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Memorandum

CS Memorandum No. 2234

To: Distribution

From: Beverly Ward, CMB, Risk and SSCRC Management Assistant

Date: February 08, 2018

Reference: Project No. M544.1, Contract No. CS-149
Task No. 1-4, Risk Management

Subject: Risk Mitigation Report No. 102, Rev. 0

Attached please find Risk Mitigation Report No. 102 for meeting held on January 04, 2018.

Risk Mitigation Report No. 102, Rev 0 with attachments

Cc: Jeffrey Davis, FTA jeffrey.s.davis@dot.gov
Eric Stassevitch, CSP
Jane Wang, SFMTA
Sanford Pong, SFMTA
Mark Latch, CSP
CS File No. M544.1.5.0820

Distribution:
William Byrne, DEA BByrne@deainc.com
Luis Zurinaga, SFCTA luis.zurinaga@sfcta.org
Albert Hoe, SFMTA
Beverly Ward, CSP

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DATE: January 29, 2018

MEETING DATE: **Thursday January 04, 2018**

LOCATION: 530 Bush Street, 4th Floor

TIME: 2:00pm

ATTENDEES: Albert Hoe, Luis Zurinaga, Bill Byrne, Beverly Ward

COPIES TO: Attendees: Eric Stassevitch, Mark Latch, Jane Wang, Sanford Pong, Jeffrey Davis,

REFERENCE File: M544.1.5.0820
Program/Construction Management

SUBJECT: **Risk Management – Risk Mitigation Meeting**
Risk Mitigation Report No. 102

RECORD OF MEETING

ITEM #		ACTION BY DUE DATE
1 –	**Report (Risk rated rating ≥ 6)**	
	Risk 248: Production Rate – existing sequence at CTS (actual vs expected effort not achieved) **Discussion**: The Program expects the completion of the cavern by mid-February. The Committee suggested that this risk is a candidate to be reduced on the risk register, or even retired altogether in March. **Risk Rating 25** **Risk 240:** Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost for the Program) **Discussion**: Elemental updates of the Programs schedule within Primavera P6 (.Xer) file are being done. When comparing the Contractor's schedule against the Programs schedule, it appears, TPC is not implementing the schedule as being tracked as true and valid in the field. As discussed with the DBR the software P6 schedule software file will continue to be forwarded back to the Contractor with the Program's updates. **Risk rating 12** **Risk 251:** Physical activities missing (not defined) in the schedule/ Identify activities of undefined scope **Discussion:** The Program has continued to update the activities by modifying the Primavea (.Xer) file, but not allowing these activities to extend the contract durations. **Risk rating 8** **Risk 234:** Sequential Excavation Method at CTS - Contractor's propose	

	method will induce subsidence **Discussion:** Mitigation measures to perform compensation grouting was successful in bringing the Mandarin Tower, Kent Bldg., South Presbyterian Church, and Jack Jair to within alert levels of 0.25 inches. A measurement of the tolerance will be done to see what the existing condition is. **Risk Rating 7** **Risk 249:** Sequence of Construction (linear work) **Discussion:** The Contractor's recent schedule update shows segments of work being done in a parallel sequence. **Risk Rating 7** **Risk 253:** Do not have adequate resources defined to do the work **Discussion:** This risk relates to the upcoming Mechanical Electrical Plumbing (MEP) work to be completed and questions TPC's ability to secure enough resources. The Committee suggested adding two new items as mitigation strategies (Nos 3 & 4). 3. Ensure access to the area. 4. Identify TPC's sub-consultant "Fisk" staff who will led the MEP work. **Risk Rating 6** **Risk 52:** Unacceptable settlement and impact on major utilities at CTS (old sewer and others within 20ft space between top of cavern and street level) **Discussion:** Utilities have not been impacted by settlement as indicated by recent mitigation measurement. **Risk Rating 6** **Risk 238:** Quality Program is ineffective in processing the nonconformance items causing schedule impacts **Discussion**: No quality reporting issues has occurred this month. The Contractor recently was requested to issue a CNCR concerning water intrusion at the elevator pit at the YBM station. **Risk Rating 6** **Risk 205:** Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor **Discussion***:* The Program continues to process CMods. As reported previously the negotiating of these modifications with the Contractor continues to be a slow process. Coupled with this a new issue developed related to the inability to certify the contract modifications with SFMTA financial team. **Risk Rating 6**	
	Risk 229: CN1300 Systems Acceptance Testing **Discussion:** Coordination efforts with Muni Operations to address the draft Rail Activation Plan and other issues concerning startup and testing is still pending. **Risk Rating 6** **Risk 230:** SFMTA Commissioning Coordination-inaccurate time for coordination or participation from SF Muni Operations **Discussion:** No update to the efforts for coordination with SFMTA Transit Operations, Julie Kirschbaum to report. **Risk Rating 6**	
2 -	**Report on Active Risk (Rated ≤ 6)**	
	Risk 99: Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule **Discussion:** DRB meetings are taking place, specifically to address contract	

	claims are being held. The Program has concerns that the DRB is being persuaded by the Contractor to view information post their hearing decision. **Risk Rating 5** **Risk 246:** Design changes not being captured in as-builts **Discussion:** There is a Contract pay application list a pay item which is to meant for verification any design changes are being incorporated into the as-builts drawings. **Risk Rating 2** **Risk 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) **Discussion**: No complaints about the construction work itself have been received from the merchants. However, complaints are being made concerning the activities in the surrounding areas of construction. **Risk Rating 2**	
3-	**New Business**	
	The suggested new time and date for the recurring Risk Mitigation meeting, will be 1st Tuesday of the month from 2:30 to 4:00pm, beginning in February.	

ACTION ITEMS –

ITEM #	MTG DATE	DESCRIPTION	BIC	DUE DATE	STATUS
3	05/07/15	**Risk 72** – 4th & King - Develop a test plan checklist for recertifying	S. Pong	02/06/18	Open

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: BW [initials of preparer] **Date:** 2/8/18 [Date completed].

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Meeting Agenda

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Risk Mitigation Management Meeting No. 102
January 04, 2017
2:00pm – 3:00pm
Central Subway Project Office
530 Bush Street, 4th Floor

Attendees:

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

1. **Report on Risks (Rated 6 and above)**
   - **Construction Risks** (248, 240, 251, 234, 249, 253, 52, 238, 205, 229, 230)
2. **Report on Active Risks (Rated below 6)**
   - **Construction Risks** (99, 246, 46)
3. **New Business:**
   -

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

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Meeting Attendance Sheet

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Risk Management Meeting No. 102
January 04, 2017
2:00 p.m. – 4:00 p.m.
Central Subway Project Office

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	BByrne@deainc.com	BB
Jeffrey Davis	FTA	415-744-2594	Jeffrey.s.davis@dot.gov	
John Funghi	SFMTA	415-660-5403	John.funghi@sfmta.com	
Albert Hoe	SFMTA	415-660-5385	Albert.hoe@sfmta.com	AH
Mark Latch	CSP	415-660-5410	Mark.latch@sfmta.com	
Eric Stassevitch	CSP	415-660-5407	Eric.stassevitch@sfmta.com	
Beverly Ward	CSP	415-660-5386	Beverly.ward@sfmta.com	
Luis Zurinaga	SFCTA	415-716-6956	luis@sfcta.org	

Risk Mitigation Status
Risk Reference: 46 (CTS)

Risk	Mitigation Strategy
Public complaints result in unanticipated restrictions on construction at CTS. (schedule and estimate for underground work assumes 6 day work week and 2 shifts per day)	1. Public outreach. Maintain regular and open communications so Public knows construction plans and progress at all times. 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. 3. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 4. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. 5. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. 6. Quickly process and resolve damage and accident claims from the Public. 7. Assumed this work in cost & schedule estimates. 8. Assign an outreach person to occupy a desk within the Program office to answer the public's questions and address any concerns.

Initial Assessment: 2, 3, 6 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating, 2 – Construction Risk

Status Log:

January 2012:

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

May 2013:

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

October 2013:

1. Community meeting held in September to notify merchants and residents that construction of the Chinatown station would be commencing soon.
2. 30day and 10day construction notices have been mailed out

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3. Construction updates are being communicated weekly via social media, mailings, and the Central Subway website. CCDC are also hand delivering translated construction notices to project neighbors.

May 2014:

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

July 2014:

1. Tutor Perini submitted the requested noise readings for a two week period and documentation to show the permit requirements.
2. The Contractor is performing continuous noise monitoring in addition to performing hand held readings once a week.

July 2016:

1. The Committee performed a reassessment of the risk, rating will remain a 6.

August 2016:

1. Sound from Exhaust Fans remains a huge issue, especially at night. RE (Doug) working on mitigation ideas to present to SFMTA and TPC. Need to navigate through who designs sound mitigation structure, who pays for it, and how quickly it can be installed.
2. Along east side of NEES work area, trash and debris building up along barricades has had negative impact on businesses. RE talked to TPC and they are complying with the clean up on a regular basis per General Provisions 3.19 A and Special Provisions outlined on S-9.

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3. CTS Neighborhood is very upset with early morning truck traffic, which is sporadic, as well as fans through the night. TPC has made many efforts to inform their subcontractors and delivery folks, which will help a lot. There will be more truck traffic most probably because this is a major project and nearly impossible to inform every trucker who ever will come to this job to NOT show up before 7 am.

September 2016:

1. Continued efforts are being made to reduce the ventilation noise.
2. No neighborhood complaints have been received in the two weeks.

October 2016:

1. Frontier-Kemper General Superintendent removed the inverted "hats" off the top of the fan line and secured expanded metal screen. Fan noise decreased to under 77 dBA at 50 feet and was 65 dBA at 100 feet. Fans are set at 55 – 60% for now. Once full mining of north and south platform tunnels is underway, the expanded metal screen may no longer work (because of back-pressure) and this issue may need to be addressed at that time, probably in December 2016.
2. TPC and F-K are providing personnel to clean along the NEES along the east side of Stockton Street between Sta. 101+00 to 102+00 in the early morning on a daily basis.
3. Some barriers and banners need cleaning from graffiti; brought up in weekly progress meetings.

November 2016:

1. Ventilation and equipment noise at CTS not an issue currently.
2. Public Outreach efforts continue through CCDC and lead person Jerri Diep.
3. Barriers and banners have been cleaned – ongoing effort
4. TPC personnel daily (or almost daily) clean along the North Emergency Egress Shaft work area where debris accumulates.
5. Monitoring is ongoing, communication with the community is good, TPC field crew is responsive.

Risk Mitigation Status
Risk Reference: 46 (CTS)

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6. No extra costs at this time.
7. Joint Trench along Washington Street and Chinese United Methodist (CUM) Church is beginning in the next two weeks with a 4' walkway planned for public access to the Stockton-Washington intersection.

December 2016:

1. Ventilation and equipment noise at CTS not an issue currently.
2. Public Outreach efforts continue through CCDC and lead person Jerri Diep.
3. Barriers and banners have been cleaned – ongoing effort
4. TPC personnel daily (or almost daily) clean along the North Emergency Egress Shaft work area where debris accumulates.
5. Monitoring is ongoing, communication with the community is good, TPC field crew is responsive.
6. No extra costs at this time.
7. Joint Trench along Washington Street and Chinese United Methodist (CUM) Church has not started for the 4' walkway planned for public access to the Stockton-Washington intersection. TPC has stated they will put in the 4' walkway before Chinese New Year. Pedestrians have walked through the site attempting to gain access to Stockton Street after walking downhill from Powell and Washington.

January 2017:

1. Ventilation and equipment noise at CTS not an issue currently.
2. Public Outreach efforts continue through CCDC and lead person Jerri Diep.
3. Barriers and banners have been cleaned – ongoing effort
4. TPC personnel daily (or almost daily) clean along the North Emergency Egress Shaft work area where debris accumulates.
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7. Joint Trench along Washington Street and Chinese United Methodist (CUM) Church has not started for the 4' walkway planned for public access to the Stockton-Washington intersection. TPC has again stated they will put in the 4' walkway before Chinese New Year. Pedestrians have walked through the site attempting to gain access to Stockton Street after walking downhill from Powell and Washington.
8. The Committee performed a reassessment of the risk rating, reducing the risk from 6 to 2. **New Risk Rating 2** (1, 2, 1)
   Probability (1), <10%
   Cost impact (2), <>$250K - $1M
   Schedule impacts (1), < 1 Month

February 2017:

1. There has been no complaints preventing work. Work on the surface of the CTS has been shut down in observance of the Chinatown holiday moratorium.

November 2017:

1. Monthly merchants meetings continue to take place.
2. As dictated by the Programs CTS mitigation plan, a community outreach person has been assigned a desk at CSP's Program office on Tuesday and Thursday's from 8-12pm, to respond to inquiries from the public on an outreach.

December 2017:

1. Monthly merchants meetings continue to take place.

Risk Mitigation Status
Risk Reference: 46 (CTS)

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2. As dictated by the Programs CTS mitigation plan, a community outreach person has been assigned a desk at CSP's Program office on Tuesday and Thursday's from 8-12pm, to respond to inquiries from the public on an outreach.
3. Continue noise monitoring of construction work
4. Re-evaluating current dust monitoring system to identify potential monitoring improvements

January 2018:

1. Complaints from the merchants are concerning the surround site area, rather than the construction work itself.

Risk Mitigation Status
Risk Reference: 52

Risk		Mitigation Strategy
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-lined sewer by CTS contractor. 3. Other utilities will be reinforced as needed, monitored during construction, and repaired / replaced as needed. 4. Contractor to correct impact of settlements by repair. 5. Have contingency repair/restoration plan. 6. Utility contact information and procedure will be on plans. 7. Develop an allowance for utility repair. 8. Include probable costs in estimate.

Initial Assessment: 4, 2, 8 **Risk Owner:** D. Jacobson

Current Assessment: Risk Rating 6 – Construction Risk

Status Log:

December 8, 2009 Meeting:

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

January 21, 2010 Meeting:

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

November 2011:

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

January 2012 Meeting:

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

February 2012:

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

Risk Mitigation Status
Risk Reference: 52

Risk		Mitigation Strategy
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Initial Assessment: 4, 2, 8 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating 6 – Construction Risk

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

September 2012 Meeting:
1. CTS has been resolved

October 2012 Meeting:
1. UMS & YBM yet to be closed out

May 2012:
1. **Recommend reducing this risk rating to 3 (2, 2, 1)** (reduce probability and cost impact)
    a. Current probability (3), >50%, recommend reduce probability to (2), 10-50%
    b. Current cost impact (3), $1m - $3m, recommend reduce cost impact to (2), $250k - $1m (CN 1300 CTS AL-8 = $250k)
    c. Current schedule impacts (1), <1 month, maintain schedule impact
2. Risk rating to remain at 6

January 2014:
1. Comments regarding UMS and YBM are still to be closed out with SFPUC.
2. A letter responding to the outstanding comments will be sent to SFPUC the week of January 13th

March 2014:
1. Letter was sent to SFPUC. Response from SFPUC is still pending.
2. SFPUC previous contact Betsey Eagon has left the division. SFMTA needs to identify the new contact person.

April 2014:
1. Response from SFPUC of outstanding comments is still pending.

Risk Mitigation Status
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Initial Assessment: 4, 2, 8 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating 6 – Construction Risk

February 2015:

1. Slip lining brick sewers scheduled to begin After Chinese New Year. Prior to work commencement the risk owner is to meet with utility owner (PUC) and identify existing obstructions that are preventing slip lining work and request funding to relocate or eliminate obstructions.

2. 12 inch 100 year old water line identified as a risk. Prepare a conceptual waterline layout and present to utility owner (PUC) and request funding to upgrade their line.

March 2015

1. Slip lining between Washington and Jackson installed, backfilling on going. Determined that there would be no additional cost. Clay to Washington not yet scheduled.

2. No progress update for the 12-inch 100yr. old water line.

April 2015:

1. The 12inch/100 year old water line issue was addressed in the settlement report. No issues were found, the settlement report was not revised during the lowering of the tunnel.
2. The RE needs to drill down and investigate the issue. Are there additional precaution that need to be done?

May 2015:

1. A new valve was installed as part of the North Assess shaft 12 inch water line relocation. RE recommends that two Utility Monitoring points be installed at the junction of the old pipe and Washington St
2. RE should present his findings and recommendation to the Configuration Management Board as a proposed contract change. Or direct the Contractor to rearrange the utility monitoring points.

June 2015:

1. The 100 year old CIP 12” water line will be monitored.

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Initial Assessment: 4, 2, 8 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating 6 – Construction Risk

June 2016:

1. At the current time, all utilities are currently functioning. Water utility monitoring is ongoing with Data Loggers that read decibel dB levels. The system (Gutermann Instruments data loggers with antennae) used for the TBM work is also appropriate for the SEM tunnel excavations for CTS Platform Tunnels. During the utility relocation effort, some data loggers went missing. SFMTA and the Instrumentation Task Force has required TPC to replace missing data loggers.
2. The Mitigation Strategy listed above probably needs to be updated. For example, most of item 2 is completed. Is item 7 relevant as the contract for CTS is already underway?

July 2016:

1. The Committee performed a reassessment of the risk, rating will remain a 6.

August 2016:

1. TPC's subcontractor Exaro installed remaining Gutermann data loggers for total of 12 working loggers.
2. TPC installed piezometer using 4" drain pipe in the middle of the Wash/Stockton St intersection cistern on Tuesday, August 2, 2016. The cistern is filled with sand (in 1944, per as-built). Water level after pipe had been vacuumed out was 5.75' below the street. With the sand and assumed void ratio, the cistern may hold 1000+ gallons of water.
3. SFMTA staff (RE and PM Eric Stassevitch) met with SFWater engineers and gatemen to plan emergency water shut off for CTS. Valve location plan and phone tree in case of an emergency are in process.

September 2016:

1. Water shut off work is not completed for the two emergency shutoff valves. Ongoing discussion with SFWater

October 2016:

1. Meeting with SFWater to proceed with installing two emergency gate valves, one 12" GV near Sta 108+00 on 100 yr-old 12" water and one 6" GV near Sta 100+50 near Jackson/Stockton intersection on 6" water line. SFWater completed hydraulic study to see how many of the dozen redundant gate valves can be closed in case of a major shutdown of water due to surface ground movement. So far, the

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Initial Assessment: 4, 2, 8 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating 6 – Construction Risk

expected settlement of Stockton Street is much less than projected. Daily monitoring within the Cross-Cut Cavern is required during the Barrel Vault pipe installation.

November 2016:

1. Same as October 2016: Meeting with SFWater to proceed with installing two emergency gate valves, one 12" GV near Sta 108+00 on 100 yr-old 12" water and one 6" GV near Sta 100+50 near Jackson/Stockton intersection on 6" water line. SFWater completed hydraulic study to see how many of the dozen redundant gate valves can be closed in case of a major shutdown of water due to surface ground movement. So far, the expected settlement of Stockton Street is much less than projected. Daily monitoring within the Cross-Cut Cavern is required during the Barrel Vault pipe installation. .

December 2016:

1. Met with SFWater a second time for installing two emergency gate valves, one 12" GV near Sta 108+00 on 100 yr-old 12" water and one 6" GV near Sta 100+50 near Jackson/Stockton intersection on 6" water line. The completed SFWater hydraulic study showed that adding these two gate valves allows the closure of eight [8] gate valves located above the Platform Cavern in case of a major shutdown of water due to surface ground movement. So far, the expected settlement of Stockton Street is much less than projected. Daily monitoring within the Cross-Cut Cavern continues as well as monitoring of new survey targets within the Platform Cavern side drifts under excavation.

January 2017:

1. Utilities remain stable. Two emergency gate valves are not yet installed, pending TPC work in early January (if SFWater can meet deadline). The plan is for SF Water to fabricate and install gate valve assemble; TPC to excavate, backfill, and restore street. If early January does not work out to complete this work, TPC plans to provide crew to pothole, excavate, backfill and restore street by mid-February after Chinese New Year Moratorium.

February 2017:

1. Gate valve work is expected to be installed in mid-February after Chinese New Year.

Risk Mitigation Status
Risk Reference: 52

Risk		Mitigation Strategy
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-lined sewer by CTS contractor. 3. Other utilities will be reinforced as needed, monitored during construction, and repaired / replaced as needed. 4. Contractor to correct impact of settlements by repair. 5. Have contingency repair/restoration plan. 6. Utility contact information and procedure will be on plans. 7. Develop an allowance for utility repair. 8. Include probable costs in estimate.

Initial Assessment: 4, 2, 8 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating 6 – Construction Risk

March 2017:

1. Utilities remain stable at this time. SF Water is tasked with installing both the 6" gate valve and 12" gate valve. Monitoring is ongoing.

April 2017

1. Utilities remain stable at this time. SF Water is planning to install 6" gate valve near Jackson and Stockton the week of April 10-14. SF Water may also begin excavation for 12" gate valve near Sacramento St on Stockton by mid-April.

May 2017:

1. Six locking gate valves were installed to control water in and around the various CTS locations.
2. Currently the waterline above is not operational. SFWD would like to activate a portion of the waterline which isn't above the box, but connected to them. Activation of this waterline would result in water above the box.

June 2017

1. A meeting with the Designer will take place to mitigate some of the utilities, specifically the water and sewer lines.
2. Recent measurements have shown the utilities have been lowered. Requiring pumping in of grout.
3. Damaged utilities have not been encountered, if at some point that is a realization it may require the City to replacement them.

July 2017:

1. Monitoring reports indicate some settlement at the waterline.
2. Two gate valves to control the water were installed, so if there is a break it can be turned off.

August 2017:

1. Monitoring of the waterline is ongoing. The CM is actively working with the DOR to see what can be done, specifically related to the waterline.

Risk Mitigation Status
Risk Reference: 52

Risk		Mitigation Strategy
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-lined sewer by CTS contractor. 3. Other utilities will be reinforced as needed, monitored during construction, and repaired / replaced as needed. 4. Contractor to correct impact of settlements by repair. 5. Have contingency repair/restoration plan. 6. Utility contact information and procedure will be on plans. 7. Develop an allowance for utility repair. 8. Include probable costs in estimate.

Initial Assessment: 4, 2, 8 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating 6 – Construction Risk

September 2017:

1. The DOR has provided a response to the WL issue. According to the DOR from a physical dimension the settlement has gone pass the trigger. Their analysis shows a greater tolerance can be withstood.

October 2017:

1. Continuing to monitor the settlement of the WL (water lines).
2. Tunnel Cavern Primary Lining is of high quality (per QA personnel working at CTS) and has proper dimension. Settlements are below what was anticipated.

November 2017:

1. No significant settlement to the utilities has taken place. Mitigation strategies are being implemented.

December 2017:

1. Continue monitoring settlement for existing street utilities. Mitigation strategies are being implemented.

January 2018:

1. No utilities have been impact as noted in the settlement monitoring reports.

Risk Mitigation Status
Risk Reference: 99

Risk	Mitigation Strategy
Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule	1. Executive partnering and alternate dispute resolution. 2. Train staff in adherence to issue resolution process

Initial Assessment: 5, 3, 8
Current Assessment: Risk Rating 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 21st, 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 14th 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.

Risk Mitigation Status
Risk Reference: 99

Risk	Mitigation Strategy
Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule	1. Executive partnering and alternate dispute resolution. 2. Train staff in adherence to issue resolution process

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

Risk	Mitigation Strategy
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 24th, as well a DRB meeting.
2. The Committee performed a reassessment of the risk, rating will remain a 5.

October 2016:

1. Executive Partnering session with the 1300 Contractor was held on September 8, 2016.
2. Weekly meetings are taking place with SFMTA's RE's, Program Management and TPC's management and Project Engineers.

January 2017:

1. The process of conducting dispute resolution meetings between TPC and SFMTA Program management have been successful in resolving issues.

March 2017:

1. Partnering and DRB meetings continue to take place focusing on resolving issues that may arise.

June 2017:

1. There has been a no breakdown in communication between the SFMTA and the Contractor, however there are a number of claims being submitted. CSP is in the process of resolving five or six of the thirty-five received. Currently the Program is using a timeline approach to resolve the claims beginning from the point startup to March 2015 then moving on to the next timeline forward.

Risk Mitigation Status
Risk Reference: 99

Risk	Mitigation Strategy
Breakdown in relationships between SFMTA and Contractors during construction results in increased claims and delays to the overall construction schedule	1. Executive partnering and alternate dispute resolution. 2. Train staff in adherence to issue resolution process

October 2017:

1. Discussion between SFMTA and TPC continue to take place to resolve any potential issues.

November 2017:

1. Executive Partnering session with the 1300 Contractor took place today, November 2, 2017. One of the topics of discussion was ways to address the project's construction BHAGS.

December 2017:

1. A special DRB meeting is being held on December 12 &13, 2017 as a hearing to address one of TPC's contract claims.
2. The normally scheduled DRB meeting will be held on December 14, 2017, to discuss any other issues or concerns.

January 2018:

1. Meetings are being held with the DRB to discussed issues, in particular claim disputes.
2. Program has expressed concern the DRB is taking in considerations information presented post hearing decision.

Risk Mitigation Status
Risk Reference: 205

Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	√ √	1. CMod Task Force - 5 Areas of Improvement identified 2. Implement areas of improvement 3. Increase Delegation of Authority 4. Increase frequency of meetings

Initial Assessment: 1, 1, 3 **Risk Owner:** E. Stassevitch
Current Assessment: Risk Rating 3 – Construction Risk

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 21st 2013.

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

Risk Mitigation Status
Risk Reference: 205

Risk		Mitigation Strategy
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 4. Increase frequency of meetings

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.

Risk Mitigation Status
Risk Reference: 205

Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	√ √	1. CMod Task Force - 5 Areas of Improvement identified 2. Implement areas of improvement 3. Increase Delegation of Authority 4. Increase frequency of meetings

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.

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.

August 2016":

1. Progress is being made towards reducing the time it takes to process contract change modifications. Work still needs to be made toward increasing the time it takes to receive signature approval from all parties.

September 2016:

1. The Program processed and signed six CMod's this month. Work still needs to be done to improve the time it takes in establishing merit and quantum.

October 2016:

1. Progress in the CMod process are continuing to be made. Improvements still need to be made in the time it takes for RE's to establish merit and quantum.

November 2016:

1. CMod's continue to increase in the number of modifications being processed monthly.

December 2016:

1. Two additional CMod's were processed this month. Both parties are demonstrating a satisfaction with the process and the progress being made.

Risk Mitigation Status
Risk Reference: 205

Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	√ √	1. CMod Task Force - 5 Areas of Improvement identified 2. Implement areas of improvement 3. Increase Delegation of Authority 4. Increase frequency of meetings

January 2017:

1. CMod's are being processed. There is still an issue with the amount of time it takes to complete the modifications.

February 2017:

1. Twelve CMod's were processed this month. Those CMod's included several COR's.

March 2017:

1. Currently there are no issues concerning issuing of contract modifications. The amount of time it takes to negotiate cost could be improved.

April 2017:

1. There are no issue with issuing contract modifications. The underlying issue is the amount of time it takes in negotiating the actual modification.
2. The Committee added this month a fourth strategy for mitigating this risk – Increase frequency of meetings.

May 2017:

1. The Program processed contract modifications; totaling a million dollars which included several COR's.
2. Additional staff has been brought on to assist with the preparation of CMod's.

June 2017:

1. Processing of CMods does not pose any issues. The continue issue is more of having an adequate amount of time to investigate the F items requiring merit determination and response.

July 2017:

1. Newly hired CSP staff members, are assigned the task of processing the CMods.

August 2017:

1. The ongoing issue center arounds the need to address the PCC/COR status log (F) items.
2. Additional efforts need to be made in determining merit or generating a letter in response to the TPC's COR's.
3. In addition the lack of COR cost associated with the Contractor's impact is adding to the delay in determining merit.

September 2017:

1. Contract modifications are being halted at two stages: (B stage) Prepare / Ready for Negotiations / Under Negotiations and (D stage) Needs Contractors' Proposal/Response.

Risk Mitigation Status
Risk Reference: 205

Risk		Mitigation Strategy
Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	√ √	1. CMod Task Force - 5 Areas of Improvement identified 2. Implement areas of improvement 3. Increase Delegation of Authority 4. Increase frequency of meetings

October 2017:

1. Efforts by CSP in addressing the merit determination of COR needs to be increased.
2. TPC needs to submit cost impact along with COR notifications.

November 2017:

1. CSP's Contract Manager continues to work diligently to process contract modifications. The process remains arduous due to the negotiation process holding up progress.

December 2017:

1. CSP's Contract Administrator is in the process of implementing contract modifications which includes multiple CMod's.

January 2018:

1. Contract modification are being processed. Currently the issue with concerns not being able to have them certified with the SFMTA finance control team.

Risk Mitigation Status
Risk Reference: 229

Risk		Mitigation Strategy
CN1300 System Acceptance Testing		1. Identify duration 2. Identify advance activities that can be done prior to and concurrent to revenue service

Initial Assessment: 3, 1, 3 **Risk Owner:** A. Hoe
Current Assessment: Risk Rating 6 – Construction Risk

Status Log:

November 2014:
1. Risk needs to be further evaluated to gain a better understanding of what mitigation strategies need to be implemented.

August 2016:
1. Individual system components may take longer than expected.

September 2016:
1. Currently the Program is working towards putting together system schedule to identify all the key components.

October 2016:
1. The train control system schedule is being developed and will be included as part of the as built schedule.

November 2016:
1. Dates for startup and testing of systems on CSP have been developed and will be incorporated into the train control schedule.

December 2016:
1. The startup and testing schedule has been incorporated. The Program will need to perform an analysis of the various different schedule dates allowing more detail to be added to the schedule.

January 2017:
1. A second mitigation strategy was added this month to be implemented. Involving identifying activities, which should be done in advance of the systems acceptance test.

February 2017:
1. Currently the schedule identifies fifteen known systems testing items.

March 2017:
1. Schedule ask activities for systems testing continue to be developed.

Risk Mitigation Status
Risk Reference: 229

Risk		Mitigation Strategy
CN1300 System Acceptance Testing		1. Identify duration 2. Identify advance activities that can be done prior to and concurrent to revenue service

April 2017:

1. The Program's draft Rail Activation Plan will be submitted to FTA and Muni Operations, this month. Input from Operations will assist the Program in identifying activities prior to pre revenue service.
2. Mitigation strategy has been updated allowing for a clearer understanding of the task description.

May 2017:

1. Once the Rail Activation manager comes onboard the Program will be better equip to identifying more pre revenue task, services and commitments while coordinating with Operations.

June 2017:

1. System startup and testing activities have been refined and been incorporated into the Programs scheduled.
2. A draft of this schedule has been submitted to the FTA for review. Senior management anticipates that these new activities to be part of the overall schedule discussion during Central Subway's Program Schedule Workshop.

July 207:

1. CSP has reached out to SFMTA Operations regarding coordination activities for systems acceptance, to occur as part of the start and testing phase as a linear activity. A follow up conversation between the two parties has yet to take place.

August 2017:

1. A modification of the schedule for startup and testing has been done to the Program schedule, requiring a meeting to take place with SFMTA MUNI Operations to discussion coordination needs to take place.

September 2017:

1. CSP will need to establish communication with the new person in charge of Muni Operations coordination with Central Subway. Currently there are two potential staff members which may be placed in this role: Matthew Brill or Julie Kirschbaum.

October 2017:

1. Need to reach out to SFMTA of Operations Julie Kirschbaum, to inquire about the schedule for the general barn sign up. With this information CSP can make a clearer determination to have the full operational test runs or a truncated test runs.

November 2017:

1. Julie Kirschbaum, Head of SFMTA Operations has been contacted regarding the required coordination schedule for Muni's barn sign up. The conversation between CSP and SFMTA Operations has yet to take place.

Risk Mitigation Status
Risk Reference: 229

Risk		Mitigation Strategy
CN1300 System Acceptance Testing		1. Identify duration 2. Identify advance activities that can be done prior to and concurrent to revenue service

December 2017:

1. No progress has been made in the direction of required coordination.

January 2018:

1. Coordination efforts with Muni operations is still in the process of being implemented.

Risk Mitigation Status
Risk Reference: 230

Risk		Mitigation Strategy
SFMTA Commissioning Coordination - inaccurate time for coordination or participation from SF Muni Operations		1. Signage – Notifying the public 2. Create a commissioning team 3. Getting Operation's test requirement in hand

Initial Assessment: 3, 1, 3 **Risk Owner:** A. Hoe
Current Assessment: Risk Rating 6 – Construction Risk

Status Log:

November 2014:
1. Risk needs to be further evaluated to gain a better understanding of what mitigation strategies need to be implemented.

August 2016:
1. During commissioning, test performed by TPC will need to be witness by Operations. SFMTA will need to confirm which test and the amount expected to be witnessed.

September 2016:
1. SFMTA is developing the Rail Activation Plan (RAP). The RAP will establish dates when activities need to take place and will be added to the schedule for startup and testing.

October 2016:
1. No status update for this month. The Rail Activation Plan (RAP) is continuing to be developed.

November 2016:
1. Commissioning coordination plan will be incorporated into CSP's Rail Activation Plan (RAP). Currently the RAP is still a draft document.

December 2016:
1. The Rail Activation Plan (RAP) is in development. There is a commitment to get a draft version issued during the issuance of the annual PMP in April 2017.

January 2017:
1. Risk description has been expanded to include what the actually risk that may be incurred: SFMTA Commission Coordination – Inaccurate time for coordination or participation from SF Muni Operations.

Risk Mitigation Status
Risk Reference: 230

Risk		Mitigation Strategy
SFMTA Commissioning Coordination - inaccurate time for coordination or participation from SF Muni Operations		1. Signage – Notifying the public 2. Create a commissioning team 3. Getting Operation's test requirement in hand

February 2017:

1. The Program is working on hiring a Systems Coordination Manager, to head up the coordination and testing part of the project.

March 2017:

1. Coordination meetings with Muni Operations have yet to take place.

April 2017:

1. A copy of the draft Rail Activation Plan (RAP) has been delivered to Muni Operations this month for internal review. This is the start of commission coordination.

June 2017:

1. CSP has begun engagement with SFMTA Muni Operations inquiring with them, what are some of the key elements they required to take place in advance. CSP is working on establishing a formalize method of receipt and dissemination of information.

July 2017:

1. SFMTA Muni Operations is considering adjusting the muni barn sign up dates to accommodate CSP schedule. If this is done the cost would be incurred by CSP.

August 2017:

1. If there is a conflict with CSP's commissioning schedule and MUNI's barn sign. A captive fleet (dedicated fleet) may need to be ran, to carry out operations for the CSP line.

September 2017:

1. The RAP will be forwarded to Michael Kurylo, CSP's new RE for Systems integration, for his input of the draft plan.

October 2017:

1. CSP will have Michael Kurylo, RE for the Systems work, to view the start/testing schedule and the draft RAP.

November 2017:

1. An electronic copy of the draft Rail Activation Plan has been forwarded to Michael Kurylo for his review and input.

December 2017:

1. Review comments from M. Kurylo are pending.
2. SFMTA/CSP has put in a requisition for the positon of Startup and Testing Manager.

Risk Mitigation Status
Risk Reference: 230

Risk		Mitigation Strategy
SFMTA Commissioning Coordination - inaccurate time for coordination or participation from SF Muni Operations		1. Signage – Notifying the public 2. Create a commissioning team 3. Getting Operation's test requirement in hand

January 2018:

1. There has been no update to this risk item.

Risk Mitigation Status
Risk Reference: 234

Risk		Mitigation Strategy
Sequential Excavation Method at CTS - Contractor's propose method will induce detrimental subsidence		1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward 3. Compensation grouting

Initial Assessment: 2, 4, 3 **Risk Owner:** D. Jacobson
Current Assessment: Risk Rating 7 – Construction Risk

Status Log:

January 2015:

1. The Program is awaiting the Contractor's SEM re-submittal. Anticipating their response to SFMTA's letter providing them with 4 options to choose from to perform the work.

February 2015:

1. No new update on this risk.

March 2015:

1. Contractor has yet to submit a response to SFMTA letter providing them with alternatives for the excavation sequences.

April 2015:

1. Contractor has not responded to SFMTA's letter with alternatives
2. The Designer of record will be contracted to review the Contractor's submittal for (scope and delivery) to determine if the proposed is viable.

May 2015:

1. The designer has proposed 4 different sequences for the contractor to evaluate. Contractor is evaluating.
2. DOR was compensated to review the SEM Geometry change and offered suggestions for TPC's evaluation.

June 2015:

1. Contractor has yet to submit.
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. Contractor has yet to submit.

Risk Mitigation Status
Risk Reference: 234

Risk		Mitigation Strategy
Sequential Excavation Method at CTS - Contractor's propose method will induce detrimental subsidence		1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward 3. Compensation grouting

August 2015:

1. Contractor has yet to submit.

September 2015:

1. The Contractor has submitted the proposed method. The submittal was forwarded to the designer of record on July 29 and is now being reviewed by CSDG.

October 2015:

1. The submittal was returned revise and resubmit. The designer did not have an issue with the proposed sequences but wanted to see the stamped calculations.

November 2015:

1. The Contractor is performing the work in the approved prescribed sequence. Stamp calculations have yet to be submitted.

December 2015:

1. A contractor is performing the prep work in the approved prescribed sequence. Calculations were not required for the sequence. Calculations were required for slurrywall support between the two side drifts.

January 2016:

1. The Contractor is performing the prep work as prescribed.
2. The risk to the Program is can they perform the work in a quality manner.

February 2016:

1. TPC is performing the work as specified.

April 2016:

1. The Contractor is in the process of installing barrel vault pipes.
2. The SEM designer of record Engineer Franz Langer is now on site to ensure the contract design is being followed.

May 2016:

1. Barrel vault pipes are installed and grouted.
2. SEM support team with additional geologist and one of two QA inspectors are on site. Second QA inspector due within one week.

Risk Mitigation Status
Risk Reference: 234

Risk		Mitigation Strategy
Sequential Excavation Method at CTS - Contractor's propose method will induce detrimental subsidence		1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward 3. Compensation grouting

3. Two horizontal inclinometer are not working as of this morning.
4. Contractor (TPC – FKCI) has begun mining operation. SFMTA sent letter yesterday citing TPC for failure to comply with contract on required functioning instrumentation prior to beginning excavation.

June 2016:

1. Barrel vault pipes and grouting continues to provide support as planned
2. SFMTA's SEM Team (Dr. Sauer Group - DSG) has four men on site, Franz Langer, lead engineer for SEM; Michael Orisario, geologist engineer; Arno and Walter – day/night shift SEM inspectors.
3. All three horizontal inclinometers are now working as necessary from monitoring subsidence immediately above the tunnel excavation.
4. Wang Technologies staff continues to take surface readings above the tunnel excavation twice a week with data reviewed by both SFMTA and TPC teams.
5. Daily readings of Convergence targets (four of six sets of three) are provided as work progresses. Settlement so far for the sidedrifts has remained under 5 mm.

July 2016:

1. The Committee performed a reassessment of the risk, rating will remain a 7.

August 2016:

1. No change from June 2016 assessment.

September 2016:

1. No change to five items listed for June 2016. Frontier-Kemper continues mining on Cross Cut Cavern - Left and Right Side Drift Benches and Inverts. Final section is Center Drift Bench and Invert to complete the ring closure for the CCC. Dr. Sauer & Partners expect up to 10 mm settlement in the street once the ring is closed. Bi-weekly monitoring continues to show stability.

October 2016:

1. Basically, no change to five items for June 2016. F-K completed CCC and NEET on October 6.
2. DSP has four men working on excavation/support phase of CCC through Oct 8. Crew shrinks to three during the next 5-6 week phase of Barrel Vault drilling, installation, grouting, probably completed mid-to-late November based on discussion with DSP (FL).
3. Inclinometers worked through completion of CCC.
4. Wang Tech continues with twice-a-week measurements of surface points with no alerts or triggers yet.
5. Convergence points within the CCC indicated that the beginning and ending points (Stations TM 4.0-6.0, TM 66-68, TM 78) exhibited less than 5 mm movement. Center survey points (Sta. TM 34-36) converged or settled under 10 mm movement, less than expected.

Risk Mitigation Status
Risk Reference: 234

Risk		Mitigation Strategy
Sequential Excavation Method at CTS - Contractor's propose method will induce detrimental subsidence		1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward 3. Compensation grouting

6. Stability for the CCC is quite good. Now next phase begins of backfilling up to Springline and "crunching" temporary inner arches to begin Barrel Vault installation (59 pipes for each of the North Platform and South Platform tunnels.

November 2016:

1. Barrel Vault drilling (60' x 5" diameter) for North and South Platform Caverns is underway, more than 50% completed by Nov 1. About 35% of Barrel Vault pipes are grouted.
2. Dr Sauer & Partners (1 engineer and 2 inspectors) are on site for every day of work.
3. Other instrumentation is now relevant, surface markers, vertical inclinometers, instruments on buildings, and all these items are relevant for close monitoring of the tunnel, surface, and buildings. Contractual issue where TPC does not think that contract requires the SEM Engineer to attend Instrumentation Task Force meetings. SFMTA position is that SEM Engineer is most important Engineer at CTS during excavation under Stockton Street and that SEM Engineer must attend Task Force meeting to stay current with data. Resolution to this issue is pending.
4. Wang Tech continues with twice-a-week measurements of surface points with no alerts or triggers yet.
5. Convergence targets in Cross Cut Cavern have remained stable throughout the last month.
6. Site stability remains good for now. Once Platform Caverns (N and S) begins, then concern for potential movement also increases.

December 2016:

1. Barrel Vaults completed and grouted. Platform Cavern N and S Side Drifts are under excavation at this time for the next many months.
2. Dr Sauer & Partners (1 engineer and 2 inspectors) are on site for every day of work.
3. Other instrumentation is now relevant, surface markers, vertical inclinometers, instruments on buildings, and all these items are relevant for close monitoring of the tunnel, surface, and buildings. TPC is not having the SEM Engineer attend Instrumentation Task Force meetings. This attendance issue by the SEM Engineer is resolved.
4. Wang Tech continues with twice-a-week measurements of surface points with no alerts or triggers yet.
5. Convergence targets in Cross Cut Cavern have remained stable throughout the last month.
6. Site stability remains good for now. Once Platform Caverns (N and S) begins, then concern for potential movement also increases.

January 2017:

1. Platform Cavern N and S Side Drifts are under excavation at this time for the next many months.
2. Dr Sauer & Partners (2 engineers and 2 inspectors) are on site for every day of work.
3. Other instrumentation is now relevant, surface markers, vertical inclinometers, instruments on buildings, and all these items are relevant for close monitoring of the tunnel, surface, and buildings. TPC is ~~not having~~ now allowing the SEM Engineer to attend Instrumentation Task Force meetings. This attendance issue by the SEM Engineer is now resolved.
4. Wang Tech continues with twice-a-week measurements of surface points with no alerts or triggers yet.
5. Convergence targets in Cross Cut Cavern have remained stable throughout the last month.

Risk Mitigation Status
Risk Reference: 234

Risk		Mitigation Strategy
Sequential Excavation Method at CTS - Contractor's propose method will induce detrimental subsidence		1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward 3. Compensation grouting

6. Site stability remains good for now. Platform Caverns (N and S) excavation continues with negligible movement so far (< 3 mm).

February 2017:

1. Using the prescribed methodology no evidence of subsidence has been experienced.

March 2017:

1. Using the prescribed methodology no evidence of subsidence has been experienced.

April 2017:

1. Using the prescribed methodology, no subsidence has occurred beyond what was expected. Platform Caverns and Cross Cut Cavern remain stable.
2. Strategic use of compensation grouting is being implemented.

May 2017:

1. SEM of the center drift started on Tuesday, 05/02/17 resulting in a 1/8th of an inch subsidence requiring abatement. Additional abatement may be required when work recommences on Friday around the Mandarin Tower.

June 2017:

1. Subsidence issues have been experienced at the Mandarin Tower location for the second time. Grout stabilization methods have been introduced.

July 2017:

1. Subsidence issues have been experienced at the Mandarin Tower location this month. Abatement protocols were implemented, the Contractor was able to arrest the induced subsidence.

August 2017:

1. No new update from last month's status report.

September 2017:

1. No update. Condition has remains steady.

Risk Mitigation Status
Risk Reference: 234

Risk		Mitigation Strategy
Sequential Excavation Method at CTS - Contractor's propose method will induce detrimental subsidence		1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward 3. Compensation grouting

October 2017:

1. Subsidence issues have been experienced have not been detrimental. Condition remains steady.

November 2017:

1. Subsidence issues have been experienced on the Mandarin Tower side. The Contractor will comp grout the area to bring the building level, due to uneven settling – front is settling deeper than the back end.
2. Discussion are now taking place to resolve the issue of what level to bring the building back up. The question is should the building be brought back up? Should it be brought up to the trigger level of 0.25 or back to the zero line? Or should it be brought back to the original line at the start of the CN1300 contract.

December 2017:

1. Subsidence issues have been experienced on the Mandarin Tower side, Kent Building, South Presbyterian Church, and Jack Jair building. Contractor performed comp grout to these areas to balance the building level, street side is settling deeper than the back end.
2. Set goal to bring building level back up to the alert level of 0.25, where possible, without damaging building structure.

January 2018:

1. Compensation grouting was successful in bringing Mandarin Tower, Kent Bldg, South Presbyterian Church, Jack Jair to within alert levels of 0.25 inches. No reports of damage to any building.

Risk Mitigation Status
Risk Reference: 238

Risk		Mitigation Strategy
Quality Program is ineffective in processing the nonconformance items causing schedule impacts		1. Review CNCR log on a biweekly basis. 2. Greater clarity in the Log on what CNCR's are open

Initial Assessment: 3, 2, 2 **Risk Owner:** M. Latch
Current Assessment: Risk Rating 6 - Construction

Status Log:

July 2015:

1. Discussion required regarding condemning the "Quality Program" VS TPC/TPC QC's inability to; accurately log and or expedite the determination of the disposition of a CNCR, provide timely suggested repair procedures, determine root cause, provide acceptable steps to prevent recurrence, correctly close or accurately update the CNCR Log .
2. TPC QC has begun using the CM13 module for Noncompliance Notices for CNCRs. This should provide for timely submittal of CNCRs and timely/accurate updates of the CNCR Log. More to follow.

August 2015:

1. Assessment of the risk was done and values were assigned.
2. **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. SFMTA Construction team diligently working to make sure the CNCR log is accurate and nonconformance items are being clearly addressed

October 2015:

1. As mentioned in the 6Oct2015 C1300 Progress Meeting - TPC QC has made significant progress in providing a more complete, accurate and timely CNCR Log.
2. New mitigation item added.

November 2015:

1. TPC QC, with support from TPC's Project Executive, is no longer allowing commercial issues to impede the generation of CNCRs.
    a. Additionally, at the bi-weekly Quality Task Force Meeting it was agreed that TPC's CQM and the CSP PQM will discuss CNCRs that are of a particularly contemptuous or controversial nature and in particular to make sure that each CNCR is timely and accurate and describes non-conforming work; not contractual matters. CNCRs are now identified on the CNCR Log and at each Additional Initial Phase Concrete Pre-Placement Meeting, to preclude work that is the subject of a CNCR from being inadvertently

Risk Mitigation Status
Risk Reference: 238

Risk		Mitigation Strategy
Quality Program is ineffective in processing the nonconformance items causing schedule impacts		1. Review CNCR log on a biweekly basis. 2. Greater clarity in the Log on what CNCR's are open

incorporated in to the work. TPC in general, is providing a timelier but still in need of improvement (including ensuring that sufficient information is provided to the Engineer to allow an efficient review of each CNCR) disposition of CNCRs. TPC QCM is now signing off on each CNCR form, prior to the submittal to the Engineer, attesting to the fact that the CNCR contains a reasonable/plausible root cause, suggested repair, reason for accepting a USE-AS-IS dispositioned CNCR and steps to preclude recurrence.

b. Posting all CNCRs to CM13 eliminates issues associated with the lack of CNCR file naming convention or human error. Through the use of CM13, the Initial issuances and subsequent processing of CNCRs are now timelier and much easier to retrieve for review/approval/informational purposes. Each of the four stages/phases of each CNCR are documented by posting (attaching) a separate file for (1) Initial, (2) Dispositioned, (3) Approved by SFMTA (REPAIR and USE-AS-IS dispositions) and (4) Closed CNCRs, to the associated CNCR number within CM13.

January 2016:

1. The posting of nonconformance items by the Contractor has shown notable improvements as it relates to the four stages/phases within CM13.

February 2016:

1. Timely issuance/updating of TPC's CNCR log and issuance of initial phase CNCRs has significantly improved.

March 2016:

1. Nothing new to report other than the CNCR Log is distributed, and discussed as warranted, at the weekly Contract Package Progress Meetings. And, SFMTA Quality Assurance Audit QAS 026, currently being conducted, includes CNCR Log attributes.)

April 2016:

1. Nothing new to report.

May 2016:

1. As mentioned for Risk 237, 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 otherwise nothing new to report.

June 2016:

1. CNCRs continue to be processed by TPC QC as required. One item to note is that the log includes "What is Affected" – this is where each concrete Lift that is impacted/affected by a CNCR is clearly indicated such that concrete is not placed until all non-conforming conditions have been rectified.

Risk Mitigation Status
Risk Reference: 238

Risk		Mitigation Strategy
Quality Program is ineffective in processing the nonconformance items causing schedule impacts		1. Review CNCR log on a biweekly basis. 2. Greater clarity in the Log on what CNCR's are open

July 2016:

1. As reported last month; CNCRs are being logged, generated and processed as required.
2. The Committee performed a reassessment of the risk, rating will remain a 6.

August 2016:

1. No change in status since July 2016.

September 2016:

1. SFMTA and TPC continue to coordinate efforts to mitigate the risk.

October 2016:

1. TPC QC continues to generate "initial" CNCRs upon becoming aware (which often is provided by SFMTA) of a probable non-conformance. CNCRs are then logged and suitably dispositioned, approved by the appropriate entities and closed as appropriate. As has been mentioned previously, weekly progress meetings for each of the Contract Packages includes an agenda item for Quality that always includes a discussion related to CNCRs. Currently, CNCRs are usually being written in a timely manner and are processed as required.

November 2016:

1. Nothing new to add to the October 2016 update for this item.

December 2016:

1. CNCRs continue to be generated, logged and processed as required per TPC's Approved Quality Control Program in conjunction with Specification Section 01 45 00 *Quality Control.* And as such, as was reported last month, there is really nothing new to report.

January 2017:

1. Nothing new to report – suggest that this Risk Item be retired; in particular because this item has become somewhat blended/incorporated into Risk Item 237 which will continue to be reported upon.
2. The Committee addressed the recommendation by SFMTA QA by examining the risk. The decision was made to continue to track this risk on the register separately from 237.

February 2017:

1. Nothing new to report.

March 2017:

1. No change to this risk.

Risk Mitigation Status
Risk Reference: 238

Risk		Mitigation Strategy
Quality Program is ineffective in processing the nonconformance items causing schedule impacts		1. Review CNCR log on a biweekly basis. 2. Greater clarity in the Log on what CNCR's are open

April 2017:

1. No change to this risk.

May 2017:

1. No change to this risk.

June 2017:

1. No change to this risk.

July 2017:

1. No change to this risk.

August 2017:

1. No change to this risk.

September 2017:

1. No change to this risk.

October 2017:

1. No change to risk this month.

November 2017:

1. Nothing new to report.

December 2017:

1. Nothing new to report.

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January 2018:

1. Nothing new to report.
2. This item needs to be reevaluated to better define the potential risk.

Risk Mitigation Status
Risk Reference: 240

Risk		Mitigation Strategy
Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost for the Program)		1. Ask for TIA's 2. As Built Schedule (Program Analysis) 3. Perform a more refined analysis 4. Meet regularly with the Contractor to assign responsibility

Initial Assessment: 3, 4, 4 **Risk Owner:** E. Stassevitch
Current Assessment: Risk Rating 12 – Construction Risk

Status Log:

October 2015:
1. Risk was assessed, risk rating was applied and mitigation strategy added.
2. SFMTA requested the Contractor to submit a recover schedule to demonstrate the method to which they intend to capture the time loss. If the Contractor elects not to produce a recovery schedule. The Program should formally document the Contractor is not adhering to the contract.

November 2015:
1. SFMTA is working with Contractor to produce recovery Schedule.
2. SFMTA together with FTA PMOC have planned a schedule workshop for mid Nov. to focus on identifying recovery plans and addressing several issues with the schedule update process.

December 2015:
1. Working with TPC to provide monthly schedule progress updates to minimize impact.

January 2016:
1. Schedule letter in preparation to address issues surrounding schedule updates, need for schedule recovery plan, and other deficiencies related to contract required schedule deliverables.

February 2016:
1. SFMTA is preparing a letter to be sent out on February 5, 2016. The will address various issues:
    a. TPC's claim of TIA's, which have yet to be received by SFMTA.
    b. List of achievable goals where SFMTA can help them with.

April 2016:
1. Partnering with TPC continues. Both parties have agreed to sit down and discuss schedule comments.
2. Limiting the rhetoric, comments are required to come from management in terms of how to address the schedule mitigation.
3. The work is not being by the unresolved schedule comments. The focus now is to improve the contract operation future and to reconcile the past.
4. Two additional resources on the SFMTA's scheduling side have been brought on board help with resolutions.

Risk Mitigation Status
Risk Reference: 240

Risk		Mitigation Strategy
Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost for the Program)		1. Ask for TIA's 2. As Built Schedule (Program Analysis) 3. Perform a more refined analysis 4. Meet regularly with the Contractor to assign responsibility

May 2016:

1. Reconciling of the progress schedule continues.
2. The SFMTA's goal is to have the as built schedule reconciled by the end of May. Source data will be transmitted to TPC to show why schedule dates where changed by SFMTA.

June 2016

1. SFMTA continue to work on As-built schedules reconciliation,
2. Progress schedule reconciliation continues

July 2016:

1. The Committee performed a reassessment of the risk, rating will remain an 8.

August 2016:

1. SFMTA continues to work with TPC to reconcile the progress schedule. Pressing TPC to address issues related to logic and other issues.

September 2016:

1. To mitigate the delays the Contractor will work towards reducing the amount of work, which needs to be completed in the remaining amount of time.
2. The Program have buffer float of about six months.

October 2016:

1. Efforts are ongoing towards completing the as built schedule as well as reconciling the progress schedule.

November 2016:

1. Currently the critical path is being analyzed on month to month basis. Determination of who owns what delay will be sorted out once the as-built schedule is completed.

December 2016:

1. The Program is proceeding with meeting with TPC's scheduler. Negotiating discussions are taking place concerning the Chinatown pole. SFMTA will present an offer. If that offer is rejected then the SFMTA will proceed with a unilateral change. Also, the Program is beginning the process of assigning responsibility for the incurred delays.
2. The Program is also looking a claims which concern non critical path delays.

January 2017:

Risk Mitigation Status
Risk Reference: 240

Risk		Mitigation Strategy
Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost for the Program)		1. Ask for TIA's 2. As Built Schedule (Program Analysis) 3. Perform a more refined analysis 4. Meet regularly with the Contractor to assign responsibility

1. Work towards completion of the as built schedule continues. Once the gaps are filled in, it will allow the Program to accurately assign responsibility for delays.

February 2017:

1. Delay responsibility will be determined once the as built schedule is complete.

March 2017:

1. An adjustment was granted for non-compensable 18-days of schedule delay, under (COR 039).

April 2017:

1. The Project Control team continues to review the inspector's daily reports, to piece together the as built schedule.

May 2017:

1. In CSP generated analysis of the schedule, CSP has conceded to 18 days of the delay, with the possibility of giving into a few more days.
2. If there is no assigned resolution during the senior partnering meeting today, May 4th, the next step will to take this issue before the DRB presenting a narrative of the schedule facts.

June 2017:

1. Senior Management Partnering meetings between CSP and TPC are taking place to try and resolved some of the schedule delays.

July 2017:

1. The most recent DRB meeting scheduled required a cancellation, due to the absence of one of the three DRB members.
2. In an attempt to resolve some of the outstanding delay responsibility issues, CSP has stated that out of the 180 days initially requested by TPC, CSP is willing to compromise, offering 35 days of compensable delay.

August 2017:

1. The Project next DRB meeting is set for August 22nd and 23rd.
2. The Senior Management Partnering meetings between CSP and TPC will be held on 08/17/17.

September 2017:

1. An agreement between SFMTA and TPC on the as built schedule has been established up to January 2016. Currently there is no agreement on responsibility for the delay.
2. A re-evaluation of the risk by the Committee agreed that the rating was too and warranted an increase. In additional a fourth mitigation strategy was added to this risk.
3. **Recommend increasing this risk rating to 12 (3, 4, 4)** (increasing probability)
    a. Increase probability (3), >50%, from a 2

Risk Mitigation Status
Risk Reference: 240

Risk		Mitigation Strategy
Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost for the Program)		1. Ask for TIA's 2. As Built Schedule (Program Analysis) 3. Perform a more refined analysis 4. Meet regularly with the Contractor to assign responsibility

b. Maintain cost impact (4), $3m - 10m,
c. Maintain schedule impacts (4), <6-12 months

New Assessment: Risk Rating 12

October 2017:

1. The SFMTA and TPC will participate in a DRB Hearing on October 11, 2017 to discuss claims #5 & #23 – TIA's at CTS.

November 2017:

1. SFMTA/TPC has agreed to break the job's TIA's into meaningful segments of work, that are well defined and on the critical path, for example slurry wall and headhouse digging.
2. TPC is still disputing the Program findings, believing SFMTA is chiefly responsible for all delays.
3. The DRB owes the both parties a report on their finding for the meeting which took place on October 11, 2017.

December 2017:

1. The Program received the DRB's report for its findings of information presented at the October 11, 2017 meeting.\
2. CSP's review of TPC's schedule updates, are being sent back to them with the Program input, which reflects what is believed to be the actual schedule.
3. An agreement was made during the DRB is to provide TPC the actual XER file with comments and what it is CSP expect to see, for TPC to incorporate. This practice has begun during the month of June and has continued thru the month of December. The Program has yet to receive a response from TPC.

January 2018:

1. Updates to elements within the schedule are being done to the (Xer) file. The Program will continue to give TPC SFMTA's updated (Xer) file as agreed to with the DRB.

Risk Mitigation Status
Risk Reference: 246

Risk		Mitigation Strategy
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.

May 2017:

1. RFI, CNCR and PCC changes will be incorporated in into the as built drawings by the Contractor. As well as the sketches being issued by the designer of record which are now part of the CAD's.

January 2018:

1. TPC contract contains a pay item in their pay application, which is to verify that the drawings capture the construction as builts information.

Risk Mitigation Status
Risk Reference: 248

Risk		Mitigation Strategy
Production Rate – existing sequence at CTS (actual vs expected effort not achieved)		1. Allowing the Contractor to gain time in other areas of the remaining construction. .

Initial Assessment 5, 5, 5 **Risk Owner:** E. Stassevitch
Current Assessment: Risk Rating 25 – Construction Risk

Status Log:

September 2017:
1. Mitigation strategies already implemented were to relax the mining requirement hold point, allowing them to mine further.
2. Rating of this risk show's that if LD's were issued it would be at a significant cost impact. Totaling over $10M that can be issued.

October 2017:
1. Currently there has been no additional delays and the schedule isn't losing any more time.
2. The Program is expecting the work activity to be completed in January 2018.

November 2017:
1. Analysis of the schedule range was ran through the Monte Carlo software. Based on the current production information ran the result of the analysis demonstrates the work schedule work has been maintained.
2. TPC's schedule is reflecting an end of completion date for tunneling excavation by the end of February. The Program believes it to be closer to mid-March or April.
3. Closely monitoring of the Contractor's progress should take place, specifically during this holiday period.

December 2107:
1. TPC weekly progress report shows there was a slippage. The progress will continue to be closely monitored.

January 2018:
1. Based on a review of TPC's schedule the Program believe the completion of the cavern date to be mid-February.
2. A recommendation has been made to possibly lower the risk rating or retire the risk altogether in March.

Risk Mitigation Status
Risk Reference: 249

Risk		Mitigation Strategy
Unable to re-sequence the current construction activities which are linear		1. Get the Contractor to demonstrate the ability to do so.

Initial Assessment: 2, 3, 4 **Risk Owner:** E. Stassevitch
Current Assessment: Risk Rating 7 – Construction Risk

Status Log:

September 2017:

1. Mitigation assessment/strategy and assigned risk rating was done by the Committee.

October 2017:

1. Activities taking place are start to finish. CSP would like to see the Contractor perform some activities start to start. CSP's scheduler is looking at future activities to get a range, to see if this is possible.

November 2017:

1. TPC's schedule shows items which are linear. The Program has made updates to its schedule now showing items in the schedule which are somewhat parallel, in an attempt to show the real schedule durations.

December 2017:

1. With the use of the Monte Carlo software the Program has discovered some linear construction activities in nature aren't true. In addition it has been discovered there are imbedded floats. Determining that TPC has included additional extended days to perform testing beyond the individual station testing. This discovery in the schedule has been brought to TPC's attention. A response is still pending.

January 2018:

1. TPC's schedule update demonstrates the Contractor is performing some activities parallel sequence.

Risk Mitigation Status
Risk Reference: 251

Risk		Mitigation Strategy
Physical activities missing (not defined) in the schedule/ Identify activities of undefined scope		1. Perform additional reviews of schedule to see if any changes are made. 2. Maintain Programs schedule, which does not allow increase duration.

Initial Assessment: 3, 2, 3 **Risk Owner:** E. Stassevitch/A. Hoe
Current Assessment: Risk Rating 8 – Construction Risk

Status Log:

September 2017:

1. Activities by the Contractor are being added to the schedule, increasing the duration, which is not allowed per the contract.

October 2017:

1. TPC has in the (near schedule) included activities not in the planned work. The Committee suggested the scheduler delve deeper to determine if the activities is an omission or embedded into another activity. Whatever the reason the Contractor should include a narrative of what he has done.
2. Previous risk #250 has been deleted from the register and added to this risk #251.

November 2017:

1. The Program's scheduler has identified some physical activities which are missing from TPC's schedule. CSP's scheduler is inputting those identified missing activities in the Programs schedule.

December 2017:

1. CSP's scheduler is modifying the .XER file and forwarding it back to TPC for their input.

January 2018:

1. Activities are continuously being updated, while maintaining task durations.

Risk Mitigation Status
Risk Reference: 253

Risk		Mitigation Strategy
Do not have adequate resources defined to do the work		1. Add resources to make sure to prioritize where limited resources need to go. 2. Work extended hours or additional shifts. 3. Ensure access to the area. 4. Identify TPC's sub-consultant "Fisk" staff who will led the MEP work.

Initial Assessment: 5, 2, 2 **Risk Owner:** E. Stassevitch
Current Assessment: Risk Rating 6 – Construction Risk

Status Log:

September 2017:
1. Mitigation assessment/strategy and assigned risk rating was done by the Committee.

October 2017:
1. Committee expressed the concern the Contractor would not have adequate resources to perform the Mechanical Electrical Plumbing (MEP) work. Based on the schedule's staggering work the CM believes there will be enough lag for crews to head towards the work north.
2. A reassessment of the risk was done. The risk rating was reduced from 10 to 6.
   New Risk Rating 6 (3, 2, 2)
   Probability (3), > 50%
   Cost impact (2), <> $250K – 1M
   Schedule impacts (2), <> 1 – 3 Month

November 2017:
1. The Program does not have confidence that there will be enough time and resources to do the work that is reflected in the schedule. In mitigating this issue an assessment needs to be taken each month of construction work progress, via the schedule summary form, commenting on the Program findings.

December 2017:
1. Contractor is not falling further behind.
2. More advancing work is being done, moving out of sequence so the work is not all on the critical path.

January 2018:
1. No new information to report this month.
2. The Committee added additional mitigation strategies 3 & 4 to this risk.

Risk Mitigation Status
Risk Reference: 253

Risk		Mitigation Strategy
Do not have adequate resources defined to do the work		1. Add resources to make sure to prioritize where limited resources need to go. 2. Work extended hours or additional shifts. 3. Ensure access to the area. 4. Identify TPC's sub-consultant "Fisk" staff who will led the MEP work.

February 2018:

1.

	A	H	I	J	K	L	M	N	O	P	R	S
1	**PROJECT RISK REGISTER**					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)		
2	Central Subway Project San Francisco				Probability	< 10%	<> 10-50%	> 50%	<> 75% & 90%	>90%	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
3	REV : 75				Cost Impact	< $250K	<>$250K - $1M	<> $1M - $3M	<> $3M - $10M	>$10M	2	
4	DATE ISSUED: 01/04/18				Schedule Impact	< 1 Month	<> 1 - 3 Months	<> 3-6 Months	<> 6 - 12 Months	> 12 Months	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**	**Status**	**Must Complete by Date**
10	At Grade In Mixed Traffic											
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 and allowance in the station contracts for end wall leakage repair. 3. Include "Clawback" provision in tunnel contract to allow station contractor to transfer costs of repair to headwall to the tunnel contractor. 4. Require tunnel contractor to be present to witness station excavation of headwalls.	C	3	1	1	1	50%	3		5/26/15 UMS1295
52	Track Embedded											
55	Track: Special											
58	MOS Station											
112	36	Damage to buildings or utilities as a result of heave from grouting at UMS	Tangent piles combined with surface jet grouting will be utilized.	C	5	1	1	1	90%	5	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	1	1	1		1	Mitigation measures implemented in contract documents to reduce risk	9/7/16 UMS1430
161	CTS Station											
163	46	Public complaints result in unanticipated restrictions on construction at CTS. (schedule and estimate for underground work assumes 6 day work week and 2 shifts per day)	1. Public outreach maintain regular and open communications so Public knows construction plans and progress at all times. 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. 3. Require barriers to protect pedestrians and shield them from noise and dirt from construction. 4. Work with MOED to increase cleanup of the area and assist pedestrians across streets, as needed. 5. Monitor and enforce noise, vibration, ADA, traffic, and cleanup requirements. 6. Quickly process and resolve damage and accident claims from the Public. 7. Assumed this work in cost & schedule estimates.	C	1	2	1	2	10%	2	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 dewatering bid item in contract. 3. Include probable grouting and dewatering work in cost & schedule estimates.	C	2	2	1	2	35%	3	Mitigation measures have been included in contract documents	5/1/16 CTS1140

	A	H	I	J	K	L	M	N	O	P	R	S
1	**PROJECT RISK REGISTER**					Low (1)	Medium (2)	High (3)	Very High (4)	Significant (5)		
2	Central Subway Project San Francisco				Probability	< 10%	<> 10-50%	> 50%	<> 75% & 90%	>90%	RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)	
3	REV : 75				Cost Impact	< $250K	<>$250K - $1M	<> $1M - $3M	<> $3M - $10M	>$10M	2	
4	DATE ISSUED: 01/04/18				Schedule Impact	< 1 Month	<> 1 - 3 Months	<> 3-6 Months	<> 6 - 12 Months	> 12 Months	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**	**Status**	**Must Complete by Date**
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-lined sewer by CTS contractor. 3. Other utilities will be reinforced as needed, monitored during construction, and repaired / replaced as needed. 4. Contractor to correct impact of settlements by repair. 5. Have contingency repair/restoration plan. 6. Utility contact information and procedure will be on plans. 7. Develop an allowance for utility repair. 8. Include probable costs in estimate.	C	3	3	1	2	50%	6	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											
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	1. 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	Awaiting approval of contract plans by Muni Operations.	3/4/16 STS1045
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		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)	1. Assist Bonding company in transition and to maintain schedule.	C	2	2	3	3	35%	5		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. Train staff in adherence to issue resolution process	C	2	4	1	3	35%	5	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	Not considered a project risk.	11/17/17 STS 1500
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	1	1	1	10%	1		12/18/12 FDS 1275
308	104	CPUC approval at Grade Crossing for G0164d takes longer to negotiate / obtain than schedule allows	1. Grade Crossing approvals are not received until final CPUC inspection at the completion of construction. 2. Close coordination with CPUC will continue until approval is received. 3. Signal standardization issue will elevated to the appropriate SFMTA Division.	R	2	3	2	3	35%	5	CPUC Resolution (TED-253) for extension of our at grade crossing was granted.	7/27/12 FDS 1940

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5	**Final Risk ID**	**Risk Description**	**Mitigation Description**	**Risk Category**	**Probability %**	**Cost Impact**	**Schedule Impact**	**Calc Impact**	**Calc %**	**Risk Rating**	**Status**	**Must Complete by Date**
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	Applications for new service have been submitted to PG&E.	11/17/17 STS 1500
310	106	Risk of Labor dispute delaying the work.	1. Enforce designated gate for employees of the contract in dispute so that the rest of the work is not delayed. In case of a Labor dispute, it is standard practice for the contractor to enforce designated gate for employees of the contract in dispute so that the rest of the work is not delayed.	C	2	1	1	1	35%	2		11/17/17 STS 1500
312	Unallocated Contingency											
317	111	Major Earthquake stops work	1. Include Force Majeure clause in contracts.	C	1	5	3	4	10%	4	Force Majeure clause included in contracts.	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	Health and Safety provisions included in contracts. CS Program provides full-time Safety Manager.	12/30/20 MS 0010
320												
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 identified 2. Implement areas of improvement 3. Increase Delegation of Authority 4. Increase frequency of meetings	C	4	2	1	2	80%	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	DTIS MOU has been signed.	
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		
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		
353	228	Muni union workers - barn signup (preferred runs)	1. Barn sign up - Issue the runs in the trapeze system to provide the runs for the operators to sign up 6 months in advance.	C	1	1	4	3	10%	3		
354	229	CN1300 System Acceptance Testing	1. Identify duration 2. Identify advance activities that can be done prior to and concurrent to revenue service	C	3	1	3	2	50%	6		
355	230	SFMTA Commissioning Coordination (inaccurate time for coordination or participation from Muni Ops)	1. Signage – Notifying the public 2. Create a commissioning team 3. Getting Operation's test requirement in hand	C	3	1	3	2	50%	6		
359	234	Sequential Excavation Method at CTS - Contractor's propose method will induce detrimental subsidence	1. Designers concurrence on variation of options 2. Presented four options to the Contractor for going forward 3. Compensatin grouting	C	2	4	3	4	35%	7		
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	1	2	2	2	10%	2		

PROJECT RISK REGISTER

Central Subway Project San Francisco

REV : 75

DATE ISSUED: 01/04/18

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RISK RATING = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)
2
SCORE = PROBABILITY X (COST IMPACT + SCHEDULE IMPACT)

Final Risk ID	Risk Description	Mitigation Description	Risk Category	Probability %	Cost Impact	Schedule Impact	Calc Impact	Calc %	Risk Rating	Status	Must Complete by Date
238	Quality Program is ineffective in processing the nonconformance items causing schedule impacts	1. Review CNCR log on a biweekly basis. 2. Greater clarity in the Log on what CNCR's are open	C	3	2	2	2	50%	6		
240	Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost for the Program)	1. Ask for TIA's 2. As Built Schedule (Program Analysis) 3. Perform a more refined analysis 4. Meet regularly with the Contractor to assign responsibility	C	3	4	4	4	50%	12		
243	Contractor becomes complacent in third party insurance claims - could increase cost to the project	1	C	2	2	1	2	35%	3		
244	254 Fourth Street (Olivet Bldg.) 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		
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		
247	Year 2017/2018 Funding allocation – Not receiving the needed funding	1. Find alternative funding for $246M 2. Highlight the importance in the infrastructure to this project.	C	2	4	1	3	35%	5		
248	Production Rate – existing sequence at CTS (actual vs expected effort not achieved)	1. Allowing the Contractor to gain time in other areas of the remaining construction.	C	5	5	5	5	90%	25		
249	Unable to re-sequence the current construction activities which are linear	1.Get the Contractor to demonstrate the ability to do so.	C	2	3	4	4	35%	7		
251	Physical activities missing (not defined) in the schedule / identify activities of undefined scope	1. Perform additional reviews of schedule to see if any changes are made. 2. Maintain Programs schedule, which does not allow increase duration.	C	3	2	3	3	50%	8		
252	Inappropriate time duration identified in the schedule for an activity	1. Add additional shifts and resources	C	2	2	3	3	35%	5		
253	Do not have adequate resources defined to do the work	1.Add resources to make sure to prioritize where limited resources need to go. 2. Work extended hours or additional shifts. 3. Ensure access to the area. 4. Identify TPC's sub-consultant "Fisk" staff who will led the MEP work.	C	3	2	2	2	50%	6		