

Meeting Agenda

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Risk Mitigation Management Meeting No. 53
December 10, 2013
2:00pm – 4:00pm
 Central Subway Project Office
 821 Howard St. 2nd Floor
 Main Conference Room

Attendees:

Mark Benson		Richard Redmond		Roger Nguyen	
Alex Clifford		Albert Hoe		Eric Stassevitch	
Vivian Chow		Mark Latch		Beverly Ward	
John Funghi		Brad Lebovitz		Luis Zurinaga	

1. Report on Red Risks (Risk Rating 6 and above)

- Requirement Risks (83)
- Construction Risks (99, 204, 208)

2. Report on Remaining Requirement and Design Risks

- Requirement Risks (79)
- Design Risks (89, T, V)

3. Active Risks

- Market Risk (none)
- Construction Risks (U, PR1, 7, 13, 15, 50, 196, 212, 213, 214)

4. New Risks (Assessment and mitigation strategy)

- 218 – SFFD Station air replenishment system
- 219 – YBM Clearance between slurry wall and headwall tunnel penetration
- 220 – Pagoda compensation grouting delayed

Note: **Bolded** numerals indicate that risk is recommended to be retired.

Risk Register

PROJECT RISK REGISTER												Risk Profile		Severity Score					Legend							
Central Subway Project San Francisco												Likelihood Score	1	2	3	4	5	Probability	Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)		
REV : 27												5							< 10%	< 10% - 50%	> 50%	< 75% - 90%	> 90%	< 3 Low	2	
DATE ISSUED: 12/10/13												4							< \$250K	< \$250K - \$1M	< \$1M - \$3M	< \$3M - \$10M	> \$10M	3 - 9 Medium	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
												3							< 1 Month	< 1 - 3 Months	< 3 - 6 Months	< 6 - 12 Months	> 12 Months	> 10 High		
												2														
												1														
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date														
Underground Tunnel																										
1	Additional night shift work required at portal launch box due to bus storage facility relocation delay	Work with TJPA to coordinate construction schedules and GGB to coordinate Traffic Routing.	C	2	1	-	1	35%	1	2	No longer considered a risk. GGB not scheduled to be utilizing site until 2014	3/20/15 TUN1160														
2a	42"/48" sewer line relocated as part Utility 1 package is damaged by subsequent construction of the launch box.	1. Make follow-on contractor responsible for repairs to any existing utility lines. 2. Properly as built actual location as part of Utility 1 package and provide to Contract 3 Contractor	C	1	1	2	2	10%	2	3	Sewer Installation complete, awaiting as built drawing. Sewer installed according to contract drawings. Contract 1252 provisions for protection of existing utilities puts all cost and schedule risk on Contractor.	10/24/12 TUN1080														
5	Possibility that lowest level of tie-backs extending out from Moscone Center could be within the tunnel alignment.	1. Lower tunnel alignment 5' below the lowest expected tieback. 2. Include obstruction clause and allowance in contract documents.	C	1	1	1	1	10%	1	2	Contract Documents issued for bid, contain location of tiebacks from as built drawings, do not intersect tunnel alignment.	7/2/13 TUN1118														
7	Potential for excessive settlement of BART tunnels - SIGNIFICANT COMPENSATION GROUT REQUIRED OVER ESTIMATE ALLOWANCES	1. Early and extensive co-ordination with BART. 2. Survey BART tunnels to determine exact locations. 3. Checking effect of maximum expected settlement on tunnels. 4. Require EPBM TBM, Contractor to demonstrate effective control of ground settlements and correction of settlements by compensation grouting, and pre-installation of compensation grout piping under BART tunnels prior to tunneling reaching Market St. Require repair/adjustment plan. 5. Monitor movement of BART tunnels in real-time. 6.. Repair/adjust as needed. 7. Include probable cost in estimate.	C	2	2	2	2	35%	4	8	Risk is considered active, with mitigation measures fully developed . Adjusted cost impact lower resulting in Risk rating increasing to 4 but still remains a low risk.	8/28/13 TUN1120														
8	Flowing groundwater in vicinity of UMS Station could make adequate annulus grouting difficult.	1. Use appropriate additives such as accelerators in primary annulus backfill grouting, if needed. 2. Use secondary grouting as needed.	C	1	1	1	1	10%	1	2	Plans issued for bid contain mitigation measures	8/28/13 TUN1120														
E	Underground obstructions tunnel and retrieval shaft	Include differing site conditions in GPs as well as DRB to adjudicate conflicts and minimize costs	C	2	2	3	3	35%	5	10	Mitigation measures have been implemented. Maintain adequate contingency throughout tunnel construction	2/5/14 TUN1124														
13	Damage / settlement 3x 5' to old brick sewer running parallel to tunnel alignment	Slip Line 3'x5' brick sewer before TBM reaches CTS.	C	1	1	-	1	10%	1	1	Tunnel profile has been lowered 25 ft. and plans developed for replacement of at risk utilities in advance of tunnel drive.	12/16/13 TUN1121														
15	Major TBM machine failure	Closely monitor condition and maintenance of the machines.	C	1	2	2	2	10%	2	4	Contractor has indicated that they plan to use a newly manufactured TBM for this project.	2/5/14 TUN1124														
115	Jet grouted station end walls are installed by Tunnel contractor. Station Contractor assumes risk of possibly leakage problems due to insufficiently qualify of end walls.	1. In the 1252 contract, have tunnel contractor set aside a pre-determined amount of money in escrow that can be used to repair any leaks encountered by the station contractors after the in the jet grout end walls are excavated. 2. Alternatively, place an allowance in the station contracts for end wall leakage repair.	C	3	1	1	1	50%	3	6	Project configuration changes include headwall designs with multiple levels of redundancy. Warranty provisions added to contact language.	5/26/15 UMS1295														

Risk Register

PROJECT RISK REGISTER												
Central Subway Project San Francisco												
REV : 27												
DATE ISSUED: 12/10/13												
Risk Profile		Severity Score										Legend
Likelihood Score	1	2	3	4	5	Probability	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score
5	Yellow	Red	Red	Red	Red	< 10%	< \$250K	< 1 Month			< 3 Low	
4	Yellow	Yellow	Red	Red	Red	< 10% - 50%	< \$250K - \$1M	< 1 - 3 Months			3 - 9 Medium	
3	Green	Yellow	Yellow	Red	Red	> 50%	< \$1M - \$3M	< 3 - 6 Months			> 10 High	
2	Green	Green	Yellow	Yellow	Red	< 75% - 90%	< \$3M - \$10M	< 6 - 12 Months				
1	Green	Green	Green	Yellow	Yellow	> 90%	> \$10M	> 12 Months				
RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)												2
SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)												
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
B	Storage and testing of excavated soils from tunnel limits advance rate of tunneling.	1. Provide adequate storage and handling facility to accommodate testing activity. 2. Work with SAR to develop acceptance criteria, to minimize or eliminate testing requirements. 3. Require the contractor to provide a detailed workplan for testing, sorting and stockpile prior to hauling.	C	-	-	-	-	0%	-	-	Contractor is attempting to obtain the use of additional Caltrans parcel between Fourth & Fifth and Harrison & Bryant to help facilitate this work and provide additional storage area. .	Retire 11/12/13
MOS Station												
21	Incomplete cutoff of groundwater at MOS	1. Require additional grouting to limit leakage to permissible level. 2. Include probable grouting work in cost & schedule estimates.	C	1	1	-	1	10%	1	1	Mitigation measure to be made part of the contract documents	4/28/15 MOS1150
22	Public complaints result in unanticipated restrictions on construction at MOS.	1. Public outreach. 2. Maintain regular and open communications so Public knows construction plans and progress at all times. 3. Require Contractor to assist Public Outreach efforts, maintain access to businesses and assist with deliveries and pick-ups, control noise and vibration, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, ADA ramps and minimum sidewalk widths. 4. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. 5. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. 6. Quickly process and resolve damage and accident claims from the Public. 7. Assumed this work in cost & schedule estimates.	C	1	1	-	1	10%	1	1	Implementation of mitigation measures part of Communication/Outreach plan and certain aspects to be included in the contract documents.	9/16/16 MOS1230
F	Underground obstructions Stations (MOS)	1. Provide adequate allowance for differing site conditions to address unknown underground obstructions. 2. Show field verified obstructions discovered during previous contracts on contract drawings. 3. Make as-built drawings of structures adjacent to the work available to the contractor as reference drawings.	C	4	2	2	2	80%	8	16	Mitigation measures have been implemented.	4/28/15 MOS1150
27	Loss of business results in unanticipated restrictions on construction at MOS.	1. Public outreach. 2. Maintain regular and open communications so Merchants know construction plans and progress at all times. 3. Require Contractor to coordinate with merchants, maintain access to businesses and assist with deliveries and pick-ups, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, and minimum sidewalk widths. 4. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 5. Work with MOEWD to increase cleanup of the area and assist pedestrians across streets. 6. Include this work in cost & schedule estimates.	C	1	2	1	2	10%	2	3	Mitigation measures to be implemented and to the extent possible requirements will be written into contract documents to minimize disruptions to businesses.	4/28/15 MOS1150

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REV : 27												5	4	3	2	1	< 10%	< 10% - 50%	> 50%	< 75% - 90%	> 90%					
DATE ISSUED: 12/10/13																										
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date														
F	Underground obstructions Stations (UMS)	1. Provide adequate allowance for differing site conditions to address unknown underground obstructions. 2. Show field verified obstructions discovered during previous contracts on contract drawings. 3. Make as-built drawings of structures adjacent to the work available to the contractor as reference drawings.	C	4	2	2	2	80%	8	16	Mitigation measures have been implemented.	8/12/15 UMS 1320														
28	Incomplete cutoff of groundwater at UMS	1. If needed, perform grouting to mitigate the intrusion of groundwater. 2. Include in cost & schedule estimates.	C	1	2	1	2	10%	2	3	Mitigation measures in the form of consolidation grouting to be included in contract documents	8/12/15 UMS1320														
33	Damage to utilities at UMS causes delay to construction and/or consequential cost. (very close to walls adjacent to relocated utility trenches)	1. Intensive utility coordination and investigation. 2. Relocate utilities out of the way of construction wherever possible. 3. Show utilities on reference plans. 4. Have utility contact information and procedure on plans. 5. Have contingency repair/restoration plans. 6. Include probable impacts to schedule & cost in estimates.	C	2	1	1	1	35%	2	4	Although mitigation measure have been fully implemented, Increased probability due to proximity of new pile design to existing relocated utilities.	7/19/16 UMS1410														
34	Loss of business results in unanticipated restrictions on construction at UMS.	1. Public outreach. 2. Work closely with Merchant's Association. 3. Maintain regular and open communications so Merchants know construction plans and progress at all times. 4. Advertise that Stockton Street Merchants are Open for Business. 5. Require Contractor to coordinate with merchants, maintain access to businesses and assist with deliveries and pick-ups, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, and minimum sidewalk widths. 6. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 7. Work with the Union Square BID or MOED to increase cleanup of the area and assist pedestrians across streets. 8. Include this work in cost & schedule estimates.	C	2	3	2	3	35%	5	10	Mitigation measures to be implemented and to the extent possible requirements will be written into contract documents to minimize disruptions to businesses.	9/7/16 UMS1430														
35	Ground support structure causes groundwater table to rise which results in leakage into adjacent structures. (new structure might create a dam that results into leaks into new and existing structures)	1. Perform detailed hydrogeologic modeling and analysis. 2. Monitor groundwater table at multiple locations and passive measures as necessary to mitigate. 3. Reference the Tech memo in contract documents. 4. Include probable costs in estimate.	C	1	2	-	1	10%	1	2	Mitigation measures incorporated in design based on updated Hydrogeologic analysis and report	9/7/16 UMS1430														
36	Damage to buildings or utilities as a result of heave from jet grouting at UMS.	Utilize tangent piles combined with surface jet grouting.	C	1	1	-	1	10%	1	1	Mitigation measures implemented in contract documents to reduce risk	4/14/15 UMS1310														
37	Damage to adjacent buildings at UMS due to surface construction activities.	1. Require protective barriers. 2. Have an emergency and rapid response customer focused task force to fix damaged facilities. 3. Quickly repair and reimburse resulting costs. 4. Include probable cost in estimate.	C	1	2	-	1	10%	1	2	Mitigation measures implemented in contract documents to reduce risk	9/7/16 UMS1430														
38		1. Direct contractor to dig out the tiebacks on the plans. 2. Include allowance and differing site conditions clause in contract. 3. Include this work in the cost and schedule estimates.	C	2	2	1	2	35%	3	6	Mitigation measures fully implemented, Advance utility relocation contract (1251) confirmed location of tiebacks. Risk rating has been reduced due to a lowering of the probability of event occurring	5/6/14 UMS1170														

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REV : 27												5	4	3	2	1	< 10%	< 10% - 50%	> 50%	< 75% - 90%	> 90%	3 - 9 Medium	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
DATE ISSUED: 12/10/13												5	4	3	2	1	< \$250K	< \$250K - \$1M	< \$1M - \$3M	< \$3M - \$10M	> \$10M	>10 High		
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date												
J	Macy's entrance conflict with new piles	1. Show known obstructions shown on as-built drawings on contract drawings. 2. Make as-built drawings available to contractor as reference drawings. 3. Have contractor field verify obstruction shown on as-built drawings and contract drawings	C	3	1	1	1	50%	3	6	Known obstructions are shown on the ES drawings. Allowance for differing site conditions added to UMS Station contract.	1/23/14 UMS1060												
Q	As-built drawings and UMS construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction north entrance.	1. Investigate if electronic files of design can be given to the contractor. 2. Clearly define shop drawing criteria in the technical specifications. 3. Make as-built drawings available as reference drawings to the contractor	C	3	1	1	1	50%	3	6	Specifications require contractor to survey USG in order to develop shop drawings for structural steel.	3/24/12 UMS1280												
CTS Station																								
46	Public complaints result in unanticipated restrictions on construction at CTS. (schedule and estimate for underground work assumes 6 day work week and 2 shifts per day)	1. Public outreach. 2. Maintain regular and open communications so Public knows construction plans and progress at all times. 3. Require Contractor to assist Public Outreach efforts, maintain access to businesses and assist with deliveries and pick-ups, control noise and vibration, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, ADA ramps and minimum sidewalk widths. 4. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 5. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. 6. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. 7. Quickly process and resolve damage and accident claims from the Public. 8. Include this work in cost & schedule estimates.	C	2	5	1	3	35%	6	12	Implementation of mitigation measures part of Communication/Outreach plan and certain aspects to be included in the contract documents.	10/9/17 CTS1500												
48	Incomplete drawdown of groundwater. (inside of box and inside of caverns)	1. Require additional grouting to limit leakage to permissible level. 2. Include probable grouting work in cost & schedule estimates. 3. Include allowance for dewatering within cavern during construction.	C	2	2	1	2	35%	3	6	Mitigation measures have been included in contract documents	5/1/16 CTS1140												
50	CTS station contractor delayed by tunnel contractor since station platform construction cannot start until tunnels have been finished.	1. Include provisions in CTS contract identifying the potential waiting period for tunnel contractor. 2. Actively monitor progress towards schedule milestones	C	2	1	2	2	35%	3	6	Constraints on CTS contractor added to specification "Work Sequence and Constraints"	12/16/13 TUN1122												
52	Unacceptable settlement and impact on major utilities at CTS. (OLD SEWERS AND OTHERS WITHIN 20FT SPACE BETWEEN TOP OF CAVERN AND STREET LEVEL)	1. Evaluate effect of potential settlement on utilities. 2. Slip-line sewer by TBM contractor. 3. Reinforce other utilities as needed, monitored during construction, and repair / replace, as needed. 4. Have contingency repair/restoration plan. 5. Utility contact information and procedure will be on plans. 6. Develop an allowance for utility repair. 7. Include probable cost in estimate.	C	3	3	1	2	50%	6	12	Project configuration change, lowered station 25 ft. reducing the probability of this risk. Risk rating lowered.	4/22/16 N-CTS9730												
F	Underground obstructions stations (CTS)	1. Provide adequate allowance for differing site conditions to address unknown underground obstructions. 2. Make as-built drawings of structures adjacent to the work available to the contractor as reference drawings	C	4	2	2	2	80%	8	16	Mitigation measures have been implemented.	10/9/17 CTS1500												
U	Proximity at junction of head house boundary wall and school yard may result in relocation of school yard during wall construction		C	1	1	1	1	10%	1	2	Project configuration changed to eliminate encroachment. Risk converted to Construction risk from Risk 55.	8/16/13 CTS1010												
General																								
Demolition, Clearing, Earthwork																								
Site Utilities, Utility relocations																								
Hazmat, Contaminated Material																								
Environmental Mitigations																								
65	Archeological/Cultural findings during construction increases schedule and/or cost. (Portal) AROUND 10%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	1	2	1	2	10%	2	3	Additional boring taken in vicinity of portal indicated no evidence of Archeological/Cultural resources.	10/24/12 TUN1080												

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DATE ISSUED: 12/10/13												5	4	3	2	1	Cost Impact	< \$250K	< \$250K - \$1M	< \$1M - \$3M	< \$3M - \$10M	> \$10M	2		
												3	2	1	0	0	Schedule Impact	< 1 Month	< 1 - 3 Months	< 3 - 6 Months	< 6 - 12 Months	> 12 Months	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)		
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date													
66	Archeological/Cultural findings during construction increases schedule and/or cost.(Moscone) AROUND 10%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	3	1	1	1	50%	3	6	Mitigated - Current exposure only to those amount above those currently identified	4/28/15 TUN1150													
67	Archeological/Cultural findings during construction increases schedule and/or cost. (UMS)...LESS THAN 1%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	3	1	2	2	50%	5	9	Mitigation measures to be implemented in contract documents	8/12/15 UMS1320													
68	Archeological/Cultural findings during construction increases schedule and/or cost. (CHINA TOWN) ...AROUND 10%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	3	1	2	2	50%	5	9	Mitigation measures to be implemented in contract documents	10/9/17 CTS1500													
Auto/bus/van access ways, roads																									
70	Change in traffic control requirements after bid.	1. Provide unit bid items to reimburse contractor for traffic management costs outside their control. 2. Include allowance in construction contracts for PCOs.	C	3	4	1	3	50%	8	15	Mitigation measures implemented.	5/22/17 STS1020													
71	Power supply interruptions to TBM's (no dual power feed currently planned)	Obtain TBM power directly from PG&E substation.	C	1	2	-	1	10%	1	2		2/5/14 TUN1124													
Train Control and Signals																									
72	Interface new Signaling and Train Control system to existing at Fourth and King	Connect new system in parallel with existing system until the new system has been tested and safety certified for operation.	C	2	2	3	3	35%	5	10	Awaiting approval of contract plans by Muni Operations.	3/4/16 STS1045													
PR78	Delays or complication by other SFMTA projects delays CSP: radio, fare collection, C3/TMC	1. Monitor other projects' developments. 2. Develop contingency plans as needed to avoid 1256 delay of revenue service.	C	2	1	1	1	35%	2	4		7/27/12 FDS 1940													
Traffic signals & Crossing Protn.																									
Purchase or lease of Real Estate																									
79	Delay in obtaining tunnel easements (3 #) (goes to condemnation) - Costs of ROW may cost more than expected	1. Engage Owners in negotiations as soon as possible. 2. PM/CM to provide real estate specialists to facilitate.	R	1	1	-	1	10%	1	1	Right of possession obtained on all three parcels. Cost agreement reached with 1455 Stockton & 801 Market.	9/7/2012													
Reloc. of Household or Business																									
Vehicles																									
83	Cost of vehicles are more than estimated	Time the procurement of the vehicles to be part of the procurement of the existing Breda LRVs.	R	3	4	1	3	50%	8	15	CSP vehicles to be included in overall SFMTA vehicle procurement contract.	11/17/17 STS 1500													
Preliminary Engineering																									
89	3rd Party reviews of Design documents delays completion of Final Design.	Provide assistance to 3rd Parties to facilitate their reviews and obtain concurrent partial approval for underground work.	D	1	2	2	2	10%	2	4	3rd Party coordination meeting ongoing.	5/23/12 FDS 1930													
Project Management for Design and Construction																									
95	Contractor default during construction impacts schedule. (key sub-contractor)	Assist Bonding company in transition and to maintain schedule.	C	1	2	2	2	10%	2	4		11/17/17 STS 1500													
99	Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule.	1. Executive partnering and alternate dispute resolution. 2. Provide incentives in construction contracts in addition to penalties	C	2	4	1	3	35%	5	10	Mitigation measures being implemented	7/27/12 FDS 1940													
100	Procurement of long lead items delays work. (fans, rails and special track work, TPSS, Escalators, elevators, TBM)	1. Include schedule milestones for procurement of and substantial payment for stored long lead items in contract to encourage early procurement. 2. Monitor procurement of critical items.	C	1	2	2	2	10%	2	4	Not considered a project risk.	11/17/17 STS 1500													
102	Late finish of early contract delays later contracts and extends PM / CM and incurs additional costs	1. Actively manage contracts and include incentive provisions for early completion in critical contracts. 2. Add buffer float to critical path to actively manage schedule contingency	C	2	1	2	2	35%	3	6	LONP 1 & 2 initiated to reduce this risk. See Risk 86. The mitigation of risks associated with early contracts will address this risk. Risk rating reduced due to mitigation measures implemented	12/30/20 MS 0010													
T	Delay on station emergency ventilation approval	1. Work with SFFD to develop a plan acceptable to each party. 2. Incorporate SFFD requirements into construction documents.	R	2	5	-	3	35%	5	10	SFFD agreed to the proposed plan by SFMTA	7/27/12 FDS 1940													
PR37	Temporary construction power and ability to provide permanent power feed - PGE ability to provide power requirements to the program together with their other commitment	1. Identify temporary power requirements for station construction. 2. Investigate the timing of the permanent feed.	C	2	1	2	2	35%	3	6	Cost for First and Redundant electrical services need to be included in Cost Estimate.	5/3/18 STS1080													

Risk Register

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Central Subway Project San Francisco REV : 27 DATE ISSUED: 12/10/13		Risk Profile Likelihood Score Severity Score 1 2 3 4 5 5 4 3 2 1 HIGH MEDIUM LOW					Legend Probability < 10% < 10% - 50% > 50% < 75% - 90% > 90% Cost Impact < \$250K < \$250K - \$1M < \$1M - \$3M < \$3M - \$10M > \$10M Schedule Impact < 1 Month < 1 - 3 Months < 3 - 6 Months < 6 - 12 Months > 12 Months <3 Low 3 - 9 Medium >10 High					RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)		
		Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
		Insurance, permits etc.												
		103	Difficulty in getting required permits.	1. Coordinate with permit officials and request permits as early as possible. 2. Obtain assistance obtaining permits from PM/CM & FD Consultants.	C	1	2	1	2	10%	2	3		12/18/12 FDS 1275
		104	CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	1. Obtain Grade Crossing approvals at final CPUC inspection at the completion of construction. 2. Coordinate closely with CPUC until approval is received.	R	2	3	2	3	35%	5	10	CPUC Resolution (TED-253) for extension of our at grade crossing was granted.	7/27/12 FDS 1940
105	Electrical service delays startup and testing.	1. Submit applications for new service as early as possible. 2. Coordinate closely with PG&E to ensure timely delivery of electrical service.	C	1	2	1	2	10%	2	3	Applications for new service have been submitted to PG&E.	11/17/17 STS 1500		
106	Risk of Labor dispute delaying the work.	Enforce designated gate for employees of the contract in dispute so that the rest of the work is not delayed.	C	2	1	1	1	35%	2	4		11/17/17 STS 1500		
Unallocated Contingency														
111	Major Earthquake stops work	Include Force Majeure clause in contracts.	C	1	5	3	4	10%	4	8	Force Majeure clause included in contracts.	12/30/20 MS 0010		
112	Major safety event halts work	1. Require contractor Safety plan to address this risk. 2. CM inspections to ensure that safety plan and procedures are implemented.	C	1	5	3	4	10%	4	8	Health and Safety provisions included in contracts. CS Program provides full-time Safety Manager.	12/30/20 MS 0010		
196	The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned.	1. Continue to negotiate with building owners 2. Required Notices and Appraisals to be completed 3. Commence condemnation process with City Attorneys	C		1	1	1	0%	4	-				
202	Cargo Preference (Ship America) must solicit U.S.- flag carriers. Civilian Agencies Cargo = at least 50% (governed by Cargo Preference Act of 1954)	1. Require Ship America compliance agreement first tier contractors and subcontractors	C	1	1	1	1	10%	1	2				
203	Headwalls interface delay 1300 Contractor (SSTS)	1. Meet and develop recovery schedule 2. Review possible Adjustment to 1300 interface	C	3	3	2	3	50%	8	15				
204	AT&T Vault - New Sewer Work south of Bryant	1. Continue negotiations/coordination with utility owners. 2. Schedule analysis to confirm coordination	C	2	2	4	3	35%	6	12				
205	Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	1. CMod Task Force - 5 Areas of Improvement 2. Implement 3. Delegation of Authority	C	3	1	1	1	50%	3	6				
208	Additional cost if we change direction going to the Pagoda	1. Develop Scope with designers currently under contract 2. Agree to alignment and details of new shaft location 3. Issue PCC to Contractor 4. Initial site works and borings if necessary 5. Obtain appropriate permits	C	3	3	2	3	50%	8	15				
210	Mission Bay Loop Grant – Needs to be built to allow for train turnarounds (June 2013)	1. Identify timeline for grant funding	C	4	1	1	1	80%	4	8				
211	Differing site conditions encountered during ground freezing of Cross Passage 5 results in increased costs.	1. Contractor has submitted a 'no cost, no schedule' PCC for ground freezing 2. Need early review of work plan, and identification of entity that will perform the work	C	1	2	2	2	10%	2	4				
212	UMS Inclined piles – 8" clearance between piles and tunnel results in damage or safety issues within the tunnel	1. Establish 1252 and 1300 contract requirements to construct within acceptable tolerances 2. Workshop to be held with BIH to discuss hold points during construction.	C	1	5	3	4	10%	4	8				
213	Micro Piles exist within tunnel path at UMS	1. Re-profile and realign tunnel to clear micropiles	C	2	3	1	2	35%	4	8				
214	Micro Piles at UMS interfere with Tube-a-manchette installation (60' deep micropiles)	1. Provide micro-pile as-built information to contractor 2. Realign tube-a-manchettes clear of micro-piles	C	3	1	1	1	50%	3	6				

Risk Register

PROJECT RISK REGISTER													
Central Subway Project San Francisco													
REV : 27													
DATE ISSUED: 12/10/13													
Risk Profile		Severity Score					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)
Likelihood Score	1	2	3	4	5	< 10%	<= 10% - 50%	> 50%	<= 75% - 90%	> 90%	< 3 Low	2	
5	Yellow	Red	Red	Red	Red	< \$250K	<= \$250K - \$1M	> \$1M - \$3M	<= \$3M - \$10M	> \$10M	3 - 9 Medium	2	
4	Yellow	Yellow	Yellow	Red	Red	< 1 Month	<= 1 - 3 Months	> 3 - 6 Months	<= 6 - 12 Months	> 12 Months	> 10 High	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
3	Green	Green	Yellow	Yellow	Red								
2	Green	Green	Green	Yellow	Yellow								
1	Green	Green	Green	Green	Yellow								
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date	
215	DPW Excavation permit reviews delay contract works	1. Obtain a blanket excavation permits from DPW covering the area of work for 1253, 1254, 1255, 1256	C	2	1	1	1	35%	2	4			
216	Olivet building potential construction impact	1. Reach out to building owner and keep him abreast of CS construction activities.	C	1	1	2	2	10%	2	3			
217	Delays or complications construction by others – SF Dept. Of Technology, 3rd party utilities	1. Early engagement and coordination for agreements and plan development to avoid construction delays.	C	2	1	1	1	35%	2	4	DTIS MOU has been signed.		
218	Compensation Grouting at Pagoda Site		C					0%	-	-			
219	Installation of Air Replensment System - Element no longer required by SFFD		C					0%	-	-			
220	YBM - Headwall Clearance - Proximity to TBM penetration		C				-	0%	-	-		0	

Risk Mitigation Status**Risk Reference: 7**

Risk	Mitigation Strategy
Potential for excessive settlement of BART tunnels - SIGNIFICANT COMPENSATION GROUT REQUIRED OVER ESTIMATE ALLOWANCES).	<ol style="list-style-type: none"> 1. Early and extensive co-ordination with BART. 2. Survey BART tunnels to determine exact locations. 3. Checking effect of maximum expected settlement on tunnels. 4. Requiring EPBM TBM, 5. Contractor to demonstrate effective control of ground settlements and correction of settlements by compensation grouting, and pre-installation of compensation grout piping under BART tunnels prior to tunneling reaching Market St. 6. Require repair/adjustment plan. 7. Monitor movement of BART tunnels in real-time. 8. Repair/adjust as needed. 9. Included probable cost in estimate.

Initial Assessment: 1, 1.5, 2**Current Assessment:** Risk Rating 5 – Construction Risk**Risk Owner:** S. Wilson**Status Log:**

February 2012:

1. Coordination with BART has been ongoing.
2. The BART tunnels have been surveyed.
3. An assessment of the effect of maximum anticipated settlement has been done.
4. Tunnel contract specifications require compensation grouting.
5. Tunnel contract specifications require the contractor to measure settlements in real time.
6. Tunnel contract specification require contractor to provide Action Level Plans that details measures to be taken if observed settlements and/or distortions exceed specified values.
7. Tunnel bid documents included bid items for Building Protection, including the BART tunnels.
8. EPBM TBM required for tunnel contract.
9. Coordinated with BART and Independent Review Panel (IRP) on specific check points for assessing effectiveness of control of the EPBM tunneling operations and related ground movements.
10. BART analysis of bus bridging concept reveals that it is not feasible due to lack of capacity in the system to handle the bridging.
11. Recommend to reduce this risk rating.

June 2012 Meeting:

1. Contractor and construction manager have gone through BART background check and security training that will allow the contractor to perform the settlement monitoring.

November 2012 Meeting:

1. Coordination with BART and IRP ongoing

Risk Mitigation Status

Risk Reference: 7

December 2012:

1. Installation and pre-charging of the compensation grouting pipes will demonstrate the effectiveness of the system (mitigation 5)
2. **Recommend reducing this risk rating to 3, 1.5, 4.5** (reduced cost impact associated with grout)
 - a. Current probability (3), >50%, maintain probability rating
 - b. Current cost impact (4), \$3m - \$10m, recommend reduce cost impact to (2), \$250k - \$1m (based on expected cost of additional grout only)
 - c. Current schedule impacts (1), <1 month, maintain schedule impact
3. No more can be done.
4. Cost will be brought to the January meet.

January 2013:

1. Risk probability has been lowered, new Risk rating – 2, 2, 4.

October 2013:

1. Mitigation strategies will only list ones that have a likelihood of implementation.

December 2013:

1. SB TBM crossed under BART Thanksgiving weekend, no compensation grouting was required under the BART tunnels.
2. Risk to remain open until NB TBM BART crossing is complete

Risk Mitigation Status
Risk Reference: 13

Risk	Mitigation Strategy
Damage / settlement 3x 5' to old brick sewer running parallel to tunnel alignment	Slip Line 3'x5' brick sewer before TBM reaches CTS.

Initial Assessment: 1, 1, 1
Current Assessment: Risk Rating 1 – Requirements Risk

Risk Owner: M. Benson

Status Log:

September 2011:

1. Tunnel profile has been lowered 25 ft.
2. Sewers will be video taped prior to and after tunnel drive.
3. Contract documents include allowance for repair of utilities damaged during tunnel drive.

May 2013:

1. 3x5 sewer at CTS does not require slip lining prior to tunnel construction.
2. Settlement impact was mitigated by lowering the tunnel 25'.
3. Recommend retiring this risk.

October 2013:

1. Expand risk description to include 3x5' sewer at the corner of Stockton Street and Columbus Avenue.
 - a. PUC AWSS is preventing slip lining work from commencing
 - b. Central Subway staff are working with PUC to develop a plan for resolution

December 2013:

1. A meeting was held with PUC 12/3/13 to discuss the sewer issues in north beach
 - a. A plan has been developed for implementation
 - b. The timing of installation activities are to be monitored to ensure they are complete prior to the TBM passing through the area
 - c. Central Subway will seek reimbursement of additional costs from SFPUC
2. Risk owner changed to M. Benson

Risk Mitigation Status

Risk Reference: 15

Risk	Mitigation Strategy
Major TBM machine failure	Closely monitor condition and maintenance of the machines.

Initial Assessment: 1, 2, 2

Risk Owner: S. Wilson

Current Assessment: Risk Rating 2 – Construction Risk

Status Log:

October 2011:

- 1. Risk remains active.
- 2. Contractor has indicated that they plan to use a newly manufactured TBM for this project.

October 2013:

- 1. TBMS have been designed specifically for Central Subway conditions
- 2. Update on preventative maintenance to be provided
- 3. Confirm number of spare main bearings available per specification

December 2013:

- 1. Specification section 31 71 19
 - a. One spear main bearing assembly and seals, one spare main drive gear available for replacement of the corresponding parts to be provided with each TBM
 - b. Spares shall be identified and available for the duration of TBM excavation and be deliverable to the site within 1 week

Risk Mitigation Status
Risk Reference: 196

Risk	Mitigation Strategy
<p>The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned.</p>	<ol style="list-style-type: none"> 1. Continue to negotiate with building owners 2. Required Notices and Appraisals to be completed 3. Commence condemnation process with City Attorneys

Initial Assessment: new risk

Risk Owner: A. Clifford

Current Assessment: Risk Rating 4 – Construction Risk

Status Log:

September 2012 Meeting:

1. Risk 57 retired August 2012. New Risk 196 opened.
2. To date 9/27 required Station Licenses have been signed by the respective property owners.
3. 5/27 have reached verbal agreement or have been sent to the owner for signature.
4. 13/27 Licenses are outstanding
 - a. 7 of the 13 outstanding Licenses are progressing toward agreement
 - b. The Program team is currently preparing for condemnation on the following 6 Licenses should
 - 1 Stockton (Apple) & 212 Stockton (Bulgari) (same property manager)
 - 216 Stockton (Dior)
 - 39 Stockton (Disney)
 - 19 Stockton (Armani) – unresponsive owner
 - 250 Fourth Street (Olivet University)
5. Targeting Board of Supervisors 10/23/12
 - a. remaining Notice of Intent to Appraise mailed 8/30/12
 - b. finalize list of condemnation properties by 9/14/12
 - c. remaining appraisals to be completed by 9/20/12
 - d. meeting with board clerk 9/21/12
 - e. government code offer letters to be sent by 9/27/12

November 2012 Meeting:

1. To date;
 - a. 11/27 required station licenses have been signed by the respective property owners.
 - b. 4/27 have reached verbal agreement or final drafts have been sent to the owner to sign.

Risk Mitigation Status

Risk Reference: 196

- c. 12/27 Station licenses remain outstanding, 3 of which are being negotiated with the a single property owner (Macy's) and are expected to reach agreement.
2. 9/27 Remaining station licenses + 2 remaining tunnel easements (Central Subway has possession of the two tunnel easements) have been calendared for the December 11th Board of Supervisors Hearing.
 - a. Central Subway project team and the City Attorney's office submitted draft Resolutions of Necessity to the Clerk of the Boards office November 5th.
 - b. The Central Subway Project team continues to negotiate with the property owners.
 - c. The required access for compensation grouting and building monitoring is expected approximately May 10th 2013 should this need to be obtained through the eminent domain process.

April 2013:

1. Outstanding Tunnel & Station Group A licenses: (a, b and c do not have the condemnation option available at this time)
 - a. **Macy's 3 properties** – licenses for the remaining 3 properties to be sent to Macy's 4/11/13 (233 Geary, 120 Stockton, 101 Stockton)
 - b. **1013-1015 Stockton Street** – the final agreement was hand delivered to the owners representative for signature 4/10/13. Signature of the 3 owners is expected by 4/19
 - c. **3 Pagoda properties** (725 Filbert, 659 Columbus, 1717 Powell) – details and offer letters have been sent to owners
 - d. 950 Stockton Street – Central Subway continues to negotiate with the HOA and land owner while working with the City attorney to commence condemnation if agreement cannot be reached by 4/19
 - e. 216 Stockton – resolving final issues with owner (condemnation to commence 4/19 if agreement cannot be reached)
 - f. 1 Stockton and 212 Stockton – final agreement sent to owner for signature 4/9/13
 - g. 1455 Stockton Street – condemnation suit filed 4/9/13, possession estimated mid August 2013
 - h. 19 Stockton Street – condemnation suit filed 2/13/13, possession estimated 7/6/13

July 2013:

1. 4 Licenses to be obtained by SFMTA are outstanding
 - a. 659 Columbus Ave (1252 Contract)
 - License has been verbally agreed and sent to the owner for signature (expecting signed agreement by 7/15).
 - The Program has not prepared to condemn this license.
 - b. 1455 Stockton (1252 Contract)
 - The pre-judgment possession hearing scheduled for 7/9/13 has been continued to 7/23/13. Estimated possession date is now 8/26/13.
 - The project team continues to seek resolution of the license through negotiation with BofA and the owner.
 - c. 950 Stockton (1300 Contract)
 - Condemnation action filed 7/8/13. Possession of the license is estimated to be late November 2013.
 - The project team continues to work with the Mandarin Tower Homeowners Association (HOA) and the owner to reach agreement. Currently the Project team is requesting the HOA to sign the agreement with a condition that compensation grouting work cannot proceed until agreement from the landowner is received.
 - d. 19 Stockton (1300 Contract)
 - Condemnation suit filed 2/13/13.
 - The owner has engaged trial condemnation attorneys and is challenging the City's 'right to take' this license.
 - The pre-judgment possession hearing originally scheduled for 6/7/13 and was continued by the court.
 - City attorney availability pushed pre-judgment possession hearing date to early August 2013.

Risk Mitigation Status

Risk Reference: 196

- Owner attorney availability pushed pre-judgment possession hearing date September 9th 2013. If the motion for pre-judgment possession is successful, possession of the license would be obtained approximately October 11th 2013.

October 2013:

1. 950 Stockton Street

a. Negotiation

- Signed license received from MTOA
- Negotiation continues with property owners

b. Condemnation

- Signed disclaimers of interest have been received from most owners of record who can now be dismissed from the condemnation action
- Condemnation continues as summarized below (also see attached graphic)

File motion to court for service/summons via publication	10/11/2013	
	35	days
Court decision on service via publication (estimated date)	11/15/2013	
	5	days
Publish summons (once a week for 4 weeks)	11/20/2013	
	30	days
Publication period (court date set following 30day period)	12/20/2013	
	90	days
Pre-judgment possession hearing	3/20/2014	
	5	days
File documents with court & serve 30 day notice to owners 'notice of entry of order'	3/25/2014	
	20	days
Serve 10 day notice to owners (not an eminent domain requirement)	4/14/2014	
	10	days
Possession of license	4/24/2014	

2. 19 Stockton Street

- a. Pre-judgment possession hearing held 9/26/13
Pre-judgment possession granted 10/4/13
Possession 30days following service to owner – early November
- b. Right to take hearing 11/18/13
- c. Compensation Trial 3/10/14

Risk Mitigation Status

Risk Reference: 196

November 2013:

1. 950 Stockton Street
 - a. Signed licenses received from MTOA and basement condo owner
 - b. Conference call held with Owners attorney and engineer 11/8/13. SFMTA to send a revised agreement incorporating comments discussed on the call to owner for review.
 - c. City attorney's office is preparing motion for service via publication which is the next step in the condemnation process. This step is occurring 1 month later than anticipated (delays due to 19 Stockton defense preparations).
 - d. Revised condemnation dates to be included in next schedule update.

December 2013:

1. 950 Stockton Street
 - a. Condemnation
 - City Attorney's office continues condemnation through courts
 - Possession of license through condemnation is expected prior to contractor installation of TAMS
 - b. Negotiation
 - Central Subway Staff and City Attorney's Office (CAO) continue negotiation of license with owner
 - Revised license sent to owners attorney for review 12/9/13
2. 19 Stockton Street (City has possession of license)
 - a. Condemnation
 - Right to take hearing held 25/11/13, CAO filed closing brief to court 12/6/13.
 - Decision expected December 2013/Jan 2014
 - Compensation trial is still scheduled for March 2014
 - b. Negotiation
 - Court ordered settlement conference held 11/14/13
 - Central Subway provided best and final offer for the license to the owner and has not received a response

Risk Mitigation Status**Risk Reference: 204**

Risk	Mitigation Strategy
Relocation of AT&T Vault and other utilities delays Work south of Bryant	<ol style="list-style-type: none"> 1. Continue negotiations/ coordination with utility owners. 2. Contract 1300 is required to coordinate with utility companies for relocations 3. SWAT team established to address utilities south of Bryant Street 4. Initiate utility coordination meetings

Initial Assessment: 2, 2, 4**Current Assessment:** Risk Rating 6 – Construction Risk**Risk Owner:** R. Redmond /M. Benson**Status Log:**

December 2012:

1. Identified Risk and refined risk statement together with development of mitigation strategies.

January 2013:

1. Need to setup a meeting with AT&T and a representative from the Design side to walk them through what will be done in the 1300 contract.

February 2013:

1. Risk description refined.
2. AT&T were made aware of the potential need for relocation of the vault and duct bank in November 2012.
3. A meeting has been arranged between CSP and AT&T for Tuesday 2/19/13 to follow up on the November meeting and confirm that the vault and duct bank will need to be relocated.
4. Relocation of the vault has been included in the D&B element of the 1300 contract and is the responsibility of the contractor.
5. The 1300 contract requires the contractor to allow 12 months for AT&T to cut over new services from the existing duct bank into a new duct bank proposed within the eastern sidewalk of 4th Street between Bryant and Brannan Streets.

March 2013:

1. Increase scope of this risk to include other utilities; Level 3, PG&E, MRY, ASB, SFWD, SFDT, Comcast.
2. Contractual execution of the trench installation to be discussed.
3. AT&T have not been contacted during 1300 bid.
4. It was discussed that the schedule impact of this risk rating should be increased to 4 (6-12 months), this increased the risk rating to 6

April 2013:

1. Utility relocations may require a joint trench under the Contract 1300 design build scope.
2. If a joint trench is required under the contract the 1300 contractor would manage the implementation of the joint trench, SFMTA would manage the Form B process for reimbursement of the joint trench costs.
3. Mitigation strategy added that the 1300 contractor is required to coordinate with private utility companies.

Risk Mitigation Status

Risk Reference: 204

4. A SWAT team has been established comprising DP-3 and the Design Oversight manager who are meeting weekly to address utilities south of Bryant. DP3 are preparing Notice of Intent letters for utilities to relocate.

May 2013:

1. Final Notice of Intent letters were sent to private utilities Friday 5/3/13.
2. Final Notice of Intent letters will be sent to AT&T and PG&E the week commencing 5/6/13.

July 2013:

1. Revisit following Tutor baseline submittal.
2. It is noted that the Tutor schedule submitted 5 days following bid closure allowed a 12 month period to cutover to the new AT&T duct but did not appear to allow adequate time for construction of the AT&T duct along 4th Street.
3. Utility coordination meeting will be held to ensure the contract requirements are understood by the contractor.

October 2013:

1. DP-3 Tech memo being finalized
2. Relocation design and construction schedule to be developed

November 2013:

1. Coordination meetings with utility owners to occur on a regular basis, Tutor Perini are to be invited
 - a. AT&T plan for resource allocation, confirmation of assets and scheduling of work is to be confirmed as AT&T have very few resources who can complete cutover work
2. SFMTA are currently working with AT&T to establish a feasible location to relocate Vault 2081
3. The importance of this work is to be discussed at the next executive partnering meeting with Tutor

December 2013:

1. Letter was sent notifying the contractor of the criticality of this work and requesting a completion schedule
2. Potential vault location has been identified with AT&T. Feasibility is being confirmed via potholing

Risk Mitigation Status**Risk Reference: 208**

Risk		Mitigation Strategy
Additional cost to retrieve TBMs at the Pagoda Theatre site exceeds current budget	✓ ✓ ✓ ✓ ✓ ✓	1. Develop Scope with designers currently under contract 2. Agree to alignment and details of new shaft location 3. Issue PCC to Contractor 4. Initial site works and borings if necessary 5. Obtain appropriate permits 6. Investigate alternate procurement methods

Initial Assessment: 3, 2, 8**Current Assessment:** Risk Rating 8 – Construction Risk**Risk Owner:** R. Redmond/M. Benson**Status Log:**

February 2013 Meeting:

1. This is in the works, PCC 10 has been issued, a rough order of magnitude estimate has been established, BIH has been given a not to exceed of \$ 50,000 to do Pagoda demolition drawings, SFMTA is negotiating with Pagoda Owner for use of the site.

March 2013:

1. Demolition drawings have been submitted to DBI for review.
2. If resolution of costs associated with the Pagoda option is not achieved, the TBMs will be buried to maintain budget requirements

April 2013:

1. Contractors cost estimate currently at \$10.4m net compared to engineers estimate of \$5.6m
2. Agreement has not been reached on PCC-10.
3. Current schedule has the retrieval shaft finishing just in time for arrival of the TBMs in North Beach.
4. Recommend adding an additional mitigation item 6. – investigate alternate procurement methods and strategies.
 - a. Option 1 – agree PCC-10 with contractor – Central Subway and BIH are preparing a joint paper summarizing the areas where agreement has not been reached on the PCC-10 estimates
 - b. Option 2 – utilize a separate design contract and procure via design, bid, build
 - c. Option 3 – bid demolition of the Pagoda theatre as a separate package
5. Central Subway are meeting with BIH 4/12/13 to discuss the joint paper prior to elevating for review by management
6. Recommend maintaining this risk rating.

May 2013:

1. Contract 1277 for the demolition of the Pagoda Theatre site was advertised Saturday 5/4/13.
2. The Central Subway BIH joint paper is still being developed.
3. Current cost issue between SFMTA and Contractor are close to being resolved.

June 2013:

1. PCC-10 is still being negotiated; further details will be provided next meeting.
2. Cutter soil mixing is being proposed to construct the retrieval shaft in lieu of tangent piles (ROM approx. \$600k less than tangent piles).
3. Contract 1277 for demolition of the Pagoda theatre is to be awarded 6/19/13.

Risk Mitigation Status

Risk Reference: 208

4. PCC 10 should be closed by June 14, or during the week commencing 6/17/13.
5. Overall budget will be maintained.

July 2013

1. Final negotiations have not yet concluded. Currently still on Budget

October 2013:

1. Budget to be increased \$500,000 through CPT 690 being presented to the November 5th, 2013 SFMTA Board meeting

November 2013:

1. CPT 690 approved by the SFMTA board on November 5th.
2. Change orders for the demolition of the Pagoda Theatre are currently being negotiated with the demolition contractor

December 2013:

1. Change orders are still being assessed and negotiated with the demolition contractor

Risk Mitigation Status

Risk Reference: 212

Risk		Mitigation Strategy
UMS Inclined piles – 8” clearance between piles and tunnel results in damage or safety issues within the tunnel	√	<ol style="list-style-type: none"> 1. Establish 1252 and 1300 contract requirements to construct within acceptable tolerances 2. Workshop to be held with BIH to discuss hold points during construction, and construction means and methods 3. Confirm tunnel as-built location

Initial Assessment: 4 (1, 5, 3)**Risk Owner:** R. Redmond**Current Assessment:** Risk Rating 4 - Construction Risk**Status Log:**

February 2013:

1. Identified as a potential risk

March 2013:

1. Discuss and confirm risk description, mitigation strategy and initial risk rating.
2. Workshops are to be held with BIH to increase their understanding of the interfaces with the 1300 contract.
3. Issues to be addressed will be identified and piling hold points will be discussed.
4. Tunnel construction tolerance is 4” from bulls eye, 8” clearance is in addition to the 4” tunnel tolerance.
5. **Recommended risk rating 4 (1, 5, 3)**
 - a. Probability (1), <10%, considered possible but unlikely
 - b. Cost impact (5), > \$10m, significant costs expected if tunnel collapse occurred
 - c. Schedule impacts (3), 3 - 6 months, significant schedule impacts if tunnel collapse occurred

April 2013:

1. Hold points in 1300 Contract have been identified.
2. Workshops are to be held between BIH and the 1300 Contractor to address interfaces between the contracts.

October 2013:

1. Potential for damage and safety issues in tunnel to be discussed and defined
2. Establish task force - to create action plan that specifically guides the Program successfully thru this risk.
3. Action plan to address Cost and Schedule concerns.
4. Confirm contract requirements in 1300 about tunnel bracing.
5. Update mitigation strategy – to include current contract requirements for 1300 related to bracing and work above the tunnel.
6. Follow up with the designed on what loads can the liner support?
7. Facilitate the early cooperation of 1252 Contractor and 1300 Contractor to implement appropriate plan.
8. Work together with 1300 Contractor – to sequence the work in a manner to avoid exposure to the condition.

November 2013:

1. Tunnel bracing is suggested per the contract as means and methods are to be determined by the contractor
2. Concerns raised by Tunnel Contractor are to be communicated to Designer. Designer to comment of validity of those concerns.

Risk Mitigation Status

Risk Reference: 212

December 2013:

1. Station contractors piling submittal will be provided to Tunnel contractor for information
2. Tunnel as-built information will be forwarded to Station contractor upon completion of tunneling through UMS
3. The need for a workshop will be established following review of the above documents by each contractor

Risk Mitigation Status**Risk Reference: 213**

Risk	Mitigation Strategy
Micro Piles exist within tunnel path at UMS – inaccuracies in micro-pile as-built information results in collision with piles.	1. Re-profile and realign tunnel to clear micropiles 2. Stop machine and cut out pile if slight encroachment occurs

Initial Assessment: 4 (2, 3, 1)**Current Assessment:** Risk Rating 4 - Construction Risk**Risk Owner:** M. Benson**Status Log:**

February 2013:

1. Identified as a risk

March 2013:

1. The tunnel has been realigned and re-profiled
2. **Initial risk rating 3 (1, 3, 2)**
 - a. Probability (1), <10%
 - b. Cost impact (3), \$1m - \$3m
 - c. Schedule impacts (2), 1 – 3 months

October 2013:

1. No further mitigation available

November 2013:

1. No updated information

December 2013:

1. The SB TBM is at the UMS South Headwall, no collision with micropiles to date
2. Maintain risk rating
3. Risk owner changed to M.Benson

Risk Mitigation Status
Risk Reference: 214

Risk		Mitigation Strategy
Micro Piles at UMS interfere with Tube-a-manchette installation (60' deep micropiles)	√	<ol style="list-style-type: none"> 1. Provide micro-pile as-built information to contractor 2. Ensure tube-a-manchettes are realigned to be installed clear of micro-piles

Initial Assessment: 1, 1, 3
Current Assessment: Risk Rating 3 - Construction Risk

Risk Owner: M. Benson

Status Log:

February 2013:

1. Identified as a risk

March 2013:

1. Discuss risk description, mitigation strategy and risk rating
2. Central Subway has responded to Contractors RFI and provided as-built information for the micropiles
3. Contractor will work to install tube-a-manchettes to avoid micropiles
4. **Recommended risk rating 3 (3, 1, 1)**
 - a. Probability (3), >50%
 - b. Cost impact (1), <\$250
 - c. Schedule impacts (1), <1 month

April 2013:

1. Contractor is reviewing the micropile as-built information
2. An additional mitigation was added to ensure the tube-a-manchettes are realigned to be installed clear of the micro-piles
 - a. A workshop will be held between the PB and BIH to resolve the required geometry to install the tube-a-manchettes clear of the micro-piles
 - b. The contractor will submit a revised installation alignment plan for the tube-a-manchette installation

May 2013:

1. A workshop was held between PB and BIH in April to establish the required installation geometry
2. The contractor will install the compensation grouting tubes using a diamond drill in the event that the micro piles cannot be avoided

July 2013:

1. As of Monday 7/8/13, 9 tube-a-manchettes have been installed at the Ellis Street shaft. 1 of 9 has encountered a micropile.
2. 1252 Contractor will install tubes as per the current plan. Additional tubes will be installed as required.
3. A 3-D model of the micropiles will be provided to Tutor Perini. A workshop will also be held between PB and Tutor (similar to that held with BIH) to minimize the risk of interference with 1300 compensation grouting tubes.

Risk Mitigation Status

Risk Reference: 214

September 2013:

1. Risk is becoming a greater concern. Additional mitigation measures need to be identified and implemented.

December 2013:

1. Micropile as-built information was included in 1300 reference documents
2. 1300 Contractor is considering installing TAMs from within station box

Risk Mitigation Status**Risk Reference: 218**

Risk	Mitigation Strategy
Air replenishment system no longer required – Agency bears unnecessary cost of installation and maintenance of an air replenishment system that is no longer required.	

Initial Assessment: TBD (new risk)**Current Assessment:** Risk Rating - TBD**Risk Owner:** TBD**Status Log:**

November 2013:

1. New risk identified in light of recent changes to the San Francisco Fire code removing the requirement for air replenishment systems from high rise buildings
2. Strategy for approval to remove the system is to be discussed
3. Action on this risk needs to be taken soon.

December 2013:

1. Contractor will be put on notice to put everything on hold.
2. Information about the code change will be forwarded to the Contractor.
3. A meeting with the SF Fire Marshall to discuss the issue is pending.

Risk Mitigation Status**Risk Reference: 219**

Risk	Mitigation Strategy
Clearance between TBM penetration in YBM headwall and intersection with the slurry wall causes structural or waterproofing issues.	

Initial Assessment: TBD (new risk)**Current Assessment:** Risk Rating - TBD**Risk Owner:** TBD**Status Log:**

November 2013:

1. New risk identified the possibility that the clearance between the outside of the SB tunnel, to the inside of the YBM slurry wall may be as little as 3" (if construction tolerance is used for both the tunnel and the slurry wall).
2. Communication with the designer to be put on record to the effect that the Central Subway Program understands that this was coordinated between DP1 and DP2 during design.
3. A graphic is to be generated showing the clearance between the outside of the tunnel, the inside of the slurry wall, and the reinforcing detail at the corner of the headwall.
4. The mitigation strategy is to be developed.

December 2013:

1. The CM Team has requested the Contractor submit a new submittal on the slurry wall.

Risk Mitigation Status**Risk Reference: 220**

Risk	Mitigation Strategy
Compensation grouting at the Pagoda site is delayed by resolution of the scope and role of the designer, and contractor.	

Initial Assessment: TBD (new risk)**Current Assessment:** Risk Rating - TBD**Risk Owner:** A. Hoe**Status Log:**

November 2013:

1. Risk identified – CSDG have advised that they do not have the appropriate resources to direct the compensation grouting work for mitigation at the properties surrounding the Pagoda Theatre site
2. Mitigation strategy and risk profile to be discussed

December 2013:

1. Options to find qualified person are being explored.

Risk Mitigation Status
Risk Reference: 50

Risk	Mitigation Strategy
Station contractor delayed by tunnel contractor since station contractor cannot break in to the tunnels until the tunnels have been finished.	1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur. 2. Actively monitor progress towards schedule milestones. 3. Add constraints in CTS contract specification.

Initial Assessment: 3, 4, 11
Current Assessment: Risk Rating 3 – Construction Risk

Risk Owner: M. Benson

Status Log:

September 24, 2009 Meeting:

- Attendees agreed that an LONP is one item that would alleviate this risk.
- A request for an LONP is presently being prepared. It appears at this time that an LONP has a good chance of being granted.

February 2012:

- Constraints on CTS contractor added to specification sections Work Sequence and Contract Interface.
- LONP was granted by FTA for construction of the launch box.

March 2013:

- Contract 1300 Specification section 01 12 17, 4 a) – tunneling equipment to be removed from CTS 450days following NTP (timeframe approved through CMB and included in CN 1300 addendum 3).

April 2013:

- Discuss revising this risk description to 'break into tunnel delayed by 1252 contractor' as applicable to the 1300 contract.
- Specification timing for tunneling equipment to be removed from UMS and YBM to be checked
- Current 1252 cross passage completion dates and 1300 tunnel break in dates (if NTP June 20, 2013):

Contract 1252			Contract 1300		
Milestone (complete)	Contract constraint (days following NTP)	Current Milestone date	Milestone	Contract Constraint (days following NTP)	Milestone Date (if NTP June 20, 2013)
CP1	851	6/4/14	Break into tunnel CTS	450	9/13/14
CP2, CP3 & 4	851, 915	6/4/14, 8/6/14	Break into tunnel UMS	620	3/2/15
CP5	Not a milestone	8/8/14	Break into tunnel YBM	620	3/2/15
Tunnel Substantial completion	1157	4/10/15	Tunnel Portal Access	830	9/28/15

May 2013:

- PMCM will continue to monitor the interface between the 1252 and 1300 contracts.
- No change to report.

Risk Mitigation Status**Risk Reference: 50**

June 2013:

1. PMCM continue to monitor the interface between the 1252 and 1300 contracts.

Nov 2013:

1. Contract 1252 milestones were delayed in October because of delays to the Northbound TBM assembly and testing.
2. Concurrent delays to the Retrieval Shaft are also having an impact to 1252 Milestones 1 & 2.
3. Future forecast trend to be developed considering progress to date, and expected progress for the remaining work and geological conditions (i.e. boring through rock)
4. Central Subway team to check that BIH recovery schedule uses reasonable assumptions based on expected progress

	CN1252 Contract Requirement**	CN1252 Oct Finish	CN1300 Requirement	1252 Oct & 1300 Variance	
YBM Headwalls Complete	N/A	20-Sep-14 A	31-Jul-13	(51)	CD
UMS Headwalls Complete	N/A	8-Nov-13	14-Sep-13	(55)	CD
CTS Tunnel Interface Complete 1252 MS 1 - Complete Cross Passages 1&2 (CTS)	10-Jun-14	9-Jul-14	9-Sep-14	62	CD
UMS Tunnel Interface Complete 1252 MS2 - Complete Cross Passages 3&4 (UMS)	13-Aug-14	29-Aug-14	26-Feb-15	181	CD
YBM Tunnel Interface Complete	N/A	30-Sep-14	26-Feb-15	149	CD
1252 Tunnel Substantial Completion	12-Apr-15	11-May-15			
Tunnel Portal Completion 1252 Tunnel Final Completion	12-May-15	8-Jun-15	24-Sep-15	108	CD

** Includes PCC10 & COR8

December 2013:

1. Analysis of expected TBM progress not yet complete
 - a. (see analysis chart)
2. Await submittal of Recovery Schedule 5 from contractor

Risk Mitigation Status
Risk Reference: 79

Risk	Mitigation Strategy
Delay in obtaining tunnel easements (3 #) (goes to condemnation) - Costs of ROW may cost more than expected	<ol style="list-style-type: none"> 1. Engage Owners in negotiations as soon as possible. 2. PM/CM will provide real estate specialists to facilitate.

Initial Assessment: 2, 3, 6
Current Assessment: Risk Rating 1 – Requirement Risk

Risk Owner: A. Clifford

Status Log:

October 2011 Meeting:

1. All Tunnel easements have been acquired.
2. Recommend to retire this risk from the project.
3. This risk will be revisited next month since not all easements have been obtained

November 2011 Meeting:

1. Right of entry received for properties requiring easement.
2. Costs have been identified through appraisals of properties.
3. Actual value of easements needs to be negotiated with property owners.
4. Added mention of battered piles at UMS headwalls to the risk description as they will cross property lines.

December 2011:

1. Right of possession for each of the three required parcels has been obtained.

January 2012 Meeting:

1. City Attorney's Office is finalizing final easement deed language and price for all three easements.
2. To date owners of 801 Market and 1455 Stockton have agreed to purchase price of easement.
3. Awaiting cost agreement with 790 Market.
4. Recommend to reduce the risk rating.
5. Risk rating reduced to 1, 1, 1.

February 2012 Meeting:

1. SFMTA is working with City Attorneys Office to finalized easement deed indemnity language for the 790 Market easement.

March 2012 Meeting:

1. SFMTA has provided the City Attorney's Office with additional information regarding tunnel and station related settlement at 790 Market. This information will be shared with the property owner at 790 Market in order to address their concerns of settlement and requests to include certain indemnity language in the tunnel easement. Current draft of the tunnel and station grouting licenses contain the requested indemnity language; CCSF Risk Manager, SFMTA and City Attorney do not feel owner's request for indemnity is appropriate in the easement deed.

Risk Mitigation Status

Risk Reference: 79

April 2012 Meeting:

1. No update from the March report-out.

May 2012 Meeting:

1. No update from the March report-out.

June 2012 Meeting:

1. No update from the March report-out.

July 2012 Meeting:

1. No update from the March report-out.

August 2012 Meeting:

1. The SFMTA has agreed to a final purchase price for the 801 Market and 1455 Stockton easements. 801 Market will transfer title (of the easement) through a purchase and sale agreement and 1455 Stockton will transfer title through a stipulated agreement. Final purchase price negotiations for easement under 790 Market are ongoing.

September 2012 Meeting:

1. Central subway has pre-possession for all 3 easements.
2. Negotiations continue on terms and conditions for 801 Market and 1455 Stockton.
3. Negotiations continue on final purchase price for 790 Market easement.

October 2012 Meeting:

1. Central subway has pre-possession for all 3 easements.
2. The SFMTA has executed a final stipulation agreement for possession of the easement under 1455 Stockton and all remaining funds have been transferred to the property owner.
3. Negotiations continue on terms and conditions for 801 Market.
4. Negotiations continue on final purchase price for 790 Market easement.

November 2012 Meeting:

1. Central subway has pre-possession for all 3 easements.
2. The SFMTA has executed a final stipulation agreement for possession of the easement under 1455 Stockton, final transfer of funds is pending signature of the easement deed from the property owner.
3. Negotiations continue on terms and conditions for 801 and 790 Market.

December 2012 Meeting:

1. Central subway has pre-possession for all 3 easements.
2. Final transfer of funds for 1455 Stockton easement is pending signature of the easement deed from the property owner.
3. Negotiations continue on final purchase price, terms and conditions for 801 Market and 790 Market Easement Agreements.

February 2013 Meeting:

1. Central subway has pre-possession for all 3 easements.

Risk Mitigation Status

Risk Reference: 79

2. Purchase and Sale Agreements for the 1455 Stockton easement and the 801 Market have been finalized. Final execution is pending the receipt of stamped and signed legal descriptions and plat maps from the San Francisco County Surveyor.
3. Negotiations continue on final purchase price, terms and conditions for the 790 Market Easement Agreement.

March 2013:

1. 1455 Stockton and 801 Market easement deeds executed by SFMTA Director.
2. 790 Market price and terms are still being negotiated.

April 2013:

1. Risk owner changed from G. Hollins to A. Clifford
2. 790 Market Street - The current difference between the Central Subway offer and the owners valuation + severance damages is \$280,000

October 2013:

1. Owners appraised easement value has been included in RAMP update 5

November 2013:

1. Program Director and building owner discussing path to resolution of the 790 Market easement negotiation

December 2013:

1. 790 Market St - A counter offer (for settlement) is expected from the property during December

Risk Mitigation Status
Risk Reference: 83

Risk	Mitigation Strategy
Cost of vehicles are more than estimated	1. Time the procurement of the vehicles to be part of the procurement of the SFMTA LRV procurement contract.

Initial Assessment: 1, 1.5, 2
Current Assessment: Risk Rating 8 – Requirement Risk

Risk Owner: L. Ames

Status Log:

April 2012 Meeting:

1. Fleet procurement plan needs to be checked with Fleet agency.
2. Lewis Ames is working at a program level with Operations to look at alternatives and options for procurement.

May 2012 Meeting:

1. An RFP is being developed by CH2M Hill for high-floor vehicles.
2. SFMTA will attempt to attach the procurement of the four CS vehicles to a procurement contract of another transit property that is currently pursuing procurement of vehicles.

June 2012 Meeting:

1. No status update.

September 2012 Meeting:

1. CH2M Hill is now preparing an update of the LRV Procurement Plan. CH2M Hill is working under for SFMTA Transit and led by John Haley’s staff under an on-call contract to support the update and help integrate the RFP vehicle specification process led by Elson Hao
2. Julie Kirschbaum, Manager of Service Planning/TEP is leading an effort to produce a new city-wide travel forecast as the means to support the capacity need for LRV fleet plan requirements in 2025.

The Plan is expected to be circulated, presented, approved; in 2012 etc. specific next steps in the 3rd and 4th quarters of 2012 will be provided in the next report.

3. The Procurement Plan is expected to include assessing the feasibility for SFMTA to attach the procurement of the four CS vehicles to a procurement contract of another transit property that is pursuing procurement of vehicles.

October 2012 Meeting:

1. Risk increased from (1,2, 2) to risk rating (4,4,16)
2. There is a possibility that the cost of the LRV significantly exceed the budget
3. Risk to be reviewed next meeting, status of LRV procurement plan to be advised

Risk Mitigation Status

Risk Reference: 83

4. SFMTA Transit Division issued a revised procurement plan to the FTA in October identifying the following actions in the near term;
 - a. Provide ROM Cost, funding schedule and cashflow drawdown November 2012
 - b. LRV Concept report December 2012
 - c. Service Demand Modeling Updates December 2012
 - d. Central Subway Service Plan Model Revisions December 2012
 - e. Finalize Fleet Strategy including Base Order Qty December 2012
 - f. Complete Acquisition Plan December 2012
 - g. Release updated Fleet Management Plan to FTA February 2013
 - h. Release updated Central Subway Service Plan to FTA February 2013
 - i. Release updated LRV Procurement Plan to FTA February 2013

November 2012 Meeting:

1. Item 4a above – not yet received continue to monitor with LRV Procurement PM.

December 2012:

1. Item 4a items received Nov. 20 from SFMTA LRV Procurement PM include draft schedule, scope and budget.
2. CS team met with SFMTA Finance to initiate a cost control protocol and procedure for release of CS funds for procurement.
3. The draft schedule, scope and budget were submitted to the FTA Nov. 29 for review and comment prior releasing funds.
4. The FTA PMO is expected to provide a report to the SFMTA and CS by Dec. 15.
5. CS team to prepare a Task Order that will incorporate the final schedule, scope and budget.
6. The SFMTA LRV Procurement staff is currently expending funds in anticipation of receiving funds for retroactive costs.

January 2013:

1. Most of the procurement actions will advance by the end of February
2. Ground rules are being developed to control our funds from being syphoned away.
3. Expected December report from the FTA/PMO has not been received.

February 2013 Meeting:

1. Most procurement actions are still tracking for February
2. FTA/PMO report was received early February 2013
3. Central Subway is preparing a memorandum of understanding to track funds, FTA comments are being incorporated into the memorandum

Risk Mitigation Status

Risk Reference: 83

March 2013:

1. Central Subway completed a Memorandum of Agreement with SFMTA transit division to establish the phases, costs, scope and timing of initial LRV procurement activities resulting in an LRV procurement RFP in May 2013, and vendor selection early 2014.

April 2013:

1. The RFP Package due May 2013 is expected to be complete on time.

May 2013:

1. Request for Qualifications for new LRV's was released in March
2. Responses were due April 22
3. The review process is now underway with the results of the review due late June
4. Procurement of 175 cars
5. Award expected in 2014
6. First cars expected in 2016

June 2013:

1. APTA meetings were held. One on one interviews with individuals who responded to the RFQ
2. Feedback comments on specification are being incorporated into the RFP to be released in June
3. Schedule impact has been lowered to a risk rating of (1).
4. Current assessment is an 8

July 2013

1. RFP now scheduled for SFMTA Board approval in August prior to release.
2. Currently routing and vetting internal approvals for submission to Board

September 2013

1. Due to the purchase of the vehicles no long being a sole source order the risk description will be revised to reflect the current purchase status.

October 2013:

1. RFQ released March 29, 2013 identified three qualified bidders to participate in procurement for Light Rail Vehicles (LRV4). Statement of Qualifications received April 22nd, 2013.
Four car builders, AnsaldoBreda, CAF USA Inc, Kawasaki Rail Car Inc, Siemens Industry Inc, are requested to submit proposals in response to RFP.
2. SFMTA Board approved the issuance of the RFP September 3, 2013 to procure up to 260 LRV4s.
 - a. Base order will be 175 – 24 expansion +151 replacement LRV4s.
 - b. Option for 85
3. The Notice of Advertisement, the RFP and specifications are now on the CCSF Office of Contracts web site:
<http://mission.sfgov.org/OCABidPublication/BidDetail.aspx?K=7262>

Risk Mitigation Status

Risk Reference: 83

The scope covers design, manufacture, test, parts, special tools, manuals and training.

4. Pre-bid Conference: 10/29/2013 10am at SFMTA Muni Metro East Facility 601 25th St., 2nd Fl., Rm. 235
Bids Due: 2 pm 12/10/2013
5. Project Management Plan will be drafted and be in place prior to NTP.
6. Challenges: Extended procurement includes time gap between delivery of first 24 cars and 151 cars that requires FTA approval; funding and financing sources not clear

November 2013:

1. Await bid opening 12/10/13

December 2013:

1. Bid opening delayed until February 2014
2. Need to monitor and confirm that procurement milestones will meet Central Subway testing and commissioning timelines

Risk Mitigation Status
Risk Reference: 89

Risk	Mitigation Strategy
3rd Party reviews of Design documents delays completion of Final Design.	Provide assistance to 3rd Parties to facilitate their reviews and obtain concurrent partial approval for underground work.

Initial Assessment: 2, 2, 2

Current Assessment: Risk Rating 2 – Design Risk

Risk Owner: J. Wang

Status Log:

January 2012 Meeting:

1. Meetings with Third Party reviewers have been and continue to be held with Muni Operations, DBI, SFFD, BART, etc.
2. Late review comments will be handled as addendum.

May 2012 Meeting:

1. A peer review panel was convened to assist in DBI reviews.
2. SFFD has been paid to assist in review and approval of Central Subway contract documents.
3. Meetings with other third party reviewers are ongoing.

June 2012 Meeting:

1. Coordination with 3rd Party reviewers continues.

August 2012 Meeting:

1. Majority of third party reviews have been closed. Remaining reviews are in process of going through closure phase (requiring concurrence and verification of comments). Responses have been provided to each 3rd party comment. Priority was given to 3rd party reviewers with permit approval authority such as SFFD, SFPUC and DBI. Note that the design phase has been closed.

September 2012 Meeting:

1. Process of closing out PUC and DBI comments is ongoing.
2. PUC requirements as per draft MOU scope are being incorporated into 1256 by addendum.

October 2012 Meeting:

1. Process of closing out PUC and DBI comments is ongoing.
2. PUC requirements as per draft MOU have been incorporated into combined contract.

November 2012 Meeting:

1. Central Subway continue to work with PUC and DBI to close out remaining comments

December 2012 Meeting:

1. The process of closing out all comments from PUC and DBI to is ongoing.

Risk Mitigation Status

Risk Reference: 89

February 2013 Meeting:

1. Meeting scheduled with PUC early March to address remaining comments
2. Status of close out of DBI electrical and mechanical to be confirmed.

March 2013 Meeting:

1. Not a delay.
2. Verification by reviewers of comment incorporation task is remaining.

April 2013:

1. Verification by reviewers of comment incorporation task is ongoing.

May 2013:

1. The status of close out of the DBI comments is as follows:
 - a. CTS – complete
 - b. UMS – complete
 - c. YBM – 95% complete (only mechanical comments require close out)

June 2013:

1. YBM – 100% complete
2. Verification of 90% comments from reviewers are still being closed out.

July 2013:

1. DBI approved the design of all three stations.
2. Verification of 90% comments from reviewers still being closed out.

December 2013:

1. Verification of 90% comments are still being closed out

Risk Mitigation Status**Risk Reference: 99**

Risk	Mitigation Strategy
Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule.	<ol style="list-style-type: none"> 1. Executive partnering and alternate dispute resolution. 2. Train staff in adherence to issue resolution process

Initial Assessment: 5, 3, 8**Current Assessment:** Risk Rating 5 – Construction Risk**Risk Owner:** M. Benson**Status Log:**

February 2012 Meeting:

1. Mitigation measures being implemented.
2. Incentives not being used due to legal obstacles.
3. Recommend to reduce the risk rating.

December 2012:

1. The combined contract will reduce the number of interfaces between contracts and potential for relationships to become strained
2. The CMOD process is being improved for quicker resolution of change orders
3. Mitigation 2 - 'Provide incentives in construction contracts in addition to penalties' was removed from the mitigation strategy as this is not being used (as noted in the February 2012 update).

March 2013:

1. A breakdown in the relationship has occurred due to untimely resolution of changes and unresolved contract interpretation issues.
2. SFMTA CMod SWAT team dedicated to processing changes has been implemented to improve the performance of change processing.
3. This improvement has been recognized by both parties.
4. An issue resolution process has been formalized to address disputes and avoid claims.

April 2013:

1. The issue resolution process is not being followed consistently. BIH are not responding in a timely manner and are revisiting prior agreements in the issue resolution process.
2. Brian Kelleher is developing observations and training for adherence to issue resolution process.

May 2013:

1. New Issue Resolution Ladder process presented at the CMB

June 2013:

1. The first meeting was held with BIH on May 21st, 2013 utilizing the refined issue resolution process that was presented to the CMB in May with positive results. A follow up meeting is being held June 14th to further refine the process.
2. Staff training in the issue resolution process is ongoing.
3. A similar meeting with Tutor Perini will be held in future.

Risk Mitigation Status

Risk Reference: 99

October 2013:

1. Issue resolution ladder is not working as intended and is to be discussed at the next partnering session

November 2013:

1. Issue resolution ladder to be discussed at next partnering meeting to be held 11/18/13.
2. Risk rating reduced as relationship with 1252 Contractor has improved
3. Risk rating reduced to 5. Probability (2) 10-50%, Cost Impact (4) \$3m-\$10m, Schedule Impact (1) < 1 month.
- 4.

December 2013:

1. IRL process topic of discussion during Partnering. Contractor has agreed to focus more efforts to resolve issues.

Risk Mitigation Status**Risk Reference: PR1**

Risk	Mitigation Strategy
Actual TBM production rate may be slower than forecasted.	1. Assign significant liquidated damages for not meeting specific schedule dates.

Initial Assessment: 1, 3, 2**Risk Owner:** M. Benson**Current Assessment:** Risk Rating 0 – Construction Risk**Status Log:**

May 2013:

1. The 1252 contract includes liquidated damages for late completion of cross passages 1,2,3, and 4.
2. The current work schedule involves 2 x 10 hours shifts, 5 days per week with Saturday maintenance.
3. Discuss revising mitigation strategy to include acceleration, additional shifts in lieu of liquidated damages.

December 2013:

1. Recommend retirement of this risk.
2. Risk is addressed by Risk 50
3. Risk retired by unanimous consent of Risk Assessment Committee 12/10/13.

Risk Mitigation Status
Risk Reference: T

Risk	Mitigation Strategy
Delay to final design submittal due to delay of emergency ventilation approval by SFFD.	<ol style="list-style-type: none"> 1. Work with SFFD to develop a plan acceptable to each party. 2. Incorporate SFFD comments into the construction documents.

Initial Assessment: 2, 2, 4
Current Assessment: Risk Rating 5 – Requirement Risk

Risk Owner: A. Hoe

Status Log:

- December 2011:
1. A meeting was held on 12/15/11 with SFFD and SFMTA to discuss emergency ventilation. SFFD agreed to the proposed plan by SFMTA as long as additional signage and lighting were provided in the stations to increase the safety of emergency responders in event of an emergency.
- March 2012 Meeting:
1. Required emergency ventilation requirements will be incorporated into the construction documents.
 2. Recommend to retire this risk from the risk register.
 3. This risk is not retired. Final approval by SFFD on 100% construction documents still needed.
- May 2012 Meeting:
1. SFFD requirements are being implemented in the construction documents.
 2. A variance for the under stair requirement will be sought from SFFD.
- June 2012 Meeting:
1. SFFD has conditionally approved the 3-fan configuration in the stations.
 2. SFFD has conditionally approved the CFD analysis for each station based on the approval of one-hour tenability using illuminated platform edge, and access/egress route signage/demarcation.
 3. Final approval by SFFD will occur during the DBI pre-application review for each station.
- September 2012 Meeting:
1. SES review comments addressed, revised report submitted.
- October 2012 Meeting:
1. Follow up required with SES to close out remaining comments and confirm concurrence
- November 2012 Meeting:
1. Central Subway continue to work with SFFD to close out the remaining comments
- December 2012 Meeting:
1. Comments received by SFFD, submittal will be revised.

Risk Mitigation Status

Risk Reference: T

January 2013:

1. SES will be forwarded to Fire Life Safety Committee for approval.

February 2013 Meeting:

1. The Tunnel Ventilation SES resubmittal was sent for verification 1/18/13 (verification is expected early March 2013).

March 2013:

1. No new update to this risk.

April 2013:

2. A conference call was held between HNTB and SFFD on 3/21/13 to review open comments.
3. SFFD were satisfied with the responses given.
4. HNTB are preparing a revised Tech Memo for verification prior to formal submission.

May 2013:

1. Concurrence was received from SFFD for the revision 2 of the SES technical memo
2. The tech memo will be routed internally for signature prior to sending to FLSC (Fire Life Safety Committee) for signoff.
3. The completed and signed tech memo is expected to be completed and signed by the FLSC by the end of May 2013.

July 2013:

1. SES report has been approved by SFFD, being routed internally for signature.
2. Review comments to be addressed prior to retirement of risk.

November 2013:

1. Review comments have been closed out.
2. Risk to remain open until Tunnel Lowering and Chinatown station head house changes are resolved

December 2013:

1. Letter sent to Designer for their agreement to finalize scope of work.

Risk Mitigation Status**Risk Reference: U**

Risk	Mitigation Strategy
Proximity at junction of head house boundary wall and school play ground may result in relocation of school yard during wall construction	Modify project configuration to eliminate any encroachment, or relocation, of the school play area.

Initial Assessment: 1, 1, 1**Current Assessment:** Risk Rating 1 – Construction Risk**Risk Owner:** R.Redmond/T.DePooter**Status Log:**

January 2012 Meeting:

1. Station wall shifted away from adjacent property to avoid potential conflict with school yard.
2. Risk 55 (Requirement Risk) retired by unanimous consent of Risk Assessment Committee 1/12/12.
3. New risk was created to track risk associated with potential conflict with toe of retaining wall during construction of slurry wall.

December 2013:

1. Risk owner changed from M.Benson to R.Redmond/T.DePooter
2. Upcoming excavation for the guide wall will provide further information as to whether a conflict exists

Risk Mitigation Status

Risk Reference: V

Risk	Mitigation Strategy
Incorporation of revised Planning Zoning/ development criteria for Moscone Station TOD impact MOS and CTS construction contract.	<ol style="list-style-type: none"> 1. Participate and provide input of CSP constraints to SFMTA Real Estate during process of initial task to define best use. 2. Integrate work with SFMTA Real Estate into CSP

Initial Assessment: 3, 2, 6**Current Assessment:** Risk Rating 0 – Design Risk**Risk Owner:** A.Hoe**Status Log:**

March 2012 Meeting:

1. SFMTA entered into agreement with development firm to maximize use of existing SFMTA real estate inventory.
2. Initial task is to develop proposed best use for the top three properties of which two of the properties are CTS and MOS headhouse locations.
3. Need to identify Program contact person to stay in touch and provide input of CSP constraints to SFMTA Real Estate.

May 2012 Meeting:

1. The Planning Department has included development criteria in the recently approved Conditional Use Permit.
4/10/13 Note: Central Subway received an email from Scott Sanchez of SF Planning on 9/11/12 confirming that a Conditional Use Authorization is not required as the Planning Code Section 228(c) was recently amended (Ordinance No. 173-12, effective 9/1/12) to exempt service stations on Primary Transit Streets or Citywide Pedestrian Network Streets (as designated in the General Plan) from the conversion requirements of Section 228.

June 2012 Meeting:

No status update.

August 2012 Meeting:

1. **MOS TOD** – set-aside TOD zone complied to & is based on current zoning criteria. SF Planning has plans to up-size the zoning in SOMA/Central Corridor. Potential conflict and discord with SF Planning on the IFB documents. FD has been completed.
2. **CTS TOD** – set-aside TOD zone or absence of TOD cleared SF Planning environmental (& historical) review & MMRP mitigation. ~~Next step is obtaining Conditional Use Authorization thru Sept 6, 2012 Commission contract with incorporation of Planning Dept recommendations.~~ Note: Obtaining the Conditional Use Authorization and incorporating the Planning Departments recommendations is not related to this risk

September 2012 Meeting:

1. Conditional Use permit received for CTS.

October 2012 Meeting:

1. Status of communication to SFMTA Real Estate to be provided next meeting

Risk Mitigation Status

Risk Reference: V

November 2012 Meeting:

1. Chinatown Station is compliant with current building codes and zoning requirements in effect. SFMTA Real Estate has a separate project outside of Central Subway to specifically address transit oriented development (TOD) at the site. Central Subway is not directly involved or has ability for involvement on the TOD scope. There have been no requests received from SFMTA Real Estate in relation to changing the CTS design. Note that the design is complete, and contract is out to bid as Contract 1300.
2. Yerba Buena / Moscone Station is compliant with current building codes and zoning requirements in effect, and does not preclude future TOD in accordance to present zoning CSP received a letter from SF Planning on May 4th 2012 stating the YBM design is in general conformance with the City's General Plan. In the same letter, SF Planning raised concerns in relation to the development potential of the site in relation to 1) future zoning criteria 2) development over the YBM headhouse portion of the site. Central Subway is circulating a response to this letter.
3. SFMTA Real Estate has a separate project outside of Central Subway to specifically address TOD on the site. Central Subway is not directly involved or has the ability for involvement on the TOD scope. There have been no requests received from SFMTA Real Estate in relation to changing the YBM design.
4. Note: a correction has been made to the August update.

December 2012:

1. SFMTA has not requested a change in design, however they could make a request up into the time we pour the invert slab with the actual column base rebar.

January 2013:

1. No additional request to report from SFMTA.

February 2013 Meeting:

1. Central Subway are circulating a response letter to SF Planning letter of May 4th 2012.

March 2013 Meeting:

1. No new update to this risk.

April 2013:

1. Final design documents for YBM are being routed for approval through the SF Planning department.
2. The response to the SF Planning letter of May 4th 2012 is still outstanding.

Risk Mitigation Status

Risk Reference: V

May 2013:

1. CTS:
 - a) Agency has additional funds from Funding Source:- Environmental Mitigation for Open Space
 - b) Gensler Architects to come up with proposals to perform some minor modification to the **surface** portion of Chinatown Station. Community meeting will be held in late May or June to present options. Community feedback will determine how to proceed with surface build-out of CTS.
2. MOS:
 - a) Funding source has not yet been established for MOS. Central Corridor plan is in the EIR development stage.

June 2013:

1. CTS:
 - a) Funding source has been established for CTS. The Agency has initiated a conceptual design effort to build out the balance of the property at the CTS location.
 - b) Design will be given to the 1300 Contractor to request a design build cost. Estimated cost is \$9-12M
2. MOS:
 - a) SF Planning has determined there is no issue for YBM.
3. Risk cost impact has been reduced to a 1. Overall Risk assessment rating is currently at a 3.

July 2013

1. Nothing new to report, No change in rating.
2. No cost or schedule impact, funding from outside sources.

November 2013:

1. Design costs approximately \$500,000. Tutor estimate construction costs at \$3.5m.

December 2013:

1. Work is ongoing at CTS but does not affect our budget. Funding is from an outside source.
2. Risk retired by unanimous consent of Risk Assessment Committee 12/10/13.