

Risk Mitigation Meeting Minutes #59

DATE: July 01, 2014

MEETING DATE: **June 24, 2014**

LOCATION: 821 Howard Street, 2nd Floor – Main Conference Room

TIME: 2:00pm

ATTENDEES: John Funghi, Richard Redmond, Eric Stassevitch, Alex Clifford, Luis Zurinaga
Beverly Ward, Bradley Lebovitz

COPIES TO: Attendees:, Roger Nguyen, Albert Hoe, Jane Wang, Sanford Pong,
Vivian Chow, Aileen Read, Chuck Morganson, Mark Latch, James Sampson,
David Kuehn, Jeffrey Davis, 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. 59**

RECORD OF MEETING

ITEM #	DISCUSSION	ACTION BY DUE DATE
1 -	Report on Red Risk and – (Risk rating \geq 6)	
	Risk 83: Cost of vehicles are more than estimated <u>Discussion:</u> No new information was obtained from SFMTA Operations on the status of the vendor selected. Risk Rating 8	
2 -	Report on Remaining Requirement Risks (Risk rating \leq 6)	
	Remaining requirement risk below a rating of 6 was not discussed.	
3 -	Active Construction Risks	
	Risk 70: Change in traffic control requirements after bid. <u>Discussion:</u> An additional mitigation strategy has been added - to meet regularly with DPT and the Contractor to discuss traffic control issues and better ways to control traffic. These meeting are being conducted already. Risk Rating 8	
	Risk 13: Damage/settlement 3x 5' to old brick sewer running parallel to tunnel alignment. <u>Discussion:</u> Tunnel operations are complete. A video survey of the tunnel and sign off by SFPUC is pending. Risk Rating 1	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>Risk 15: Major TBM machine failure <u>Discussion:</u> Both TBM's have holed-through. This risk will be retired. Risk Rating 0</p> <p>Risk 38: Tiebacks in Stockton Street miss located (in path of walls and would have to be dug out within 20ft of surface level) <u>Discussion:</u> Pre excavation of the tiebacks out of the footprint of secant/tangent pile has taken place (over cored), leaving the tiebacks in the dirt. Risk Rating 3</p> <p>Risk 50: Station contractor delayed by tunnel contractor since station contractor cannot break in to the tunnels until the tunnels have been finished. <u>Discussion:</u> A review of CN1300 baseline schedule is required to resolve tunnel interfaces to determine when TPC actually need to be in the tunnel. Risk Rating 3</p> <p>Risk 71: Power supply interruptions to TBM's (no dual power feed currently planned) <u>Discussion:</u> TBM's have holed-through; this is no longer a risk. This Risk will be retired. Risk Rating 0</p> <p>Risk 103: Difficulty in getting required permits. <u>Discussion:</u> Permits, which still need to be acquired, are required towards the latter part of the job. Risk Rating 2</p> <p>Risk 202: Cargo Preference must solicit U.S. - flag carriers. Civilian Agencies Cargo = at least 50% (governed by Cargo Preference Act of 1954) <u>Discussion:</u> Although MARAD has found TPC's subcontractor to be non-compliant with the Cargo Preference Regulations, they will not pursue a financial penalty. The 1300 contract does include the Buy America clause; however, this is not an issue at this time. Risk Rating 1</p> <p>Risk 204: Relocation of AT&T Vault and other utilities delays Work south of Bryant <u>Discussion:</u> Work continues to progress. Outstanding issues are being addressed with proactively scheduling AT&T resources. Risk Rating 3</p> <p>Risk 212: UMS Inclined piles – 8” clearance between piles and tunnel results in damage or safety issues within the tunnel <u>Discussion:</u> Work continues to progress well, 16 out of 197 piles have been installed Risk Rating 4</p> <p>Risk 214: Micro Piles at UMS interfere with Tube-a-manchette installation (60' deep micropiles) <u>Discussion:</u> This work is part of PCC12, which includes costs to be paid by others, not increasing Program related costs. The Program will likely pay a portion of the cost, but should be well under the range of SFMTA's estimated \$210K cost exposure. Risk needs to be quantified for the 1300 contract. Risk Rating 3</p> <p>Risk 216: Olivet building potential construction impact <u>Discussion:</u> Bid items 4 and 31 - Compensation Grouting have been eliminated</p>	



ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>due to building structure being demolish. This risk will be transferred to Mark Vilcheck as the new risk owner. Risk Rating 2</p> <p>Risk 220: Compensation grouting at the Pagoda site is delayed by resolution of the scope and role of the designer, and contractor. <u>Discussion:</u> Work is completed, no compensation grouting necessary. This risk is a candidate for retirement at the next scheduled meeting. Risk Rating 5</p> <p>Risk E: Underground obstructions for tunnel and retrieval shaft <u>Discussion:</u> Both TBM's have holed-through. This risk will be retired. Risk Rating 0</p> <p>Risk 224: CTS AWSS / Ductbank Interface - AWSS system is old and requires replacement <u>Discussion:</u> A workaround on Stockton Street for the AWSS system to address the problem is in place and is successful. Risk Rating 08</p> <p>Risk 225: Ellis Street Utilities (unknown underground utilities) <u>Discussion:</u> This can potentially be a significant risk. Risk Rating 10</p>	
4 -	Other Business - Potential Risk	
	<p>There was no new risk added to the Risk Register this month this month.</p> <p>Next month's meeting will be held on the Tuesday, July 8, 2014.</p>	

ACTION ITEMS -

ITEM #	MTG DATE	Task #	DESCRIPTION	BIC	DUE DATE	STATUS
4	12/13/12		Risk 72 - 4th & King (SSWP)	S. Pong C. Morganson	07/08/14	Open

Meeting adjourned at 3:00pm

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

Signed:   [initials of preparer & reviewer] Date: 01 July 14 [Date review completed.]

Meeting Agenda

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Risk Mitigation Management Meeting No. 59
June 24, 2014
2:00pm – 4:00pm
 Central Subway Project Office
 821 Howard St. 2nd Floor
 Main Conference Room

Attendees:

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

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

- Requirement Risks (83)
- Construction Risks (70)

2. Report on Remaining Requirement and Design Risks

- Requirement Risks

3. Active Risks

- Construction Risks (13, 15, 38, 50, 71, 103, 202, 204, 212, 214, 216, 220, E)

4. New Risks (Assessment and mitigation strategy)






- 224 - CTS AWSS/Ductbank Interface - AWSS system is old and requires replacement
- 225 - Ellis Street Utilities (unknown underground utilities)

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. 59
May 24, 2014
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
Clifford, Alex	CSP	415 243-0953	alex.clifford@sfmta.com	
Jeffrey Davis	FTA	415 744-2594	Jeffrey.s.davis@dot.gov	
John Funghi	SFMTA	415-701-4299	John.funghi@sfmta.com	
Albert Hoe	SFMTA	415-701-4289	Albert.hoe@sfmta.com	
Mark Latch	CSP	415-701-5294	Mark.latch@sfmta.com	
Brad Lebovitz	STV/PMOC	510-464-8052	Bradley.lebovitz@stvinc.com	
Richard Redmond	CSP	415-660-5407	Richard.redmond@sfmta.com	
Eric Stassevitch	CSP	415-701-4426	Eric.stassevitch@sfmta.com	
Beverly Ward	CSP	415-701-5291	Beverly.ward@sfmta.com	
Luis Zurinaga	SFCTA	415-716-6956	luis@sfcta.org	

Risk Mitigation Status	
Risk Reference: 13	
Risk	Mitigation Strategy
Damage / settlement 3x 5' to old brick sewer running parallel to tunnel alignment	Slip Line 3'x5' brick sewer before TBM reaches CTS.

Initial Assessment: 1, 1, 1

Risk Owner: A. Clifford

Current Assessment: Risk Rating 1 – Requirements Risk

Status Log:

September 2011:

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

May 2013:

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

October 2013:

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

December 2013:

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

January 2014:

1. The tunneling contractor has priced the proposed scope of work in the Green Street area.
2. Informal feedback has been received from SFPUC that they will not be paying the delta cost difference
3. Central Subway will advise SFPUC that spray mortaring is the best technical solution, but is an improvement to their aging assets. As such, if SFPUC will not agree to pay the additional delta costs Central Subway sees no option but to survey, increase monitoring of the assets, and make any repairs required following completion of tunneling.

June 2014:

1. Tunneling is complete
2. Sewer monitoring points are showing minimal settlement.
3. Propose to retire this risk following review of post construction sewer survey videos and acceptance from SFPUC.

Risk Mitigation Status
Risk Reference: 15

Risk	Mitigation Strategy
Major TBM machine failure	1. Closely monitor condition and maintenance of the machines.

Initial Assessment: 1, 2, 2
Current Assessment: Risk Rating 0 – Construction Risk

Risk Owner: A. Clifford

Status Log:
October 2011:

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

October 2013:

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

December 2013:

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

January 2014:

1. Both TBMs have experienced thrust ram failure in the last month
 - a. The Southbound TBM was stopped for approximately 2 weeks
 - b. The Northbound TBM was stopped for approximately 1 week
2. The tunneling contractor is assessing options to rectify the issue which can be implemented during the regular maintenance periods for the machines. Option 1) replace seals with a different seal 2) install an additional seal
3. A summary of the ongoing maintenance on the TBMs will be provided next meeting

February 2014:

1. Daily, weekly and monthly maintenance checklists are used to inspect structural steel, shield, main drive, main bearing, rotary coupling, gear, lock, screw conveyor, erector, thrust cylinders, segment feeder hydraulic power unit, belt conveyors, crane system and hoisting devices, water circuits, hydraulic circuits, grout injection, bentonite system, additive system, secondary ventilation, primary ventilation, gas warning system, hose drums, and cable drums.
2. Daily maintenance:
 - a. visual checks for cleanliness, wear or damage,
 - b. functional checks for noise, fluid levels, and leaks
3. Weekly maintenance:
 - a. Visual and functional checks

Risk Mitigation Status

Risk Reference: 15

Risk	Mitigation Strategy
Major TBM machine failure	1. Closely monitor condition and maintenance of the machines.

- b. Taking samples of fluids, checking torque of fastenings, confirming operation of elements
- 4. Monthly maintenance:
 - a. Oil Analysis of main drive, erector, hydraulic power unit
 - b. Check screw conveyor wall thickness
- 5. A status update of the replacement of failed thrust rams needs to be done.

March 2014

- 1. The contractor has replaced;
 - a. Northbound 11/16 thrust rams
 - b. Southbound 9/16 thrust rams
- 2. The remaining thrust rams are not expected to have issues

April 2014:

- 1. SB Thrust Ram 11 is yet to be replaced, thrust Ram 12 is leaking.
- 2. Both thrust RAMS will be replaced with repaired thrust rams this weekend.
- 3. SB average progress for last 15 mining days is 81'
- 4. See attached updated Thrust Ram status diagram

May 2014:

- 1. SB Tunnel is 94% complete. NB Tunnel is 89% complete.
- 2. Contractor has implemented a program of monitoring thrust rams and replacing as required.

June 2014:

- 1. Tunneling is complete
- 2. Recommend retirement of this risk
- 3. Risk retired by unanimous consent of Risk Assessment Committee 6/24/14.

Risk Mitigation Status**Risk Reference: 38**

Risk	Mitigation Strategy
Tiebacks in Stockton Street miss located (in path of walls and would have to be dug out within 20ft of surface level)'	<ol style="list-style-type: none"> 1. Contractor has been directed on the plans to dig out the tiebacks. 2. Include allowance for differing site conditions to contract. 3. Assume this work in the cost and schedule estimates.

Initial Assessment: 3, 1.5, 5**Current Assessment:** Risk Rating 3 – Construction Risk**Risk Owner:** R. Redmond/S. Tisell**Status Log:**

February 2012:

1. Advanced utility relocation contract (1251) confirmed location of tiebacks.
2. Tiebacks are shown in contract drawings.
3. Note on ES-001 directs contractor to remove tiebacks.
4. Allowance for differing site conditions has been included in the contract.

September 2012:

1. Update to be provided next meeting

October 2012:

1. Allowance for differing site conditions has not been included into the contract. PM/CM Design Manager to review bid items for inclusion into the contract documents.

November 2012 Meeting:

1. Confirm allowance for differing site conditions has been included as bid item in 1300 contract

May 2013:

1. Contractor has been instructed to remove the tiebacks as part of the contract 1300 scope of work.

May 2014:

1. Tutor has successfully over cored and cut thru obstructions at UMS to date with no issues.

June 2014:

1. TPC's subconsultant Becho over cored the piles /tiebacks. There are no issues. There are still a few more to do.

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.	<ol style="list-style-type: none"> 1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur. 2. Actively monitor progress towards schedule milestones. 3. Add constraints in CTS contract specification.

Initial Assessment: 3, 4, 11

Current Assessment: Risk Rating 3 – Construction Risk

Risk Owner: A. Clifford

Status Log:

September 24, 2009 Meeting:

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

February 2012:

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

March 2013:

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

April 2013:

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

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

May 2013:

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

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.	<ol style="list-style-type: none"> 1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur. 2. Actively monitor progress towards schedule milestones. 3. Add constraints in CTS contract specification.

June 2013:

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

Nov 2013:

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

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

** Includes PCC10 & COR8

December 2013:

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

Risk Mitigation Status	
Risk Reference: 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.	<ol style="list-style-type: none"> 1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur. 2. Actively monitor progress towards schedule milestones. 3. Add constraints in CTS contract specification.

January 2014:

1. No current impact at interface points.
2. The Tunnel Contractor's Recovery schedule 5 is still to be assessed against the Station contractors schedule to determine if a conflict between the two contracts is expected.
3. The recovery schedule will not be approved unless the Program believes the dates to be realistic.

February 2014:

1. CN 1252 Recovery schedule 5 (submitted 1/21/14) currently under assessment
2. The monitoring of the two contracts existing float in the schedules is ongoing.

March 2014

1. Approval of CN1252 recovery schedule is pending
2. Milestone 1 & 2 remains 45 days late and 30 days late on substantial completion

April 2014:

1. See next page

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.

April 2014

1. Recovery schedule discussed with BIH following the last partnering meeting
2. BIH have submitted Recovery Schedule 5b (included in the March 2014 Update)
3. The milestone dates for Recovery Schedule 5b are summarized below

Interface Points	CN1300 Requirement	CN1252 Finish Feb 14	Variance	Recovery 5b Finish MAR14 Recovery 5b	Variance	
YBM Headwalls Complete	31-Jul-13	20-Sep-13	-51.00	20-Sep-13	-51	N/A
UMS Headwalls Complete	14-Sep-13	22-Nov-13	-69.00	22-Nov-13	-69	N/A
CTS Tunnel Interface Complete 1252 MS 1 - Complete Cross Passages 1&2 (CTS)	9-Sep-14	25-Jul-14	46.00	14-Jul-14	57	
UMS Tunnel Interface Complete 1252 MS2 - Complete Cross Passages 3&4 (UMS)	26-Feb-15	17-Sep-14	162.00	24-Jun-14	247	CP3
YBM Tunnel Interface Complete 1252 Tunnel Substantial Completion (12Apr15)	26-Feb-15	16-Oct-14	133.00	17-Nov-14	101	CP4
Tunnel Portal Completion	24-Sep-15	27-May-15	-45.00	10-Apr-15	2	
		27-May-15	120.00	10-Apr-15	167	

May 2014:

1. January or February are the critical dates to look at.

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.	<ol style="list-style-type: none"> 1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur. 2. Actively monitor progress towards schedule milestones. 3. Add constraints in CTS contract specification.

June 2014:

1. Schedule slippage of 1 day on Southbound Tunnel excavation and Hole Through activities on May 2014 Update Schedule.
2. Critical Path on Final Invert and Arch for Cross Passage 3 & 4, Portal Structure, and Closeout.
3. May 2014 Update Schedule Substantial Completion shows -1 day of Total Float and Final Completion shows 0 days Total Float.

April 2014 Update Schedule

Interface Points	CN1300 Requirement	CN 1252 April Finish	Variance	
CTS Tunnel Interface Complete 1252 MS 2 - Substantially Complete Cross Passages 1&2 (CTS)	9-Sep-14	9-Aug-14	31	CD
UMS Tunnel Interface Complete 1252 MS1 - Substantially Complete Cross Passages 3&4 (UMS)	26-Feb-15	16-Aug-14	197	CD
YBM Tunnel Interface Complete	26-Feb-15	10-Nov-14	108	CD
Tunnel Portal Completion 1252 Tunnel Final Completion	24-Sep-15	8-May-15	139	CD

Risk Mitigation Status

Risk Reference: 71

Risk	Mitigation Strategy
Power supply interruptions to TBM's (no dual power feed currently planned)	Chance of power outage is miniscule.

Initial Assessment: 1, 1, 1**Current Assessment:** Risk Rating 0 – Construction Risk**Risk Owner:** A. Clifford**Status Log:**

November 2012 Meeting:

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

September 2013 Meeting:

1. Power supplied to the TBM does not seem adequate. If power is loss, PG&E has the ability restore power quickly, but replacing power takes a couple of months.

June 2014:

1. Tunneling is complete
2. Recommend retirement of this risk
3. Risk retired by unanimous consent of the Risk Assessment Committee 6/24/14.

Risk Mitigation Status
Risk Reference: 83

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

Initial Assessment: 1, 1.5, 2

Current Assessment: Risk Rating 8 – Requirement Risk

Risk Owner: L. Ames

Status Log:

April 2012 Meeting:

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

May 2012 Meeting:

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

June 2012 Meeting:

1. No status update.

September 2012 Meeting:

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

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

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

October 2012 Meeting:

1. Risk increased from (1,2, 2) to risk rating (4,4,16)
2. There is a possibility that the cost of the LRV significantly exceed the budget

Risk Mitigation Status
Risk Reference: 83

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

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

March 2013:

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

April 2013:

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

May 2013:

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

June 2013:

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

July 2013

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

September 2013

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

Risk Mitigation Status	
Risk Reference: 83	
Risk	Mitigation Strategy
Cost of vehicles are more than estimated	1. Time the procurement of the vehicles to be part of the procurement of the SFMTA LRV procurement contract.

October 2013:

1. RFQ released March 29, 2013 identified three qualified bidders to participate in procurement for Light Rail Vehicles (LRV4).
Statement of Qualifications received April 22nd, 2013.
Four car builders, AnsaldoBreda, CAF USA Inc, Kawasaki Rail Car Inc, Siemens Industry Inc, are requested to submit proposals in response to RFP.
2. SFMTA Board approved the issuance of the RFP September 3, 2013 to procure up to 260 LRV4s.
 - a. Base order will be 175 – 24 expansion +151 replacement LRV4s.
 - b. Option for 85
3. The Notice of Advertisement, the RFP and specifications are now on the CCSF Office of Contracts web site:
<http://mission.sfgov.org/OCABidPublication/BidDetail.aspx?K=7262>
The scope covers design, manufacture, test, parts, special tools, manuals and training.
4. Pre-bid Conference: 10/29/2013 10am at SFMTA Muni Metro East Facility 601 25th St., 2nd Fl., Rm. 235
Bids Due: 2 pm 12/10/2013
5. Project Management Plan will be drafted and be in place prior to NTP.
6. Challenges: Extended procurement includes time gap between delivery of first 24 cars and 151 cars that requires FTA approval; funding and financing sources not clear

November 2013:

1. Await bid opening 12/10/13

December 2013:

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

January 2014:

1. Still awaiting bid opening, 18th February

February 2014:

1. Opening of bids is anticipated to be the third week in February.

March 2014:

1. Bids opened on February 25, 2014. Currently under review by the LRV PM.

Risk Mitigation Status

Risk Reference: 83

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

April 2014:

1. No new information, bids are still being reviewed.

May 2014:

1. LRV Procurement continues to move forward. A recommendation was made by the committee on the highest scoring bidder.

June 2014:

1. No new information has been decimated by SFMTA Operations on the status of the selected bidder.

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.

October 2013:

1. Building and demolition permits have been issued
2. Outstanding permits and needed dates are being tracked weekly
3. No change to the status of this risk

June 2014:

1. General Excavation Permits were obtained for the 1300 Contract and have been issued to Tutor Perini.
2. Other remaining permits are being tracked weekly.
3. No change to the status of this risk.

Risk Mitigation Status
Risk Reference: 202

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

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

Risk Owner: R. Redmond

Status Log:

December 2012 Meeting:

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

January 2013 Meeting:

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

February 2013 Meeting:

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

March 2013:

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

September 2013:

1. This is a contractor risk, no effect on program.
2. MARAD issued finding of non-compliance to Robbins

October 2013:

1. MARAD are evaluating possible penalties for Robbins
2. Letter sent to BIH September 17, 2013 encouraging future shipments to be transported via United States flagged vessels

June 2014:

1. MARAD has elected to not impose a fine on BIH's subconsultant Robbins.
2. The compliance issue has not come up in CN1300.

Risk Mitigation Status
Risk Reference: 204

Risk	Mitigation Strategy
Relocation of AT&T Vault and other utilities delays Work south of Bryant	<ol style="list-style-type: none"> 1. Continue negotiations/ coordination with utility owners. 2. Contract 1300 is required to coordinate with utility companies for relocations 3. SWAT team established to address utilities south of Bryant Street 4. Initiate utility coordination meetings 5. Proactively schedule AT&T resources

Initial Assessment: 2, 2, 4
Current Assessment: Risk Rating 3 – Construction Risk

Risk Owner: R. Redmond/M. Acosta

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.

Risk Mitigation Status**Risk Reference: 204**

Risk	Mitigation Strategy
Relocation of AT&T Vault and other utilities delays Work south of Bryant	<ol style="list-style-type: none"> 1. Continue negotiations/ coordination with utility owners. 2. Contract 1300 is required to coordinate with utility companies for relocations 3. SWAT team established to address utilities south of Bryant Street 4. Initiate utility coordination meetings 5. Proactively schedule AT&T resources

3. Mitigation strategy added that the 1300 contractor is required to coordinate with private utility companies.
4. A SWAT team has been established comprising DP-3 and the Design Oversight manager who are meeting weekly to address utilities south of Bryant. DP3 are preparing Notice of Intent letters for utilities to relocate.

May 2013:

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

July 2013:

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

October 2013:

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

November 2013:

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

December 2013:

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

January 2014:

1. Potholing to confirm locations of utilities to commence the week of January 20th
2. AT&T are to be put on notice of the expected installation and cut over dates.

Risk Mitigation Status
Risk Reference: 204

Risk	Mitigation Strategy
Relocation of AT&T Vault and other utilities delays Work south of Bryant	<ol style="list-style-type: none"> 1. Continue negotiations/ coordination with utility owners. 2. Contract 1300 is required to coordinate with utility companies for relocations 3. SWAT team established to address utilities south of Bryant Street 4. Initiate utility coordination meetings 5. Proactively schedule AT&T resources

3. Proactively requesting and scheduling AT&T resources added to mitigation strategy.

February 2014:

1. Potholing of utilities has commenced.
2. At the last executive partnering meeting Tutor Perini were tasked with commencing utility coordination meetings.
3. 1/31/14 Letter (CN 1300 Misc. Letter No. 0023) a letter was sent to AT&T notifying them of key dates from Tutor Perini's baseline schedule and requesting AT&T schedule it's resources to meet Tutor Perini's dates.

March 2014:

1. Potholing of utilities is 99% complete. Potholing work at 4th and Townsend remains.
2. Current AT&T ductbank relocation design is constructible but will include relocation of a 20' segment of 12" waterline and shifting of existing AT&T cables.
3. Tutor Perini is projected to start installation of AT&T ductbank by early April 2014 pending completion of soil profile work.

April 2014:

1. Potholing of utilities is 100% complete.
2. There seem to be enough space for a new AT&T manhole and a 36" sewer force main without having to relocate a 20' segment of 12" waterline. Shifting of existing AT&T cables is still necessary at 4th/Bryant; the project team including AT&T Engineer have finalized the workplan to safely accomplish this task.
3. Tutor Perini's subcontractor, Abbett Electric started installation of AT&T ductbank. Abbett decided to temporarily stockpile excavated soils to its yard to be re-used as backfill. Surplus materials to be off hauled pending completion of soil profiling.
4. Risk probability has been reduced to a 1.

May 2014:

1. Installation of AT&T ductbank work continues. Surplus materials to be off hauled pending completion of soil profiling.
2. Expected completion of ductbank and vault installation is July 2014.

June 2014:

1. Installation of AT&T ductbank work continues. Surplus materials to be off hauled pending completion of soil profiling.
2. Expected completion of ductbank and vault installation is September 2014.

Risk Mitigation Status

Risk Reference: 212

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

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

February 2013:

1. Identified as a potential risk

March 2013:

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

April 2013:

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

October 2013:

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

Risk Mitigation Status**Risk Reference: 212**

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

November 2013:

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

December 2013:

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

April 2014:

1. Meeting was held yesterday with Tutor , BECHO, SFMTA and CSDG to review and respond to clearance questions
2. Follow up meeting will be scheduled between all parties
3. Final review comments of Contractor’s work plan is pending

May 2014:

1. Months of collaboration, calculation checks and verification between SFMTA, Tutor and CSDG has led to 3 batter piles installed with no issues.

June 2014:

1. To date 16 of 197 battered piles have been installed successfully.

Risk Mitigation Status
Risk Reference: 214

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

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

Risk Owner: A. Clifford

Status Log:

February 2013:

1. Identified as a risk

March 2013:

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

April 2013:

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

May 2013:

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

July 2013:

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

Risk Mitigation Status**Risk Reference: 214**

Risk		Mitigation Strategy
Micro Piles at UMS interfere with Tube-a-manchette installation (60' deep micropiles)	√	1. Provide micro-pile as-built information to contractor 2. Ensure tube-a-manchettes are realigned to be installed clear of micro-piles

September 2013:

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

December 2013:

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

June 2014:

1. 5 additional joker holes, 623 extra feet of drilling and pre-condition grouting, lowering of pipes, adjustment to the working platform
2. Contractor claiming \$380k, SFMTA current estimate in the order of \$210k
3. Discuss updating risk rating.
4. The Program's portion of the cost will be under the estimated \$210K.

Risk Mitigation Status
Risk Reference: 216

Risk	Mitigation Strategy
Olivet building potential construction impact	<ol style="list-style-type: none"> 1. 1. Reach out to building owner and keep him abreast of CS construction activities.

Initial Assessment: 2 (1, 1, 2)
Current Assessment: Risk Rating 2 - Construction Risk

Risk Owner: M. Vilcheck

Status Log:

May 2013:

1. Maintain communication with DPT to make sure that they aren't approving work which will affect our project.

July 2013:

1. A meeting was held with the owner and engineering consultants of the 250 Fourth Street Development.
 - a. Overview and extent of YBM station structure and construction staging was explained.
 - b. Demolition of existing Olivet University building expected early 2014
 - c. 250 Fourth Development advised that Clementina (via 5th Street) is likely to be the only access available to their site.

October 2013:

1. Discuss increasing cost impact to rating (2) \$250k to \$1m due to potential impact on building protection and compensation grouting program
2. Staff are working with the City Attorney's office, Planning, and Department of Building Inspection to confirm the Cities rights in this situation
3. Permitting status of development to be confirmed
4. TPC to submit street space permits as soon as possible
5. Communication protocol with developer to be established

November 2013:

1. 10/23/13 conference call held with developer.
 - a. The developer is preparing a pile foundation design to minimize impact on Station Structure
 - b. This will be forward to Central Subway to allow its designers to assess the impact of the design on the station
 - c. Central Subways consultant time will be reimbursed by the developer (agreement currently with developer for review)
 - d. Tutor Perini have established Phase 1 Traffic Management which occupies part of Clementina Street and the West side of 4th street

January 2014:

1. Central Subway are still waiting for the Owner of the development to return the signed cost reimbursement agreement to reimburse Central Subway staff and consultant time spent reviewing any 250 Fourth Street Development information

Risk Mitigation Status

Risk Reference: 216

Risk	Mitigation Strategy
Olivet building potential construction impact	1. 1. Reach out to building owner and keep him abreast of CS construction activities.

June 2014:

1. Demolition Permit issued 4/21/14
2. No change to this risk rating
3. Compensation grouting bid item has been eliminated
4. Risk owner has transferred from A. Clifford to M. Vilcheck

Risk Mitigation Status
Risk Reference: 220

Risk	Mitigation Strategy
Compensation grouting at the Pagoda site is delayed by resolution of the scope and role of the designer, and contractor.	<ol style="list-style-type: none"> 1. Direct the contractor to perform the work under the contract 2. Document (in real time – daily basis if necessary) if the contractor refuses to diligently pursue the work 3. Notify contractors bonding company if the contractor refuses to carry out the work

Initial Assessment: 5 (5,1,1)
Current Assessment: 5

Risk Owner: A. Hoe

Status Log:

November 2013:

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

December 2013:

1. Options to find qualified person are being explored.

January 2014:

1. Risk mitigation strategy added, initial risk assessment agreed by the Risk Assessment Committee 1/14/14
2. A letter will be issued to the contractor instructing them to perform the contract work, and that design support will be provided on an as needed basis.

February 2014:

1. A letter was issued to the contractor (letter 271, dated January 14, 2014), the contractor responded with a letter on January 20, 2014 to the effect that it accepts no liability for SFMTAs direction of the compensation grouting work.
2. Central Subway will respond to this latest letter refuting the Contractor’s position.

March 2014:

1. Compensation grouting work is already in process and Contractor and the design team have been in coordination for pre-condition grout activities. The designer has been providing approval on the compensation grout pressure and volume based on recommendation by the contractor.

April 2014:

1. Compensation grouting at North Beach is complete with the initial work and we are waiting for the TBM to arrive.

June 2014:

1. Field direction protocol was resolved and agreed between SFMTA/PB and BIH.
2. No compensation grouting was necessary during tunneling into the retrieval shaft.
3. This risk has been mitigated and is a candidate for retirement at the next Risk meeting.

Risk Mitigation Status**Risk Reference: 224**

Risk	Mitigation Strategy
CTS AWSS / Ductbank Interface - AWSS system is old and requires replacement	<ol style="list-style-type: none">1. Look at alternatives to address2. Turn off system while CSP work is being done, and then turn on later (find a bypass).

Initial Assessment: 5 (1, 2, 2)**Current Assessment: 8****Risk Owner: R. Redmond / M. Kobler****Status Log:**

Risk Mitigation Status

Risk Reference: 225

Risk	Mitigation Strategy
Ellis Street Utilities (unknown underground utilities)	1.

Initial Assessment: 5 (2, 2, 2)

Current Assessment: 10

Risk Owner: R. Redmond

Status Log:

Risk Mitigation Status**Risk Reference: E**

Risk	Mitigation Strategy
Underground obstructions for tunnel and retrieval shaft	<ol style="list-style-type: none"> 1. Lower tunnel alignment 5' below the lowest expected tieback. 2. Cover costs of removal of unforeseen obstructions in unallocated contingency.

Initial Assessment: 2, 3, 5**Current Assessment:** Risk Rating 0 – Construction Risk**Risk Owner:** A. Clifford**Status Log:**

February 2012:

1. Lowered tunnel alignment 5' below the lowest expected tieback.
2. Mitigation strategy #2 "Include obstruction clause and allowance in contract documents" was not included in the Tunnel contract documents.
3. Cost of removing unforeseen obstructions will be covered by unallocated contingency.
4. Recommend to reduce this risk rating.

May 2014:

1. SB Tunnel is 94% complete. NB Tunnel is 89% complete.
2. Retrieval Shaft construction is complete
3. Recommend reducing this risk rating

June 2014:

1. Tunneling is complete
2. Recommend retiring this risk.
3. Risk retired by unanimous consent of the Risk Assessment Committee 6/24/14

Risk Register

A	H	I	J	K	L	M	N	O	P	Q	R	S		
PROJECT RISK REGISTER Central Subway Project San Francisco REV : 33 DATE ISSUED: 06/24/14		Risk Profile					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend	PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) 2 PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
		Likelihood Score	Severity Score					Probability	Cost Impact	Schedule Impact				
		5	1	2	3	4	5	< 10%	◊ 10% - 50%	> 50%	◊ 75% - 90%	> 90%		◊ 3 Low
		4	1	2	3	4	5	< \$250K	◊ \$250K - \$1M	◊ \$1M - \$3M	◊ \$3M - \$10M	> \$10M		3 - 9 Medium
		3	1	2	3	4	5	< 1 Month	◊ 1 - 3 Months	◊ 3 - 6 Months	◊ 6 - 12 Months	> 12 Months		> 10 High
2	1	2	3	4	5									
1	1	2	3	4	5									
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date		
1	Additional night shift work required at portal launch box due to bus storage facility relocation delay	Work with TJPA to coordinate construction schedules and GGB to coordinate Traffic Routing.	C	2	1	-	1	35%	1	2	No longer considered a risk. GGB not scheduled to be utilizing site until 2014	3/20/15 TUN1160		
8	Flowing groundwater in vicinity of UMS Station could make adequate annulus grouting difficult during tunneling	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		
13	Damage / settlement 3x5' 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		
115	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.	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		
52 Track Embedded														
55 Track: Special														
58 MOS Station														
21	Incomplete cutoff of groundwater at MOS	1. Require additional grouting to limit leakage to permissible level. 2. Include probable grouting work in cost & schedule estimates.	C	1	1	-	1	10%	1	1	Mitigation measure to be made part of the contract documents	4/28/15 MOS1150		
22	Public complaints result in unanticipated restrictions on construction at UMS	1. Public outreach. 2. Maintain regular and open communications so Public knows construction plans and progress at all times. 3. Require Contractor to assist Public Outreach efforts, maintain access to businesses and assist with deliveries and pick-ups, control noise and vibration, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, ADA ramps and minimum sidewalk widths. 4. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. 5. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. 6. Quickly process and resolve damage and accident claims from the Public. 7. Assumed this work in cost & schedule estimates.	C	1	1	-	1	10%	1	1	Implementation of mitigation measures part of Communication/Outreach plan and certain aspects to be included in the contract documents.	9/16/16 MOS1230		

Risk Register

1	PROJECT RISK REGISTER					Risk Profile					Legend								
2	Central Subway Project San Francisco					Likelihood Score					Probability								
3	REV : 33					Severity Score					Cost Impact								
4	DATE ISSUED: 06/24/14					Schedule Impact					Status								
						1	2	3	4	5	<10%	< 10% - 50%	> 50%	< 75% - 90%	> 90%	<3 Low			
						5					< \$250K	< \$250K - \$1M	< \$1M - \$3M	< \$3M - \$10M	> \$10M	3 - 9 Medium			
						4	MEDIUM												
						3					LOW								
						2													
						1					< 1 Month	< 1 - 3 Months	< 3 - 6 Months	< 6 - 12 Months	> 12 Months	>10 High			

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

Risk Register

A	H	I	J	K	L	M	N	O	P	Q	R	S		
PROJECT RISK REGISTER Central Subway Project San Francisco REV : 33 DATE ISSUED: 06/24/14		Risk Profile					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend	PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) 2 PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
		Likelihood Score	Severity Score					Probability	Cost Impact	Schedule Impact				
		5	1	2	3	4	5	< 10%	< 10% - 50%	> 50%	< 75% - 90%	> 90%		< 3 Low
		4	2	3	4	5	3	< \$250K	< \$250K - \$1M	< \$1M - \$3M	< \$3M - \$10M	> \$10M		3 - 9 Medium
		3	1	2	3	4	5	< 1 Month	< 1 - 3 Months	< 3 - 6 Months	< 6 - 12 Months	> 12 Months		> 10 High
2	1	2	3	4	5									
1	1	2	3	4	5									
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date		
J	Macy's entrance conflict with new piles	1. Show known obstructions shown on as-built drawings on contract drawings. 2. Make as-built drawings available to contractor as reference drawings. 3. Have contractor field verify obstruction shown on as-built drawings and contract drawings	C	3	1	1	1	50%	3	6	Known obstructions are shown on the ES drawings. Allowance for differing site conditions added to UMS Station contract.	1/23/14 UMS1060		
Q	As-built drawings and UMS construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction north entrance.	1. Investigate if electronic files of design can be given to the contractor. 2. Clearly define shop drawing criteria in the technical specifications. 3. Make as-built drawings available as reference drawings to the contractor	C	3	1	1	1	50%	3	6	Specifications require contractor to survey USG in order to develop shop drawings for structural steel.	3/24/12 UMS1280		
161 CTS Station														
46	Public complaints result in unanticipated restrictions on construction at CTS. (schedule and estimate for underground work assumes 6 day work week and 2 shifts per day)	1. Public outreach. 2. Maintain regular and open communications so Public knows construction plans and progress at all times. 3. Require Contractor to assist Public Outreach efforts, maintain access to businesses and assist with deliveries and pick-ups, control noise and vibration, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, ADA ramps and minimum sidewalk widths. 4. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 5. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. 6. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. 7. Quickly process and resolve damage and accident claims from the Public. 8. Include this work in cost & schedule estimates.	C	2	5	1	3	35%	6	12	Implementation of mitigation measures part of Communication/Outreach plan and certain aspects to be included in the contract documents.	10/9/17 CTS1500		
48	Incomplete drawdown of groundwater. (inside of box and inside of caverns)	1. Require additional grouting to limit leakage to permissible level. 2. Include probable grouting work in cost & schedule estimates. 3. Include allowance for dewatering within cavern during construction.	C	2	2	1	2	35%	3	6	Mitigation measures have been included in contract documents	5/1/16 CTS1140		
50	CTS station contractor delayed by tunnel contractor since station platform construction cannot start until tunnels have been finished.	1. Include provisions in CTS contract identifying the potential waiting period for tunnel contractor. 2. Actively monitor progress towards schedule milestones	C	2	1	2	2	35%	3	6	Constraints on CTS contractor added to specification "Work Sequence and Constraints"	12/16/13 TUN1122		
52	Unacceptable settlement and impact on major utilities at CTS. (OLD SEWERS AND OTHERS WITHIN 20FT SPACE BETWEEN TOP OF CAVERN AND STREET LEVEL)	1. Evaluate effect of potential settlement on utilities. 2. Slip-line sewer by TBM contractor. 3. Reinforce other utilities as needed, monitored during construction, and repair / replace, as needed. 4. Have contingency repair/restoration plan. 5. Utility contact information and procedure will be on plans. 6. Develop an allowance for utility repair. 7. Include probable cost in estimate. 8. Need to identify the new SFPUC contact	C	3	3	1	2	50%	6	12	Project configuration change, lowered station 25 ft. reducing the probability of this risk. Risk rating lowered.	4/22/16 N-CTS9730		
F	Underground obstructions stations (CTS)	1. Provide adequate allowance for differing site conditions to address unknown underground obstructions. 2. Make as-built drawings of structures adjacent to the work available to the contractor as reference drawings	C	4	2	2	2	80%	8	16	Mitigation measures have been implemented.	10/9/17 CTS1500		
U	Proximity at junction of head house boundary wall and school yard may result in relocation of school yard during wall construction		C	1	1	1	1	10%	1	2	Project configuration changed to eliminate encroachment. Risk converted to Construction risk from Risk 55.	8/16/13 CTS1010		

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Central Subway Project San Francisco	5	1	2	3	4	5	Probability	< 10%	10% - 50%	> 50%	< 75% - 90%	> 90%	3	Low
REV : 33	4	2	3	4	5	3	Cost Impact	< \$250K	\$250K - \$1M	\$1M - \$3M	\$3M - \$10M	> \$10M	3 - 9	Medium
DATE ISSUED: 06/24/14	1	1	2	3	4	5	Schedule Impact	< 1 Month	1 - 3 Months	3 - 6 Months	6 - 12 Months	> 12 Months	> 10	High
Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date		
216 General														
218 Demolition, Clearing, Earthwork														
220 Site Utilities, Utility relocations														
230 Hazmat, Contaminated Material														
234 Environmental Mitigations														
65	Archeological/Cultural findings during construction increases schedule and/or cost. (Portal) AROUND 10%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	1	2	1	2	10%	2	3	Additional boring taken in vicinity of portal indicated no evidence of Archeological/Cultural resources.	10/24/12 TUN1080		
66	Archeological/Cultural findings during construction increases schedule and/or cost.(Moscone) AROUND 10%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	3	1	1	1	50%	3	6	Mitigated - Current exposure only to those amount above those currently identified	4/28/15 TUN1150		
67	Archeological/Cultural findings during construction increases schedule and/or cost. (UMS)...LESS THAN 1%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	3	1	2	2	50%	5	9	Mitigation measures to be implemented in contract documents	8/12/15 UMS1320		
68	Archeological/Cultural findings during construction increases schedule and/or cost. (CHINA TOWN)...AROUND 10%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	3	1	2	2	50%	5	9	Mitigation measures to be implemented in contract documents	10/9/17 CTS1500		
240 Site Structure incl. sound walls														
242 Auto/bus/van access ways, roads														
70	Change in traffic control requirements after bid	1. Provide unit bid items to reimburse contractor for traffic management costs outside their control. 2. Include allowance in construction contracts for PCOs.	C	3	4	1	3	50%	8	15	Mitigation measures implemented.	5/22/17 STS1020		
247 Train Control and Signals														
72	Interface new Signaling and Train Control system to existing at Fourth and King	Connect new system in parallel with existing system until the new system has been tested and safety certified for operation.	C	2	2	3	3	35%	5	10	Awaiting approval of contract plans by Muni Operations.	3/4/16 STS1045		
PR78	Delays or complication by other SFMTA projects delays CSP: radio, fare collection, C3/TMC	1. Monitor other projects' developments. 2. Develop contingency plans as needed to avoid 1256 delay of revenue service.	C	2	1	1	1	35%	2	4		7/27/12 FDS 1940		
258 Traffic signals & Crossing Protn.														
262 Fare Collections Systems														
265 Purchase or lease of Real Estate														
79	Delay in obtaining tunnel easements (3 #) (goes to condemnation) - Costs of ROW may cost more than expected	1. Engage Owners in negotiations as soon as possible. 2. PM/CM to provide real estate specialists to facilitate.	R	1	1	-	1	10%	1	1	Right of possession obtained on all three parcels. Cost agreement reached with 1455 Stockton & 801 Market.	9/7/2012		
273 Reloc. of Household or Business														
275 Vehicles														
83	Cost of vehicles are more than estimated	Time the procurement of the vehicles to be part of the procurement of the existing Breda LRVs.	R	3	4	1	3	50%	8	15	CSP vehicles to be included in overall SFMTA vehicle procurement contract.	11/17/17 STS 1500		
278 Preliminary Engineering														
287														

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Central Subway Project San Francisco				Likelihood Score	1	2	3	4	5	Probability	< 10%	10% - 50%	> 50%	< 75% - 90%	> 90%	< 3	2
REV : 33				5	4	3	2	1	4	Cost Impact	< \$250K	> \$250K - \$1M	> \$1M - \$3M	> \$3M - \$10M	> \$10M	3 - 9	3
DATE ISSUED: 06/24/14				4	3	2	1	4	4	Schedule Impact	< 1 Month	> 1 - 3 Months	> 3 - 6 Months	> 6 - 12 Months	> 12 Months	> 10	High
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95	Contractor default during construction impacts schedule. (key sub-contractor)	Assist Bonding company in transition and to maintain schedule.	C	1	2	2	2	10%	2	4		11/17/17 STS 1500					
99	Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule.	1. Executive partnering and alternate dispute resolution. 2. Provide incentives in construction contracts in addition to penalties	C	2	4	1	3	35%	5	10	Mitigation measures being implemented	7/27/12 FDS 1940					
100	Procurement of long lead items delays work. (fans, rails and special track work, TPSS, Escalators, elevators, TBM)	1. Include schedule milestones for procurement of and substantial payment for stored long lead items in contract to encourage early procurement. 2. Monitor procurement of critical items.	C	1	2	2	2	10%	2	4	Not considered a project risk.	11/17/17 STS 1500					
102	Late finish of early contract delays later contracts and extends PM / CM and incurs additional costs	1. Actively manage contracts and include incentive provisions for early completion in critical contracts. 2. Add buffer float to critical path to actively manage schedule contingency	C	2	1	2	2	35%	3	6	LONP 1 & 2 initiated to reduce this risk. See Risk 86. The mitigation of risks associated with early contracts will address this risk. Risk rating reduced due to mitigation measures implemented	12/30/20 MS 0010					
PR37	Temporary construction power and ability to provide permanent power feed - PGE ability to provide power requirements to the program together with their other commitment	1. Identify temporary power requirements for station construction. 2. Investigate the timing of the permanent feed.	C	2	1	2	2	35%	3	6	Cost for First and Redundant electrical services need to be included in Cost Estimate.	5/3/18 STS1080					
306 Insurance, permits etc.																	
103	Difficulty in getting required permits.	1. Coordinate with permit officials and request permits as early as possible. 2. Obtain assistance obtaining permits from PM/CM & FD Consultants.	C	1	2	1	2	10%	2	3		12/18/12 FDS 1275					
104	CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	1. Obtain Grade Crossing approvals at final CPUC inspection at the completion of construction. 2. Coordinate closely with CPUC until approval is received.	R	2	3	2	3	35%	5	10	CPUC Resolution (TED-253) for extension of our at grade crossing was granted.	7/27/12 FDS 1940					
105	Electrical service delays startup and testing.	1. Submit applications for new service as early as possible. 2. Coordinate closely with PG&E to ensure timely delivery of electrical service.	C	1	2	1	2	10%	2	3	Applications for new service have been submitted to PG&E.	11/17/17 STS 1500					
106	Risk of Labor dispute delaying the work.	Enforce designated gate for employees of the contract in dispute so that the rest of the work is not delayed.	C	2	1	1	1	35%	2	4		11/17/17 STS 1500					
312 Unallocated Contingency																	
111	Major Earthquake stops work	Include Force Majeure clause in contracts.	C	1	5	3	4	10%	4	8	Force Majeure clause included in contracts.	12/30/20 MS 0010					
112	Major safety event halts work	1. Require contractor Safety plan to address this risk. 2. CM inspections to ensure that safety plan and procedures are implemented.	C	1	5	3	4	10%	4	8	Health and Safety provisions included in contracts. CS Program provides full-time Safety Manager.	12/30/20 MS 0010					
320																	
196	The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned.	1. Continue to negotiate with building owners 2. Required Notices and Appraisals to be completed 3. Commence condemnation process with City Attorneys	C	1	1	1	1	10%	4	2							

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1	PROJECT RISK REGISTER					Risk Profile					Legend				
2	Central Subway Project San Francisco					Likelihood Score					Probability				
3	REV : 33					Severity Score					Cost Impact				
4	DATE ISSUED: 06/24/14					Schedule Impact					Status				
						1					2				
						2					3				
						3					4				
						4					5				
						5					6				

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202	Cargo Preference (Ship America) must solicit U.S.-flag carriers. Civilian Agencies Cargo = at least 50% (governed by Cargo Preference Act of 1954)	1. Require Ship America compliance agreement first tier contractors and subcontractors	C	1	1	1	1	10%	1	2		
204	AT&T Vault - New Sewer Work south of Bryant	1. Continue negotiations/coordination with utility owners. 2. Schedule analysis to confirm coordination	C	1	2	4	3	10%	3	6		
205	Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	1. CMod Task Force - 5 Areas of Improvement 2. Implement 3. Delegation of Authority	C	3	1	1	1	50%	3	6		
208	Additional cost if we change direction going to the Pagoda	1. Develop Scope with designers currently under contract 2. Agree to alignment and details of new shaft location 3. Issue PCC to Contractor 4. Initial site works and borings if necessary 5. Obtain appropriate permits	C	3	3	2	3	50%	8	15		
210	Mission Bay Loop Grant – Needs to be built to allow for train turnarounds (June 2013)	1. Identify timeline for grant funding	C	4	1	1	1	80%	4	8		
211	Differing site conditions encountered during ground freezing of Cross Passage 5 results in increased costs.	1. Contractor has submitted a 'no cost, no schedule' PCC for ground freezing 2. Need early review of work plan, and identification of entity that will perform the work	C	1	2	2	2	10%	2	4		
212	UMS Inclined piles – 8" clearance between piles and tunnel results in damage or safety issues within the tunnel	1. Establish 1252 and 1300 contract requirements to construct within acceptable tolerances 2. Workshop to be held with BIH to discuss hold points during construction.	C	1	5	3	4	10%	4	8		
214	Micro Piles at UMS interfere with Tube-a-manchette installation (60' deep micropiles)	1. Provide micro-pile as-built information to contractor 2. Realign tube-a-manchettes clear of micro-piles	C	3	1	1	1	50%	3	6		
215	DPW Excavation permit reviews delay contract works	1. Obtain a blanket excavation permits from DPW covering the area of work for 1253, 1254, 1255, 1256	C	2	1	1	1	35%	2	4		
216	Olivet building potential construction impact	1. Reach out to building owner and keep him abreast of CS construction activities.	C	1	1	2	2	10%	2	3		
217	Delays or complications construction by others – SF Dept. Of Technology, 3rd party utilities	1. Early engagement and coordination for agreements and plan development to avoid construction delays.	C	2	1	1	1	35%	2	4	DTIS MOU has been signed.	
218	Air replenishment system no longer required – Agency bears unnecessary cost of installation and maintenance of an air replenishment system that is no longer required.	1. Contractor to be notified to place procurement on hold 2. Central Subway to seek approval from SFFD to delete the system from the contract	C	1	1	1	1	10%	1	2		
219	Clearance between YBM slurry wall and constructed tunnels results in a strike causing safety or structural concerns	1. Program Safety Manager to prepare a comprehensive safety plan to address this issue 2. Program to prepare a written position/response to concerns raised regarding this issue	C	2	2	1	2	35%	3	6		
220	Compensation grouting at the Pagoda site is delayed by resolution of the scope and role of the designer, and contractor	1. Direct the contractor to perform the work under the contract 2. Document (in real time – daily basis if necessary) if the contractor refuses to diligently pursue the work 3. Notify contractors bonding company if the contractor refuses to carry out the work	C	5	1	1	1	90%	5	10		
222	ARGUS Monitoring Software - Sharing Instrumentation for CN1252 and CN1300	1. Outline responsibilities for each contractor (1252 & 1300)	C	3	3	1	2	50%	6	12		

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348	223	Contamination during dewatering (CTS)	1. Review contract requirements .	C	2	3	1	2	35%	4	8					
349	224	CTS AWSS/Ductbank Interface - AWSS system is old and requires replacement	1. Look at alternatives to address, 2. Turn off system while CSP work is being done, and then turn on later (find a bypass).	C	5	1	2	2	90%	8	15					
350	225	Ellis Street Utilities (unknown underground utilities)		C	5	2	2	2	90%	10	20					