

**Risk Mitigation Status****Risk Reference: 1**

Risk	Mitigation Strategy
Additional night shift work required at portal launch box due to bus storage facility relocation delay.	1. Working with TJPA (Trans Bay Joint Power Authority) to coordinate construction schedules and GGB to coordinate Traffic Routing.

**Initial Assessment:** 2,0.5,1**Current Assessment:** Risk Rating 1 – Construction Risk**Risk Owner:** S. Wilson**Status Log:**

September 2011:

No longer considered a risk. GGB not scheduled to be utilizing site until 2014

December 2012:

1. Risk owner changed from J. Caulfield to S. Wilson
2. GGB construction still expected 2014
3. Revisit risk early 2014 and assess impact on portal construction

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

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

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

September 2011:

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

December 2012:

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

April 2013:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 5</b>

<b>Risk</b>	<b>Mitigation Strategy</b>
Possibility that lowest level of tie-backs extending out from Moscone Center could be within the tunnel alignment.	<ol style="list-style-type: none"> <li>1. Lowered tunnel alignment 5' below the lowest expected tieback.</li> <li>2. Including obstruction clause and allowance in contract documents.</li> </ol>

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

**Current Assessment:** Risk Rating 1 – Construction Risk

**Risk Owner:** S. Wilson

**Status Log:**

September 2011:

1. Tunnel contract has been awarded
2. Contract documents contain location of tiebacks from as built drawings.
3. Tunnel alignment was lowered to avoid the lowest expected tie back at Moscone Center.
4. Differing site conditions clause is included in Tunnel contract.
5. Recommend to retire this risk from the risk register.

December 2012:

1. Risk owner changed from J. Caulfield to S. Wilson.
2. Maintain risk rating as there is still a possibility that tiebacks are deeper than expected.

**Risk Mitigation Status****Risk Reference: 7**

Risk	Mitigation Strategy
Potential for excessive settlement of BART tunnels - SIGNIFICANT COMPENSATION GROUT REQUIRED OVER ESTIMATE ALLOWANCES).	<ol style="list-style-type: none"><li>1. Early and extensive co-ordination with BART.</li><li>2. Survey BART tunnels to determine exact locations.</li><li>3. Checking effect of maximum expected settlement on tunnels.</li><li>4. Requiring EPBM TBM,</li><li>5. Contractor to demonstrate effective control of ground settlements and correction of settlements by compensation grouting, and pre-installation of compensation grout piping under BART tunnels prior to tunneling reaching Market St.</li><li>6. Require repair/adjustment plan.</li><li>7. Develop contingency plan to provide bus bridge, if needed.</li><li>8. Requiring non-stop weekend excavation beneath BART tunnels.</li><li>9. Monitor movement of BART tunnels in real-time.</li><li>10. Repair/adjust as needed.</li><li>11. Included probable cost in estimate.</li></ol>

**Initial Assessment:** 1, 1.5, 2**Current Assessment:** Risk Rating 4 – Construction Risk**Risk Owner:** S. Wilson**Status Log:**

February 2012:

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

June 2012 Meeting:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 7</b>

November 2012 Meeting:

1. Coordination with BART and IRP ongoing

December 2012:

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

January 2013:

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

**Risk Mitigation Status****Risk Reference: 8**

Risk	Mitigation Strategy
Flowing groundwater in vicinity of UMS Station could make adequate annulus grouting difficult during tunneling.	<ol style="list-style-type: none"><li>1. Use appropriate additives such as accelerators in primary annulus backfill grouting, if needed.</li><li>2. Use secondary grouting as needed.</li></ol>

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

October 2011:

Plans issued for bid contain mitigation measures.

December 2012:

1. Risk owner changed from M. Fowler to S. Wilson
2. Maintain risk rating

**Risk Mitigation Status****Risk Reference: 13**

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

**Initial Assessment:** 1, 1, 1**Current Assessment:** Risk Rating 1 – Requirements Risk**Risk Owner:** Matt Fowler**Status Log:**

September 2011:

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

May 2013:

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

**Risk Mitigation Status****Risk Reference: 15**

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

**Initial Assessment:** 1, 2, 2**Risk Owner:** J. Caulfield/Matt Fowler**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.



<b>Risk Mitigation Status</b>
<b>Risk Reference: 16</b>

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

**Initial Assessment:** 1, 5, 5

**Current Assessment:** Risk Rating 5 – Construction Risk

**Risk Owner:** M. Benson

**Status Log:**

February 2012:

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

September 2012:

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

October 2012:

1. Market for 2<sup>nd</sup> hand TBM's still to be investigated

November 2012 Meeting:

1. Market for 2<sup>nd</sup> hand TBM's will not be investigated.
2. Recommend retiring, will revisit in December 2012 Risk meeting.

April 2013:

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

**Risk Mitigation Status****Risk Reference: 22**

Risk	Mitigation Strategy
Public complaints result in unanticipated restrictions on construction at UMS station.	Public outreach. Maintain regular and open communications so Public knows construction plans and progress at all times. 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. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. Quickly process and resolve damage and accident claims from the Public. Assumed this work in cost & schedule estimates.

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

September 2011:

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

**Risk Mitigation Status****Risk Reference: 27 (YBM)**

Risk	Mitigation Strategy
Loss of business results in unanticipated restrictions on construction.	<p>Public outreach.</p> <ol style="list-style-type: none"><li>1. Work closely with Merchant's Association.</li><li>2. Maintain regular and open communications so Merchants know construction plans and progress at all times.</li><li>3. Advertise that Stockton Street Merchants are Open for Business. 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.</li><li>4. Require barriers to protect pedestrians and shield them from noise and dirt from construction.</li><li>5. Work with the Union Square BID or MOED to increase cleanup of the area and assist pedestrians across streets.</li><li>6. Assumed this work in cost &amp; schedule estimates.</li></ol>

**Initial Assessment:** 1, 4, 4**Current Assessment** Risk Rating 2 – Construction Risk**Risk Owner:** A. Wong**Status Log:**

September 2011:

Mitigation measures to be implemented and to the extent possible requirements will be written into contract documents to minimize disruptions to businesses.

December 2012:

1. Community outreach is being conducted including the Yerba Buena B.I.D., merchants association and childcare center.
2. Additional reach out required prior to commencement of YBM Station.

May 2013:

1. Outreach met with YBM alliance in April and collected email addresses from businesses for notifications and construction updates. Outreach are working with Yerba Buena BID, Yerba Buena Alliance, Moscone Centre
2. Outreach will meet with individual business owners once contractors schedule is obtained to provide an update and Central Subway contact information.
3. Contactor is required to:
  - Send 60day, and 30day notices to surrounding properties.
  - Coordinate with businesses regarding changes to property access and parking.
  - Install appropriate barriers to guide pedestrians around the construction site.
  - Keep areas adjacent to the site clean

**Risk Mitigation Status****Risk Reference: 28**

Risk	Mitigation Strategy
Incomplete cutoff of groundwater at UMS.	<ol style="list-style-type: none"><li>1. If needed, grouting will be performed to mitigate the intrusion of groundwater.</li><li>2. Work is included in cost &amp; schedule estimates.</li></ol>

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

February 2012:

1. Jet grouting at headwalls and behind tangent pile included in contract documents.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 32</b>

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

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

**Current Assessment:** Risk Rating 1 – Requirement Risk

**Risk Owner:** M. Benson

**Status Log:**

September 2011:

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

January 2012 Meeting:

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

March 2012:

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

April 2012

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

May 2012

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

June 2012

1. No status update

July 2012

1. No Status update

November 2012 Meeting:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 32</b>

December 2012:

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

February 2013:

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

March 2013:

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

April 2013:

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

May 2013:

1. Maiden Lane Water tie in completed Wednesday April 19<sup>th</sup> 2013.
2. Macy's Backflow
  - a. Central Subway have investigated and found an existing check valve within the public right of way.
  - b. Central Subway have requested an estimate from the SF Water Department to self-perform the installation of a new check valve and complete the connection to the building within the public right of way. No work will be required within the Macy's building.

**Risk Mitigation Status****Risk Reference: 33**

Risk	Mitigation Strategy
Damage to utilities causes delay to construction and/or consequential cost. (very close to walls adjacent to relocated utility trenches at UMS)	<ol style="list-style-type: none"><li>1. Intensive utility coordination and investigation.</li><li>2. Relocate utilities out of the way of construction wherever possible.</li><li>3. Show utilities on reference plans.</li><li>4. Have utility contact information and procedure on plans.</li><li>5. Have contingency repair/restoration plans.</li><li>6. Assumed probable impacts to schedule &amp; cost in estimates.</li></ol>

**Initial Assessment:** 1, 1, 1**Initial Assessment:** Risk Rating 2 – Construction Risk**Risk Owner:** J. Wang**Status Log:**

February 2012:

1. Although mitigation measure have been fully implemented, increased probability due to proximity of new pile design to existing relocated utilities.

**Risk Mitigation Status****Risk Reference: 34 (UMS)**

Risk	Mitigation Strategy
Loss of business results in unanticipated restrictions on construction.	Public outreach. 1. Work closely with Merchant's Association. 2. Maintain regular and open communications so Merchants know construction plans and progress at all times. 3. Advertise that Stockton Street Merchants are Open for Business. 4. 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. 5. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 6. Work with the Union Square BID or MOED to increase cleanup of the area and assist pedestrians across streets. 7. Assumed this work in cost & schedule estimates.

**Initial Assessment:** 2, 2.5, 5**Current Assessment:** Risk Rating 5 – Construction Risk**Risk Owner:** A. Wong**Status Log:**

September 2011:

Mitigation measures to be implemented and to the extent possible requirements will be written into contract documents to minimize disruptions to businesses.

August 2012:

1. Community outreach was achieved prior to commencement of 1252 work on Stockton Street and is ongoing that includes the Union Square B.I.D.
2. The UMS specification includes language to maintain access to businesses and notes special events as in addendum #4, section 01 12 17

May 2013:

1. A weekly construction update is emailed to individual property owners and managers and is also uploaded to the Central Subway website.
2. Central Subway is working with the Union Square BID to establish a suitable construction site perimeter barrier, as well as to establish a park environment during the holiday moratorium to foster goodwill during construction.
3. CSP has engaged MJM to provide additional cleaning on a daily basis since the commencement of contract 1251 and will continue through the 1300 contract.



**Risk Mitigation Status****Risk Reference: 35**

Risk	Mitigation Strategy
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)	<ol style="list-style-type: none"><li>1. Performed detailed hydrogeologic modeling and analysis.</li><li>2. Will monitor groundwater table at multiple locations and passive measures as necessary to mitigate.</li><li>3. Reference Technical Memo in contract specs.</li><li>4. Included probable costs in estimate.</li></ol>

**Initial Assessment:** 1, 1, 1**Current Assessment:** Risk Rating 1 – Construction Risk**Risk Owner:** J. Wang**Status Log:**

September 2011:

1. Hydrogeologic modeling was conducted and the results summarized in a Technical Memorandum title “UMS Groundwater Flow Model Development and Results” dated 8/22/11. Groundwater is anticipated to rise 9 to 12 feet.

May 2012:

1. Technical Memorandum “Technical Memorandum - UMS GROUNDWATER FLOW MODEL DEVELOPMENT AND RESULTS, Revision 0” dated August 22, 2011 is included in contract documents as a reference document in spec.
2. Groundwater levels will be checked monthly by UMS Station contractor.
3. BART agreement has provisions for mitigation of groundwater level rise.

**Risk Mitigation Status****Risk Reference: 36**

Risk	Mitigation Strategy
Damage to buildings or utilities as a result of heave from jet grouting.	Tangent piles combined with surface jet grouting will be utilized.

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

April 2012:

1. Mitigation strategy change to reflect “tangent piles” rather than “secant piles”.
2. Protection of Existing Property spec requires contractor to repair damage caused by their actions.

**Risk Mitigation Status****Risk Reference: 37**

Risk	Mitigation Strategy
Damage to adjacent buildings due to surface construction activities at UMS.	<ol style="list-style-type: none"><li>1. Require protective barriers.</li><li>2. Quickly repair and reimburse resulting costs.</li><li>3. Included probable cost in estimate.</li></ol>

**Initial Assessment:** 1, 1, 1**Current Assessment:** Risk Rating 1 – Construction Risk**Risk Owner:** J. Wang**Status Log:**

March 2012:

1. Mitigation strategy “Have emergency and rapid response customer-focused task force to fix damaged facilities” was removed.
2. Repair of damage by contractor is contractor’s responsibility to repair. Specification 01 76 29, Part 1.08 Replacement requires the contractor to immediately repair any damage at their expense.

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

<b>Risk</b>	<b>Mitigation Strategy</b>
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:** M. Benson

**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.

**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:** A. Wong / 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

**Risk Mitigation Status****Risk Reference: 48**

Risk	Mitigation Strategy
Incomplete drawdown of groundwater at CTS (inside of box and inside of caverns).	<ol style="list-style-type: none"><li>1. Require additional grouting to limit leakage to permissible level.</li><li>2. Include dewatering bid item in contract.</li><li>3. Include probable grouting and dewatering work in cost &amp; schedule estimates.</li></ol>

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

February 2012:

1. Mitigation strategy “Include dewatering bid item in contract” was added to status log.
2. Bid item for dewatering has been included in the contract documents (TB – 14 Drilled Gravity Dewatering Pipes).

<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>

**Initial Assessment:** 3, 4, 11

**Risk Owner:** M.Benson

**Current Assessment:** Risk Rating 3 – Construction Risk

#### **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):

<b>Contract 1252</b>			<b>Contract 1300</b>		
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.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 52</b>

<b>Risk</b>	<b>Mitigation Strategy</b>
Unacceptable settlement and impact on major utilities at CTS. (OLD SEWERS AND OTHERS WITHIN 20FT SPACE BETWEEN TOP OF CAVERN AND STREET LEVEL)	<ol style="list-style-type: none"> <li>1. Evaluate effect of potential settlement on utilities.</li> <li>2. Slip-lined sewer by CTS contractor.</li> <li>3. Other utilities will be reinforced as needed, monitored during construction, and repaired / replaced as needed.</li> <li>4. Contractor to correct impact of settlements by repair.</li> <li>5. Have contingency repair/restoration plan.</li> <li>6. Utility contact information and procedure will be on plans.</li> <li>7. Develop an allowance for utility repair.</li> <li>8. Include probable costs in estimate.</li> </ol>

**Initial Assessment:** 4, 2, 8

**Current Assessment:** Risk Rating 6 – Construction Risk

**Risk Owner:** Q. Chin/ R. Edwards

**Status Log:**

December 8, 2009 Meeting:

1. R. Edwards was identified as risk owner.
2. A. Hoe will status the mitigation strategy.
3. Mitigation strategy needs to establish metrics for acceptable settlement criteria.
4. Eliminated Mitigation Strategy Item 6: "Cistern at Washington St. will be repaired at the completion of construction and damaged pavements replaced" from this risk and will make a new Risk 52a to address the risk to the cistern.(Done)

January 21, 2010 Meeting:

1. An action from the last risk mitigation meeting to "move Mitigation Strategy Item No. 6 to a new Risk 52a" was not done. R. Rocco will update the register accordingly.

November 2011:

1. Revised mitigation strategy 1 to indicate slip-lining of sewer by CTS contractor, not TBM contractor.
2. Removed mitigation strategy 2 "will pre-install tubamachettes for compensation grouting".
3. Revised mitigation strategy 4 to eliminate use of compensation grouting to correct impact of settlement.
4. Sewers will be slip-lined prior to cavern construction.
5. Affected utilities requiring monitoring are listed in BP drawings.
6. Technical specifications address requirement for leak detection and mitigation plans to repair leaks.

January 2012 Meeting:

1. SFPUC submitted comments on the Effects of Settlement on Utilities report.
2. SFMTA will respond to comments.

February 2012:

1. Mitigation strategy added to "Develop an allowance bid item for utility repair".
2. SFMTA responded to comments. None of the responses change the mitigation strategy for this risk.



<b>Risk Mitigation Status</b>
<b>Risk Reference: 52</b>

3. Leak detection requirements added to contract.
4. Allowance for utility repair included in contract.

September 2012 Meeting:

1. CTS has been resolved

October 2012 Meeting:

1. UMS & YBM yet to be closed out

May 2012:

1. **Recommend reducing this risk rating to 3 (2, 2, 1)** (reduce probability and cost impact)
  - a. Current probability (3), >50%, recommend reduce probability to (2), 10-50%
  - b. Current cost impact (3), \$1m - \$3m, recommend reduce cost impact to (2), \$250k - \$1m (CN 1300 CTS AL-8 = \$250k)
  - c. Current schedule impacts (1), <1 month, maintain schedule impact
2. Risk rating to remain at 6

**Risk Mitigation Status****Risk Reference: 56**

Risk	Mitigation Strategy
Escalation more / less than expected (Increase in bid prices to hedge possible increases in cost of volatile commodities).	<ol style="list-style-type: none"><li>1. In the current economic environment, escalation is just as likely to be less as more than anticipated.</li><li>2. For volatile materials and equipment, provide substantial payment for stored materials and equipment to encourage early procurement</li><li>3. Include an escalation clause for volatile commodities in contracts.</li></ol>

**Initial Assessment:** 5, 2.5, 13**Current Assessment:** Risk Rating 3 – Market Risk**Risk Owner:** A. Wong**Status Log:**

September 24, 2009 Meeting:

1. Escalation varies over the duration of a project. It is favorable to the Project now, but could be a concern in the near future.
2. This risk needs to be monitored, but little can be done about it at this time.

February 2012:

1. Escalation clause will not be included in contracts because current market projections do not warrant escalation provisions.
2. Current cost estimate includes a 3.3% escalation.
3. Bid costs will be based on commodity prices at the time of bidding.
4. Contractors are likely to include potential escalation of commodities in contracts based on forecasted escalation at the time of bidding.
5. Risk rating reduced to 2, 3, 6

November 2012:

1. Various market factors have changed but overall risk remains unchanged.

May 2013:

1. Contract 1300 bid prices have been received.
2. Risk associated with material pricing is carried by the contractor.
3. Recommend retiring this risk.

**Risk Mitigation Status****Risk Reference: 65**

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

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

September 2011:

Additional boring taken in vicinity of portal indicated no evidence of Archeological/Cultural resources.

November 2012:

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

December 2012:

1. Risk owner changed from D. Greenaway to S. Wilson.
2. Guide-wall excavations were completed with no evidence of archaeological significant findings.
3. A monitoring plan is in place to minimize time and cost implications should archaeological significant material be encountered.
4. Risk will remain active.

**Risk Mitigation Status****Risk Reference: 66**

Risk		Mitigation Strategy
Archeological/Cultural findings during construction increases schedule and/or cost.(Moscone) AROUND 10%	√ √	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.

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

February 2012 Meeting:

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

March 2013:

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

**Risk Mitigation Status****Risk Reference: 67**

Risk		Mitigation Strategy
Archeological/Cultural findings during construction increases schedule and/or cost. (UMS)...LESS THAN 1%	√ √	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.

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

February 2012 Meeting:

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

March 2013:

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

**Risk Mitigation Status****Risk Reference: 68**

Risk		Mitigation Strategy
Archeological/Cultural findings during construction increases schedule and/or cost. (CHINATOWN) ...AROUND 10%	√ √	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.

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

February 2012 Meeting:

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

March 2013:

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

**Risk Mitigation Status****Risk Reference: 70**

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**Risk Owner:** R. Edwards**Current Assessment:** Risk Rating 8 – Construction Risk**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.

**Risk Mitigation Status****Risk Reference: 71**

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

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

November 2012 Meeting:

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



<b>Risk Mitigation Status</b>
<b>Risk Reference: 72</b>

<b>Risk</b>	<b>Mitigation Strategy</b>
Interface new Signaling and Train Control system to existing at Fourth and King	New system will be connected in parallel with existing system until the new system has been tested and safety certified for operation.

**Initial Assessment:** 2, 3, 5

**Risk Owner:** S. Pong

**Current Assessment:** Risk Rating 5 – Design Risk

**Status Log:**

October 2011 Meeting:

1. Recommend to retire this risk from the project.
2. Risk not retired. Systems contract drawings need approval of Muni Operations.

November 2011:

1. Functional requirements for the interface have been approved by Muni Operations.
2. 90% design drawings for Systems contract will be forwarded to Muni Operations for their review and comment.

January 2012 Meeting:

1. Concept design with SFMTA Operations recommended safety enhancements have been approved.
2. ECP for recommended safety enhancements prepared and will be submitted to CMB for approval.

February 2012:

1. CMB approved ECP for Operational & Safety Upgrades.
2. SFMTA Muni Operations signed off on ECP.
3. ECP being implemented by design team.
4. Recommend to reduce this risk rating.

September 2012 Meeting:

1. Update to be provided next meeting.
2. New plan to be advised, mitigation strategy to be revised.

October 2012 Meeting:

1. Central Subway have sent a letter to Ops including contract specifications, temporary and permanent requirements seeking concurrence
2. Ross/Carlos to provide a briefing next meeting regarding how signaling interface design has ensured functionality at the end of each weekend shutdown.

November 2012 Meeting:

1. Technical specifications now approved.
2. A presentation is to be given at the December Risk meeting to demonstrate that the signaling design has confirmed functionality can be maintained where required, and reinstated following the 6 weekend shutdowns.

<b>Risk Mitigation Status</b>
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<b>Risk Reference: 72</b>
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December 2012 Meeting:

1. Clarification system will not be parallel
2. System train control will not be done during track and OCS construction
3. New switch machine have similar controls as the old machine.
4. Expansion of the Site Specific Work Plan will be established for review by the Risk Committee.

February 2013 Meeting:

- 1.

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

<b>Risk</b>	<b>Mitigation Strategy</b>
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

**Risk Owner:** A. Clifford

**Current Assessment:** Risk Rating 1 – Requirement Risk

#### **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.

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

April 2012 Meeting:

1. No update from the March report-out.

May 2012 Meeting:

1. No update from the March report-out.

June 2012 Meeting:

1. No update from the March report-out.

July 2012 Meeting:

1. No update from the March report-out.

August 2012 Meeting:

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

September 2012 Meeting:

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

October 2012 Meeting:

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

November 2012 Meeting:

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

December 2012 Meeting:

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

February 2013 Meeting:

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

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

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

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

<b>Risk</b>	<b>Mitigation Strategy</b>
Cost of vehicles may be more than estimated due to sole source and small order	1. Time the procurement of the vehicles to be part of the procurement of the SFMTA LRV procurement contract.

**Initial Assessment:** 1, 1.5, 2

**Current Assessment:** Risk Rating 16 – Requirement Risk

**Risk Owner:** L. Ames

**Status Log:**

April 2012 Meeting:

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

May 2012 Meeting:

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

June 2012 Meeting:

- 1 No status update.

September 2012 Meeting:

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

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

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

October 2012 Meeting:

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

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

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

November 2012 Meeting:

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

December 2012:

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

January 2013:

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

February 2013 Meeting:

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

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

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



<b>Risk Mitigation Status</b>
<b>Risk Reference: 89</b>

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

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

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

**Risk Owner:** R. Edwards

#### **Status Log:**

January 2012 Meeting:

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

May 2012 Meeting:

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

June 2012 Meeting:

1. Coordination with 3<sup>rd</sup> Party reviewers continues.

August 2012 Meeting:

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

September 2012 Meeting:

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

October 2012 Meeting:

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

November 2012 Meeting:

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

December 2012 Meeting:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 89</b>

February 2013 Meeting:

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

March 2013 Meeting:

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

April 2013:

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

May 2013:

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

**Risk Mitigation Status****Risk Reference: 94**

Risk	Mitigation Strategy
Bid protests delay award and NTP for construction contracts	Strictly adhere to Procurement Best Practices and Protest Procedures.

**Initial Assessment:** 1, 2, 2**Current Assessment:** Risk Rating 2 – Market Risk**Risk Owner:** A. Wong**Status Log:**

September 2011:

Mitigation measures being implemented.

November 2012:

1. Combined contract out to bid, revisit following bid opening

**Risk Mitigation Status****Risk Reference: 95**

Risk	Mitigation Strategy
Contractor default during construction impacts schedule. (key sub-contractor)	Assist Bonding company in transition and to maintain schedule.

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

May 2013:

1. 1252 Joint venture partners are all well established, experienced companies. Condon Johnson & Nicholson could be replaced by other local companies if required.
2. Maintain this risk rating.

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

<b>Risk</b>	<b>Mitigation Strategy</b>
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

**Risk Owner:** M. Benson

**Current Assessment:** Risk Rating 8 – Construction Risk

**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

**Risk Mitigation Status****Risk Reference: 100**

Risk	Mitigation Strategy
Procurement of long lead items delays work. (fans, rails and special track work, TPSS, Escalators, elevators, TBM)	<ol style="list-style-type: none"><li>1. Include schedule milestones for procurement of and substantial payment for stored long lead items in contract to encourage early procurement.</li><li>2. Monitor procurement of critical items.</li></ol>

**Initial Assessment:** 2, 2, 2**Current Assessment:** Risk Rating 2 – Market Risk**Risk Owner:** R. Edwards**Status Log:**

February 2012:

1. Contract provisions SP-13 include provisions for storage of materials in bonded warehouse.
2. Contract milestones include adequate time to procure long lead time materials.

May 2013:

1. The first TBM has been delivered to site. Testing of the second TBM was complete May 3<sup>rd</sup>.
2. Payment for long lead items shown in GP's or SP's
3. Recommend transferring this risk to Construction Risk to monitor procurement or critical items

**Risk Mitigation Status****Risk Reference: 102**

Risk	Mitigation Strategy
Late finish of early contract delays later contracts and extends PM / CM and incurs additional costs	<ol style="list-style-type: none"><li>1. Actively manage contracts and include incentive provisions for early completion in critical contracts.</li><li>2. Buffer float added to critical path to actively manage schedule contingency</li></ol>

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

September 2011:

1. LONP 1 & 2 initiated to reduce this risk. See Risk 86.
2. The mitigation of risks associated with early contracts will address this risk.
3. Risk rating reduced due to mitigation measures implemented.

May 2013:

1. The early utilities relocation contracts were completed within an appropriate contract time periods.
  - a. Mitigation measures were taken to address issues to accomplish the requirement. Measures taken
    - i. Extensive coordination with utility companies
    - ii. Acceleration
    - iii. Schedule re-sequencing
    - iv. Deferment of activities to follow on contracts
2. The follow on contracts are reflective of the early contract impacts, when known in a timely manner.
  - a. Follow on contracts include
    - i. Updated schedule and milestone
    - ii. Updated work scope with included early contract deferred activities
3. The interface between contract 1252 and 1300 is being monitored under Risk #50.
4. Recommend maintaining this risk rating.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 103</b>

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

**Initial Assessment:** 1, 1.5, 2

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

**Risk Owner:** A. Clifford

**Status Log:**

December 2012:

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

April 2013:

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



<b>Risk Mitigation Status</b>
<b>Risk Reference: 104</b>

<b>Risk</b>	<b>Mitigation Strategy</b>
CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	<ol style="list-style-type: none"> <li>1. Grade Crossing approvals are not received until final CPUC inspection at the completion of construction.</li> <li>2. Close coordination with CPUC will continue until approval is received.</li> </ol>

**Initial Assessment:** 2, 3.5, 7

**Current Assessment:** Risk Rating 5 – Construction Risk

**Risk Owner:** S. Pong

**Status Log:**

September 2011:

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

January 2012 Meeting:

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

April 2012 Meeting:

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

May 2012 Meeting:

No update.

July 2012 Meeting:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 104</b>

August 2012 Meeting:

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

September 2012 Meeting:

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

October 2012 Meeting:

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

November 2012 Meeting:

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

December 2012:

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

January 2013 Meeting:

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

February 2013 Meeting:

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

March 2013:

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

April 2013:

1. Construction, testing, and safety requirements need to be met to enable CPUC signoff at completion.
2. Another request for extension will need to be submitted if construction and approval is not received by January 1<sup>st</sup> 2016.

May 2013:

1. Discuss transferring to Construction Risk and maintain current risk owner.
2. Risk has been transferred to a Construction category, Risk owner remains as Sanford Pong
3. Final from approval from CPUC will be given after construction completion.

**Risk Mitigation Status****Risk Reference: 105**

Risk	Mitigation Strategy
Electrical service delays startup and testing.	<ol style="list-style-type: none"><li>1. Submit applications for new service as early as possible.</li><li>2. Coordinate closely with PG&amp;E to ensure timely delivery of electrical service.</li></ol>

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

September 2011:

Applications have been submitted to obtain service as early as possible.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 106</b>

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

**Initial Assessment:** 3, 2.5, 8

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

**Risk Owner:** R. Redmond

**Status Log:**

February 2012 Meeting:

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

March 2013:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 107</b>

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

**Initial Assessment:** 3, 2.5, 8

**Current Assessment:** Risk Rating 5 – Market Risk

**Risk Owner:** A. Wong

**Status Log:**

September 2011:

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

August 2012:

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

April 2013:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 111</b>

<b>Risk</b>	<b>Mitigation Strategy</b>
Major Earthquake stops work	1. Include "Force Majeure" clause in contracts.

**Initial Assessment:** 5, 3, 4

**Current Assessment:** Risk Rating 4 – Construction Risk

**Risk Owner:** A. Wong

**Status Log:**

February 2012:

1. General Provisions Section 702, B.1 allows for non-compensable time extension to a contract in the case of an earthquake.

August 2012 Meeting:

1. Mitigation plan to be prepared to deal with the event of an earthquake occurring

September 2012 Meeting:

1. Mitigation plan/emergency response plan to be prepared

October 2012 Meeting:

1. Requirements for Central Subway mitigation/emergency response plan to be discussed next meeting
2. 'Force Majeure' inclusion in contracts to be reviewed next meeting

November 2012 Meeting:

1. Requirements for Central Subway mitigation/emergency response plan to be discussed next meeting
2. Outline scope of plan to be developed if required.

**Risk Mitigation Status****Risk Reference: 112**

Risk	Mitigation Strategy
Major safety event halts work	1. Require contractor to provide for a full-time Safety Manager.

**Initial Assessment:** 5, 3, 4**Current Assessment:** Risk Rating 4 – Construction Risk**Risk Owner:** M. Benson**Status Log:**

February 2012:

1. Contract Technical Specifications Section 01 35 29.10 – Health and Safety includes procedures and contractor requirements to prevent accidents.
2. Contracts require contractor to provide a full-time Safety Manager.
3. Central Subway Program retains a full-time Safety Manager.

**Risk Mitigation Status****Risk Reference: 115**

Risk	Mitigation Strategy
Jet grouted station end walls are installed by tunnel Contractor. Station Contractor assumes risk of possibly leakage problems due to insufficiently qualify of end walls.	<ol style="list-style-type: none"><li>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.</li><li>2. Alternatively, place and allowance in the station contracts for end wall leakage repair.</li><li>3. Include "Clawback" provision in tunnel contract to allow station contractor to transfer costs of repair to headwall to the tunnel contractor.</li><li>4. Require tunnel contractor to be present to witness station excavation of headwalls.</li></ol>

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

September 2011:

1. Project configuration changes include headwall designs with multiple levels of redundancy.
2. Warranty "clawback" provisions added to tunnel contract language.

December 2012:

1. Risk owner changed from J. Caulfield/J. Wang to S. Wilson
2. Mitigations 1, 2 and 3 have not been implemented.
3. The 1252 contract includes a Warranty Bond of 10% of the contract value for 2 years following final acceptance. Should funds need to be obtained to remediate leakage problems, Central Subway will source these from the bond holder.
4. The forecast completion date for the portal structure is April 2015, current estimate schedule for station excavation (latest of 3 stations) is November 2015. Therefore the excavation of the station caverns and exposure of the end walls will fall within the warranty period of the 1252 contract.



<b>Risk Mitigation Status</b>
<b>Risk Reference: 116</b>

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

**Initial Assessment:** 3, 1, 3

**Risk Owner:** M. Benson

**Current Assessment:** Risk Rating 4 – Construction Risk

**Status Log:**

February 2012:

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

April 2012:

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

April 2013:

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

<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 2. Required Notices and Appraisals to be completed 3. Commence condemnation process with City Attorneys

**Initial Assessment:** new risk

**Risk Owner:** A. Clifford

**Current Assessment:** Risk Rating 4 – Construction Risk

#### **Status Log:**

September 2012 Meeting:

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

November 2012 Meeting:

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

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

- 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.
  - 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

**Risk Mitigation Status****Risk Reference: 201**

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

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

December Meeting 2012:

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

January 2013:

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

February 2013:

1. No change in the status of this risk

March 2013:

1. No change to the status of this risk

<b>Risk Mitigation Status</b>
<b>Risk Reference: 202</b>

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

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

**Risk Owner:** R. Redmond

**Current Assessment:** Risk Rating 1 - Construction Risk

**Status Log:**

December 2012 Meeting:

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

January 2013 Meeting:

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

February 2013 Meeting:

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

March 2013:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: 203</b>

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

**Initial Assessment:** 3, 2, 8

**Risk Owner:** M. Benson

**Current Assessment:** Risk Rating 8 – Construction Risk

**Status Log:**

December Meeting 2012:

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

January 2013:

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

February 2013 Meeting:

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

March 2013:

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

April 2013:

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

May 2013:

1. The contractor has re-sequenced the work with a new forecast completion date of August 15<sup>th</sup> (south headwall) and September 25<sup>th</sup> (north headwall).
2. 1300 Contractor has access 90 days following NTP (approximately September 7<sup>th</sup> – subject to NTP date).
3. Tutor preliminary schedule indicates that current completion dates should not impact the 1300 contractor.

**Risk Mitigation Status****Risk Reference: 204**

<b>Risk</b>	<b>Mitigation Strategy</b>
Relocation of AT&T Vault and other utilities delays New Sewer 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></ol>

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

December 2012:

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

January 2013:

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

February 2013:

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

<b>Risk Mitigation Status</b>
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<b>Risk Reference: 204</b>
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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.



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

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

**Initial Assessment:** 1, 1, 3

**Current Assessment:** Risk Rating 3 – Construction Risk

**Risk Owner:** E. Stassevitch/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.

**Risk Mitigation Status****Risk Reference: 207**

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

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

February 2013 meeting:

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

March 2013:

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

April 2013:

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

May 2013:

1. The Owner has until May to back out of the lease.
2. Maintain this risk rating.
3. NEPA clearance still remains open.

**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	√ √ √	1. Develop Scope with designers currently under contract 2. Agree to alignment and details of new shaft location 3. Issue PCC to Contractor 4. Initial site works and borings if necessary 5. Obtain appropriate permits 6. Investigate alternate procurement methods

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

February 2013 Meeting:

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

March 2013:

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

April 2013:

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

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.

**Risk Mitigation Status****Risk Reference: 209**

Risk	Mitigation Strategy
Implementing Pagoda Option - Obtaining Environmental Clearance	<ol style="list-style-type: none"><li>1. Engage Planning Dept. to outline required actions</li><li>2. Develop necessary CEQA documents in concert with Planning Dept.</li><li>3. Meet with FTA and determine NEPA and SHPO requirements</li></ol>

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

## February 2013 Meeting:

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

## March 2013:

1. CEQA clearance has been received
2. Separate contracts will be issued to complete additional noise and vibration studies to satisfy National Environmental Policy Act (NEPA) requirement and will be submitted to the FTA for evaluation.

## April 2013:

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

**Risk Mitigation Status****Risk Reference: 210**

Risk	Mitigation Strategy
Mission Bay Loop Grant – Needs to be built to allow for train turnarounds (June 2013)	<ol style="list-style-type: none"><li>1. Identify and track major MBL completion milestones<ul style="list-style-type: none"><li>- Grant funding</li><li>- Design</li><li>- Construction</li><li>- Testing</li><li>- Use of MBL before CS startup training (N-Line or supplemental T-line revenue service)</li></ul></li></ol>

**Initial Assessment:** 1, 1, 4**Current Assessment:** Risk Rating 4 – Construction Risk**Risk Owner:** L. Ames**Status Log:**

February 2013 Meeting:

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

April 2013:

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

May 2013:

1. Major Milestones:
  - a. Design – July 2013 – October 2013 (to 95% complete)
  - b. Construction – NTP May 2014 – October 2014 (substantial completion)

**Risk Mitigation Status****Risk Reference: 211**

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

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

February 2013:

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

March 2013:

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

May 2013:

1. Risk heading revised to include clarification "during ground freezing".

**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</li></ol>

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

February 2013:

1. Identified as a potential risk

March 2013:

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

April 2013:

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

**Risk Mitigation Status****Risk Reference: 213**

Risk	Mitigation Strategy
Micro Piles exist within tunnel path at UMS – inaccuracies in micro-pile as-built information results in collision with piles.	<ol style="list-style-type: none"><li>1. Re-profile and realign tunnel to clear micropiles</li><li>2. Stop machine and cut out pile if slight encroachment occurs</li></ol>

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

February 2013:

1. Identified as a risk

March 2013:

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



**Risk Mitigation Status****Risk Reference: 214**

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

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

February 2013:

1. Identified as a risk

March 2013:

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

April 2013:

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

May 2013:

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

**Risk Mitigation Status****Risk Reference: 215**

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

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

March 2013:

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

**Risk Mitigation Status****Risk Reference: 216**

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

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

May 2013:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: A</b>

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

**Initial Assessment:** 4, 1, 10

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

**Risk Owner:** S. Pong

**Status Log:**

**November 2011 Meeting:**

1. An alternative analysis report dated May 27, 2011 was forwarded to SFPUC for review and comment. Three options were studied by SFMTA for handling the sewers south of the portal:

- A. Leave the sewers in place and construct offset manholes where the track is in conflict with existing manholes,
- B. Replace the existing sewers in their existing locations,
- C. Construct twin sewers.

2. The recommendation from the report was to leave the sewers in place and construct offset manholes.
3. SFPUC provided a letter stating that the recommendations of the May 27 report were unacceptable to SFPUC.
4. New information has confirmed that leaving the sewer manholes in the track way do not violate CPUC, SFPUC or SFMTA safety criteria. A new proposal has been formulated and documented in a letter currently being circulated for signature signoff to SFPUC for approval to leave sewer in place and perform condition assessment at SFPUC cost.
5. Letter is waiting for John Funghi's signature to send to SFPUC.

**December 2011 Meeting:**

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

**January 2012 Meeting:**

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: A</b>

February 2012 Meeting:

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

April 2012 Meeting:

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

May 2012 Meeting

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

June 2012 Meeting:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: A</b>

July 2012 Meeting:

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

August 2012 Meeting:

1. Sewer design for 4<sup>th</sup> Street continues no impact to 1256 schedule.

September 2012 Meeting:

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

October 2012 Meeting:

1. Included as D&B element in combined contract

December 2012 Meeting:

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

January 2013 Meeting:

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

February 2013 Meeting:

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

March 2013:

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

April 2013:

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

May 2013:

1. Meeting to be held with PUC 5/15
2. The terms and conditions of the MOU are still to be resolved.

**Risk Mitigation Status****Risk Reference: B**

Risk		Mitigation Strategy
Storage and testing of excavated soils from tunnel limits advance rate of tunneling.	√	<ol style="list-style-type: none"> <li>1. Provide adequate storage and handling facility to accommodate testing activity.</li> <li>2. Work with SAR to develop acceptance criteria, to minimize or eliminate testing requirements.</li> <li>3. Require the contractor to provide a detailed workplan for testing, sorting and stockpile prior to hauling.</li> </ol>

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

January 2012 Meeting:

1. The tunnel contractor is required to prepare and submit for approval preliminary workplan for handling and testing excavated materials. Contractor is attempting to obtain the use of additional Caltrans parcel between Fourth & Fifth and Harrison & Bryant to help facilitate this work and provide additional storage area.
2. The Project Team is working with Caltrans and the community to obtain a temporary lease for this parcel.
3. Added mitigation strategy to expedite testing of material.
4. Recommend to reduce this risk to 2, 3, 6.

June 2012 Meeting;

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

December 2012:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: B</b>

April 2013:

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

May 2013:

1. BIH have confirmed that material handling and storage capacity will not be reduced
2. Recommend reduce this risk rating to 3



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

Risk	Mitigation Strategy
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:** S. Wilson**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.

<b>Risk Mitigation Status</b>
<b>Risk Reference: F - CTS</b>

<b>Risk</b>		<b>Mitigation Strategy</b>
Underground obstructions at Chinatown Station	√	1. Provide adequate allowance for differing site conditions to address unknown underground obstructions.
	√	2. Make as-built drawings of structures adjacent to the work available to the contractor as reference drawings.

**Initial Assessment:** 2, 2, 8

**Risk Owner:** M. Benson

**Current Assessment:** Risk Rating 8 – Construction Risk

**Status Log:**

March 2012 Meeting:

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

March 2013:

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

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

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

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

March 2012 Meeting:

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

March 2013:

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

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

Risk	Mitigation Strategy
Underground obstructions at Union Square/Market Street station.	<ol style="list-style-type: none"><li>1. Provide adequate allowance for differing site conditions to address unknown underground obstructions.</li><li>2. Show field verified obstructions discovered during previous contracts on contract drawings.</li><li>3. Make as-built drawings of structures adjacent to the work available to the contractor as reference drawings.</li></ol>

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

March 2012 Meeting:

1. Allowance for differing site conditions added as GE bid item.
2. All known underground obstructions shown on ES drawings.
3. Recommend to reduce this risk rating.

August 2012 Meeting:

1. Steam chase pipe encountered on 1252 contract.
2. Add allowance through CMB to deal with underground obstructions /hazardous materials.

September 2012 Meeting:

1. Allowance for differing site conditions has generally not been included as a bid item; some different unit prices have been included in lieu.
2. Attendees at the meeting accepted that the risk could not be reduced or mitigated any further.

**Risk Mitigation Status****Risk Reference: G**

Risk		Mitigation Strategy
Closure on Washington Street		1. Develop primary mitigation to allow closure of Washington Street.

**Initial Assessment:** 1, 0, 0**Current Assessment:** Risk Rating 0 – Design Risk**Risk Owner:** Q. Chin**Status Log:**

September 2011:

See Risk 122 for discussion of this risk.

**Risk Mitigation Status****Risk Reference: J**

Risk	Mitigation Strategy
Macy's entrance conflict with new piles.	<ol style="list-style-type: none"><li>1. Show known obstructions on as-built drawings on contract drawings,</li><li>2. Make as-built drawings available to contractor as reference drawings.</li><li>3. Include allowance for differing site conditions.</li><li>4. Recover costs for removal of Macy's entrance from Macy's if it is in conflict with station construction.</li></ol>

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

February 2012:

1. Known obstructions are shown on the ES drawings.
2. As-built Macy's drawings will be made available to the station contractor.
3. An allowance for differing site conditions has been added to the contract.

November 2012:

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

**Risk Mitigation Status****Risk Reference: Q**

Risk	Mitigation Strategy
As-built drawings and construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction of north entrance.	<ol style="list-style-type: none"><li>1. Investigate if electronic files of design can be given to the contractor.</li><li>2. Clearly define shop drawing criteria in the technical specifications.</li><li>3. Make as-built drawings available as reference drawings to the contractor.</li><li>4. Allow enough time in Master Project Schedule to produce shop drawings for structural steel at USG.</li></ol>

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

March 2012:

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

March 2013:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: T</b>

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

**Initial Assessment:** 2, 2, 4

**Current Assessment:** Risk Rating 4 – Requirement Risk

**Risk Owner:** R. Edwards

**Status Log:**

December 2011:

1. A meeting was held on 12/15/11 with SFFD and SFMTA to discuss emergency ventilation. SFFD agreed to the proposed plan by SFMTA as long as additional signage and lighting were provided in the stations to increase the safety of emergency responders in event of an emergency.

March 2012 Meeting:

1. Required emergency ventilation requirements will be incorporated into the construction documents.
2. Recommend to retire this risk from the risk register.
3. This risk is not retired. Final approval by SFFD on 100% construction documents still needed.

May 2012 Meeting:

1. SFFD requirements are being implemented in the construction documents.
2. A variance for the under stair requirement will be sought from SFFD.

June 2012 Meeting:

1. SFFD has conditionally approved the 3-fan configuration in the stations.
2. SFFD has conditionally approved the CFD analysis for each station based on the approval of one-hour tenability using illuminated platform edge, and access/egress route signage/demarcation.
3. Final approval by SFFD will occur during the DBI pre-application review for each station.

September 2012 Meeting:

1. SES review comments addressed, revised report submitted.

October 2012 Meeting:

1. Follow up required with SES to close out remaining comments and confirm concurrence

1. November 2012 Meeting:

1. Central Subway continue to work with SFFD to close out the remaining comments

December 2012 Meeting:

1. Comments received by SFFD, submittal will be revised.



<b>Risk Mitigation Status</b>
<b>Risk Reference: T</b>

January 2013:

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

February 2013 Meeting:

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

March 2013:

1. No new update to this risk.

April 2013:

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

May 2013:

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

**Risk Mitigation Status****Risk Reference: U**

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

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

January 2012 Meeting:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: V</b>

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

**Initial Assessment:** 3, 2, 6

**Risk Owner:** R. Edwards

**Current Assessment:** Risk Rating 6 – Design Risk

#### **Status Log:**

March 2012 Meeting:

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

May 2012 Meeting:

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

June 2012 Meeting:

No status update.

August 2012 Meeting:

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

September 2012 Meeting:

1. Conditional Use permit received for CTS.

October 2012 Meeting:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: V</b>

November 2012 Meeting:

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

December 2012:

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

January 2013:

1. No additional request to report from SFMTA.

February 2013 Meeting:

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

March 2013 Meeting:

1. No new update to this risk.

April 2013:

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

<b>Risk Mitigation Status</b>
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<b>Risk Reference: V</b>
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May 2013:

1. CTS

- a) Agency has additional funds from Funding Source:- Environmental Mitigation for Open Space
- b) Gensler Architects to come up with proposals to perform some minor modification to the **surface** portion of Chinatown Station. Community meeting will be held in late May or June to present options. Community feedback will determine how to proceed with surface build-out of CTS.

2. MOS

- a) Funding source has not yet been established for MOS. Central Corridor plan is in the EIR development stage.

**Risk Mitigation Status****Risk Reference: PR1**

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

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

May 2013:

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

**Risk Mitigation Status****Risk Reference: PR37**

Risk	Mitigation Strategy
Temporary construction power and ability to provide permanent power feed - PGE ability to provide power requirements to the program together with their other commitment	1. Identify temporary power requirements for station construction. 2. Investigate the timing of the permanent feed.

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

March 2013:

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

<b>Risk Mitigation Status</b>
<b>Risk Reference: PR73</b>

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

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

**Risk Owner:** R. Edwards

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

**Status Log:**

March 2012 Meeting:

1. Project team continues to coordinate with 3<sup>rd</sup> party utility agencies (AT&T, PG&E, SFDT) to complete construction and cutover of facilities designed under CN1250 & CN1251.

May 2012 Meeting:

1. Met with SFDT to confirm the scope of work that they will perform for the Systems contract.

June 2012 Meeting:

1. Agreements on scope of work with SFDT are being sought.

August 2012 Meeting:

1. MOU written to DTIS to define scope. Awaiting concurrence. SFFD reviewing 90-100% design no comments received to date.

September 2012 Meeting:

1. Central subway following up DTIS

October 2012 Meeting:

1. Follow up with DTIS still required, verbal concurrence received
2. 3<sup>rd</sup> Party Utilities
  - a. 1300 Utility relocations – status to be advised next meeting
  - b. 1256 utility relocations – confirmation and schedule required – follow up next meeting

November 2012 Meeting:

1. Follow up with DTIS still required
2. 3<sup>rd</sup> Party Utility
  - a. 1300 Utility relocations – High level timeframes to be obtained from utility owners
3. 1256 Utility relocations
  - a. Confirmation and schedule to be sought from affected utilities.
  - b. AT&T to advise high level time frames should relocation of the duct bank (east side of 4<sup>th</sup> street, south of Bryant) be required.



<b>Risk Mitigation Status</b>
<b>Risk Reference: PR73</b>

December 2012:

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

January 2013:

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

February 2013 Meeting:

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

March 2013:

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

April 2013:

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

May 2013:

1. DTIS scope concurrence letter signed 4/19/13
2. Recommend creating a new construction risk to coordinate DT's work once contract 1300 schedule has been established.
3. Recommend retiring this risk.

Risk Mitigation Status		
Risk Reference: PR78		
Risk		Mitigation Strategy
Delays or complication by other SFMTA projects delays CSP: radio, fare collection, C3/TMC, ATCS		1. Monitor other projects' developments and develop contingency plans as needed to avoid 1256 delay of revenue service.

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

**Risk Owner:** M. Benson

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

#### Status Log:

May 2012 Meeting:

1. Thales is expected to provide the CSP advanced train control system under a sole source contract requiring FTA approval.
2. An RFP has been prepared for Thales services, equipment and contract preparation
3. Thales will review the CSP Project specifications, drawings and related documents
4. Thales will provide commentary and revise CSP design documents
5. Thales will list proprietary software, hardware, systems, equipment and components including a Bill of Materials
6. Thales will submit a cost proposal as part of the RFP.
7. Thales will assist in Contract Preparation
8. SFMTA Radio Project has been delayed. Equipment requirements from this project may be needed for the Systems contract. Fiber backbone upgrades in Market Street subway may be needed for implementation of Systems contract.
9. Capacity on the existing backbone within the Muni Metro tunnel will become available. CSP to investigate if this new capacity can be utilized for the project.
10. SFDT has suggested that a route to TMC at 1455 Market is available through existing ductbanks within the city streets.
11. The schedule for completion the C3 project at the TMC has it completed several years in advance of the time that CSP will need to tie into the TMC.

June 2012 Meeting:

1. Design has been completed with SFMTA projects integrated into contract documents.
2. Recommend to retire this risk and open new construction risk on this subject.

July 2012

1. This risk has been re-adjusted to a construction risk. Risk owner was changed from C. Campillo to M. Benson

**Risk Mitigation Status****Risk Reference: PR80**

Risk		Mitigation Strategy
ROW costs higher than anticipated.		1. Provide adequate contingency for potential higher costs

**Initial Assessment:** 1, 2, 2**Current Assessment:** Risk Rating 2 – Market Risk**Risk Owner:** R. Edwards**Status Log:**

January 2012:

**Risk Mitigation Status****Risk Reference: PR82**

Risk		Mitigation Strategy
Confined work spaces along alignment can impact productivity and result in significant cost and schedule impacts.		1. Account for cost and schedule impacts in estimate and schedule for contract packages

**Initial Assessment:** 1, 2, 2**Current Assessment:** Risk Rating 2 – Construction Risk**Risk Owner:** R. Redmond/M. Benson**Status Log:**

January 2012: