

## Risk Mitigation Meeting Minutes #58

DATE: May 16, 2014

MEETING DATE: **May 13, 2014**

LOCATION: 821 Howard Street, 2<sup>nd</sup> Floor – Main Conference Room

TIME: 2:00pm

ATTENDEES: John Funghi, Albert Hoe, Eric Stassevitch, Alex Clifford, Mark Latch  
Beverly Ward, Bradley Lebovitz

COPIES TO: Attendees:, Roger Nguyen, Richard Redmond, Jane Wang, Sanford Pong,  
Vivian Chow, Aileen Read, Chuck Morganson, Luis Zurinaga, 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. 58**

### RECORD OF MEETING

| ITEM # | DISCUSSION  | ACTION BY DUE DATE |
|--------|---|--------------------|
| 1 -    | <b>Report on Red Risk and – (Risk rating ≥ 6)</b>   |                    |
|        | <p><b>Risk 83:</b> Cost of vehicles are more than estimated<br/> <u>Discussion:</u> Bids have been evaluated. The committee has made a recommendation based on the highest scoring vendor’s proposal.<br/> <b>Risk Rating 8</b></p> <p><b>Risk 46:</b> 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)<br/> <u>Discussion:</u> The Contractor to submit Noise reading report to substantiate permit compliance. <b>Risk Rating 6</b></p> <p><b>Risk 204:</b> Relocation of AT&amp;T Vault and other utilities delays work south of Bryant<br/> <u>Discussion:</u> AT&amp;T ductbank installation work is continuing. <b>Risk Rating 3</b></p> <p><b>Risk 208:</b> Additional cost to retrieve TBMs at the Pagoda Theatre site exceeds current budget<br/> <u>Discussion:</u> Additional information requested of Contractor to demonstrate impact has yet to be received to assess the alleged DSC claim. <b>Risk Rating 6</b></p> |                    |

| ITEM # | DISCUSSION   | ACTION BY DUE DATE |
|--------|--|--------------------|
| 2 -    | <b>Report on Remaining Requirement &amp; Design Risks (Risk rating ≤ 6)</b>  |                    |
|        | <p><b>Risk 79:</b> Delay in obtaining tunnel easements (3 #) (goes to condemnation) - Costs of ROW may cost more than expected<br/> <u>Discussion:</u> The owner has requested an agreement by the Program; if there is damage due to vibration the Program will fix it. A response letter will be drafted.<br/> <b>Risk Rating 1</b></p>  |                    |
| 3-     | <b>Active Construction Risks</b>   |                    |
|        | <p><b>Risk 15:</b> Major TBM failure<br/> <u>Discussion:</u> The Contractor has reported segment delivery is holding up the TBM progress. 40 Segments a day are required to maintain the progress schedule. Real time information needs to be received from the Contractor.<br/> <b>Risk Rating 2</b></p> <p><b>Risk 38</b> Tiebacks in Stockton Street miss located (in path of walls and would have to be dug out within 20ft of surface level)<br/> <u>Discussion:</u> No issues to report.</p> <p><b>Risk 50:</b> Station contractor delayed by tunnel contractor since station contractor cannot break in to the tunnels until the tunnels have been finished.<br/> <u>Discussion:</u> Need to establish the 1300 Contractor's schedule. The critical date is sometime in January or February 2015. <b>Risk Rating 3</b></p> <p><b>Risk 99:</b> Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule.<br/> <u>Discussion:</u> Partnering efforts on both Contract 1252 and Contract 1300 need to be constantly monitored in order to maintain positive relationship. Process are being established to address issues in a timely fashion. <b>Risk Rating 5</b></p> <p><b>Risk 196:</b> The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned.<br/> <u>Discussion:</u> 19 Stockton Street trial is continued until November 2014. Instrumentation has been placed on building. A location map for instruments will be provided to the owner. <b>Risk Rating 4</b></p> <p><b>Risk 205:</b> Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor<br/> <u>Discussion:</u> Continuous progress has been made in the CN1252 CMod process. <b>Risk Rating 3</b></p> <p><b>Risk 212:</b> UMS Inclined piles – 8” clearance between piles and tunnel results in damage or safety issues within the tunnel<br/> <u>Discussion:</u> Three batter piles have been installed with no issue. The risk concern remains. <b>Risk Rating 4</b></p> <p><b>Risk 218:</b> Air replenishment system no longer required – Agency bears unnecessary cost of installation and maintenance of an air replenishment system that is no longer required<br/> <u>Discussion:</u> A meeting with SFFD took place. We now have an agreement on the ARS. The remaining details to be addressed are on the placement of the</p> |                    |



| ITEM # | DISCUSSION  | ACTION BY DUE DATE |
|--------|---|--------------------|
|        | <p>pushcarts and an agreement on the ARS for stations, specifically the elevator shaft. SFFD is requesting the shafts have a 2hr rating. A letter will be drafted to the Contractor requesting a credit for the deleted work. <b>Risk Rating 1</b></p> <p><b>Risk 223</b> Contamination during dewatering (CTS)<br/> <u>Discussion:</u> Allowance item 7 in the specs addresses the handling of sedimentation water. Water which is found to be contaminant, would be considered a contract change due to additional treatments necessary. <b>Risk Rating 4</b></p> |                    |
| 4-     | <b>Other Business - Potential Risk</b>  |                    |
|        | <p><b>New Risk:</b> CTS AWSS/Ductbank Interface - AWSS system is old and requires replacement<br/> <u>Discussion:</u> Mitigation: 1. Look at alternatives to address, 2. Turn off system while CSP work is being done, and then turn on later (find a bypass).<br/> <b>Risk Rating TBD</b></p> <p><b>New Risk:</b> Ellis Street Utilities<br/> <u>Discussion:</u> Unknown underground utilities. <b>Risk Rating TBD</b></p> <p><b>Next month's meeting will be held on the Tuesday, June 16, 2014.</b></p>  |                    |

**ACTION ITEMS –**

| ITEM # | MTG DATE | Task # | DESCRIPTION                                       | BIC                     | DUE DATE | STATUS |
|--------|----------|--------|---|-------------------------|----------|--------|
| 4      | 12/13/12 |        | <b>Risk 72 – 4<sup>th</sup> &amp; King (SSWP)</b> | S. Pong<br>C. Morganson | 06/17/14 | Open   |

Meeting adjourned at 3:40pm

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: 16 May 14 [Date review completed.]

## Meeting Agenda

**Project No. M544.1, Contract No. CS-149**  
**Program/Construction Management**  
**Risk Mitigation Management Meeting No. 58**  
**May 13, 2014**  
**2:00pm – 4:00pm**  
 Central Subway Project Office  
 821 Howard St. 2<sup>nd</sup> 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 (46, 70, 204, 208)

**2. Report on Remaining Requirement and Design Risks**

- Requirement Risks (79)

**3. Active Risks**

- Construction Risks (15, 38, 50, 99, 196, 205, 212, 218, E)

**4. New Risks (Assessment and mitigation strategy)**

- 223 - Contamination during dewatering

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. 58**

**May 13, 2014**




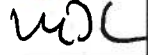



**2:00 p.m. – 4:00 p.m.**

Central Subway Project Office

821 Howard Street, 2<sup>nd</sup> Floor

Main Conference Room

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

| NAME             | AFFILIATION | PHONE        | E-MAIL<br>(for minutes)  | INITIALS  |
|------------------|-------------|--------------|--|---|
| Clifford, Alex   | CSP         | 415 243-0953 | <a href="mailto:alex.clifford@sfmta.com">alex.clifford@sfmta.com</a>         |    |
| Jeffrey Davis    | FTA         | 415 744-2594 | <a href="mailto:Jeffrey.s.davis@dot.gov">Jeffrey.s.davis@dot.gov</a>         |   |
| John Funghi      | SFMTA       | 415-701-4299 | <a href="mailto:John.funghi@sfmta.com">John.funghi@sfmta.com</a>             |    |
| Albert Hoe       | SFMTA       | 415-701-4289 | <a href="mailto:Albert.hoe@sfmta.com">Albert.hoe@sfmta.com</a>               |   |
| Mark Latch       | CSP         | 415-701-5294 | <a href="mailto:Mark.latch@sfmta.com">Mark.latch@sfmta.com</a>               |  |
| Brad Lebovitz    | STV/PMOC    | 510-464-8052 | <a href="mailto:Bradley.lebovitz@stvinc.com">Bradley.lebovitz@stvinc.com</a> |  |
| Richard Redmond  | CSP         |              | <a href="mailto:Richard.redmond@sfmta.com">Richard.redmond@sfmta.com</a>     |   |
| Eric Stassevitch | CSP         | 415-701-4426 | <a href="mailto:Eric.stassevitch@sfmta.com">Eric.stassevitch@sfmta.com</a>   |  |
| Beverly Ward     | CSP         | 415-701-5291 | <a href="mailto:Beverly.ward@sfmta.com">Beverly.ward@sfmta.com</a>           |  |
| Luis Zurinaga    | SFCTA       | 415-716-6956 | <a href="mailto:luis@sfcta.org">luis@sfcta.org</a>                           |   |
|                  |             |              |  |   |
|                  |             |              |  |   |
|                  |             |              |  |   |

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 15</b>     |

| <b>Risk</b>               | <b>Mitigation Strategy</b>                                    |
|---------------------------|---|
| Major TBM machine failure | 1. Closely monitor condition and maintenance of the machines. |

**Initial Assessment:** 1, 2, 2

**Risk Owner:** A. Clifford

**Current Assessment:** Risk Rating 2 – Construction Risk

**Status Log:**

October 2011:

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

October 2013:

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

December 2013:

1. Specification section 31 71 19
  - a. One 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.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 38</b>     |

| 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"> <li>1. Contractor has been directed on the plans to dig out the tiebacks.</li> <li>2. Include allowance for differing site conditions to contract.</li> <li>3. Assume this work in the cost and schedule estimates.</li> </ol> |

**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.



**Risk Mitigation Status****Risk Reference: 46 (CTS)**

| Risk   | Mitigation Strategy  |
|--|--|
| 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) | <ol style="list-style-type: none"> <li>1. Public outreach. Maintain regular and open communications so Public knows construction plans and progress at all times.</li> <li>2. 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.</li> <li>3. Require barriers to protect pedestrians and shield them from noise and dirt from construction.</li> <li>4. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed.</li> <li>5. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. Quickly process and resolve damage and accident claims from the Public.</li> <li>6. Assumed this work in cost &amp; schedule estimates.</li> </ol> |

**Initial Assessment:** 2, 3, 6**Current Assessment:** Risk Rating, 6 – Construction Risk**Risk Owner:** R. Redmond/ B. Chau**Status Log:**

January 2012:

1. Implementation of mitigation measures part of Communication/Outreach plan and certain aspects to be included in the contract documents.

May 2013:

1. CCDC are assisting the Central Subway outreach effort in Chinatown
2. Weekly construction updates are being uploaded to the Central Subway website, translated copies will be hand delivered through Chinatown
3. The contractor will be required to comply with the contract specifications and City ordinances for noise and dust control.
4. Discuss revising mitigation strategies
  - '4' – MOED is not involved in Chinatown, contractor is required to maintain cleanliness adjacent to site

October 2013:

1. Community meeting held in September to notify merchants and residents that construction of the Chinatown station would be commencing soon.
2. 30day and 10day construction notices have been mailed out
3. Construction updates are being communicated weekly via social media, mailings, and the Central Subway website. CCDC are also hand delivering translated construction notices to project neighbors.

**Risk Mitigation Status****Risk Reference: 46 (CTS)**

| <b>Risk</b>  | <b>Mitigation Strategy</b>  |
|--|---|
| 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) | <ol style="list-style-type: none"><li>1. Public outreach. Maintain regular and open communications so Public knows construction plans and progress at all times.</li><li>2. 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.</li><li>3. Require barriers to protect pedestrians and shield them from noise and dirt from construction.</li><li>4. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed.</li><li>5. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. Quickly process and resolve damage and accident claims from the Public.</li><li>6. Assumed this work in cost &amp; schedule estimates.</li></ol> |

May 2014:

1. SFMTA has requested documentation from Tutor Perini that they are in compliance with noise readings and permit requirements.

| 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"> <li>1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur.</li> <li>2. Actively monitor progress towards schedule milestones.</li> <li>3. Add constraints in CTS contract specification.</li> </ol> |

**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"> <li>1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur.</li> <li>2. Actively monitor progress towards schedule milestones.</li> <li>3. Add constraints in CTS contract specification.</li> </ol> |

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<br>1252 MS 1 - Complete Cross Passages 1&2 (CTS) | 10-Jun-14                     | 9-Jul-14          | 9-Sep-14           | 62                       | CD |
| UMS Tunnel Interface Complete<br>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<br>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

| <b>Risk Mitigation Status</b>   |  |
|---|--|
| <b>Risk Reference: 50</b>   |  |
| <b>Risk</b>   | <b>Mitigation Strategy</b>   |
| 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"> <li>1. Include Milestone dates in Tunnel Contract when the turnover of tunnels to CTS contractor has to occur.</li> <li>2. Actively monitor progress towards schedule milestones.</li> <li>3. Add constraints in CTS contract specification.</li> </ol> |

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.<br>2. Actively monitor progress towards schedule milestones.<br>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<br>Feb 14 | Variance | Recovery 5b Finish<br>MAR14<br>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<br>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<br>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<br>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 oar the critical dates to look at.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 70</b>     |

| Risk  | Mitigation Strategy   |
|---|---|
| Change in traffic control requirements after bid. | <ol style="list-style-type: none"> <li>1. Provide unit bid items to reimburse contractor for traffic management costs outside their control.</li> <li>2. Include allowance to construction contracts for PCOs.</li> </ol> |

**Initial Assessment:** 3, 1.5, 5  
**Current Assessment:** Risk Rating 8 – Construction Risk

**Risk Owner:** R. Redmond

**Status Log:**

March 2012 Meeting:

1. Allowance added to construction contracts for PCOs.
2. Additional PCOs can be provided at a program level, if needed.
3. Contractor proposed changes would be reviewed and approved prior to implementation. Review would confirm no impact (or beneficial impact) to cost and schedule.
4. External pressure to change traffic control is minimized by detailed involvement of DPT during design and development of traffic control plans and specifications.
5. In case of CTS, traffic routing and changes have been reviewed with local entities such as Gordon Lau School.
6. Recommend to reduce this risk.

May 2013:

1. CN 1300 allowances for traffic control \$825,000.
2. **Recommend reducing this risk rating to (3, 3, 1)** (reduced cost impact)
  - a. Current probability (3), >50%, maintain probability rating
  - b. Current cost impact (4), \$3m - \$10m, recommend reduce cost impact to (3), \$1m - \$3m
  - c. Current schedule impacts (1), <1 month, maintain schedule impact
3. Traffic control was included in the 1300 contract as a lump sum bid item.
4. Changes to contractor traffic control will be negotiated through the change order process.

May 2014:

1. SFMTA is meeting with DPT to request more advantageous traffic configurations to better construction progress.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 79</b>     |

| 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"> <li>1. Engage Owners in negotiations as soon as possible.</li> <li>2. PM/CM will provide real estate specialists to facilitate.</li> </ol> |

**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**

| 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"> <li>1. Engage Owners in negotiations as soon as possible.</li> <li>2. PM/CM will provide real estate specialists to facilitate.</li> </ol> |

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.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 79</b>     |

| Risk   | Mitigation Strategy   |
|--|---|
| Delay in obtaining tunnel easements (3 #) (goes to condemnation) -<br>Costs of ROW may cost more than expected | 1. Engage Owners in negotiations as soon as possible.<br>2. PM/CM will provide real estate specialists to facilitate. |

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

March 2013:

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

April 2013:

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

October 2013:

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

November 2013:

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

December 2013:

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

January 2014:

1. 790 Market St - A counter offer (for settlement) from the owner is still outstanding

February 2014:

1. 790 Market St - A counter offer from the owner is still outstanding

March 2014

1. 790 Market Street - counter offer is still outstanding from owner.

**Risk Mitigation Status****Risk Reference: 79**

| <b>Risk</b>  | <b>Mitigation Strategy</b>  |
|--|---|
| Delay in obtaining tunnel easements (3 #) (goes to condemnation) -<br>Costs of ROW may cost more than expected | 1. Engage Owners in negotiations as soon as possible.<br>2. PM/CM will provide real estate specialists to facilitate. |

April 2014

1. Counter offer is still outstanding.
2. The project team spoke with the owner 4/10 and is expecting feedback on the offer in the next two weeks.
3. The project team will follow up with the owner on a weekly basis to move toward resolution.

May 2014:

1. The property owner has advised the project team of outstanding concerns, some of which are issues that have previously been responded to.
2. The project team will attempt to resolve these issues with the property owner and continue toward trial in parallel as required.

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| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 83</b>     |

| <b>Risk</b>                              | <b>Mitigation Strategy</b>   |
|--|--|
| 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

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 83</b>     |

| <b>Risk</b>                              | <b>Mitigation Strategy</b>   |
|--|--|
| Cost of vehicles are more than estimated | <ol style="list-style-type: none"> <li>1. Time the procurement of the vehicles to be part of the procurement of the SFMTA LRV procurement contract.</li> </ol> |

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

November 2012 Meeting:

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

December 2012:

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

January 2013:

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

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| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 83</b>     |

| <b>Risk</b>                              | <b>Mitigation Strategy</b>   |
|--|--|
| 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.

|  |  |
|--|--|
| <b>Risk Mitigation Status</b>            |  |
| <b>Risk Reference: 83</b>                |  |
| <b>Risk</b>                              | <b>Mitigation Strategy</b>   |
| 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, 18<sup>th</sup> 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.

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| <b>Risk Mitigation Status</b> |
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|                           |
|---------------------------|
| <b>Risk Reference: 83</b> |
|---------------------------|

| <b>Risk</b>                              | <b>Mitigation Strategy</b>   |
|--|--|
| 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.



|                               |
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| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 99</b>     |

| 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"> <li>1. Executive partnering and alternate dispute resolution.</li> <li>2. Train staff in adherence to issue resolution process</li> </ol> |

**Initial Assessment:** 5, 3, 8  
**Current Assessment:** Risk Rating 5 – Construction Risk

**Risk Owner:** R. Redmond

**Status Log:**

February 2012 Meeting:

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

December 2012:

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

March 2013:

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

April 2013:

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

May 2013:

1. New Issue Resolution Ladder process presented at the CMB

June 2013:

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

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 99</b>     |

| 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"> <li>1. Executive partnering and alternate dispute resolution.</li> <li>2. Train staff in adherence to issue resolution process</li> </ol> |

October 2013:

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

November 2013:

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

December 2013:

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

March 2014:

1. Executive Partnering session with Contractor for 1300 (TPC) was held 27JAN14. Follow-up dedicated meeting for the schedule brainstorming was calendared for the 28FEB14 but subsequently cancelled by TPC. Currently not rescheduled
2. Regular quarterly partnering meeting held with 1252 Contractor (BIH). Openly discussed contentious environment between parties and how to improve. Executive management team committed to process moving forward, established follow-up dates to review schedule recovery, retention reduction and release, and timely processing of progress payments.

April 2014:

1. The next Executive partnering meeting is schedule with the Contractor for (1300) Tutor Perini on April 24, 2014
2. An Executive Management meeting was held with between contract 1252 and the PM/CM Sr. Management to resolve outstanding COR's. A follow up meeting to discuss the balance of the issues is scheduled for 04/15.
3. Construction Management team for contract 1300 will be trained in adherence to issue resolution process.

May 2014:

1. SFMTA and Tutor Perini have had 2 Exec partnering sessions.
2. Practices are being implemented to address issues.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 196</b>    |

| Risk  | Mitigation Strategy   |
|---|---|
| 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<br>2. Required Notices and Appraisals to be completed<br>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.
  - 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 11<sup>th</sup> 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 5<sup>th</sup>.
  - b. The Central Subway Project team continues to negotiate with the property owners.

|   |   |
|---|---|
| <b>Risk Mitigation Status</b>   |   |
| <b>Risk Reference: 196</b>  |   |
| <b>Risk</b>   | <b>Mitigation Strategy</b>  |
| The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned. | <ol style="list-style-type: none"> <li>1. Continue to negotiate with building owners</li> <li>2. Required Notices and Appraisals to be completed</li> <li>3. Commence condemnation process with City Attorneys</li> </ol> |

- c. The required access for compensation grouting and building monitoring is expected approximately May 10<sup>th</sup> 2013 should this need to be obtained through the eminent domain process.

April 2013:

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

July 2013:

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

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| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 196</b>    |

| <b>Risk</b>   | <b>Mitigation Strategy</b>  |
|---|---|
| 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<br>2. Required Notices and Appraisals to be completed<br>3. Commence condemnation process with City Attorneys |

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

October 2013:

1. 950 Stockton Street
  - a. Negotiation
    - Signed license received from MTOA
    - Negotiation continues with property owners
  - b. Condemnation
    - Signed disclaimers of interest have been received from most owners of record who can now be dismissed from the condemnation action
    - Condemnation continues as summarized below (also see attached graphic)

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

2. 19 Stockton Street
  - a. Pre-judgment possession hearing held 9/26/13  
Pre-judgment possession granted 10/4/13

|   |   |
|---|---|
| <b>Risk Mitigation Status</b>   |   |
| <b>Risk Reference: 196</b>  |   |
| <b>Risk</b>   | <b>Mitigation Strategy</b>  |
| The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned. | <ol style="list-style-type: none"> <li>1. Continue to negotiate with building owners</li> <li>2. Required Notices and Appraisals to be completed</li> <li>3. Commence condemnation process with City Attorneys</li> </ol> |

- Possession 30days following service to owner – early November
- b. Right to take hearing 11/18/13
- c. Compensation Trial 3/10/14

November 2013:

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

December 2013:

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

January 2014:

1. 950 Stockton Street
  - a. Negotiation – complete. Signed license agreements have been obtained from the 2 building owners, the homeowners association, and the basement commercial condo owner

|   |   |
|---|---|
| <b>Risk Mitigation Status</b>   |   |
| <b>Risk Reference: 196</b>  |   |
| <b>Risk</b>   | <b>Mitigation Strategy</b>  |
| The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned. | <ol style="list-style-type: none"> <li>1. Continue to negotiate with building owners</li> <li>2. Required Notices and Appraisals to be completed</li> <li>3. Commence condemnation process with City Attorneys</li> </ol> |

- b. Condemnation
  - City Attorney's office will file withdrawal of the condemnation action following execution of the signed agreements

2. 19 Stockton Street (City has possession of license)

- a. Condemnation
  - Right to take hearing held 25/11/13, 1/13/14 Court ruled in favor of the City.
  - Compensation trial is scheduled for March 10, 2014. Central Subway will request another settlement conference with the owner prior to the compensation trial.
- b. Negotiation
  - Central Subway has not received a response to its December 2013 offer to the Owner

February 2014:

- 1. 19 Stockton
  - a. Central Subway staff and the City attorney's office continue to reach out to the owner to open a settlement dialogue prior to the compensation trial scheduled for March 10<sup>th</sup>.
  - b. Possession of the license has been granted through the condemnation process.
  - c. The potential cost of the license has been identified in the real estate budget contingency.

March 2014

- 1. 19 Stockton Street
  - a. The Compensation Trial has been continued until April 28<sup>th</sup>, 2014
  - b. The City Attorney's Office will request a pre-trial settlement conference with the property owner

April 2014:

- 1. 19 Stockton Street
  - a. A pre-trial settlement conference has been granted by the Courts and is scheduled for April 25.
  - b. No change to the status of this risk.

May 2014:

- 1. 19 Stockton Street
  - a. The pre-trial settlement conference was held April 25, 2014.
  - b. The project team was not able to agree terms with the property owner but will continue to work with the owner and provide further information about the locations of the instruments and the grouting program.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
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|                            |
|----------------------------|
| <b>Risk Reference: 196</b> |
|----------------------------|

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

- c. The City has obtained the necessary access via condemnation, this risk relates to the cost of the license which is yet to be determined by the courts. The compensation Trial is scheduled for November 3<sup>rd</sup>, 2014.



|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 204</b>    |

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

**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 4<sup>th</sup> 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.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 204</b>    |

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

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 4<sup>th</sup> 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 20<sup>th</sup>
2. AT&T are to be put on notice of the expected installation and cut over dates.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 204</b>    |

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

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 4<sup>th</sup>/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.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 205</b>    |

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

May 2013:

1. A request to the SFMTA board to increase the Director of Transportation authority to approve changes orders of up to \$5 million for each of the Contract 1300 packages (a total of \$20 million) has been included in the calendar item requesting the SFMTA board to award Contract 1300.
2. The target SFMTA board meeting for this calendar item is May 21<sup>st</sup> 2013.

October 2013:

1. SFMTA board approved increase in Directors authority with award of Contract 1300 in May 2013.

**Risk Mitigation Status**

**Risk Reference: 205**

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

May 2014:

1. Progress in the CMod process are continuing to be made.

|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 208</b>    |

| Risk   | Mitigation Strategy  |
|--|--|
| Additional cost to retrieve TBMs at the Pagoda Theatre site exceeds current budget | <ol style="list-style-type: none"> <li>1. Develop Scope with designers currently under contract</li> <li>2. Agree to alignment and details of new shaft location</li> <li>3. Issue PCC to Contractor</li> <li>4. Initial site works and borings if necessary</li> <li>5. Obtain appropriate permits</li> <li>6. Investigate alternate procurement methods</li> </ol> |

**Initial Assessment:** 3, 2, 8  
**Current Assessment:** Risk Rating 8 – Construction Risk

**Risk Owner:** R. Redmond/ A. Clifford

**Status Log:**

February 2013 Meeting:

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

March 2013:

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

April 2013:

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

May 2013:

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

June 2013:

1. PCC-10 is still being negotiated; further details will be provided next meeting.
2. Cutter soil mixing is being proposed to construct the retrieval shaft in lieu of tangent piles (ROM approx. \$600k less than tangent piles).

**Risk Mitigation Status****Risk Reference: 208**

| Risk   | Mitigation Strategy  |
|--|--|
| Additional cost to retrieve TBMs at the Pagoda Theatre site exceeds current budget | <ol style="list-style-type: none"> <li>1. Develop Scope with designers currently under contract</li> <li>2. Agree to alignment and details of new shaft location</li> <li>3. Issue PCC to Contractor</li> <li>4. Initial site works and borings if necessary</li> <li>5. Obtain appropriate permits</li> <li>6. Investigate alternate procurement methods</li> </ol> |

3. Contract 1277 for demolition of the Pagoda theatre is to be awarded 6/19/13.
4. PCC 10 should be closed by June 14, or during the week commencing 6/17/13.
5. Overall budget will be maintained.

## July 2013

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

## October 2013:

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

## November 2013:

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

## December 2013:

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

## February 2014:

1. Change orders for the 1277 Contract have been budgeted under CPT 690
2. Under the 1252 contract only minor potential changes have been experienced to date
3. 1252 Contractor submitted a DSC citing layer was harder than expected. SFMTA rejected the DSC after review of boring log indicated material found was anticipated.
4. Maintain this risk rating

## March 2014

1. 1252 Contractor's alleged harder ground issue is being tracked
2. Incremental ground samples are being taken to compare with the core log sample

## April 2014:

1. Construction of the retrieval shaft was complete Thursday 4/3/14.
2. 1252 team are assessing whether the ground encountered differed from that expected, or impacted construction.
3. Additional information from the Contractor was requested to evaluate the alleged claim.

**Risk Mitigation Status****Risk Reference: 208**

| <b>Risk</b>  | <b>Mitigation Strategy</b>  |
|--|---|
| Additional cost to retrieve TBMs at the Pagoda Theatre site exceeds current budget | <ol style="list-style-type: none"><li>1. Develop Scope with designers currently under contract</li><li>2. Agree to alignment and details of new shaft location</li><li>3. Issue PCC to Contractor</li><li>4. Initial site works and borings if necessary</li><li>5. Obtain appropriate permits</li><li>6. Investigate alternate procurement methods</li></ol> |

May 2014:

1. The 1252 contractor is yet to submit substantiation for the differing site condition claimed.



|                               |
|-------------------------------|
| <b>Risk Mitigation Status</b> |
| <b>Risk Reference: 212</b>    |

| 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"> <li>1. Establish 1252 and 1300 contract requirements to construct within acceptable tolerances</li> <li>2. Workshop to be held with BIH to discuss hold points during construction, and construction means and methods</li> <li>3. Confirm tunnel as-built location</li> </ol> |

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

**Risk Owner:** R. Redmond/S. Tisell

**Status Log:**

February 2013:  
 1. Identified as a potential risk

March 2013:  
 1. Discuss and confirm risk description, mitigation strategy and initial risk rating.  
 2. Workshops are to be held with BIH to increase their understanding of the interfaces with the 1300 contract.  
 3. Issues to be addressed will be identified and piling hold points will be discussed.  
 4. Tunnel construction tolerance is 4” from bulls eye, 8” clearance is in addition to the 4” tunnel tolerance.  
 5. **Recommended risk rating 4 (1, 5, 3)**  
     a. Probability (1), <10%, considered possible but unlikely  
     b. Cost impact (5), > \$10m, significant costs expected if tunnel collapse occurred  
     c. Schedule impacts (3), 3 - 6 months, significant schedule impacts if tunnel collapse occurred

April 2013:  
 1. Hold points in 1300 Contract have been identified.  
 2. Workshops are to be held between BIH and the 1300 Contractor to address interfaces between the contracts.

October 2013:  
 1. Potential for damage and safety issues in tunnel to be discussed and defined  
 2. Establish task force - to create action plan that specifically guides the Program successfully thru this risk.  
 3. Action plan to address Cost and Schedule concerns.  
 4. Confirm contract requirements in 1300 about tunnel bracing.  
 5. Update mitigation strategy – to include current contract requirements for 1300 related to bracing and work above the tunnel.  
 6. Follow up with the designed on what loads can the liner support?  
 7. Facilitate the early cooperation of 1252 Contractor and 1300 Contractor to implement appropriate plan.  
 8. Work together with 1300 Contractor – to sequence the work in a manner to avoid exposure to the condition.

November 2013:  
 1. Tunnel bracing is suggested per the contract as means and methods are to be determined by the contractor

**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"> <li>1. Establish 1252 and 1300 contract requirements to construct within acceptable tolerances</li> <li>2. Workshop to be held with BIH to discuss hold points during construction, and construction means and methods</li> <li>3. Confirm tunnel as-built location</li> </ol> |

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.

**Risk Mitigation Status****Risk Reference: 218**

| Risk   | Mitigation Strategy  |
|--|--|
| Air replenishment system no longer required – Agency bears unnecessary cost of installation and maintenance of an air replenishment system that is no longer required. | <ol style="list-style-type: none"> <li>1. Contractor to be notified to place procurement on hold</li> <li>2. Central Subway to seek approval from SFFD to delete the system from the contract</li> </ol> |

**Initial Assessment: 1****Current Assessment: 1****Risk Owner: A. Hoe****Status Log: test**

November 2013:

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

December 2013:

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

January 2014:

1. Initial risk rating assessed at 1 by the Risk Assessment Committee on 1/14/14
2. Mitigation Strategy items 1 and 2 added

February 2014:

1. A letter has been sent to TPC notifying them to place the procurement of the air replenishment system on hold (Letter No. CN 1300-0072, dated 1/28/14).
2. Central Subway are meeting with SFFD 2/19 to discuss what is required (if anything) in lieu of the air replenishment system.
3. SFFD has requested that an equivalency be provided

March 2014:

1. Meeting with SFFD to discuss cart to bring air tanks from the station or cross passage
2. Review elevator shaft to determine if the current shaft design will meet the fire resistance criteria for elevator
3. Review code application with SFFD

April 2014:

1. Review of elevator shaft design is pending elevator design changes at CTS (due to the addition of Plaza).

**Risk Mitigation Status****Risk Reference: 218**

| <b>Risk</b>  | <b>Mitigation Strategy</b>  |
|--|---|
| Air replenishment system no longer required – Agency bears unnecessary cost of installation and maintenance of an air replenishment system that is no longer required. | <ol style="list-style-type: none"><li>1. Contractor to be notified to place procurement on hold</li><li>2. Central Subway to seek approval from SFFD to delete the system from the contract</li></ol> |

May 2014:

1. There is an agreement in place on the Air replenishment system (ARS) with SFFD. The remaining details to work out are the placement of the pushcarts and the air replenishment system for the elevator shafts at the stations.

**Risk Mitigation Status****Risk Reference: 223**

| <b>Risk</b>                           | <b>Mitigation Strategy</b>       |
|---------------------------------------|----------------------------------|
| Contamination during dewatering (CTS) | 1.. Review contract requirements |

**Initial Assessment: 2 (3,1,2)****Current Assessment: 4****Risk Owner: R. Redmond/ M. Kobler****Status Log:**

May 2014:

1. There is an allowance for handling the water. If hydrocarbons is discovered during dewatering , it would be a change to the contract resulting in additional water treatments.

**Risk Mitigation Status****Risk Reference: E**

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

**Initial Assessment:** 2, 3, 5**Current Assessment:** Risk Rating 5 – 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

Risk Register

| A  | H                                    | I  |   |   |   |   | J | K               | L             | M             | N               | O             | P             | Q               | R   |  | S                     |
|----|--------------------------------------|--|---|---|---|---|---|-----------------|---------------|---------------|-----------------|---------------|---------------|-----------------|---|--|-----------------------|
| 1  | <b>PROJECT RISK REGISTER</b>         | Risk Profile   | Severity Score  |   |   |   |   |                 |               | Low (1)       | Medium (2)      | High (3)      | Very High (4) | Significant (5) | Legend  |  |                       |
| 2  | Central Subway Project San Francisco | Likelihood Score   | 1   | 2 | 3 | 4 | 5 |                 | Probability   | < 10%         | 10% - 50%       | > 50%         | < 75% - 90%   | > 90%           | < 3<br>Low  | RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)  |                       |
| 3  | REV : 32                             | 5  | 4   | 3 | 2 | 1 |   | Cost Impact     | < \$250K      | \$250K - \$1M | \$1M - \$3M     | \$3M - \$10M  | > \$10M       | 3 - 9<br>Medium | 2   |  |                       |
| 4  | DATE ISSUED: 05/13/14                | 3  | 2   | 1 |   |   |   | Schedule Impact | < 1 Month     | 1 - 3 Months  | 3 - 6 Months    | 6 - 12 Months | > 12 Months   | > 10<br>High    | SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |  |                       |
| 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 |
| 6  |                                      |  |   |   |   |   |   |                 |               |               |                 |               |               |                 |   |  |                       |
| 15 | 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<br>TUN1160    |
| 29 | 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.<br>2. Use secondary grouting as needed.  |   |   |   |   | C               | 1             | 1             | 1               | 1             | 10%           | 1               | 2   | Plans issued for bid contain mitigation measures   | 8/28/13<br>TUN1120    |
| 32 | E                                    | Underground obstructions tunnel and retrieval shaft  | Include differing site conditions in GPs as well as DRB to adjudicate conflicts and minimize costs  |   |   |   |   | C               | 2             | 2             | 3               | 3             | 35%           | 5               | 10  | Mitigation measures have been implemented. Maintain adequate contingency throughout tunnel construction                                    | 2/5/14<br>TUN1124     |
| 36 | 13                                   | Damage / settlement 3x 5' to old brick sewer running parallel to tunnel alignment  | Slip Line 3'x5' brick sewer before TBM reaches CTS.   |   |   |   |   | C               | 1             | 1             | -               | 1             | 10%           | 1               | 1   | Tunnel profile has been lowered 25 ft. and plans developed for replacement of at risk utilities in advance of tunnel drive.                | 12/16/13<br>TUN1121   |
| 38 | 15                                   | Major TBM machine failure  | Closely monitor condition and maintenance of the machines.  |   |   |   |   | C               | 1             | 2             | 2               | 2             | 10%           | 2               | 4   | Contractor has indicated that they plan to use a newly manufactured TBM for this project.  | 2/5/14<br>TUN1124     |
| 45 | 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<br>UMS1295    |
| 52 | Track Embedded                       |  |   |   |   |   |   |                 |               |               |                 |               |               |                 |   |  |                       |
| 55 | Track: Special                       |  |   |   |   |   |   |                 |               |               |                 |               |               |                 |   |  |                       |
| 58 | MOS Station                          |  |   |   |   |   |   |                 |               |               |                 |               |               |                 |   |  |                       |
| 60 | 21                                   | Incomplete cutoff of groundwater at MOS  | 1. Require additional grouting to limit leakage to permissible level.<br>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<br>MOS1150    |
| 63 | 22                                   | Public complaints result in unanticipated restrictions on construction at UMS  | 1. Public outreach.<br>2. Maintain regular and open communications so Public knows construction plans and progress at all times.<br>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.<br>4. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed.<br>5. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements.<br>6. Quickly process and resolve damage and accident claims from the Public.<br>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<br>MOS1230    |

Risk Register

| A   | H                                    | I  |   |               |               |             | J               | K           | L               | M           | N             | O  | P                     | Q           | R               | S   |
|-----|--------------------------------------|--|---|---------------|---------------|-------------|-----------------|-------------|-----------------|-------------|---------------|--|-----------------------|-------------|-----------------|---|
| 1   | <b>PROJECT RISK REGISTER</b>         | Risk Profile   | Likelihood Score  | 1             | 2             | 3           | 4               | 5           | Probability     | < 10%       | 10% - 50%     | > 50%  | < 75% - 90%           | > 90%       | < 3<br>Low      | RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |
| 2   | Central Subway Project San Francisco | 5  | 4   | 3             | 2             | 1           | HIGH            | MEDIUM      | Cost Impact     | < \$250K    | \$250K - \$1M | \$1M - \$3M  | \$3M - \$10M          | > \$10M     | 3 - 9<br>Medium | 2   |
| 3   | REV : 32                             | 4  | 3   | 2             | 1             | LOW         | MEDIUM          | HIGH        | Schedule Impact | < 1 Month   | 1 - 3 Months  | 3 - 6 Months   | 6 - 12 Months         | > 12 Months | > 10<br>High    | SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)       |
| 4   | DATE ISSUED: 05/13/14                | 3  | 2   | 1             | 1             | 2           | 3               | 4           | 5               | 6           | 7             | 8  | 9                     | 10          | 11              | 12  |
| 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 |             |                 |   |
| 88  | 27                                   | Loss of business results in unanticipated restrictions on construction at YBM  | 1. Public outreach.<br>2. Maintain regular and open communications so Merchants know construction plans and progress at all times.<br>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.<br>4. Require barriers to protect pedestrians and shield them from noise and dirt from construction.<br>5. Work with MOEWD to increase cleanup of the area and assist pedestrians across streets.<br>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<br>MOS1150    |             |                 |   |
| 92  | F                                    | Underground obstructions Stations (UMS)  | 1. Provide adequate allowance for differing site conditions to address unknown underground obstructions.<br>2. Show field verified obstructions discovered during previous contracts on contract drawings.<br>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<br>UMS 1320   |             |                 |   |
| 98  | 28                                   | Incomplete cutoff of groundwater at UMS  | 1. If needed, perform grouting to mitigate the intrusion of groundwater.<br>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<br>UMS1320    |             |                 |   |
| 99  | 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.<br>2. Relocate utilities out of the way of construction wherever possible.<br>3. Show utilities on reference plans.<br>4. Have utility contact information and procedure on plans.<br>5. Have contingency repair/restoration plans.<br>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<br>UMS1410    |             |                 |   |
| 107 | 34                                   | Loss of business results in unanticipated restrictions on construction at UMS  | 1. Public outreach.<br>2. Work closely with Merchant's Association.<br>3. Maintain regular and open communications so Merchants know construction plans and progress at all times.<br>4. Advertise that Stockton Street Merchants are Open for Business.<br>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.<br>6. Require barriers to protect pedestrians and shield them from noise and dirt from construction.<br>7. Work with the Union Square BID or MOED to increase cleanup of the area and assist pedestrians across streets.<br>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<br>UMS1430     |             |                 |   |
| 108 | 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.<br>2. Monitor groundwater table at multiple locations and passive measures as necessary to mitigate.<br>3. Reference the Tech memo in contract documents.<br>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<br>UMS1430     |             |                 |   |
| 111 | 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<br>UMS1310    |             |                 |   |
| 112 |                                      |  |   |               |               |             |                 |             |                 |             |               |  |                       |             |                 |   |



Risk Register

| A   | H                                    | I   |  |               |               |             | J               | K           | L               | M           | N             | O  | P                     | Q               | R            | S   |
|-----|--------------------------------------|---|--|---------------|---------------|-------------|-----------------|-------------|-----------------|-------------|---------------|--|-----------------------|-----------------|--------------|---|
| 1   | <b>PROJECT RISK REGISTER</b>         | Risk Profile  | Likelihood Score   | 1             | 2             | 3           | 4               | 5           |                 | Low (1)     | Medium (2)    | High (3)   | Very High (4)         | Significant (5) | Legend       |   |
| 2   | Central Subway Project San Francisco | 5   | 4  | 3             | 2             | 1           | HIGH            |             | Probability     | < 10%       | 10% - 50%     | > 50%  | < 75% - 90%           | > 90%           | < 3 Low      | RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |
| 3   | REV : 32                             | 4   | 3  | 2             | 1             | MEDIUM      |                 |             | Cost Impact     | < \$250K    | \$250K - \$1M | \$1M - \$3M  | \$3M - \$10M          | > \$10M         | 3 - 9 Medium | 2   |
| 4   | DATE ISSUED: 05/13/14                | 3   | 2  | 1             | LOW           |             |                 |             | Schedule Impact | < 1 Month   | 1 - 3 Months  | 3 - 6 Months   | 6 - 12 Months         | > 12 Months     | > 10 High    | SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)       |
| 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 |                 |              |   |
| 113 | 37                                   | Damage to adjacent buildings at UMS due to surface construction activities.   | 1. Require protective barriers.<br>2. Have an emergency and rapid response customer focused task force to fix damaged facilities.<br>3. Quickly repair and reimburse resulting costs.<br>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        |                 |              |   |
| 114 | 38                                   | Tiebacks in Stockton Street mis located (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.<br>2. Include allowance and differing site conditions clause in contract.<br>3. Include this work in the cost and schedule estimates.   | C             | 2             | 2           | 1               | 2           | 35%             | 3           | 6             | Mitigation measures fully implemented, Advance utility relocation contract (1251) confirmed location of tiebacks. Risk rating has been reduced due to a lowering of the probability of event occurring | 5/6/14 UMS1170        |                 |              |   |
| 159 | J                                    | Macy's entrance conflict with new piles   | 1. Show known obstructions shown on as-built drawings on contract drawings.<br>2. Make as-built drawings available to contractor as reference drawings.<br>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       |                 |              |   |
| 160 | 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.<br>2. Clearly define shop drawing criteria in the technical specifications.<br>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                          |   |  |               |               |             |                 |             |                 |             |               |  |                       |                 |              |   |
| 163 | 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.<br>2. Maintain regular and open communications so Public knows construction plans and progress at all times.<br>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.<br>4. Require barriers to protect pedestrians and shield them from noise and dirt from construction.<br>5. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed.<br>6. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements.<br>7. Quickly process and resolve damage and accident claims from the Public.<br>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       |                 |              |   |
| 167 | 48                                   | Incomplete drawdown of groundwater. (inside of box and inside of caverns)   | 1. Require additional grouting to limit leakage to permissible level.<br>2. Include probable grouting work in cost & schedule estimates.<br>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        |                 |              |   |
| 173 | 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.<br>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      |                 |              |   |

Risk Register

| A   |                                     | H  |   | I                      |   |   |   |   | J   | K   | L  | M  | N           | O      | P           | Q  | R                    | S                     |
|---|-------------------------------------|--|---|------------------------|---|---|---|---|---|---|--|--|-------------|--------|-------------|--|----------------------|-----------------------|
| <b>PROJECT RISK REGISTER</b><br>Central Subway Project San Francisco<br>REV : 32<br>DATE ISSUED: 05/13/14 |                                     | Risk Profile   |   | Severity Score         |   |   |   |   | Probability<br>Cost Impact<br>Schedule Impact | Low (1)<br>Medium (2)<br>High (3)<br>Very High (4)<br>Significant (5) | Legend<br><3 Low<br>3-9 Medium<br>>10 High | RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)<br>SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |             |        |             |  |                      |                       |
|   |                                     | Likelihood Score   | 1   | 2                      | 3 | 4 | 5 |   |   |   |  |  |             |        |             |  |                      |                       |
|   |                                     | 5  | 4   | 3                      | 2 | 1 |   |   |   |   |  |  |             |        |             |  |                      |                       |
|   |                                     | 4  | 3   | 2                      | 1 |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| Final Risk ID   |                                     | Risk Description   |   | Mitigation Description |   |   |   |   | Risk Category                                 | Probability %   | Cost Impact                                | Schedule Impact  | Calc Impact | Calc % | Risk Rating | Score  | Status               | Must Complete by Date |
| 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.<br>2. Slip-line sewer by TBM contractor.<br>3. Reinforce other utilities as needed, monitored during construction, and repair / replace, as needed.<br>4. Have contingency repair/restoration plan.<br>5. Utility contact information and procedure will be on plans.<br>6. Develop an allowance for utility repair.<br>7. Include probable cost in estimate.<br>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<br>N-CTS9730 |                       |
| F   |                                     | Underground obstructions stations (CTS)  | 1. Provide adequate allowance for differing site conditions to address unknown underground obstructions.<br>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<br>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<br>CTS1010   |                       |
| 216   | General                             |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| 218   | Demolition, Clearing , Earthwork    |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| 220   | Site Utilities, Utility relocations |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| 230   | Hazard, Contaminated Material       |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| 234   | Environmental Mitigations           |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| 65  |                                     | Archeological/Cultural findings during construction increases schedule and/or cost. (Portal) AROUND 10%  | 1. Provide on-call Archeologist.<br>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<br>TUN1080  |                       |
| 66  |                                     | Archeological/Cultural findings during construction increases schedule and/or cost.(Moscone) AROUND 10%  | 1. Provide on-call Archeologist.<br>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<br>TUN1150   |                       |
| 67  |                                     | Archeological/Cultural findings during construction increases schedule and/or cost. (UMS)...LESS THAN 1%                                       | 1. Provide on-call Archeologist.<br>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<br>UMS1320   |                       |
| 68  |                                     | Archeological/Cultural findings during construction increases schedule and/or cost. (CHINA TOWN) ...AROUND 10%                                 | 1. Provide on-call Archeologist.<br>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<br>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.<br>2. Include allowance in construction contracts for PCOs.   |                        |   |   |   | C | 3   | 4   | 1  | 3  | 50%         | 8      | 15          | Mitigation measures implemented.   | 5/22/17<br>STS1020   |                       |
| 71  |                                     | Power supply interruptions to TBM's (no dual power feed currently planned)   | Obtain TBM power directly from PG&E substation.   |                        |   |   |   | C | 1   | 2   | -  | 1  | 10%         | 1      | 2           |  | 2/5/14<br>TUN1124    |                       |
| 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<br>STS1045    |                       |
| PR78  |                                     | Delays or complication by other SFMTA projects delays CSP: radio, fare collection, C3/TMC  | 1. Monitor other projects' developments.<br>2. Develop contingency plans as needed to avoid 1256 delay of revenue service.  |                        |   |   |   | C | 2   | 1   | 1  | 1  | 35%         | 2      | 4           |  | 7/27/12<br>FDS 1940  |                       |
| 260   | Traffic signals & Crossing Protn.   |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| 262   | Fare Collections Systems            |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |
| 265   | Purchase or lease of Real Estate    |  |   |                        |   |   |   |   |   |   |  |  |             |        |             |  |                      |                       |

Risk Register

| A   | H                                    | I  |   |               |               |             | J               | K           | L               | M           | N               | O   | P                     | Q               | R            | S   |
|-----|--------------------------------------|--|---|---------------|---------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|---|-----------------------|-----------------|--------------|---|
| 1   | PROJECT RISK REGISTER                | Risk Profile   | Likelihood Score  | 1             | 2             | 3           | 4               | 5           | Probability     | Low (1)     | Medium (2)      | High (3)  | Very High (4)         | Significant (5) | Legend       | RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |
| 2   | Central Subway Project San Francisco | 5  | 5   | 4             | 3             | 2           | 1               | 5           | Cost Impact     | < \$250K    | ↔ \$250K - \$1M | ↔ \$1M - \$3M   | ↔ \$3M - \$10M        | > \$10M         | 3 - 9 Medium | 2   |
| 3   | REV : 32                             | 4  | 3   | 2             | 1             | 5           | 4               | 3           | Schedule Impact | < 1 Month   | ↔ 1 - 3 Months  | ↔ 3 - 6 Months  | ↔ 6 - 12 Months       | > 12 Months     | >10 High     | SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)       |
| 4   | DATE ISSUED: 05/13/14                | 3  | 2   | 1             | 5             | 4           | 3               | 2           | 1               | 5           | 4               | 3   | 2                     | 1               | 5            | 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 |                 |              |   |
| 266 | 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.<br>2. PM/CM to provide real estate specialists to facilitate.   | R             | 1             | 1           | -               | 1           | 10%             | 1           | 15              | 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                             |  |   |               |               |             |                 |             |                 |             |                 |   |                       |                 |              |   |
| 276 | 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 | 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     |                 |              |   |
| 297 | 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.<br>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      |                 |              |   |
| 299 | 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.<br>2. Monitor procurement of critical items. | C             | 1             | 2           | 2               | 2           | 10%             | 2           | 4               | Not considered a project risk.  | 11/17/17 STS 1500     |                 |              |   |
| 301 | 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.<br>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      |                 |              |   |
| 305 | 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.<br>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.              |  |   |               |               |             |                 |             |                 |             |                 |   |                       |                 |              |   |
| 307 | 103                                  | Difficulty in getting required permits.  | 1. Coordinate with permit officials and request permits as early as possible.<br>2. Obtain assistance obtaining permits from PM/CM & FD Consultants.  | C             | 1             | 2           | 1               | 2           | 10%             | 2           | 3               |   | 12/18/12 FDS 1275     |                 |              |   |
| 308 | 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.<br>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      |                 |              |   |
| 309 | 105                                  | Electrical service delays startup and testing.   | 1. Submit applications for new service as early as possible.<br>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     |                 |              |   |
| 310 | 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              |  |   |               |               |             |                 |             |                 |             |                 |   |                       |                 |              |   |
| 317 | 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      |                 |              |   |

Risk Register

| A   |  | H  |   | I              |   |           |                |                 | J                | K               | L               | M              | N            | O               | P   | Q                     | R  | S |
|---|--|--|---|----------------|---|-----------|----------------|-----------------|------------------|-----------------|-----------------|----------------|--------------|-----------------|---|-----------------------|--|---|
| <b>PROJECT RISK REGISTER</b><br>Central Subway Project San Francisco<br>REV : 32<br>DATE ISSUED: 05/13/14 |  | Risk Profile   |   | Severity Score |   |           |                |                 | Likelihood Score | Probability     | Low (1)         | Medium (2)     | High (3)     | Very High (4)   | Significant (5)   | Legend                | RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)<br>SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |   |
|   |  | Likelihood Score   | 1 | 2              | 3 | 4         | 5              | < 10%           |                  |                 | < 10% - 50%     | > 50%          | < 75% - 90%  | > 90%           | < 3<br>Low  |                       |  |   |
|   |  | 5  | 4 | 3              | 2 | 1         | < \$250K       | < \$250K - \$1M |                  |                 | < \$1M - \$3M   | < \$3M - \$10M | > \$10M      | 3 - 9<br>Medium |   |                       |  |   |
|   |  | 4  | 3 | 2              | 1 | < 1 Month | < 1 - 3 Months | < 3 - 6 Months  |                  |                 | < 6 - 12 Months | > 12 Months    | > 10<br>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 |  |   |
| 112   | Major safety event halts work  | 1. Require contractor Safety plan to address this risk.<br>2. CM inspections to ensure that safety plan and procedures are implemented.  |   |                |   |           | C              | 1               | 5                | 3               | 4               | 10%            | 4            | 8               | Health and Safety provisions included in contracts. CS Program provides full-time Safety Manager. | 12/30/20 MS 0010      |  |   |
| 196   | The process of acquiring station licenses: acquisition/condemnation could significantly delay schedule and cost more than that presently planned.                      | 1. Continue to negotiate with building owners<br>2. Required Notices and Appraisals to be completed<br>3. Commence condemnation process with City Attorneys  |   |                |   |           | C              | 1               | 1                | 1               | 1               | 10%            | 4            | 2               |   |                       |  |   |
| 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.<br>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<br>2. Implement<br>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<br>2. Agree to alignment and details of new shaft location<br>3. Issue PCC to Contractor<br>4. Initial site works and borings if necessary<br>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<br>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<br>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<br>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<br>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<br>2. Program to prepare a written position/response to concerns raised regarding this issue  |   |                |   |           | C              | 2               | 2                | 1               | 2               | 35%            | 3            | 6               |   |                       |  |   |

Risk Register

| A   | H                                    | I   |   |               |               |             | J               | K               | L           | M             | N            | O             | P                     | Q               | R   | S   |
|-----|--------------------------------------|---|---|---------------|---------------|-------------|-----------------|-----------------|-------------|---------------|--------------|---------------|-----------------------|-----------------|---|---|
| 1   | <b>PROJECT RISK REGISTER</b>         | Risk Profile  | Severity Score  |               |               |             |                 |                 |             | Low (1)       | Medium (2)   | High (3)      | Very High (4)         | Significant (5) | Legend  |   |
| 2   | Central Subway Project San Francisco | Likelihood Score  | 1   | 2             | 3             | 4           | 5               |                 | Probability | < 10%         | 10% - 50%    | > 50%         | < 75% - 90%           | > 90%           | < 3<br>Low  | RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |
| 3   | REV : 32                             | 5   | 4   | 3             | 2             | 1           |                 | Cost Impact     | < \$250K    | \$250K - \$1M | \$1M - \$3M  | \$3M - \$10M  | > \$10M               | 3 - 9<br>Medium | 2   |   |
| 4   | DATE ISSUED: 05/13/14                | 3   | 2   | 1             |               |             |                 | Schedule Impact | < 1 Month   | 1 - 3 Months  | 3 - 6 Months | 6 - 12 Months | > 12 Months           | > 10<br>High    | SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) |   |
| 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 |                 |   |   |
| 345 | 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<br>2. Document (in real time – daily basis if necessary) if the contractor refuses to diligently pursue the work<br>3. Notify contractors bonding company if the contractor refuses to carry out the work | C             | 5             | 1           | 1               | 1               | 90%         | 5             | 10           |               |                       |                 |   |   |
| 347 | 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           |               |                       |                 |   |   |
| 348 | 223                                  | Contamination during dewatering (CTS)   | 1. Review contract requirements .   | C             | 2             | 3           | 1               | 2               | 35%         | 4             | 8            |               |                       |                 |   |   |

### **LRV Procurement**

The LRV Procurement continues to move forward. The evaluation committee has made a recommendation on the highest scoring vendor based on proposals submitted in February and has notified them to come in for negotiations. The procurement will provide over 260 vehicles over the next decade. The cars are essential to improve our service, meet increased demand, and accommodate system expansion including the Central Subway. We anticipate completing negotiations and making a recommendation to the SFMTA Board this summer.

### **Trolley Coach Procurement**

The trolley coach procurement project is purchase 60 buses at a cost of \$95M. It was conducted as a joint procurement with King County Department of Transportation. A contract was awarded to New Flyer in Feb 2014. There have been two pre-production meetings held to discuss the detail design of the coaches, one in San Francisco and another in Winnipeg. During the pre-production meeting held at Winnipeg, SFMTA staff also conducted a plant tour of New Flyer's production facilities located in Winnipeg and in Crookston. We believe that both facilities have the production capacity and quality assurance program in place to manufacture the coaches per SFMTA's requirements. Staff is currently working to finalize the details for the final bus design which should be completed July of this year. Production will begin as early as October 2014 and the scheduled delivery of the prototype is expected in early 2015.

### **Training**

Transit is working closely with Training to outline our service needs and operator situation. With the increase in trainers, Training has started monthly classes. A class of 28 started in March and a class of 21 started in April. The March class will graduate at the end of May and the April class at the end of June. In addition to new bus operators, six F Line operators and up to 24 LRV operators are scheduled to start training in May. Monthly bus classes and large rail classes will greatly improve our ability to deliver scheduled service, reduce overtime, and prepare to increase service in the Fall related to the TEP. With an estimated operator deficit of 280 operators and the need to increase service levels in the Fall, Transit's need for additional operators is acute and the impact of the shortfall in operators is being felt by our customers on a daily basis.