

## Risk Mitigation Meeting Minutes #84

DATE: July 20, 2016  
 MEETING DATE: **July 07, 2016**  
 LOCATION: 530 Bush Street, 4<sup>th</sup> Floor – Large Conference Room  
 TIME: 3:00pm  
 ATTENDEES: John Funghi, Albert Hoe, Eric Stassevitch, Mark Latch, Beverly Ward, Luis Zurinaga  
 COPIES TO: Attendees:, Roger Nguyen, Jane Wang, Bill Byrne, John Lackey, Jeffrey Davis  
 File: M544.1.5.0820  
 REFERENCE Program/Construction Management  
 SUBJECT: **Risk Management – Risk Mitigation Meeting  
 Risk Mitigation Report No. 84**

### RECORD OF MEETING

ITEM #		ACTION BY DUE DATE
	<p>The Risk Committee performed a quarterly review of active risk items previously assessed as being a lower rated risk, identified by a rating of five and below, as well as a review of all other construction risk rated 6 and above. The purpose of this review is to evaluate the current disposition of the risk, determining if the risk rating continues to be valid, or requires reevaluation by the Committee. By examining the risk description, and mitigation strategies against current construction activities enabled the Committee to make an accurate determination of the current risk status. Listed below are those risks, which received a ratings reclassification, risk rating was unchanged or risk was determined to be no longer a risk to the Program. Risk items deemed no longer a valid risk were retired from the Risk Register. In addition, a monthly update was reported on some of the current construction risk and the one remaining requirement risk.</p>	
1 –	<b>Risk Report and Reassessment (Risk rated rating <math>\leq</math> 6)</b>	
	<p><b>Risk 34:</b> Loss of business results in unanticipated restrictions on construction at UMS.  <u>Discussion:</u> This coming winter will be the last winter where the Program will engage with the Union Square Merchant's Association, transforming UMS on Stockton Street to "Winter Walk", during the Holiday moratorium. This risk will remain open for an additional year. By the end of this year, the Program expects to grant access or have returned as useable space the streets back to the public. The Committee performed a reassessment of the risk rating, reducing the risk.</p> <p><b><u>New Risk Rating 2 (1, 3, 1)</u></b>                      Probability (1), &lt;10%                      Cost impact (3), &lt;&gt; \$1M - \$3M                      Schedule impacts (1), &lt; 1 Month</p> <p><b>Risk 99:</b> Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule  <u>Discussion:</u> A Central Subway Partnering meeting was held on June 24<sup>th</sup>, and a DRB meeting as well in the month of June. <b>Risk Rating 5</b></p>	

ITEM #		ACTION BY DUE DATE
	<p><b>Risk 104:</b> CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows  <u>Discussion:</u> CPUC General Order for At Grade Crossing extension was granted to CSP. The extension is valid until March 11, 2019. CPUC’s original approval was granted conditionally, upon CSP’s consideration of incorporating the Red X cross buck design. Until the Agency is agreeable to the change, Central Subway, at this time, cannot adopt CPUC’s design standard without being in violation of the agencies Standard Operating Procedures (SOP). Currently SFMTA uses a turning white/amber colored signal light. Th3 adoption of CPUC’s design remains an open issue between the SFMTA and CPUC. A pending resolution related to the grade crossing could possibly become an issue at the back end of the project for CSP. <b>Risk Rating 5</b></p> <p><b>Risk 72:</b> Interface new Signaling and Train Control system to existing at Fourth and King  <u>Discussion:</u> The permanent track work at 4<sup>th</sup> and King Street has been installed. The remaining work to be completed is a subsection of 4<sup>th</sup> and King Street signaling work, as part of (phase two) has yet to begin. Completion of this work will take place at the end of year 2017. <b>Risk Rating 5</b></p> <p><b>Risk 237:</b> Non-Conforming work is not identified by TPC’s Quality Control Program  <u>Discussion:</u> The QCP program is working well. The Contractor has begun writing NCR’s without suggestions from SFMTA. There are still a few occasions where a difference of opinion occurs as to the necessity of report. In this case, SFMTA has requested the Contractor; write it the report in tandem while the Contractor continues to make his case, why it is not valid. If the NCR is determined to be unjustified, the Contractor has the right to void it. <b>Risk Rating 6</b></p> <p><b>Risk 95:</b> Contractor default during construction impacts schedule. (key sub-contractor)  <u>Discussion:</u> This risk is yet to happen, but will remain an active risk on the on the risk register until the end the job. <b>Risk Rating 2</b></p> <p><b>Risk 36:</b> Damage to buildings or utilities as a result of heave from jet grouting  <u>Discussion:</u> The risk description, of jet grouting as stated is no longer considered a risk since jet grouting is complete. The Committee agreed the risk should continue to be active, with a slight change to the description. The new description removes the word “jet”, recognizing there could also be potential damage caused by compensation grouting. This change was implemented and will be noted on the risk summary status sheet as well. <b>Risk Rating 5</b></p> <p><b>Risk 223:</b> Contamination during dewatering (CTS)  <u>Discussion:</u> Dewatering is taking place with very little water. Recent testing of leaking waterlines in the area, where the Contractor assumed it was sewer water; San Francisco Water testing determined it to be a combination of drinking and groundwater. The Committee performed a reevaluation of the risk rating, reducing the risk. This risk will be evaluated again next month, to determine if the status at that time is a realistic candidate for retirement.  <b>New Risk Rating 2 (1, 3, 1)</b>                      Probability (1), &lt;10%                      Cost impact (3), &lt;&gt; \$1M - \$3M                      Schedule impacts (1), &lt; 1 Month</p>	

ITEM #		ACTION BY DUE DATE
	<p><b>Risk PR37:</b> Temporary construction power and ability to provide permanent power feed - PGE ability to provide power requirements to the program together with their other commitment  <u>Discussion:</u> Currently there is a source identified for YBM, but power has not been brought to the location yet. <b>Risk Rating 3</b></p> <p><b>Risk 115:</b> Jet grouted station end walls are installed by tunnel Contractor - Station Contractor assumes risk of possibly leakage problems due to insufficiently quality of end walls  <u>Discussion:</u> The Contractor has not reached the bottom yet. <b>Risk Rating 3</b></p> <p><b>Risk 48:</b> Incomplete drawdown of groundwater at CTS (inside of box and inside of caverns)  <u>Discussion:</u> Work has not completed in this area yet. <b>Risk Rating 3</b></p> <p><b>Risk Q:</b> As-built drawings and construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction of north entrance  <u>Discussion:</u> Inaccurate as built drawings have created issues occurring in the area due to differing site conditions (DSC) taking place, which are being, address during progress of the work. <b>Risk Rating 3</b></p> <p><b>Risk 204:</b> Relocation of AT&amp;T Vault and other utilities delays Work south of Bryant  <u>Discussion:</u> The vault has been identified, but the work has not been begun yet.  <b>Risk Rating 3</b></p> <p><b>Risk 205:</b> Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor  <u>Discussion:</u> Contractor and CSP are working to mitigate any issues that arise. The Committee performed a reevaluation of the risk rating, increasing the risk value to a 6. <b>New Risk Rating 6 (4, 2, 1)</b>  Probability (4), &lt;&gt; 75% &amp; 90%  Cost impact (2), &lt;&gt; \$250K - \$1M  Schedule impacts (1), &lt; 1 Month</p> <p><b>Risk PR78:</b> Delays or complication by other SFMTA projects delays CSP: radio, fare collection, C3/TMC, ATCS  <u>Discussion:</u> The agency lacks a centralize configuration management control of the design within the system (C3) radio project, which encumbers the ability to know what coordination is taking place. These suggested changes will need to be identified as authorized changes. The Committee performed a reevaluation of the risk rating, increasing the risk value to a 4.  <b>New Risk Rating 4 (2, 2, 2)</b>  Probability (2), &lt;&gt; 10-50%  Cost impact (2), &lt;&gt;\$250K - \$1M  Schedule impacts (2), &lt;&gt; 1 - 3 Months</p> <p><b>Risk 100:</b> Procurement of long lead items delays work. (fans, rails and special track work, TPSS, Escalators, elevators, TBM)  <u>Discussion:</u> Long lead items have already been order. There are still discussions concerning the fans. <b>Risk Rating 2</b></p>	

ITEM #		ACTION BY DUE DATE
	<p><b>Risk 246:</b> Design changes not being captured in as-builts  <u>Discussion:</u> Design changes are being identified, but how to get to the actual detail is still being sorted through. The process of capturing design changes in the as-built drawings require an examination to confirm RFI's and submittal design changes are in fact, being attached to the contract drawings. <b>Risk Rating 2</b></p> <p><b>Risk 103:</b> Difficulty in getting required permits  <u>Discussion:</u> CSP has one remaining Caltrans permit to obtain at 4<sup>th</sup> and Bryant for STS scope of work. <b>Risk Rating 2</b></p> <p><b>Risk 224:</b> CTS AWSS / Ductbank Interface - AWSS system is old and requires replacement  <u>Discussion:</u> AWSS line running down the Street of Stockton through the PG&amp;E vault. Replacement of this vault is questionable. The Contractor shutoff the system at Clay Street and at Washington Street while CSP work is being completed. The Committee performed a reevaluation of the risk rating, reducing the risk.  <b>New Risk Rating 2 (2, 1, 1)</b>                      Probability (2), &lt;&gt;10% - 50%                      Cost impact (1), &lt; \$250K                      Schedule impacts (1), &lt; 1 Month</p>	
2 -	<b>Risk Items Retired from Risk Register after Reassessment</b>	
	<p><b>Risk F (UMS)</b>  <u>Discussion:</u> A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #F (UMS).  <b>This risk will be retired. Risk Rating 0</b></p> <p><b>Risk F (CTS) Underground obstructions at Chinatown Station</b>  <u>Discussion:</u> A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #F (CTS).  <b>This risk will be retired. Risk Rating 0</b></p> <p><b>Risk 68:</b> Archeological/Cultural findings during construction increases schedule and/or cost. (CHINATOWN) ...AROUND 10%  <u>Discussion:</u> The Contractor has reached the bottom; the soil below is all native Franciscan soil. A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #68.  <b>This risk will be retired. Risk Rating 0</b></p> <p><b>Risk 241:</b> Potential Winter Impacts (Preparation for El Niño)  <u>Discussion:</u> A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #241.  <b>This risk will be retired. Risk Rating 0</b></p>	

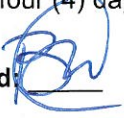
ITEM #		ACTION BY DUE DATE
	<p><b>Risk 33:</b> Damage to utilities causes delay to construction and/or consequential cost. (very close to walls adjacent to relocated utility trenches at UMS)  <u>Discussion:</u> On July 22 2016, the last roof beam will be put in. A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #33. <b>This risk will be retired Risk Rating 0</b></p> <p><b>Risk 245:</b> Relocation of Resident Engineer's Construction Management Operations  <u>Discussion:</u> A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #245.  <b>This risk will be retired. Risk Rating 0</b></p> <p><b>Risk 28:</b> Incomplete cutoff of groundwater at UMS  <u>Discussion:</u> A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #28.  <b>This risk will be retired. Risk Rating 0</b></p> <p><b>Risk 35:</b> 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)  <u>Discussion:</u> The piezometer will show an increase in the water table. A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #35. <b>This risk will be retired. Risk Rating 0</b></p> <p><b>Risk 22:</b> Public complaints result in unanticipated restrictions on construction at UMS station  <u>Discussion:</u> A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #22.  <b>This risk will be retired. Risk Rating 0</b></p> <p><b>Risk 21:</b> Incomplete cutoff of groundwater at Moscone Station (YBM)  <u>Discussion:</u> We are at the bottom. A reassessment of this risk was implemented. By unanimous decision, the Committee has voted to retire this risk. For a complete history of the monthly status of the risk, refer to the Risk Mitigation Status sheet #21.  <b>This risk will be retired. Risk Rating 0</b></p>	
3-	There were no new risks were added to the Risk Register this month.	

**ACTION ITEMS –**

ITEM #	MTG DATE	DESCRIPTION	BIC	DUE DATE	STATUS
3	05/07/15	<b>Risk 72</b> – 4 <sup>th</sup> & King - Develop a test plan checklist for recertifying	S. Pong	8/04/16	Open

Meeting adjourned at 4:15pm

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

Signed:  [initials of preparer]      Date: 7/28/16 [Date completed].

## Meeting Agenda

**Project No. M544.1, Contract No. CS-149**  
**Program/Construction Management**  
**Risk Mitigation Management Meeting No. 84**  
**July 07, 2016**

*3pm*  
**2:00pm – 4:00pm**

Central Subway Project Office  
530 Bush Street, 4<sup>th</sup> Floor  
Large Conference Room

### Attendees:

William Byrne		Mark Latch		Beverly Ward	
John Funghi		Roger Nguyen		Luis Zurinaga	
Albert Hoe		Eric Stassevitch			

### 1. Report on Red Risks (Rated 6 and above)

- Construction Risks (36, 52, **232**, 233, 234, 238, 240, 241)

### 2. Report on Remaining Requirement Risk

- Requirement Risk (104)

### 3. Report on Active Risks (Rated below 6)

- Construction Risks (48, 100, 204)

### 4. Reassessment of all identified risk items on the Risk Register

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

## Meeting Attendance Sheet

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

**Program/Construction Management**

**Risk Management Meeting No. 84**

July 07, 2016

*3P* 2:00 p.m. – 4:00 p.m.

Central Subway Project Office

530 Bush Street, 4th Floor

Large Conference Room

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

NAME	AFFILIATION	PHONE	E-MAIL (for minutes)	INITIALS
Bill Byrne	DEA/PMOC	720-225-4669	<a href="mailto:BByrne@deainc.com">BByrne@deainc.com</a>	
Jeffrey Davis	FTA	415-744-2594	<a href="mailto:Jeffrey.s.davis@dot.gov">Jeffrey.s.davis@dot.gov</a>	
John Funghi	SFMTA	415-660-5403	<a href="mailto:John.funghi@sfmta.com">John.funghi@sfmta.com</a>	<i>JF</i>
Albert Hoe	SFMTA	415-660-5385	<a href="mailto:Albert.hoe@sfmta.com">Albert.hoe@sfmta.com</a>	<i>AH</i>
John Lackey	DEA/PMOC	503-499-0596	<a href="mailto:jal@deainc.com">jal@deainc.com</a>	
Mark Latch	CSP	415-660-5410	<a href="mailto:Mark.latch@sfmta.com">Mark.latch@sfmta.com</a>	<i>ML</i>
Roger Nguyen	SFMTA	415-701-4312	<a href="mailto:Roger.Nguyen@sfmta.com">Roger.Nguyen@sfmta.com</a>	
Eric Stassevitch	CSP	415-660-5407	<a href="mailto:Eric.stassevitch@sfmta.com">Eric.stassevitch@sfmta.com</a>	
Beverly Ward	CSP	415-660-5386	<a href="mailto:Beverly.ward@sfmta.com">Beverly.ward@sfmta.com</a>	<i>BW</i>
Lyn Wylder	DEA/PMOC	503-499-0273	<a href="mailto:cdw@deainc.com">cdw@deainc.com</a>	
Luis Zurinaga	SFCTA	415-716-6956	<a href="mailto:luis@sfcta.org">luis@sfcta.org</a>	<i>LZ</i>



<b>Risk Mitigation Status</b>
<b>Risk Reference: 21</b>

Risk	Mitigation Strategy
Incomplete cutoff of groundwater at Moscone Station	<ol style="list-style-type: none"> <li>1. Require additional grouting to limit leakage to permissible level.</li> <li>2. Assume probable grouting work in cost &amp; schedule estimates.</li> </ol>

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

**Risk Owner:** M. Vilcheck

**Status Log:**

February 2012:

1. Additional grouting has been made part of the contract documents.
2. Deep slurry walls are designed to cutoff groundwater.

May 2015

1. Cutoff has been achieved. The Program has a repair procedure in place.
2. Risk owner has been changed to Mark Vilcheck.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee preformed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This current construction Risk rating will remain a 1.
3. No change to this risk, the Contractor is down to the second level, with two more to go.

March 2016:

1. No change.

July 2016:

1. By unanimous decision, the Committee has voted to retire this risk on 07/07/16..

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

Risk	Mitigation Strategy
Public complaints result in unanticipated restrictions on construction at UMS station.	<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. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed.</li> <li>4. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements.</li> <li>5. Quickly process and resolve damage and accident claims from the Public. Assumed this work in cost &amp; schedule estimates.</li> </ol>

**Initial Assessment:** 2, 1.5, 3**Current Assessment:** Risk Rating 0 – Construction Risk**Risk Owner:** S. Wilson**Status Log:**

September 2011:

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

October 2013:

1. Central Subway staff are in regular communication with BID
  - a. UMS construction hoarding has incorporated suggestions from BID
  - b. Staff are working with BID to develop space activation to commence during the 2014 holiday moratorium
2. Construction updates are being communicated weekly via mailing lists, social networks and the Central Subway website
3. Sidewalks and windows are regularly cleaned during construction.

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

Risk	Mitigation Strategy
Public complaints result in unanticipated restrictions on construction at UMS station.	<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. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed.</li><li>4. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements.</li><li>5. Quickly process and resolve damage and accident claims from the Public. Assumed this work in cost &amp; schedule estimates.</li></ol>

## October 2015:

1. The Contractor's work has not been restricted in this area. Minor issues have been addressed.
2. The Program will implement Winter Walk 2.0 to commence during the 2015 holiday moratorium.

## November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee preformed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This current construction Risk rating will remain a 1.

## July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.

**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 0 – Construction Risk**Risk Owner:** S. Wilson**Status Log:**

February 2012:

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

November 2015:

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. The This current construction Risk rating will remain a 2
3. The status of the groundwater cutoff will note be ascertain until the bottom is reached.

July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.

**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, 3**Initial Assessment:** Risk Rating 0 – Construction Risk**Risk Owner:** S. Wilson**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.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. The This current construction Risk rating will remain a 2
3. Issues have been realized, but were dealt with. The intersection at O'Farrell Street still has the potential to become a risk.

July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.

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

Risk	Mitigation Strategy
Loss of business results in unanticipated restrictions on construction at UMS.	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 2 – Construction Risk**Risk Owner:** S. Wilson**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.

June 2015:

1. The jet grouting could constitute a restriction in the area.

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

Risk	Mitigation Strategy
Loss of business results in unanticipated restrictions on construction at UMS.	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.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee preformed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This construction Risk rating will remain a 5.

July 2016:

1. By the end of the year the Contractor will be able to reopen the streets and return useable space back to the public.
2. The Committee performed a reassessment of the risk rating, reducing the risk.

**New Risk Rating 2 (1, 3, 1)**

Probability (1), &lt;10%

Cost impact (3), &lt;&gt; \$1M - \$3M

Schedule impacts (1), &lt; 1 Month

**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 0 – Construction Risk**Risk Owner:** S. Wilson**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.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. The construction risk rating will remain a 2
3. Ground water table is being monitored.

July 2016:

1. Risk retired by unanimous consent of Risk Assessment Committee 07/07/16.



<b>Risk Mitigation Status</b>
<b>Risk Reference: 36</b>

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

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

**Risk Owner:** S. Wilson

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

**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.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid. The construction Risk rating will remain a 1.
2. Heave from the jet grouting did occur in the Macy’s basement

March 2016:

1. Very little grout has entered the buildings, when discovered the Contractor has addressed the issue.

July 2016”

1. Jet grouting is complete.
2. Risk description will be change to “Damage to buildings or utilities as a result of heave from grouting”.
3. The Committee performed a reassessment of the risk, rating will remain a 5.

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

**Risk Owner:** D. Jacobson

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

**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).

April 2016:

1. Continuing issue for CTS. Mark Kronke and Doug J are checking on bore logs, depth of dewatering wells, and drawdown depths in the area of tunneling. Most areas are show ground water above the crown of the tunnel.

May 2016:

1. Water levels are being monitored. The Task Force team is discussing the need for additional piezometer.

June 2016:

1. Currently, the Task Force has agreed that there is no need for an additional piezometer (COR#547). Dewatering continues with rates of approximately 1 gpm (gallon per minute) for the last month. As tunneling excavation continues for the Cross Cut Cavern, only slight drips are noted by the geologists (FK and PB) indicating the formations in the area are dewatered.
2. Contractor has 8 dewatering wells (90 to 120 feet deep) in the immediate vicinity of the Cross Cut Cavern and North Emergency Egress Shaft. Both locations are stable with no water intrusion issues at this time.

July 2016:

1. Work is ongoing.
2. The Committee performed a reassessment of the risk, rating will remain a 3.

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

Risk		Mitigation Strategy
Archeological/Cultural findings during construction increases schedule and/or cost. (CHINATOWN) ...AROUND 10%	<ul style="list-style-type: none"> <li>√</li> <li>√</li> </ul>	<ul 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> </ul>

**Initial Assessment:** 1, 2.5, 3**Current Assessment:** Risk Rating 0 – Construction Risk**Risk Owner:** M. Kobler**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

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This current construction Risk rating will remain a 5.

July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.

<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	<ol style="list-style-type: none"> <li>1. New system will be connected in parallel with existing system until the new system has been tested and safety certified for operation.</li> </ol>

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

**Risk Owner:** S. Pong

**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.

<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	<ol style="list-style-type: none"> <li>1. New system will be connected in parallel with existing system until the new system has been tested and safety certified for operation.</li> </ol>

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.

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.

July 2013 Meeting:

1. SFMTA to begin discussions with CN 1300 Contractor – Tutor Perini to develop site specific work plans and identify weekend work windows.

October 2014:

1. Review of the designs constructability needs additional evaluation.
2. A swat team to include Program Management, RE and ARE will be created to address the interface issues between trackwork, signaling and train control system.

February 2015:

1. S. Pong to setup a meeting with the Designer (HNTB) to respond to outstanding questions related to signal and train control.

March 2015:

1. The meeting with HNTB (DP3) has yet to take place. S. Pong is still working on coordination.

April 2015:

1. Meeting took place between SFMTA and HNTB (DP3). A solution is still pending. The Designer needs to demonstrate their signaling phasing design similar to the track design.

May 2015:

1. The Contractor will submit a master plan to address the question of how they plan to recertify the 4th and Street intersection for revenue service.
2. TPC needs to fill the liaisons positions of a System Integrator.

June 2015:

1. SFMTA received contractor's master workplan on 5/18 and is under review.

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

Risk	Mitigation Strategy
Interface new Signaling and Train Control system to existing at Fourth and King	<ol style="list-style-type: none"> <li>1. New system will be connected in parallel with existing system until the new system has been tested and safety certified for operation.</li> </ol>

- July 2015:
1. Approval of the H&K track switch machine submittal has been rescinded. See SFMTA Ltr 0765, dated June 17, 2015.
  2. SFMTA has offered an alternative, to use the enhanced Irwin switch for train control. PCC 060 was issued to the Contractor to obtain a price quote to procure four track switches.
- August 2015:
1. Revised PCC 060 was issued to the contractor for the enhanced Irwin switch for 4<sup>th</sup> and King and Bluxome intersections, modifications of the switch machine from gauge side to field side, and modifications of the train signal controller and cabinet to accommodate the new Irwin switch machines.
  2. The overall shutdown has been reduced to three to minimize the signal work and to defer the actual signal work to the last shutdown after the civil work is completed.
- September 2015:
1. Irwin switches for train control system been procured. The Current 4th and King Street, phase 1 and 2 work will not include work to Installation of the train control system; will take place during the third occurrence of the 4<sup>th</sup> and King planned shutdown.
- October 2015:
1. Irwin switches for the train control systems have been received and housed on site. Two of the switches were installed during phase 1 of the shutdowns.
  2. The next plan work is schedule to take place on Monday, November 9<sup>th</sup>.
- November 2015:
1. The Contractor will be putting in the infrastructure so that interim signaling solution will be operational, during the second phase shutdown at 4<sup>th</sup> and King Streets scheduled on Monday, November 9<sup>th</sup>
  2. Future work will involve cutover work to cut in the certifiable permanent system
- July 2016:
1. The permanent track work to be completed will not being until the end of 2017.
  2. The current construction risk rating will remain a 5.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 95</b>

<b>Risk</b>	<b>Mitigation Strategy</b>
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:** Albert Hoe

**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.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. The current construction Risk rating will remain a 2.

July 2016:

1. There has been no change to this risk.
2. The current construction risk rating will remain a 2.

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

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

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

**Risk Owner:** E. Stassevitch

**Status Log:**

February 2012 Meeting:

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

December 2012:

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

March 2013:

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

April 2013:

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

May 2013:

1. New Issue Resolution Ladder process presented at the CMB

June 2013:

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



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

October 2013:

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

November 2013:

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

December 2013:

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

March 2014:

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

April 2014:

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

May 2014:

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

December 2014:

1. Quarterly Partnering meetings are taking place to address issues.

August 2015:

1. An executive partnering session meeting is schedule between SFMTA and TPC's upper management on August 27, 2015 at 10am.

**Risk Mitigation Status****Risk Reference: 99**

<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.	1. Executive partnering and alternate dispute resolution. 2. Train staff in adherence to issue resolution process

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee preformed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This construction Risk rating will remain a 5.

April 2016:

1. Meetings are taking place with TPC's management every Thursday at 1:30pm. The RE's also attend a progress meeting each Tuesday and Wednesday's with a number of TPC management.

May 2016:

1. In an effort to resolve any issues meetings between SFMTA and the Contractor are ongoing.

June 2016:

1. Weekly meetings with REs and Project Engineers for TPC together with Executive Weekly meetings continue to be held to improve communications and address issues. Focus will continue to be on resolving disputes at the lowest possible level.

July 2016:

1. Executive Weekly meetings are ongoing. Recently the project conducted a Partnering meeting on June 24<sup>th</sup>, as well a DRB meeting.
2. The Committee performed a reassessment of the risk, rating will remain a 5.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 100</b>

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 – Construction Risk

**Risk Owner:** J. Wang / S. Pong / E. Stassevitch

**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

July 2013:

1. Risk changed from Market Risk to Construction Risk.
2. Risk owner changed from R. Edwards to R. Redmond.
3. CN 1300 Contractor - Tutor Perini has been requested to include long lead items in baseline schedule.
4. Revisit following review of baseline schedule submittal (expected mid July).

October 2015:

1. Long Lead items are in Baseline schedule, and being monitored.
2. Need to verify status of TPSS, Escalators and Elevators.
3. Track work items currently in storage in nearby yards.
4. Sanford Pong will go to witness a fabrication of the Traction Power Substation (TPSS) on October 19, 2015 in the Utah.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. The construction Risk rating will remain a 2.

May 2016:

1. A MEP meeting was held on Tuesday, April 19, 2016. Discussions involved the issues concerning the elevators and escalators.
2. The designer along with design oversight needs to reach a resolution in instructing the Contractor through redlining the existing drawings demonstrating how to portion out the fixed stairs, escalators and the tunnel.

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

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

June 2016:

1. An adjustment giving to the elevator manufactures is now requiring modification to the escalator.
2. The Program has suggested revisiting some other alternatives for the escalator, possibly going back to the original equipment stated in the contract.

July 2016:

1. Long lead items have been order. Discussions concerning the fans are still ongoing.
2. The Committee performed a reassessment of the risk, rating will remain a 2.

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

Risk	Mitigation Strategy
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.

October 2013:

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

June 2014:

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

November 2015:

1. There are still outstanding permits to be acquired, including Caltrans permits.

December 2015:

1. Caltrans Permit is still outstanding for items to be permanently installed for the 1256 'STS' scope of work.
  - a. The project team is compiling the required documents and completing the new application.
2. The STS RE is procuring an interim encroachment permit to enable work in the field to continue.

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

January 2016:

1. Post meeting update: The RE for STS confirmed Caltrans interim encroachment permit for STS to perform work in the Caltrans yard, installing various items has yet to be acquired.

February 2016:

1. The STS RE has procured an interim encroachment permit to enable the work to continue.
2. Staff is preparing the new permanent encroachment permit application for submittal to Caltrans.

July 2016:

1. One Caltrans permit is still pending for STS.
2. The Committee performed a reassessment of the risk, rating will remain a 2.

**Risk Mitigation Status****Risk Reference: 104**

Risk	Mitigation Strategy
CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	<ol style="list-style-type: none"> <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> <li>3. Signal standardization issue will be elevated to the appropriate SFMTA Division</li> </ol>

**Initial Assessment:** 2, 3.5, 7**Current Assessment:** Risk Rating 5 – Requirement Risk**Risk Owner:** S. Pong**Status Log:**

September 2011:

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

January 2012 Meeting:

1. Design team conducted informal review meeting with CPUC on 12/6/11 in preparation for 1256 pre-final submittal. CPUC provided 5 comments at the meeting that will be incorporated by the designers:
  - Evaluate curb extension at Portal
  - Evaluate curb tapering or end treatments
  - Evaluate train coming sign at 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>

Risk	Mitigation Strategy
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> <li>3. Signal standardization issue will be elevated to the appropriate SFMTA Division</li> </ol>

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.



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

Risk	Mitigation Strategy
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> <li>3. Signal standardization issue will be elevated to the appropriate SFMTA Division</li> </ol>

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 form approval from CPUC will be given after construction completion.

July 2013

1. Confirmed design issues have been resolved and agreed to with CPUC, schedule extension granted. Schedule Extensions are for a maximum of three years, another request will need to be generated in 2016.

September 2013:

1. One comment remains open regarding the 'crossbuck' on. Resolution is still pending.

November 2013:

1. CPUC Resolution (TED-253) for extension of at grade crossing was granted. Need to reapply for extension in 2016 as well as resolve outstanding comment related to Red Cross Buck.

October 2014:

1. The Red X cross buck issue remains open. This is an agency wide issue which will require resolution between SFMTA and CPUC.

November 2015:

1. A meeting will be setup with CPUC to discuss the outstanding issue of signal design to be used.
2. CSP will request an extension of the CPUC Resolution (TED-253). The current extension will expire on 3/11/16.

January 2016:

1. Extension request letter – Resolution (TED-253) for the construction of the - At grade crossing has been drafted and will be sent to CPUC.

February 2016:

1. A letter requesting an extension (continuance) will go out by the end of the week, February 05, 2016.

**Risk Mitigation Status****Risk Reference: 104**

Risk	Mitigation Strategy
CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	<ol style="list-style-type: none"> <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> <li>3. Signal standardization issue will be elevated to the appropriate SFMTA Division</li> </ol>

March 2016:

1. Extension request letter was issued to MTC on February 9, 2016. Awaiting extension approval.

April 2016:

1. Email received on CPUC, on April 5, 2016, stating they will pass CSP's time extension request.
2. Still awaiting official approval letter from CPUC.

May 2016:

1. CSP is still awaiting official approval letter from CPUC.

June 2016:

1. SFMTA received the executed Time Extension Decision Resolution TED-259 from CPUC on Monday, May 16, 2016. Granting an extension of time to complete the construction of three new at grade highway-light rail crossings and a new track at an existing crossing as part of the San Francisco municipal transportation agency Central Subway Project.
2. Previous Resolution SX-92 authorization expired on March 11, 2016. Current extension is valid from March 11, 2016 to March 11, 2019.

July 2016:

1. This requirement risk will remain active until a resolution can be reached between the Agency and CPUC concerning the Red X cross buck.
2. The Committee performed a reassessment of the risk rating will remain a 5.

**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 quality 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:** A. Clifford**Status Log:**

September 2011:

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

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee preformed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This current construction Risk rating will remain a 3.

December 2015:

1. Excavation of the station boxes at YBM and UMS has commenced and is still expected to be complete within the 1252 Warranty Bond time period. See Item 3 of the December 2012 update.

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

<b>Risk</b>	<b>Mitigation Strategy</b>
Jet grouted station end walls are installed by tunnel Contractor. Station Contractor assumes risk of possibly leakage problems due to insufficiently quality of end walls.	<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>

April 2016:

1. N. Headwalls at UMS showed a little water. If this is an issue TPC is responsible for addressing it.
2. CN1252 includes a warrant bond, if need these will be used to remediate leakage problems.

July 2016:

1. The Contractor has yet to reach the bottom.
2. The Committee performed a reassessment of the risk, rating will remain a 3.

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

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

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

**Risk Owner:** M. Acosta

**Status Log:**

December 2012:

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

January 2013:

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

February 2013:

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

March 2013:

1. Increase scope of this risk to include other utilities; Level 3, PG&E, MRY, ASB, SFWD, SFDT, Comcast.
2. Contractual execution of the trench installation to be discussed.
3. AT&T have not been contacted during 1300 bid.
4. It was discussed that the schedule impact of this risk rating should be increased to 4 (6-12 months), this increased the risk rating to 6

April 2013:

1. Utility relocations may require a joint trench under the Contract 1300 design build scope.
2. If a joint trench is required under the contract the 1300 contractor would manage the implementation of the joint trench, SFMTA would manage the Form B process for reimbursement of the joint trench costs.

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

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

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

## May 2013:

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

## July 2013:

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

## October 2013:

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

## November 2013:

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

## December 2013:

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

## January 2014:

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

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

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

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

February 2014:

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

March 2014:

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

April 2014:

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

May 2014:

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

June 2014:

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

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

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

October 2014:

1. Installation of AT&T ductbank work continues. Surplus materials to be off hauled pending completion of soil profiling.
2. Expected completion of ductbank and vault installation is October 31, 2014 for the main trunk. At this time, AT&T can start cut-over process. Note that AT&T had recently requested to install six 4" conduits across Bryant Street. This request does not delay the cut-over start or extend the cut-over duration.

November 2014:

1. Installation of AT&T ductbank work continues. Surplus materials to be off hauled pending completion of soil profiling.
2. Expected completion of ductbank and vault installation is November 26, 2014 for the main trunk.
3. RE sent Miscellaneous City Letter #37 to put AT&T on notice of completion of main ductbank and start of cut-over work. AT&T had requested to install six 4" conduits across Bryant Street; PCC 23 was issued to Tutor. This request does not delay the cut-over start or extend the cut-over duration.

December 2014:

1. Installation of AT&T ductbank work continues. Surplus materials to be off hauled pending completion of soil profiling.
2. Expected completion of ductbank and vault installation is January 30, 2015 for the main trunk.
3. RE sent Miscellaneous City Letter #37 to put AT&T on notice of completion of main ductbank and start of cut-over work. AT&T had requested to install six 4" conduits across Bryant Street; PCC 23 was issued to Tutor. This request does not delay the cut-over start or extend the cut-over duration. RE has not received Tutor's cost proposal

January 2015:

1. No new update from December's report out.

February 2015:

1. Provide a price for BKF Design
2. Set up meeting with PUC

March 2015:

1. Completion of the ductbank work is almost done.
2. Discussions are taking place with AT&T requesting them to meet the original cut-over date. 12months form the date which was prior to any contract changes.



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

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

- April 2015:
1. Completion of the ductbank work by April 10, 2015.
  2. Discussions are taking place with AT&T requesting them to meet the original cut-over date. 12months from the date which was prior to any contract changes.
- May 2015:
1. Duct bank and vault work by the Contractor is now complete. AT&T has taken possession of the site.
- June 2015:
1. Ductbank was signed over by TPC. Substantial completion of AT&T ductbank work occurred on April 16, 2015. This is the date in which the final mandrel report was made.
  2. AT&T is in the process of ordering the cable.
- July 2015:
1. All cable materials have arrived. AT&T cutover crew will mobilize as early as the week of 7/13/2015 and no later than the week of 7/20/15.
- August 2015:
1. AT&T crew completed pulling cables. Cut-over crew will mobilize within 2 weeks for splicing. AT&T's goal is to complete cutover by end of 2015.
- September 2015:
1. AT&T cutover crew has not started work yet. The utility crew is awaiting receipt of the splicers.
  2. AT&T still believes they can put everything in before the end of the year.
- October 2015:
1. AT&T crew has yet to begin cutover work. The utility crew is awaiting receipt of the splicers.
  2. AT&T has until April 2016 to put everything in.
- November 2015
1. AT&T has made a commitment to perform the cutover work by November 19<sup>th</sup>, 2015.

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

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

## December 2015:

1. The RE is currently trying to get a more reliable schedule. Currently the work that's being performed is pre work and not the fiber connection work. PG&E has made the commitment to be done by the end of the year.

## January 2016:

1. RE's perform a task updating the manhours for AT&T to demonstrate the percent complete. The results show AT&T is roughly 65% complete.
2. RE's has requested a meeting with Huan Huynh, AT&T representative to obtain the metric schedule of when their work will be completed.

## February 2016:

1. Removal of existing duct bank is an issue. SFMTA direct TPC perform the removal work.
2. RE is working with AT&T to have them pay for the additional work to remove the DB.

## March 2016:

1. SFMTA directed TPC in writing to perform the removal work of the existing duct bank.
2. RE is working with AT&T to have them pay for the additional work to remove the DB.

## April 2016:

1. AT&T subleases should be out by April 15, 2016. RE sent email out today, 04/07/16 to them citing the urgency to vacate.
2. TPC has been given the ok to start the DB removal on April 18, 2016.

## May 2016:

1. AT&T provided SFMTA with letter dated April 22, 2016, stating that AT&T, Wave, and Level 3 completed it cutovers on 4/15/16, 4/12/16, 4/21/16, respectively.
2. SFDT completed relocation and cutting of its cables on 5/3/16.
3. TPC started AT&T vault demo work on April 18, 2016.

## June 2016:

1. A construction delay was experienced due to AT&T not finishing on time.
2. Current issue with AT&T is the removal of the existing ductbank which is impacting the installation of the 36 inch and 48 inch force main. Currently the Contractor is mitigating the issue by getting it out of the way.

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

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

July 2016:

1. The Committee performed a reassessment of the risk rating will remain a 4.

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

Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	<ul style="list-style-type: none"> <li>√</li> <li>√</li> </ul>	<ul style="list-style-type: none"> <li>1. CMod Task Force - 5 Areas of Improvement identified</li> <li>2. Implement areas of improvement</li> <li>3. Increase Delegation of Authority</li> </ul>

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

**Risk Owner:** E. Stassevitch

**Status Log:**

December Meeting 2012:

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

January 2013:

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

February 2013 Meeting:

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

March 2013:

- 1. Process to increase delegation of authority to be discussed

April 2013:

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

May 2013:

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

October 2013:

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

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

Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	<ul style="list-style-type: none"> <li>√</li> <li>√</li> </ul>	<ul style="list-style-type: none"> <li>1. CMod Task Force - 5 Areas of Improvement identified</li> <li>2. Implement areas of improvement</li> <li>3. Increase Delegation of Authority</li> </ul>

May 2014:

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

July 2014:

- 1. Contract 1300 Partnering efforts have expanded to include the RE level, Designers, Utility companies and Department of Traffic.

December 2014:

- 1. No change to the status of this risk.

September 2015:

- 1. Executive partnering meeting on August 27, 2015 established goal to lower number of outstanding merited changes. Focused attention on completing outstanding merit evaluations, and effectively utilizing the regular weekly meeting to move changes thru the process. Program Manager and Contractor Project Manager to attend weekly change meeting to prioritize work and to meet more often if required expediting processing of changes. Progress to be monitored weekly to measure effectiveness and implement mitigations as required.

October 2015:

- 1. Weekly Change Management meetings are beginning to produce results; agreed to list of changes, prioritization of items to be addressed, and scheduling of change negotiations. Progress is still extremely slow in the processing of agreed to changes, but moving forward.
- 2. Outstanding merit determination items are being reduced.

November 2015:

- 1. Progress continues to be extremely slow, but still moving forward.

December 2015:

- 1. Three Cmod's have been signed this month, that contained multiple COR's.

January 2016:

- 1. 6 more Cmod's have been processed since the last update, all contain multiple CORs.

February 2016:

- 2. Four CMods for the stations contract and Two CMods for the tunnel contract have been process since last month's update.

April 2016:

- 1. The change order process is being examined. The Program has brought on additional help to address the issue of assessing merit determination at UMS – Union Square Garage settlements.

**Risk Mitigation Status****Risk Reference: 205**

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

May 2016:

1. The change order process is being examined by SFMTA Project Manager - Contract Administration, to identify the constraints of lump sum proposals. Solutions being proposed are to process unilateral changes when cost is not negotiated.
2. The Program is looking at ways or a process to determine distinctively how to pay the Contractor.

June 2016:

1. Continued Efforts to examine the CMod process in order to identify area that require improvement to reduce the time it takes to process changes.

July 2016:

1. The Committee performed a reassessment of the risk, rating will remain a 3.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 223</b>

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

**Initial Assessment:** 2 (3,1,2)

**Risk Owner:** D. Jacobson

**Current Assessment:** Risk Rating 2

**Status Log:**

May 2014:

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

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This current construction Risk rating will remain a 4
3. Dewatering work has not begun.

May 2016:

1. The RE has not heard that this is an issue any more. This is a lower risk right now.

July 2016:

1. Dewatering is taking place, with very little water.
2. The Committee performed a reassessment of the risk rating, reducing the risk to a 2.

**New Risk Rating 2 (1, 3, 1)**

Probability (1), <10%

Cost impact (3), <> \$1M - \$3M

Schedule impacts (1), < 1 Month

**Risk Mitigation Status****Risk Reference: 224**

Risk	Mitigation Strategy
CTS AWSS / Ductbank Interface - AWSS system is old and requires replacement	1. Look at alternatives to address 2. Turn off system while CSP work is being done, and then turn on later (find a bypass).

**Initial Assessment:** 5 (1, 2, 2)**Current Assessment:** Risk Rating 2 - Construction Risk**Risk Owner:** D. Jacobson**Status Log:**

November 2014:

1. A determination of whether the AWSS system requires replacement has yet to be made.

December 2014:

1. The Program has established a mitigation strategy to address the AWSS conflict.

July 2016:

1. Shutoff of the system will continue until work is complete in the area. After which the vault replacement will be determined.
2. The Committee performed a revaluation of the risk rating, reducing the risk to a 2.

**New Risk Rating 2 (2, 1, 1)**

Probability (2), &lt;&gt;10% - 50%

Cost impact (1), &lt; \$250K

Schedule impacts (1), &lt; 1 Month



<b>Risk Mitigation Status</b>
<b>Risk Reference: 237</b>

Risk	Mitigation Strategy
Non-Conforming work is not identified by TPC's Quality Control Program	<ol style="list-style-type: none"> <li>1. Correction Action Plan from Contractor</li> <li>2. Stand down meeting with Contractor</li> <li>3. Augmentation of Management Staff</li> <li>4. Higher Cross Check Standards</li> <li>5. QA (greater surveillances )</li> <li>6. Bring on additional personnel within the Smith-Emery organization</li> </ol>

**Initial Assessment:** 3, 2, 2  
**Current Assessment:** Construction Risk Rating 6

**Risk Owner:** M. Latch

**Status Log:**

May 2015:

1. When Work is found to be non-conforming the Contractor generates a Contractor Non Conformance Report (CNCR). To date, the Contractor has logged 58 CNCRs. The Contractor is required to complete each Block 14 "Proposed Action(s)" of the Contractor's CNCR Form. USE-AS-IS and REPAIR dispositioned CNCRs must be approved by the Resident Engineer (RE) – the approval of the RE includes acceptance of Block 14.
2. The Contractor has been asked to resume the bi-weekly Quality Task Force Meetings (after the 5May2015 C1300 Progress Meeting) which should be the proper forum, or will result in additional meetings to assure that the Work is performed to the Contract Documents and that Work is inspected as required by the approved QCP.
3. Currently the Contractor has provided personnel as required except at CTS where the QCM is also the acting AQCM. TPC QC is in the process of adding personnel, the exact date is to TBD. . In addition, the reinforcing F & I Subcontractor has recently added a Quality Control Engineer (QCE) to assure, and sign-off on the preplacement card, that the rebar has been installed to the latest approved shop drawings or Engineer approved changes to the Design Drawings (the QCE also helps facilitate the generation of RFIs when rebar Design Drawings require clarification).
4. TPC QC has made Smith Emery (SE) Reinforced Concrete Inspectors aware Design Drawing details that have been the subject of CNCRs at YBM roof placements. Additionally, the SE Inspectors have been told to use Design Drawings and approved rebar shop drawings to inspect/accept the installation of reinforcing steel in all concrete placement.
5. TBD
6. TPC QC is now having an additional SE Inspector present to allow for an dedicated inspection of placed rebar prior to each concrete placement.

June 2015:

1. No new information to report.
2. Risk title was reevaluated for accuracy of the risk. The Risk Committee agreed the title should be changed during the June 2015 meeting.

July 2015:

1. Only change is Contractor has now written 72 CNCRs
2. At the 8Jul2015 C1300 Partnering Meeting, the need for this meeting was discussed and is to occur every other week.

**Risk Mitigation Status**

Risk Reference: 237

Risk	Mitigation Strategy
Non-Conforming work is not identified by TPC's Quality Control Program	<ol style="list-style-type: none"> <li>1. Correction Action Plan from Contractor</li> <li>2. Stand down meeting with Contractor</li> <li>3. Augmentation of Management Staff</li> <li>4. Higher Cross Check Standards</li> <li>5. QA (greater surveillances )</li> <li>6. Bring on additional personnel within the Smith-Emery organization</li> </ol>

3. There is now an Assistant CQM for each of the Contract Packages. The organization is somewhat in flux regarding the potential replacement of the current CQM due to health reasons.
4. No change
5. SFMTA QA completed Quality Assurance Audit 025 and Quality Assurance Surveillances 063-066 of TPC's implementation of their Contractor Quality Program (CQP).
6. No change
7. Risk title has been updated once more during the July 2015 meeting, to read "Non-Conforming work is not identified by TPC's Quality Control Program".

## August 2015:

1. TPC has assigned a new Quality Control Manager.
2. Assessment of the risk was done and values were assigned.
3. **Recommended risk rating 6 (3 2 2)**
  - a. Probability (3), >50%
  - b. Cost impact (2), <>\$250K - \$1M
  - c. Schedule impacts (2), <> 1 - 3 Months

## September 2015:

1. The corrective action reports (CAR) are being received.
2. The Contractor's Quality Control Plan submittal was resubmitted after SFMTA comments were addressed.
3. Reorganization of TPC Quality Control personnel was done; TPC has hired additional personnel.

## October 2015:

1. TPC QC is initiating CNCRs usually within the required 24 hours upon becoming cognizant (which at times is provided by RE Staff) of the non-conforming condition.
2. CNCRs with a Use-As-Is and Repair dispositions are being approved by SFMTA prior to repairs being performed or subsequent work being allowed to proceed.
3. TPC's CNCR Form, once again, and as originally approved, includes the CQM's approval of the disposition, root cause and steps to prevent recurrence.
4. Concrete Placement Cards now include provision for assuring that all open CNCRs are closed prior to concrete placement.
5. REs have generated no NCNs (RE requesting TPC to generate a CNCR) since mid-August.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 237</b>

Risk	Mitigation Strategy
Non-Conforming work is not identified by TPC's Quality Control Program	<ol style="list-style-type: none"> <li>1. Correction Action Plan from Contractor</li> <li>2. Stand down meeting with Contractor</li> <li>3. Augmentation of Management Staff</li> <li>4. Higher Cross Check Standards</li> <li>5. QA (greater surveillances )</li> <li>6. Bring on additional personnel within the Smith-Emery organization</li> </ol>

December 2015:

1. Bi weekly quality meeting are ongoing, attended by Chuck Ralston, TPC and Mark. Latch, SFMTA.

January 2016:

1. Bi weekly quality meeting continue to take place.
2. Quality issues related to welding have reached a resolution.
3. Spot surveillance related to quality issues findings require resolution.

February 2016:

1. The Quality Task Force (QTF) Meetings are conducted on a bi-weekly schedule with meeting minutes published usually within the following week. These meetings frequently include, as agenda items or ad-hoc items, discussion and suggested mitigation measures related to SFMTA's identification of potential field issues as observed by SFMTA's QA Inspectors.
2. TPC QC, with some participation by SFMTA QA, have verified that Smith Emery's CWIs have documented their acceptance of all structural steel welds performed at UMS prior to June 2015, to approved shop and design drawings and Welding Code (AWS D1.2) requirements.
3. Follow-up joint surveillance (SFMTA QA/TPC QC) of Project Record Documentation (As-Builts) indicates that repair dispositioned CNCRs are now being reflected on the Documentation

March 2016:

1. Generally, the Contractor's QP is being implemented through a collaborative effort; including RE Staff's timely participation, prior to (Preparatory and Initial Phase Meetings and SFMTA HOLD Points) and during the performance of Work, to ensure that the Contract Document requirements have been met. CNCR's are generated, also at times through the aforementioned collaborative effort, when non-conforming work is inadvertently performed/occur. Through ongoing discussions/interactions with SFMTA and TPC QC, TPC QC does not clandestinely accept Work that will require a CNCR.

April 2016:

1. Nothing new to report.

May 2016:

1. Weekly review of CNCRs at each Work Package Progress Meeting indicates that TPC, in conjunction with the Resident Engineers, is satisfactorily implementing the CNCR process of identifying/documenting non-conforming work; otherwise nothing new to report.

**Risk Mitigation Status****Risk Reference: 237**

<b>Risk</b>	<b>Mitigation Strategy</b>
Non-Conforming work is not identified by TPC's Quality Control Program	<ol style="list-style-type: none"><li>1. Correction Action Plan from Contractor</li><li>2. Stand down meeting with Contractor</li><li>3. Augmentation of Management Staff</li><li>4. Higher Cross Check Standards</li><li>5. QA (greater surveillances )</li><li>6. Bring on additional personnel within the Smith-Emery organization</li></ol>

July 2016:

1. The QCP is continuing to go well. The Contractor is writing NCR's without it being prompted by SFMTA.
2. The Committee performed a reassessment of the risk, rating will remain a 6.

**Risk Mitigation Status****Risk Reference: 241**

Risk	Mitigation Strategy
Potential Winter Impacts (Preparation for El Niño)	<ol style="list-style-type: none"><li>1. Allowing planning for future activities during rainy days</li><li>2. Have access to standby generator and large capacity pumps.</li></ol>

**Initial Assessment:** 3, 2, 2**Current Assessment:** Risk Rating 0 – Construction Risk**Risk Owner:** E. Stassevitch**Status Log:**

October 2015:

1. Risk was assessed, risk rating was applied and mitigation strategy added.
2. The Program should make sure there are large capacity pumps on standby, in case they are needed.

July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.

<b>Risk Mitigation Status</b>
<b>Risk Reference: 245</b>

Risk	Mitigation Strategy
Relocation of Resident Engineer's Construction Management Operations	1. Interface with Utility, DT and City agency to establish temporary residency.

**Initial Assessment:** 1,1,1  
**Current Assessment:** Risk Rating 0 - Construction Risk

**Risk Owner:** E. Stassevitch

**Status Log:**

April 2016:

1. To accommodate CSP staff move to 530 Bush, the Program is negotiating with the Contractor to secure a 60-foot trailer to be housed on Bryant Street for YBM and STS construction staff.

May 2016:

1. The Contractor provided SFMTA with a construction trailer to accommodate the YBM and STS construction staff. Connection of the utilities and data technology is pending.
2. The committee performed an assessment of this risk to determine its current Risk rating.

**Recommended risk rating 2 (1 1 1)**

- a. Probability (1), < 10%
- b. Cost impact (1), < \$250K
- c. Schedule impacts (1), < 1 Month

June 2016:

1. Relocation partially completed, RE groups for YBM and STS are operational at trailer. Awaiting final utility hookups.

July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.

<b>Risk Mitigation Status</b>
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<b>Risk Reference: 246</b>
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<b>Risk</b>	<b>Mitigation Strategy</b>
Design changes not being captured in as-builts	1. Ensure Contractor is including all PCC design change details onto the as-builts dwgs.

**Initial Assessment:** 1, 1, 1  
**Current Assessment:** Risk Rating 2 - Construction Risk

**Risk Owner:** E. Stassevitch

**Status Log:**

May 2016:

1. The committee preformed an assessment of this risk to determine its current Risk rating.

**Recommended risk rating 2 (1 1 1)**

- a. Probability (1), < 10%
- b. Cost impact (1), < \$250K
- c. Schedule impacts (1), < 1 Month

July 2016:

1. To ensure design changes are being captured in the as-builts the process needs to be examined closely.
2. The Committee performed a reassessment of the risk rating will remain a 2.

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

Risk		Mitigation Strategy
Underground obstructions at Chinatown Station	√ √	<ol style="list-style-type: none"> <li>1. Provide adequate allowance for differing site conditions to address unknown underground obstructions.</li> <li>2. Make as-built drawings of structures adjacent to the work available to the contractor as reference drawings.</li> </ol>

**Initial Assessment:** 2, 2, 8**Risk Owner:** D. Jacobson**Current Assessment:** Risk Rating 0 – 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.

February 2014:

1. This risk rating was discussed; the risk rating is to remain unchanged.

February 2016:

1. No change.

July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.



**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 0 – Construction Risk**Risk Owner:** S. Wilson**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.

February 2016:

1. Contractor hasn't cleared digging yet.

July 2016:

1. Risk retired by unanimous consent of the Risk Assessment Committee 07/07/16.

**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:** A. Hoe / S. Pong**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.

June 2013:

1. Risk owner changed from Q. Chin to A. Hoe/S.Pong.
2. Meeting held with PG&E 6/11/13 to commence planning and coordination of streetlight connections.
3. Temporary power requirements will be facilitated through ongoing coordination meetings with PG&E and the 1300 contractor.
4. This risk applies to permanent power only.
5. PG&E has a scheme for permanent power feed. Full design is still in progress.
6. PG&E to provide costs for permanent supply.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This current construction Risk rating will remain a 3.

July 2016:

1. Power source has been identified. Power has not been brought to the location yet.
2. The Committee performed a reassessment of the risk, rating will remain a 3.

<b>Risk Mitigation Status</b>
<b>Risk Reference: PR78</b>

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:** E. Stassevitch

**Current Assessment:** Risk Rating 4 – 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 2013:

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

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This construction Risk rating will remain a 2.

**Risk Mitigation Status**

**Risk Reference: PR78**

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

July 2016:

1. The Committee performed a reassessment of the risk, increasing the rating to a 4.

**New Risk Rating 4 (2, 2, 2)**

Probability (2), <> 10-50%

Cost impact (2), <>\$250K - \$1M

Schedule impacts (2), <> 1 - 3 Months

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

As-built drawings and construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction of north entrance.

1. Investigate if electronic files of design can be given to the contractor.
2. Clearly define shop drawing criteria in the technical specifications.
3. Make as-built drawings available as reference drawings to the contractor.
4. Allow enough time in Master Project Schedule to produce shop drawings for structural steel at USG.

**Initial Assessment:** 1, 1, 3**Current Assessment:** Risk Rating 3 – Construction Risk**Risk Owner:** A. Clifford**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

February 2014:

1. Risk to be discussed next meeting. TPC baseline schedule to be assessed as to the adequacy of survey, and procurement of temporary support to the Union Square garage during demolition activities in this area.

August 2015:

1. A follow up needs to be done, to determine if adequate shop drawings were created to generate as built.

November 2015:

1. As part of an overall evaluation of the remaining requirement and design risk, as well as the low rated active construction risk. The committee performed a reassessment of this risk to determine if its current Risk rating is still valid.
2. There was no change made to the risk rating. This current construction Risk rating will remain a 3.
3. This risk is occurring now, affecting construction activities.

December 2015:

1. SFMTA have requested TPC conduct survey of the existing garage structure at the locations of new structural steel.
2. This information will be reviewed against the design documents, discrepancies will be addressed as identified.
3. Recommend monitoring the status of this risk monthly until shop drawings are finalized.

<b>Risk Mitigation Status</b>
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<b>Risk Reference: Q</b>
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As-built drawings and construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction of north entrance.	
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| <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> |
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January 2016:

1. TPC performed a survey of the garage structure where the new structural steel is located. Discrepancies were identified by the survey. Some of the details will be redone, due to the new dimension configuration.

February 2016:

1. RFI's have been submitted for discrepancies discovered as a result of the survey conducted.
2. The discrepancies will be resolved through the RFI process, and submittals revised accordingly to reflect new details created by the design team.

July 2016:

1. Issues experienced by inaccurate as builts are being addressed during progress of work.
2. The Committee performed a reassessment of the risk, rating will remain a 3.

**Risk Register**

	A	H	I	J	K	L	M	N	O	P	Q	R	S
1	<b>PROJECT RISK REGISTER</b>					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend		
2	Central Subway Project San Francisco				Probability	< 10%	<> 10-50%	> 50%	<> 75% & 90%	>90%	<3 Low	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) / 2	
3	REV : 57				Cost Impact	< \$250K	<> \$250K - \$1M	<> \$1M - \$3M	<> \$3M - \$10M	>\$10M	3-9 Medium		
4	DATE ISSUED: 07/07/16				Schedule Impact	< 1 Month	<> 1 - 3 Months	<> 3-6 Months	<> 6 - 12 Months	> 12 Months	>10 High	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
5	Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
12	Underground Tunnel												
45	115	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.	1. In the 1252 contract, have tunnel contractor set aside a pre-determined amount of money in escrow that can be used to repair any leaks encountered by the station contractors after the in the jet grout end walls are excavated. 2. Alternatively, place an allowance in the station contracts for end wall leakage repair.	C	3	1	1	1	50%	3			5/26/15 UMS1295
52	Track Embedded												
55	Track: Special												
58	MOS Station												
92													
108	34	Loss of business results in unanticipated restrictions on construction at UMS	1. Public outreach. 2. Work closely with Merchant's Association. 3. Maintain regular and open communications so Merchants know construction plans and progress at all times. 4. Advertise that Stockton Street Merchants are Open for Business. 5. Require Contractor to coordinate with merchants, maintain access to businesses and assist with deliveries and pick-ups, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, and minimum sidewalk widths. 6. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 7. Work with the Union Square BID or MOED to increase cleanup of the area and assist pedestrians across streets. 8. Include this work in cost & schedule estimates	C	1	3	1	2	10%	2	4	Mitigation measures to be implemented and to the extent possible requirements will be written into contract documents to minimize disruptions to businesses.	09/07/16 UMS1430
112	36	Damage to buildings or utilities as a result of heave from grouting at UMS.	Utilize tangent piles combined with surface jet grouting.	C	5	1	1	1	90%	5	10	Mitigation measures implemented in contract documents to reduce risk	4/14/15 UMS1310
113	37	Damage to adjacent buildings at UMS due to surface construction activities.	1. Require protective barriers. 2. Have an emergency and rapid response customer focused task force to fix damaged facilities. 3. Quickly repair and reimburse resulting costs. 4. Include probable cost in estimate.	C	1	2	-	1	10%	1	2	Mitigation measures implemented in contract documents to reduce risk	9/7/16 UMS1430
160	Q	As-built drawings and UMS construction drawings do not contain enough information to produce shop drawings without significant surveying effort delaying construction north entrance.	1. Investigate if electronic files of design can be given to the contractor. 2. Clearly define shop drawing criteria in the technical specifications. 3. Make as-built drawings available as reference drawings to the contractor	C	3	1	1	1	50%	3	6	Specifications require contractor to survey USG in order to develop shop drawings for structural steel.	3/24/12 UMS1280
161	CTS Station												

**Risk Register**

	A	H	I	J	K	L	M	N	O	P	Q	R	S
1	<b>PROJECT RISK REGISTER</b>					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend		
2	Central Subway Project San Francisco				Probability	< 10%	<> 10-50%	> 50%	<> 75% & 90%	>90%	<3 Low	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
3	REV : 57				Cost Impact	< \$250K	<> \$250K - \$1M	<> \$1M - \$3M	<> \$3M - \$10M	>\$10M	3-9 Medium	2	
4	DATE ISSUED: 07/07/16				Schedule Impact	< 1 Month	<> 1 - 3 Months	<> 3-6 Months	<> 6 - 12 Months	> 12 Months	>10 High	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
5	Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
163	46	Public complaints result in unanticipated restrictions on construction at CTS. (schedule and estimate for underground work assumes 6 day work week and 2 shifts per day)	1. Public outreach. 2. Maintain regular and open communications so Public knows construction plans and progress at all times. 3. Require Contractor to assist Public Outreach efforts, maintain access to businesses and assist with deliveries and pick-ups, control noise and vibration, continuously cleanup site, and provide pedestrian and vehicle traffic and protection plans, informational signage, ADA ramps and minimum sidewalk widths. 4. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 5. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. 6. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. 7. Quickly process and resolve damage and accident claims from the Public. 8. Include this work in cost & schedule estimates.	C	2	5	1	3	35%	6	12	Implementation of mitigation measures part of Communication/Outreach plan and certain aspects to be included in the contract documents.	10/9/17 CTS1500
167	48	Incomplete drawdown of groundwater. (inside of box and inside of caverns)	1. Require additional grouting to limit leakage to permissible level. 2. Include probable grouting work in cost & schedule estimates. 3. Include allowance for dewatering within cavern during construction.	C	2	2	1	2	35%	3	6	Mitigation measures have been included in contract documents	5/1/16 CTS1140
175	52	Unacceptable settlement and impact on major utilities at CTS. (OLD SEWERS AND OTHERS WITHIN 20FT SPACE BETWEEN TOP OF CAVERN AND STREET LEVEL)	1. Evaluate effect of potential settlement on utilities. 2. Slip-line sewer by TBM contractor. 3. Reinforce other utilities as needed, monitored during construction, and repair / replace, as needed. 4. Have contingency repair/restoration plan. 5. Utility contact information and procedure will be on plans. 6. Develop an allowance for utility repair. 7. Include probable cost in estimate. 8. Need to identify the new SFPUC contact	C	3	3	1	2	50%	6	12	Project configuration change, lowered station 25 ft. reducing the probability of this risk. Risk rating lowered.	4/22/16 N-CTS9730
216	General												
218	Demolition, Clearing , Earthwork												
220	Site Utilities, Utility relocations												
230	Hazmat, Contaminated Material												
234	Environmental Mitigations												
237	67	Archeological/Cultural findings during construction increases schedule and/or cost. (UMS)...LESS THAN 1%	1. Provide on-call Archeologist. 2. Provide allowance and procedure in contract for Archeological/Cultural discoveries.	C	3	1	2	2	50%	5	9	Mitigation measures to be implemented in contract documents	8/12/15 UMS1320
240	Site Structure incl. sound walls												
242	Auto/bus/van access ways, roads												
247	Train Control and Signals												
249	72	Interface new Signaling and Train Control system to existing at Fourth and King	Connect new system in parallel with existing system until the new system has been tested and safety certified for operation.	C	2	2	3	3	35%	5	10	Awaiting approval of contract plans by Muni Operations.	3/4/16 STS1045



**Risk Register**

	A	H	I	J	K	L	M	N	O	P	Q	R	S
1	<b>PROJECT RISK REGISTER</b>					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend		
2	Central Subway Project San Francisco				Probability	< 10%	<> 10-50%	> 50%	<> 75% & 90%	>90%	<3 Low	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
3	REV : 57				Cost Impact	< \$250K	<> \$250K - \$1M	<> \$1M - \$3M	<> \$3M - \$10M	>\$10M	3-9 Medium	2	
4	DATE ISSUED: 07/07/16				Schedule Impact	< 1 Month	<> 1 - 3 Months	<> 3-6 Months	<> 6 - 12 Months	> 12 Months	>10 High	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
5	Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
258	PR78	Delays or complication by other SFMTA projects delays CSP: radio, fare collection, C3/TMC	1. Monitor other projects' developments. 2. Develop contingency plans as needed to avoid 1256 delay of revenue service.	C	2	2	2	2	35%	4	8		7/27/12 FDS 1940
260	Traffic signals & Crossing Protn.												
262	Fare Collections Systems												
265	Purchase or lease of Real Estate												
273	Reloc. of Household or Business												
275	Vehicles												
278	Preliminary Engineering												
291	95	Contractor default during construction impacts schedule. (key sub-contractor)	Assist Bonding company in transition and to maintain schedule.	C	1	2	2	2	10%	2	4		11/17/17 STS 1500
297	99	Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule.	1. Executive partnering and alternate dispute resolution. 2. Provide incentives in construction contracts in addition to penalties	C	2	4	1	3	35%	5	10	Mitigation measures being implemented	7/27/12 FDS 1940
299	100	Procurement of long lead items delays work. (fans, rails and special track work, TPSS, Escalators, elevators, TBM)	1. Include schedule milestones for procurement of and substantial payment for stored long lead items in contract to encourage early procurement. 2. Monitor procurement of critical items.	C	1	2	2	2	10%	2	4	Not considered a project risk.	11/17/17 STS 1500
305	PR37	Temporary construction power and ability to provide permanent power feed - PGE ability to provide power requirements to the program together with their other commitment	1. Identify temporary power requirements for station construction. 2. Investigate the timing of the permanent feed.	C	2	1	2	2	35%	3	6	Cost for First and Redundant electrical services need to be included in Cost Estimate.	5/3/18 STS1080
306	Insurance, permits etc.												
307	103	Difficulty in getting required permits.	1. Coordinate with permit officials and request permits as early as possible. 2. Obtain assistance obtaining permits from PM/CM & FD Consultants.	C	1	2	1	2	10%	2	3		12/18/12 FDS 1275
308	104	CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	1. Obtain Grade Crossing approvals at final CPUC inspection at the completion of construction. 2. Coordinate closely with CPUC until approval is received.	R	2	3	2	3	35%	5	10	CPUC Resolution (TED-253) for extension of our at grade crossing was granted.	7/27/12 FDS 1940
309	105	Electrical service delays startup and testing.	1. Submit applications for new service as early as possible. 2. Coordinate closely with PG&E to ensure timely delivery of electrical service.	C	1	2	1	2	10%	2	3	Applications for new service have been submitted to PG&E.	11/17/17 STS 1500
310	106	Risk of Labor dispute delaying the work.	Enforce designated gate for employees of the contract in dispute so that the rest of the work is not delayed.	C	2	1	1	1	35%	2	4		11/17/17 STS 1500
312	Unallocated Contingency												
317	111	Major Earthquake stops work	Include Force Majeure clause in contracts.	C	1	5	3	4	10%	4	8	Force Majeure clause included in contr	12/30/20 MS 0010
318	112	Major safety event halts work	1. Require contractor Safety plan to address this risk. 2. CM inspections to ensure that safety plan and procedures are implemented.	C	1	5	3	4	10%	4	8	Health and Safety provisions included in contracts. CS Program provides full-time Safety Manager.	12/30/20 MS 0010
320													

**Risk Register**

	A	H	I	J	K	L	M	N	O	P	Q	R	S
1	<b>PROJECT RISK REGISTER</b>					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend		
2	Central Subway Project San Francisco				Probability	< 10%	<> 10-50%	> 50%	<> 75% & 90%	>90%	<3 Low	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
3	REV : 57				Cost Impact	< \$250K	<> \$250K - \$1M	<> \$1M - \$3M	<> \$3M - \$10M	>\$10M	3-9 Medium	2	
4	DATE ISSUED: 07/07/16				Schedule Impact	< 1 Month	<> 1 - 3 Months	<> 3-6 Months	<> 6 - 12 Months	> 12 Months	>10 High	SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
5	Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
329	204	AT&T Vault - New Sewer Work south of Bryant	1. Continue negotiations/coordination with utility owners. 2. Schedule analysis to confirm coordination	C	1	2	4	3	10%	3	6		
330	205	Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	1. CMod Task Force - 5 Areas of Improvement 2. Implement 3. Delegation of Authority	C	4	2	1	2	80%	6	12		
339	214	Micro Piles at UMS interfere with Tube-a-manchette installation (60' deep micropiles)	1. Provide micro-pile as-built information to contractor 2. Realign tube-a-manchettes clear of micro-piles	C	3	1	1	1	50%	3	6		
342	217	Delays or complications construction by others – SF Dept. Of Technology, 3rd party utilities	1. Early engagement and coordination for agreements and plan development to avoid construction delays.	C	2	1	1	1	35%	2	4	DTIS MOU has been signed.	
348	223	Contamination during dewatering (CTS)	1. Review contract requirements .	C	1	3	1	2	10%	2	4		
349	224	CTS AWSS/Ductbank Interface - AWSS system is old and requires replacement	1. Look at alternatives to address 2. Turn off system while CSP work is being done, and then turn on later (find a bypass).	C	2	1	1	1	35%	2	4		
352	227	LRV Training - having enough trained operators (surplus)	1. Ramp up trained operators a year ahead of time 2. Ensure testing is finished 3. Completion of work at storage track location (Bryant & King)	C	1	2	1	2	10%	2	3		
353	228	Muni union workers - barn signup (preferred runs)	1. Try to get six months advance notice for annual in addition to barn sign up.	C	1	1	1	1	10%	1	2		
354	229	Pre Revenue Testing		C									
355	230	Post Revenue Testing		C									
357	232	Behind Schedule - Unable to Recover from Delay to 1300 Contract	1. Schedule analysis of number of days behind 2.	C	4	3	3	3	80%	12	24		
358	233	Shotcrete Substitution - Final Finish Concrete Lining is Inferior	1. Meet and discuss with TPC's senior management what the issues are and the status for clarification.	C	3	3	3	3	50%	9	18		
359	234	Sequential Excavation Method at CTS - Contractor's propose method will induce subsidence	1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward	C	2	4	3	4	35%	7	14		
360	235	Sewer work running up and down Stockton Street		C	1	3	1	2	10%	2	4		
362	237	Non-Conforming work is not identified by TPC's Quality Control Program	1. Correction Action Plan from Contractor 2. Stand down Meeting with Contractor 3. Augmentation of Management Staff 4. Higher Cross Standards 5. QA (greater surveillances ) 6. Bring on additional personnel within the Smith-Emery organization	C	2	3	2	3	35%	5	10		

**Risk Register**

	A	H	I	J	K	L	M	N	O	P	Q	R	S
1	<b>PROJECT RISK REGISTER</b>					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)	Legend	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT) SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
2	Central Subway Project San Francisco				Probability	< 10%	<> 10-50%	> 50%	<> 75% & 90%	>90%	<3 Low		
3	REV : 57				Cost Impact	< \$250K	<>\$250K - \$1M	<> \$1M - \$3M	<> \$3M - \$10M	>\$10M	3-9 Medium		
4	DATE ISSUED: 07/07/16				Schedule Impact	< 1 Month	<> 1 - 3 Months	<> 3-6 Months	<> 6 - 12 Months	> 12 Months	>10 High		
5	Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Score	Status	Must Complete by Date
363	238	Quality Program is ineffective in processing the nonconformance items causing schedule impacts	1. Review the CNCR log on a biweekly basis at the joint TPC /SFMTA meeting. 2. Greater Clarity in the Log on what CNCR's are open	C	3	2	2	2	50%	6	12		
364	239	Revenue Service Delay		C				-	0%	-	-		
365	240	Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost)	1. Ask the Contractor for TIA's 2. As built schedule (Program analysis) 3. Perform a more refined analysis	C	2	4	4	4	35%	8	16		
368	243	Contractor becomes complacent in third party insurance claims - could increase cost to the project		C	5	2	1	2	90%	8	15		
369	244	Olivet building - potential coordination issues	1. Maintain contact with the Developer 2. Facilitate completion of TPC work overlapping with developer access	C	2	1	1	1	35%	2	4		
371	246	Design changes not being captured in as-builts	1.Ensure Contractor is including all PCC design change details onto the as-builts dwgs	C	2	1	1	1	35%	2	4		