

Attachment G

Risk Register

LEVEL 3 - RISK REGISTER		Project Name:		SR 37 Improvements		DIST- EA	04-1Q760K	Project Manager	Kevin Chen: MTC; Parag Mehta: Kimley Horn											
Risk Identification						Probability		Cost Impact (\$)				Time Impact (days)				Rationale	Risk Response			
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions	Risk Owner	Updated
Active	1	Design	Survey Information	Inadequate survey information could lead to changes in design and ROW footprint, resulting in impacts Project Cost.	No Field work has been done for the PID. Available maps and as built information is used to develop alternatives in the PID. Survey work will be done under the PA&ED phase.	5	10	\$ 300,000		\$ 600,000	\$ 34,000					The interim project alternatives are limited to improvements within the existing footprint and the ultimate project alternatives include construction of a new facility. The risk of using as built and available data to develop preliminary engineering is limited to interim alternatives only.	Mitigate	Collect accurate survey data as first order of work in PA/ED phase	MTC	8/1/2018
Active	2	Design	Deteriorating Pavement Conditions	Existing pavement and shoulder conditions are not fully evaluated in PSR-PDS, leading to increased scope of the interim project, resulting in cost increase.	For interim project, it is assumed that shoulders will be reconstructed. No existing pavement reconstruction work is assumed.	10	30	\$ 5,000,000		\$ 20,000,000	\$ 2,500,000					Assumed 5% - 10% of Pavement structural section will require reconstruction in estimate for Interim project Alts	Mitigate	Test and analyze existing pavement and identify additional replacement work. Programming costs included contingency for additional reconstruction work	MTC	8/1/2018
Active	3	Design	Approval of non-standard features	The Project may have non-standard features that are hard to justify the merits of, leading to additional construction on the project, resulting in additional unanticipated construction and right of way costs.	To minimize environmental impacts, proposed alternatives for interim projects will require non standard design features. Justification and approval of design standard decision document will be prepared in the PAED phase.	5	25	\$ 15,000,000		\$ 50,000,000	\$ 4,875,000					The design standard risk assessment table is included in the PID. Cost impacts are based on the probability rating assigned to non standard features.	Mitigate	Interim project alternatives were presented to Caltrans Design during PID development. Justifications will be developed in the PAED phase and opportunities to improve design to reduce or eliminate non standard features will be explored in the PAED phase.	MTC	8/1/2018
Active	4	Design	Bicycle facility	The 4 Lane Interim project alternative may face opposition for approval because of lack of bicycle lanes, leading to alteration in design which results in increased cost and schedule delay.	4 Lane Interim alternative proposes to use shoulder for traffic lanes during peak periods so bicycle usage during peak period will not be accommodated. A bicycle shuttle will be provided during peak periods.	5	10	\$ 2,000,000		\$ 5,000,000	\$ 263,000	780		2,080	107	A bicycle shuttle similar to one used at Bay Bridge will be provided for this alternative.	Mitigate	Work with Bicycle community in identifying mitigation efforts to compensate non availability of bicycle lane.	MTC	8/1/2018
Active	5	Design	Flooding	The Interim project proposes roadway at existing elevation and may have a risk of seasonal flooding at low spots locations near Tolay Creek and Mare Island, leading to additional flooding related work to be part of interim project, resulting in cost increase.	Interim project will evaluate design options to mitigate flooding measure in the PAED phase. There are separate shoreline restoration and flood control efforts are under consideration for this corridor that will provide protection for low spot areas.	20	50	\$ 3,000,000		\$ 6,000,000	\$ 1,575,000					SR 37 is relatively at higher elevation with three local low spots at Tolay Creek and Mare Island area.	Mitigate	Mitigate the risk by continual coordination of flood protection project and evaluate design features in the interim project to provide flood protection.	MTC/Caltrans	8/1/2018
Active	6	Design	Unexpected geotechnical issues	The project 's geotechnical assessment is very preliminary in nature and needs full understanding, which might result in additional work as part of the project, resulting in additional costs	A preliminary Geotech assessment was conducted to identify site condition and provide input for construction costs associated with building on the Bay Mud site condition.	25	60	\$ 50,000,000		\$ 100,000,000	\$ 31,875,000					The Geotech assessment was based on available information. Site specific exploration will be conducted in the PAED phase.	Mitigate	Perform detailed geotechnical investigations in the PA&ED phase to mitigate risk. The current cost estimate for ultimate projects has higher contingencies to account for this risk.	MTC	8/1/2018
Active	7	Design	SLR guidance	SLR guidance could change during the course of project development, leading to Design change for the Alternatives being considered, resulting in additional costs.	Current ultimate alternative elevations are based on available SLR guidance	20	60	\$ 100,000,000		\$ 500,000,000	\$ 120,000,000					Stakeholder acceptance on SLR guidance used for this project will need to be confirmed in the PAED phase	Mitigate	work with stakeholders to develop a science based methodology to assess and analyze risks associated with SLR and determine SLR scenario to use for this project.	MTC/Caltrans	8/1/2018
Active	8	Environmental	Concurrence on alternatives and mitigation to allow environmental review	The Project might trigger disagreement with resource agencies on the P&N, resulting in additional environmental review time, resulting in schedule delays.	Consultation and agreement is required with resource agencies, potentially at key steps such as purpose and need, alternatives, and other PA&ED steps.	20	40	\$ 1,000,000		\$ 5,000,000	\$ 900,000	200			60	project elements are coordinated v	Accept	Include adequate time and steps for agency consultation in project schedule and level of effort.	MTC/Caltrans	8/1/2018
Active	9	Environmental	Public input on range of alternatives and studies.	New viable alternatives may be introduced after technical studies performed, leading to change in scope and design, resulting in cost increase and schedule delays.	Multiple alternatives may be suggested by public; need to sufficiently address all viable alternatives.	30	60	\$ 2,000,000		\$ 5,000,000	\$ 1,575,000	200			90	Alternatives Evaluation and Screening memorandum (October 2018) documented a high-level screening and included both quantitative and qualitative measures to evaluate alternatives included in the PID.	Mitigate	Provide adequate resources to address new viable alternatives raised as a result of environmental document circulation.	MTC/Caltrans	8/1/2018
Active	10	Environmental	Unknown resources	The Project may encounter occurrence of endangered species or other sensitive environmental resources, leading to additional environmental screening, resulting in cost increase and schedule delays.	environmental resource information is developed using available data.	20	50	\$ 100,000		\$ 200,000	\$ 53,000	200			70	Project alternatives are coordinated with environmental community to identify resource impacts.	Mitigate	Risk for this event would be more defined/determined after environmental study phase is complete.	MTC/Caltrans	8/1/2018
Active	11	Environmental	Wetland mitigation	The Project may have extensive wetland and/or species mitigation requirements, leading to incorporating additional mitigation measures, resulting in schedule delays and cost impacts.	the current project estimates are based on 3:1 mitigation for wetland impacts	20	50	\$ 100,000		\$ 200,000	\$ 53,000	200			70	Mitigation will be required, but unknown how this obligation will be met. Will become more defined and addressed during project development.	Mitigate	Define options for mitigation during PA&ED, including costs and practicability.	MTC/Caltrans	8/1/2018

Active	12	Environmental	Legal challenge following approval of environmental document.	The Project may face legal challenge following approval of environmental document, leading to further work on remedies, resulting in schedule delays and cost increase.	the alternative under considerations are developed in coordination with environmental community.	10	40	\$ 400,000		\$ 750,000	\$ 144,000	550			138	Potential lawsuit against project or on choice of alternative.	Mitigate	More input would be received during/after public review. Consult with Caltrans legal to help define risk, potential consequences, and remedies.	MTC/Caltrans	8/1/2018
Active	13	PM	Funding uncertainty	The Project may lack funding or lose identified funding sources, leading to finding other potential sources of funding, resulting in schedule delay.	MTC and partner agencies are developing funding strategies	20	60	\$ 2,000,000		\$ 10,000,000	\$ 2,400,000	780			312	Lack or loss of funding, or extended project scope.	Mitigate	Project would have to be listed in the TIP and RTP with potential funding sources. Also consider construction and phasing options through stages of project development time funding availability with project development. A funding plan will be developed in the PA&ED phase	MTC/Caltrans	8/1/2018
Active	14	Construction	Unknown site condition	The Project may encounter constructability issues, leading to modifications in design and construction methodology, resulting in schedule delays and increase in costs.	the current alternatives are based on available information on site condition. The cost assumes challenging site condition	40	60	\$ 50,000,000		\$ 100,000,000	\$ 37,500,000					Enough data is not currently available to accurately assess site conditions which can have impacts to costs. As the project progresses in PA&ED, further information will help better calculate this risk.	Mitigate	Constructability needs to be carefully evaluated at the PA&ED phase, including performing additional field investigations .	MTC/Caltrans	8/1/2018
Active	15	Construction	Unanticipated Utilities	Unanticipated utilities may be encountered during design/construction leading to extra work for relocation or mitigation resulting in additional project costs and schedule delays.	the current alternatives are based on available information on site condition. The cost includes utilities relocation costs.	40	70	\$ 500,000		\$ 2,000,000	\$ 688,000	260	780	286	The cost impacts were calculated based on the existing information and range between 25% to 100% of the total utility costs identified for the interim alternatives	Mitigate	Perform thorough utility research to identify existing utilities within the Project Limits to mitigate unanticipated utilities and related relocations	MTC	12/4/2018	
Active	16	Construction	Utility Relocation Risk	Existing utilities with the project work area may require relocation leading to readjustment in project schedule or utility work during construction resulting in additional cost and schedule delays. If any utilities require relocation, the project may be delayed. PG&E relocation may delay the project 2+ years.	the current alternatives are based on available information on site condition. The cost includes utilities relocation costs.	20	60	\$ 500,000		\$ 1,000,000	\$ 300,000	260	780	208	Based on the existing information collected in this phase and the utility costs identified in this phase, cost of 25% to 50% of utility impact costs are identified for this risk.	Mitigate	Identify utilities and the extent of relocations to the best of ability by potholing and thorough research and outreach in the planning and design phases.	MTC	11/24/2018	
Active	17	Environmental	Unknown Mitigation costs	The Ultimate project Alternative currently shows impacts to SR 29/37 project's mitigation site, leading to unknown mitigation costs, resulting in increase of Project cost.	the current project estimates include mitigation costs and include contingencies for potential additional costs.	25	75	\$ 1,000,000		\$ 5,000,000	\$ 1,500,000					The risk is based on unknown factors. The costs are based on the fact that there might be feasibility in design to avoid the risk and in the case it can not be avoided, a maximum of \$5 Million is proposed for impacts.	Mitigate	Review alignment alternatives to avoid and/or mitigate impacts to the SR 29/37 project mitigation site. If unavoidable, coordinate early to account for costs of impacting a mitigation site.	MTC/Caltrans	12/4/2018
Active	18	Environmental	Endangered Species	Inability to avoid protected species habitat or actual presence may add cost and time.	PA&ED studies and consultation will further define risks and avoidance.	25	50	\$ 100,000		\$ 500,000	\$ 113,000	90	700	148	Mitigation is likely to be required. Impacts can likely be minimized for Interim but may be unavoidable for Ultimate project.	Mitigate	Review alternatives and design to minimize impacts related to habitat. Consider advanced mitigation.	MTC/Caltrans	12/12/2018	
Active	19	Environmental	Cultural Resources	Potential for encountering unknown resources during construction, resulting in delay until site is evaluated.	Record search indicated low potential. Much of existing SR 37 may be on modern fill, lowering risk.	10	30	\$ 50,000		\$ 200,000	\$ 25,000	90	200	29	PA&ED studies will help define likelihood of resources being present.	Mitigate	If resource is identified, can isolate construction in that area while evaluating allowing construction on remainder of project to continue.	MTC/Caltrans	12/12/2018	
Active	20	Environmental	Hazardous materials	Risk of encountering unknown contaminated materials during construction, adding delay and cost.	Records indicate only one known site in areal, and evaluations by others indicate it has been addressed. As for any highway, there is a potential for lead contamination. Can likely be successfully evaluated at PA&ED and addressed at PS&E.	10	20	\$ 50,000		\$ 100,000	\$ 11,000	90	200	22	Risk considered low given lack of urban development near route and lack of known site records. To be confirmed during PA&ED.	Mitigate	Reassess risk following PA&ED studies. Include contingency for potential treatment of soil or water.	MTC/Caltrans	12/12/2018	
Active	21	Environmental	Nesting birds	Nesting birds identified as present during pre-construction surveys, requiring avoidance.	Time vegetation and site clearance to occur prior to breeding season. If construction cannot start until breeding season, consider need for monitoring.	10	20	\$ 25,000		\$ 75,000	\$ 8,000	30	120	11	Pre-construction surveys and avoidance of nesting birds is standard practice if habitat is present.	Mitigate	If nesting birds identified prior to or during construction, can isolate construction in that area until nesting completed (establish buffers), allowing construction to continue on remainder of project.	MTC/Caltrans	12/12/2018	
Active	22	Environmental	Permit delay	Environmental permits from outside agencies may have longer than expected lead time for approval leading to schedule delays if permits are not issued in a timely manner resulting in additional cost and reschedule milestone.	Army Corps of Engineers (permit), Bay Conservation and Development Commission (permit), Regional Water Quality Control Board (Section 401 water quality certification, and stormwater runoff) (permit), US Fish and Wildlife Service (agreement/Biological Opinion), National Marine Fisheries Service (agreement/Biological Opinion), and California Department of Fish and Wildlife (Permit/Consultation).	25	75	\$ 250,000		\$ 1,000,000	\$ 313,000	90	700	198	Risk is based on potential difficulty obtaining adequate mitigation to offset unavoidable impacts. Habitat resources are considered valuable/high in this area. Replacement mitigation will be contingent on availability which is somewhat unpredictable.	Mitigate	Identify options for habitat restoration and replacement at early phase of PA&ED. Obtain agreements with mitigation site owners if possible.	MTC/Caltrans	12/12/2018	
Active	23	Organizational	CPUC Application delay	As the result of new bridge over the existing railroad crossing in the ultimate alternative, a "formal application" will be required by the CPUC for this new bridge and the formal applications could take up to one year to process resulting in schedule and project delivery delays	It is assumed that early identification and coordination efforts will be in place to avoid delivery schedule delays and increased resource needs in the PS&E and R/W certification phases.	10	40	\$ -		\$ -	\$ -	130	260	49	Risk is based on CPUC application and approval being delayed.	Avoid	Identify Risk early and coordinate with CPUC early and often to avoid risk.	MTC	12/26/2018	

Active	24	Environmental	CEQA Documentation	Elevating the CEQA document for the Interim Project to an Environmental Impact Report (EIR) may be necessary if technical studies indicate the potential for significant impacts, or if public review identifies areas of controversy or concern related to environmental impacts or the alternatives considered. An EIR would require increased level of effort to prepare and would add time to the schedule for completing CEQA compliance.	It is currently assumed that the CEQA compliance for the Interim Project can be completed as an Initial Study/Mitigated Negative Declaration.	30	65	\$ 75,000		\$ 150,000	\$ 53,000	180		360	128	Interim Project has been defined to minimize impacts; however, the potential for unanticipated impacts or areas of public controversy still exist.	Mitigate	Reasses risk following PA&ED studies. Engage stakeholders and public early on.	MTC/Caltrans	12/27/2018
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