MONTHLY MONITORING REPORT
May 2020

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

Draft Report Delivered to FTA on June 23, 2020
Final Report Delivered to FTA on TBD

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: 19 months

EXECUTIVE SUMMARY

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 beneath Stockton Street in downtown San Francisco. The CSP is Phase 2 of the San Francisco Municipal Transportation Agency's (SFMTA) T Third Light Rail Transit (LRT) Project. The CSP will extend the T Third Line from the 4th Street Caltran 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 expand the LRV fleet and includes options for replacement of the entire fleet. Average weekday riders are projected to be 43,521 in 2030.

Project Status

The project has been under construction since February 2010. *At the end of April 2020, the project was 96.7% complete based on expenditures.* The one active construction contract: 1300 Stations and Systems/Trackwork being executed by Tutor Perini Corporation (TPC)*, was 92.63% complete based on incurred cost.* Substantial completion of this contract was originally scheduled for February 10, 2018, *but the latest master program schedule update shows substantial completion occurring on December 15, 2020, which is a change from the November 17, 2020 date stated in the prior reports, which represents over 1000 days later than the original substantial completion date.* SFMTA's most recent update of the program schedule forecasts the Revenue Service Date (RSD) to occur on *September 16, 2021*.

Table 1 - Core Accountability Items

Project Status: *(as reported in SFMTA's April 2020 Monthly Progress Report)*		**Original at Full Funding Grant Agreement (FFGA):**	**Current Estimate:**
Cost	Cost Estimate	$1,578,300,000	$1,578,300,000
Contingency	Unallocated Contingency	$74,722,000	*$6,882,669*
Contingency	Total Contingency (Including Approved Contract Changes)	$185,500,000	*($17,239,944)*
Schedule	Revenue Service Date (RSD)	12/26/2018	*09/16/2021 (SFMTA forecast)*

Project Status: *(as reported in SFMTA's April 2020 Monthly Progress Report)*		**Original at Full Funding Grant Agreement (FFGA):**	**Current Estimate:**
Total Project Percent Complete	Based on Expenditures	*96.7%*	
	Based on Earned Value	*93.16%*	
Major Issues	**Status**	**Comments/Planned Action**	
Schedule Contingency	All schedule contingency has been consumed.	*SFMTA's substantial completion date continues to be extended and is now changed to December 15, 2020*	
Cost Contingency	Total cost contingency has been exhausted and stands at negative $17.2 million as of this reporting cycle.	*The contingency amounts continue to be severely inadequate for the current level of project completion. The increasing contractor claims, potential changes, and now delays related to COVID-19 continue to be a concern.*	
Technical Capacity and Capability	Program Director and Start-up and Testing Manager positions-filled.	In June 2019, a permanent Director for the CSP was appointed.	
Date of Next Quarterly Meeting:		*TBD*	

Earned Value (EV): *$1,460,310,250.*

Planned Value (PV): *$1,589,690,998*

Actual Cost (AC): *$1,525,846,545*

Cost Performance Index (CPI): *0.96*, indicating that the value of completed work is consistent with the incurred cost.

Contingency

Cost Contingency

The total available contingency (approved contingency less approved contract changes) as of *April 2020 is at ($17,239,944)*, which *is significantly* below the minimum required contingency of $25 million. Additional unallocated contingency of $1.4 million should be available as a result of the final close out price for the Tunnel Contract. The latest available trend summary report estimated a maximum potential additional cost increase from claims, denied change order requests, and pending changes of more than $75 million, which is substantially higher than estimated in prior reporting cycles. The contingency needs to be replenished to cover the current estimate of maximum cost exposure from claims. SFMTA does not include claims in its forecast of Estimate at Completion.

Schedule Contingency

All contingency in the schedule has been consumed, and there are over 12 months of negative float from the baseline schedule. *The schedule dated April 2020 submitted by SFMTA maintains the*

same forecast of September 16, 2021 *for the* RSD, which represents *568* days of additional delays. SFMTA submitted a Full Funding Grant Agreement (FFGA) Schedule Extension letter to the Federal Transit Administration (FTA) on December 6, 2018 with a request to extend the FFGA RSD to May 26, 2020. The FTA issued an approval letter on February 27, 2019.

PMOC Observations, Opinions, Recommendations, and Concerns

SFMTA stated that construction continues during the COVID-19 outbreak. SFMTA indicated a letter was sent out to contractors that a time extension is granted by delays caused by the COVID-19 force majeure (for example following social distancing and cleaning protocols), but is not compensable. However, it is compensable if delays are caused by the COVID-19-related sickness with proper backups.

SFMTA currently forecasts the RSD to occur in December 2021. Part of the reasons for the delays are due to impacts of COVID-19. It is the Project Management Oversight Contractor's (PMOC) opinion that SFMTA should explore mitigation measures to maintain the RSD occurring in 2021.

SFMTA is in the process of conducting a study of Tunnel/Crossover Ventilation Alternative Hazard Analysis (AHA). The goal of the ventilation study is to improve the throughput of service in the section between UMS and CTS. Additional study is underway with regards to the fire department's mitigation on two standard operation procedures. SFMTA indicated the outcome of the study will not impact the fire alarm systems, but will impact the Automated Train Control System (ATCS) software system, which, in the PMOC's opinion, will impact the dynamic testing and overall systems integration and testing.

A Change Order workshop was held on February 7, 2020 with participation from the FTA, PMOC, and SFMTA to share the best practices of change order execution. On February 17 2020, the SFMTA board approved the following recommendations:

- SFMTA should request the Board of Directors' approval to increase the delegation of authority at the Director level. This will avoid the need for Board approval for future change orders, at a lower change order threshold.
- SFMTA should request the Board of Directors' approval for re-delegations to Resident Engineers to approve change orders for up to $50,000, but not to exceed the total of $5 million established authority. This will accelerate the processing of field-related changes.
- SFMTA should modify its change order process for change order amounts less than $250,000. Based on the latest federal requirements, pricing analysis is not required for change orders with amounts less than $250,000.
- The CSP should simplify its Configuration Management Board (CMB) process. Based on the current requirement, all CSP change orders, regardless of amount, are being processed through the CMB.
- SFMTA should increase its capacity in the project controls discipline, particularly in cost estimating. This will assist in the processing of change orders in a timely manner. A specific duration should be prescribed for this effort.

- The SFMTA procurement department should simplify the format of the independent cost estimate. Based on the project teams' input, the current format requires a time-consuming effort to complete the estimates.
- The CSP team should replenish the contract "allowances." Currently, all the "allowances" are consumed. Once the "allowances" are replenished, the change orders can be processed more efficiently.
- The SFMTA procurement department should delegate its responsibility to project-specific procurement staff. This will shorten the procurement review time.

The delay claim settlement amount approved by the SFMTA Board on September 17, 2019 is approximately $32 million. In December 2019, the Board approved $9 million for Proposed Contract Change (PCC) #50: Additional scope of work for the Chinatown Station Plaza. In February 2020, the Board approved the combined change order (CO) modification, with the additional $30 million in the delegation of authority at the Director level to approve changes. The only future Board action item is the pending global settlement with TPC and subcontractors. However, with the upcoming settlements with the subcontractors and the prime contractor, the PMOC continues to express concern about the contingency level. Based on the preliminary assessment, a total of global settlement liability could significantly exceed the remaining contingency amount.

Based on the risk workshop discussion on October 25, 2019, the following are critical to the project completion:

- Construction progress on PCC #50 Chinatown Station Plaza work
- Fire Department's sign off on Fire Alarm Systems by December 2019
- Pacific Gas & Electric (PG&E) to provide permanent power by November 2019
- Reducing the lengthy process of processing change orders
- Resource availability of the specialty sub-contractor (Abbett)
- Progress on the Train Control Dynamic Testing
- Coordination on the availability of resources required for the pre-revenue operation tasks

The PMOC conducted a site tour on October 24, 2019 with the intention of observing the progress of the CTS, which is currently on the critical path. With the delay claim settlement (applicable to September 3, 2019) and the on-going negotiation of settlements for subcontractors and the prime contractor, noticeable progress was observed, and significantly more resources were allocated on the critical path work. SFMTA stated that the contractor is currently working on a 10-hour shift per day with weekend work. An estimated over 100 laborers were working in the CTS on October 24, 2019. It is the PMOC's opinion that the relationship between SFMTA and TPC has improved. However, SFMTA and TPC should continue improving the trusted relationship so that both parties are working on a productive goal of completing the project as committed to in the settlement.

A conference call was held in June 2019 between SFMTA and the PMOC's System Integration Manager as part of the monthly recurring call to discuss the required documentation for OP #54 (Readiness for Revenue Operation). The requirements listed below were discussed. The PMOC recommended commencement of the OP #54 review in the third quarter of 2019, which is

approximately 6 to 9 months prior to the forecasted RSD. However, contingent upon SFMTA's updated projection of the RSD, PMOC's OP #54 review could be delayed.

- System Integration/Testing
- Safety and Security
- Pre-Revenue Operations
- Management Capability and Capacity

The PMOC continues to be concerned that the time required for SFMTA to make decisions regarding project issues and to execute contract changes needs improvement. Resolution of issues, such as approval of traffic control plans (TCPs) for construction at CTS and along 4th Street, are taking far too long. Also, the execution of planned contract changes for ATCS has taken far too long. Separation of ATCS from TPC (Contract Modification [CMod] #93) has been executed based on the Board meeting on February 19, 2019. SFMTA is finalizing the contract terms and conditions with the ATCS contractor. The responsibility of installation of both systems are currently with TPC.

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A. PROJECT STATUS

Full Funding Grant Agreement (FFGA)

The FFGA for the Central Subway Project (CSP) 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 (TBMs) and construction of the tunnel portal, retrieval shaft, and five cross-passages. Final completion has been achieved, and final contract close out is now underway. San Francisco Municipal Transportation Agency (SFMTA) presented the final cost data for the contract at the August 2018 Quarterly Progress Review Meeting (QPRM). Not including costs of extra work paid from non-project sources, the final cost of the Central Subway tunneling work is $233,511,253, compared to the most current estimate at completion of $234,967,069. When SFMTA reconciles the final contract cost with the program budget, about $1.4 million in additional unallocated contingency should be available as a result of the final cost of the tunneling work being well below the current allocated budget for the work.

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 February 2020, the construction of the Stations and Surface, Track, and Systems (STS) Contract was 92.31% complete based on cost and around 93% complete based on the value of completed construction.*

The forecast date for completion of construction for each work package is shown for the March 2020 and April 2020 schedule updates in Table 2.

Table 2 - Forecast Construction Completion Dates for CSP Work Packages

Work Package	*March 2020 Forecast Construction Completion Date*	*April 2020 Forecast Construction Completion Date*
1253 – Union Square/Market Street Station	*11/18/2020*	*12/16/2020*
1254 – Chinatown Station	*11/18/2020*	*12/16/2020*
1255 – Yerba Buena/Moscone Station	*11/18/2020*	*12/16/2020*
1256 – Surface, Track, and Systems	*02/25/2021*	02/25/2021

Source: SFMTA Monthly Progress Reports for *March 2020 and April 2020*

Union Square/Market Street Station (UMS*): Construction of stairs and elevators continued throughout the station. The contractor continued installing fire protection, security system, and emergency lighting throughout station. The installation of the glass enclosure around the elevators and escalators at the north and south concourses continued. The installation of Mechanical, Electrical, and Plumbing (M/E/P) and fire protection components continued throughout the station. The contractor continued installing the unistrut for ceiling panels and Light Emitting Diode (LED) artwork at the concourse level. The installation of precast architectural concrete elements for USG terrace level is underway. The installation of the USG roof level exhaust vent continued. The pavement renovation at the north side of Market Street is underway.*

Chinatown Station (CTS): *The installation of M/E/P and fire protection components continued throughout the station. The contractor began the installation of escalators Nos. 5 and 6 at the upper mezzanine level. Elevators Nos. 1, 2, 3, and 4 at platform and concourse levels continued. The contractor continued installing overhead conduit at the Main Electric and Traction Power rooms. The electrical switchgear installation continued at the Headhouse platform level. The contractor continued the installation of the Glass Fiber Reinforced Concrete (GFRC) panels at the concourse level. The contractor began erecting structural steel for Plaza level. The street work, monitoring, and surveying activities are ongoing. The emergency ventilation fan installation at the Headhouse continued. The construction of surface slabs and Proposed Contract Change (PCC) #50 Chinatown Station Plaza walls and stairs continued.*

Yerba Buena/Moscone Station (YBM): *The installation of M/E/P components, interior walls, stairs continued throughout the station. Installation of escalators Nos. 3 and 4 and elevators Nos. 3 and 4 continued. The contractor completed installing toilets and lockers at the Headhouse concourse. The contractor completed installing the lighting at the station concourse. The installation of EV controls at the station mezzanine continued. The contractor continued the ceiling installation at the Headhouse concourse. The contractor placed concrete sidewalk sections along Clementina Street.*

Surface, Track, and Systems (STS): *The traction power conduit and other electrical conduit installation inside the tunnels continued. The tunnel lighting installation is ongoing. Installation of the standpipe in the tunnel and cross passages was completed. The Overhead Contact System (OSC) hanger installation inside the tunnel continued. The FDC work near the 4th Street portal began.* SFMTA is still awaiting an Encroachment Permit from the California Department of Transportation (Caltrans) for work at the Interstate 80 off-ramp at Bryant Street. However, Caltrans agreed to provide a permit for the rail work separate from the minor striping work that is awaiting environmental clearance.

Systems and Track

Separation of Automated Train Control System (ATCS) from Tutor Perini Corporation (TPC) (Contract Modification [CMod] #93) has been executed based on the Board meeting on February 19, 2019. Separation of Radio from TPC (PCC #300) was processed in the March 19, 2019 Board meeting. The responsibility of installation of both systems are currently with TPC.

Work on track had been suspended pending delivery of new track to replace the non-conforming track supplied by the contractor. The track was delivered at the end of October 2019 and is stored on 4th Street. Installation of the replacement track continues. SFMTA retained ownership of the non-conforming rail and is working with project representatives for the Sacramento Streetcar project to potentially transfer ownership of the rail for use on that project.

Tunnel Work

The electrical subcontractor continues to progress the installation of conduits and OCS support equipment in the tunnels.

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

Bay Area Rapid Transit (BART)

No updates to report.

California Department of Transportation (Caltrans)

SFMTA needs an Encroachment Permit to install electrical and traffic signal equipment at the I-80 off-ramp, which terminates at the intersection of 4th and Bryant streets. SFMTA Sustainable Streets Division (SSD) is planning other improvements to the intersection that would be implemented after completion of the Central Subway Project. Caltrans is insisting that the Encroachment Permit include all planned improvements, while SFMTA is requesting that the later work by SSD be covered by a separate permit. SFMTA and Caltrans have been unable to resolve the issue and it has been escalated to the SFMTA Director of Transportation. However, Caltrans agreed to provide a permit for the rail work separate from the minor striping work that is awaiting environmental clearance.

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) QPRMs, and were in attendance at the *February 6, 2020* QPRM. The FLSC is working to approve items on the certifiable items list for the Stations Contract. SFMTA has expressed concern that CPUC may have insufficient staff to witness the required safety tests for CSP, which could further delay the Revenue Service Date (RSD). This potential risk is being monitored in the risk register, and mitigation strategies have been identified.

San Francisco Public Utilities Commission (SFPUC)

No updates to report.

San Francisco Department of Public Works (SFDPW)

SFDPW inspects completed street and sidewalk facilities that the contractor has proposed to release to the City. SFDPW develops punch lists of required repairs that must be completed by the contractor prior to acceptance of the streets and sidewalks.

San Francisco Parks and Recreation Department

No updates to report.

Private Property Owners

All real estate acquisitions are complete. 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

The four Light Rail Vehicles (LRVs) for the Central Subway have been delivered and accepted by SFMTA. An additional 24 LRVs for near-term fleet expansion (four for service to the new Warriors Arena) and 151 LRVs for fleet replacement are in various stages of production and delivery. SFMTA has identified which of the new cars are considered to be funded by the CSP and will provide information on the date they are placed into revenue services for ongoing tracking of these assets in which the federal government has a financial interest.

Real Estate

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

Labor Relations and Policies

Appendix E of the Project Monthly Report details the Small Business Enterprise (SBE) goals and actual participation on each contract as of *September 2019.* 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

No updates to report.

B. PROJECT MANAGEMENT PLAN AND SUB-PLAN IMPLEMENTATION

Project Management Plan (PMP)

SFMTA delivered an update of the PMP in April 2019. A comprehensive review of the PMP by the Project Management Oversight Contractor (PMOC) was not requested by FTA.

Environmental Assessment/Mitigation Plan/Archaeological Plans

The PMOC received the First Quarter 2018 Mitigation Monitoring Reporting Program (MMRP) update from SFMTA on July 10, 2018. The PMOC's review of the report indicates that SFMTA continues to meet its commitments for monitoring and mitigation of project impacts.

Real Estate Acquisition Management Plan (RAMP)

SFMTA submitted RAMP Revision 5, dated September 26, 2013, to FTA on November 19, 2013. SFMTA has acquired all required real estate for the project 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

SFMTA appointed a permanent program director for the CSP in July 2019. Transition with the current acting director began the week of July 15, 2019. The permanent CSP director attended the SFMTA QPRM held on August 8, 2019. In November 2019, SFMTA appointed a permanent Director of Transportation. The new Director started his position on December 16, 2019.

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), PCCs, Notice of Potential Claims (NOPC), and Certified Claims 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 contract change management log includes CORs that have been determined to have merit as well as agency-initiated PCCs that are progressing through negotiations toward a CMod. The NOPC Log and the Claim Log include CORs rejected by SFMTA for which the contractor expects to submit or has submitted a claim. The latest versions of the Trend Log (dated August 8, 2019) and Trend Summary indicates that 118 contract modifications had been executed for the 1300 Contract. The total value of executed CMods was $7,169,271, which is a $1.2 million increase from the June 2019 report. The Claim Log, through the same period, indicates that there are now 142 certified claims with a total value at $48.5 million.

Project Cost (*as of April 2020*)

Cost estimate: $1.5783 billion.

Total contingency: *($17.2) million (minimum contingency is $25 million), decreased by approximately $42 million since August 2019.*

Actual Cost (AC): *$1,525,846,545 an increase of $7.6 million from March 2020 (96.7% of the total project budget).*

Current funding level: $1,517,025,000 (96.1% of the total project budget).

Earned Value (EV): *$1,460,310,250,*

Cost Performance Index (CPI): *0.96*

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 1.0 indicates a cost underrun, and a value of less than 1.0 indicates a trend towards 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.

Project Cost Trends

SFMTA tracks potential changes in project cost, calling these potential changes "trends." Trends include all potential changes in a contract's 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 the contract dispute resolution process.

Table 3 shows the overall budget, trends, and contingency status for the entire Central Subway program. Note that the values in Table 3 reflect the project status as of the end of January 2020 as reported in SFMTA's latest Monthly Progress Report (MPR). Claims and denied CORs are not included in the cost forecast in Table 3.

Change Order Control

SFMTA is maintaining its management tools for tracking potential contract changes for the 1300 Contract. The latest available CN1300 Trend Summary was dated August 8, 2019. This report shows that 118 contract modifications had been approved for a net increase in the contract value of $7,169,271. CORs (generated by the contractor) that have been determined to have merit and PCCs (generated by SFMTA) had a combined potential net cost impact of $9.07 million in increased contract value, which is $65 thousand less than in the prior report. This estimate includes expected reimbursements by third parties for work completed for their benefit. SFMTA expects to settle the outstanding CORs for less than the overall cost currently claimed by the contractor.

An additional 1053 items were being tracked in the Trend Log. Of these, SFMTA judged 493 items to be without merit and denied them. Many of these denied trend items are included in contractor

claims. A further 415 items have been voided and are carried at no cost. There were 144 items covered by certified claims and NOPCs by the contractor ($41.57 million in estimated maximum total exposure), and one item was "open" or new and awaiting a determination of merit.

The potential exposure of the project to additional costs from the NOPCs, claims, and open items was $41.57 million that, when added to the $11.83 million in increased project costs from merited contract changes, yielded a possible exposure of the project to additional costs for the 1300 Contract of $53.4 million. This is compared to the remaining contingency for the project of - $7.9 million, after accounting for the latest contract modifications. An additional $1.4 million in contingency should be available from the 1252 Contract based on the final contract value. In the opinion of the PMOC, the rapid increase in claims by TPC calls into question the adequacy of the program contingency. Unless the claims are settled for less than the claimed amount, there continues to be a risk that the program budget could be exceeded.

Table 3 - Budget and Contingency Status for Central Subway Project[1]

[1] Data reported in the *April 2020* Central Subway Project Monthly Progress Report – SFMTA (reformatted by the PMOC).

SFMTA Central Subway Project, Budget, Costs and EAC by SCC April 2020		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**	**(31,664,633)**	**284,261,448**	**-10%**			**282,648,964**	**99%**	**1,612,484**			
10.02	Guideway: At Grade, Semi-exclusive	2,395,143	464,857	2,860,000	19%			2,855,000	100%	5,000			
10.06	Guideway: Underground cut and cover	74,407,195	(4,590,788)	69,816,407	-6%			69,117,301	99%	699,106			
10.07	Guideway: Underground tunnel	224,933,257	(24,558,942)	200,374,315	-11%			199,485,368	100%	888,947			
10.09	Track: Direct fixation	7,293,157	(532,068)	6,761,089	-7%			6,741,658	100%	19,431			
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%			4,449,637	100%	-			
20	**Stations, Stops, Terminals, Intermodal**	**432,698,735**	**99,604,225**	**541,663,143**	**25%**			**534,626,594**	**99%**	**7,036,549**			
20.01	At-grade station	774,913	6,827,944	7,602,857	881%			6,208,049	82%	1,394,808			
20.02	Aerial station, stop, shelter, mall, terminal, platform		1,544,543	1,544,543	NA			-	0%	1,544,543			
20.03	Underground station	412,084,888	88,758,780	500,843,668	22%			509,261,664	102%	(8,417,996)			
20.04	Other Stations, Landing, Terminals: Intermodal, Ferry, Trolley, Etc.			9,360,183				-					
20.07	Elevators, escalators	19,838,934	2,472,958	22,311,892	12%			19,156,881	86%	3,155,011			
40	**Sitework and Special Conditions**	**232,551,627**	**32,254,398**	**264,806,025**	**14%**			**268,595,810**	**101%**	**(3,789,785)**			
40.01	Demolition, clearing, earthwork	8,887,028	3,867,587	12,754,615	44%			12,495,015	98%	259,600			
40.02	Site utilities, utility relocation	29,562,587	39,190,856	68,753,443	133%			78,368,341	114%	(9,614,898)			
40.03	Haz. Material, contam'd soli removal, ground water treatment	2,957,442	6,465,683	9,423,125	219%			9,378,786	100%	44,339			
40.04	Environmental mitigation	3,146,216	(2,023,317)	1,122,899	-64%			1,121,899	100%	1,000			
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%			5,128,831	52%	4,662,164			
40.07	Automobile, van, bus accessways, including roads and parking lots	11,919,550	(5,340,451)	6,579,099	-45%			6,409,470	97%	169,629			
40.08	Temporary facilities and other construction indirect costs	158,790,820	(5,115,402)	153,675,418	-3%			152,987,037	100%	688,381			
50	**Systems**	**108,429,774**	**(7,791,998)**	**100,637,776**	**-7%**			**76,691,276**	**76%**	**23,946,500**			
50.01	Train control and signals	37,447,116	(9,155,753)	28,291,363	-24%			34,156,947	121%	(5,865,584)			
50.02	Traffic signals and crossing protection	3,013,232	9,791,724	12,804,956	325%			12,144,191	95%	660,765			
50.03	Traction power supply	20,379,634	1,085,439	21,465,073	5%			18,681,948	87%	2,783,125			
50.04	Traction power distribution	16,239,951	(3,798,838)	12,441,113	-23%			3,120,128	25%	9,320,985			
50.05	Communications	28,545,305	(11,624,620)	16,920,685	-41%			7,099,693	42%	9,820,992			
50.06	Fare collection system and equipment	2,804,536	3,295,464	6,100,000	118%			627,988	10%	5,472,012			
50.07	Central Control		2,614,586	2,614,586	NA			860,381	33%	1,754,205			
Subtotal (10 - 50)		**1,089,606,217**	**92,401,992**	**1,191,368,392**	**9%**	**1,216,849,427**	**(25,481,035)**	**1,162,562,644**	**98%**	**28,805,748**	**69,672,639**	**1,232,235,283**	**(40,866,891)**
60	**ROW, Land, Existing Improvements**	**37,398,029**	**(5,151,708)**	**32,246,321**	**-14%**	**32,246,321**	**-**	**30,648,969**	**95%**	**1,597,352**	**1,597,352**	**32,246,321**	**-**
60.01	Purchase or lease of real estate	33,798,029	(3,732,219)	30,065,810	-11%	30,065,810		28,239,539	94%	1,826,271	1,597,352	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**	**(9,585,653)**	**16,800,000**	**-36%**	**16,800,000**	**-**	**11,929,247**	**71%**	**4,870,753**	**4,870,753**	**16,800,000**	**-**
70.01	Light Rail Vehicles	26,385,653	(9,585,653)	16,800,000	-36%	16,800,000	-	11,929,247	71%	4,870,753	4,870,753	16,800,000	-
80	**Professional Services**	**361,568,360**	**(30,565,742)**	**331,002,618**	**-8%**	**329,644,196**	**1,358,422**	**313,093,966**	**95%**	**17,908,652**	**16,550,230**	**329,644,196**	**1,358,422**
80.01	Preliminary Engineering	46,317,094	**(114,420)**	46,202,674	0%	46,202,674	-	46,202,675	100%	(1)	-		
80.02	Final Design	86,053,240	(24,734,909)	61,318,331	-29%	61,318,331	-	61,200,826	100%	117,505			
80.03	Project Management for Design and Construction	191,025,800	(108,781,519)	82,244,281	-57%	82,244,281	-	79,881,982	97%	2,362,299	(79,881,982)		
80.04	Construction Administration and Management	15,495,521	101,495,778	116,991,299	655%	116,991,299	-	112,955,748	97%	4,035,551	(112,955,748)		
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	(6,340,196)		
80.06	Legal, Permits, Review Fees by Other Agencies	7,242,340	970,264	8,212,604	13%	8,212,604	-	5,605,986	68%	2,606,618	(5,605,986)		
80.07	Surveys, Testing, Investigation, Inspection	234,036	699,064	933,100	299%	933,100	-	906,553	97%	26,547	(906,553)		
80.08	Start up	8,400,329	(100,000)	8,300,329	-1%	6,941,907	1,358,422	-	0%	8,300,329	-		
Subtotal (10 - 80)		**1,514,958,258**	**56,459,073**	**1,571,417,331**	**4%**	**1,595,539,944**	**(24,122,613)**	**1,525,846,545**	**97%**	**45,570,786**	**85,079,255**	**1,610,925,800**	**(39,508,469)**
90	Unallocated Contingency	63,341,742	(56,459,073)	6,882,669	-89%		6,882,669		0%	6,882,669			6,882,669
Total Project Costs (10 - 100)		**1,578,300,000**	-	**1,578,300,000**	**0%**		**(17,239,743)**	**1,525,846,545**	**97%**	**52,453,455**	**85,079,255**	**1,610,925,800**	**(32,625,800)**

SCC Breakdown of Forecast Construction Costs Not Available

The Trend Log showed the following trend items with potential cost increases in excess of $250,000.

1. # 24 - Change to grade 50 steel from specified grade 70 steel (due to availability issues) - $572,884
2. # 36 - Extra trucking costs for contaminated soil at CTS - $2,274,225
3. # 39 - Harder rock than anticipated for CTS slurry wall excavation - $2,290,471
4. # 61 - Delays to installation of tangent piles at UMS - $627,081
5. # 176 - UMS Garage underpinning requirements - $732,157
6. # 192 - 12-inch waterline at UMS, added scope - $336,236
7. # 193 - Sewer line conflict at UMS - $495,001
8. # 246 - UMS art glass installation requirements - $270,001
9. # 272 - Obstructions to jet grout placement at UMS - $3,1,35,764
10. # 341 - Change in track switch machine manufacturer at STS - $347,670
11. # 399 - Additional monitoring instruments at CTS - $429,777
12. # 466 - Extra work to prepare existing tunnel - $399,000
13. # 528 - Additional traffic control requirements for STS work package - $1,032,302
14. # 537 - Cost of changes to the design of CTS to accommodate the plaza requested by the community - $2,759,569 (paid from non-project funds)
15. # 543 - Change in construction sequence at CTS - $250,001
16. # 546 - Additional 12-inch water line work at YBM - $254,106
17. # 580 - Missing conduit between manholes at UMS - $250,001
18. # 592 - Extra excavation costs for rock at CTS - $450,001
19. # 636 - Changes in emergency vent design (all stations) - $500,001
20. # 644 - Contractor-claimed change in contract requirements for pre-loading permanent struts at UMS - $1,853,352
21. # 695 - Change in scope for slip-lining of 78-inch sewer on 4th Street - $800,016
22. # 840 - Change in drain piping details at UMS - $313,854
23. # 892 - Temporary drainage to re-direct water off new ramps at UMS - $261,851
24. # 1052 - Change in design for BART elevator at UMS - $400,000
25. # 1099 - Extra costs for Sequential Excavation Method (SEM) excavation at CTS due to tunnel segments being 5 feet long - $1,480,001
26. # 1117 - Extra costs due to concrete obstruction at CTS south platform cavern - $451,688

27. # 1152 - Extra costs for tying wall reinforcing into invert slab at UMS - $359,905
28. # 1175 - Time impacts due to power pole conflict during demolition at CTS - $520,000
29. # 1268 - Revised reinforcing steel for Headhouse invert at CTS - $1,147,356
30. # 1378 - General claimed extra costs for SEM work at CTS - $3,520,001
31. # 1424 - Extra work due to changes in form-savers and couplers at roof to wall connection at YBM - $250,001
32. # 1479 - Large volume of water inflow at end of probe - $300,000
33. # 1485 - Conflict between YBM Headhouse column reinforcing steel and temporary struts - $298,912
34. # 1509 - Unidentified duct bank removal at YBM - $264,013
35. # 1571 - Increase in allowance for Dispute Review Board (DRB) costs - $1,296,364
36. # 1606 - Claim of defective specifications at YBM - $2,500,001
37. # 1669 - Extra quantity of compensation grouting material all stations - $775,000
38. # 1670 - Differing site conditions at CTS - $2,280,001
39. # 1766 - Changes in finishes at UMS Ellis Street entrance - $300,001
40. # 1785 - Extra costs for design changes at UMS - $2,668,575
41. # 1885 - Change in structural reinforcement requirements in CTS Headhouse - $1,000,001
42. # 1886 - Addition of horn and strobe lights for fire alarm at UMS - $288,976
43. # 1914 - Extra costs to transport excavated soil to Ox Mountain - $1,621,173
44. # 1936 - CTS COR #1568 Elevators 1 and 2 Rotunda - $258,279
45. # 1971 - STS CCC 107 CMod #093 ATCS - $14,600,000
46. # 1993 - CTS COR #1717 All Stations – Exterior - $3,638,400
47. # 2028 - CTS CMod #092 – Delay PCC #233 - $1,000,001
48. # 2055 - CTS COR #1743 Stair 1 and Escalator 1 - $542,484
49. # 2061 - UMS CMod #116 COR #1788 - $899,852
50. # 2085 - STS (GEN) COR #1769 Global Impact, E - $4,000,001
51. # 2089 - CTS COR #1778 CTS and UMS Escalator D - $553,619
52. *# 2116 - CTS PCC #532 Reinforced Stairs 1-2-3 - $418,675*
53. *# 2138 - YBM PCC #536 Access Control Systems - $320,000*
54. *# 2231 - CTS Schedule Delay Costs - $31,240,000*
55. *# 2240 - YBM PCC #594 Mitigation of Water Int. - $300,000*

56. *# 2252 - STS COR #1812 GEN Added Costs SFMTA - $1,495,566*
57. *# 2254 - YBM COR #1906 GEN Best Construction - $1,783,583*
58. *# 2255 - CTS PCC #564 Stair 1 and Escalator - $517,369*
59. *# 2257 - UMS COR #1910 GEN Schindler Claim - $6,653,186*
60. *# 2258 - YBM COR #1916 DMI Delay Claim Notice - $7,130,758*

The estimated cost impacts of several large trends have been revised downwards by SFMTA since 2018.

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)
3. Replace specified Closed Circuit Television (CCTV) equipment with alternate for all stations - ($1,600,000)

Funding

Federal, state, and local project funding and expenditures are shown in Table 4. The awarded funding now represents *96.1%* of the project budget.

Table 4 - Project Funding, as of *April 2020*

Source		Committed ($1,000)	Awarded ($1,000)
Federal			
New Starts		942,200	942,200
Congestion Mitigation		41,025	41,025
Federal Subtotal		983,225	983,225
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			
MTA		0	475
Prop. K Sales Tax		123,975	137,727
Local Subtotal		123,975	138,202
Project Total:		**1,578,300**	***1,517,025***

E. PROJECT SCHEDULE STATUS

As of the end of *April 2020*, the project was around 1000 days late, based on the projected RSD of *September 16, 2021*. The substantial completion date for the 1300 Contract is now forecast to be *December 15, 2020, which is over 1000 days later* than the original date (February 10, 2018).

The critical path for the construction work still flows through the CTS Headhouse concrete work, electrical activities, STS start-up and testing, commissioning, and pre-revenue activities. Work at UMS is close to the critical path so that any delays at UMS or time-savings at CTS may cause a change in the critical path.

SFMTA stated it reached a settlement with TPC on the delay claim up to the date of September 3, 2019. The commitment from TPC includes a substantial completion date of construction in June 2020 with the following conditions:

- SFMTA must procure and deliver all radio cables by the end of December 2019
- Pacific Gas & Electric (PG&E) to provide permanent power by November 2019
- Fire Department to sign off on Fire Alarm Systems by December 2019

SFMTA sought and received approval of the delay claim settlement (applicable to September 3, 2019) during the September 17, 2019 SFMTA Board meeting. Subsequent to this delay claim settlement, SFMTA will continue to work with TPC on the following settlements:

- With TPC's subcontractors
- With TPC as a prime contractor

Project Schedule Data (as of *April 2020*)

Earned Value (EV): *$1,460,310,250.*

Planned Value (PV): *$1,589,690,998.*

Schedule Performance Index (SPI): *0.92*. 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 1.0 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 *0.92* indicates that the project is significantly behind schedule.

Table 5 shows the status of the schedule milestones established for the project.

Table 5 - 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)

	(P = Planned Date, A = Actual Date, F = Forecast Date)
Station Construction Notice to Proceed (NTP):	June 17, 2013 (A)
Station Construction Substantial Completion:	February 24, 2018 (P); *December 15, 2020 (F)*
RSD:	December 26, 2018 (P); *September 16, 2021 (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 in 2009. The FTA recommended schedule contingency for the current stage of the project is 4.0 months.

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 (complete)

CTS Headhouse Structural Concrete/Remove Bracing (underway)

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 for September 16, 2021)

Three Month Look-ahead

The following activities are planned over the next three months:

1300 Contract

UMS

- *Platform Station:*
    - *Complete Concrete Masonry Unit (CMU) wall construction*
    - *Complete deck installation*
    - *Complete all structural concrete work*
    - *Complete construction of stairs and escalators*
    - *Complete installation of ceiling panels*
    - *Complete installation of emergency lighting at tunnel tie-in on platform level*
    - *Continue installation of fireproofing*
    - *Continue installation of terrazzo flooring*

  - *Continue installation of artwork on concourse and platform levels*
  - *Continue installation of light fixtures and controls*
  - *Continue installation of overhead plumbing, fire protection piping, and overhead fixture and electrical installation*
  - *Continue installation of frames and pressurized doors at intermediate strut level*
  - *Continue installation of low voltage systems*
- *North Concourse:*
  - *Complete installation of ceiling and glass panels*
  - *Complete installation of stairs, elevators, and escalators*
  - *Continue installation of terrazzo flooring*
  - *Complete installation of access controls*
  - *Continue installation of fire alarm, security, and public announcement systems*
- *South Concourse:*
  - *Complete installation of ceiling and glass panels*
  - *Complete installation of stairs and escalators*
  - *Complete installation of rolling and grille doors*
  - *Continue terrazzo flooring*
  - *Complete installation of access controls*
  - *Continue installation of fire alarm, security, and public announcement systems*
- *Street/Surface:*
  - *Complete installation of granite curb, brick sidewalk, and pedestrian ramps north of Market Street*
  - *Complete installation of glass roof walk artwork on USG Terrace level*
  - *Complete installation of precast architectural concrete elements for USG terrace level*
  - *Complete landscaping and drainage at USG terrace level*
  - *Complete the USG Roof level exhaust vent*
  - *Complete the Tap room and emergency command post at surface level*
  - *Continue installation of permanent historic streetlights at O'Farrell and Stockton Streets*
  - *Continue installation of traffic cabinets*

CTS

- *Complete M/E/P at surface, plaza, and roof levels at Headhouse*
- *Complete construction of surface, plaza, roof levels at Headhouse*
- *Complete construction of PCC #50 Chinatown Station Plaza*
- *Abandon dewatering wells on Stockton*
- *Begin street utility work on Washington Street*

YBM

- *Continue installation of interior finishes on mezzanine and concourse levels within Station Box*
- *Begin installation of the sculpture at the surface level*
- *Complete escalators Nos. 3 and 4, and escalators 3 and 4*
- *Complete grinding of platform and concourse station terrazzo floors*
- *Complete installation and grinding of concourse Headhouse terrazzo floor*
- *Complete platform kiosks*
- *Complete station agent booth*
- *Complete systems start up and acceptance testing*
- *Complete fire alarm system*

STS

- *Complete OCS/street light pole installation*
- *Continue OCS support/wire installation in tunnel and on 4th Street*
- *Continue 4th/Brannan platform construction*
- *Continue tunnel walkway stairs installation*
- *Continue electrical conduit installation inside tunnel*
- *Continue tunnel lighting installation*
- *Continue installation of mini power center*
- *Continue pulling traction power feeder cables on surface*
- *Continue train case work at 4th Street and King Street*
- *Continue FDC work near 4th Street portal*

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.

The quality concerns for the 1300 Stations Contract identified in the SFMTA June 2018 monthly report included issues identified in the previous month. A key activity for SFMTA is to determine the causes for acceptance of non-conforming rail during the submittal review process and at delivery of the rail to the project site.

The PMOC continues to recommend that SFMTA complete its review of its QA procedures and process to determine how the non-conforming rail was accepted and installed for a significant portion of the alignment before the issue was identified. The PMOC also recommends that SFMTA assess its design control procedures to identify how to avoid conflicting requirements for specified materials in different portions of the specification.

The previous Quality Assurance Manager (QAM) was conducting a surveillance of quality control related to the water leaks that have appeared in the YBM station. The status of that surveillance has not been reported. **The PMOC recommends that the new QAM follow up on the status of this audit.**

As of April 30, 2020, TPC's Quality Manager had filed 536 CNCRs (five new since March). Eight new items were under review (one more since March), 26 other items had responses identified but not yet approved (no change from March), the proposed responses to eight items were disapproved (26 less since March), and 44 items had approved responses that were not yet implemented (five new since March). In addition, 396 items were closed (three new since March) and 54 items had been voided (two more since March).

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 Rail

Activation Plan (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 now that SFMTA has hired a Start-up and Testing manager for the program.

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 was started to address the station construction items in 2016. As of August 6, 2018, 264 of the 1660 items on the Safety and Security Conformance Checklist were approved and 31 items required follow-up responses from the SFMTA construction team. Twelve items were under review by the committee. The San Francisco Fire Department (SFFD) regularly attends the now combined FLSC and SSCRC meetings.

Construction Safety

There were two recordable incidents in the month of April 2020. The performance metrics relating to accidents per working hour remain well below the OSHA goals for similar construction. The current incident statistics for the project are shown in Table 6.

Table 6 - Construction Safety Data

Through April 2020	No. of Incidents	Incident Rate[2]	Goal
1300 Contract			
OSHA Recordable Accidents	*40*	*1.80*	<3.4
Job Transfer/Restricted Duty Incidents	0	0.00	NA
Lost Time Incidents	*11*	*0.49*	<1.6
Total Incidents	*51*	*2.29*	NA
Hours Worked	*4,449,266*		

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

I. PROJECT RISK, RISK MANAGEMENT, AND RISK MITIGATION

SFMTA conducts monthly meetings to review the status of identified risks, monitor the implementation of mitigation measures, identify new risks, and evaluate the probability and potential impacts of existing and newly identified risks. The current major risks to the project address the potential for further delays to the construction of the stations, which cannot be mitigated or recovered, resulting in further delays to the RSD. At the Risk Mitigation meeting on April 16, 2019, these and other major remaining project risks were evaluated. The outcome of the risk meeting is documented in Appendix D.

The PMOC noted the following significant items of discussion at the April meeting:

- Risk 99 – Breakdown in relationships between SFMTA and contractors during construction results in increased claims and delays to the overall construction schedule – rating has been increased, resulting in this being the top ranked risk. Along with risk 240 – Unresolved Assignment of Schedule Delay Responsibility leading to higher costs for the program – the effects of this risk are occurring now. SFMTA has started to conduct its detailed review of the causes of and responsibilities for delays in an effort to establish a negotiating position for a global resolution of the outstanding delay claims. Risk 99 and 240 remain the top threats to the program. SFMTA stated the mitigation for this risk is to identify additional funding sources to address potential cost overrun due to the increased claims.
- Risk 205 – Prolonged time to execute CMods creates additional cost and causes conflict between Resident Engineers (REs) and the contractor. TPC is now refusing to progress work that includes changes to the contract documents without an executed CMod, which may delay future work. SFMTA noted that its standard procedures for contract modifications lead to delays in execution of all changes.
- The meeting proceeded with routine updates to previously identified risks. Risks associated with underground mining at CTS are nearing retirement, pending completion of the final lining of the platform and cross-cut caverns.
- CSP's new quality manager noted that there has been an increase in NCNs, which are issued when the contractor fails to issue a CNCR.
- Initial ratings were developed for a new risk that had been identified at previous risk mitigation meetings:
    - Systems elements not working properly – rated high for probability and cost impact and medium for schedule impact, resulting in a rating of 8.

The PMOC encourages SFMTA to continue to identify new risks associated with the coordination of design and installation of upcoming building finishes and M/E/P and systems work, as the major risks associated with civil work and related differing site conditions are being retired.

SFMTA has been applying updated schedule risks to a Monte Carlo analysis of the program schedule in order to establish a range of likely construction completion dates and revenue service dates. SFMTA provided an updated report on the schedule risk assessment to the PMOC as part of the schedule workshop conducted in November. SFMTA finalized its risk assessment and submitted a letter to the FTA requesting an extension to the RSD to May 26, 2020.

J. ACTION ITEMS AND RECOMMENDATIONS

Table 7 on the following page shows the current action items for SFMTA. Table 8 provides a summary of the currently active PMOC recommendations. Closed recommendations are removed from the table one month after closure.

Table 7 - SFMTA Action Items for Central Subway Project

Category	NO.	ACTION	DATE OPENED	DUE DATE	DATE CLOSED	COMMENTS
C	***178***	Recognize impact of schedule delays to project management costs	11/14/2017	2/1/2018	To Be Determined (TBD)	SFMTA has started the process to update its forecast for project management costs.
CH	**180**	FTA to provide support for review of contract change management and documentation to seek ways to streamline SFMTA's process.	11/28/2018	TBD	*02/18/2020*	A CO best practice workshop was held on February 7, 2020

(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
CH – Change Management
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.

Table 8 - Active PMOC Recommendations

Number	Date Identified	Recommendation
1	12/27/2017	SFMTA and the contractor should continue to use the DRB process as a tool to resolve contract disputes. DRB reviews are continuing. **CLOSED**
2	12/27/2017	Required cost and schedule contingencies should be reevaluated when CTS excavation and placement of the invert slab of the Headhouse is complete. Headhouse invert slab was completed in June 2018. SFMTA is reevaluating its schedule risk assessment given the delayed completion of this critical path work. **CLOSED**
3	12/27/2017	The CSP Management Team should assess the impacts that schedule acceleration may be having on the quality program for the project and make any necessary adjustments needed to assure that quality is not compromised.
4	12/27/2017	The status of Big Hairy Audacious Goals (BHAG) should be discussed at each work package status meeting in order to improve the effectiveness of the goals in advancing critical project work. The PMOC noted that BHAGs were discussed at each of the four work package status meetings. **CLOSED**
5	12/27/2017	The trend log tracking should include the amount of time that has passed from the initial identification of the trend.
6	01/10/2018	SFMTA should immediately prepare and implement a plan for filling key positions, including the Program Director and Resident Engineer openings. The PMOC will monitor the agency's progress in recruitment and hiring of needed staff. RE positions were filled, but the STS RE recently resigned. In December 2018, the Program Manager and Start-up and Testing Manager position has been filled. **CLOSED**
7	01/10/2018	SFMTA should evaluate the current and future staffing levels and expertise required to address outstanding contract issues while effectively managing ongoing construction and preparing for systems testing and start-up activities. The PMOC supports the concept of assigning a dedicated claims management team, which has been partially implemented. SFMTA has added several contract and claims management staff. **CLOSED**
8	01/10/2018	SFMTA should now focus on updating the risks and mitigation strategies to reflect the transition of the work from excavation and major structural supports to M/E/P and systems installation and testing. A specific risk of delays due to contractual issues with the ATCS system would appear to be a concern.

Number	Date Identified	Recommendation
9	02/23/2018	The PMOC recommends that SFMTA quickly resolve the ongoing contractual issues regarding the schedule for and management of the ATCS to avoid schedule delays. Execution of amendments is still pending.
10	02/23/2018	The PMOC recommends SFMTA immediately resolve differences of opinion regarding skills required for the Start-up and Testing Manager and fill this position. SFMTA plans to obtain consulting support for the testing and start-up work while assigning two operations staff to the project. The assignments have yet to be implemented. **CLOSED**
11	03/11/2018	SFMTA management should work with SSD and CSP management to assure that traffic control requirements appropriately balance the needs of the project and the traveling public. A partnering approach may be effective in addressing Traffic Control Plan (TCP) issues. The requirements for traffic control for street restoration at the remaining intersections along 4th Street were to be agreed at a meeting on July 13. However the plan is still not in place and the target date of September 1, 2018 was missed.
12	04/12/2018	The PMOC recommends that the risk assessment and schedule forecast be updated once the contract amendment to separate ATCS work from the 1300 Contract is executed. Significant schedule risk is associated with the unknown schedule for ATCS work and this risk can be better evaluated once the Thales contract has been modified. Schedule risk update completed. RSD extension letter transmitted 12/06/2018. **CLOSED**
13	05/17/2018	The PMOC recommends that SFMTA quickly determine what course of action to take in response to the installation of standard, rather than hardened, rail for the project's trackwork. Replacement rail should be procured as soon as possible to minimize delays to the project. Rail was delivered in October 2018. **CLOSED**
14	07/18/2018	SFMTA is encouraged to work with the designer to expedite solutions to design issues identified by the contractor to avoid delays to the program critical path.
15	07/18/2018	The PMOC recommends that the new QAM follow up on the status of the quality audit for waterproofing installation at YBM.
16	08/06/2018	The PMOC recommends that SFMTA take immediate action to prevent further occurrences of contractor or subcontractor crews preforming work without proper QC oversight.

Number	Date Identified	Recommendation
17	12/16/2018	Claims and pending/potential contract changes now have a maximum potential impact that is substantially greater than the remaining contingency in the project budget. In the opinion of the PMOC, SFMTA should continue their focus on the resolution of outstanding claims in order to improve confidence in the adequacy of the available contingency.
18	12/16/2018	The PMOC recommends that FTA conduct a review of the outstanding claims to develop a realistic estimate of the potential cost exposure from claims.
19	12/16/2018	The PMOC recommends that SFMTA complete its review of its QA procedures and process to determine how non-conforming rail was accepted and installed for a significant portion of the alignment before the issue was identified. The PMOC also recommends that SFMTA assess its design control procedures to identify how to avoid inconsistent requirements for specified materials in different portions of the specification.

APPENDIX A. LIST OF ACRONYMS

AC	Actual Cost
ADA	Americans with Disabilities Act
AHA	Alternative Hazard Analysis
APTA	American Public Transportation Association
ARS	Air Replenishment System
ATCS	Automated 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
CCC	
CCTV	Closed Circuit Television
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CMB	Configuration Management Board
CM/GC	Construction Manager/General Contractor
CMod	Contract Modification
CMU	Concrete Masonry Unit
CNCR	Contractor Non-Conformance Report
CO	Change Order
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
DMI	
DRB	Dispute Review Board
EV	Earned Value
FD	Final Design
FDC	
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

GEN	
GFRC	Glass Fiber Reinforced Concrete
IRP	Independent Review Panel
LED	Light Emitting Diode
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
MPR	Monthly Progress Report
MPS	Master Project Schedule
Muni	Common Public Reference to SFMTA
NCN	Non-conformance Notice
NEPA	National Environmental Policy Act
NOPC	Notice of Potential Claim
NTP	Notice to Proceed
O&M	Operations & Maintenance
OCS	Overhead Contact System
OHA	Operational Hazard Analysis
OP	Oversight Procedure
PCC	Proposed Contract Change
PE	Preliminary Engineering
PG&E	Pacific Gas & Electric
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
QAM	Quality Assurance Manager
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
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
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
SSD	Sustainable Streets Division
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
TCP	Traffic Control Plan
TPC	Tutor Perini Corporation
TSA	Transportation Security Administration
TVA	Threat and Vulnerability Analysis
UMS	Union Square/Market Street Station
USG	
U.S.C.	United States Code
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			
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
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.

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 Security Plan or SEPP as per Part 659.21?	Y		See above.
Did the oversight agency participate in the last Quarterly Program Review Meeting?	N		
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. CPUC attends monthly certification review meetings conducted by SFMTA.
Has the grantee implemented security directives issues by the Department Homeland Security, Transportation Security Administration?	N/A		Currently, there are no Transportation Security Administration (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.

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**
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.
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		

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 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.
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. The status of safety and security certifications is reviewed at weekly project management 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 have been developed. Certification is achieved 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.

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 construction specification conformance?	Y		This is on-going as construction progresses and verified through the Safety and Security Certification process
Has the grantee identified safety and security critical tests to be performed prior to passenger operations?	N		Currently being developed.
Has the grantee verified conformance with safety and security requirements during testing, inspection, and start-up phases?	N		*Project is in construction, with RSD about 18 months 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. Grantee intends to hire a Start-up and Testing Manager who will develop the plans and procedures. This hire is becoming a critical activity.
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.

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**
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.
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. Statistics remain favorable compared to national averages and project safety goals.
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 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		

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**
Is the CHA underway?	N/A		
Other FRA required Hazard Analysis – Fencing, etc.?	N/A		
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:	*April 30, 2020*
Project Name:	Central Subway Project (CSP) New Starts Light Rail Transit
Grantee:	San Francisco Municipal Transportation Agency (SFMTA)
FTA Regional contact:	Mr. Bernardo Bustamante
FTA Headquarters contact:	Mr. Andre Anderson

Scope

Description:	The CSP will extend the Third Street Light Rail line from the Caltran 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. Vehicle manufacturing is underway and SFMTA has identified the four vehicles that will be considered to have been partially funded with CSP grant funds.
Ridership:	43,521 Average Weekday Riders 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

09/16/2021 Revenue Operations Date at date of this report

96.7% Percent Complete Based on Progress (April 30, 2020 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
$1,525.8 million	Amount of Expenditures at date of this report from Total Project Budget of $1,578 million
96.7%	Percent Complete based on Expenditures at date of this report
$6.88 million	Unallocated Contingency remaining
($17.2) million	Total Project Contingency (allocated and unallocated contingency as reported by CSP)
$25 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	*2Q18*	60	60
5	Hold Point 5 – Complete CTS / Tunnels systems inst. April 2018	*2Q19*	25	25
RSD	PMOC / FTA RSD	1Q20		
CURRENT TOTAL CONTINGENCY (*$17.2 million)*				


central T subway
Lombard St.
COIT TOWER
Columbus Ave.
Washington Square Park
Union St.
TUNNEL ONLY - NO SERVICE
Broadway
Broadway Tunnel
Washington St.
The Embarcadero
Ferry Building
CHINATOWN
Stockton St.
Kearny St.
Montgomery St.
Battery St.
EMBARCADERO
California St.
Leavenworth St.
Bush St.
Post St.
FUTURE TRANSBAY TERMINAL
FOLSOM
MONTGOMERY
UNION SQUARE/ MARKET STREET
J K L M N T
Market St.
Mission St.
1st St.
N
POWELL
Howard St.
Folsom St.
2nd St.
Harrison St.
BRANNAN
I-80
Golden Gate St.
4th St.
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.
Townsend St.
Caltrain
MISSION ROCK
UCSF
UCSF MISSION BAY
LEGEND
T Third Phase 2
T Third Phase 1
Muni Metro
Caltrain
BART

APPENDIX D. TOP PROJECT RISKS

Top risks were discussed at the *October* 2019 risk meeting as noted below:

Top Risks Discussed at Most Recent Meeting:

Risk 99 – Breakdown in relationships between SFMTA and contractors during construction results in increased claims and delays to the overall construction schedule. This risk is being realized, with TPC issuing more than 100 claims to date. This risk is now rated as the highest threat to the project. SFMTA and the contractor are using the DRB process to address disputes, but thus far, the DRB recommendations have not resulted in agreement between SFMTA and the contractor. SFMTA is initiating an analysis of the responsibilities for delays to support negotiation of a global settlement for delays. SFMTA stated the mitigation for this risk is to identify additional funding sources to address potential cost overrun due to the increased claims.

Risk 240 – Unresolved assignment of responsibility for schedule delays may lead to increased costs for the program. This risk continues to be a concern. TPC continues to push for a global settlement of the outstanding claims. If accepted, the proposed settlement would have significant cost impacts.

Risk 255 – Water leaks at YBM. Water leaks continue at YBM despite ongoing repair activities. Most of the leaks are at the interface between the station box and the Headhouse. Thus far, the schedule impacts of the leaks have been minor, but SFMTA expects to be liable for the costs of the repairs. SFMTA has spent $500,000 to $800,000 on leak mitigation work. SFMTA has received one finding of a third party evaluation of the reasons for the leaks and is starting work to mitigate the impacts of the leaks. The findings of the leak evaluation indicate that the design did not provide a complete "bathtub" that would keep groundwater out of the structure.

Risk 251 – Activities required to complete the project scope are not identified in the schedule, resulting in the time required to complete the project being longer than currently forecast. The ATCS contractor provided a detailed schedule for its work, which did not result in additional time beyond what was included in the simplified schedule. This risk will continue to be monitored. SFMTA noted that TPC's schedule updates include new activities not included in the baseline schedule that cause the completion date to be pushed later. The contract does not allow such addition of activities to the schedule without agreement of SFMTA. SFMTA's schedule updates are capturing differences between the activities in the baseline schedule and the work actually being completed.

Risk 234 and 52 – Unacceptable settlement occurs due to SEM mining at CTS, causing damage to buildings or utilities. All SEM mining work is complete, and placement of the final linings for the CTS platform and crossover caverns is underway. These risks can be retired when sufficient time has passed to allow the surrounding ground to respond to the excavation. Thus far, compensation grouting has been effective in returning the adjacent buildings to elevations that are within the established tolerances. SFMTA will monitor the behavior of the ground over and near the excavation and will retire this risk when the final linings of the cavern structures are complete.

Risk 253 – Insufficient resources are available to complete the work as planned. Thus far, crew shortages have not been experienced. However, there are concerns about the adequacy of the electrical subcontractor's resources. As M/E/P work ramps up at UMS and CTS, resources for the work may become a concern.

Risk 238 – Quality program is ineffective in processing non-conformance items causing schedule impacts. The SFMTA QAM conducted a review of potential causes of water leaks at YBM and concluded that there is no evidence of a failure in the QA/QC process. There is a concern that TPC is refusing to issue CNCRs when non-conforming work is identified. This or a similar risk was realized when it was discovered that non-conforming rail for the project had been approved through the submittal process, delivered to the project, and installed over portions of the alignment. SFMTA's new QAM has started an effort to reduce the time for CNCRs to be issued, dispositioned, approved, and closed. The QAM also noted that there has been an increase in issuance of NCNs, which raises a concern about the effectiveness of the contractor's quality program.

Risk 205 – Prolonged time to execute contract modifications may lead to poor relations between the REs and the contractor. This risk continues to be a concern. A few additional CMods, including some large cost increases, have been issued over the past two months. SFMTA continues to focus on speeding up the process of evaluating the justification for CMods and completing the negotiation process on price and time impacts with TPC. Additional staff has been assigned to processing CMods, and the agency is reviewing its procedures for modifying all contracts to identify opportunities to streamline the process. However, internal SFMTA procedures continue to extend the time required to execute CMods.

Risk 229 and 230 – Risk that contractor and SFMTA systems testing and commissioning will take longer than currently planned. SFMTA has delivered to the PMOC a more detailed schedule for ATCS, which includes the contractor's system tests. SFMTA still needs to complete a more detailed commissioning schedule that includes identification of required testing and the responsibilities for witnessing and approving the tests. SFMTA appointed a full-time Systems Integration and Testing manager in December 2018. SFMTA also plans to obtain consultant support for the testing and commissioning process in addition to the services of staff assigned from SFMTA Operations. The Start-up and Testing staff members have not started work on the project.

Risk 254 – CPUC has insufficient staff to witness required testing. This risk of delays due to insufficient CPUC staffing continues to be a concern. SFMTA has identified having CPUC audit tests conducted by others as a possible mitigation measure. SFMTA is working with CPUC to advance the certification process that must be completed in advance of testing.

The PMOC recommends that SFMTA focus on updating the risks and mitigation strategies to reflect the transition of the work from excavation and major structural supports to M/E/P and systems installation and testing. A specific risk of delays due to contractual issues with the ATCS system would also appear to be a concern.

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	05/15/2019	TBD	
Prepare Schedule for Testing (update)	06/01/2018	10/01/2018	11/07/2018	
Finalize Test Procedures	TBD	05/15/2019	TBD	
Conduct System Integrated Testing with trains, including procedures and reports	08/13/2019	12/15/2019	TBD	
Complete Testing Reports	12/01/2019	12/15/2019	TBD	
Operating Plan, Rules, and Training				
Finalize Operating Plan	03/15/2019	03/29/2019	TBD	
Finalize/revise SOPs, manuals, and rulebook as applicable	03/27/2019	06/09/2019	TBD	
Operations Manuals	05/11/2019	06/09/2019	TBD	
Staffing and Operations Plan	~~3/~~	~~TBD~~	~~TBD~~	
Training of O&M personnel	10/23/2019	10/29/2019	TBD	
Emergency response plan, training, and drills	10/23/2019	10/29/2019	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**
Facility and Right-of-Way Maintenance Plan, Equipment, Facilities, and Training				
Maintenance Schedules and Procedures	06/10/2019	06/29/2019	TBD	
Spare Parts Requirements	05/01/2019	07/30/2019	TBD	
Maintenance Manuals	10/22/2019	11/05/2019	TBD	
Maintenance Training	11/06/2019	11/15/2019	TBD	
Pre-Revenue Operations				
Finalize and/or update RAP and/or Pre-Revenue Operations Plan	04/02/2015	03/01/2019	TBD	
Implement Rail Activation Committee	01/01/2019	12/25/2019	TBD	
Develop/revise SSPP & Security Plan (approved by State Safety Oversight (SSO))	*Ongoing*	10/31/2015	10/31/2015	
FTA Office of Safety & Security Readiness Review	TBD	TBD	TBD	
PMOC OP-54 Readiness for Revenue Operations Review Report, Phase I	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**
Conduct Operational Hazard Analysis (OHA) and resolve other hazards/ vulnerabilities	TBD	TBD	TBD	
Pre-Revenue Operations	11/16/2019	12/26/2019	TBD	
Public Outreach				
Develop Safety Outreach Plan	01/07/2019	02/15/2019	TBD	
Provide Community Outreach	03/22/2019	12/10/2019	TBD	
Grand Opening Plan	11/08/2018	09/15/2019	TBD	
Construction Close Out				
Close Out of Non-Conformance Reports	Ongoing	12/25/2019	TBD	
Punch List Complete	07/26/2019	12/25/2019	TBD	
Certificates of Occupancy/Substantial Completion	06/01/2019	07/28/2019	TBD	
Safety, Security, and Fire-Life Safety Certifications				
Update/Finalize SSMP			02/18/2014	
Finalize and/or update Safety Certifiable Item List (SCIL) and SSCP			10/10/2008	
Implement Safety and Security Certification Committee			08/01/2010	
Implement Fire Life Safety Committee			08/01/2010	

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Preliminary Hazard Analysis (PHA)				
Threat and Vulnerability Analysis (TVA)				
Design Criteria Reflecting Safety and Security Requirements	NA	NA	NA	
Review status of quality non-conformances	Ongoing	12/26/2019	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	10/26/2019		
Document Workarounds/Open Items List	07/29/2019	12/25/2019	TBD	
Verify emergency drills, tabletops, training, etc. are completed	11/25/2019	12/25/2019	TBD	
SSO final certification/signature	11/13/2019	12/24/2019		

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	-	*7/29/2021*		
FFGA Revenue Service Date	-	12/26/2018		

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.
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

LL#	Date	Phase	Category	Subject	Lesson Learned
					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.
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.

LL#	Date	Phase	Category	Subject	Lesson Learned
15	01-30-14	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	06-30-14	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.
17	04-10-15	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. Lesson: When the safety and structural integrity of a construction site depends on maintaining 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.

LL#	Date	Phase	Category	Subject	Lesson Learned
18	04-10-15	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. Lesson: Pre-planning and quick action to involve the appropriate parties resulted in satisfactory handling of the artifacts with minimal delays to the construction schedule.
19	05-11-15	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. Lesson: A process should be established to assure that the latest design information, including submittals and related designer notes, is available in the field and used to inspect reinforcing steel prior to concrete placement.
20	09-28-15	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: Owners should aggressively assert the need for accurate schedule updates from contractors and should withhold payment if such updates are included in

LL#	Date	Phase	Category	Subject	Lesson Learned
					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.
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 the 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. Lesson: Effective pre-planning and mock-up assembly of complex trackwork, may allow the final assembly to be completed without the need for field adjustments and in less time than planned. This approach can mitigate the risks associated with the installation of complex custom track components in an operating transit line.
22	03-01-17	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

LL#	Date	Phase	Category	Subject	Lesson Learned
					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. Lesson: Careful record keeping and preparation for dispute resolution can limit agency exposure to costs related to claims.
23	01-10-18	Design and Procurement	Claims	Quality Control of As-built Data for Procurement	The Central Subway had three major construction phases: Utility Relocation, Tunneling, and Stations/Track/Systems. Inaccurate as-built information from earlier construction phases has led to claims for differing site conditions during the construction of Stations/Track/Systems phase. For example, during the final design phase for the tunnel work, SFMTA agreed to a proposed change to tunnel segments defined in the preliminary engineering phase. The length of tunnel segments was changed from 4 feet to 5 feet except in areas with tight curves. The approved change in segment length was not captured in the final design documents for the stations contract, even though the change in tunnel design was made prior to completion of the station contract documents. When the stations contractor encountered 5-foot-long segments while mining for the platform and crossover caverns at the Chinatown Station, he issued a change order request to account for extra costs due to the need to change the excavation approach to handle the longer tunnel segments. The current claimed extra cost is $4.4 million. Lesson: Procedures should be established to ensure that approved design changes during construction of early phases of complex projects are accurately reflected in contract documents for follow-on construction phases. PMOC oversight should confirm that procedures are in place to capture changes in design during construction and to assure that changes are reflected in follow-on construction contract procurement documents.

LL#	Date	Phase	Category	Subject	Lesson Learned
24	06-18-18	Design, Construction	Quality Management	QC of Contract Specifications and Material Acceptance	The Rail Procurement section of the specification called for hardened rail throughout the project. The Trackwork section of the specification allowed standard rail under all but special conditions. The contractor procured standard rail despite SFMTA's intent to use hardened rail. The standard rail was accepted on delivery and was installed over a significant portion of the alignment before the issue was identified. A dispute has arisen, with SFMTA referring to the Rail spec and directing replacement of all rail, and the contractor referring to the Trackwork spec and asserting that the rail meets contract requirements. Lesson: Design control and quality management procedures are needed to eliminate duplication in the contract specifications and assure that any duplicative requirements are consistent across sections of the specification. Quality control and assurance procedures need to be improved to assure that non-conforming materials are not accepted on delivery.

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 *April 30, 2020.*

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
	Final 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	$3,836,531
	Final Contract Value	$20,669,081
	Expended to Date	$20,794,581
	% Expended	100%
	SBE Participation	87.4%
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. Final contract cost to be lower than reported here.	
Cost:	Original Contract Value	$233.58 million
	Approved Change Orders	$7.83 million
	Current Contract Value	$241.41 million
	Expended to Date	$233.59 million; $6.2 million is paid from non-project funds
	% Expended	96.8%
	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	$21.96 million
	Current Contract Value (budget)	$861.64 million
	Expended to Date	*$735.1 million*
	% Expended	*85.95%*
	SBE Participation	22.9%
Schedule:	NTP issued June 17, 2013. Substantial Completion planned February 2018 and *forecast June 2020* .	
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	$7,904,713
	% Expended	99.6%
	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	$39,949,948
	Approved Change Orders	$7,950,658
	Current Contract Value	$47,900,606
	Expended to Date	$42,196,304
	% Expended	88.1%
	SBE Participation	31.6%
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	$16,864,250
	Approved Change Orders	$1,637,474
	Current Contract Value	$18,501,724
	Expended to Date	$15,275,838
	% Expended	82.6%
	SBE Participation	25.9%
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	$72,666,838
	% Expended	85.4%
	SBE Participation	32.4%
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	$10,081,808
	% Expended	58.9%
	SBE Participation	30.0%
Schedule:		
Issues or Concerns:		