinston Bypass**  
**Plan for Treatment of Discovered, Unmarked Burials**  
Final – June 10, 2022

This document was prepared for the North Carolina Department of Transportation (NCDOT) Division 2 and the United States Army Corps of Engineers (USACE), in collaboration with the North Carolina Office of State Archaeology (OSA), the North Carolina State Historic Preservation Office (SHPO), and NCDOT Cultural Resources. The USACE, as the lead federal agency for the R-2553 project, approves this plan and ensures it is followed. NCDOT Division 2, as the owner of the R-2553 project, is the permittee for the USACE 404 permit.

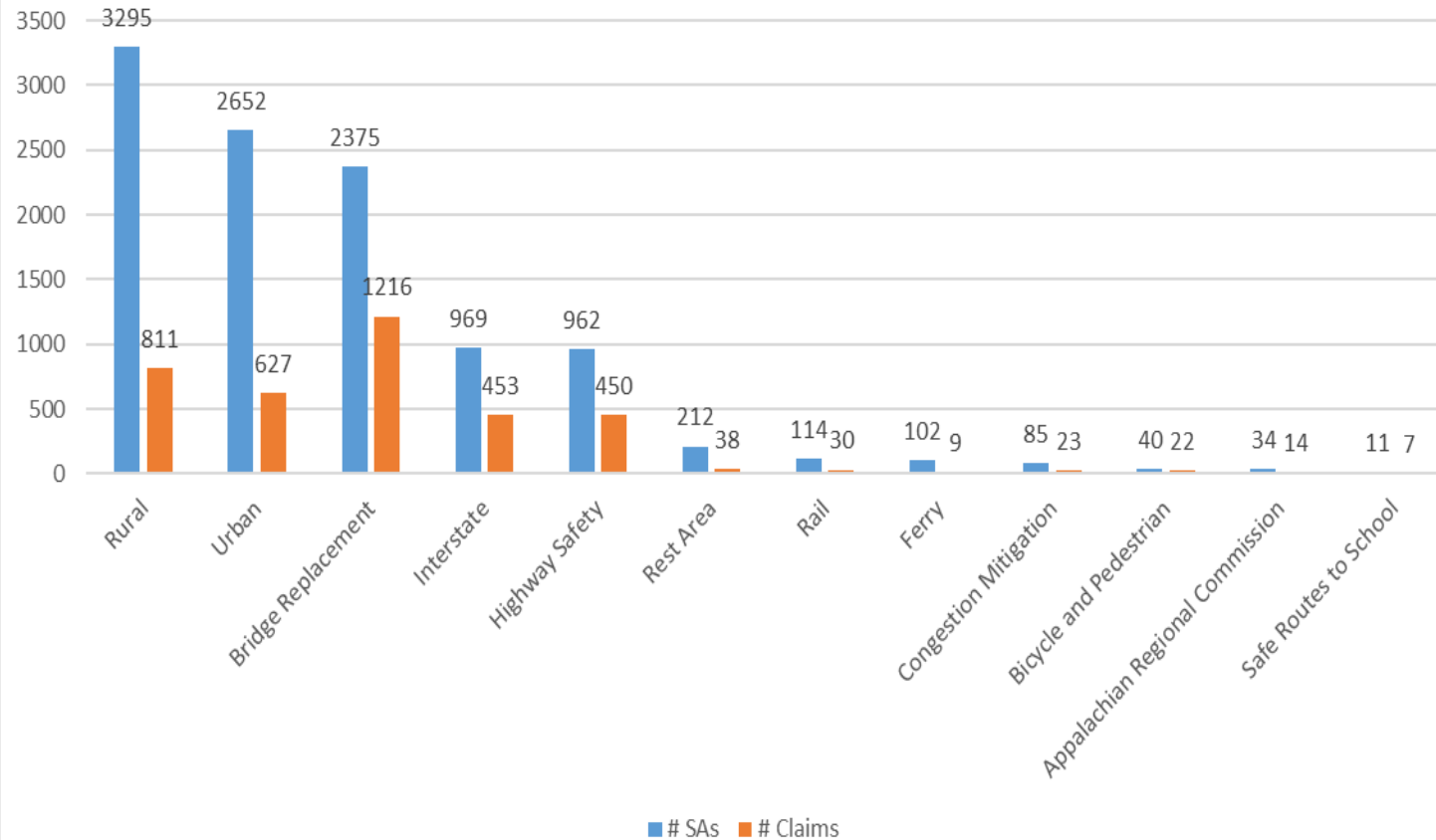
# Insights for Effective Risk Management in Transportation Projects

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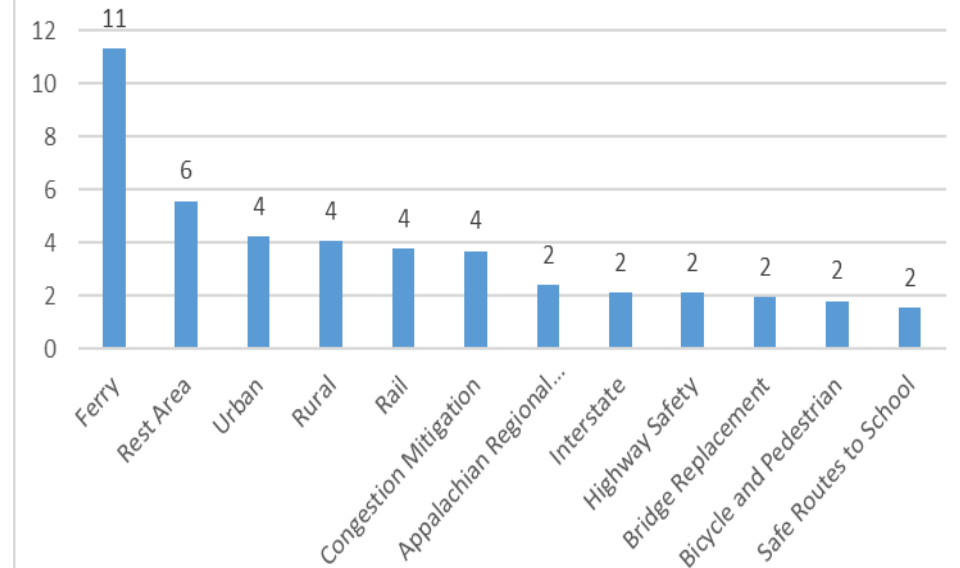
**Collaborative Research Project with North Carolina State University**

# NCDOT Claims and Supplementary Agreements

# SAs and Claims



SA/Claim Ratio



Cost and Schedule Impact



Claims: \$50 to \$36.1 M and 1-999 Days  
 SAs: -\$8.8 M to \$186.3 M (days not provided)

## Research Project Overview

Goal: Enhance NCDOT's Current Risk Management Program

1. Reviewed the current risk management practices employed by the NCDOT
2. Investigated risk management programs implemented by other state DOTs to glean valuable insights and best practices
3. Analyzed generic and specific causes of NCDOT project claims and supplementary agreements
4. Developed strategies for mitigating the most common risks



[View full research report on VMO's RMP site](#)

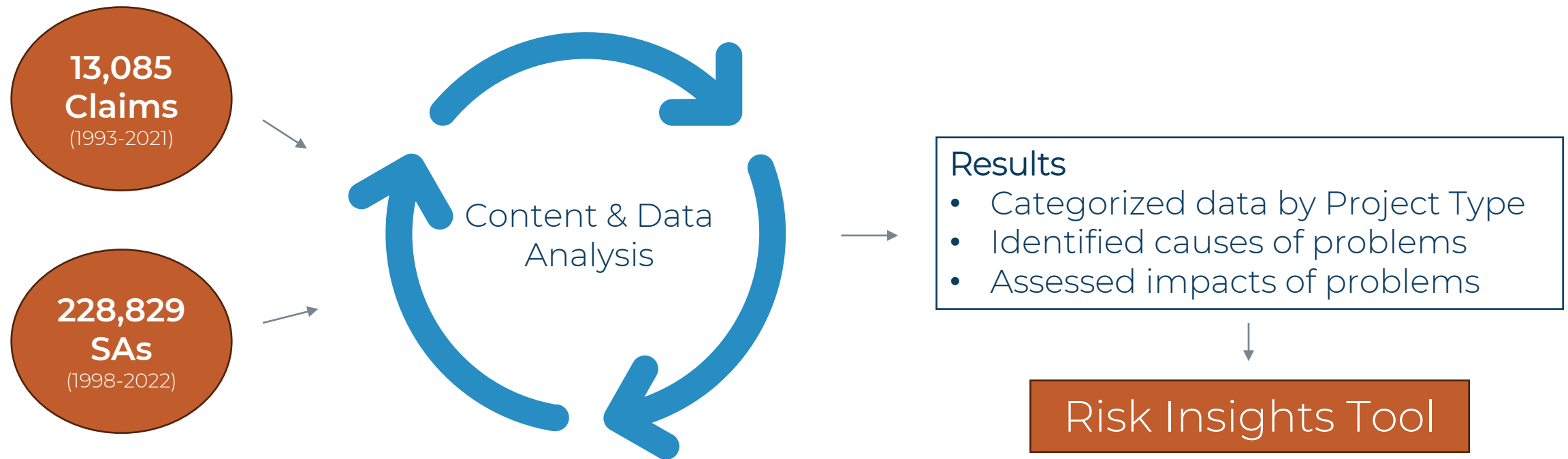
Risk Insights Tool

Risk Management Playbook

with Risk Examples and Mitigation Strategies

# Study I: Development of Risk Insights Tool Based on Past Project Claims and Supplemental Agreements

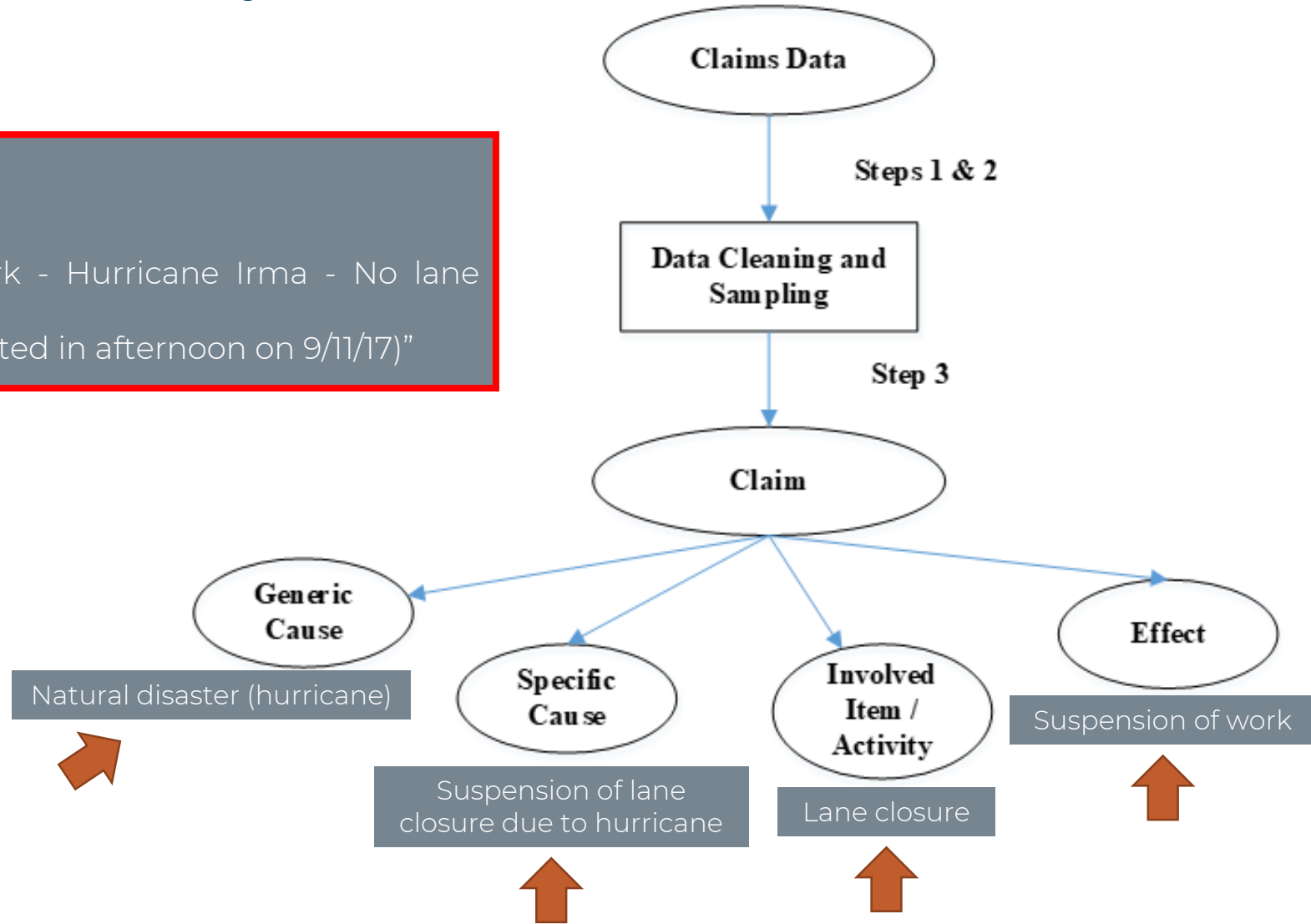
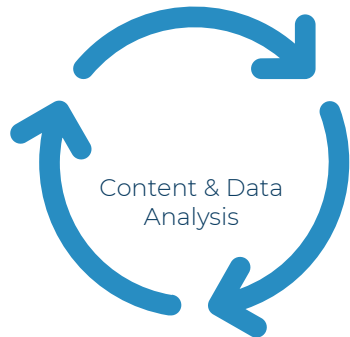
Transportation projects, given their complexity, are susceptible to a plethora of risks that can result in claims, change orders, and/or supplementary agreements, ultimately leading to cost and schedule overruns



“Content analysis is a research tool used to determine the presence of certain words, themes, or concepts within some given qualitative data (i.e. text).”

# Dissecting the Data: Content Analysis

Claim description:  
“NCDOT Chief Engineer suspension of work - Hurricane Irma - No lane closures (4 days) -9/8/17 @7PM thru 9/11/17 (lifted in afternoon on 9/11/17)”





# Risk Insights Tool

Contains over 30 sets of tables for both claims and supplemental agreements

## Risk Profile: Distribution of Generic Causes of Claims across Project Types

Claims (per Project Type)														
Generic Cause\Project Type	Appalachian Regional Commission	Bicycle and Pedestrian	Bridge Replacement	Ferry	Highway Safety	Interstate	Other	Rail	Railroad - Highway Crossings	Rest Area	Rural	Safe Routes to School	Urban	All Project Types
Access/ROW/Easement	0.0%	2.9%	1.2%	0.0%	2.7%	2.2%	0.0%	10.0%	0.0%	0.0%	2.0%	0.0%	2.5%	2.1%
Constructability Issues (Except Geotechnical/Underground Conflicts)	9.5%	2.9%	7.5%	0.0%	5.4%	7.1%	3.8%	7.1%	0.0%	2.7%	6.4%	6.7%	2.9%	5.9%
Contract Amendment	14.3%	5.7%	5.9%	14.3%	3.4%	7.1%	7.5%	8.6%	0.0%	13.5%	11.3%	26.7%	7.8%	8.0%
Design Approval Waiting Period/Indecision/Negotiation	4.8%	11.4%	4.5%	7.1%	2.0%	3.8%	7.5%	1.4%	0.0%	0.0%	2.0%	0.0%	3.3%	3.4%
Design/Plan Issues	38.1%	20.1%	13.9%	7.1%	14.2%	12.6%	11.3%	8.6%	0.0%	21.6%	18.3%	0.0%	23.0%	16.2%
Differing Site Conditions (Except Utilities)	0.0%	2.9%	5.4%	7.1%	2.0%	2.2%	3.8%	0.0%	0.0%	0.0%	2.3%	0.0%	2.9%	3.1%
Environmental/Community Concerns	4.8%	0.0%	7.3%	0.0%	4.7%	1.6%	5.7%	0.0%	0.0%	5.4%	3.8%	6.7%	2.9%	4.3%
Issues with Underground Utilities	4.8%	22.1%	13.9%	7.1%	17.6%	3.3%	13.2%	17.1%	42.9%	2.7%	13.4%	33.3%	18.9%	14.7%
M&R/Replacement	0.0%	5.7%	2.6%	7.1%	4.1%	10.4%	3.8%	2.9%	0.0%	2.7%	6.4%	0.0%	3.3%	4.7%
Natural Disaster	9.5%	2.9%	9.4%	28.6%	12.2%	11.5%	5.7%	0.0%	0.0%	10.8%	8.7%	6.7%	7.0%	8.8%
Other	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	1.9%	4.3%	0.0%	0.0%	1.5%	0.0%	0.4%	0.8%
Permit	0.0%	0.0%	2.4%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	2.7%	1.2%	0.0%	0.4%	1.1%
Procurement Issues	0.0%	2.9%	2.6%	7.1%	2.0%	3.8%	5.7%	1.4%	0.0%	10.8%	3.5%	0.0%	2.0%	3.0%
Project Closeout Issues	4.8%	5.7%	7.8%	0.0%	14.2%	8.2%	13.2%	1.4%	14.3%	8.1%	2.6%	13.3%	5.7%	6.8%
Quantities Overrun/Underrun	4.8%	0.0%	2.1%	0.0%	7.4%	9.8%	0.0%	11.4%	0.0%	0.0%	3.5%	6.7%	6.6%	4.8%
Scheduling and Coordination Issues (Except Start of Work and/or project closeout)	4.8%	8.6%	8.5%	14.3%	6.1%	13.7%	5.7%	5.7%	42.9%	8.1%	8.4%	0.0%	9.4%	8.8%
Start Date Delays	0.0%	5.7%	1.6%	0.0%	1.4%	1.1%	11.3%	0.0%	0.0%	10.8%	2.9%	0.0%	0.0%	2.1%
Survey/Test Issues	0.0%	0.0%	2.8%	0.0%	0.7%	1.1%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	1.2%	1.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

# Highlights for Claims (Bridge Replacement Project)

## Claims (Bridge Replacement)

Generic Cause	Count	% Total
Issues with Underground Utilities	59	13.9%
Design/Plan Issues	59	13.9%
Natural Disaster	40	9.4%
Scheduling and Coordination Issues (Except Start of Work and/or project closeout)	36	8.5%
Project Closeout Issues	33	7.8%
Constructability Issues (Except Geotechnical/Underground Conflicts)	32	7.5%
Environmental/Community Concerns	31	7.3%
Contract Amendment	25	5.9%
Differing Site Conditions (Except Utilities)	23	5.4%
Design Approval Waiting Period/Indecision/Negotiation	19	4.5%
Survey/Test Issues	12	2.8%
M&R/Replacement	12	2.8%
Procurement Issues	11	2.6%
Permit	10	2.4%
Quantities Overrun/Underrun	9	2.1%
Start Date Delays	7	1.6%
Access/ROW/Easement	5	1.2%
Other	2	0.5%

## Generic Cause Level 2

Compliance with Standard Specifications	5	8.5%
Design/Plan Error-Unspecified	14	23.7%
Design/Plan Revision-Unspecified	39	66.1%
Increased Traffic Volume	1	1.7%

## Organizational Units Affected

"Design/Plan Issues" Category (RBS)	%(Design/Plan Issues)
Hydraulic Design– flow control, water quality, criteria d	32.2%
Structure Design– bridge superstructure	18.6%
Roadway Design– vertical / horizontal alignment, earth	13.6%
Geotechnical Design– foundations, retaining walls, pile	13.6%
Unspecified	11.9%
Utility	8.5%
Traffic Control & Staging	1.7%
Traffic Design– ITS, Illumination, Signals, intersections,	0.0%
Environmental	0.0%

# SA Risk Profile (Bridge Replacement)

Generic Cause	Generic Cause Level 2	Count (Generic Cause Level 2)	GC Level 2- GC Ratio	Count (Generic Cause)	% (Generic Cause)	Average Cost per SA	Expected Cost per SA
Design/Plan Issues	Compliance with Standard Specifications	16	16.7%	96	26.8%	\$ 15,665.03	\$ 4,200.68
	Construction Plans Error/Discrepancy	7	7.3%				
	Design Error-Elevation Difference with Existing Objects	4	4.2%				
	Design Error-Unspecified	14	14.6%				
	Design Revision-Fix Impacts of Previous Revisions	1	1.0%				
	Design Revision-Functionality Issues	2	2.1%				
	Design Revision-Future Maintenance Concerns	2	2.1%				
	Design Revision-per Contractor Request	17	17.7%				
	Design Revision-Uniformity with Adjacent Projects/Objects	1	1.0%				
	Design Revision-Unspecified	29	30.2%				
	Increased Traffic Volume	2	2.1%				
	Scope Change	1	1.0%				
Differing Site Conditions (Except Utilities)	Differing Site Conditions-Buried Objects	1	3.2%	31	8.7%	\$ 29,960.83	\$ 2,594.37
	Differing Site Conditions-Groundwater Discovery/High Groundwater Level	3	9.7%				
	Differing Site Conditions-Not Shown in Construction Plans	5	16.1%				
	Differing Site Conditions-Unspecified	7	22.6%				
	Differing Site Conditions-Unsuitable Materials	4	12.9%				
	Slope Protection/Soil Stabilization	11	35.5%				

# Risk Insights Tool Demo

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File Home Insert Page Layout Formulas Data Review View Foxit PDF Tell me what you want to do... Share

Clipboard: Paste, Cut, Copy, Format Painter

Font: Calibri, 11, Bold, Italic, Underline, Text Color, Background Color

Alignment: Wrap Text, Merge & Center

Number: General, Currency, Percentage, Decimals, Fractions

Styles: Normal, Bad, Good, Neutral, Calculation, Check Cell

Cells: Insert, Delete, Format

Editing: AutoSum, Fill, Clear, Sort & Filter, Find & Select

L40

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
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**Claims**

**Descriptions - Generic Cause**

1. Design/Plan Issues: Problems arising from flaws in the project design or plans.
2. Issues with Underground Utilities: Difficulties encountered during construction due to conflicts with existing underground utilities.
3. Natural Disaster: Unforeseen natural disasters such as hurricanes, tornadoes, and floods that impact project progress and completion.
4. Scheduling and Coordination Issues (Except Start of Work and/or Project Closeout): Challenges with coordinating different aspects of the project, such as subcontractor schedules or scheduling of inspections.
5. Contract Amendment: Modifications made to the project contract, resulting in changes in contract line items, schedule, or budget.
6. Project Closeout Issues: Difficulties encountered during project closeout, such as delays in scheduling final inspections or resolving outstanding disputes.
7. Constructability Issues (Except Geotechnical/Underground Conflicts): Issues related to the feasibility and practicality of constructing the project, except for conflicts with geotechnical or underground conditions.
8. Quantities Overrun/Underrun: Variances between the planned and actual amounts of materials, labor, or other resources required for the project.
9. M&R/Replacement: Costs incurred due to maintenance and repair or replacement of existing infrastructure or equipment.
10. Environmental/Community Concerns: Issues arising from environmental regulations, community opposition, or other social factors.
11. Design Approval Waiting Period/Indecision/Negotiation: Delays in obtaining approvals for project designs, due to indecision or negotiation issues.
12. Differing Site Conditions (Except Utilities): Unforeseen subsurface or soil conditions that differ from those indicated in the project plans, except for conflicts with underground utilities.
13. Procurement Issues: Difficulties with the procurement of materials or equipment needed for the project.
14. Access/ROW/Easement: Challenges related to obtaining the necessary rights-of-way or easements to access the project site.
15. Start Date Delays: Delays in starting the project due to issues such as delays to preconstruction meeting, approvals, or unforeseen circumstances.
16. Survey/Test Issues: Problems arising from inaccuracies or inconsistencies in project surveys or tests.
17. Permit: Difficulties obtaining necessary permits for the project from regulatory agencies.
18. Other: Any other issues not covered by the previous categories.

**Supplementary**

**Agreements**

**Descriptions - Generic Cause**

1. Design/Plan Issues: Problems arising from flaws in the project design or plans.
2. Contract Amendment: Modifications made to the project contract, resulting in changes in contract line items, schedule, or budget.
3. Stakeholder Request: Requests made by external stakeholders, such as local government entities or nearby residents, that require changes to the project.
4. Differing Site Conditions (Except Utilities): Unforeseen site conditions that differ from what was expected, but do not involve underground utilities.

## Study II: Development of Risk Management Playbook

Goal: Create a tool that will aid NCDOT project teams in identifying and mitigating potential risks in transportation projects

- Playbooks created for six critical areas:



Roadway



Right-Of-Way



Structures



Utilities



Rail



Other

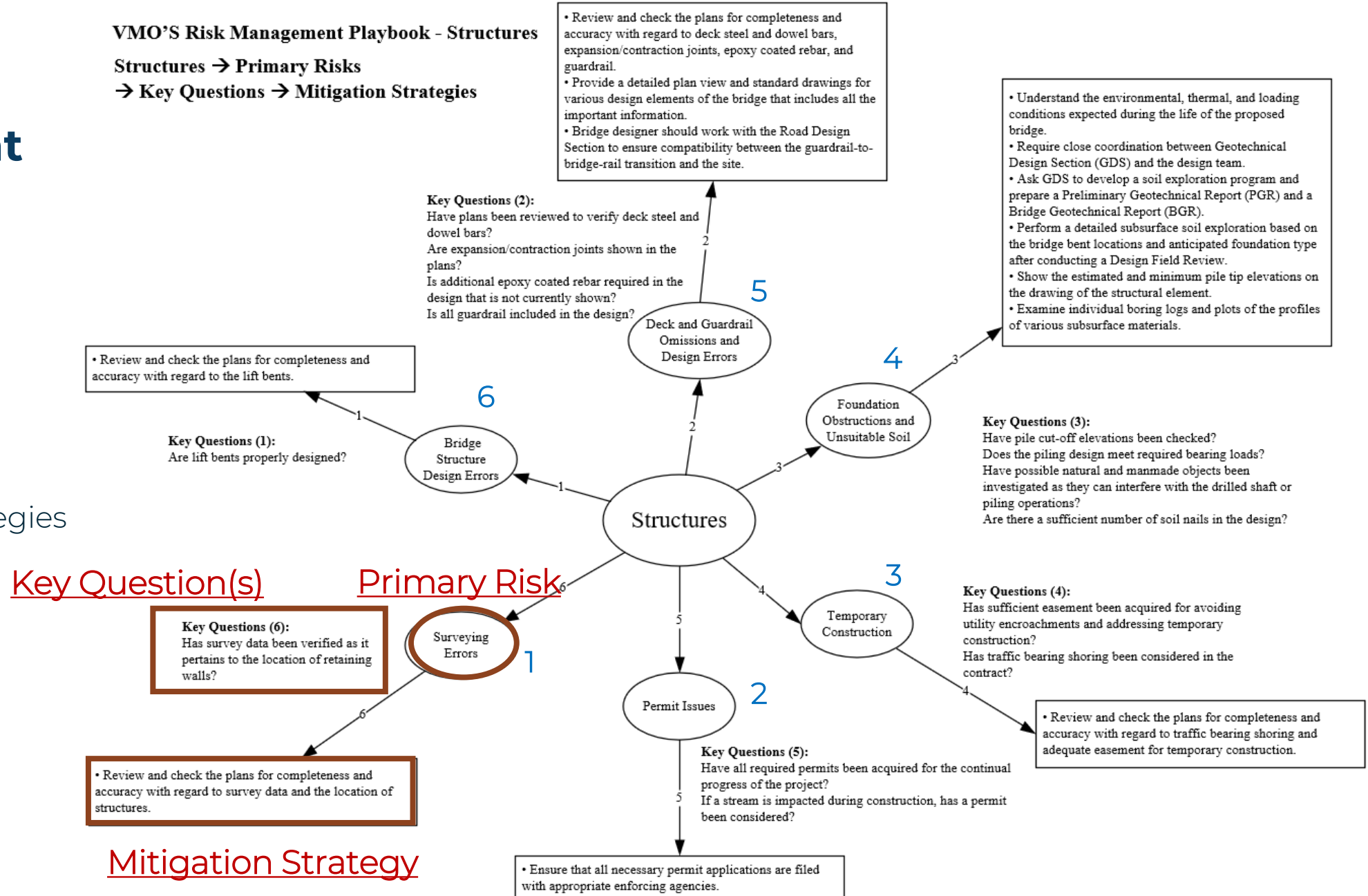
# Risk Management Playbooks

## VMO'S Risk Management Playbook - Structures

Structures → Primary Risks  
→ Key Questions → Mitigation Strategies

### Example: Structures Playbook

- Playbooks include:
  - Risk Examples
  - Key Questions
  - Mitigation Strategies



# Bridge Replacement Risks with Mitigation Strategies using Risk Insight Tool and Risk Management Playbook

## Risk Assessment Worksheet

Project # : R-2553

Risk Identification				Risk Assessment			Response Strategy			Management & Monitoring Plan			
Risk #	Risk Description IF	Risk Description THEN	Threat / Opp.	Status	Probability	Impact	Score	Strategy	Action Plan	Risk Owner	Follow-up Date	Update Frequency	Update & Comments
Example	If 4f properties are involved in the project area.	then delays to the project schedule may occur if potential impacts and avoidance options are not proactively and realistically identified and assessed.	T	Active	Moderate	Moderate	●						
<b>Long Range Planning</b>													
<b>Environmental</b>													



Risk Identification



Risk Mitigation

## Risk Assessment Worksheet--BRIDGE REPLACEMENT PROJECT

Risk Identification				Risk Assessment			Response Strategy		
Risk #	Risk Description IF	Risk Description THEN	Threat / Opp.	Status	Probability	Impact	Score	Strategy	Action Plan
<b>Right of Way /</b>									
3	If underground utilities are not accurately identified and located before construction begins	then unforeseen utilities may be discovered, resulting in delays to the project schedule and increased costs.	T	Active	Very High	High	●	Mitigate	<ul style="list-style-type: none"> <li>- Coordinate with utility companies early in the project development process to identify and locate all underground utilities in the project area.</li> <li>- Conduct a utility survey to confirm the location of all underground utilities.</li> <li>- Mark the location of all underground utilities before construction begins.</li> </ul>
<b>Technical</b>									
4	If the design plans do not accurately reflect the existing conditions,	then construction may be delayed and costs may increase as unforeseen problems are encountered. The finished product may also not meet the expectations of the stakeholders.	T	Active	High	Very High	●	Avoid	<ul style="list-style-type: none"> <li>- The project manager should review the design plans carefully and compare them to the existing conditions on the site.</li> <li>- The project manager should identify any discrepancies between the plans and the existing conditions and communicate them to the design team.</li> <li>- The design team should update the plans to reflect the existing conditions.</li> <li>- The project manager should review the updated plans carefully to ensure that they are accurate.</li> </ul>





# Wrap Up and Reminders

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# 4 things you can do to operate with a risk mindset today!

1



3



2



4



# Online Collaborative Platform for Project Risk

## Where do you find the online RAW?

Navigate to Connect project site

Select Risk Assessment under Precon Tools (left nav panel)

Add & Edit Risks for project

The screenshot shows the 'Preconstruction Dashboard' for project U-1050. The left navigation panel includes sections for Home, My Precon, Tools, Resources, Processing Requests, and Help. The main content area features a 'PRECONSTRUCTION DASHBOARD' with filters for 'Plan Turn In' (All Projects, Division 13, U-1050) and 'Let Date'. Below this is a 'Risk Assessment Worksheet' table with columns for Risk ID, Risk Description (IF/THEN), Risk Owner, Probability, Impact, Risk Score, Risk Status, Modified By, and Modified. The table contains three rows of risk data.

Risk ID	Risk Description (IF)	Risk Description (THEN)	Risk Owner	Probability	Impact	Risk Score	Risk Status	Modified By	Modified
2	I turn on the light	it gets brighter		Very High	Moderate	15	Active	Alice L. Roebuck	06/15/2023
3	if materials continue to increase in price and cost estimation tools are not updated,	then there will likely be cost overruns or issues with materials procurement during construction.	Estimating Unit	Moderate	Moderate	9	Active	Patricia E. Mehaffy	07/25/2023
1	Test					TBD	Active	Caitlyn S. Meyer	05/09/2023

## Risk Management Program



Risks are identified as uncertainties. There are two types of risks: Threats and Opportunities. Threats are potential obstacles that may have a negative impact and Opportunities are possibilities that may have a positive effect. Risk Management is a proactive process designed to minimize potential obstacles and maximize the ability to capitalize on opportunities.

Identifying Risks have been performed as part of NCDOT day-to-day business for years; however, the NCDOT Value Management Office is striving to provide a more formalized internal procedure to incorporate the Risk Management process in a more consistent way throughout all NCDOT activities and projects.

Where to find help and tools?

Visit the RMP Webpage



### Program Links

[Risk Assessment Worksheet \(RAW\)](#)

Excel-based tool to track risks

[Risk Management Guide](#)

Risk Management Program Overview

[Risk Management Flowchart](#)

Risk in the PDN

[How to Use Online RAW](#)

Learn to use the Online RAW for your projects

[Risk Management Support Tools](#)

Risk Examples & Mitigation Strategies

["Using Risk Management Tools on NCDOT Projects"](#)

2023 Preconstruction Workshop Session Recording

[NCDOT Research Project](#)

Expanding the NCDOT's Current Risk Management Program

[NCDOT Risk Insights Tool](#)

Analysis of Supplemental Agreements and Claims Data Related to Risk

Everyone has a role in  
risk management!

## Call to Action

Start thinking with a risk mindset today!

- Does your project have a risk register?
- Do you know the common risks for project types you work on?
- Do you have suggestions on tools that would be helpful?



# Scan to learn more about NCDOT's Risk Management Program!

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# Contact Us

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**Thank you!**

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