Risk Management

Background

The cost to deliver transportation projects has dramatically risen in the last few years and this has had a negative impact on the Department's Work Program. Due to the increases, several projects have exceed their cost estimates and been deferred to future years. The increases have been directly related to increases in petroleum costs, availability of materials (earthwork, asphalt, concrete, steel, etc.) and labor shortages that weren't accounted for in the original cost estimates. Also, overruns can be attributed to unanticipated problems ("risk") that arise during project development, such as scope creep during planning, environmental process delays, real estate acquisition delays, poor market conditions, high escalation, poor ground conditions, etc. Risk Management is a tool that can be used to manage these types of uncertainties in a project. The objectives of Risk Management are to increase the probability and impact of positive events, and decrease the probability and impact of negative events.

Risk is an uncertain event or condition that, if it occurs, has a positive or a negative effect on a project objective.

Process

Risk Management should apply to all projects, but the level of effort can greatly vary depending on the project. On noncomplex, low-cost projects with little uncertainty, the risks can be identified and kept as a list of red flag items to be monitored by the project manager or individuals from the project team. On complex, high-cost projects that have a high level of uncertainty, a formal risk management plan that identifies, assesses & analyzes, develops strategies for handling and monitors/controls the risk should be considered. These complex high cost projects should also include an estimate validation process.

The process for risk management includes the following steps:

Risk Identification: Identify, categorize and document risks

Assess/Analyze: This step can be broken into the following 2 categories depending on the complexity and cost of the project:

Qualitative Risk Assessment: Qualitative Risk assessment has two aspects. The first determines the risk frequency (likelihood that is happens) and the second determines the impact of the risk should it occur. This assessment is useful for prioritizing risks and developing risk mitigation and allocation strategies.

Quantitative Risk Analysis: This step should only be performed on complex high cost projects that have a high level of uncertainty. The purpose is to translate the effects of the various risks into the overall project cost estimate and schedule.

Mitigation & Plan: Use the information from the previous steps to develop risk response strategies for key risks. The common strategies are to avoid, transfer, mitigate or accept.

Allocate: The objective of risk allocation can is to allocate risks to the party best able to manage them and in alignment with project goals.

Monitor & Control: Track identified risk, identify any new risks and manage the process.

Recommendations

While Risk Management is a tool that should always be considered to manage project uncertainties, projects with total estimated costs greater than $100 million should perform a formal quantitative risk analysis workshop. This would facilitate meeting FHWA's requirement for finance plans by providing detailed cost estimates that includes uncertainty. Projects with total estimated costs between $100 million and $500 million, the risk analysis will be performed internally by a statewide SWAT team facilitated by the State Estimates Office. Projects with total estimated costs greater than $500 million, the risk analysis will be facilitated by a consultant with expertise in risk management. The State Estimates Office will be responsible for arranging these workshops and coordinating with the project managers.

For projects that do not meet this threshold, project managers should be encouraged to implement a limited risk assessment and management plan (qualitative) depending on the cost and complexity of the project. For projects that will undergo value engineering, a qualitative risk analysis will be incorporated into the value engineering study.