


Memorandum

CS Memorandum No. 1402

To: Distribution

From: Beverly Ward, CMB/Risk Management Assistant 

Date: March 26, 2013

Reference: Project No. M544.1, Contract No. CS-149
Task No. 1-4, Risk Management

Subject: Risk Mitigation Report No. 43, Rev. 0

Attached please find Risk Mitigation Report No. 43 for meeting held on March 14, 2013. Please click on the "Bookmark" tab on the left side of Adobe file to navigate to report sections

Attachments:

Risk Mitigation Report No. 43, Rev 0 with attachments

Cc: James Sampson, STV (w/attachments) james.sampson@stvinc.com
David Kuehn, STV (w/attachments) david.kuehn@stvinc.com
Luis Zurinaga, SFCTA (w/attachments) luis.zurinaga@sfcta.org
Mark Benson, CSP (w/attachments)
Arthur Wong, SFMTA (w/attachments)
Ross Edwards, CSP (w/attachments)
Mark Latch, CSP (w/attachments)
Jane Wang, SFMTA (w/attachments)
Quon Chin, CSP (w/attachments)
Chuck Morganson, HNTB/B&C (w/attachments)
Aileen Read, CSDG (w/attachments)
CS File No. M544.1.5.0820

Distribution:

Brad Lebovitz, STV bradley.lebovitz@stvinc.com
John Funghi, SFMTA
Albert Hoe, SFMTA
Richard Redmond, CSP
Eric Stassevitch, CSP
Alex Clifford, CSP
Beverly Ward, CSP

Risk Mitigation Meeting Minutes #43

DATE: March 18, 2013
 MEETING DATE: **March 14, 2013**
 LOCATION: 821 Howard Street, 2nd Floor – Main Conference Room
 TIME: 2:00pm
 ATTENDEES: John Funghi (*part-time*), Albert Hoe, Richard Redmond, Eric Stassevitch, Alex Clifford, Beverly Ward, Brad Lebovitz
 COPIES TO: Attendees: Arthur Wong, Ross Edwards, Mark Latch, Mark Benson, Quon Chin, Jane Wang, Aileen Read, Chuck Morganson, James Sampson, Luis Zurinaga, David Kuehn
 File: M544.1.5.0820
 REFERENCE: Project No. M544.1, Contract No. 149 Task 1-4.01
 Program/Construction Management
 SUBJECT: **Risk Management – Risk Mitigation Meeting
 Risk Mitigation Report No. 43**

RECORD OF MEETING

ITEM #	DISCUSSION	ACTION BY DUE DATE
1 -	Report on Red Risk and – (Risk rating ≥ 6)	
	<p>Risk 83: Cost of vehicles may be more than estimated due to sole source and small order <u>Discussion:</u> Memorandum of Agreement has been signed by John Haley, SFMTA Director of Transit (see attached). Initial allocation in \$2M in CSP funds has been identified. CH2M Hill is working on the plans. LRV Procurement documents (RFP) is expected to go out in late May. Risk Rating 16</p> <p>Risk V: Incorporation of revised Planning Zoning/ development criteria for Moscone Station TOD impact MOS and CTS construction contract <u>Discussion:</u> No new update to this risk. Response to letter received from Planning in May 2012 is still in process. Risk Rating 6</p> <p>Risk 67: Archeological/Cultural findings during construction increases schedule and/or cost. (UMS)...LESS THAN 1% <u>Discussion:</u> Mitigation measures have been implemented. Recommendation to transfer risk category to a construction risk. Risk rating will be change to a (5). Risk Rating 5</p> <p>Risk 68: Archeological/Cultural findings during construction increases schedule and/or cost. (CHINATOWN) ...AROUND 10% <u>Discussion:</u> Mitigation measures have been implemented. Recommendation to transfer risk category to a construction risk. Risk rating will be change to a (5). Risk Rating 5</p>	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>Risk F (CTS): Underground obstructions at Chinatown Station <u>Discussion:</u> Bid allowance added to the contract. Mitigation measures have been implemented. Risk Rating 8</p> <p>Risk F (MOS): Underground obstructions at Moscone Station. <u>Discussion:</u> Mitigation measures have been implemented. Risk Rating 8</p> <p>Risk 99: Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule. <u>Discussion:</u> Breakdown has occurred due to untimely resolution of changes and unresolved contract interpretation issues. SFMTA CMod SWAT team dedicated to processing changes implemented resulting in improved performance of change processing recognized and acknowledged by both parties. Issue Resolution process formalized to address disputes and avoid claims. Risk Rating 8</p> <p>Risk 106: Risk of Labor dispute delaying the work. <u>Discussion:</u> City and County of SF has not had a labor dispute issue in three years. Contract provides for time but no money if the contract is held up due to a dispute. Risk rating will be reduced for probability (2), cost (1) and schedule (1). Risk Rating 2</p> <p>Risk 203: Headwalls interface delay CN1300 Contractor <u>Discussion:</u> 1252 Work has been re-sequenced. Contractor is back on schedule, but condition is guarded. Risk Rating 8</p> <p>Risk 206: Delay in Decision on Retrieval Shaft <u>Discussion:</u> No delay. Program is moving forward in the direction of the Pagoda. Risk schedule impact will be reduced to a (1). Risk Rating 8</p> <p>Risk 207: Implementing Pagoda Option for Retrieval Shaft - Delay in Obtaining Property <u>Discussion:</u> Real estate lease agreement has been completed. Issued separate contracts to do additional noise and vibration studies to satisfy the National Environmental Policy Act (NEPA) requirement to be submitted to the FTA for evaluation. Need to confirm hazardous abatement is still part of 1252 Contract scope. Risk Rating 9</p> <p>Risk 208: Additional cost if we change direction going to the Pagoda <u>Discussion:</u> Resolution of cost needs to be made; if no resolution is made on the cost tunnel boring machine will be buried. Risk Rating 8</p>	
2 -	Report on Remaining Requirement & Design Risks (Risk rating ≤ 6)	
	<p>Risk 32: Delay in advanced utility relocation delays ground treatment and start of construction. (Uty 2) <u>Discussion:</u> No update from February's updates - Macy's backflow preventer still needs to be completed, Maiden Lane water is still pending Risk Rating 1</p> <p>Risk 79: Delay in obtaining tunnel easements (3 #) (goes to condemnation) - Costs of ROW may cost more than expected <u>Discussion:</u> Have all tunnel easements but cost impact has not been finalized on 790 Market. Risk Rating 1</p>	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>Risk 104: CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows <u>Discussion:</u> Three year extension from CPUC has been received. Risk Rating 5</p> <p>Risk T: Delay to final design submittal due to delay of emergency ventilation approval by SFFD. <u>Discussion:</u> Waiting for verification acceptance from SES on modification addressed. Risk Rating 4</p> <p>Risk A: Timely resolution of sewer lines south of portal <u>Discussion:</u> MOU has not been signed. Risk still has a cost impact. Risk Rating 2</p> <p>Risk 89: 3rd Party reviews of Design documents delays completion of Final Design. <u>Discussion:</u> Not a delay. Verification by reviewers of comment incorporation is remaining task outstanding. Risk Rating 2</p> <p>Risk PR73: Delays or complications of design & construction by others – SF Dept. Of Technology, 3rd party utilities <u>Discussion:</u> MOU agreement agreed; signed version has yet to be received from DTIS. Third party utility coordination agreement in CN1256 (scope and schedule) is late but ongoing. Risk Rating 2</p>	
3	Active Risks	
	<p>Risk 198: Outreach efforts to get more bidders - (SSTS) 1300 Contract <u>Discussion:</u> Bid pool stands at three bidders with the withdrawal Kiewit. Risk Rating 4</p> <p>Risk 201: Bid Protest - 1300 Contract <u>Discussion:</u> No update to this risk from February. Risk Rating 1</p> <p>Risk Q: As-built drawings and construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction of north entrance. <u>Discussion:</u> Does not appear to be an issue. Risk owner will be change to Mark Benson/Rich Redmond. Risk Rating 3</p> <p>Risk 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 <u>Discussion:</u> Waiting for PG&E to submit cost and schedule for permanent power. This might not be received for a couple years. Risk Rating 3</p> <p>Risk 50: CTS station contractor delayed by tunnel contractor since station platform construction cannot start until tunnels have been finished <u>Discussion:</u> Risk may need to be rewritten or a new risk developed due to design requirement language in the 1300 contract requiring coordination with the 1252 Contractor to be allowed access into the tunnel. Risk Rating 3</p>	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>Risk 66: Archeological/Cultural findings during construction increases schedule and/or cost.(Moscone) AROUND 10% <u>Discussion:</u> Allowance included in 1300 contract. This risk rating will be lowered to (3). Risk Rating 3</p>	
	<p>Risk 202: Cargo Preference must solicit U.S. - flag carriers. Civilian Agencies Cargo = at least 50% (governed by Cargo Preference Act of 1954) <u>Discussion:</u> This is no longer a risk issue. TBM machine is being transported by a foreign carrier. Risk Rating 1</p> <p>Risk 204: Relocation of AT&T Vault and other utilities delays New Sewer Work south of Bryant <u>Discussion:</u> Risk heading refined as of 02/14/13 meeting. Schedule impact has increased to 6 – 12 months due to the new sewer work south of Bryant. Risk rating has increased to a (6) Risk Rating 6</p> <p>Risk 205: Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor <u>Discussion:</u> CMod process is working there are no current issues between SFMTA and the Contractor. Risk Rating 3</p> <p>Risk 209: Implementing Pagoda Option - Obtaining Environmental Clearance <u>Discussion:</u> California Environmental Quality Act (CEQA) clearance has been received. Target date for National Environmental Policy Act (NEPA) is in May for clearance. Risk Rating 3</p> <p>Risk 210: – Mission Bay Loop Grant – Needs to be built to allow for train turnarounds (June 2013) <u>Discussion:</u> No update to this risk. Grant funding is in jeopardy of being lost if not obtained by June. Risk Rating 4</p>	
4-	Other Business – New Risks	
	<p>Risk 211: Differing site conditions encountered during construction of Cross Passage 5 results in increased costs <u>Discussion:</u> No cost or time increase to the Program. Acceptance of Contractor's proposed method to "freeze the ground" will not delay construction at Cross Passage 5. Risk Rating TBD</p> <p>Risk 212: UMS Inclined piles – 8" clearance between piles and tunnel results in damage or safety issues within the tunnel <u>Discussion:</u> No update to this risk. Risk Rating 4</p> <p>Risk 213: Micro pile Installation will impact tunnel at UMS <u>Discussion:</u> As built condition has change, Re-alignment has been developed to miss piles. Machine may still hit the piles. Risk Rating 4</p> <p>Risk 214: Micro Piles at UMS interfere with Tube-a-machette installation (60' deep micropiles) <u>Discussion:</u> Interference with tube-a-machette remains a risk. Risk Rating 3</p> <p>Risk 215: DPW Excavation permit reviews delay contract works <u>Discussion:</u> Applying for blanket excavation permits. 1300 contract still requires the Contractor to obtain their permits. Risk Rating 2</p>	

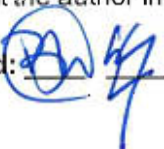
ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>Potential Risk 1 – Thales Procurement Issue Discussion: A. Hoe negotiating with Thales on cost and terms. Current cost proposal is \$32M Program is trying to negotiate down to \$26M. Thales will provide a revised cost proposal on 03/15 reflecting a reduction in price based on discussions. Agreement on most terms and conditions except for two layers on liquidated damages at substantiate completion and final completion. Optional bid item is being added to the 1300 Contact in addendum 7. Risk Rating TBD</p>	

ACTION ITEMS -

ITEM #	MTG DATE	Task #	DESCRIPTION	BIC	DUE DATE	STATUS
2	09/13/12		Risk PR 73 – Status of the MOU memo	R. Edwards	03/14/13	Closed
1	12/13/12		Risk 7 – Cost for significant settlement grout	R. Edwards	03/14/13	Open
4	12/13/12		Risk 72 – 4th & King (SSWP)	R. Edwards/ C. Morganson	04/14/13	Open
3	02/14/13		Risk 205 – Increase CMod threshold above \$5M for SFMTA Board approval	M. Benson	04/14/13	Open

Meeting adjourned at 4:00pm

These meeting minutes have been prepared by B. Ward and reviewed by E. Stassevitch, and are the preparer's interpretation of discussions that took place. If the reader's interpretation differs, please contact the author in writing within four (4) days of receipt of these minutes.

Signed:  [initials of preparer & reviewer] Date: 26/1/13 [Date review completed.]

Meeting Agenda

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Risk Mitigation Management Meeting No. 43
March 14, 2012
2:00pm – 4:00pm
 Central Subway Project Office
 821 Howard St. 2nd Floor
 Main Conference Room

Attendees:

Mark Benson		David Kuehn		Beverly Ward	
Alex Clifford		Mark Latch		Art Wong	
Ross Edwards		Brad Lebovitz		Luis Zurinaga	
John Funghi		Richard Redmond			
Albert Hoe		Eric Stassevitch			

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

- **Requirement Risks** (83)
- **Design Risks** (V)
- **Market Risks** (All outstanding Market - None)
- **Construction Risks** (67, 68, F-CTS, F-MOS, 99, 106, 203, 206, 207, 208)

2. Report on Remaining Requirement and Design Risks

- **Requirement Risks** (32, 79, 104, T)
- **Design Risks** (A, 89, PR73)

3. Active Risks

- **Market Risks** (198, 201)
- **Construction Risks** (Q, PR-37, 50, 66, 202, 204, 205, 209, 210)

4. Other Business – Identify New risk items associated with New Contracting Strategy

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

Meeting Attendance Sheet

Project No. M544.1, Contract No. CS-149

Program/Construction Management

Risk Management Meeting No. 43

March 14, 2013

2:00 p.m. – 4:00 p.m.

Central Subway Project Office

821 Howard Street, 2nd Floor

Main Conference Room

Deliver Meeting Attendance Sheet with original signatures/initials to Document Control.

NAME	AFFILIATION	PHONE	E-MAIL (for minutes)	INITIALS
Mark Benson	CSP	415-701-5295	Mark.Benson@sfmta.com	
Alex Clifford	CSP	415 701- 5275	Alex.clifford@sfmta.com	Ac
Ross Edwards	CSP	415-581-5165	ross.edwards@sfmta.com	
John Funghi	SFMTA	415-701-4299	john.funghi@sfmta.com	JF
Albert Hoe	SFMTA	415-701-4289	albert.hoe@sfmta.com	
David Kuehn	STV/PMOC	510-464-8053	david.kuehn@stvinc.com	
Mark Latch	CSP	415-701-5294	mark.latch@sfmta.com	
Brad Lebovitz	STV/PMOC	510-464-8052	Bradley.lebovitz@stvinc.com	BL
Richard Redmond	CSP	415-701-4288	Richard.redmond@sfmta.com	RR
Eric Stassevitch	CSP	415-701-4426	Eric.stassevitch@sfmta.com	ES
Beverly Ward	CSP	415-701-5291	Beverly.ward@sfmta.com	BW
Arthur Wong	SFMTA	415-701-4305	arthur.wong@sfmta.com	
Luis Zurinaga	SFCTA	415-716-6956	luis@sfcta.org	

Albert Hoe was in attendance, but did not sign in.

Risk Register

PROJECT RISK REGISTER

Central Subway Project San Francisco

REV : 19

DATE ISSUED : 03/14/13

Likelihood Score	Severity Score				
	1	2	3	4	5
5	Yellow	Yellow	Red	Red	Red
4	Yellow	Yellow	Yellow	Red	Red
3	Green	Yellow	Yellow	Yellow	Yellow
2	Green	Green	Yellow	Yellow	Yellow
1	Green	Green	Green	Yellow	Yellow

	Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend
Probability	< 10%	<= 10% - 50%	> 50%	<= 75% - 90%	> 90%	<3 Low
Cost Impact	< \$250K	<= \$250K - \$1M	<= \$1M - \$3M	<= \$3M - \$10M	> \$10M	3 - 9 Medium
Schedule Impact	< 1 Month	<= 1 - 3 Months	<= 3 - 6 Months	<= 6 - 12 Months	> 12 Months	>10 High

RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)
 SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)
2

Final Risk ID	Contract I.D	Muni Risk REF. I.D	Type	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	TUN	10.07.1	Guideway Tunnels	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	TUN	10.07.2	Guideway Tunnels	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	TUN	10.07.13	Guideway Tunnels	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	TUN	10.07.14	Guideway Tunnels	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. Develop contingency plan to provide bus bridge, if needed. 6. Require non-stop weekend excavation beneath BART tunnels. 7. Monitor movement of BART tunnels in real-time. 8. Repair/adjust as needed. 9. Include probable cost in estimate.	C	2	4	1	2	35%	4	10	Risk is considered active, with mitigation measures fully developed with the exception of Bus Bridge. Adjusted cost impact lower resulting in Risk rating increasing to 2 but still remains a low risk.	8/28/13 TUN1120
8	TUN	10.07.15	Guideway Tunnels	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	TUN		Guideway Tunnels	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
PR1	TUN		Guideway Tunnels	Actual TBM production rate may be slower than forecasted.	Assign significant liquidated damages for not meeting specific schedule dates.	C	1	1	3	2	10%	2	4	Considered Risk inherent in the work and reflected in the Current Cost Estimate. Risk will be reflected in Contractor's Bid. LDs included in contract.	2/5/14 TUN1124
13	TUN		Guideway Tunnels	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	TUN		Guideway Tunnels	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
16	TUN		Guideway Tunnels	TBM loss and / or damaged in Transit	Provide provisions for insurance for TBM in transit to jobsite	C	1	5	4	5	10%	5	9	Costs covered by Contractor's insurance.	5/20/13 TUN1095
115	TUN		Guideway Tunnel	Jet grouted station end walls are installed by Tunnel contractor. Station Contractor assumes risk of possibly leakage problems due to insufficiently quality 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 contract language.	5/26/15 UMS1295
116	TUN		Guideway Tunnel	TBM procurement, delivery and assembly takes longer than assumed in schedule.	Accommodate delay to TBM procurement and delivery, on the order of 2 or 3 months, with current float shown on the construction schedule.	C	2	2	2	2	35%	4	8	Mitigation measures are being implemented	5/20/13 TUN1095
B	TUN		Guideway Tunnel	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	2	3	3	3	35%	6	9	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. .	2/5/14 TUN1124
MOS Station															
21	MOS	20.03.01.2	Moscone Station	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

Risk Register

PROJECT RISK REGISTER

Central Subway Project San Francisco

REV : 19

DATE ISSUED : 03/14/13

Likelihood Score	Severity Score				
	1	2	3	4	5
5	Yellow	Yellow	Red	Red	Red
4	Yellow	Yellow	Yellow	Red	Red
3	Yellow	Yellow	Yellow	Yellow	Yellow
2	Green	Green	Green	Yellow	Yellow
1	Green	Green	Green	Green	Green

	Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend
Probability	< 10%	<= 10% - 50%	> 50%	<= 75% - 90%	> 90%	<3 Low
Cost Impact	< \$250K	<= \$250K - \$1M	<= \$1M - \$3M	<= \$3M - \$10M	> \$10M	3 - 9 Medium
Schedule Impact	< 1 Month	<= 1 - 3 Months	<= 3 - 6 Months	<= 6 - 12 Months	> 12 Months	>10 High

RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)
2

SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)

Final Risk ID	Contract I.D	Muni Risk REF. I.D	Type	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date	
22	MOS	20.03.01.5	Moscone Station	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	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	MOS		Moscone Station	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	MOS		Moscone Station	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	
UMS Station																
F	UMS		Union Square market Street Station	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		Mitigation measures have been implemented.	8/12/15 UMS 1320	
28	UMS	20.03.02.2	Union Square market Street Station	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	
32	UMS	20.03.02.9	Union Square Market Street Station	Delay in advanced utility relocation delays ground treatment and start of construction. (Uty 2)	1. Intensive coordination with and commitment from utility owners. 2. Early completion incentive for utility relocation contract. 3. Enforce franchise agreements.	R	1	1	1	1	10%	1	2	Advance utility relocation contract (1251) is underway with a projected completion date in advance of advertising UMS construction contract, reducing this risk of cost and schedule impacts	7/31/12 N-ATT00100	
33	UMS	20.03.02.10	Union Square market Street Station	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	UMS	20.03.02.11	Union Square market Street Station	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	

Risk Register

PROJECT RISK REGISTER

Central Subway Project San Francisco

REV : 19

DATE ISSUED : 03/14/13

Risk Profile		Severity Score				
Likelihood Score		1	2	3	4	5
5						
4						
3						
2						
1						

	Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend
Probability	< 10%	<= 10% - 50%	> 50%	<= 75% - 90%	> 90%	<3 Low
Cost Impact	< \$250K	<= \$250K - \$1M	<= \$1M - \$3M	<= \$3M - \$10M	> \$10M	3 - 9 Medium
Schedule Impact	< 1 Month	<= 1 - 3 Months	<= 3 - 6 Months	<= 6 - 12 Months	> 12 Months	>10 High

RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)
2

SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)

Final Risk ID	Contract I.D	Muni Risk REF. I.D	Type	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
35	UMS	20.03.02.14	Union Square Market Street Station	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	UMS	20.03.02.15	Union Square Market Street Station	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	UMS	20.03.02.16	Union Square market Street Station	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	UMS	20.03.02.17	Union Square market Street Station	Tiebacks in Stockton Street mislocated (in path of walls and would have to be dug out within 20ft of surface level)	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		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
J	UMS		ROW	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	UMS		Union Square market Street Station	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	CTS	20.03.03.2	Chinatown Station and crossover cavern	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	CTS	20.03.03.6	Chinatown Station and crossover cavern	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	20.03.03.11	Chinatown Station and crossover cavern	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	CTS	20.03.03.12	Chinatown Station and crossover cavern	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	CTS		Chinatown Station and crossover cavern	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		Mitigation measures have been implemented.	10/9/17 CTS1500

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3	Green	Yellow	Yellow	Yellow	Yellow
2	Green	Green	Yellow	Yellow	Yellow
1	Green	Green	Green	Green	Green

	Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend
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Cost Impact	< \$250K	< \$250K - \$1M	< \$1M - \$3M	< \$3M - \$10M	> \$10M	3 - 9 Medium
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U	CTS		Chinatown Station and crossover cavern	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															
56	GEN	40.00.1	Unallocated Contingency	Escalation more / less than expected (Increase in bid prices to hedge possible increases in cost of volatile commodities.)	1. In the current economic environment, escalation is just as likely to be less as more than anticipated. 2. For volatile materials and equipment, provide substantial payment for stored materials and equipment to encourage early procurement and an escalation clause for volatile commodities in contracts.	M	2	3	-	2	35%	3	6	Current projected escalation rates remain below those reflected in Program budget.	1/10/18 STS1042
Demolition, Clearing, Earthwork Site Utilities, Utility relocations															
A	STS		Utilities	Timely resolution of Sewer lines south of portal.	1. Develop alternatives that do not require creation of a new sewer line. 2. Work together with SFPUC to find mutually beneficial solutions. . 3. Provide evidence of solutions developed for similar situations from existing SFMTA and /or other transit agencies. 4. Develop detailed schedule of activities required for resolution including milestones for go - no go actions which will not impact the overall MPS.	R	1	2	1	2	10%	2	3	\$ 2.1 million in budget. Could be as high as \$8 million. Continuing to work with SFPUC to find solution.	5/13/12 PDS 1870
Environmental Mitigations															
65	TUN	40.04.1	Environmental	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
66	MOS		Environmental	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	UMS		Environmental	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	CTS		Environmental	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	GEN	40.08.1	Vehicle access	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	TUN	40.08.2	Vehicle access	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	STS	50.01.1	Train Control and Signals	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
75	STS	50.01.1	Train Control and Signals	Signals and Comms equipment may need to be stored off site	Require contractor to store equipment offsite or at the factory until it is needed.	C	3	1	-	1	50%	2	3	Special Provisions address offsite storage.	11/6/17 STS1070
PR73	STS	50.01.1	Train Control and Signals	Delays or complications of design & construction by others - SF Dept. Of Technology, 3rd party utilities	Early engagement and coordination for agreements and plan development to avoid construction delays.	D	2	1	1	1	35%	2	4		5/30/12 DP3C530
PR78	STS	50.01.1	Train Control and Signals	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	TUN	60.01.1	ROW	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
Vehicles															
83	GEN	70.00.01	Vehicles	Cost of vehicles may be more than estimated due to sole source and small order	Time the procurement of the vehicles to be part of the procurement of the existing Breda LRVs.	R	4	4	4	4	80%	16	32	CSP vehicles to be included in overall SFMTA vehicle procurement contract.	11/17/17 STS 1500
89	GEN	80.02.2	Final Design	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															
94	GEN	80.04.3	Project Management	Bid protests delay award and NTP for construction contracts	Strictly adhere to Procurement Best Practices and Protest Procedures.	M	1	2	2	2	10%	2	4	Mitigation measures being implemented	2/19/13 FDS 1900

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3	Green	Yellow	Yellow	Red	Red
2	Green	Green	Yellow	Yellow	Yellow
1	Green	Green	Green	Yellow	Yellow

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95	GEN	80.04.4	Project Management	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
97	GEN	80.04.6	Project Management	Conflicts arising from Contractors working concurrently in the same work space results in delays and claims for additional costs (systems / civil interface)	Limit the number of contractors working in the same workspace by scheduling contracts appropriately and demobilizing contractors upon substantial completion.	C	2	3	2	3	35%	5	10	Mitigation measures being implemented	11/17/17 STS 1500
PR82	GEN		General	Confined work spaces along alignment can impact productivity and result in significant cost and schedule impacts.	Account for cost and schedule impacts in estimate and schedule for contract packages	C	1	1	1	1	10%	1	2		11/17/17 STS 1500
99	GEN	80.04.8	Project Management	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	5	3	4	35%	8	16	Mitigation measures being implemented	7/27/12 FDS 1940
100	GEN	80.04.9	Project Management	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.	M	1	2	2	2	10%	2	4	Not considered a project risk.	11/17/17 STS 1500
102	GEN	80.04.11	Project Management	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
107	GEN	80.04.12	Testing and startup	Market risk in achieving 100% bonding capacity (cost and reduction in contractors able to get bonding)	Structure construction contracts not to exceed \$250 million	M	2	5	-	3	35%	5	10	All contracts expected not to exceed \$250 million	7/27/12 FDS 1940
T	GEN	80.04.12	Testing and startup	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	-	2	35%	4	10	SFFD agreed to the proposed plan by SFMTA	7/27/12 FDS 1940
V	GEN		MOS & CTS Stations	Incorporation of revised Planning Zoning/ development criteria for Moscone Station TOD impact MOS and CTS construction contract.	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.	D	3	2	2	2	50%	6			12/13/16 N-CTS1225
PR37	GEN		Testing and startup	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
Insurance, permits etc															
103	GEN	80.06.1	Permits	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	STS	80.06.2	Approvals	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	Providing preview of 90% submittal to CPUC and will resolve comments/issues from PE before finalizing design documents	7/27/12 FDS 1940
105	GEN	80.06.3	Testing and startup	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	GEN	80.06.4	Labor relations	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	GEN		Unallocated Contingency	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	GEN		Unallocated Contingency	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	GEN		Project Management	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	-		
197	GEN		Project Management	The untimely delivery of FFGA funds to the project causes shortfalls in cash flow and the Central Subway will be unable to meet its financial commitments	1. Establish procedure and timeline for receipt of FFGA funds 2. Monitor status of available bridging funds 3. At the start of the 1st quarter of 2013, present the Director of Transportation with a Project cash flow that shows the "what-if" scenario that shows a delay in federal funds in Oct. of 2013	C					0%	-	-		

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198	GEN		Project Management	Outreach efforts to get more bidders - (SSTS) 1300 Contract	1. Develop a Contractor Outreach Plan: 2. Engage in extensive contractor outreach and promote assurances of being a reasonable contract partner.	M	1	5	2	4	10%	4	7		
201	GEN		Project Management	Bid Protest - (SSTS) 1300 Contract	1. Establish and enforce appropriate qualifications requirement for contractors to be deemed a responsible bidder.	M	1	1	1	1	10%	1	2		
202	SSTS		General	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	SSTS		Project Management	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	SSTS		Utilities	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	GEN		Project Management	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		
206	TUN		Project Management	Delay in Decision on Retrieval Shaft	1. Establish Task Force to focus on issues 2. Meet Regularly and Act promptly on issues 3. Keep Decision makers infomed 4. Keep Community Informed 5. Keep Stakeholders informed	C	3	4	1	3	50%	8	15		
207	TUN		Project Management	Implementing Pagoda Option for Retrieval Shaft - Delay in Obtaining Property	1. Obtain clear understanding of current status of property 2. Meet with Owner and determine best options for SFMTA needs. 3. Establish Special Use District to retain existing development rights, in addition to new land use entitlements. 4. Obtain Appraisal 5. Identify Funding 6. Confirm hazardous abatement	C	3	4	2	3	50%	9	18		
208	TUN		Project Management	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		
209	TUN		Project Management	Implementing Pagoda Option - Obtaining Environmental Clearance	1. Engage Planning Dept to outline required actions 2. Develop necessary CEQA documents in concert with Planning Dept. 3. Meet with FTA and determine NEPA and SHPO requirements	C	3	1	1	1	50%	3	6		
210	Gen		Project Management	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	TUN		Project Management	Differing site conditions encountered during construction of Cross Passage 5 results in increased costs.		C					0%	-			
212	TUN		Project Management	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	C	1	5	3	4	10%	4			
213	TUN		Project Management	Micro Piles exist within tunnel path at UMS	1. Re-profile and realign tunnel to clear micropiles	C	2	3	1	2	35%	4			
214	TUN		Project Management	Micro Piles at UMS interfere with Tube-a-machete installation (60' deep micropiles)	1. Provide micro-pile as-built information to contractor 2. Realign tube-a-machettes clear of micro-piles	C	3	1	1	1	50%	3			
215	GEN		Permits	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			

Risk Mitigation Status
Risk Reference: 32

Risk	Mitigation Strategy
Delay in advanced utility relocation delays ground treatment and start of construction. (Uty 2)	<ol style="list-style-type: none"> 1. Intensive coordination with and commitment from utility owners. 2. Early completion incentive for utility relocation contract. 3. Enforce franchise agreements.

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

Risk Owner: M. Benson

Status Log:

September 2011:
 Advance utility relocation contract (1251) is underway with a projected completion date in advance of advertising UMS construction contract.

January 2012 Meeting:

1. CN1251 is 77% complete as of end of December.
2. Utility companies are beginning cutovers to new joint trench facilities.

March 2012:

1. PG&E and AT&T coordination is ongoing. AT&T has brought on additional resources to keep schedule.

April 2012

1. PG&E and AT&T coordination is ongoing.

May 2012

1. PG&E and AT&T coordination is ongoing.
2. AT&T has brought on further additional resources to keep schedule.
3. AT&T schedule has slipped based on their current staffing levels.
4. SFMTA will request that AT&T begin night work to finish their cutover work ASAP.

June 2012

1. No status update

July 2012

1. No Status update

November 2012 Meeting:

1. Completion and close out of AT&T work to be tracked under this risk.
2. Currently expecting completion by end of November 2012.

Risk Mitigation Status

Risk Reference: 32

December 2012:

1. PG&E work is complete
2. AT&T are scheduled to be complete the first week of January.
3. The Maiden Lane water tie in is to be completed prior to commencement of the UMS station work
 - a. A quote from CCSF is being sought to self-perform the work

February 2013:

1. AT&T cutovers were completed at Union Square the first week in January 2013.
2. Maiden Lane water tie-in will be performed by SFWD. Need to establish a budget and index code for SFWD to perform this work.
3. Macy's are required to install a backflow preventer at the Macy's Men's store to allow the fire service to be cut over, and the existing water main to be abandoned. The existing water main is in the UMS station footprint and needs to be abandoned prior to UMS construction.

March 2013:

1. Maiden Lane water tie-in – budget has been approved for SFWD to self perform the work
2. Macy's Men's backflow preventer (120 Stockton Street) – A meeting was held with Macy's management on Friday 3/8/13, Macy's are not taking action to complete this work. Central Subway are preparing a letter advising Macy's that the existing water service to the building will be removed at commencement of the Union Square / Market Street Station construction.
3. Discuss increasing this risk rating and revising the mitigation strategy.

Risk Mitigation Status**Risk Reference: 50**

Risk	Mitigation Strategy
Station contractor delayed by tunnel contractor since station platform construction cannot start until tunnels have been finished.	<ol style="list-style-type: none"> 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:** Q. Chin**Status Log:**

September 24, 2009 Meeting:

1. Attendees agreed that an LONP is one item that would alleviate this risk.
2. 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:

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

March 2013:

1. 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).

Risk Mitigation Status**Risk Reference: 66**

Risk		Mitigation Strategy
Archeological/Cultural findings during construction increases schedule and/or cost.(Moscone) AROUND 10%	<ul style="list-style-type: none"> √ √ 	<ul style="list-style-type: none"> 1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.

Initial Assessment: 1, 1.5, 2**Current Assessment:** Risk Rating 3 – Construction Risk**Risk Owner:** Q. Chin**Status Log:**

February 2012 Meeting:

1. Allowance for archeological discoveries included in contract.
2. Procedure for addressing archeological discoveries is included in contract.
3. Current exposure is only to those amounts above those currently identified.
4. Recommend to reduce the risk rating.

March 2013:

1. Allowance for archaeological discoveries included in CN 1300 YBM-AL-6
2. Discuss reducing this risk rating (current schedule impact > 12months), and transferring risk ownership to CM team
3. It was discussed that the cost impact should be reduced from 2 (\$250k to \$1m) to 1, <\$250k, the risk rating revised to 3

Risk Mitigation Status**Risk Reference: 67**

Risk		Mitigation Strategy
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.

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

February 2012 Meeting:

1. Mitigation measures to be implemented in contract documents.
2. Recommend this risk rating be reduced to 3.

March 2013:

1. Discuss reducing this risk rating and Transferring ownership to CM
2. Reduced cost impact to 1 (<\$250k), risk rating reduced to 5

Risk Mitigation Status**Risk Reference: 68**

Risk		Mitigation Strategy
Archeological/Cultural findings during construction increases schedule and/or cost. (CHINATOWN) ...AROUND 10%	<ul style="list-style-type: none"> √ √ 	<ul style="list-style-type: none"> 1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.

Initial Assessment: 1, 2.5, 3**Current Assessment:** Risk Rating 5 – Construction Risk**Risk Owner:** M. Benson**Status Log:**

February 2012 Meeting:

1. Mitigation measures to be implemented in contract documents.
2. Recommend that this risk rating be reduced to 3.

March 2013:

1. Mitigation measures implemented, specification section 01 45 00 and CTS bid item allowance CTS-AL-6 (\$100,000).
2. Discuss reducing this risk rating, current cost impact is 2 (\$250k - \$1m)
3. Reduce cost impact to 1 (<\$250k), risk rating becomes 5
4. Risk transferred to Construction Risk

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	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: G. Hollins

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: 83

Risk	Mitigation Strategy
Cost of vehicles may be more than estimated due to sole source and small order	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 16 – 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 budge.
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 budge.
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.

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.

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: R. Edwards

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.

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.	1. Executive partnering and alternate dispute resolution.

Initial Assessment: 5, 3, 8
Current Assessment: Risk Rating 8 – 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.

Risk Mitigation Status
Risk Reference: 104

Risk	Mitigation Strategy
CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	<ol style="list-style-type: none"> Grade Crossing approvals are not received until final CPUC inspection at the completion of construction. Close coordination with CPUC will continue until approval is received.

Initial Assessment: 2, 3.5, 7
Current Assessment: Risk Rating 5 – Requirement Risk

Risk Owner: S. Pong

Status Log:

September 2011:

- Providing preview of 90% submittal to CPUC and will resolve comments/issues from PE before finalizing design documents.

January 2012 Meeting:

- Design team conducted informal review meeting with CPUC on 12/6/11 in preparation for 1256 pre-final submittal. CPUC provided 5 comments at the meeting that will be incorporated by the designers:
 - Evaluate curb extension at Portal
 - Evaluate curb tapering or end treatments
 - Evaluate train coming sign at 4th/Bryant and 4th/Brannan
 - Evaluate black out/no left turn sign
 - Evaluate guide stripping
- CPUC issued Resolution SX-92 granting SFMTA approval to construct the new and modified grade crossings in March 11, 2010. This approval is good for 3 years.
- SFMTA will need to file for an extension of SX-92 at least 30 days before March 11, 2013.
- SFMTA will need to file CPUC Form G within 30 days after the completion of construction.
- Recommend to reduce this risk rating.
- Risk rating reduced to 2, 2.5, 5.

April 2012 Meeting:

- CPUC review comments are being incorporated into the 100% contract documents.

May 2012 Meeting:

No update.

July 2012 Meeting:

- CPUC reviewed and approved 11 of 12 comments noted on RCF-066. RCF-66 Comment 49 remains open with no CPUC concurrence or Verification. Comment 49 states the Muni standard Red X “Crossbuck” signal is not consistent with MUTCD standards and is strongly discouraged by the CPUC for new construction. Comment 49 will be resolved with CPUC to assure successful application of SX-92 for new and modified grade crossings due February 11, 2013.

Risk Mitigation Status

Risk Reference: 104

August 2012 Meeting:

1. Mitigation measures to be discussed with CPUC at the August 16, 2012 Safety and Security Meeting.
2. State PUC to review documents, validate and sign off.

September 2012 Meeting:

1. Meeting held with CPUC.
2. Document review ongoing.

October 2012 Meeting:

1. Requirements have been incorporated into the design documents
2. Letter to be sent to CPUC for concurrence

November 2012 Meeting:

1. Confirmation of concurrence is being sought from PUC and is expected to be received by February 2013

December 2012:

1. Approval by the CPUC is given for a specific window of time, and if need another approval will need to be requested.
2. Follow up on letter sent to CPUC for concurrence

January 2013 Meeting:

1. A request for a continuance from CPUC will be sent.

February 2013 Meeting:

1. A letter requesting an extension (continuance) was sent to CPUC February 8th 2013 and is now being processed.
2. The letter was vetted with CPUC for comments prior to being sent.

March 2013:

1. Extension of the timeframe to complete the construction of at grade crossings by 3 years was received from CPUC March 6th 2013
2. Discuss transferring this risk to CM team

Risk Mitigation Status
Risk Reference: 106

Risk	Mitigation Strategy
Risk of Labor dispute delaying the work.	In case of a Labor dispute, it is standard practice for the contractor to enforce designated gate for employees of the contract in dispute so that the rest of the work is not delayed. During the MMT contract, the designated gate system limited delay to one day in five years.

Initial Assessment: 3, 2.5, 8
Current Assessment: Risk Rating 2 – Construction Risk
Risk Owner: R. Redmond

Status Log:

February 2012 Meeting:

1. It is not anticipated that a labor dispute will delay the work in the current economic climate.
2. Recommend to reduce this risk rating.

March 2013:

1. Discuss clarifying that the risk considered is a union strike.
2. Risk owner changed from R. Edwards to R. Redmond.
3. There have been no labor issues or strikes on the project in the last 3 years.
4. **Recommend reducing this risk rating to 2 (2, 1, 1)**
 - a. Current probability (3), >50%, reduce probability to (2) 10-50%
 - b. Current cost impact (3), \$1m - \$3m, recommend reduce cost impact to (1), <\$250k (contract provides time but not cost)
 - c. Current schedule impacts (2), 1-3 months, reduce schedule impact to (1) < 1 month (based on project labor history)
5. Risk rating reduced to 2

Risk Mitigation Status
Risk Reference: 198

Risk	Mitigation Strategy
Outreach efforts to get more bidders - 1300 Contract	1. Develop a Contractor Outreach Plan: 2. Engage in extensive contractor outreach and promote assurances of being a reasonable contract partner.

Initial Assessment: 5, 2, 4

Risk Owner: A. Wong

Current Assessment: Risk Rating 4 – Market Risk

Status Log:

December 2012 Meeting:

1. Identified Risk and refined risk statement together with development of mitigation strategies.
2. Pre bid conference meeting took place and a meet and greet to allow the Prime Contractor to meet with sub consultants
3. Extended the bidding period an additional 3mos from January to March
4. List of Prime Contractors who attended the conference:
 - a. Kiewit
 - b. Tutor Perini Corp
 - c. R&L Brosamer
 - d. Dragados USA
 - e. S.J. Smoroso Construction Co., Inc. – (Table)
 - f. Reeds Construction
 - g. Sener Engineering & Systems, Inc.
 - h. Quality Engineering Inc.
 - i. Impregilo/S.A.S. Healy – (Table)
 - j. Alfred Williams Consultancy, LLC
 - k. Barnard Construction Company, Inc.
 - l. Skanska, Shimmick

January 2013 Meeting:

1. No new updates

February 2013 Meeting:

1. List of Prime Contractor established and attended the CCO required SBE individual outreach session (January 25 – February 1) prior to bid submission:
 - a. Kiewit Infrastructure West Co.
 - b. Tutor Saliba Corporation
 - c. S.J. Amoroso Construction Co., Inc., FCC and Southland
 - d. Skanska, Shimmick and Stacy Witbeck

March 2013:

1. Kiewit Infrastructure West Co. has withdrawn from the bid

Risk Mitigation Status

Risk Reference: 198

Risk Mitigation Status**Risk Reference: 201**

Risk	Mitigation Strategy
Bid Protest - 1300 Contract	1. Establish and enforce appropriate qualifications requirement for contractors to be deemed a responsible bidder.

Initial Assessment: 1, 1, 1**Current Assessment:** Risk Rating 1 – Market Risk**Risk Owner:** A. Hoe**Status Log:**

December Meeting 2012:

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

January 2013:

1. Specification language worded to allow for quick response without impact to schedule.

February 2013:

1. No change in the status of this risk

March 2013:

1. No change to the status of this risk

Risk Mitigation Status

Risk Reference: 202

Risk	Mitigation Strategy
Cargo Preference must solicit U.S. - flag carriers. Civilian Agencies Cargo = at least 50% (governed by Cargo Preference Act of 1954)	1. Require compliance agreement first tier contractors and subcontractors

Initial Assessment: 1, 1, 1

Risk Owner: R. Redmond

Current Assessment: Risk Rating 1 Construction Risk

Status Log:

December 2012 Meeting:

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

January 2013 Meeting:

- 1. No indication from Maritime admin what the penalty would be for non-compliance, if the Contractor does not adhere to Cargo Preference requirement.

February 2013 Meeting:

- 1. It has appeared that MARAD initial ruling is that the TBM must be shipped 50% American vessel, the 1st TBM is planned to be shipped by non-American vessel, expected to ship early march - the 2nd TBM ship date has not yet been confirmed.
- 2. Contractor has engaged legal advice this issue.

March 2013:

- 1. 50% of each TBM will be shipped via U.S. flagged carriers
- 2. Assess Stations and Systems contract following contract 1300 NTP

Risk Mitigation Status**Risk Reference: 203**

Risk	Mitigation Strategy
Headwalls interface delay 1300 Contractor	1. Meet and develop recovery schedule 2. Review possible Adjustment to 1300 interface

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

December Meeting 2012:

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

January 2013:

1. Delay has already begun, roughly six weeks behind schedule.
2. Meeting with BIH will take place to discuss a recovery schedule.

February 2013 Meeting:

1. BIH and their sub C/JN JV have re-sequenced the headwall work at Union Square so the completion date is now back on schedule with the CN 1300 milestone interface date with the CN 1252 headwall completion.

March 2013:

1. Contractor has experienced delay installing the first 4 secant piles.
2. Work has been re-sequenced, and BIH are working 2 shifts (5days per week) and a single shift Saturday.
3. Contractor is back on schedule.

Risk Mitigation Status
Risk Reference: 204

Risk	Mitigation Strategy
Relocation of AT&T Vault and other utilities delays New Sewer Work south of Bryant	1. Continue negotiations/ coordination with utility owners.

Initial Assessment: 2, 2, 4
Current Assessment: Risk Rating 6 – Construction Risk

Risk Owner: R. Edwards /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

Risk Mitigation Status
Risk Reference: 205

3Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	√ √	1. Cmod Task Force - 5 Areas of Improvement identified 2. Implement areas of improvement 3. Increase Delegation of Authority

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

Risk Owner: E. Stassevitch/M. Benson

Status Log:

December Meeting 2012:

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

January 2013:

1. CMod Task force continues to demonstrate the process is working.
2. Task force process has slowed down submission of changes from Contractor

February 2013 Meeting:

1. Initial risk rating established
2. CMod task force improvements are working
3. The combined 1300 contract has effectively resulted in a \$5m Board threshold for the entire 1300 contract (previously \$5m threshold for each of the 4 contracts) – Central Subway to investigate increasing the CMod authority above \$5m.

March 2013:

1. Process to increase delegation of authority to be discussed

Risk Mitigation Status**Risk Reference: 206**

Risk		Mitigation Strategy
Delay in Decision on Retrieval Shaft	✓ ✓ ✓ ✓ ✓	1. Establish Task Force to focus on issues 2. Meet Regularly and Act promptly on issues 3. Keep Decision makers informed 4. Keep Community Informed 5. Keep Stakeholders informed

Initial Assessment: 4, 2, 9**Risk Owner:** R. Redmond/ Mark Benson**Current Assessment:** Risk Rating 8 – Construction Risk**Status Log:**

February 2013 Meeting:

1. The last decision would be to abandon the TBM in the ground and pay the contractor his salvage value for the TBM. This decision could be made a few months from now.

March 2013:

1. Ross Edwards is heading up the design development
2. Central Subway and BIH are meeting weekly
3. Community outreach is ongoing
4. FTA and CCSF funding partners are being kept informed
5. Cost estimate received from contractor \$10.6m net compared to engineers estimate of \$1.8m.
6. PCC needs to be negotiated by April 1st 2013 to avoid delay.
7. BIH have advised that additional work would result in a 14day delay
Recommend reducing this risk rating to - 8 (3, 4, 1) (reduce schedule impact)
 - a. Current probability (3), >50%, maintain probability rating
 - b. Current cost impact (4), \$3m - \$10m, maintain cost impact based on estimate
 - c. Current schedule impacts (2), 1 – 3 months, reduce schedule impact to (1) < 1 month.
8. Risk rating reduced to 8

Risk Mitigation Status**Risk Reference: 207**

Risk		Mitigation Strategy
Implementing Pagoda Option for Retrieval Shaft – costs and time associated with additional real estate and environmental requirements	√ √ √ √ √ √	1. Obtain clear understanding of current status of property 2. Meet with Owner and determine best options for SFMTA needs. 3. Establish Special Use District to retain existing development rights, in addition to new land use entitlements. 4. Obtain Appraisal 5. Identify Funding 6. Confirm hazardous abatement

Initial Assessment: 4, 2, 9**Current Assessment:** Risk Rating 9 – Construction Risk**Risk Owner:** J. Funghi**Status Log:**

February 2013 meeting:

1. Pagoda lease signed 2/13/13.
2. The risk management meeting attendant's agreed to broaden the risk description include requirements other than 'delay in obtaining Property'.

March 2013:

1. Separate contracts will be issued to complete additional noise and vibration studies to satisfy National Environmental Policy Act (NEPA) requirement and will be submitted to the FTA for evaluation.
2. Hazardous material abatement is not expected to be required. The status of hazardous material abatement under PCC 10 is to be confirmed.

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

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

Risk Mitigation Status**Risk Reference: 209**

Risk	Mitigation Strategy
Implementing Pagoda Option - Obtaining Environmental Clearance	1. Engage Planning Dept. to outline required actions 2. Develop necessary CEQA documents in concert with Planning Dept. 3. Meet with FTA and determine NEPA and SHPO requirements

Initial Assessment: 1, 1, 3**Current Assessment:** Risk Rating 3 – Construction Risk**Risk Owner:** R. Edwards**Status Log:**

February 2013 Meeting:

1. Central Subway has engaged SF Planning and outlined the required actions.
2. CEQA Documents are under review, feedback is expected by the end of February 2013.
3. NEPA feedback is expected March 2013.
4. Updated Area of Potential Effects (APE) to be sent to SHPO week commencing 2/18/13

March 2013:

1. CEQA clearance has been received

Risk Mitigation Status

Risk Reference: 210

Risk	Mitigation Strategy
Mission Bay Loop Grant – Needs to be built to allow for train turnarounds (June 2013)	1. Identify timeline for grant funding

Initial Assessment: 1, 1, 4

Current Assessment: Risk Rating 4 – Construction Risk

Risk Owner: L. Ames

Status Log:

February 2013 Meeting:

1. Central Subway are awaiting a decision on grant funding from the FTA
2. Construction is not required to be completed until train operation.

Risk Mitigation Status

Risk Reference: 211

Risk	Mitigation Strategy
Differing site conditions encountered during construction of Cross Passage 5 results in increased costs.	1. Contractor has submitted a 'no cost, no schedule' PCC for ground freezing

Initial Assessment: 2 (1, 2, 1)**Current Assessment:** Risk Rating 1 - Construction Risk**Risk Owner:****Status Log:**

February 2013:

1. Identified as a potential risk
2. Majority of risk is carried by the 1252 Contractor

March 2013:

1. Discuss and confirm risk description, mitigations and owner
2. Contractor has submitted a no cost, no schedule PCC for ground freezing.
3. **Recommended risk rating 2 (1, 2, 1)**
 - a. Probability (1), <50%, differing ground conditions are considered unlikely
 - b. Cost impact (2), \$250k to \$1m, additional costs would be limited to additional ground freezing work
 - c. Schedule impacts (1), <1 month, impact of additional work (if required) is expected to be minor

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

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

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: 3 (1, 3, 2)**Current Assessment:** Risk Rating 2 - Construction Risk**Risk Owner:** R. Edwards**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

Risk Mitigation Status**Risk Reference: 214**

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

Initial Assessment: 1, 1, 3**Current Assessment:** Risk Rating 3 - Construction Risk**Risk Owner:****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-machetes 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

Risk Mitigation Status**Risk Reference: 215**

Risk	Mitigation Strategy
DPW Excavation permit reviews delay contract works	1. Obtain a blanket excavation permit from DPW covering the area of work for 1253, 1254, 1255, 1256

Initial Assessment: 3 (2, 1, 1)**Current Assessment:** Risk Rating 3 - Construction Risk**Risk Owner:** A. Clifford**Status Log:**

March 2013:

1. Contract documents have been issued to DPW for review
2. Blanket application permits have been submitted for UMS and YBM
3. Meeting scheduled for 3/15/13 to discuss status of documentation review, submittal of CTS and STS general excavation permits, and DPW resourcing for review of excavation permits
4. Contract 1300 currently requires the contractor to obtain excavation permits
5. **Initial risk rating 3 (2, 1, 1)**
 - a. Probability (2), 10-50%
 - b. Cost impact (1), <\$250
 - c. Schedule impacts (1), <1 month

Risk Mitigation Status
Risk Reference: A

Risk	Mitigation Strategy
Timely resolution of sewer lines south of portal	<ol style="list-style-type: none"> 1. Develop alternatives that do not require creation of a new sewer line. 2. Work together with SFPUC to find mutually beneficial solutions. 3. Provide evidence of solutions developed for similar situations from existing SFMTA and /or other transit agencies. 4. Develop detailed schedule of activities required for resolution including milestones for go - no go actions which will not impact the overall MPS. 5. Request condition assessment of sewers from SFPUC to determine required repair of sewers under proposed track.

Initial Assessment: 4, 1, 10

Risk Owner: S. Pong

Current Assessment: Risk Rating 2 – Design Risk

Status Log:

November 2011 Meeting:

1. An alternative analysis report dated May 27, 2011 was forwarded to SFPUC for review and comment. Three options were studied by SFMTA for handling the sewers south of the portal:
 - A. Leave the sewers in place and construct offset manholes where the track is in conflict with existing manholes,
 - B. Replace the existing sewers in their existing locations,
 - C. Construct twin sewers.
2. The recommendation from the report was to leave the sewers in place and construct offset manholes.
3. SFPUC provided a letter stating that the recommendations of the May 27 report were unacceptable to SFPUC.
4. New information has confirmed that leaving the sewer manholes in the track way do not violate CPUC, SFPUC or SFMTA safety criteria. A new proposal has been formulated and documented in a letter currently being circulated for signature signoff to SFPUC for approval to leave sewer in place and perform condition assessment at SFPUC cost.
5. Letter is waiting for John Funghi's signature to send to SFPUC.

December 2011 Meeting:

1. SFMTA sent letter December 13 stating that SFMTA will not relocate sewers.
2. Also requested a meeting between SFMTA & SFPUC Directors.
3. Mitigation strategy was added to request condition assessment of sewers under proposed track.

January 2012 Meeting:

1. Meeting between PUC GM and Director of Transportation will be set up by end of month.
2. Condition assessment by SFPUC has been requested by SFMTA in December 13 letter.
3. Risk rating increased to 4, 3, 12.

Risk Mitigation Status

Risk Reference: A

February 2012 Meeting:

1. SFPUC is performing a video survey of sewer lines.
2. Pre-meeting with Director of Transportation will be held prior to meeting with SFPUC. Items to be discussed with Director are:
 - a. agreement of bus bridging during sewer construction,
 - b. scope of sewer work requested by design team,
 - c. structural analysis of existing sewer lines.

April 2012 Meeting:

1. Meeting was held on February 17 between SFMTA and SFPUC to discuss the sewer lines south of the portal.
2. SFMTA presented a proposal to rebuild seven sewer chimneys at manhole locations.
3. SFMTA will provide the LRV train loading conditions to SFPUC.
4. The 30" force main was not discussed.
5. Meeting with SFPUC took place on April 12 to discuss next step on how to move forward. Additional proposal from SFPUC was presented to SFMTA to consider; make 78-inch sewer the main sewer, but run two laterals enabling them to make the house connection without taping the main line. To build two smaller 12-inch sewers on east and west side as a lateral and retrofit the existing with two options: 1) to rebuild the crown for two blocks from Bryant to Townsend, or b) slip line the 78-inch sewer.
6. SFPUC is conducting a condition assessment of the sewers along Fourth Street. The condition assessment will provide the premises of whether or not to rebuild the roof structure of the sewer. SFMTA will not pay for the changes, but would consider cost sharing.
7. A copy of the meeting minutes from the Director's meeting with track change edits from SFMTA was presented.

May 2012 Meeting

1. A meeting with SFPUC was held on 4/12/12.
2. It was discussed that CS would replace the existing brick crowns, replace a force main under the proposed tracks, and protect the sewer laterals. SFPUC would study the potential for their twin sewer arrangement.
3. A senior management meeting was held on 5/18/12 to discuss scope and cost sharing.
 - a. The crown and laterals for the existing 78" sewer will be replaced and paid for by SFMTA.
 - b. The existing force main under the tracks will be replaced to the east side of the tracks. SFPUC to pay for this work.
 - c. A new 48" sewer will be installed on the east side of tracks from Bryant to Brannan. This work will be paid for by SFPUC.
 - d. A local sewer will be installed on the west side of the tracks.
 - e. Joint trench work to relocate the existing AT&T structures on the east side of the tracks will be required.
 - f. Cost estimates for the sewer work are available from DPW.
 - g. The design of the sewer work will be achieved using Design/Build contracting strategy.
4. SFPUC completed a video survey of the existing sewers south of Bryant.

June 2012 Meeting:

1. A further Senior Management meeting is required to reach agreement of the cost-sharing of the scope items listed in Item 3 of the May 2012 notes above.
2. An MOU will be drafted upon concurrence of cost sharing between the two parties.
3. Design of the sewer work will still be achieved using Design/build contracting strategy.

Risk Mitigation Status

Risk Reference: A

July 2012 Meeting:

1. Sewer ECP presented to CMB on July 11.
2. Design will include two separate drawings depicting 1) Base work and 2) SFPUC Optional work as a design build.
3. SFPUC Optional work will be done at the sole cost of the PUC.

August 2012 Meeting:

1. Sewer design for 4th Street continues no impact to 1256 schedule.

September 2012 Meeting:

1. Sewer design for 4th Street expected to be complete 9/28/12

October 2012 Meeting:

1. Included as D&B element in combined contract

December 2012 Meeting:

1. Sewer line completed
2. Receipt of MOU is still pending.
3. Percentage cost may need to be revised.

January 2013 Meeting:

1. MOU has not been finalized, still pending
2. New sewer drawings are included in CN1300 drawings set

February 2013 Meeting:

1. The cost share agreement with PUC is still being finalized
2. Expected costs are in the current budget

March 2013:

1. Meeting to be held 3/20 with PUC to discuss the MOU and cost share percentages

Risk Mitigation Status**Risk Reference: F - CTS**

Risk		Mitigation Strategy
Underground obstructions at Chinatown Station	√	<ol style="list-style-type: none"> 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.

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

March 2012 Meeting:

1. Allowance for differing site conditions will be added as a GE bid item.
2. Recommend to reduce the risk rating.

March 2013:

1. Allowance CTS-AL-13 included in Contract, the allowance was increased in Addendum 3 (\$250k)
2. Bid items CTS BI-5, BI-6, BI-7, BI-8 have been included to establish contractor pricing per unit area and volume in the event of differing site conditions.
3. Discuss reducing this risk rating (current cost impact (2) \$250k - \$1m), and transfer ownership of this risk to the CM team
4. Reducing this risk rating was discussed, the risk rating is to remain the same
5. There is potential for the schoolyard wall adjacent to the CTS site to clash with the slurry wall construction. Mitigations in place to address this are to be discussed next meeting.

Risk Mitigation Status**Risk Reference: F - MOS**

Risk		Mitigation Strategy
Underground obstructions at Moscone Station.	√	1. Provide adequate allowance based on unknown buried structures encountered during utility relocation and as-built drawings from Moscone Center.
	√	2. Show previously revealed and anticipated structures on contract drawings.

Initial Assessment: 2, 2, 8**Risk Owner:** Q. Chin**Current Assessment** Risk Rating 8 – Construction Risk**Status Log:**

March 2012 Meeting:

1. Allowance for differing site conditions added to contract.
2. Underground obstructions encountered during CN1250 have been included onto ES drawings.

March 2013:

1. Moscone Center drawings (including tie-back drawings) have been provided as reference drawings for the 1300 contract.
2. Brick wall (discovered June 2012) field survey information has been included in the 1300 contract 'ES' drawings.
3. Allowance YBM-AL-13 (\$200k) has been included for unforeseen or differing conditions in the 1300 contract.
4. Discuss reducing this risk rating (current cost impact (2) \$250k - \$1m) and transfer ownership of this risk to CM team.

Risk Mitigation Status**Risk Reference: Q**

Risk	Mitigation Strategy
As-built drawings and construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction of north entrance.	<ol style="list-style-type: none"> 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. 4. Allow enough time in Master Project Schedule to produce shop drawings for structural steel at USG.

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

March 2012:

1. Specification 05 12 00 Structural Steel requires contractor to produce accurate shop drawings stamped by a Registered Engineer.

March 2013:

1. Only 1 month has been allowed in the master schedule for design, submittals, and approvals.
2. CM have discussed the north entrance construction schedule with the program scheduler, construction of the north entrance is not on the critical path.
3. The risk owner has been changed to Mark Benson

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 4 – Requirement Risk

Risk Owner: R. Edwards

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:

2. No new update to this risk.

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 6 – Design Risk**Risk Owner:** R. Edwards**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.

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

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

Risk Mitigation Status

Risk Reference: V

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.

Risk Mitigation Status**Risk Reference: PR37**

Risk	Mitigation Strategy
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.

Initial Assessment: 1, 2, 3**Risk Owner:** Q. Chin**Current Assessment:** Risk Rating 3 – Construction Risk**Status Log:**

March 2013:

1. 1300 Contractor is responsible for temporary construction power
2. Permanent power applications have been submitted to PG&E
3. The PG&E Permanent power supply activities and any additional information required from Central Subway need to be established and included in the project Master Schedule.

Risk Mitigation Status
Risk Reference: PR73

Risk	Mitigation Strategy
Delays or complications of design & construction by others – SF Dept. Of Technology, 3rd party utilities	Early engagement and coordination for agreements and plan development to avoid construction delays.

Initial Assessment: 1, 1, 2
Current Assessment: Risk Rating 2 – Design Risk
Risk Owner: R. Edwards

Status Log:

- March 2012 Meeting:
1. Project team continues to coordinate with 3rd party utility agencies (AT&T, PG&E, SFDT) to complete construction and cutover of facilities designed under CN1250 & CN1251.
- May 2012 Meeting:
1. Met with SFDT to confirm the scope of work that they will perform for the Systems contract.
- June 2012 Meeting:
1. Agreements on scope of work with SFDT are being sought.
- August 2012 Meeting:
1. MOU written to DTIS to define scope. Awaiting concurrence. SFFD reviewing 90-100% design no comments received to date.
- September 2012 Meeting:
1. Central subway following up DTIS
- October 2012 Meeting:
1. Follow up with DTIS still required, verbal concurrence received
 2. 3rd Party Utilities
 - a. 1300 Utility relocations – status to be advised next meeting
 - b. 1256 utility relocations – confirmation and schedule required – follow up next meeting
- November 2012 Meeting:
1. Follow up with DTIS still required
 2. 3rd Party Utility
 - a. 1300 Utility relocations – High level timeframes to be obtained from utility owners
 3. 1256 Utility relocations
 - a. Confirmation and schedule to be sought from affected utilities.
 - b. AT&T to advise high level time frames should relocation of the duct bank (east side of 4th street, south of Bryant) be required.

Risk Mitigation Status

Risk Reference: PR73

December 2012:

1. Follow up with DTIS still required??? Ross
2. 3rd Party Utility
 - a. 1300 Utility relocations – High level timeframes still to be obtained from utility owners
3. 1256 Utility relocations
 - a. Notice of Intent letters sent to utility owners
4. An MOU agreement between SFMTA and DTIS is still pending.
5. AT&T work on south of Market Street

January 2013:

1. No new updates, MOU agreement is still pending.

February 2013 Meeting:


1. STS 3rd Party private utility relocation scope and schedule has not yet been completed and coordination with utility agencies is ongoing.
2. Where scope and timing has been established, the details have been included in the 1300 contract.
3. Other mitigations have been included in the 1300 contract in anticipation of agreement with 3rd party utilities.
4. The status of the MOU with DTIS will be advised next meeting.

March 2013:

1. STS 3rd Party Utility coordination is ongoing
2. DTIS MOU is agreed, a signed version needs to be obtained from DTIS.



MEMORANDUM

DATE: March 8, 2013
TO: John J. Haley
Director of Transit
FROM: John Funghi 
Central Subway Program Director

SUBJECT: CSP Segment for LRV Procurement/RFP Development

This memo presents the process to establish and fund a segment within the current Central Subway Project (CSP) CPT 544 to manage the initial expenses of procuring LRVs. This approach was developed by Trinh Nguyen, Monique Webster and Lewis Ames for your approval (see signature line below).

In 2016 Year of Expenditure dollars, the CSP has an FTA-approved FFGA budget of \$26,386,000 for the purchase four light rail vehicles, a maximum of \$6,596,500 per vehicle. This memo formalizes the Transit Division's responsibility for the delivery of the four vehicles. An initial allocation of \$2,000,000 in CSP funds is identified for use by the Agency for procurement management and consultant work associated with the Agency's LRV RFP. This allocation will fund Conceptual Design, completion of the Solicitation Package, Notice to Proceed to the Manufacturer and additional work as described on Page 2. The CSP will book an initial \$700,000 to support RFP development from Conceptual Design to completion of the Solicitation Package. A separate budget revision will fund Vendor Selection through the Notice to Proceed to the Manufacturer.

We are working with LRV Procurement Program Project Manager Trinh Nguyen in support of the Transit Division's procurement implementation. During this procurement project, the Project Manager will prepare monthly reports that will include updates on expenditures and progress toward project milestones and deliverables as shown in Attachment 1. Quarterly reports will be submitted to the CSP for review before submittal to the FTA. The Transit Division schedule shows that NTP is anticipated in spring 2014.

The \$2,000,000 will fund three phases of work for the Agency's LRV Procurement Project as summarized here:

- | | | |
|------------------------|-------------|-------------------------|
| • Conceptual Design | \$250,000 | Complete December 2012 |
| • Solicitation Package | \$450,000 | May 2013 |
| • Vendor Selection | \$1,100,000 | June 2013 to June 2014. |
| Contingency | \$200,000 | |

The initial \$700,000 fund authorization will be under two index codes for Project Management and consultant services. The Transit Division will submit a request to authorize disbursement of the remaining \$1,100,000, plus contingency, if needed, when the RFP has been released and the Vendor Selection phase begins.



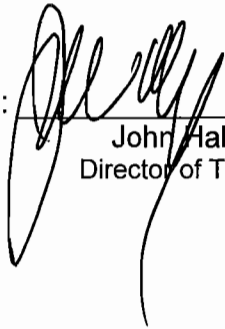
San Francisco Municipal Transportation Agency
Central Subway / Transit Division LRV Procurement
2013 – 2014 RFP Development through LRV Manufacturer Selection

The current LRV Procurement plan comprises a minimum base order of 24 vehicles, including the four cars in the FFGA budget and a Muni Metro service expansion of 20 cars, with the RFP expected to contain options for longer-term fleet expansion and vehicle replacement.

The Agency's LRV Procurement scope, schedule and budget were reviewed by the FTA and Central Subway PMO, as summarized on Attachment 1, in January 2013. The PMO Spot Report and the SFMTA Response are Attachments 3 and 4 of this memo.

The remaining CSP funds will be booked in increments as progress payments to the new CPT during the procurement phase of the project after NTP in 2014.

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Approved:



John Haley
Director of Transit

San Francisco Municipal Transportation Agency
Central Subway / Transit Division LRV Procurement
 2013 – 2014 RFP Development through LRV Manufacturer Selection

Attachment 1 – LRV Procurement Project Phase, Costs, Scope

BUDGET PHASE	STAGE	FUNDING	DELIVERABLE	SCOPE DESCRIPTION
Planning/ Conceptual Engineering	Phase 1 - Concept Definition Complete December 2012	\$250,000	LRV Concept Report	<ul style="list-style-type: none"> • Program Management * • White Papers • Budgetary Cost Estimate • Vehicle Concept • Specification Outline • Procurement Strategy • Industry Outreach
Solicitation Package / Design Engineering	Phase 2 - Prepare Solicitation Package Complete May 2013	\$450,000	RFP Package	<ul style="list-style-type: none"> • Program Management * • LRV Technical Specification • Contract and Solicitation Documents • RFQ Package • Qualification Process • RFP Document • Sample Agreement • Evaluation Procedure • Board approval package
<i>Subtotal</i>		\$700,000		
Vendor Selection/ Advertise Construction	Phase 3a – Pre-Proposal Complete Aug. 2013	\$300,000	Pre-proposal documentation	<ul style="list-style-type: none"> • Program Management* • Detailed Evaluation Procedure • Independent Engineers Estimate • Response to Inquiries • Pre-proposal meeting
Vendor Selection	Phase 3b – Evaluation Complete Feb. 2014	\$600,000	Vendor Selection Report	<ul style="list-style-type: none"> • Program Management* • Proposal Evaluation • Clarifications • Request BAFO • Negotiations • Selection Process documentation • Pre-award Buy America Audit
Vendor Selection	Phase 3c – Certification Complete May 2014	\$150,000	Board Package	<ul style="list-style-type: none"> • Program Management • Prepare Board Package • Pre-award Certifications • Carbuilder Kickoff Preparation
<i>Subtotal</i>		\$1,100,000		
Contingency		\$200,000	As Needed	
Total		\$2,000,000		

***LRV Procurement Project Management – RFP/Vendor Selection tasks:**

- Prepare, update and manage LRV Procurement Plan schedule, scope and budget; maintain procurement records and reports.
- Establish funding plan with Finance; manage costs; review and approve third party expenditures.
- Produce and present status reports to Agency, stakeholders and funding partners; respond to PMOC reviews.
- Partner with the Fleet Plan update and the CS rail simulation process to back up the LRVs in the base order.
- Submit monthly progress reports of expenditures and progress toward milestones for CSP management review.

Attachment 2 – LRV Procurement Project Expenditure Plan Background

The Central Subway's approved FFGA budget contains a cost category for the purchase of four new light rail vehicles, including spare parts and training, at an estimated total cost of \$26,385,653 that is based on a unit cost of \$6,596,413. These costs are in year of expenditure 2016 dollars.

The Third Street Light Rail Project's November 1998 FEIS/FEIR identified that 24 new LRVs should be added to the SFMTA rail transit fleet.

The basis for projecting the number of new vehicles needed was the service levels when the FEIS/FEIR was completed. The existing peak demand required 107 LRVs. The Phase 1 T-Third Line included starting the Mission Bay loop service as well as the 5.1 miles to the Bayshore Station terminus.

With Phase 1, including the Mission Bay Loop, the total peak service demand for light rail vehicles was projected to increase to 129 LRVs, or approximately 20 vehicles. Ten of these vehicles were for system-wide growth and 10 were for the Mission Bay Loop service.

Phase 2 (Central Subway) peak demand was projected to increase the needed service capacity. As a result, the projected number of vehicles required for the Central Subway is three peak LRVs plus one spare, for a total of four LRVs.

In March 2011 the SFMTA submitted to the FTA the Light Rail Vehicle Procurement Plan (VP Plan) 2011-2018 for the purchase of 24 new LRVs. The VP Plan was developed as Appendix H of the 2010 SFMTA Transit Fleet Management Plan (TFMP).

On July 18, 2012, the SFMTA transmitted to the Federal Transit Administration (FTA) a letter with the Light Rail VP Plan update for the purchase of 24 new LRVs.

In September 2012, The FTA PMO submitted to the SFMTA 19 recommendations to enhance the VP Plan. The LRV Procurement scope, schedule and budget were reviewed by the FTA and its PMO in January 2013. The PMO Spot Report and the SFMTA Response are Attachments 3 and 4 of this memo.

The Vendor Selection budget includes a Transit Division estimate from CH2M Hill that has been reviewed and approved by the Transit Division Director. The Transit Division's use of funds shall be based only on the incurred costs for the LRV procurement services provided.

Attachment 3 -
PMOC January 13, 2013 Draft Review of the SFMTA LRV Procurement Scope and Budget
for use of Central Subway 5309 Funds by Transit Division (Spot Report)

January 11, 2013

Mr. Jeffrey S. Davis, Task Order Manager
USDOT/Federal Transit Administration
201 Mission Street, Suite 1650
San Francisco, CA 94105

Reference: **STV/FTA TBD**
Contract No. DTFT60-09-D-00015-Project Management Oversight Services for
FTA Major Capital Projects – Project No. DC-76-5009
SFMTA ARRA Oversight Continuing Reviews – Task Order No. 6

Subject: SFMTA LRV Procurement Program – Budget Approval Review
CLIN 0003B
PMOC Task List Item #314
For Action

STV PROJECT NO.: 40-15094

Dear Mr. Davis:

At the Federal Transit Administration (FTA)'s request, the Project Management Oversight Contractor (PMOC) reviewed the San Francisco Municipal Transportation Agency (SFMTA) Light Rail Vehicle (LRV) Procurement Scope and Budget for use of Central Subway 5309 Funds by Transit Division (Attachment 1). The PMOC has the following comments:

- The request to use \$2,000,000 of Central Subway funds by the Transit Division for the development of the LRV procurement seems disproportionate since Central Subway will only use four (4) of the 14 cars identified and four (4) of the 24 cars projected. The PMOC's opinion is that the transit division should perhaps be contributing close to 72 percent of the cost.
- In the Scope/Schedule/Budget on page two under schedule it states that there is an 11-month duration for "Advertise Construction." The PMOC requests an explanation of this activity and a breakdown of the 11 months, if possible.
- In the Budget section of Scope/Schedule/Budget it states that the contract activities will cost \$1,200,000.00. The PMOC requests that if possible, the cost be broken down, given that this single figure represent 60 percent of the budget. Some deliverables should also be associated with this figure so FTA has a clear understanding of the activities' value.

Attachment 3 - continued

- Section 1.10 45 ft. Curve White Paper – This title in itself is too limiting. If this paper is indeed necessary, SFMTA needs to think a little more “outside of the box” and ask the question “what is the real minimum curve requirement that should be written into the specification?” The PMOC, however, questions the merit of such a white paper because it seems that the infrastructure is a given with no obvious funding source to change it. It is not clear if this study provides any benefit or is just an academic exercise.
- General Comment / Observation – It should be noted that several of the subject topics such as LRV Concept, Specification Outline, and industry outreach have already been paid for by SFMTA, and significant amounts of data have been generated in the work of CH2MHill. SFMTA, therefore, needs to make sure that it takes advantage of this information rather than pay twice for the same data.

If you have any questions about this review, please feel free to contact me.

Very truly yours,
STV Incorporated

David A. Kuehn
Project Manager

DAK/dwm

Attachment: 1 – LRV Procurement Scope and Budget for use of Central Subway 5309 Funds
by Transit Division

cc: S. Asatoorian - FTA J. Sampson - STV
K. Nguyen - FTA N. Forde - STV
File: 48-238

Attachment 4 -
SFMTA Response to PMOC January 13, 2013 Draft Spot Report



LRV Funding Memo-
Signed.pdf

San Francisco Municipal Transportation Agency

New LRV Procurement - FTA/PMOC Update

Meeting Minutes

~~Date:~~ Date: January 28th, 2013,

~~Time:~~ Time: 12:30 PM

~~Location:~~ Location: 1 South Van Ness, Union Square Conference Room

Attendees : Jeffrey Davis, David Kuehn, Trinh Nguyen, Janet Gallegos, Monique Webster

~~Via Phone Conference:~~ Conference: Norman Forde, Gavin Fraser

1. Introduction:

The purpose of the meeting was to provide an update to the FTA and PMOC on the new LRV procurement project. The review focused on project progress since the last revision of the Procurement Plan issued in October 2012. Meeting agenda is provided in Attachment 1.

2. Procurement Update :

A summary of project progress to date was provided. A brief description of white papers completed was presented and discussed briefly. White Papers are attached (Attachment 2). Findings from the ongoing industry review were also discussed. An update to both the industry Outreach Plan, and the Industry Outreach Report are attached (Attachment 3). SFMTA explained that the Technical Specification is performance based with interface details and is approaching 90% complete. FTA and PMOC agreed that the performance based approach was is preferred by the car building community. The procurement approach will be in two phases, with an RFQ to prequalify prospective suppliers, prior to the RFP selection. FTA recommended that the Procurement include options to allow flexibility in purchase quantities. FTA also recommended that the adequacy of the combined Maintenance Facility Capacity be verified as part of ~~in~~ the future ~~for the expansion for~~ vehicles.

ACTION:

- SFMTA to provide white papers and completed project documentation ~~completed~~ Formatted: Bulleted + Level: 1 + Aligned at: 0.75" + Indent at: 1"
- The Procurement Plan will be updated and reissued in February. The Plan will include an update to open actions including the funding plan and the rail simulation work and projected completion dates. Formatted: Bulleted + Level: 1 + Aligned at: 0.75" + Indent at: 1"
- ~~ACTION~~ SFMTA to provide updated LRV Procurement Plan by the end of February. Formatted: Bulleted + Level: 1 + Aligned at: 0.75" + Indent at: 1"

3. Funding Plan

SFMTA has the capacity to issue revenue bonds in the amount of about \$100 (?) every 2 years. The first allocation has just been made and has already been allocated. The new LRV procurement will be given priority in future issuances and will fund the SFMTA portion of the first 24 vehicles and the future 40 expansion vehicles. The replacement vehicles will be funded through MTC/FTA where replacement vehicles have the highest priority.

Comment [NAF1]: Is this million?

SFMTA is working to refine overall costs and optimize cash flow. Initial budget costs for the first 24 vehicles were estimates, and did not include many peripheral costs such as support costs and SFMTA supplied equipment. The next issuance of the Procurement Plan will include a funding update.

ACTION: SMFTA to update funding plan in the next issue of the Procurement Plan by the end of February?

4. \$2M Funding Transfer Request

SFMTA provided a draft response to the draft review of the \$2M budget transfer request. Draft response is provided in Attachment 4.

PMOC expressed concern that the Central Subway funding may be subsidizing the larger LRV procurement. SFMTA clarified that the project is being conducted as one project, but that the funding is proportionate at the project level. Initial funding needs to be provided by Central Subway in

order for the Project to proceed. Central Subway project provides cash flow but will not subsidize the other 20 vehicles. FTA has no issue with this plan, provided that there is a cap on the overall funding from the Central Subway Project.

PMOC stated that there must be a rationalization of cost estimates. There must be sufficient breakdown of estimated costs to allow tracking of work against costs expended. SFMTA also agreed to provide regular quarterly reports to provide details of Project Progress. These reports should start after achieving the first major milestone (issuance of RFP), FTA concurs.

ACTION: SFMTA to provide breakdown of costs by each deliverable milestone

By contrast, the MOA is an internal document provided to outline the transfer of funds between the Central Subway Project and the Transit Division responsible for procuring the new light rail vehicles. The MOA will document the information to be exchanged between the two divisions of the SFMTA but is not for external review and approval.

FTA agreed that work on the LRV Procurement must continue without interruption. The initial funding transfer of \$2M should proceed without delay. The requested breakdown of projected cost by deliverable milestone will then allow tracking of expenditure against work delivered.