


Memorandum

CS Memorandum No. 1420

To: Distribution
From: Beverly Ward, CMB/Risk Management Assistant 
Date: April 19, 2013
Reference: Project No. M544.1, Contract No. CS-149
Task No. 1-4, Risk Management
Subject: Risk Mitigation Report No. 44, Rev. 0

Attached please find Risk Mitigation Report No. 44 for meeting held on April 11, 2013. Please click on the "Bookmark" tab on the left side of Adobe file to navigate to report sections Attachments:

Risk Mitigation Report No. 44, 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
John Funghi, SFMTA (w/attachments)
Arthur Wong, SFMTA (w/attachments)
Ross Edwards, 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
Albert Hoe, SFMTA
Richard Redmond, CSP
Eric Stassevitch, CSP
Alex Clifford, CSP
Mark Benson, CSP
Mark Latch, CSP
Vivian Chow, SFMTA
Beverly Ward, CSP

Risk Mitigation Meeting Minutes #44

DATE: April 12, 2013
 MEETING DATE: **April 11, 2013**
 LOCATION: 821 Howard Street, 2nd Floor – Main Conference Room
 TIME: 2:00pm
 ATTENDEES: Albert Hoe (*part-time*), Richard Redmond, Vivian Chow, Eric Stassevitch, Alex Clifford, Mark Latch, Mark Benson, Beverly Ward, Brad Lebovitz
 COPIES TO: Attendees: John Funghi, Arthur Wong, Ross Edwards, 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. 44**

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> LRV Procurement documents (RFP) is expected to be out on time. 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> Final design documents are being reviewed. A draft letter of response to the Planning letter received in May 2012 is being circulated. Risk Rating 6</p> <p>Risk B: Storage and testing of excavated soils from tunnel limits advance rate of tunneling. <u>Discussion:</u> Contractor is in the process of revamping their method for handling and testing hazardous material. Risk Rating 6</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 Contractor issues with the elevation ladder negotiations process, specifically with the details in the proposal if their subs don't agree to the terms. SFMTA Contract Administrator will develop and observation and training program to be used by both parties as an issue resolution process to address disputes. Risk Rating 8</p>	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>Risk 203: Headwalls interface delay CN1300 Contractor <u>Discussion:</u> Delay is already occurring. New projected date is October 3rd for the headwalls. Contractor needs to develop a recovery schedule for their means and methods. Risk committee suggested a letter be sent to Contractor putting them on notice. Risk Rating 8</p> <p>Risk 204: Relocation of AT&T Vault and other utilities delays New Sewer Work south of Bryant <u>Discussion:</u> The force main and impact to utilities is in the design build and DP3 scope of work to coordinate. Risk Rating 6</p> <p>Risk 206: Delay in Decision on Retrieval Shaft <u>Discussion:</u> A decision has been made, this risk has been mitigated. Risk Rating 0. This risk is retired.</p> <p>Risk 207: Implementing Pagoda Option for Retrieval Shaft - Delay in Obtaining Property <u>Discussion:</u> Real estate lease agreement has been signed. New information regarding the presence of hazardous material requiring abatement. Information needs to be included in PCC 10 and the MPS. Environmental Policy Act (NEPA) requirement to be submitted to the FTA for evaluation. Risk Rating 9</p> <p>Risk 208: Additional cost if we change direction going to the Pagoda <u>Discussion:</u> Optional plan has been developed: 1) Continue to negotiate with BIH on their proposal (identifying the hard spots of discrepancy) prepare document for Senior Management review), 2) Initiate a separate contract for design build of the Retrieval and put it out as a separate contract or add it on to BIH's contract instructing them to build it. 3) Bid the Pagoda separately without the add-ons. Risk Rating 8</p>	
2 -	Report on Remaining Requirement & Design Risks (Risk rating ≤ 6)	
	<p>Risk A: Timely resolution of sewer lines south of portal <u>Discussion:</u> MOU has not been signed. Finer points of the MOU still need to be agreed on. Risk Rating 2</p> <p>Risk 32: Delay in advanced utility relocation delays ground treatment and start of construction. (Uty 2) <u>Discussion:</u> Maiden Lane on track to finish by the end of the month. A strategy is being developed the backflow. A letter being prepared to send out to Macy's by April 15. 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. Outstanding issue being the \$280K difference in price for 790 Market. Risk Rating 1</p> <p>Risk 104: CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows <u>Discussion:</u> Three year extension approval was received from CPUC. If sign-off is not received by January 2016 we need to request another continuance. Risk Rating 5</p>	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>Risk T: Delay to final design submittal due to delay of emergency ventilation approval by SFFD. <u>Discussion:</u> Conference call with SFFD took place last month. Fire department happy with the responses given. HNTB (DP3) needs to submit a technical memo verifying what was discussed. Risk Rating 4</p> <p>Risk 89: 3rd Party reviews of Design documents delays completion of Final Design. <u>Discussion:</u> No new update on this risk, verification is ongoing. 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> Design Oversight Manager is still pursuing getting the signed version of the MOU agreement. Risk Rating 2</p>	
3	Active Risks	
	<p>Construction Risk with a rating below 6 which are actively been tracked were included on the agenda for information, but were not discussed at this meeting. Updates to those risk status sheet are included in this meeting package for distribution.</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> Clarification of the risk - that the station contractor is delayed from getting down to the bottom of the platform due to the tunnel contractor work not being completed. Risk Rating 3</p> <p>Risk 75: Signals and Comms equipment may need to be stored off site. <u>Discussion:</u> This is not a risk to the Program. Risk Rating 0. This risk will be retired.</p> <p>Risk 196: The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned. <u>Discussion:</u> Still need to send out license agreement for the three remaining Macy's properties. Risk Rating 4</p> <p>Risk 209: Implementing Pagoda Option - Obtaining Environmental Clearance <u>Discussion:</u> Bids for testing of noise and vibration went out. National Environmental Policy Act (NEPA) studies due on 4/12/13. Risk Rating 3</p> <p>Risk 205: Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor <u>Discussion:</u> R. Redmond will prepare a "white paper" to address the rational for increasing the delegation of authority approval beyond the \$5M for construction changes before it requires SFMTA Board approval. Risk Rating 3</p> <p>Risk 214: Micro Piles at UMS interfere with Tube-a-machete installation (60' deep micropiles) <u>Discussion:</u> New re-alignment profile was sent to the Contractor. Construction Management team needs to officially send it as a PCC. Additional mitigation needs to be employed as a cross check against the Contractor's alignment submittal to ensure the correct alignment is being implemented. Risk Rating 3</p>	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	Risk 107: Market risk in achieving 100% bonding capacity (cost and reduction in contractors able to get performance bonding) <u>Discussion:</u> An addendum was issued to resolve the warrant bonding issue. Risk Rating 5	
4-	Other Business – New Risks	
	Risk 216: Olivet building potential construction impact <u>Discussion:</u> A. Clifford will pursue getting a schedule from them. There should be no impact to the CSP. Risk Rating TBD	

ACTION ITEMS -

ITEM #	MTG DATE	Task #	DESCRIPTION	BIC	DUE DATE	STATUS
1	12/13/12		Risk 7 – Cost for significant settlement grout	R. Edwards	05/09/13	Open
4	12/13/12		Risk 72 – 4 th & King (SSWP)	R. Edwards/ C. Morganson	05/09/13	Open
3	02/14/13		Risk 205 – Increase CMod threshold above \$5M for SFMTA Board approval	M. Benson	04/11/13	CLOSED

Meeting adjourned at 4:15pm

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: 18 Apr 13 [Date review completed.]

Meeting Agenda

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Risk Mitigation Management Meeting No. 44
April 11, 2013
2:00pm – 4:00pm
 Central Subway Project Office
 821 Howard St. 2nd Floor
 Main Conference Room

Attendees:

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

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

- **Requirement Risks** (83)
- **Design Risks** (V)
- **Market Risks** (All outstanding Market - None)
- **Construction Risks** (B, 99, 203, 204, **206**, 207, 208)

2. Report on Remaining Requirement and Design Risks

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

3. Active Risks

- **Construction Risks** (2a, 16, 50, **75**, 103, 116, 196, 205, 209, 210, 212, 214)
- **Market Risk (107)**

4. Other Business – Identify New risk items associated with Tunnel Program and Headwalls

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. 44
April 11, 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	MCB
Vivian Chow	SFMTA	415 701-5264	Vivian.chow.@sfmta.com	VC
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	
Albert Hoe	SFMTA	415-701-4289	albert.hoe@sfmta.com	AH
David Kuehn	STV/PMOC	510-464-8053	david.kuehn@stvinc.com	
Mark Latch	CSP	415-701-5294	mark.latch@sfmta.com	ML
Brad Lebovitz	STV/PMOC	510-464-8052	Bradley.lebovitz@stvinc.com	BR
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	

NAME	AFFILIATION	PHONE	E-MAIL (for minutes)	INITIALS

Risk Register

PROJECT RISK REGISTER															Risk Profile		Legend											
Central Subway Project San Francisco															Likelihood Score		Severity Score		Low (1)		Medium (2)		High (3)		Very High (4)		Significant (5)	
REV : 20															5		HIGH		< 10%		↔ 10% - 50%		> 50%		↔ 75% - 90%		> 90%	
DATE ISSUED : 04/11/13															4		MEDIUM		< \$250K		↔ \$250K - \$1M		↔ \$1M - \$3M		↔ \$3M - \$10M		> \$10M	
															3													
															2		LOW		< 1 Month		↔ 1 - 3 Months		↔ 3 - 6 Months		↔ 6 - 12 Months		> 12 Months	
															1													
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		Guide way 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		Guide way 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		Guide way 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		Guide way 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		Guide way 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 : 20

DATE ISSUED : 04/11/13

Likelihood Score	Severity Score				
	1	2	3	4	5
5	Yellow	Red	Red	Red	Red
4	Yellow	Yellow	Red	Red	Red
3	Green	Yellow	Yellow	Red	Red
2	Green	Green	Yellow	Yellow	Red
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)
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 : 20

DATE ISSUED : 04/11/13

Likelihood Score	Severity Score				
	1	2	3	4	5
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	Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend
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RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)
2
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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 misallocated (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
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

Risk Register

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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																																																		
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																																																		
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																																																		

Risk Register

PROJECT RISK REGISTER

Central Subway Project San Francisco

REV : 20

DATE ISSUED : 04/11/13

Likelihood Score	Severity Score				
	1	2	3	4	5
5	Yellow	Red	Red	Red	Red
4	Yellow	Yellow	Red	Red	Red
3	Green	Yellow	Yellow	Red	Red
2	Green	Green	Yellow	Yellow	Red
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)
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
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%		-		
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		

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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			
216	TUN		Project Management	Olivet building potential construction impact	1	C					0%	-			
PNR 130314-1	TUN		Project Management	Contract 1300 language requires the contractor to coordinate with 1252 for tunnel access. The tunnel contractor is not required to coordinate with the 1300 contractor. Bracing in the tunnel at UMS is required during construction of CP-5. Construction of CP-5 may limit access for installation of this bracing	1	C					0%	-			

Risk Mitigation Status**Risk Reference: 2a**

Risk	Mitigation Strategy
42"/48" sewer line relocated as part Utility 1 package is damaged by subsequent construction of the launch box.	<ol style="list-style-type: none"> 1. Follow on contractor responsible for repairs to any existing utility lines. 2. Also included an option in Utility 1 package to delete this work and have it installed by Contract 3. 3. Properly as built actual location as part of Utility 1 package and provide to Contract 3 Contractor

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

September 2011:

1. Sewer Installation complete. Awaiting as built drawing.
2. Sewer installed according to contract drawings.
3. Sewer backfilled in cement sand slurry to protect it during launch box wall construction.

December 2012:

1. Risk owner changed from J. Caulfield to S. Wilson
2. 1252 Contractor is responsible for repairs to existing utility lines
3. As-built drawings have been provided to the 1252 contractor
4. Video survey of the sewer is required following construction
5. The sewer location was confirmed by the 1252 contractor during construction of the guide-walls

April 2013:

1. The launch box has been constructed down to invert level with no damage to the sewer line detected to date
2. Maintain risk rating until tunnel boring has been completed in this area

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.

December 2012:

Risk Mitigation Status

Risk Reference: 32

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.

April 2013:

1. Maiden Lane water tie in is due to be completed this month.
2. Macy's Men's backflow preventer – SFMTA are investigating:
 - a. having the SFMTA mechanical engineering division design the backflow installation
 - b. having the installation work completed under the 1252 or 1300 contracts
 - c. seeking reimbursement for the work from Macy's
3. A letter is being prepared to send to Macy's by 4/15.
4. NTP for contract 1300 is expected early June 2013, the backflow prevention device and service cutover will need to be completed by this time.

Risk Mitigation Status

Risk Reference: 50

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

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

Risk Owner: M.Benson

Status Log:

September 24, 2009 Meeting:

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

February 2012:

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

March 2013:

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

April 2013:

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

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

Risk Mitigation Status**Risk Reference: 75**

Risk	Mitigation Strategy
Signals and Comms equipment may need to be stored off site.	1. It is normal for the contractor to store equipment offsite or at the factory until it is needed.

Initial Assessment: 3, 0.5, 2**Current Assessment:** Risk Rating 0 – Construction Risk - Retired**Risk Owner:** S. Pong**Status Log:**

December 2011:

1. This risk would only apply to Agency-Furnished Equipment or Materials.

November 2012 Meeting:

1. Recommend retiring, will revisit in December 2012 Risk meeting.

April 2013:

1. Recommend retiring this Risk.
2. This risk was retired by unanimous consent of the Risk Assessment Committee on 04/11/13.

Risk Mitigation Status
Risk Reference: 79

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

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

Risk Owner: A. Clifford

Status Log:

October 2011 Meeting:

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

November 2011 Meeting:

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

December 2011:

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

January 2012 Meeting:

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

February 2012 Meeting:

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

March 2012 Meeting:

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

Risk Mitigation Status

Risk Reference: 79

April 2012 Meeting:

1. No update from the March report-out.

May 2012 Meeting:

1. No update from the March report-out.

June 2012 Meeting:

1. No update from the March report-out.

July 2012 Meeting:

1. No update from the March report-out.

August 2012 Meeting:

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

September 2012 Meeting:

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

October 2012 Meeting:

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

November 2012 Meeting:

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

December 2012 Meeting:

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

February 2013 Meeting:

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

Risk Mitigation Status

Risk Reference: 79

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

March 2013:

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

April 2013:

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

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.

April 2013:

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

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.

April 2013:

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

Risk Mitigation Status**Risk Reference: 99**

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

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

April 2013:

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

Risk Mitigation Status**Risk Reference: 103**

Risk	Mitigation Strategy
Difficulty in getting required permits.	<ol style="list-style-type: none">1. Coordinate with permit officials and request permits as early as possible.2. Obtain assistance obtaining permits from PM/CM & FD Consultants.

Initial Assessment: 1, 1.5, 2**Current Assessment:** Risk Rating 2 – Construction Risk**Risk Owner:** A. Clifford**Status Log:**

December 2012:

1. Monthly meetings are being held between the 3rd Party team and design oversight managers to discuss the permitting requirements of each contract and provide a status of procurement of the required permits.
2. A Permit matrix has been developed to track the progress of the permits being sought for the program.

April 2013:

1. Permit applications are being submitted as early as possible
2. Central Subway are working with DBI to close out remaining issues for issuance of DBI Building permit prior to NTP
3. Central subway are working with DPW to obtain an 'overall excavation permit' for each work area (CTS, UMS, YBM, STS) to reduce the risk of delay to the 1300 contractor obtaining excavation permits.

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"> 1. Grade Crossing approvals are not received until final CPUC inspection at the completion of construction. 2. 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:

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

January 2012 Meeting:

1. 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
2. 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.
3. SFMTA will need to file for an extension of SX-92 at least 30 days before March 11, 2013.
4. SFMTA will need to file CPUC Form G within 30 days after the completion of construction.
5. Recommend to reduce this risk rating.
6. Risk rating reduced to 2, 2.5, 5.

April 2012 Meeting:

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

May 2012 Meeting:

No update.

July 2012 Meeting:

1. 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

April 2013:

1. Recommend transferring this risk to CM team to meet construction, testing, and safety requirements to enable CPUC signoff at completion.
2. Another request for extension will need to be submitted if construction and approval is not received by January 1st 2016.

Risk Mitigation Status**Risk Reference: 107**

Risk	Mitigation Strategy
Market risk in achieving 100% bonding capacity (cost and reduction in contractors able to get performance bonding)	1. Structure bonding appropriately for Contract 1300

Initial Assessment: 3, 2.5, 8**Current Assessment:** Risk Rating 5 – Market Risk**Risk Owner:** A. Wong**Status Log:**

September 2011:

1. Seven construction contracts are planned for the program.
2. Three contracts have been awarded.
3. The four remaining contracts are anticipated to be less than the tunnel contract, which was awarded for \$235 million.

August 2012:

1. All estimates still under \$250million
2. Does not seem to be a problem for UMS or CTS

April 2013:

1. Risk updated to specify that risk is referring to performance bonding.
2. Obtaining performance bonding for the \$750m contract 1300 is not a problem for the market.
3. Issues have been raised in relation to performance bond coverage over the various and extensive warranty periods nominated in the various project specifications.
4. Contract 1300 specification has been revised to structure bonding appropriately for the 1300 contract.
5. Sureties obligations have been limited to 5 years after substantial completion, and up to 10% of construction costs.
6. Mitigation strategy revised from 'Structure construction contracts not to exceed \$250 million' to 'structure bonding appropriately for Contract 1300'.

Risk Mitigation Status
Risk Reference: 116

Risk	Mitigation Strategy
TBM procurement, delivery and assembly takes longer than assumed in schedule.	1. Allow adequate time to allow procurement of TBM in MPS.

Initial Assessment: 3, 1, 3

Risk Owner: M. Benson

Current Assessment: Risk Rating 4 – Construction Risk

Status Log:

February 2012:

1. Mitigation strategy #1 “The most likely delay to TBM procurement and delivery, on the order of 2 or 3 months, could be accommodated with current float shown on the construction schedule” was removed.
2. Mitigation strategy #2 “Include milestones in contract for procurement of TBM” was not used.
3. Contract includes substantial completion requirements including liquidated damages for delay in completion by milestone date.
4. NTP 1 for TBM procurement was issued on 1/27/12.
5. Contractor has estimated 10 months to procure and deliver TBM to site.
6. LOPN2 was approved by FTA to build launch box and MOS headwalls.
7. Recommend to reduce this risk rating.

April 2012:

1. BIH has entered into a contract with Robbins to procure two TBMs; one to be delivered no later than January 2013 and one no later than February 2013.

April 2013:

1. The 1st TBM is arriving this month, the 2nd TBM is due to arrive in June this year.
2. BIH are procuring a gantry crane for the TBM assembly, if the gantry crane is not approved for use adjacent to the I-80 bridge an alternate crane would need to be sourced. The delay due to this is expected to be less than 1 month.
3. **Recommend reducing this risk rating to 3 (2, 2, 1)** (reduced schedule impact associated with sourcing another crane)
 - a. Current probability (2), 10 - 50%, maintain probability rating
 - b. Current cost impact (2), \$250k - \$1m, maintain cost impact
 - c. Current schedule impacts (2), 1 -3 months, recommend reducing schedule impact to (1), <1month

Risk Mitigation Status
Risk Reference: 16

Risk		Mitigation Strategy
TBM loss and / or damaged in Transit	√ √	1. Provide provisions for insurance for TBM in transit to jobsite. 2. Include insurance costs in contract cost.

Initial Assessment: 1, 5, 5
Current Assessment: Risk Rating 5 – Construction Risk

Risk Owner: M. Benson

Status Log:

February 2012:

1. Costs covered by Contractor’s insurance.
2. Payment for delivery of TBM is staged in Mobilization bid item based on performance milestones.
3. Recommend to reduce risk to 1, 3, 3

September 2012:

1. Contractor has ordered spare parts
2. 2nd TBM will be used to mitigate loss
3. Contingency plan to be developed – investigate market for 2nd hand TBM’s

October 2012:

1. Market for 2nd hand TBM’s still to be investigated

November 2012 Meeting:

1. Market for 2nd hand TBM’s will not be investigated.
2. Recommend retiring, will revisit in December 2012 Risk meeting.

April 2013:

1. The 1st TBM is due to arrive this month. The second 2nd TBM is due to arrive in June of this year.
2. Revisit this risk following arrival of the 2nd TBM.

Risk Mitigation Status
Risk Reference: 196

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

Initial Assessment: new risk

Risk Owner: A. Clifford

Current Assessment: Risk Rating 4 – Construction Risk

Status Log:

September 2012 Meeting:

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

November 2012 Meeting:

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

Risk Mitigation Status

Risk Reference: 196

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

April 2013:

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

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 CJN 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.

April 2013:

1. Contractor is currently working 2 shifts, 6days per week and bringing additional plant to site.
2. Contractor is preparing a revised recovery schedule.
3. Follow up next meeting following submittal of the revised recovery 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	<ol style="list-style-type: none"> 1. Continue negotiations/ coordination with utility owners. 2. Contract 1300 is required to coordinate with utility companies for relocations 3. SWAT team established to address utilities south of Bryant Street

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

April 2013:

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

Risk Mitigation Status

Risk Reference: 204

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

Risk Mitigation Status
Risk Reference: 205

Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	<ul style="list-style-type: none"> √ √ 	<ul style="list-style-type: none"> 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/R.Redmond

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

April 2013:

- 1. Risk owner changed from M.Benson to R.Redmond
- 2. A formal recommendation to increase the delegation of authority will be prepared and presented to the CMB on 4/17.
- 3. A detailed White Paper will be developed for the Project Director outlining the rationale for increasing the delegation of authority.

Risk Mitigation Status

Risk Reference: 206

Risk		Mitigation Strategy
Delay in Decision on Retrieval Shaft	<ul style="list-style-type: none"> √ √ √ √ √ 	<ul style="list-style-type: none"> 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

April 2013:

1. Decision has been made to retrieve the TBMs from the Pagoda site.
2. Recommend retiring this risk.

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:** R.Edwards**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.

April 2013:

1. Risk Owner changed from J. Funghi to R. Edwards
2. The lease for the use of the Pagoda site has been signed
3. New information has been received regarding the presence of hazardous material at the Pagoda site and will be included in PCC-10 and master schedule.
4. Risk description will not expanded as this risk is limited to obtaining the property

Risk Mitigation Status**Risk Reference: 208**

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

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

February 2013 Meeting:

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

March 2013:

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

April 2013:

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

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
2. 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.

April 2013:

1. Technical Memo for Archaeological Monitoring, Testing, and Treatment plan for the Pagoda Option sent to SHPO and the FTA 2/19/13 (incorporating Area of Potential Affects).
2. Correction to March 2013 report. Item 2 has been carried over from risk 207.
3. Contracts have been issued for completion of noise and vibration studies which are expected to be completed by the end of April.
4. NEPA feedback is expected by the end of April.

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 and track major MBL completion milestones <ul style="list-style-type: none"> - Grant funding - Design - Construction - Testing - Use of MBL before CS startup training (N-Line or supplemental T-line revenue service)

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.

April 2013:

1. Recommend expanding the risk mitigation strategy to include tracking the major MBL completion milestones against the Central Subway startup and testing activity dates
2. TIGER grant funding is expected in the summer of 2013
3. PTMISEA funds are expected in the fall of 2013
4. Major milestone dates have been requested from Lucien Bergurt (SFMTA MBL Project Manager)

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

April 2013:

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

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. Ensure tube-a-machetes are realigned to be installed clear of micro-piles

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

Risk Owner: M.Benson

Status Log:

February 2013:

1. Identified as a risk

March 2013:

1. Discuss risk description, mitigation strategy and risk rating
2. Central Subway has responded to Contractors RFI and provided as-built information for the micropiles
3. Contractor will work to install tube-a-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

April 2013:

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

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

Current Assessment: Risk Rating 2 – Design Risk

Risk Owner: S. Pong

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

April 2013:

1. Cost share percentages for the MOU were agreed between SFMTA and SFPUC at the meeting 3/20.
2. The draft MOU has been circulated for discussion.

Risk Mitigation Status**Risk Reference: B**

Risk		Mitigation Strategy
Storage and testing of excavated soils from tunnel limits advance rate of tunneling.	√	<ol style="list-style-type: none"> 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.

Initial Assessment: 3, 3, 9**Risk Owner:** S. Wilson**Current Assessment:** Risk Rating 6 – Construction Risk**Status Log:**

January 2012 Meeting:

1. The tunnel contractor is required to prepare and submit for approval preliminary workplan for handling and testing excavated materials. 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. The Project Team is working with Caltrans and the community to obtain a temporary lease for this parcel.
3. Added mitigation strategy to expedite testing of material.
4. Recommend to reduce this risk to 2, 3, 6.

June 2012 Meeting;

1. Obtained some of Caltrans parcel needed for muck handling. Contractor feels that enough room to handle material.
2. Approval to test soils offsite has not been approved. Some testing area is available on Caltrans site.

December 2012:

1. Launch Box - BIH have submitted a plan for handling and testing of excavated materials for the launch box excavation.
 - a. handling and testing plan has been reviewed and accepted by DPH.
 - b. soil was sampled and pre-classified during slurry wall installation.
 - c. testing regime has been agreed with DPH and the receiver of spoil (Baylands) to expedite removal.
2. Tunnel Excavation will follow a similar procedure to the launch box.
 - a. Tunneling spoil handling and testing plan is expected early 2013.
 - b. The 1252 team are seeking to transport non-classified spoil from site to be handled as if hazardous material until it's classification is confirmed by off-site testing.
 - c. Advanced tunneling spoil removal will be managed using additional haulage and off-site storage if required
3. **Recommend reduce this risk rating to 2, 1.5, 3** (reduced cost and schedule impact only)
 - a. Current probability (2), 10%-50%, maintain probability rating
 - b. Current cost impact (3), \$1m - \$3m, recommend reduce cost impact to (2), \$250k - \$1m (cost of additional haulage or storage off site)
 - c. Current schedule impacts (3), 3 – 6 months, recommend reduce schedule impact to (1), < 1 month (days or weeks to adjust haulage and storage requirements).

Risk Mitigation Status

Risk Reference: B

April 2013:

1. Hazardous material has been discovered in the ground at the 1252 yard preventing excavation in some areas
2. BIH had planned to create a holding pit for material excavated from the tunneling operation
3. Capacity for storage of material excavated by tunneling at the site may now have been reduced
4. BIH are preparing a revised handling and testing plan to address this issue
5. Maintain this risk rating and revisit next month following receipt of the new handling and testing plan

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:

1. No new update to this risk.

April 2013:

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

Risk Mitigation Status
Risk Reference: 203

Risk	Mitigation Strategy
Headwalls interface delay 1300 Contractor	1. Meet and develop recovery schedule 2. CM to review possible Adjustment to 1300 interface 3. Ensure contractor is notified (via letter) of their obligations under the contract

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 CJN 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.

April 2013:

1. Contractor is currently working 2 shifts, 6days per week and bringing additional plant to site.
2. Contractor is preparing a revised recovery schedule.
3. The current projected completion date for the headwalls is October 3rd (assumed production of 2 ½ piles per week)
4. A letter is to be prepared and sent to BIH summarizing the history of events contributing to the current delay, reaffirming the applicable liquidated damages under the contract and placing BIH on notice that additional resources and improved planning is required to address this delay.

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.

April 2013:

1. Central Subway are still working to obtain a signed version from DTIS

