MONTHLY MONITORING REPORT
June 2017

Central Subway Project
San Francisco Municipal Transportation Agency (SFMTA)
San Francisco, CA

Draft Report Delivered to FTA on July 19, 2017
Final Report Delivered to FTA on July 26, 2017

PMOC Contract No.: DTFT6014D00010
Task Order No. 5
Project No.: FTA-13-0294

Work Order Number: 002
OPs Referenced: 01 and 25
CLIN 0002B

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Time on project: 3 years

EXECUTIVE SUMMARY

This Project Management Oversight Contractor (PMOC) Monthly Monitoring Report reflects information gathered from documents and data distributed by the San Francisco Municipal Transportation Agency (SFMTA). The PMOC did not conduct on-site monitoring during the month of June 2017.

Project Description

The Central Subway Project (CSP) involves construction of a 1.7-mile extension of Muni's T Third Line along 4th Street and Stockton Street in downtown San Francisco. The CSP is Phase 2 of the SFMTA's T Third Light Rail Transit (LRT) Project. Phase 1 of the project constructed a 5.1-mile LRT line along the densely populated 3rd Street corridor. Revenue service commenced on the T Third Line in April 2007. The CSP will extend the T Third Line from the 4th Street Caltrain Station to Chinatown, providing a direct, rapid transit link from the Bayshore and Mission Bay areas to South of Market, Union Square, and downtown.

Four new stations are being constructed as part of the project—an at-grade station at 4th and Brannan streets and three underground stations at Yerba Buena/Moscone Center (YBM), Union Square/Market Street (UMS), and Chinatown (CTS). Four light rail vehicles (LRVs) are included in the budget for the CSP as part of a larger procurement that will replace the entire LRV fleet. Average weekday boardings are projected to be 43,521 in 2030.

Project Status

The project has been under construction since February 2010. *At the end of May 2017, the project was 67.8% complete based on expenditures.* There was one active construction contract: 1300 Stations and Systems/Trackwork*, which was 55.60% complete based on incurred cost. Substantial completion of this contract was originally scheduled for February 2018, but the latest master program schedule update forecasts substantial completion on June 26, 2019, a delay of 502 days (the same date as the April forecast).* The contractor has submitted revised schedule updates through April 2017. *The contractor did not submit the May schedule update pending revisions to the earlier schedule updates.* The master schedule information for the project was based on SFMTA's latest update of the construction schedule, which indicates a forecast Revenue Service Date (RSD) of December 10, 2019. This is 349 days later than the required RSD of December 26, 2018 in the Full Funding Grant Agreement (FFGA). ***The PMOC notes that the forecast RSD did not change from the previous reporting period. The accumulation of delays appears to have been arrested, at least temporarily, which is a positive development.*** **In the opinion of the PMOC, the recent pattern of month-by-month extensions of the projected RSD has been detrimental to effective management of the project. When project team members see that target completion dates are repeatedly extended, the motivation to work towards the target date is lost.** ***SFMTA and the contractor should work together to avoid future schedule delays and, if possible, improve on the current RSD forecast.***

The Big Hairy Audacious Goals (BHAGs) identified for each of the work packages have thus far been ineffective in arresting the accumulation of delays. However, *SFMTA and the*

contractor collaborated to start work on the CTS crossover cavern, which was on the critical path, early. Advancing this work maintained the previous substantial completion date, even though the production rate for mining at the CTS platform cavern continued to be below plan.

The PMOC will convene a schedule workshop in July 2017 with the objective of identifying a range of achievable dates for completion of construction and for the start of revenue service. **An achievable substantial completion date for the 1300 Contract, which includes appropriate contingencies for unexpected future events that may cause delays, may be several months later than the current forecast of December 2019.**

SFMTA completed an update of the Rail Activation Plan (RAP) as part of its annual update of the Project Management Plan (PMP) and distributed the updated version of the report in April 2017. The RAP now provides additional detail on the testing, commissioning, and start-up activities that will influence the RSD for the project. SFMTA has also delivered an updated program master schedule that includes the start-up and testing activities identified in the RAP. This program master schedule will provide the basis for analysis of the achievable RSD for the project and identification of schedule containment strategies at the upcoming schedule workshop.

Table 1 - Core Accountability Items

Project Status: *(as of May 31, 2017)*		**Original at FFGA:**	**Current Estimate:**
Cost	Cost Estimate	$1,578,300,000	$1,578,300,000
Contingency	Unallocated Contingency	$74,722,000	$8,880,402 (no change from April)
	Total Contingency (Including Approved Contract Changes)	$185,500,000	*$75,986,922 (reduced $160,114 from April)*
Schedule	Revenue Service Date	12/26/2018	*12/10/2019* (SFMTA forecast)
Total Project Percent Complete	Based on Expenditures	*67.82%*	
	Based on Earned Value	*66.14%*	
Major Issues	**Status**	**Comments/Planned Action**	
Schedule Contingency	Based on the latest program master schedule, there is negative schedule float of approximately 8 months.	The minimum schedule contingency agreed to at this stage of the project is 6.0 months. The project is nearly 12 months behind schedule, and it is likely that further delays will occur.	

Cost Contingency	*The current Total Contingency is $76.0 million.* The Federal Transit Administration (FTA) recommends a minimum contingency level of $60 million.	Accumulating delays will likely lead to an increase in project soft costs. There is also a risk that the contractor will be successful in its claims for compensation for increased delay-related costs. These cost items could consume some of the contingency but it appears that there is sufficient cost contingency to cover these items and other project cost risks. SFMTA also has the right to assess liquidated damages for delays that are the responsibility of the contractor.
Technical Capacity and Capability	The Resident Engineer (RE) recently reassigned to the UMS work package left the project. *The latest progress report indicates additional staff departures have occurred*.	Staff turnover at the RE level will create a challenge for resolution of outstanding cost and delay claims. *The staff vacancies on the SFMTA project team will make it challenging to meet the project management demands of the project.* SFMTA should develop a plan for filling the vacancies on the project team.
Date of Next Quarterly Meeting:		*August 3, 2017*

Earned Value (EV): *$1,043,940,351, an increase of $3.97 million from April. Earned value for the month of May was well below that for April and far below the planned increase in earned value of more than $18 million.*

Planned Value (PV): *$1,401,896,036, a planned increase of $31.72 million from April.*

Actual Cost (AC): *$1,070,407,741, an increase of $11.43 million from April.*

Cost Performance Index (CPI): 0.98. A value greater than 1 means that value of the work completed is more than the cost of the work (under budget) and less than 1 means that the value of the work is less than the cost of the work (over budget). ***The PMOC notes that the cost of work performed in May was much higher than the increase in earned value. SFMTA should review its calculations for earned value given the ongoing disparity between actual costs and earned value***.

Schedule Performance Index (SPI): *0.75.* SPI greater than 1.0 is ahead of schedule and less than 1.0 is behind schedule. SFMTA has identified the minimum acceptable SPI to be 0.90.

Contingency

Cost Contingency

The total available contingency (approved contingency less approved contract changes) *as of May 31, 2017* was $ 75,986,922, which is above the minimum required contingency of $60 million *and down slightly from April. As of July 12, 2017, 73 contract modifications had been executed for the*

1300 Contract with a combined value of $7.73 million. Five new contract modifications had been executed since June 7, 2017.

***In the opinion of the PMOC, SFMTA's cost forecasts should recognize the possibility of increased soft costs due to project delays as well as the potential for the contractor to be successful in obtaining additional compensation for increased costs due to delays and other factors determined to be beyond its control. Despite the potential for higher soft costs and increases in the 1300 contract value,* the available cost contingency appears to be sufficient to provide reasonable assurance of on-budget completion of the project. SFMTA and the contractor are encouraged to continue to identify schedule recovery and mitigation strategies to reduce the potential for delay-related costs and to continue to work to resolve long-standing time impact claims.**

Schedule Contingency

All contingency in the schedule has been consumed, and there is nearly 12 months of negative float. *Recent changes in the sequence of work have arrested the ongoing accumulation of delays. The long-term effectiveness of these actions remains to be confirmed.*

PMOC Observations, Opinions, and Concerns

The PMOC notes that, because the contractor started critical path work early, no further delays to the RSD occurred in May. SFMTA and the contractor should work to sustain and improve on this positive trend. In the opinion of the PMOC, the recent pattern of month-by-month extension of the projected RSD has been detrimental to effective management of the project because the project team does not have achievable schedule targets to manage to. SFMTA and the contractor are encouraged to develop an achievable schedule for completion of the remaining work that reflects recent changes in work sequence and incorporates achievable production rates for critical path work based on the actual production rates. In the opinion of the PMOC, although setting and working toward the BHAGs may be encouraging cooperation and collaboration between Tutor Perini Corporation (TPC) and SFMTA in advancing the current work, this practice, by itself, has been ineffective in arresting the ongoing schedule slippage.

The PMOC will convene a schedule workshop to evaluate potential time saving measures and assess the likely range for the RSD of the project. In order to establish an achievable RSD, the time required to complete the remaining Sequential Excavation Method (SEM) work at CTS must be determined based on achievable production rates that reflect the actual conditions for this work. Improvement of the RSD will require enhancements of the work sequence and advancement of elements of the testing and commissioning activities near the end of the project.

It appears likely that resolution of the large number of time-related contract disputes between SFMTA and the contractor will be challenging and time consuming since the contractor and SFMTA positions are far apart. The PMOC recommends that SFMTA recognize the likelihood of increased soft costs in its forecast of potential cost increases *and continue to maintain sufficient cost contingencies to address the potential outcomes of the dispute resolution process.*

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A. PROJECT STATUS

Full Funding Grant Agreement (FFGA)

The FFGA was signed on October 11, 2012.

Design

Design is complete.

Construction

Contract 1250 (UR #1). This completed contract relocated utilities within the footprint of the proposed Yerba Buena/Moscone Center (YBM) Station.

Contract 1251 (UR #2). This completed contract included the relocation of utility lines within the footprint of the proposed Union Square/Market Street (UMS) Station and temporarily rerouted existing trolley coach lines around the construction zone.

Contract 1252 Tunnel. This completed contract included the construction of 1.5 miles of twin tunnels excavated by tunnel boring machines and construction of the tunnel portal, retrieval shaft, and five cross-passages. Final completion has been achieved, and financial close out *is underway.* San Francisco Municipal Transportation Agency (SFMTA) is still working to reach resolution on the amounts that are due to the stations contractor to cover extra costs related to non-conforming work by the tunnel contractor. The tunnel contractor also must repair leaks in the tunnel and some of the cross passages before the contract can be closed out. *Repairs for leaks at the portal were completed, but were not completely effective. Coordination of access to the remainder of the tunnel for the leak repair work with ongoing station construction has been challenging.*

It appears likely that this contract will close out with a final cost less than $2 million over the original contract value, with change orders of less than 1% of the contract amount, which is very good cost control performance compared to typical infrastructure projects.

Contract 1300 (Combination of UMS, CTS, YBM, and STS). This contract includes the construction of three underground stations, one surface station, all surface works required for the installation of Light Rail Transit (LRT) between 4th and King streets and the tunnel portal, and all LRT track and systems components. *As of the end of May 2017, the construction of the Stations and Surface, Track, and Systems Contract was 55.60% complete based on cost and 56.11% complete based on the value of completed construction.*

Union Square/Market Street Station (UMS): The *previous* Big Hairy Audacious Goal (BHAG) for this work package was to complete excavation and placement of support of excavation for the station box by June 1, 2017. *That goal was not achieved, and the BHAG was changed to have the elevator in the BART annex ready to install by September 1. The first pour for the station box invert occurred on July 12, and two additional pours were scheduled for July 2017.*

Final utility placements were nearing completion at the triangle formed by Market Street, the westbound lane of Ellis Street, and the western end of the Ellis Street Annex. The latest 4-week look-ahead schedule indicated that street restoration could be completed by the end of July if a

12-inch water line could be placed as scheduled during the week of July 10. In the opinion of the Project Management Oversight Contractor (PMOC), SFMTA management took appropriate (although probably overdue) action to move this work forward.

Walls of the mechanical duct chase at the fan level of the north entrance were completed. A*dditional work to complete the duct chase is continuing in July.* Mechanical, electrical, and plumbing (M/E/P) rough-in *and placement of structural steel is underway at the concourse level of the north entrance.*

Chinatown Station (CTS): *Work on the center drift started on May 1 for the southbound direction and was scheduled to start on July 17 for the northbound direction. Excavation of the left and right side drifts of the crossover cavern was scheduled to continue through July. SFMTA reported that the early start of this work by the contractor offset ongoing delays to the platform cavern excavation so that no additional overall delay was incurred in May.* ***In the opinion of the PMOC, SFMTA and the contractor demonstrated effective collaboration to minimize schedule delays by advancing this critical path work ahead of the baseline schedule.*** The contractor also is continuing to work two 12-hour shifts 6 days per week on the mining work at CTS in an attempt to mitigate the schedule impacts of the low production rate.

The BHAG for completion of the mining for the platform cavern was revised again to September 15, 2017 from September 1, 2017, an extension of two weeks. The PMOC and SFMTA have agreed to convene a schedule containment workshop in July. The actual production rates achieved for the platform cavern work will be used to project the likely completion date for the crossover cavern, which is the last mining work on the project critical path.

Yerba Buena/Moscone Station (YBM): The latest BHAG for YBM is to have the escalators ready to install by September 1, 2017. *Information on the status of this BHAG was not available at the publication time for this report.*

Remaining utility and street work along Clementina Street and subsequent restoration of that street is being coordinated with the planned opening of a new hotel on the northwest corner of Clementina and 4th streets. The most recent projection for the opening date of the hotel was July 2017, *but the hotel contractor missed this milestone. Central Subway Project (CSP) project work on Clementina Street is scheduled to be completed between July 17 and early August, which should be well in advance of the actual hotel opening date.*

Work to install a 36-inch sewer force main in 4th Street was being delayed by conflicting underground utility infrastructure and by the need to resolve how to handle Muni overhead power lines for an emergency turnaround at 4th and Howard streets that conflict with the planned construction. At Folsom Street, the contractor had planned to start construction of the structure for emergency egress stair 4 in May following the removal of an undisclosed underground storage tank. The tank was not actually removed until July 7. Construction of the stair will extend into August, with final utility adjustments in the area following the completion of the structure.

Finishing work continued on the mezzanine and concourse levels of the station. *Plaster work is underway, along with electrical rough-in work. Preparation for placement of the permanent station walls is underway at the platform level, with the walls planned to be poured in late July.*

In the headhouse, the contractor will be placing the 12-inch headhouse shotcrete walls and building the walls surrounding stairs 5 and 6 and elevators 3 and 4 in July.

Surface, Track, and Systems (STS): The *previous* BHAGs for this work package included:

- Complete all utility work and pavement restoration south of Bryant Street by May 31, 2017 – *now targeted for September 30.*
- Complete all utility work and pavement restoration through the Bryant Street/4th Street intersection to the portal by July 15, 2017 – *now targeted for September 30.*

Utility conflicts continue to impede progress on completion of the roadways on either side of the center-running trackway along 4th Street. Muni power ductbank work, sewer work, and water work are all underway throughout July. Tutor Perini Corporation's (TPC) 4-week look-ahead schedule indicates that approvals of traffic control plans and delayed work by Pacific Gas & Electric Company (PG&E) were delaying some of this work.

The contractor began stockpiling rail strings in the median of 4th Street between Bryant and Brannan streets and started welding the rail into longer sections on July 10. The remaining short segments of tunnel invert slab needed at YBM station were scheduled to be completed on July 14.

Despite the focused attention of the CSP's senior management team on achievement of the short term BHAGs, these goals have not been effective in arresting schedule slippage, in part because the target dates are not being achieved. The Revenue Service Date (RSD) did not slip in May because critical path work on the crossover cavern, which was originally planned to start after excavation of the platform cavern was complete, started early. **Improved performance for the mining operation must be achieved immediately, and sustained and additional time savings must be identified for all four lines of work that are driving the current RSD in order to *avoid further delays to the current forecast RSD of December 10, 2019.***

In the opinion of the PMOC, the recent pattern of month-by-month extension of the projected RSD was detrimental to effective management of the project because the project team did not have achievable schedule targets to manage to. SFMTA and he contractor should continue to work together to maintain the current forecast date for substantial completion or develop a mutually agreed and achievable schedule for completion of the remaining work including any realistic schedule recovery strategies and appropriate schedule float to absorb future delays that will inevitably occur. SFMTA and the contractor should agree on the forward-looking schedule as soon as possible. *The PMOC will convene a schedule workshop in July 2017 with the objective of identifying a range of likely feasible construction completion dates and RSDs.*

Third Party Agreements Including Utilities, Railroads, Other Agencies, Etc.

Bay Area Rapid Transit (BART)

BART has accepted the work for removal of CSP instrumentation in the BART tunnel and has issued releases of SFMTA for liability. BART has provided confirmation that it has received payment from the tunnel contractor for agency costs associated with the tunneling work, which closes out the SFMTA-BART coordination for the tunnel contract.

California Department of Transportation (Caltrans)

An Encroachment Permit is needed to install electrical and traffic signal equipment at the I-280 off ramp. SFMTA is working to obtain the permit for the work, which is not on the critical path.

CPUC

The California Public Utilities Commission (CPUC) is participating in the various safety meetings, including the Safety and Security Certification Review Committee (SSCRC) and Fire and Life Safety Committee (FLSC) meetings. Representatives of the CPUC also regularly attend the SFMTA/Federal Transit Administration (FTA) Quarterly Progress Review Meetings (QPRM). The FLSC has begun to address the certifiable items list for the Stations Contract. Rail crossing permits from CPUC are required for the at-grade portion of the project alignment. CPUC has provided the permits but they will need to be extended as the permits call for the crossings to be in operation before the scheduled completion of the CSP project.

San Francisco Public Utilities Commission (SFPUC)

Coordination is ongoing for the installation of new water and sewer facilities along 4th Street.

San Francisco Department of Public Works (SFDPW)

No updates to report.

San Francisco Parks and Recreation Department

No updates to report.

Private Property Owners

All real estate acquisitions have been completed. There will be a need to extend the duration of some of the licenses for compensation grouting. A number of private property owners and businesses have issued claims for damage associated with the project construction. The builder's insurance policies maintained by the contractor cover the costs associated with these claims and the contractor has demonstrated improved responsiveness to damage claims that are associated with ongoing construction work.

Status of Vehicle Design, Procurement, Testing, and Integration

Vehicle design and fabrication is underway by Siemens Corporation for four Light Rail Vehicles (LRVs) for the Central Subway, 20 LRVs for near-term fleet expansion, and 151 LRVs for fleet replacement. Options for up to 85 additional vehicles are available for fleet expansion. The vehicle design and assembly process is reported to be on schedule. *Four cars had been delivered to SFMTA as of the end of May, which satisfies the vehicle requirement for operation of the CSP. SFMTA is conducting testing on the cars delivered by the supplier.*

Real Estate

SFMTA has acquired all project right-of-way, and all commercial and residential relocations are complete.

Labor Relations and Policies

Appendix G of the Project Monthly Report details the Small Business Enterprise (SBE) goals and actual participation on each contract as of March 31, 2017. SFMTA contract goals range from 6% to 30% on each of the contracts. The majority of the contracts have met these goals to date.

Compliance with Applicable Statutes, Regulations, Guidance, and FTA Agreements

The 1300 contractor had previously raised the possibility of Buy America compliance issues with cooling equipment for the three underground stations. In the case of the cooling equipment, the contract specifications for the Variable Refrigerant Flow (VRF) cooling units identify four manufacturers that are all foreign, and the contractor has not been able to identify a domestic supplier that can meet the specifications. SFMTA has indicated that it intends to seek a waiver of Buy America requirements for this equipment, citing examples from other FTA-funded projects where waivers were granted by FTA for similar equipment. SFMTA is assembling information in advance of scheduling a meeting with FTA to discuss the proposed waiver request.

B. PROJECT MANAGEMENT PLAN AND SUB-PLAN IMPLEMENTATION

Project Management Plan (PMP)

SFMTA delivered an update of the PMP in April 2017. The reporting relationships for the quality function have been revised due to the departure of SFMTA's Capital Programs and Construction Quality Manager.

Environmental Assessment/Mitigation Plan/Archaeological Plans

The PMOC received the Fourth Quarter 2016 Mitigation Monitoring Reporting Program (MMRP) update from SFMTA on February 17, 2017.

Real Estate Acquisition Management Plan (RAMP)

The RAMP Revision 5, dated September 26, 2013, was submitted to FTA on November 19, 2013. All required real estate for the project has been acquired in accordance with the RAMP.

Quality Assurance/Quality Control (QA/QC) Program Plan

See section F.

Safety and Security Management Plan (SSMP)

See section H.

Risk and Contingency Management Plan (RCMP)

See section I.

C. PROJECT MANAGEMENT CAPABILITY AND CAPACITY

Agency Staff

Several CSP project staff members continue to prepare the as-built record of the construction for the 1300 Contract. This effort requires support from the field management staff for each of the work packages. The updates have been completed for all stations through May 2017.

Several positions in the SFMTA CSP project staff are now vacant, including the Project Controls Manager, Contract Claims Administrator, Estimator, Assistant Resident Engineer, Office Engineer, and Construction Inspector positions. Overall, the project team is seven members smaller than planned for the current stage of the project. ***In the opinion of the PMOC, the number of vacancies on the project team will cause challenges in meeting the management demands of the project.*** SFMTA reported that the previous UMS RE is working part time to address the backlog of change order requests from the contractor.

Several long-standing major change orders and time impact claims remain to be resolved, but SFMTA has initiated discussions with the contractor on some of the oldest issues, including the impacts of a PG&E power pole on demolition work at the CTS headhouse. SFMTA reported that it is now meeting with the contractor on a weekly basis to address delay claims, including any additional compensation that may be due to the contractor, beginning with the work at CTS that preceded the start of excavation. *Thus far, SFMTA and the contractor have been able to resolve any of the major disputes related to project delays.* SFMTA and TPC are planning to submit information regarding the time impact claims at CTS to the Dispute Review Board (DRB) in an attempt to reach resolution on these issues. **In the opinion of the PMOC, this is an appropriate use of the DRB.** *However, the contractor and SFMTA have disagreements regarding DRB procedures.*

The PMOC will continue to monitor the SFMTA's progress in clearing the backlog of pending change orders. The PMOC identified a new action item for SFMTA to include metrics for the time needed to progress identified potential contract changes and change order requests from the contractor through the various stages of resolution.

Contractor Staff

There were no changes in the contractor's management staff.

D. PROJECT COST STATUS

Project Cost Control Systems

SFMTA continued to maintain the Trend Log and logs of Change Order Requests (COR) and Proposed Contract Changes (PCC) for Contract 1300 using CM13. The Trend Log includes all potential changes in contract value, including items that, in the opinion of the CSP staff, are not merited and new items for which merit has not been determined. The companion contract change management log includes items that have been determined to have merit and are progressing through negotiations toward a contract modification (CMod). **In the opinion of the PMOC, the**

trend log tracking should include the amount of time that has passed from the initial identification of the trend, and an action item has been identified for SFMTA's response. *Five new modifications to the contract were executed between early June and early July 2017.*

The most recent versions of the Trend Log and Trend Summary documents are dated July 12, 2017. The Trend Summary indicates that 73 contract modifications had been executed for the 1300 Contract. The total value of executed CMods was $7,726,806. Note that tables 2 and 3 reflect the project status as of the end of *May 2017* and show different values for approved contract changes.

Project Cost (*as of May 31, 2017*)

Cost estimate: $1.5783 billion.

Total contingency: *$75.99 million* (minimum contingency is $60 million), *slightly lower than in April.*

Actual Cost (AC): $*1,070,407,741, an increase of $11.43 million from April (67.82% of the total project budget)*.

Current funding level: $1,329,794,000 (84.3% of the total project budget).

Earned Value (EV): *$1,043,940,351, an increase of $3.97 million from April.*

Cost Performance Index (CPI): *0.98.*

CPI is a measure of cost efficiency on a project. It is the ratio of EV to AC. A CPI equal to or greater than 1 indicates a cost underrun, and a value of less than 1 indicates a cost overrun. A value of 0.9 or greater is considered acceptable, considering the margin of error in estimating the value of completed work. ***The PMOC noted that the cost of work performed in May was much higher than the increase in earned value. The PMOC recommends that SFMTA review its method for determining earned value to confirm whether it is accurately representing actual progress.***

Project Cost Trends

SFMTA tracks potential changes in project cost, calling these potential changes "trends." Trends include all potential changes in the contract value. As the status of an identified trend changes, it may become a contract modification, it may become an item that is paid on a force account basis, or it may be denied/closed with no impact to the project cost. Extra cost items identified by the 1300 contractor that CSP management concludes have no merit are carried in the total trend amount at a lower value than the contractor's estimate of extra costs, with the value reflecting SFMTA's assessment of the likelihood that the change would ultimately be approved through mediation or other contract dispute resolution measures.

Table 2 summarizes the trends for the two construction contracts that have not attained financial close out. The remaining contingency, less identified trends, represents about *54%* of the potential left to spend for Contract 1252. *After potential changes are accounted for, there is now only $1.29 million in contingency remaining for Contract 1300.* **The resulting contingency of *less than 1%* of potential remaining spending after potential changes are accounted for is likely insufficient. However, unallocated contingency and excess contingency for other elements of**

the program are likely sufficient to allow on-budget completion of the CSP. *The combined allocated contingency for all construction work less identified trends is now $3.27 million or 0.8% of the potential remaining work.* **In the opinion of the PMOC, the allocated contingency for the 1252 Contract is greater than the amount required to assure final close out of the contract within the budget. The allocated contingency for the 1300 Contract is probably insufficient given the pending contract changes and there is a significant likelihood that additional contingency will need to be allocated to this contract prior to completion, as SFMTA has identified an additional *$31.46 million* in potential contract changes to the 1300 Contract in its trend log.**

Table 2 - Contract, Budget, and Trends for Active Construction Projects[1]

	1252 – Tunnel	1300 Stations, STS
Original Contract	233,584,015	839,676,400
Approved Contingency	2,329,485	40,000,000
Extra Budget for Non-Project Costs	6,173,508	
Approved Budget	235,913,500	879,676,400
Approved Changes	1,494,770	*7,245,927*
Current Contract (1252 does not include non-project costs)	235,078,785	*846,922,327*
Remaining Contingency	834,715	*32,754,073*
Potential Changes (Trends)	*20,000*	*31,463,566*
Estimate at Completion	*235,098,785*	*878,385,893*
Contingency Less Trends	*814,715*	*1,290,507*
Spent to Date	*233,589,322*	*489,142,923*
Potential Left to Spend	*1,509,463*	*389,242,970*
Contingency Less Trends as % of Potential Cost to Complete	*54.0%*	*0.3%*

[1] *As reported in the May 2017* Central Subway Project Monthly Progress Report – SFMTA (reformatted by the PMOC).

Table 3 shows the overall budget, trends, and contingency status for the entire Central Subway program. **The total contingency, including unallocated contingency and subtracting identified trends, represents *9.4%* of the potential remaining spending, which, in the opinion of the PMOC, should be sufficient to provide reasonable confidence in an on-budget completion of the project.**

Table 3 - Budget and Contingency Status for Central Subway Project

SFMTA Central Subway Project, Budget, Costs and EAC by SCC January 31, 2017		FFGA Budget	Budget Transfers	Current Budget = Committed	Change	Base Budget	Contingency	Expenditures to Date		Remaining Budget	Cost to Complete	Estimate at Completion	Budget Forecast Variance
		$	$	$	%	$	$	$	%	$	$	$	$
10	**Guideway and Track Elements**	**315,926,081**	**(30,698,202)**	**285,227,879**	**-10%**			**225,224,912**	79%	**60,002,967**			
10.02	Guideway: At Grade, Semi-exclusive	2,395,143	464,857	2,860,000	19%			382,500	13%	2,477,500			
10.06	Guideway: Underground cut and cover	74,407,195	(4,590,788)	69,816,407	-6%			62,268,677	89%	7,547,730			
10.07	Guideway: Underground tunnel	224,933,257	(23,592,511)	201,340,746	-10%			156,832,219	78%	44,508,527			
10.09	Track: Direct fixation	7,293,157	(532,068)	6,761,089	-7%			3,122,916	46%	3,638,173			
10.10	Track: Embedded	1,601,763	(1,601,763)	-	-100%			-	0%	-			
10.12	Track: Special	5,295,566	(845,929)	4,449,637	-16%			2,618,600	59%	1,831,037			
20	**Stations, Stops, Terminals, Intermodal**	**432,698,735**	**154,839,410**	**587,538,145**	**36%**			**336,694,896**	57%	**250,843,249**			
20.01	At-grade station	774,913	6,827,944	7,602,857	881%			1,506,488	20%	6,096,369			
20.02	Aerial station, stop, shelter, mall, terminal, platform		2,997,529	2,997,529	NA			-	0%	2,997,529			
20.03	Underground station	412,084,888	143,151,034	555,235,922	35%			331,302,560	60%	223,933,362			
20.07	Elevators, escalators	19,838,934	1,862,903	21,701,837	9%			3,885,848	18%	17,815,989			
40	**Sitework and Special Conditions**	**232,551,627**	**(18,514,458)**	**214,037,169**	**-8%**			**196,432,976**	**92%**	**17,604,193**			
40.01	Demolition, clearing, earthwork	8,887,028	3,468,587	12,355,615	39%			11,938,516	97%	417,099			
40.02	Site utilities, utility relocation	29,562,587	30,685,785	60,248,372	104%			63,721,728	106%	(3,473,356)			
40.03	Haz. Material, contam'd soli removal, ground water treatment	2,957,442	4,494,779	7,452,221	152%			4,674,185	63%	2,778,036			
40.04	Environmental mitigation	3,146,216	(2,023,317)	1,122,899	-64%			619,100	55%	503,799			
40.05	Site structures, including retaining walls, sound walls	2,894,074	(187,643)	2,706,431	-6%			2,706,431	100%	-			
40.06	Pedestrian and bike access and accommodation, landscaping	14,393,910	(4,602,915)	9,790,995	-32%			2,442,049	25%	7,348,946			
40.07	Automobile, van, bus accessways, including roads and parking lots	11,919,550	(5,340,451)	6,579,099	-45%			3,635,664	55%	2,943,435			
40.08	Temporary facilities and other construction indirect costs	158,790,820	(45,009,283)	113,781,537	-28%			106,695,303	94%	7,086,234			
50	**Systems**	**108,429,774**	**(13,184,464)**	**95,245,310**	**-12%**			**26,590,199**	**28%**	**68,655,111**			
50.01	Train control and signals	37,447,116	(9,415,693)	28,031,423	-25%			7,301,619	26%	20,729,804			
50.02	Traffic signals and crossing protection	3,013,232	9,549,297	12,562,529	317%			9,648,857	77%	2,913,672			
50.03	Traction power supply	20,379,634	1,085,439	21,465,073	5%			8,017,780	37%	13,447,293			
50.04	Traction power distribution	16,239,951	(3,798,838)	12,441,113	-23%			1,439,439	12%	11,001,674			
50.05	Communications	28,545,305	(16,514,719)	12,030,586	-58%			182,503	2%	11,848,083			
50.06	Fare collection system and equipment	2,804,536	3,295,464	6,100,000	118%			-	0%	6,100,000			
50.07	Central Control		2,614,586	2,614,586	NA			1	0%	2,614,585			
Subtotal (10 - 50)		**1,089,606,217**	**92,442,286**	**1,182,048,503**	**8%**	**1,146,239,715**	**35,808,788**	**784,942,983**	**66%**	**397,105,520**	**392,780,299**	**1,177,723,282**	**4,325,221**
60	**ROW, Land, Existing Improvements**	**37,398,029**	**(5,151,708)**	**32,246,321**	**-14%**	**32,246,321**	**-**	**30,731,521**	**95%**	**1,514,800**	**1,514,800**	**32,246,321**	**-**
60.01	Purchase or lease of real estate	33,798,029	(3,732,219)	30,065,810	-11%	30,065,810	-	28,322,091	94%	1,743,719	1,514,800	29,836,891	228,919
60.02	Relocation of existing households and businesses	3,600,000	(1,419,489)	2,180,511	-39%	2,180,511	-	2,409,430	110%	(228,919)	-	2,409,430	(228,919)
70	**Vehicles**	**26,385,653**	**-**	**26,385,653**	**0%**	**13,309,000**	**13,076,653**	**2,147,782**	**8%**	**24,237,871**	**11,161,218**	**13,309,000**	**13,076,653**
70.01	Light Rail Vehicles	26,385,653	-	26,385,653	0%	13,309,000	13,076,653	2,147,782	8%	24,237,871	11,161,218	13,309,000	13,076,653
80	**Professional Services**	**361,568,360**	**(32,829,240)**	**328,739,120**	**-9%**	**310,518,041**	**18,221,079**	**252,585,456**	**77%**	**76,153,664**	**57,932,586**	**310,518,042**	**18,221,078**
80.01	Preliminary Engineering	46,317,094	**(114,420)**	46,202,674	0%	46,202,674	-	46,202,675	100%	(1)	-	46,202,675	(1)
80.02	Final Design	86,053,240	(24,734,909)	61,318,331	-29%	61,318,331	-	61,199,308	100%	119,023		61,318,331	-
80.03	Project Management for Design and Construction	191,025,800	(88,107,411)	102,918,389	-46%	89,012,544	13,905,845	67,963,650	66%	34,954,739	26,143,960	94,107,610	8,810,779
80.04	Construction Administration and Management	15,495,521	78,558,172	94,053,693	507%	91,096,881	2,956,812	65,664,676	70%	28,389,017	20,337,139	86,001,815	8,051,878
80.05	Professional Liability and Other Non-Construction Insurance	6,800,000	-	6,800,000	0%	6,800,000	-	6,340,196	93%	459,804	78,823	6,419,019	380,981
80.06	Legal, Permits, Review Fees by Other Agencies	7,242,340	970,264	8,212,604	13%	8,212,604	-	4,383,245	53%	3,829,359	3,369,235	7,752,480	460,124
80.07	Surveys, Testing, Investigation, Inspection	234,036	699,064	933,100	299%	933,100	-	831,706	89%	101,394	49,116	880,822	52,278
80.08	Start up	8,400,329	(100,000)	8,300,329	-1%	6,941,907	1,358,422	-	0%	8,300,329	7,835,290	7,835,290	465,039
Subtotal (10 - 80)		**1,514,958,258**	**54,461,339**	**1,569,419,597**	**4%**	**1,502,313,077**	**67,106,520**	**1,070,407,742**	**68%**	**499,011,855**	**463,388,903**	**1,533,796,645**	**35,622,952**
90	Unallocated Contingency	63,341,742	(54,461,340)	8,880,402	-86%		8,880,402		0%	8,880,402			8,880,402
Total Project Costs (10 - 100)		**1,578,300,000**	**(1)**	**1,578,299,999**	**0%**		**75,986,922**	**1,070,407,742**	**68%**	**507,892,257**	**463,388,903**	**1,533,796,645**	**44,503,354**

SCC Breakdown of Forecast Construction Costs Not Available

[2]Data reported in the *May 2017* Central Subway Project Monthly Progress Report – SFMTA (reformatted by the PMOC).

Change Order Control

SFMTA *now estimate*s that CMods with a net increase in contract value of *only $20,000* will be executed as part of contract close out for the 1252 Contract. Based on the expected final contract value, change orders for the base work are forecast to represent less than 1% of the original contract amount. This represents exceptionally good change order control compared to typical capital projects.

SFMTA is maintaining its management tools for tracking potential contract changes for the 1300 Contract. *The latest CN1300 Trend Summary is dated July 12, 2017. This report shows that 73 contract modifications have been approved (five additional CMods since June 6) for a net increase in the contract value of $7,726,806. CORs (generated by the contractor) that have been determined to have merit and PCCs (generated by SFMTA) have a combined expected value of $26,898,896 in increased contract value, a decrease of $4.40 million since June 6. An additional 618 items are being tracked in the Trend Log with a net value of $28.98 million in possible contract value increases. Of these, 296 have been judged by SFMTA to be without merit, but are being carried at a reduced value in the trend to address potential future claims. A further 258 items have been voided and are carried at no cost. There are 50 items covered by certified claims and notices of potential claims by the contractor ($14.58 million total exposure, $490,000 greater than last month), and 14 items are "open" or "new" and awaiting a determination of merit.*

The most recent version of the Trend Summary shows a total potential increase in contract cost of $63,603,799 including the $7.73 million in contract cost increases executed thus far. The total estimated cost impact of the identified trends decreased by about $2.74 million from June 6, 2017 to July 12, 2017.

The following trend items with potential cost increases in excess of $250,000 are identified in the Trend Log:

1. Change to grade 50 steel from specified grade 70 steel (due to availability issues) - $572,884
2. Extra trucking costs for contaminated soil at CTS - $2,274,225
3. Harder rock than anticipated for CTS slurry wall excavation - $2,820,600
4. Delays to installation of tangent piles at UMS - $1,082,380
5. UMS Garage underpinning requirements - $732,157
6. 12-inch waterline at UMS, added scope - $336,236
7. Utility conflicts with sewer line installation at UMS - $744,465
8. Changes in construction sequence for UMS Garage - $500,000
9. UMS art glass installation requirements - $382,978
10. Obstructions to jet grout placement at UMS - $2,062,420
11. Change in track switch machine manufacturer at STS - $391,909

12. Additional monitoring instruments at CTS - $429,777
13. Extra work to prepare existing tunnel - $431,423
14. Additional traffic control requirements at 4th and King - $675,001
15. Incomplete interface design at STS - $300,001
16. Additional traffic control requirements for STS work package - $1,032,302
17. Cost of changes to the design of CTS to accommodate the plaza requested by the community - $4,618,428
18. Change in vent for emergency generator at all stations - $500,001
19. Missing conduit between manholes at UMS - $250,001
20. Contractor-claimed change in contract requirements for pre-loading permanent struts at UMS - $1,853,352
21. Soil nail and shotcrete wall changes in Union Square Garage - $1,337,776
22. Change in drain piping details at UMS - $332,252
23. Temporary drainage at Union Square Garage ramps - $292,754
24. Change in automatic train control system for reverse running - $400,001
25. Design changes for UMS vertical drainage slots - $866,709
26. Costs associated with differing site conditions for Level 3 Duct Bank - $2,400,001
27. Claim for extra costs and time due to extremely hard ground claimed by TPC during the coring for the SEM mining work - $862,720
28. Escalator raceways at UMS - $492,065
29. Extra costs for SEM excavation at CTS due to tunnel segments being 5 feet wide - $4,404,329
30. Extra costs due to concrete obstruction at CTS south platform cavern - $583,623
31. Time impacts due to power pole conflict during demolition at CTS - $3,516,164
32. Time impacts from extended submittal reviews and substitution request procedures - $3,021,262
33. Claimed delays to SEM work at the platform invert due to compensation grout exclusion zone requirements in the contract specifications - $900,889
34. Estimated extra costs of proposed scope increase to provide sidewalk bulb-outs at 4th and Bryant and 4th and Harrison - $1,500,000
35. Claimed extra costs for a schedule delay to the train control subcontract - $2,000,000
36. Claimed extra costs for delays to the CTS south platform center drift excavation due to restrictions caused by compensation grouting - $450,000

Although no new major trends were identified in May, the PMOC is concerned that several new large change order requests have been issued in the past two months, which may indicate a negative trend for project cost control.

In addition to these large potential cost increases, the Trend Log includes the following major cost savings:

1. Deletion of compensation grouting bid items at YBM - ($1,833,869)
2. Deletion of the Air Replenishment System (ARS) - ($4,689,000)

Funding

Federal, state, and local project funding and expenditures are shown in Table 4. The awarded funding now represents 84.3% of the project budget.

Table 4 - Project Funding

Source	Committed ($1,000)	Awarded ($1,000)
Federal		
New Starts	942,200	769,196
Congestion Mitigation	41,025	41,025
Federal Subtotal	983,225	810,221
State		
TCRP	14,000	14,000
State RIP	88,000	12,498
Prop. 1B / PTMISEA	307,792	307,792
Prop. 1A / HSR	61,308	61,308
State Subtotal	471,100	395,598
Local		
Prop. K Sales Tax	123,975	123,975
Local Subtotal	123,975	123,975
Project Total:	**1,578,300**	**1,329,794**

E. PROJECT SCHEDULE STATUS

SFMTA prepared an update of the master program schedule in June representing progress on the project through May 2017. SFMTA has added details for start-up and testing activities to the program schedule. The contractor has submitted revised schedule updates through April 2017. The contractor did not submit the May update pending contractor implementation of requested corrections to earlier updates and the current master schedule is based on SFMTA's schedule.

As of the end of May 2017, the project was 349 days late, based on the projected RSD of December 10, 2019. The projected substantial completion date for the 1300 Contract was June 26, 2019, which is 502 days later than the original date (February 9, 2018).

SFMTA has initiated discussions with TPC regarding long-standing delay claims and has provided a formal proposal regarding the time allowance for one of the oldest claims (delayed removal of a power pole at CTS). *TPC disputes the amount of delay allowed by SFMTA and has issued a claim*

for the additional delay they consider to be warranted. TPC has issued several other major delay claims for the CTS and other work packages related to work from the past as well as ongoing and future work. ***The PMOC is concerned that resolution of the outstanding claims will be challenging because the parties' respective positions are far apart.*** **SFMTA and the contractor should make appropriate use of the partnering and DRB processes to facilitate resolution of the disputes regarding allowable time impacts.**

The May master program schedule update indicates that the projected RSD did not change during the month. The critical path for the construction work continues to flow through the construction of CTS, but analysis by the PMOC indicates that there are a total of four lines of work that are influencing the RSD for the project. The projected RSD forecast remains December 10, 2019, nearly 12 months later than planned. There is negative float on the project critical path, and further delays to the RSD are likely based on the progress of work on the critical path. *The contractor started critical path work on the crossover cavern in advance of the completion of the platform cavern. Advancing this work while the platform cavern excavation is underway allowed the RSD to be maintained, despite excavation production rates that continue to be lower than planned for the platform cavern.* The contractor also has been working two 12-hour shifts and 6 days per week at CTS in an attempt to reduce the impacts of lower than planned production rates for the ongoing SEM mining work for the platform cavern.

Table 5 shows the latest BHAGs and the status for each work package in the 1300 Contract.

Table 5 - Interim BHAGs for CTS Construction Progress

Milestone	Target Date	Actual Date	*Status*
CTS Complete platform cavern excavation	*Delayed from September 1, 2017 to September 15, 2017*		*Excavation ongoing. Early start of crossover cavern is mitigating effects of delayed completion.*
UMS *Bart elevator ready to install*	*September 1, 2017*		*Unknown*
YBM *Escalators ready to install*	*September 1, 2017*		*Unknown*
STS Complete all utility work along 4th Street	*Delayed from May 31, 2017 to September 30 at Brannan Street* *Delayed from July 15, 2017 to September 30 at Bryant Street*		*Unknown* *Unknown*

The PMOC convened a schedule containment workshop for the project on June 22 and 23, 2016. The PMOC's analysis of the schedule at that time indicated that four lines of work were driving project completion to be later than the December 2018 planned RSD:

- CTS work leading to tunnel electrical power and Advanced Train Control System (ATCS) testing;
- STS work (Radiax, Train Control and Software) leading to ATCS testing;
- CTS work leading to building start-up and testing; and
- UMS work leading to building start-up and testing.

SFMTA and the contractor need to make improvements in the overall durations of each of these lines of work in order to move the RSD earlier than the projected date, *presuming that the pattern of continuing schedule slippage at CTS has been arrested.*

In the opinion of the PMOC, although setting and working toward the BHAGs may be encouraging cooperation and collaboration between TPC and SFMTA in advancing the current work, this practice has been ineffective in arresting the ongoing schedule slippage. In order to establish an achievable RSD, the time required to complete the remaining Sequential Excavation Method (SEM) work at CTS must be determined based on realistically achievable production rates that reflect the actual conditions for this work. To determine whether any time savings for the subsequent work are possible, a comprehensive view of the lines of work that are driving the RSD must be taken by SFMTA. Efforts must be made to improve the work sequence and advance elements of the testing and commissioning activities near the end of the project in order to improve the RSD. SFMTA has started to engage its Transit Division in planning the testing and commissioning work. Coordination between the CSP and SFMTA's operations management should continue with the objective of establishing a firm schedule for commissioning and start-up activities.

SFMTA agreed to several action items that will lead to an updated schedule and projection of likely RSD outcomes (see Table 8). The PMOC notes that SFMTA has completed an update of the Rail Activation Plan (RAP) including a more detailed schedule of testing, commissioning, and start-up activities as part of the 2017 update of the PMP.

The potential for schedule recovery can be evaluated with more confidence after the mining work for the crossover cavern has been underway for a few weeks. Information on the likely progress rate for the crossover cavern excavation can be used to project a completion date for the SEM work at CTS, which is on the project critical path. The PMOC will hold another schedule recovery workshop in July 2017.

Project Schedule Data

Earned Value (EV): $*1,043,940,351, an increase of $3.97 million from April.*

Planned Value (PV): *$1,401,896,036, a planned increase of $31.72 million from April.*

Schedule Performance Index (SPI): *0.75.* SPI is a measure of schedule efficiency on a project. It is the ratio of earned value to planned value. An SPI equal to or greater than 1.0 indicates more work was completed than planned and a value of less than 1 indicates less work was completed than planned. A value of equal to or greater than 0.9 reflects satisfactory performance, considering

the margin of error in estimating both earned value and planned value. The current value of *0.75* indicates that the project is significantly behind schedule**.**

Table 6 shows the status of the schedule milestones established for the project.

Table 6 - Schedule Milestones

	(P = Planned Date, A = Actual Date, F = Forecast Date)
Preliminary Engineering (PE):	Authorized in July 2002 (A)
Record of Decision:	Issued November 26, 2008 (A)
Final Design (FD):	Authorized in January 2010 (A)
FFGA Request:	Submitted September 2011 (A)
FFGA Executed:	October 11, 2012 (A)
Ground Breaking: (Utility Relocation Contract)	February 9, 2010 (A)
Tunnel excavation complete (hole through):	June 2, 2014 (SB); June 11, 2014 (NB) (A)
Cross passages complete:	December 20, 2014 (P); April 15, 2015 (A)
Tunneling substantial completion:	April 15, 2015 (A)
Station construction Notice to Proceed (NTP):	June 17, 2013 (A)
Station construction substantial completion:	February 24, 2018 (P); June 26, 2019 (F)
RSD:	December 26, 2018 (P); December 10, 2019 (F)

Schedule Contingency Management criteria were developed from the FTA Risk Assessment prior to entry into Final Design (FD). Minimum schedule contingency levels at various project milestones or "Hold Points" were agreed to with SFMTA at Risk Workshop #4, held on February 24 through 27, 2009. The FTA recommended schedule contingency for the current stage of the project is 6.0 months. As noted above, the current schedule reflects *nearly 12 months* of negative buffer float.

Critical Path Summary *(Baseline Schedule)*

CTS Install Guidewalls, Slurry Walls, and Install Surface Deck (complete)
CTS Excavate Headhouse and Bracing (complete)
CTS SEM and Install Supports (underway)
CTS Headhouse Structural Concrete/Remove Bracing
CTS Install M/E/P Equipment
CTS Start-up and Testing
CTS P-1254R Commissioning of Station
Safety and Security Certification/Pre-Revenue Activities
RSD on December 26, 2018 (currently forecast December 10, 2019)

Three Month Look-ahead

The following activities are planned over the next 3 months:

1300 Contract

UMS

Complete utility placement, backfill, and paving of Ellis Street

Install guardrails and prepare the new vehicle ramps at Union Square Garage for use by the public

Complete waterproofing and lightweight concrete fill at plaza level of Union Square Garage

Complete the fan-level structure in the Union Square Garage area

Complete excavation and placement of the invert slab in the station box

Complete removal of the tunnel liner in the station box

Complete construction of access shaft at O'Farrell Street

Complete the invert in the Ellis Street Annex area

Install elevator in the BART annex

CTS

Complete excavation of the station platform cavern

Continue excavation of the crossover cavern

Continue structural work in the north egress shaft and final lining of the egress tunnel

Provide compensation grouting as needed

YBM

Continue bottom-up construction of the headhouse

Continue M/E/P rough-in and place topping slabs at the mezzanine and concourse levels

Continue interior wall construction and M/E/P rough-in at the platform level

Complete utilities in 4th Street above the station box and restore street pavement

Install escalators

STS

Sewer installation

Waterline installation

Muni duct bank installation

Continue street restoration and final paving

Start installation of tunnel lighting

Installation of overhead contact system support poles and light poles

Placement of tunnel walkways

Complete staging of track and track welding in the 4th Street median

Continue installation of track invert slab in the station areas

The PMOC expects to attend the following meetings:

- Weekly Management (*July 31, September 11, and October 2)*
- Weekly Contract 1300 Construction Progress Meetings (*August 1/2, September 12/13, and October 3/4*)
- Weekly Configuration Management Board (CMB) *(August 2, September 13, and October 4)*
- CSP Risk Management Meetings (August 3, October 5*)*
- CSP PMOC Status meetings (*August 1, September 12, and October 3)*
- FTA/QPRM scheduled for *August 3, 2017*

F. QUALITY ASSURANCE AND QUALITY CONTROL

QA/QC Plan Implementation

The 1300 contractor's staff includes a Contractor's Quality Manager (CQM), who reports to the Contractor's Management at an organization level superior to the contractor's Project Manager. The CQM is provided by a subcontractor. The reporting structure is to provide the CQM with direct access to the contractor's Principal Officers. A Contractor Non-conformance Report (CNCR) Log for identifying, correcting, documenting, and controlling non-conformances is maintained by the contractor and reviewed at weekly status meetings for each work package. Subsequent work may not progress for work that is the subject of a Corrective Action Request (CAR) until conditions averse to quality are corrected. In the event that the contractor does not issue a CNCR, SFMTA may issue a Non-conformance Notice (NCN) where non-conforming work is identified by SFMTA's quality assurance staff.

Construction crew attention to quality has been consistent, with the occurrence of critical non-conforming work being infrequent. The quality concerns for the 1300 Stations Contract identified in the SFMTA *May* monthly report included:

- *Excavation of the south center drift of the platform cavern started before the side drifts were completed, which was contrary to the requirements of the contract specifications. TPC's management allowed the excavation to proceed predicated upon an undocumented understanding reached during a meeting between TPC and SFMTA. SFMTA issued a Non-conformance Notice regarding this issue. TPC issued a CNCR, which proposed a resolution to the issue. SFMTA QA is reviewing the CNCR to confirm that TPC is taking action to assure that it follows contract requirements.*

- As is typical to similar projects, work performed prior to receipt of approval status of required submittals/Requests for Information (RFI) with/without knowledge of QC remains a potential area of concern.
- Deterioration of the SEM and Construction Monitoring Task Force meetings, where the resolution of technical issues is being hindered by "contractual bickering."

As of July 12, 2017, TPC's Quality Manager had filed 300 CNCRs (six more than in early June). Ten new items were under review, 22 other items had responses identified but not yet approved, the proposed responses to 11 items were disapproved, and 20 items had approved responses that were not yet implemented. In addition, 198 items were closed (15 more than in June) and 39 items had been voided. None of the open or disapproved items is delaying progress of the work. ***In the opinion of the PMOC it is positive to have the number of closed items exceed the number of new items in the CNCR list.***

G. AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE

There are no ADA issues for the project at this time.

H. SAFETY AND SECURITY

Safety and Security Management Plan

An updated SSMP Revision 2, dated February 2, 2014, was submitted to FTA on May 2, 2014. The SSMP outlines the plans needed prior to revenue operations. These plans include the RAP, the System Integration Test Plan, the Safety and Security Certification Plan (SSCP), and the Pre-Revenue Operations and Start-up Plan. SFMTA has completed the SSCP, which is being used to guide safety certification activities. The initial draft of the RAP was completed with the latest update of the PMP. The System Integration Test Plan and the Pre-Revenue Operations and Start-up Plan are expected to be provided with the next PMP update.

Fire and Life Safety/Safety and Security Issues

The Construction Specification Conformance Checklists have been completed and approved for all construction packages. In September 2013, the CPUC staff began attending monthly as-built meetings to review the completed items. All items related to the tunnel construction have been certified and accepted by SFMTA's safety staff. The certification work will begin to address the station construction items in 2016. The San Francisco Fire Department (SFFD) regularly attends the now combined FLSC and SSCRC meetings. The SFFD will continue to coordinate with the Stations Construction Project to identify issues of importance during construction.

Construction Safety

The 1300 Contract is maintaining an excellent safety record, with a total of six recordable and four lost time incidents since the project start. *No recordable incidents occurred in the month of April 2017.* The performance metrics relating to accidents per working hour are well below the OSHA

goals for similar construction. The current accident records for the 1300 Contract are shown in Table 7.

Table 7 - Construction Safety Data

Through May 2017	No. of Incidents	Incident Rate[1]	Goal
1300 Contract			
OSHA Recordable Accidents	6	*0.53*	<3.4
Job Transfer/Restricted Duty Incidents	0	0	NA
Lost Time Incidents	1	*0.09*	<1.6
Total Incidents	7	*0.62*	NA
Hours Worked	*2,248,877*		

[1]OSHA incident rate = incidents x 200,000/hours worked.

I. PROJECT RISK, RISK MANAGEMENT, AND RISK MITIGATION

The PMOC received RCMP Revision 3 on April 30, 2013. The outgoing PMOC provided its final Spot Report to FTA on July 19, 2013. SFMTA submitted a CSP "Contingency Management – Schedule 2012 Update" on May 22, 2013. SFMTA provided a further update of the schedule risk assessment in June 2015 that recommended a reduction of the minimum schedule contingency after demobilization of the tunnel work to 4.0 months. The updated risk assessment was conducted on the approved baseline schedule for the 1300 Contract without updates to reflect the then status of the construction work and the accumulated construction delays.

The Contract 1300 baseline schedule was adopted in early December 2014. SFMTA has rejected Schedule updates completed by the contractor due to alleged logic errors and have not been incorporated into the master program schedule. SFMTA has prepared its own revision of the construction schedule and is using updates to that schedule to maintain the master program schedule. SFMTA is continuing to refine the record of as-built construction activity incorporated in the master schedule. An update of the schedule risk assessment is now expected from the CSP after the schedule tool in P6 is further enhanced and a recovery schedule is produced. The risk assessment will be conducted to determine a range of likely actual RSDs based on the updated schedule, possible recovery of accumulated delays, and remaining schedule risks. The timing of the risk assessment will be determined in the coming months.

The most recent Risk Mitigation Meeting attended by the PMOC was the June 8, 2017 Risk Mitigation Meeting for the CSP, which included a review of the status of the top risks ranked "6" or above and several other risks that had not been updated recently. The PMOC noted the following significant items of discussion:

- The risk of damage to structures in the CTS construction area due to settlement and subsequent failure of utilities remains. SFMTA noted that settlement monitoring devices have detected slight settlement of utility lines above the platform cavern excavation zone. Corresponding settlement of the street surface has not been detected. SFMTA is evaluating responses to the measured settlement, including assessing what amount of settlement could be sustained without high risk of damage to the utility lines. San Francisco Water Department (SFWD) still has not yet installed gate valves on the two major water mains that

traverse the construction zone. The work was due to be completed in June. These valves are intended to facilitate quick shut-off of water in the event that one of the water lines fails, thereby preventing collateral damage due to water intrusion.

- Two risks related to delays in testing, commissioning, and system start-up have been partially mitigated through preparation of a more detailed RAP and accompanying schedule of testing and start up activities. SFMTA issued the updated RAP in April. Muni Operations is now reviewing and is expected to provide comments on the RAP. The schedule for testing needs additional logic ties to construction work completion. At present, no testing work is shown to start before May 2019. Testing work can likely start sooner at YBM, as that station construction will be completed earlier than the other two stations. The discussion regarding risks associated with start-up and testing activities being delayed revealed that active discussions are underway between the CSP program and Muni Operations regarding the required activities and the schedule for completion. In the opinion of the PMOC, beginning the planning for start-up activities well in advance of the completion of construction should support effective planning and implementation of the testing and start-up activities.
- As part of the discussion regarding potential delays to CSP caused by other SFMTA projects, SFMTA noted that delays to the system-wide train control system upgrade program might impact CSP's schedule. It also was noted that the train control system provider, Thales, has issued a schedule delay claim for its work on CSP, and that there have been numerous changes in the Thales management team. SFMTA is concerned that Thales may not have sufficient management and technical resources to complete the SFMTA work it has under contract in a timely fashion. In the opinion of the PMOC, it will be important to monitor progress on the design and delivery of the transit control system for CSP.
- The risk of being unable to recover schedule delays has occurred. All parties agree that the planned RSD of December 2018 will not be achieved. Mitigation strategies will now focus on establishing an achievable completion date for construction and RSD and then aggressively managing to achieve the revised dates. The revised RSD (to be expressed as a range of dates) will be identified through the PMOC-facilitated schedule workshop now planned for late July.
- The risk of SEM excavation leading to settlement and damage to adjacent buildings has been experienced, and compaction grouting was undertaken. The settlement of the buildings along Stockton Street at the CTS construction site was arrested and some of the settlement was recovered. Monitoring of buildings will continue as excavation proceeds.
- The risk of delays due to coordination with the construction of the hotel at 4th and Clementina streets remains low. The remaining major work to complete in Clementina is installation of the electrical supply box by PG&E, which will need to follow utility work for the hotel. It appears that the planned July opening date for the hotel may be missed.

In the opinion of the PMOC, the risk mitigation meeting continues to be an effective forum for identifying threats to the success of the CSP and for developing mitigation measures to reduce the threats, although some risks, such as schedule-related risks, are impacting the

project's performance. The project team continues to engage in meaningful discussions during the risk mitigation meetings that help focus attention on the most important issues that could affect project cost, quality, and the completion schedule.

A list of the top risks discussed at the June 2017 Risk Mitigation Meeting is included in Appendix D.

J. ACTION ITEMS

Table 8 on the following page shows the current action items for SFMTA.

Table 8 - SFMTA Action Items for Central Subway Project

Category	NO.	ACTION	DATE OPENED	DUE DATE	DATE CLOSED	COMMENTS
S	**165**	Develop recovery schedule	12/10/15	*8/17/2017*		After schedule workshop
S, RA	**166**	Update schedule risks based on recovery schedule	12/10/15	*9/20/2017*		Assume that risks will be updated 30 days after completion of schedule workshop.
S	**169**	Review and address logic errors and acceleration strategies in the schedule	6/23/16	*8/17/17*	Ongoing evaluation	Finalize logic changes based on schedule workshop recommendations.
S	**171**	Provide a range of dates for the Revenue Start Date	6/23/16	*9/3/17*		Based on results of schedule workshop.
CH	**174**	Revise trend tracking process to include the amount of time that has passed since the trend was originally identified.	3/24/17	*TBD*		
CH, S	**175**	SFMTA to finalize the time impact allowances on the remaining contractor delay claims as soon as possible so that SFMTA and the contractor can focus on the current schedule issues.	3/24/17	*TBD*		

(Note: All closed items are removed a month after being closed. Changes to open items since last update are indicated in *italics.*)

Category Key:
C – Cost
FMP – Fleet Management Plan
IRP – Independent Review Panel
PMP –Project Management Plan
QA – Quality Assurance
RA – Risk
RE – Real Estate
S – Schedule
SC – Scope
SS – Safety
T – Tech. Cap. & Cap.
CH – Change Mgmt.

APPENDIX A. LIST OF ACRONYMS

AC	Actual Cost
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ARS	Air Replenishment System
ATCS	Advanced Train Control System
BART	Bay Area Rapid Transit
BCE	Baseline Cost Estimate
BHAG	Big Hairy Audacious Goal
BRT	Bus Rapid Transit
Caltrans	California Department of Transportation
CAR	Corrective Action Request
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CMB	Configuration Management Board
CMod	Contract Modification
CNCR	Contractor Non-Conformance Report
COR	Change Order Request
CPI	Cost Performance Index
CPUC	California Public Utilities Commission
CQM	Contractor's Quality Manager
CSP	Central Subway Project
CTS	Chinatown Station
DF	Designated Function
DRB	Dispute Review Board
EV	Earned Value
FD	Final Design
FEIR	Final Environmental Impact Report
FEIS	Final Environmental Impact Statement
FFGA	Full Funding Grant Agreement
FLSC	Fire and Life Safety Committee
FMP	Fleet Management Plan
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IRP	Independent Review Panel
LONP	Letter of No Prejudice
LRT	Light Rail Transit
LRV	Light Rail Vehicle
M/E/P	Mechanical, Electrical, and Plumbing
MMRP	Mitigation Monitoring Reporting Program

MOU	Memorandum of Understanding
MPS	Master Project Schedule
Muni	Common Public Reference to SFMTA
NCN	Non-conformance Notice
NCR	Non-conformance Report
NEPA	National Environmental Policy Act
NTP	Notice to Proceed
O&M	Operations & Maintenance
OHA	Operational Hazard Analysis
OP	Oversight Procedure
PCC	Proposed Contract Changes
PE	Preliminary Engineering
PG&E	Pacific Gas & Electric Company
PHA	Preliminary Hazard Analysis
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
PTMISEA	Public Transportation Modernization, Improvement, and Service Enhancement Account
PV	Planned Value
QA/QC	Quality Assurance/Quality Control
QPRM	Quarterly Progress Review Meeting
QTR	Quarter
RAMP	Real Estate Acquisition Management Plan
RAP	Rail Activation Plan
RCMP	Risk and Contingency Management Plan
RE	Resident Engineer
RFI	Request for Information
ROD	Record of Decision
RSD	Revenue Service Date
SBE	Small Business Enterprise
SCIL	Safety Certifiable Item List
SCP	Safety Certification Plan
SEIS	Supplemental Environmental Impact Statement
SEM	Sequential Excavation Method
SEPP	Security and Emergency Preparedness Plan
SFDPW	San Francisco Department of Public Works
SFFD	San Francisco Fire Department
SFMTA	San Francisco Municipal Transportation Agency
SFPUC	San Francisco Public Utilities Commission
SFWD	San Francisco Water Department

SIT	Systems Integration Test
SOP	Standard Operating Procedure
SPI	Schedule Performance Index
SSCP	Safety and Security Certification Plan
SSCRC	Safety and Security Certification Review Committee
SSCVR	Safety and Security Certification Verification Report
SSMP	Safety and Security Management Plan
SSO	State Safety Oversight
SSP	System Security Plan
SSPP	System Safety Program Plan
STS	Surface, Track, and Systems
TBD	To Be Determined
TBM	Tunnel Boring Machine
TPC	Tutor Perini Corporation
TSA	Transportation Security Administration
TVA	Threat and Vulnerability Analysis
U.S.C.	United States Code
UMS	Union Square/Market Street Station
VRF	Variable Refrigerant Flow
YBM	Yerba Buena/Moscone Center Station
YOE	Year of Expenditure

APPENDIX B. SAFETY AND SECURITY CHECKLIST

Central Subway Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction		
Project Delivery Method (Design/Build, Design/Build/ Operate/Maintain, CM/GC, etc.)	Design-Bid-Build		
Project Plans	*Version*	*Review by FTA/FRA*	**Status**
Safety and Security Management Plan	**2014**	**2011**	Revision 1 Update submitted to FTA 02/25/2011. Not submitted to FRA. Revision 2 submitted to FTA on May 2, 2014.
Safety and Security Certification Plan (SSCP)	**2011**		SSCP was revised 10/2011. Revision 1 was developed in November 2011. Not submitted to FRA.
System Safety Program Plan (SSPP)	**2009**	**2009**	SSPP dated 03/13/2009 submitted to FTA 07/31/2009. Not submitted to FRA.
System Security Plan (SSP) or Security and Emergency Preparedness Plan (SEPP)	**2009**		Not submitted to FTA. Not submitted to FRA.
Construction Safety and Security Plan	**2012**		Health and Safety. Construction Safety Standards Revision 3, June 27, 2012.
Safety and Security Authority	*Y/N*		**Notes/Status**
Is the grantee subject to 49 CFR Part 659 state safety oversight requirements?	Y		
Has the state designated an oversight agency as per Part 659.9?	Y		California Public Utilities Commission (CPUC) Consumer Protection & Safety Division 505 Van Ness Avenue San Francisco, CA 94102 (415) 703-1017 phone (415) 703-1758 fax Point of contact: Arun Mehta

Central Subway Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction		
Project Delivery Method (Design/Build, Design/Build/ Operate/Maintain, CM/GC, etc.)	Design-Bid-Build		
Project Plans	*Version*	*Review by FTA/FRA*	**Status**
Has the oversight agency reviewed and approved the grantee's SSPP as per Part 659.17?	Y		SFMTA currently operates its LRT system in compliance with an SSPP approved by the CPUC. These plans will be revised, as required, to incorporate the addition of the CSP during the late construction and early testing phase and submitted to the CPUC for approval prior to the planned start of revenue operations.
Has the oversight agency reviewed and approved the grantee's Security Plan or SEPP as per Part 659.21?	Y		See above.
Did the oversight agency participate in the last Quarterly Program Review Meeting?	Y		
Has the grantee submitted its safety certification plan (SCP) to the oversight agency?	Y		SFMTA submitted the SSCP to CPUC staff for review and Commission approval during the preliminary engineering phase. The plan was approved in March 2009. The SSCP revised in November 2011 was submitted to the CPUC and was approved.
Has the grantee implemented security directives issues by the Department Homeland Security, Transportation Security Administration?	N/A		Currently, there are no TSA directives or programs applicable to the project. If any arise during the course of the project, the activities to comply will be developed and shown on a revision of the project safety and security activities schedule.
SSMP Monitoring			
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	Y		The PMOC reviewed the CSP SSMP and provided a spot report to FTA in May 2011. FTA approved the CSP SSMP on May 16, 2011. A follow-up Adherence Audit was conducted September 14-16, 2011. The audit found that CSP is conducting its activities in accordance with the SSMP.

Central Subway Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction		
Project Delivery Method (Design/Build, Design/Build/ Operate/Maintain, CM/GC, etc.)	Design-Bid-Build		
Project Plans	*Version*	*Review by FTA/FRA*	**Status**
Grantee reviews the SSMP and related project plans to determine if updates are necessary?		Y	SSMP Revision 2 was submitted to FTA on May 2, 2014.
Does the grantee implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.		Y	Safety and security are under the direction of the SFMTA Safety and Security Manager and supplemented by Project Management/Construction Management consultant staff, including a Safety and Security Certification professional who has been dedicated to supervise project Safety and Security Certification.
Does the grantee maintain a regularly scheduled report on the status of safety and security activities?		Y	Safety and security certification status and activities are reported in the weekly construction progress meetings and the CSP Monthly Progress Report.
Has the grantee established staffing requirements, procedures, and authority for safety and security activities throughout all project phases?		Y	
Does the grantee update the safety and security responsibility matrix/organizational chart as necessary?		Y	The PMOC found the revised matrix in the SSMP, Rev. 1, 02/08/11, to be compliant.
Has the grantee allocated sufficient resources to oversee or carry out safety and security activities?		Y	
Has the grantee developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?		Y	CSP has prepared a Preliminary Hazard Analysis Report, Rev. 0, April 23, 2009. Corrective actions and analysis for different project phases have been identified in the report.

Central Subway Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction		
Project Delivery Method (Design/Build, Design/Build/ Operate/Maintain, CM/GC, etc.)	Design-Bid-Build		
Project Plans	*Version*	*Review by FTA/FRA*	**Status**
Does the grantee implement regularly scheduled meetings to track to resolution any identified hazards and/or vulnerabilities?	Y		
Does the grantee monitor the progress of safety and security activities throughout all project phases? Please describe briefly.	Y		Safety and Security is an ongoing agenda item for the current construction contract (1300) work package status meetings.
Does the grantee ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.	Y		
Has the grantee ensured the development of safety design criteria?	Y		Design is complete and construction is underway.
Has the grantee ensured the development of security design criteria?	Y		Design is complete and construction is underway.
Has the grantee ensured conformance with safety and security requirements in design?	Y		Certification checklists are developed and certified through monthly meetings. Design is complete and construction is underway.
Has the grantee verified conformance with safety and security requirements in equipment and materials procurement?	Y		Safety and Security Conformance checklists have been prepared for each of the construction contracts. All certifiable elements of the Tunnel work have been certified and accepted by SFMTA Safety. *Certification reviews are underway for the stations contract.*
Has the grantee verified construction specification conformance?	Y		This is on-going as construction progresses.
Has the grantee identified safety and security critical tests to be performed prior to passenger operations?	N		Currently being developed.

Central Subway Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction		
Project Delivery Method (Design/Build, Design/Build/ Operate/Maintain, CM/GC, etc.)	Design-Bid-Build		
Project Plans	*Version*	*Review by FTA/FRA*	**Status**
Has the grantee verified conformance with safety and security requirements during testing, inspection, and start-up phases?	N		Project is in construction, with RSD more than 2.5 years in the future.
Does the grantee evaluate change orders, design waivers, or test variances for potential hazards and/or vulnerabilities?	Y		
Has the grantee ensured the performance of safety and security analyses for proposed work-arounds?	N/A		Currently no work-arounds have been identified.
Has the grantee demonstrated through meetings or other methods, the integration of safety and security in the following: - Activation Plan and Procedures - Integrated Test Plan and Procedures - Operations and Maintenance Plan - Emergency Operations Plan	*In Process*		Second draft of Rail Activation Plan has been completed. An Integration Matrix has been implemented for all disciplines including safety and security concerns.
Has the grantee issued final safety and security certification?	N		Project is in the construction phase.
Has the grantee issued the final safety and security verification report?	N		Project is in the construction phase.
Construction Safety			
Does the grantee have a documented/implemented Contractor Safety Program with which it expects contractors to comply?	Y		Health and Safety Construction Safety Standards Revision 3, June 27, 2012.

Central Subway Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction		
Project Delivery Method (Design/Build, Design/Build/ Operate/Maintain, CM/GC, etc.)	Design-Bid-Build		
Project Plans	*Version*	*Review by FTA/FRA*	**Status**
Does the grantee's contractor(s) have a documented companywide safety and security program plan?	Y		
Does the grantee's contractor(s) have a site-specific safety and security program plan?	Y		The remaining active contractor has a plan. Contract documents require that the contractor follows an Environmental Health and Safety Program, specific to the contract work.
Provide the grantee's OSHA statistics compared to the national average for the same type of work?	Y		Provided in the Central Subway Monthly Progress Report.
If the comparison is not favorable, what actions are being taken by the grantee to improve its safety record?	N/A		Statistics are favorable. No action is needed.
Does the grantee conduct site audits of the contractor's performance versus required safety/security procedures?	Y		Safety walks are routinely conducted at each construction site.
Federal Railroad Administration			
If shared track: has grantee submitted its waiver request application to FRA? (Please identify specific regulations for which waivers are being requested.)	N/A		No shared track. No waivers are anticipated.
If shared corridor: has grantee specified specific measures to address shared corridor safety concerns?	N/A		
Is the CHA underway?	N/A		
Other FRA required Hazard Analysis – Fencing, etc.?	N/A		

Central Subway Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	Construction		
Project Delivery Method (Design/Build, Design/Build/ Operate/Maintain, CM/GC, etc.)	Design-Bid-Build		
Project Plans	*Version*	*Review by FTA/FRA*	**Status**
Does the project have Quiet Zones?	N		
Does FRA attend the Quarterly Review Meetings?	N		

N/A = Not applicable.

APPENDIX C. PROJECT MAP AND OVERVIEW

CENTRAL SUBWAY PROJECT: Project Overview and Map

Date:	*July 12, 2017*
Project Name:	Central Subway Project (CSP) New Starts Light Rail Transit
Grantee:	San Francisco Municipal Transportation Agency (SFMTA)
FTA Regional contact:	Mr. Jeffrey S. Davis
FTA Headquarters contact:	Ms. Kim Nguyen

Scope

Description:	The CSP will extend the Third Street Light Rail line from the Caltrain station at Fourth and King streets to Chinatown. It was incorporated in the FEIS/FEIR on the Third Street Light Rail project published in December 1998, but FTA did not include the CSP in the Record of Decision (ROD) issued in March 1999. A ROD for the CSP, however, was issued by FTA on November 26, 2008, and the U.S. Department of Transportation and FTA determined that the requirements of the National Environmental Policy Act (NEPA) of 1969 were satisfied for the CSP. The environmental record for the CSP is included in the Final Supplemental Environmental Impact Statement (SEIS), Volume II, dated July 11, 2008 and the Final SEIS, Volume I, dated September 23, 2008. These documents present the detailed statement required by NEPA and U.S.C. 5324 (b). SFMTA requested authority to enter Preliminary Engineering (PE) in March 2002 and submitted a Project Management Plan (PMP) in June 2002. FTA approved entry into PE in July 2002. Approval to enter Final Design (FD) was granted by FTA on January 7, 2010. The Full Funding Grant Agreement (FFGA) was signed on October 11, 2012.
Guideway:	The length of the CSP will be 1.7 miles of double-tracked line.
Stations:	The CSP includes three subway stations and one surface station.
Additional Facilities:	The CSP does not include any ancillary facilities.
Vehicles:	The CSP Service Plan dated October 2009 clarified that four vehicles will be required.
Ridership:	43,521 Average Weekday Boardings are projected in 2030.

Schedule

07/02	Approval Entry to PE	2016	Estimated Rev Ops at Entry to PE
01/10	Approval Entry to FD	2018	Estimated Rev Ops at Entry to FD
10/11/12	FFGA	2018	Estimated Rev Ops at FFGA
12/10/2019			Revenue Operations Date at date of this report

66.1% *Percent Complete Based on Progress* (*May 2017 data*)

Cost

$764 million	Total Project Cost ($YOE) at Approval Entry to PE
$1,578 million	Total Project Cost ($YOE) at Approval Entry to FD
$1,578 million	Total Project Cost ($YOE) at FFGA signed
$TBD million	Total Project Cost ($YOE) at Revenue Operations
$1,578 million	Total Project Cost ($YOE) at date of this report including $0.00 in Finance Charges
$1,070.4 million	Amount of Expenditures at date of this report from Total Project Budget of $1,578 million
67.8%	Percent Complete based on Expenditures at date of this report
$8.88 million	Unallocated Contingency remaining
$*75.99 million*	Total Project Contingency (allocated and unallocated contingency as reported by CSP)
$60 million	Minimum Total Project Contingency revised on September 5, 2012 PMOC review of Contingency Management Plan

	AT HOLD POINTS	QTR	Minimum Contingency Levels	Revised Levels
1A	Hold Point 1a – Tunnels 100% designed February 2011 (Actual)	1Q11	280	280
1B	Hold Point 1b – CTS 100% designed June 2012 (Actual)	4Q11	250	240
1C	Hold Point 1c – 40% Bid (Tunnel and CTS)	2Q12	225	200
1D	Hold Point 1d – FFGA Award October 2012 (Actual)	3Q12	-	180
2	Hold Point 2 – Commence CTS / UMS construction (Actual June 17, 2013)	2Q13	160	160
3	Hold Point 3 – Demobilize Tunnels *(Actual April 15, 2015)*	*2Q15*	140	140
4	Hold Point 4 – Stations to platform levels (CTS / YBM) November 2016	4Q16	60	60
5	Hold Point 5 – Complete CTS / Tunnels systems inst. April 2018	2Q18	25	25
RSD	PMOC / FTA RSD	4Q19		
CURRENT TOTAL CONTINGENCY *$75.99 Million*				


central T subway
Lombard St.
COIT TOWER
Columbus Ave.
Washington Square Park
Union St.
TUNNEL ONLY - NO SERVICE
Broadway
Broadway Tunnel
The Embarcadero
Washington St.
Ferry Building
T CHINATOWN
Stockton St.
Kearny St.
Montgomery St.
Battery St.
EMBARCADERO
California St.
Leavenworth St.
Bush St.
FOLSOM
FUTURE TRANSBAY TERMINAL
Post St.
MONTGOMERY
UNION SQUARE/ MARKET STREET
J K L M N T
Market St.
1st St.
N
Mission St.
2nd St.
POWELL
Howard St.
Folsom St.
Harrison St.
BRANNAN
Golden Gate St.
4th St.
I-80
YERBA BUENA/ MOSCONE
5th St.
3rd St.
2ND ST. AND KING
CIVIC CENTER
7th St.
6th St.
4TH ST. AND BRANNAN
AT&T BALLPARK
King St.
4TH AND KING/BERRY N T
Bryant St.
Brannan St.
Caltrain
Townsend St.
MISSION ROCK
UCSF
UCSF MISSION BAY
LEGEND
T Third Phase 2
T Third Phase 1
Muni Metro
Caltrain
BART

APPENDIX D. TOP PROJECT RISKS

The Project Risk Register was updated in 2016. Top risks and selected risks that had not been reviewed in several months were discussed at the June 2017 meeting as noted below.

Top Risks Discussed in the Previous Month:

#52 – The risk of settlement of older utilities above the CTS cross-cut cavern and platform cavern excavations. The ground above and near the excavation is extensively instrumented, and daily meetings are being held to review the recorded data from the instruments. Some settlement of subsurface utilities has been detected. Gate valves have yet to be installed on the water lines above the excavation. These will allow immediate shut-off of water in the event of a failure in one of the lines or ground settlement that could damage the lines and cause a leak. SFMTA is negotiating the cost of these valves with SFWD.

#205 – The risk that the prolonged process for approval and execution of CMods results in bad blood between SFMTA and the contractor. CMods are now being processed more quickly and the backlog of unresolved changes is being reduced. SFMTA continues to try and streamline the CMod process. The parties are meeting twice weekly to advance negotiations.

#229 – Risk that acceptance testing takes longer than planned, resulting in delays to the RSD. A more detailed schedule for testing is included in the updated RAP. Some testing may be advanced at YBM, as that station will be completed earlier than the other subway stations.

#230 – Insufficient time for Muni Operations involvement in commissioning results in delays and an impact to the RSD. Muni Operations and Management are reviewing the RAP. CSP staff to confirm that commissioning schedule is sufficient and that Muni can provide required staff.

#232 – Unable to recover accumulated delays, resulting in late RSD. This risk has occurred and the RSD is very likely to be delayed. This also remains the top risk, as further delays are likely. Mitigation measures underway were discussed. A schedule containment workshop will be held in July 2017.

#234 – This risk that the contractor's proposed alternative SEM excavation method would cause subsidence will continue to be monitored until all SEM operations are completed. Closely related to risk #52. Settlement that is occurring is within the expected range and compensation grouting has been completed to arrest the settlement.

#238 – This risk is that the Quality Program may be ineffective in processing the nonconformance issues causing schedule impacts. The process of tracking and processing the NCR through improved tracking logs is continuing. The CNCR log is being updated as appropriate. CNCRs are being identified timely and processed appropriately. The rating of this risk has been reduced.

#240 – This risk that unresolved assignment of schedule delay responsibility may lead to increased cost continues. SFMTA and the contractor are working on schedule updates and on

resolution of the causes for schedule delays that have occurred. Efforts continue to focus on how to reduce the accumulated delays. This risk is closely related to #232.

#244 – Risk of delays due to coordination of construction with work at 254 4th Street. Coordination is ongoing and the risk of delays is low. Major coordination remaining is for utilities in Clementina Street.

#246 – Risk that design changes are not captured in the as-built record drawings for the project. TPC is doing a good job of preparing as-built drawings as the construction is proceeding. CSP's QA program includes reviews to assure that all changes are captured in the drawings.

#104 – Risk that CPUC approval of the project grade crossings takes longer than planned. This risk continues, as there is stall an issue with SFMTA's standard cross-buck signage for crossings. The issues should be resolved through an official update of Muni's standard operating procedures and approval of the update by CPUC.

#PR 78 – Risk that delays to other projects cause delays to the CSP RSD. It was noted that system-wide train control work could impact CSP. Additionally, the CSP train control subcontractor has issued a delay claim.

#227 – Risk that LRV operator training requirements cause delays to system opening. CSP has begun coordination with Muni Operations regarding system start-up including operator and other training requirements and schedules.

#228 – Barn sign-up timing results in delays to RSD. CSP has identified the barn sign-up process in its program schedule.

APPENDIX E. ROADMAP TO REVENUE OPERATIONS

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Testing				
Finalize/update Systems Integration Test (SIT) Plan	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Prepare Schedule for Testing	1/1/2017	3/1/2017	3/21/2017	Initial testing, commissioning, and start-up schedule has been completed.
Finalize Test Procedures	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Conduct System Integrated Testing with trains, including procedures and reports	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Complete Testing Reports	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Operating Plan, Rules, and Training				
Finalize Operating Plan	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Finalize/revise SOPs, manuals, and rulebook as applicable	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Operations Manuals	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Staffing and Operations Plan	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Training of O&M personnel	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Emergency response plan, training, and drills	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Vehicle Maintenance Plan, Equipment, Facilities, and Training				
Rail Fleet Management Plan	TBD	TBD	TBD	

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Maintenance Schedules and Procedures	TBD	TBD	TBD	The LRV fleet is being replaced and expanded through a separate project. The CSP requires an expansion of the fleet of four vehicles.
Spare Parts Requirements	TBD	TBD	TBD	The LRV fleet is being replaced and expanded through a separate project. The CSP requires an expansion of the fleet of four vehicles.
Maintenance Manuals	TBD	TBD	TBD	The LRV fleet is being replaced and expanded through a separate project. The CSP requires an expansion of the fleet of four vehicles.
Maintenance Training	TBD	TBD	TBD	The LRV fleet is being replaced and expanded through a separate project. The CSP requires an expansion of the fleet of four vehicles.
Facility and Right-of-way Maintenance Plan, Equipment, Facilities, and Training				
Maintenance Schedules and Procedures	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Spare Parts Requirements	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Maintenance Manuals	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Maintenance Training	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Pre-Revenue Operations				
Finalize and/or update RAP and/or Pre-Revenue Operations Plan	4/2/2015	4/2017	4/27/2017	The second draft with additional detail and a schedule for testing and pre-revenue activities was submitted with the 2017 update of the PMP.
Implement Rail Activation Committee	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Shadow operations	NA	NA	NA	Project will be operated by the established MUNI operations division.

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Develop/revise SSPP & Security Plan (approved by State Safety Oversight (SSO))	*Ongoing*	10/31/2015	10/31/2015	CPUC triennial review conducted in October 2015 concluded that SFMTA "has a comprehensive System Safety Program Plan (SSPP) and has made significant progress in executing that plan."
FTA Office of Safety & Security Readiness Review	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
PMOC OP-54 Readiness for Revenue Operations Review Report, Phase I	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Conduct Operational Hazard Analysis (OHA) and resolve other hazards/ vulnerabilities	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Pre-Revenue Operations	TBD	TBD	TBD	Project is in construction, with RSD 2+ years in the future.
Public Outreach				
Develop Safety Outreach Plan	TBD	TBD	TBD	Project is in construction, with RSD *2*+ years in the future.
Provide Community Outreach	TBD	TBD	TBD	Project is in construction, with RSD *2*+ years in the future.
Grand Opening Plan	TBD	TBD	TBD	Project is in construction, with RSD *2*+ years in the future.
Construction Close Out				
Close Out of Non-Conformance Reports	Ongoing	*09/02/2019*	TBD	NCRs are tracked and closed prior to follow-on work. Final closure of NCRs expected as of final completion date of 1300 Contract.
Punch List Complete	12/17/2018	*09/02/2019*	TBD	Punch list completion expected at final completion of 1300 Contract.
Certificates of Occupancy/Substantial Completion	TBD	*06/05/2019*	TBD	

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Safety, Security, and Fire-life Safety Certifications				
Update/Finalize SSMP			2/18/2014	Revision 2 completed.
Finalize and/or update SCIL and SSCP			10/10/2008	Revision 0.
Implement Safety and Security Certification Committee			8/1/2010	Committee meets monthly to review certifiable items.
Implement Fire Life Safety Committee			8/1/2010	
Preliminary Hazard Analysis (PHA)				Need dates.
Threat and Vulnerability Analysis (TVA)				Need dates.
Design Criteria Reflecting Safety and Security Requirements	NA	NA	NA	Design is complete and construction is underway.
Review status of quality non-conformances	Ongoing	*09/06/2019*	TBD	
Close Out of non-safety critical items	Ongoing	Ongoing	TBD	
Close Out of safety critical items	Ongoing	Ongoing	TBD	
Complete Safety & Security Certification Verification Report (SSCVR)	TBD	*09/15/2019*		60 days before RSD - Check against latest regulations.
Document Workarounds/Open Items List	TBD	TBD	TBD	
Verify emergency drills, tabletops, training, etc. are completed	TBD	TBD	TBD	
SSO final certification/signature	TBD	*10/24/2019*		21 days before RSD - Check against latest regulations.
Third Party and Agency Agreements				
Third Party/Agency Agreements Necessary for Revenue Service	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.
Third Party/Agency Approvals Necessary for Revenue Service	TBD	TBD	TBD	Project is in construction, with RSD *2+* years in the future.

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Revenue Service				
Target Revenue Service Date	-	*12/10/2019*		Current forecast RSD. Recovery schedule to be prepared.
FFGA Revenue Service Date	-	12/23/2018		

APPENDIX F. LESSONS LEARNED

LL#	Date	Phase	Category	Subject	Lesson Learned
1	09-30-10	FD	Management	Consultant Contracts	The project must have a full understanding of the agency and other approving governmental authorities to avoid delay of contract approval and consequential delay of the Master Project Schedule (MPS).
2	09-30-10	FD	Cost	Staffing Plan	The project staffing plan needs to be formulated during PE and updated at least quarterly during FD to manage Standard Cost Category 80 costs and monitor design production.
3	09-30-10	FD	Scope	Letter of No Prejudice (LONP)	A defined scope of grantee and PMOC responsibilities needs to be provided for content and acceptability of LONP requests.
4	09-30-10	FD	Management	SSMP	FD consultants should be trained, shortly after mobilization, in the format and their responsibility regarding the System Safety Consultant.
5	10-30-10	FD	Cost	Baseline Cost Estimate (BCE) Update	The BCE should be updated with current costs as soon as they are known by the project to allow mitigation of cost contingency usage.
6	02-21-12	FD	Management	Program Controls	Program Controls system/software selected for use for the duration of the project should be in place and functional prior to approval to enter FD. Doing so will avoid a transition during FD that could create a lag in timely reporting of cost and schedule status.
7	02-21-12	FD	Management	Risk Mitigation	Oversight Procedure (OP) 40 needs to be revised to establish minimum requirements for secondary mitigation at different phases of the project, similar to those for cost and schedule contingency. The PMOC recommends 5% of project cost at Entry into FD and 3% at execution of an FFGA.

LL#	Date	Phase	Category	Subject	Lesson Learned
8	02-21-12	FD	Scope	Third Party Agreements	All third party agreements need to be identified as soon as possible, but no later than 65% design completion. This includes leases, both temporary and permanent; MOUs; and licenses, specifically for preconstruction property surveys and settlement monitoring instruments (especially important for underground construction). These third party agreements need to be secured no later than the advertisement date of the construction that they affect. Third party agreements need to be tracked by the project continuously, reported monthly, and updated in a third party agreement matrix submitted quarterly to FTA.
9	02-21-12	FD	Cost	Cost Estimating Procedures	During the preliminary design phase, the project should establish the cost estimating procedures, format, and software to be used by all estimating entities for the entire duration of the project.
10	02-21-12	FD	Cost	Allocated Cost Contingency	In the BCE submitted to FTA for Entry into FD, the project should identify percentages of allocated cost contingency contained in the BCE that are apportioned for design risk, market risk, and construction risk.
11	02-28-12	FD	QA	Design Management Action Log	Design Management should develop a matrix as a tracking tool to document, track, and close out known elements that are missing from design submission packages.
12	08-15-12	FD	Environmental Mitigations	MMRP	Numerous mitigations identified in the MMRP are to be handled by incorporating specific design details and/or statements in the contract drawings and technical specifications. The grantee should note on the MMRP the relevant drawings and/or technical specifications.

LL#	Date	Phase	Category	Subject	Lesson Learned
13	08-31-12	FD	Management	Risk Contingency Levels and Hold Points	It became apparent, during the monitoring of the cost contingency drawdown curve for the project that the contingency levels and hold points no longer represented the current stage of project development and risk reduction/contingency usage related to project development. The project advanced through 100% project design; however, the project did not receive credit for the cost contingency usage established by the risk model. The PMOC recognized this deficiency and participated with the grantee in developing a cost contingency drawdown that reflects current project development and reduced risk.
14	06-30-13	Const.	Management	Change Order Process	Perform an audit of the project's procedures related to Change Orders and processing. The project should train staff and inform contractor of their obligations in the process.
15	1-30-14	Const.	Management	Independent Review Panel (IRP) Decision-makers	At the request of SFMTA, the American Public Transportation Association (APTA) formed a panel of geotechnical and tunnel experts to perform a peer review of the BART Undercrossing. Prior to crossing under the BART tunnels, the Independent Review Panel (IRP), contractor, SFMTA, and BART representatives convened at predetermined tunnel boring machine (TBM) locations to discuss the TBM progress and determine whether the tunneling should proceed. It is critical that decision makers from each organization attend these meetings. It was noted that BART Senior Management did not attend and instead deferred decisions to lower level staff.
16	6-30-14	Const.	Bid documents	Pre-Classification for Soil and Groundwater Disposal	Soils and groundwater generated from construction activities should be pre-classified with appropriate sampling and testing required by potential disposal facilities. Coordinate with the disposal facilities to get materials accepted.

LL#	Date	Phase	Category	Subject	Lesson Learned
17	4-10-15	Const.	Quality Control/Safety	Monitoring of Soil Conditions during Underground Construction	There was a breach of the excavation of frozen ground during construction of a cross passage between the twin bored tunnels followed by water and soil flowing into the tunnels, resulting in subsidence of the ground above and damage to underground utilities. Apparently the flow of materials into the tunnels went on for quite some time before the problem was detected and actions could be taken to arrest the flow. The construction site was not staffed when the breach started and there was no external warning system in place to notify the contractor or the agency of the condition. When the safety and structural integrity of a construction site depends on maintain soil conditions with the use of mechanical systems, the site should be continuously staffed or monitoring devices at the site should be continuously monitored from a remote location to assure that the expected soil conditions are maintained.
18	4-10-15	Const.	Environmental	Archeological Data Recovery Protocols	Sensitive archeological materials were uncovered during the excavation of the roof area at YBM. The Program Manager took immediate action to notify the appropriate state officials and implemented protocols for protection of the materials. The most likely descendent of the remains was quickly identified and a representative was engaged and brought to the site to supervise the ongoing excavation. The quick action to involve the appropriate parties resulted in satisfactory handling of the artifacts with minimal delays to the construction schedule.

LL#	Date	Phase	Category	Subject	Lesson Learned
19	5-11-15	Const.	Quality Control	Use of Latest Design Information for Field Inspection	After two roof pours were completed, it was discovered that required reinforcing steel was missing. Changes to the arrangement of the reinforcing steels were made as part of the submittal review and response process. Notes from the designer were included on the approved shop drawings but not in the contract design drawings. Field inspectors were using only the design drawings to confirm the proper installation of reinforcing steel prior to concrete placement. In the future, the latest design information, including submittals and related designer notes, will be used to inspect reinforcing steel prior to concrete placement.
20	9-28-15	Const.	Schedule	Maintenance of Updated Construction Schedule and Master Program Schedule	SFMTA was unable to obtain an acceptable baseline schedule from the station construction contractor for over a year. Then, SFMTA could not obtain acceptable updated status schedules from the contractor for another 8 months. As a result, the construction status and completion date could not be accurately determined for the first 20 months of the contract. This made schedule control impossible. SFMTA finally created its own schedule updates for the first 12 months of the construction contract using the pay applications and 4-week look-ahead schedules from the contractor. Lesson learned – owners should aggressively assert the need for accurate schedule updates from contractors and should withhold payment if such updates are included in the contract terms or specifications and are not forthcoming. If schedule updates are not received within the first few months of the project, the owner should create its own updates for the purpose of progress monitoring and schedule control.

LL#	Date	Phase	Category	Subject	Lesson Learned
21	11-30-15	Const.	Construction Planning	Installation of Special Trackwork in Operating Systems	SFMTA needed to install special trackwork to provide the connection to the new alignment for Central Subway portion the T Third LRT line. The original plan was to install the special trackwork at the intersection in eight extended weekend shutdowns. Working with the contractor, the plan was revised to accomplish the necessary trackwork installations in two shutdowns. After considering the outcome of the first shutdown, where a portion of the special trackwork did not fit properly and needed adjustment during the shutdown, SFMTA decided to pre-assemble the second, more complex, special trackwork assembly at an off-site facility. The assembly was completed and the resulting track was surveyed to confirm the geometry and to assure that the assembly would fit into the existing field conditions. While conducting the assembly and disassembly of the track components, the contractor identified an approach that would reduce the time required to reassemble the trackwork in the field. As a result of the pre-planning and assembly of the complex trackwork, the final assembly was completed without the need for field adjustments and in less time than planned. This was an effective approach to mitigate the risks associated with the installation of complex custom track components in an operating transit line.
22	3-1-17	Const.	Legal/Claims	Preparation for Mediation	A contractor for advance utility relocation issued a multi-million-dollar claim for extra costs due to delays and unforeseen conditions. SFMTA believed the claim had no justification. After several years, the claim was referred for mediation prior to going to trial. The contractor made a very compelling presentation regarding the extra costs. However, due to careful preparation by SFMTA management, the agency was able to provide specific and detailed rebuttals to the contractor's major arguments. The mediation resulted in a settlement for less than 15% of the original claim amount. SFMTA chose to accept the settlement amount, recognizing that the costs to pursue the claim in court would likely exceed the settlement value.

APPENDIX G. CONTRACT STATUS

The following sections provide the status of ongoing contracts associated with the CSP. Note that the DBE participation percentages are updated by SFMTA on a quarterly basis. The current values are through March 2017.

Contract No.	**1250**	
Contract Description:	**UR #1 (YBM)**	
Status:	Completed June 2011.	
Cost:	Original Contract Value	$9,273,939
	Approved Change Orders	$2,694,211
	Current Contract Value	$11,968,150
	Expended to Date	$11,968,150
	% Expended	100%
	SBE Participation	97%
Schedule:	NTP issued January 2010. Substantial completion in June 2011.	
Issues or Concerns:		

Contract No.	**1251**	
Contract Description:	**UR #2 (UMS)**	
Status:	Work is complete.	
Cost:	Original Contract Value	$16,832,550
	Approved Change Orders	$3,962,031
	Current Contract Value	$20,794,581
	Expended to Date	$20,794,581
	% Expended	100%
	SBE Participation	87%
Schedule:	NTP issued January 2011. Substantial completion in August 2012.	
Issues or Concerns:	Final total cost claim by contractor has been settled.	

Contract No.	**1252**	
Contract Description:	**Tunnels**	
Status:	Final completion achieved. Financial close out underway.	
Cost:	Original Contract Value	$233.58 million
	Approved Change Orders	$8.26 million
	Current Contract Value	$241.84 million
	Expended to Date	$234.88 million; $6.2 million is paid from non-project funds
	% Expended	97.1%
	SBE Participation	5.8%
Schedule:	Final completion achieved May 15, 2015.	
Issues or Concerns:	None.	

Contract No.	**1277**	
Contract Description:	**Pagoda Palace Demolition**	
Status:	Construction is complete; contract is in close out.	
Cost:	Original Contract Value	$498,995
	Approved Change Orders	$149,981
	Current Contract Value	$648,976
	Expended to Date	$648,976
	% Expended	100%
	SBE Participation	100%
Schedule:		
Issues or Concerns:	None.	

Contract No.	**1300**	
Contract Description:	**Three subway stations (YBM, UMS, and CTS) and STS**	
Status:	Mass excavation complete at one station and well underway at two other stations.	
Cost:	Original Contract Value	*$839.68 million*
	Approved Change Orders	*$7.05 million*
	Current Contract Value	*$846.72 million*
	Expended to Date	*$472.93 million*
	% Expended	*55.9%*
	SBE Participation	*1804%*
Schedule:	NTP issued June 17, 2013. Substantial Completion planned February 10, 2018 and *forecast June 2019.*	
Issues or Concerns:	The work on this contract is behind schedule.	

Contract No.	**CS-155-1**	
Contract Description:	**Design Package 1 for Contracts 1250, 1251, and 1252. PB/Telemon**	
Status:	Design is complete. Construction support is nearly complete for Contract 1252.	
Cost:	Original Contract Value	$5,795,000 (includes exercised options)
	Approved Change Orders	$2,145,159
	Current Contract Value	$7,940,159
	Expended to Date	$7,937,601
	% Expended	*100.0%*
	SBE Participation	30.2%
Schedule:		
Issues or Concerns:		

Contract No.	**CS-155-2**	
Contract Description:	**Design Package 2 for UMS, CTS, and YBM. CSDG prime**	
Status:	Designs are complete for all of the station contracts. Construction support of Contract 1300 is underway.	
Cost:	Original Contract Value	*$34,228,038*
	Approved Change Orders	*$1,626,722*
	Current Contract Value	*$35,854,760*
	Expended to Date	$35,207,277
	% Expended	*98.2%*
	SBE Participation	*36.7%*
Schedule:		
Issues or Concerns:		

Contract No.	**CS-155-3**	
Contract Description:	**Design Package 3 for STS. HNTB-B&C Prime**	
Status:	Design is complete. Construction support of Contract 1300 is underway.	
Cost:	Original Contract Value	$16,822,238
	Approved Change Orders	$312,814
	Current Contract Value	$17,232,252
	Expended to Date	*$14,163,416*
	% Expended	*81.9%*
	SBE Participation	*26.7%*
Schedule:		
Issues or Concerns:		

Contract No.	**CS-149**	
Contract Description:	**Central Subway Partnership (Project Manager/Construction Manager)**	
Status:	On-going.	
Cost:	Original Contract Value	$85,139,092
	Approved Change Orders	$0
	Current Contract Value	$85,139,092
	Expended to Date	*$58,536,776*
	% Expended	*68.8%*
	SBE Participation	*39.7%*
Schedule:		
Issues or Concerns:		

Contract No.	**CS 156**	
Contract Description:	**Project Controls Consultant**	
Status:	On-going.	
Cost:	Base Contract Value	$17,112,873
	Approved Change Orders	$0
	Current Contract Value	$17,112,873
	Expended to Date	*$9,669,141*
	% Expended	*56.5%*
	SBE Participation	*29.0%*
Schedule:		
Issues or Concerns:		