



## Example Project Risks

---

Identifying risks and opportunities is a critical step in the project risk management process. In this phase of project risk management, the design team identifies risk relative to the project baseline that may affect project objectives. The following list of project risks and opportunities is intended to facilitate this step. While your project may have risks similar to this list, it is important that the project's specific risks be written specifically to your project. Furthermore, your project likely has risks that are not on this list.

### Project Management Risks

- If project purpose and need is poorly defined, then the project may not be appropriately scoped.
- If project scope definition is poor or incomplete, then the project may have increased cost and schedule from scope creep.
- If project scope, schedule, objectives, cost, and deliverables are not clearly defined or understood, then the project team may not produce the needed deliverables at the needed times.
- If there is project scope creep for routine maintenance, the project budget may be exceeded.
- If the project work force is inexperienced, there is inadequate staff, or problems with resource availability, then the project schedule duration estimates based on normal availability of experienced staff will be inaccurate (the project will take longer).
- If MPO required STIP amendment approval is delayed, then the project will be delayed.
- If the project cost estimate and/or schedule is incomplete (e.g. missing bid items, assuming contingency is covering bid items, missing critical path activities), then the project may cost more than currently estimated.
- If there is a change in key staffing during the project, then the project may be delayed while new key staff get up to speed.
- If the project agency or team has a poor relationship with local agency, then the project may suffer schedule delays in getting required approvals and permits.
- If the agency or key team members have a very good relationship/history with a local agency, then the project may have shorter review/approval times for required permits.
- If the project has assumed design exceptions that are not acceptable, then there will likely be added time and costs to the project.
- If the project can be designed using design exception that were not anticipated, then the project cost may be reduced.

- If the project consultant's contract does not have adequate scope or contingencies, then contract amendments could cause delays.
- If additional project funding becomes available, then a project may move up in the STIP (- e.g. project that wasn't fully funded for construction can now advance).

## **Stakeholder Risks**

- If local communities pose objections, then the project scope may change and/or the project may be delayed.
- If landowners are unwilling to sell ROW, then a longer eminent domain process may occur.
- If there are inconsistent cost, time, scope, and quality objectives amongst stakeholders, then there may be issues with scope creep and budget.
- If there are funding changes for fiscal year, then the project may need to be delayed.
- If political factors change, then a new stakeholders may be injected into the project with different objectives than those previously agreed to.
- If project stakeholders request late changes, then the project may be delayed beyond its target bid date.
- If new stakeholders emerge and demand scope additions, then the project may be delayed and there may be additional costs for any added work that may be agreed to.
- If influential stakeholders request additional scope to serve their own commercial purposes, then the project may suffer from scope creep.
- If the project is threatened with lawsuits, then additional staff time may be needed to coordinate legal and other support.
- If the project stakeholders choose time and/or cost over quality, then the project quality may not achieve minimum requirements.
- If the Mobility Advisory Committee does not approved of temporary or permanent traffic configurations, then the project may be delayed or cost increased.

## **Right of Way (ROW) Risks**

- If a landowner objects to the ROW appraisal, then the ROW process will require more time and/or money,
- If the ROW need is not adequately determined at DAP, then ROW staff may have to renegotiate with landowners.
- If the API changes after DAP and requires more ROW acquisition, then the project may be delayed.
- If there are landowners unwilling to sell, then a longer process to clear ROW via condemnation may be needed.
- If there is an unanticipated escalation in ROW values due to zoning change impacts, then ROW may cost more to acquire.

- If there is no consideration made for post-completion access for Maintenance to storm water detention or features, then added costs will be incurred.
- If planned ROW donations do not occur, then the project may not fulfill its grant match obligation.
- If ROW cannot be purchased ahead/advanced, then the project will be subject to a longer schedule.
- If additional project funding becomes available, then ROW may be purchased in advance.
- If access management is included with ROW, then an increase to the anticipated acquisition duration is likely.
- If a project has planned for a HAZMAT ROW issue that testing then shows is not present, then the time to purchase and cost to remediate the parcel is reduced/eliminated.

## Construction Risks

- If the contract duration estimate too long, then the contractor may not prioritize the work.
- If Utility relocation takes more time than planned, then the contractor's ability to start construction on some or all of the project work may be delayed.
- If there are landslides due to earthwork activity, then added time and/or costs may be required to construct repairs.
- If there are claims and delays related to drilled shaft foundations, then the project may not complete on schedule and costs may increase.
- If the project uses a quicker method for bridge replacement than standard (- e.g. ½ then ½ staging), then the project may not need as many seasons to be completed.
- If buried man-made objects/unidentified hazardous waste found during construction, then there may be added costs.
- If the project design incorporates new or unproven technology/materials, then the project may be bid by contractors at a higher risk premium (cost more).
- If the contractor selected has greater than normal experience with specialty/product technology, then the contractor is more likely to prosecute the work without "learning curve" production.
- If construction or pile driving noise and vibration impacts adjacent businesses or residents, then delays may occur during construction and additional ROW actions may occur to address impacts.
- If the general market is such that contractors and/or subcontractors are not available, then the project may receive fewer bids at higher than anticipated costs.
- If the general market conditions (- e.g. Recession) is such that contractors and subcontractors have below average to low work volume, then the project may receive many bids at prices more competitive than estimated.
- If the project area has insufficient or limited construction or staging areas, then the project could have added risk costs in its bids for securing additional areas.
- If street or ramp closures not coordinated with local community, then excess traffic delays may occur and emergency vehicle travel impacted.

- If there are unidentified utilities found during construction, then the project may have delays to determine their status and how to proceed.
- If a project has a “contractor non-performance” issue, then the project may have to proceed through a stepped process that delays the target completion of construction.
- If the project needs unplanned sub-excavation or significant change in quantity of sub-excavation needed, the project may take longer and cost more.
- If there are unanticipated Mobility and/or traffic delays during the project, then there may be allowed lane/road closures and/or work schedules renegotiated with the contractor.
- If a local community approves a full road closure/detour option, rather than keeping a road open under staged construction, the project can be constructed more safely and faster.
- If the time for fabrication and/or the long lead for materials is not accounted for in setting the project duration, then the project may have fewer bidders that place their bids at a premium cost.

## **Environmental Risks**

- Project permits or required agency actions are delayed or take longer than expected, then the project could miss its target let date/construction season.
- If the scope of hazmat mitigation is unknown, then the cost and duration of those activities will lack accuracy.
- If the project cannot use programmatic permitting or streamlined processes assumed, then the project will likely take longer.
- If the project ROW includes existing subsurface pipe that is made from hazardous materials (transite pipe), then additional construction time may be required during the removal of the pipe.
- If the project triggers state and federal fish passage laws on culvert or bridge work, the replacement of existing culverts with bridges or much larger culverts is typically required. This can add significant scope and cost increase to the project and may impact the project schedule due to resource needs. The presence/absence of fish passage work should be identified during scoping and factored into project scope/budget/schedule as necessary.
- If the water quality regulations change during the design of the project, the project may be delayed so that additional water quality treatment can be designed.
- If the reviewing agency or tribe(s) requires higher-level review (more intensive) than assumed, then the project may be delayed if the review can’t be completed in time to allow dependent actions. This may include tribal or archaeological monitoring during construction.
- If piles driven into marine habitat are found to require special noise attenuation to protect marine species, then there may be added costs passed on by the contractor.
- If a project will impact archaeological sites or historic resources (Historic District, National Register listed buildings, etc.) the additional costs and timelines will need to be included in the project budget and schedule to avoid project delays and

unbudgeted work. Archaeological surveys and mitigation for impacts to historic structures can be significant project costs.

- If a project will impact historic structures that qualify as Section 4(f) protected resources a detailed analysis and justification process may be required. This analysis can affect project design, as the 4(f) law has unusually strong avoidance requirements.
- If the project may have impacts to endangered species, or wetlands , then expanded environmental documentation and/or mitigations may be required.
- If the project bridge is a habitat to bats or other species that require changes to normal construction methods, or seasons for construction are altered, then the project could have additional costs and/or could require a longer overall schedule to complete.
- If the project can't proceed without going through an Environmental Impact Statement (EIS) or Environmental Assessment (EA) NEPA process, then the project will incur added costs and delay.
- If the project doesn't use a "bank" for wetlands mitigation, and must create or restore on or off-site wetlands, then there will be added scope to design and schedules can be increased.
- If environmental clearance for staging or borrow sites is required when not originally anticipated in the project, then the schedule could be impacted.
- If environmental regulations change during the design phase, then it will require added design and coordination with permitting agencies.
- If there are any overlooked city or county permit requirements (- e.g. noise restriction times), then the duration of the contract may not be achievable.
- If the project noise study deems it necessary to require mitigation (i.e. noise walls), then additional right-of-way, geo-technical drilling, and building of the wall can impact the project scope, schedule, and budget.
- If the project falls into a high wildlife-vehicle collision area (hot spot), then wildlife passage may need to be included in the project, which can impact the project scope, schedule, and budget.
- If the project has multiple complexities that are related, then the time for permitting may be extended for additional agency coordination (- e.g. multiple of items such as listed historic site, endangered species, riparian areas, fish passage, wetlands and/or a public park are all included/adjacent on a project).
- If contractor proposes a quicker method for bridge replacement and it is allowed (- e.g. bridge slide instead of ½ then ½), then there are likely fewer IWWs needed and fewer issues with those changing and impacting the project.
- If the mitigation rate changes for wetland impacts, then more wetland banking payments may be required.
- If there is section 106 (- e.g. Archeology) discovered during advanced investigation requiring recovery prior to contract, then the bid let date of the contract could be impacted/the project may miss its construction season.
- If it is determined that construction or pile driving noise will impact nearby ESA nesting birds (- e.g. marbled murrelet), then additional work restrictions may be required on the project (longer construction duration).

## Geotechnical Risks

- If there is delay in getting permits or agreements, from Federal, State, or local agencies for geotechnical subsurface exploration, then foundation design may be delayed.
- If the subsurface soil is determined to be have potential for excessive settlement in new embankment areas, then additional project design may be required to mitigate and project cost and schedule will increase.
- If slope excavation is planned in landslide prone areas, then additional ROW may be needed to create “fall out” zones.
- If there are changes in design standards (e.g., increased seismic criteria for liquefaction) during the project’s design, then the project may not be grandfathered and need to comply, thus creating schedule delay.

## Railroad Risks

- The railroad stakeholder requires items not anticipated prior to “agreement/permit” (- e.g. an extensive geotechnical report for temporary shoring system adjacent to tracks), then the project may have additional costs to complete the reports.
- Construction within 500' of a railroad requires notification to the railroad owner. If the railroad review timeline is not accounted for in the project timeline then the project may be delayed
- The project has unanticipated RR “agreement/permitting” requirements (- e.g. the need for RR flaggers or track time), then the project will have added costs for extra items not anticipated.

## Curb Ramp Risks

- If 2D designs don’t accurately allow catches within existing ROW, then additional ROW action may be required.
- If ramp design requires changes during construction, then cost increases will occur.
- If the workforce doesn’t understand the design standards, then there is a higher likelihood of redesign extending time and adding costs to projects.
- If ROW has to be released in phases, then contractor/sub may include a premium costs for multiple mobilizations and demobilizations.
- If utility relocation for different areas has to be released as phases, then contractor/sub may include a premium costs for multiple mobilizations and demobilizations.
- If there is a lack of availability of trained specialty inspection staff, then there is a risk to quality (non-compliant work being produced).
- If there isn’t sufficient time for review by stakeholders, then changes to design may create delays and impact the budget.