**Project Risk Management**

**Background**:

Project Risk Management is a critical component of project delivery. Managing, assessing, reassessing, and controlling project risks helps the Project Manager and the Project Team save time and money. Currently, CDOT Project Managers, Project Engineers, and Project Teams inherently consider project risks throughout the lifecycle of a project. This guidance provides a process and framework to help define and manage risks as well as risk management tools.

The objective of project risk management is to increase the likelihood and impact of positive events (opportunities), and decrease the likelihood and impact of negative events (threats). Project Risk Management includes the process of conducting risk management planning, identification, analysis, and response planning that includes developing strategies for monitoring and controlling risks.

**Application of this Guidance:**

This guidance applies to managing risk for Design-Bid-Build projects that are not considered to be major projects. Major projects are managed by the Office of Major Project Delivery.

**Process for Managing Project Risks:**

The process for identifying and tracking risks is shown in the Risk Management Workflow below.



***Step 1 – Risk Identification:***

Complete the Risk Assessment Worksheet included below to determine the Risk Level for your project. This worksheet will provide a project risk ranking of Low, Medium, or High. This risk ranking should be done for all projects to help identify the best way to manage project risks.



The Project Manager (PM) should initiate the process for identifying project risks during project planning and scoping. The Design Scoping Review (DSR) Meeting is a good forum for obtaining input from the Specialty Groups. As members of the design team go through the Scoping process (Form 1048) and discuss the project, they address issues and concerns that have the potential to become project risks. A best practice is for each team member to document his/her concerns using the Risk Id Worksheet provided below. An example is included in the Worksheet (delete before using).



For each risk, the Risk Id Worksheet should include a description of the risk, the associated specialty group, and whether it would impact schedule, cost, or constructability. The design team and/or PM may want to further analyze and prioritize risks by calculating a Risk Score. To compute the Risk Score, estimate the probability of each risk occurring (1 to 5) in column E and the potential impact of the risk (1 to 5) in column F. The Risk Score (column G) is the result of multiplying these two numbers:

Probability of Risk x Impact of Risk = Risk Score

The Project Manager should collect all the information generated at the DSR and combine it into one Risk Id Worksheet. This will help the Project Manager understand and prioritize all of the project risks.

PMs should also consider risks identified by the Office of Asset Management and add them to the Risk Id Worksheet. Those risks can be found in the Asset Management Risk Register at the following link:

[Link to Asset Management Risk Register](http://connectsp/sites/ppa/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fsites%2Fppa%2FShared%20Documents%2FTransportation%20Asset%20Management%20%28TAM%29%2FRB%20AMP%20Year%202%20Implementation%2FObjective%202%20Integrate%20Risk%20into%20Planning%20and%20Programming%2FRisk%20Register&FolderCTID=0x012000E3A8A739B8F24C4A8831886DA17164B8&View=%7B0A657519%2DB439%2D4A04%2DBA86%2D31AC2CD887A9%7D)

Determine which Asset Management Risks are relevant to your project by reviewing the first three columns on the left labelled: Risk Level, Asset Class, and Event/Occurrence. Add selected Risks to your Risk Id Worksheet or Project Risk Register (see below), and using your judgement and input from your team, enter values for the likelihood and impact for each to calculate a Risk Score.

For low risk projects, the Risk Id Worksheet may be sufficient for risk analysis. For medium and high risk projects (determined by the Risk Assessment Worksheet), it is recommended that the PM complete a more structured Risk Register like the one provided below.



This Risk Register includes the following worksheets:

* “Instructions” tab – Instructions for the Risk Register.
* “Input” tab – To record brief information on the project.
* “Common Project Risks” tab – To serve as a reference.
* “Risk Detail” tab – To record project risks.
* “Risk Quicksheet” tab – Allows the PM to sort project risks by Specialty Group, level of cost risk, level of schedule risk, and other filters.
* “PDM Section List” tab – Serves as a risk breakdown structure to categorize risks.

Below is a sample Risk Register that has been partially completed. Some CDOT offices have developed similar tools for Risk Management that are suitable alternatives to the Risk Register above. Determining which tools to use is left up to the Project Manager.



***Step 2 – Create a Risk Management Plan:***

The next step is to plan the best way to manage risks. Developing a Risk Management Plan incorporates the Risk Id Worksheet or Risk Register created in Step 1. It also includes a strategy for the best way to manage each risk. For instance, can risk be avoided by making certain design decisions? Or do you accept a risk with a requirement to monitor it and mitigate the outcome if necessary? These are the elements of risk planning.

The Project Team and other relevant stakeholders should provide input to the Risk Management Plan. The Risk Management Plan should also define roles and assign responsibilities for monitoring risks.

For low risk projects, the Risk Management Plan may consist of simply documenting risk response strategies and assigning responsibilities in the Risk Id Worksheet. For projects that are medium to high risk, the PM may need to develop a more detailed Management Plan to document response strategies.

***Step 3 – Implement the Risk Management Plan:***

The Project Team puts into practice the roles and responsibilities assigned by the Risk Management Plan. The team should also review the plan at key project milestones, identify and analyze new risks, and update the Risk Register and/or Risk Management Plan as needed

***Step 4 – Monitor and Control Risks:***

The Project Team monitors and controls risks and, when needed, initiates the appropriate risk response. The Risk Register should be updated with the status of individual risks.

***Step 5 – Retire Risks:***

Finally, as the opportunity for each risk to occur passes, it no longer needs to be monitored and it can be retired. Retired risks should be tracked in the Risk Register.

**Storing Project Risk Management Documents:**

Risk Management Documents for your project should be stored in the ProjectWise folder for the project, in the Project\_Manager/Project\_Management\_Plan/Risk\_ Management subfolder, as shown below. If your project does not have a Risk\_Management subfolder, please contact a ProjectWise Administrator to request that the folder be added. A list of Administrators can be found at <http://intranet/engineering/projectwise/administrative-support>.



**References:**

This is a standalone Design Bulletin and does not change the content of the *Project Development Manual.*

Design Bulletins can be found on the CDOT website at:

<https://www.codot.gov/business/designsupport/bulletins_manuals/design-bulletins>