NORTH CAROLINA Department of Transportation

Risk Management Guide

Value Management Office

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1. Introduction

Every day, many individuals inherently identify risks as part of their daily routine of working on or managing projects. Risks are defined as uncertainties that, if they occur, would be an obstacle or opportunity in meeting the project objectives. Throughout the planning, design, construction, and maintenance processes, many project staff, Project Managers, and discipline experts handle uncertainties, often in a "fire-fighting" manner. However, early identification and continuous management of risks reduces negative impacts, promotes timely decision making, and improves our success in meeting project objectives and delivering what we promised.

> Risks are "the effects of uncertainty on objectives"
>
> International Standard ISO 31000

Risk management is an NCDOT best practice required for all projects. This guide focuses on managing risks throughout the preconstruction phase of project delivery, specifically Stages 1, 2, 3 and 4 in the Project Development Network (PDN). This guide describes what Risk Management is, defines the roles and responsibilities and provides a consistent, scalable process to manage risk.

2. Risk Management

Risk Management is a proactive process designed to minimize potential obstacles that may negatively impact a project's objectives (scope, schedule, budget, quality, and commitments) and maximize the ability to capitalize on opportunities that may improve project delivery. It's not a one-size-fits-all process and should be scaled to meet the needs of the project. The Division of Planning & Programming (Feasibility Studies and Corridor Development Units) and Project Managers are responsible for coordinating with their team members, discipline units, consultants, and the appropriate project Stakeholders to develop and manage their project risks. How well project teams plan for and respond to uncertainties can significantly impact the successful delivery of the project.

Managing risks focuses on four sections:
- Identify uncertainties
- Assess the potential probability and impact (to help prioritize)
- Develop a response strategy
- Develop plan to continuously manage and monitor risks

> Risk Management is the art of managing uncertainties.

Risks are initially identified during the Project Initiation Stage (PDN Stage 1), after the project is programmed in the STIP. During this stage, the Project Scoping Report identifies and assesses risks in the Project Initiation Form and in the Screening Checklist, respectively. When a project transitions into the Alignment Defined Stage (PDN Stage 2), these forms should be used to begin developing the Risk Assessment Worksheet (RAW), a tool for the Project Manager to use throughout Stages 2, 3 and 4 to document and manage project uncertainties. The RAW is developed right after Notice to Proceed (NTP), during the Alignment Defined Stage and is refined during the Plan-In Hand Stage (PDN Stage 3) and the PS&E Stage (PDN Stage 4).

Project teams are encouraged to use online version of the RAW. The online RAW can be accessed from the project's Connect Preconstruction project site and related Preconstruction Dashboard. More information on how to use the online RAW can be found here.

Risks evolve as the project evolves; therefore, it is essential that risks are continuously communicated among team members, monitored, managed, and refined as the project advances through these phases.
The RAW can continue to be refined as the project moves through Construction and Maintenance; however, this document focuses on the activities that occur during Preconstruction.

3. Roles and Responsibilities

Many individuals are involved in the delivery of a project. Strong teamwork, communication and collaboration throughout the process creates transparency allowing team members to have a mutual understanding of the project objectives, awareness of the efforts of other team members, and coordination on how they can collectively work together to meet those objectives. This improves decision making and allows the team to react quickly to uncertainties when they are realized. The chart below describes the various risk management roles and responsibilities across the life of a project.

> The biggest risk is the failure to communicate.

Risk Management Roles[1] and Responsibilities Responsible, Consulted, Informed	Value Management Program Manager	Project Initiation			Alignment Defined, Plan-In Hand, PS&E			
		Division Project Delivery / Development Engineer[3]	Division of Planning & Programming	Planning Team Members[2]	Division Project Delivery / Development Engineer[3]	Project Manager	Project Team Members	Risk Owner[4]
Initial Risk Identification & Assessment								
Provide expectations and assumptions to project objectives		C	R	I				
Identify project risks in Project Initiation Form		I	R	C				
Assess risks in Screening Checklist	I		R					
Develop RAW								
Provide expectations and assumptions to project objectives					C	R	I	
Place RAW on the Preconstruction SharePoint site	I					R		
Review risks in the Project Scoping Report (PSR), develop all sections in the Risk Assessment Worksheet (RAW) and identify any additional risks						R	C	
Notify VMO when initial RAW is developed	I					R		

Risk Management Roles[1] and Responsibilities

Responsible, Consulted, Informed

	Value Management Program Manager	Project Initiation			Alignment Defined, Plan-In Hand, PS&E			
		Division Project Delivery / Development Engineer[3]	Division of Planning & Programming	Planning Team Members[2]	Division Project Delivery / Development Engineer[3]	Project Manager	Project Team Members	Risk Owner[4]
Continuous Monitoring & Managing								
Identify new risks and closed out resolved risks					I	I	R	
Periodically reassess / validate impact and probability of risks						I	R	
Identify appropriate response strategy, develop action plans & identify risk owner for any new risks						C	R	
Implement/update action plans, monitor progress & provide status updates						I	I	R
Receive approval from PM's prior to modifying risk strategy to "accept"[5]					I	C		R
General								
Provide guidance when needed	R		I			I		
Facilitate & Organize Risk Management Workshop if the project: • Requires formal Value Engineering • Has substantial impacts, constructability concerns or many external stakeholders	R		C			C	I	I

[1]Consultants can be substituted in any of these roles, except for Division Project Delivery / Development Engineers and Central Team Lead.
[2]Planning Team Members refer to NCDOT staff, consultants, MPO's, RPO's, Resource Agencies and Local Stakeholders.
[3]This role at Central Office, in the Project Management Unit (PMU), is the Central Team Lead
[4]Risk Owner is a project team member or consultant responsible for implementing strategies to address risks identified in their area of expertise.
[5]Acceptance of risks means the risk and its associated impacts will be incorporated into the project. This occurs when all attempts to mitigate the risk have been exhausted or the cost/impact to accept the risk is lesser than mitigating the risk.

Responsible: Person accountable for the work and making sure it is completed. Has decision-making authority.
Consulted : Subject matter experts consulted for information and may contribute to creating content.
Informed : People informed on progress or when a deliverable is completed.

4. Risk Management Process

NCDOT requires all staff to proactively manage risks for all projects programmed in the STIP, regardless of project size; however, this process is scalable to fit the need of the project. Going through the risk management process is a collaborative team effort, which can take very little time or can require extensive coordination with multiple discipline units, Divisions, Chief's Office, or Secretary's Office. Risk management requires the Division of Planning & Programming and the Project Manager to lead teams and seek input from the appropriate stakeholders throughout all stages of the project.

4.1.   Project Initiation Stage (Stage 1)

4.1.1. Purpose

The purpose of risk management in the Project Initiation Stage is to identify potential uncertainties that may impact the project scope, schedule, budget, quality or commitments because projects that experience major changes in these areas later, may be required to go through reprioritization.

Objectives	Roles Involved	Risk Management Sections
• Identify risks in the Project Initiation Form • Assess risks in the Screening Checklist • Provide risks to be considered for Project Scoping	• Division Project Delivery/ Development Engineer/ Central Team Lead • Division of Planning & Programming • Planning Team Members • Value Management Program Manager - for support • Local Stakeholders	• Risk Identification • Risk Assessment

4.1.2. Perform the Initial Risk Identification and Assessment

During the Project Initiation Stage (PDN Stage 1), after the project is programmed in the STIP, the Division of Planning & Programming and Planning Team Members are responsible for identifying risks in the Project Initiation Form and assessing risks in the Screening Checklist (forms are available on the Scoping Connect Site).

Project Initiation Form

The Project Initiation Form has a Risk Section intended to provide a high-level overview of what risks exist at this stage of the project. The individual or team identifying risks at this stage, indicate which risks or potential uncertainties exists on the project by checking the associated boxes in this section of the form and adding any additional risks that may not be included on this form. If a certain risk does not exist for the project, then it remains unchecked.

Screening Checklist

The Risk Section in the Screening Checklist lists possible risks on a project and focuses on assessing the impact of the risks identified in the Project Initiation Form. The individual or team assessing the risks is expected to identify the potential impact associated with the risks identified on the Project Initiation Form. If a risk does not apply to a particular project, N/A can be placed in the comments section of the risk to indicate this.

Both forms are part of an existing process and are included in the Project Scoping Report (PSR). The Value Management Office (VMO) will automatically be notified when a PSR is completed so they can evaluate the project's level of risk exposure and determine if the project would benefit from having a formal Risk Management Workshop (RMW) in a future stage. For these projects, the VMO will coordinate with the Project Manager to determine when a formal RAS is appropriate.

4.2.   Alignment Defined, Plan-In Hand, PS&E Stages (Stages 2, 3 & 4)

4.2.1. Purpose

The purpose of risk management during the Alignment Defined (PDN Stage 2), Plan-In Hand (PDN Stage 3) and PS&E stages (PDN Stage 4) is to proactively identify potential uncertainties that may impact the project scope, schedule, budget, or commitments to improve timely and informed decision-making and successfully deliver what we promised our stakeholders.

Objectives
- Populate the RAW
- Regularly update and refine the RAW
- Continuously monitor and manage risks

Roles Involved
- Division Project Delivery/ Development Engr./ Central Team Lead
- Project Manager
- Project Team Members
- Risk Owners
- Value Management Program Manager - for support
- Stakeholders & Resource Agencies

Risk Management Sections
- Risk Identification
- Risk Assessment
- Response Strategy
- Management & Monitoring Plan

4.2.2. Populate & Regularly Update the RAW

Shortly after the NTP milestone in the Project Initiation Stage (PDN Stage 1) and prior to the Project Kickoff meeting in the Alignment Defined Stage (PDN Stage 2), the Project Manager is responsible for ensuring the Risk Assessment Worksheet (RAW) is populated with project specific risks (uncertainties), some of which are identified in the Project Scoping Report. Each project is unique; therefore, each project will have their own set of uncertainties. Early identification of these uncertainties increases the awareness and understanding of the impact timely decisions have on the project's objectives for the Project Manager, the project team and project stakeholders. As projects progress through Stages 2, 3 and 4, these uncertainties will change and evolve as more information becomes available. Continuous communication and management of the RAW is essential to effectively managing these risks as the project develops.

> Risks evolve as the project evolves.

Project teams should utilize the online version of the RAW linked to their project's Connect Preconstruction project site. Navigate to your project on the Preconstruction SharePoint Site to access the online version of the RAW. The Project Manager is responsible for making sure the initial list of risks are added to the RAW as well as ensuring that risks are being appropriately managed and regularly updated throughout the project. All project team members input and provide updates to the RAW.

If the Project Manager feels that a project would benefit from having a formal Risk Management Workshop (RMW) they should notify the VMO at valuemanagementunit@ncdot.gov. The Value Management Program Manager will then review the RAW to understand the project's level of risk exposure and coordinate with the Project Manager to facilitate and organize a formal RMW.

Risk management activities are further described below and are organized by RAW sections. Specific guidance on each column in the RAW is available in Appendix C and in the RAW template. Additional "how to" materials are available here.

Risk Identification

➢ **Understand project objectives**: After the PSR is complete, the Project Manager is responsible for communicating the project objectives, assumptions, and expectations with the Project Team. The Project Manager is also responsible for managing risks from the Alignment Defined stage through Letting and keeping the Division Project Delivery/ Development Engineer or Central Team Lead informed of the status and progress of any major risks.

➢ **Review and identify project uncertainties:** Identified risks are documented in the RAW under the "Risk Identification" section. The Project Manager is responsible for collaborating with the Project Team and appropriate stakeholders to:
  o Review the risk sections in the Project Initiation Form and the Screening Checklist, both of which are in the PSR, to identify and populate the RAW with risks that remain applicable.
  o Brainstorm and identify any additional uncertainties that may affect the project objectives. The "Risk Examples" (found in the Risk Management Support Tools workbook found here) can be used to help generate/brainstorm possible uncertainties.

Clear and specific risk statements are essential to effectively managing risks. If risk statements are too vague, they will be hard to manage and can lead to confusion when developing and implementing response strategies. Clear and specific risk statements can be accomplished with "if/then" statements where:

- o "if" describes the risk/uncertainty (event) and
- o "then" describes the potential effect or impact to the project objective (consequence)

For 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.

Risk Assessment

➢ **Evaluate the Probability and Impact of Uncertainties**: Risks are evaluated by assessing the probability of occurrence and the impact the uncertainty may have on the project objectives if the risk is realized/accepted. Assessing these helps the Project Manager prioritize risks. The Project Manager is responsible for coordinating these efforts with the Project Team.

➢ A **score** is automatically calculated for each uncertainty to help prioritize risks with high levels of exposure and is based on the input for probability and impact. Uncertainties with a high score have high levels of exposure and are higher priorities to mitigate/address. The Project Manager is responsible for prioritizing risks.

Response Strategy

➢ **Develop and Refine Response Strategies**: The Project Team is responsible for collaborating with the Project Manager to select the appropriate response strategies, which consist of defining the approach the team will take to effectively minimize obstacles and/or enhance opportunities (avoid, mitigate, transfer, accept or enhance). Suggestions for mitigation strategies by topic are available int the Risk Management Support Tools workbook, found here. Risk mitigation topics include:
  - ▪ Railroad
  - ▪ Roadway
  - ▪ Right of Way
  - ▪ Structures
  - ▪ Utility
  - ▪ Other

The Project Team members are also responsible for developing action items, acting as the Risk Owners and collaborating with the Project Manager to identify sufficient follow-up dates for all risks. The Risk Owner is an individual whose area of expertise relates to a specific risk and is responsible for implementing action items, monitoring progress and updating the Project Manager and Project Team on the status of the risk.

Monitor and Control

➢ **Develop Management and Monitoring Expectations:** Frequent monitoring of project risks allows the Project Manager and Project Team to discuss risk mitigation efforts, determine if

modifications to the next steps need to occur, and make timely decisions. This minimizes the frequency at which risks evolve into significant issues and cause major delays or significant cost increases. This section in the worksheet consists of specifying an update frequency and an area to keep status updates. The Project Manager is responsible for collaborating with the Project Team to identify the update frequency expectations for each risk. The Risk Owner is responsible for documenting any status updates.

➢ **Monitor and Manage Risks on a Regular Basis:** Effective risk monitoring is a continuous iterative process that extends throughout the life of the project. Project Teams are expected to regularly:

- o Identify any new risks
- o Assess whether the probability or impact to the project objectives have changed (causing the risk score to change)
- o Allow Risk Owners to provide progress updates and discuss any obstacles encountered with implementing risk response strategies and action items

These discussions can be part of a project progress meeting or separately planned risk review meetings. Updates should be reflected in the online RAW. It is the responsibility of the entire team to maintain open communication and transparency with the Project Manager, Project Team, Management, Project Stakeholders, and (if needed) the VMO. This can improve the ability to obtain additional resources and organizational support when risks become realized or accepted.

Regular Updates

The Project Manager is responsible for ensuring the RAW is regularly updated and for continuing the management of risks as the project evolves through Stages 2, 3 and 4 (see flowchart in Appendix B).

At PS&E time, the Project Manager is responsible for ensuring that the latest risk information is logged in the online RAW. The Resident Engineer is provided with a link to the Project's Preconstruction SharePoint site in their Construction SharePoint site and will have access to the RAW.

4.2.3. Cost Estimate Reviews (CER's)

Projects that require Federal assistance and exceed $500 million in cost, must follow the Federal Cost Estimate Review (CER) process which requires a risk-based review workshop. CER's are typically conducted at least 90 days prior to the approval of the NEPA decision and reviewed again before the beginning of the Construction phase. The VMO is available to assist project teams through this process. Additional information regarding CER's is available at:

https://www.fhwa.dot.gov/majorprojects/cost_estimating/index.cfm

Appendix A: Risk Management Roles and
Responsibilities

Role	Responsibilities
Value Management Program Manager	• Review the Project Initiation form and Screening Checklist in the PSR and the Risk Assessment Worksheet and coordinate with Division of Planning & Programming or Project Manager to determine if/when a formal Risk Management Workshop is appropriate. • Facilitate & Organize Risk Management Workshop if projects have substantial impacts, constructability concerns or many external stakeholders • Support Project Managers and Project Teams
Division Project Delivery/ Development Engineer or Central Team Lead	• Coordinate with the Project Manager and the Division of Planning and Programming to ensure project objectives and assumptions are met
Division of Planning & Programming	• The Division of Planning & Programming includes the Feasibility Study Unit and the Corridor Development Unit • Identify and assess risks in the Project Initiation Form and Screening Checklist, which are included in the PSR
Planning Team Members	• The Planning Team refer to NCDOT staff, MPO, RPO, resource agencies, local stakeholders, and consultants • Collaborate with Division of Planning & Programming to identify and assess risks in the Project Initiation Form and Screening Checklist
Project Manager	• Collaborate with Planning Team to review risks in the Project Initiation Form and the Screening Checklist to develop the RAW • Communicate project objectives, assumptions, and expectations with the Project Team and the Project Delivery/Development Engineer or Central Team Lead • Inform the Project Delivery/Development Engineer or Central Team Lead of the status and progress of major risks • Populate the online RAW on the project's Preconstruction SharePoint Site and ensure updated regularly • Responsible for collaborating with the Project Team to regularly update all sections of the RAW (Identification, Assessment, Response Strategy and Management and Monitoring strategy) • In the event that a Risk Management Workshop (RMW) is needed, coordinate with the VMO
Project Team Members	• Project Team members include NCDOT staff and consultants • Collaborate with the Project Manager and project team to: o Identify new risks and closed out resolved risks o Periodically reassess/validate impact and probability of risks o Identify response strategy, develop action plan & identify risk owner • Project Team members could be Risk Owners
Risk Owner	• Subject matter expert on a risk • Lead implementation of action items • Manage and monitor progress of the risk response strategy • Provide regular status updates to Project Manager and Team • Gather approval from Project Managers prior to the acceptance of risks

A-2

Appendix B: Risk Assessment Worksheet (RAW) Guidance

Understanding RAW Components

There are four sections that make up the RAW:
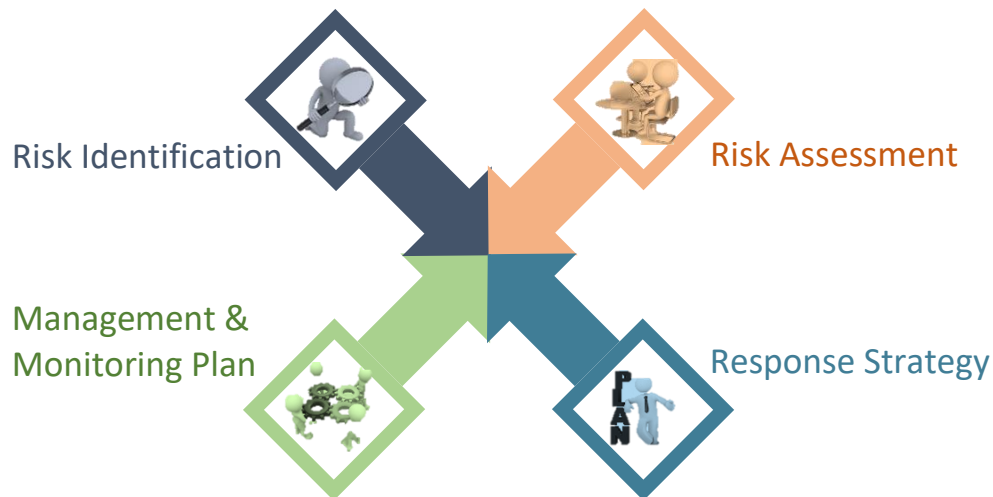
Below provides additional information on how Project Managers and teams should approach and complete each section of the RAW. All project teams are encouraged to log their risks in the online RAW that is available on their project's Connect Preconstruction project site and related Preconstruction Dashboard. A complete "how to" about access and use of the online version of the RAW is posted here.

Risk Identification

Risks are identified by the following characteristics:

- **Number:** Identifier for each risk
- **Risk Name:** Develop a risk statement by identifying the uncertainty and the effect it has on the project objective (scope, schedule, budget, quality or project commitment). Clear and specific risk statements are essential to effectively managing risks. If risk statements are too vague, they will be hard to manage and can lead to confusion when developing and implementing response strategies. Clear and specific risk statements can be accomplished with "if/then" statements where:
  - "if" describes the risk/uncertainty (event) and
  - "then" describes the potential effect or impact to the project objective (consequence)

  For 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 identified and assessed.

  Example risks can be reviewed in the Risk Management Support Tools workbook available here.

- **Threat / Opp.:** Indicate whether a risk is a threat to the project objectives or is an opportunity to improve the project objectives (save project costs, advance the schedule, etc…)
- **Status:** Active, Dormant, or Closed Out

Risk Assessment

Risks are assessed by the probability at which they occur and impact they will have on the project's objective. The combination of these two is used to prioritize risks. This is identified as the "score" on the worksheet. There are 3 sections that make up the Risk Assessment:

- ➢ Probability
- ➢ Impact
- ➢ Score

The **probability** of occurrence describes the likelihood that the risk will be realized/accepted. This is a drop-down field that records probability on a scale from very low to very high. Table A-1 describes each of these in more detail. Typically, 0% and 100% are not referred to because 0% means the risk has no chance of ever occurring and 100% means the risk is certain to occur.

Table A-1: Probability Ranking

Ranking	Probability
Very Low	Remote (14% or less)
Low	Unlikely (15% - 39%)
Moderate	Likely (40% - 59%)
High	Highly Likely (60% - 84%)
Very High	Near Certainty (85% or more)

Impact measures the effect or consequence the risk will have on the project objective if the risk is realized/accepted. This is a drop-down field that records impact on a scale from very low to very high. Table A-2 describes each of these in more detail; however, keep in mind that the Project Manager and Project Team must use their judgment and expertise in selecting the ultimate ranking.

Table A-2: Impact Rating

Ranking	Impact to Project Objective			
	Cost	Schedule (Critical Path)	Scope & Project Commitments	Quality*
Very Low	Almost no cost impact	Almost no schedule impact	Negligible modifications to project scope	Negligible impact to quality
Low	5 - 10% cost increase	2-4 week impact on PS&E Milestone	Minor modifications to project limits or project commitments	Minor impact to quality
Moderate	10 - 25% cost increase	1-2 month impact on PS&E Milestone	Moderate modifications to project limits or project commitments	Moderate impact to quality
High	25 - 35% cost increase	3-6 month impact on PS&E Milestone	Major modifications to project limits or project commitments	Major impact to quality
Very High	>35% or $25M cost increase	>6 month impact on PS&E Milestone	Scope does not match original purpose & need	Severe impact to quality

* Impact to Quality is measured by the ability to deliver an accurate Letting package without deficiencies, maintain stakeholder satisfaction and fulfill the applicable policies and standards.

5/1/2023

A **score** is automatically calculated for each uncertainty to help prioritize risks with high levels of exposure. Uncertainties with a high score have high levels of exposure and are higher priorities to mitigate/address. The Project Manager is responsible for prioritizing risks.

Response Strategy

A response strategy identifies an actionable approach to mitigate the risk. There are four sections that make up the Response Strategy:

1. ***Strategy*** – The approach the team will take to effectively reduce negative impacts or take advantage of opportunities:
   a. *Avoid:*   Eliminate the uncertainty by removing its cause
   b. *Mitigate:*   Reduce the uncertainty by reducing the probability or the impact. Make sure the costs/impacts of mitigating the risk do not outweigh the cost/impacts of accepting the risk.
   c. *Transfer:*   Giving the impact and management of the risk to an external organization such as a local entity or contractor.
   d. *Accept:*   Accept the uncertainty and the impacts associated with it.
   e. *Enhance:*   Align the project in the best position to be able to take advantage of an opportunity.
   f. *Share:*   Impact and management of the risk is shared between NCDOT and an external organization.
2. ***Action Plan*** – The steps an individual(s) will take, by when, to avoid, mitigate, transfer, or enhance the uncertainty (how, who and by when). Possible risk mitigation strategies to consider are available for teams to review in the Risk Management Support Tools workbook available here.
3. ***Risk Owner*** – This individual is typically a team member whose area of expertise relates to a specific risk. They are responsible for implementing the action items, monitoring the progress, and updating the Project Manager and Project Team on the status of the risk. If the risk owner and risk reporter are different people, please note both individuals.
4. ***Follow-up Date*** – The date the Project Manager will check in with the Risk Owner to obtain a progress update on the action items. This value is related to the "update frequency" (Management & Monitoring). For example, if the follow-up date is April 3rd and the update frequency is monthly, then after discussions occur on April 3rd, the next follow-up date would be May 3rd.

Management & Monitoring Plan

There are two sections within the Management and Monitoring Plan:
  ➢ Update Frequency
  ➢ Update & Comments

The **update frequency** identifies how frequently the Risk Owner should provide an update to the Project Manager (e.g., weekly, bi-monthly, monthly, quarterly, annually). The frequency will depend on the risk and may change throughout the life of the project. This is directly connected to the "follow-up date." (Response Strategy)

The **updates and comments** section is a place for the Project Manager and/or Risk Owner to track the progress and work that has been completed to mitigate, avoid, transfer or enhance the risk. If, for example, someone asks what work has been done to mitigate a risk, someone could go to this section to provide that information. Below is an example of the updates and comments that can be provided for a risk:

Risk	Update & Comments
If Median Emergency Access is not provided, project costs could increase to allow for outside access.	**9/15/16** - Ongoing discussion between Central Office and the Project Team as to if this type of access is allowed. **10/10/16** - No updates at this time. **11/7/16** – Peter, Paul and Mary will set up a meeting to discuss if this access occurs in other corridors. **12/5/16** - Waiting for a response from Central Office. Project Manager will reach out to Central Office team lead this week. **1/9/17** – Central Office did not approve this access and provided a list of reasons. The traffic team will develop a response to try to keep this concept in or develop a modified concept that addresses their concerns. **2/6/17** - Traffic team assembled a response to address Central Offices concerns. **3/6/17** - Reached an agreement with Central Office to not have a median access through the retaining wall. Retaining walls do not need to be gapped to provide median access. Access will come from the outside and will require some additional real estate acquisition ~$20k.

Additional Notes

This space should be used to log additional details about risk discussions and updates throughout the course of the project that are not captured in other columns. It is also suggested that the risk location be noted in this column. For example, note if the risk applies to the entire project, a specific section, or intersection.

Using Risk Examples and Mitigation Strategies

Found in the Risk Management Support Tools workbook, project teams are encouraged to review the risk examples and mitigation strategies for their project's risk categories. Access the support tools workbook here.

Appendix C: List of Acronyms

List of Acronyms

CER................ Cost Estimate Review

IPD .... Integrated Project Delivery

MPO.............. Metropolitan Planning Organization

NTP .... Notice to Proceed

PDN............... Project Delivery Network

PM .... Project Manager

PMU.............. Project Management Unit

PSR................ Project Scoping Report

PS&E .... Plans, Specifications and Estimates

RAW.............. Risk Assessment Worksheet

RMW…………. Risk Management Workshop

RPO .... Rural Planning Organization

VMO.............. Value Management Office

Note: The Division of Planning and Programming is comprised of the Feasibility Studies Unit and the Corridor Development Unit.