MONTHLY MONITORING REPORT
October 2020

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

Draft Report delivered to FTA on December 3, 2020
Final Report delivered to FTA on December 10, 2020

PMOC Contract No.: 69319519D000016
Task Order No. 69319520F300115
Requisition/Reference No.: FTA-TPM20-20-0234
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CLIN 0002

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REPORT FORMAT AND FOCUS

This report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract #69319519D000016, Task Order #69319520F300115. Its purpose is to provide information and data to assist the FTA as it continually monitors the management capability and capacity of the San Francisco Municipal Transportation Agency (SFMTA) (the Project Sponsor) to execute the project efficiently and effectively. This report covers the project management activities on the Central Subway Project (CSP) managed by SFMTA, financed by the FTA Full Funding Grant Agreement (FFGA). The cost and schedule information in this report was extracted from SFMTA's September 2020 Monthly Progress Report, except where noted. *The report has been organized to comply with the requirements of updated Oversight Procedure 25—Recurring Oversight and Related Reports dated August 2020.*

THIRD-PARTY DISCLAIMER

This report and all subsidiary reports are prepared solely for the FTA. This report should not be relied upon by any party, except the FTA or the Project Sponsor, in accordance with the purposes as described below.

For projects funded through the FTA FFGA program, FTA and its Project Management Oversight Contractor (PMOC) use a risk-based assessment process to review and validate a Project Sponsor's budget and schedule. This risk-based assessment process is a tool for analyzing project development and management. Moreover, the assessment process is iterative in nature; any results of an FTA or PMOC risk-based assessment represent a "snapshot in time" for a particular project under the conditions known at that same point in time. The status of any assessment may be altered at any time by new information, changes in circumstances, or further developments in the project, including any specific measures a Project Sponsor may take to mitigate the risks to project costs, budget, and schedule, or the strategy a Project Sponsor may develop for project execution. Therefore, the information in the monthly reports will change from month to month, based on relevant factors for the month and/or previous months.

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1. EXECUTIVE SUMMARY

1.1. Project Description

The Central Subway Project (CSP) involves construction of a 1.7-mile extension of San Francisco Municipal Transportation Agency's (SFMTA (Project Sponsor)) T Third Line along 4th Street and beneath Stockton Street in downtown San Francisco. The CSP is Phase 2 of Muni's T Third Line 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. The Full Funding Grant Agreement (FFGA) project cost is $1,578 million.

1.2. Project Status

- Scope: There have been no changes in project scope.
- Schedule: Substantial completion of this contract was originally scheduled for February 10, 2018, *but the latest master program schedule update shows substantial completion occurring on March 31, 2021, which is a change of 48 days from the February 10, 2021 date* stated in the prior report and represents more than 1,000 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 *March 31, 2022*.
- Cost: The FFGA current cost estimate (CCE) for the project is $1.578 billion in year of expenditure dollars. The SFMTA continues to evaluate the estimate at completion (EAC). Currently, the SFMTA estimates the EAC to be *$1.657 billion or $79 million above the current budget*. This EAC has not been finalized because additional cost may need to be considered including the potential cost of delays due to the COVID-19 pandemic.
- Significant Project Activities and/or Key Milestones:
    - SFMTA stated that construction continues during the COVID-19 outbreak, although inefficiencies caused by COVID-19 restrictions are expected. SFMTA indicated that inefficiencies are being experienced for both contractors and SFMTA staff and consultants, especially with issues related to field coordination and processing changes. SFMTA indicates the contractor has submitted notice of claims related to COVID-19. SFMTA is looking for potential financial aid from other funding sources to finance the COVID-19 impacts. *SFMTA indicated there are minimum impacts due to the COVID-19 "second wave" so far.*

- SFMTA concluded a study of Tunnel/Crossover Ventilation Alternative Hazard Analysis (AHA), and a draft report was issued in July 2020. The report was finalized in August 2020. SFMTA indicated that 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 Project Management Oversight Contractor's (PMOC) opinion, will impact the dynamic testing and overall systems integration and testing. *The board approval of this change is still pending. SFMTA rejected the ATCS contractor's proposal of a two-month extension.*
- Resource availability of the electrical specialty subcontractor (Abbett) continues to be a major concern going forward. SFMTA stated that resources required from Abbett to complete the Overhead Contact System (OCS) work on schedule are significantly lacking. *Based on the current burn rate of payments to the contractor and the remaining contract value, Abbett needs to provide two or three times more than their current resources to meet the schedule.*
- SFMTA currently reports a negative *$53.2* million as the contingency amount. It is the PMOC's *opinion that SFMTA* should update its EAC as soon as possible to reflect an estimated total project cost required to complete the remaining CSP scope of work, which should include the global settlement and potential COVID-19 impacts. *SFMTA indicated, due to the sensitivity of negotiations with the contractor as part of the global settlement, it will be a challenge to provide the EAC. SFMTA will schedule a meeting with the PMOC and the FTA to discuss a path forward.*
- *SFMTA submitted a draft letter to the Federal Transit Administration (FTA) to propose a revised FFGA RSD. The proposed RSD in the letter is spring 2022. The FTA provided comments on the letter that the RSD should be a definitive date with a reasonable float and that providing a season as RSD is not acceptable. In addition, the draft letter is vague in addressing potential cost overruns and those potential costs need to be identified. SFMTA is addressing the comments and will resubmit the letter.*
- SFMTA continues to make progress on the global settlement. In addition to a settlement with a major subcontractor a few months ago*, SFMTA indicated settlements with all major subcontractors were reached. A board meeting is scheduled on December 15, 2020 to execute the settlements. SFMTA is targeting resolution of the issues related to the global settlement with TPC in the upcoming months.*

1.3. Major Issues and/or Concerns

Issue/Concern	*Construction inefficiencies and delays as a result of the COVID-19 pandemic. Delay claims by contractors are expected.*
Date Identified	*April 2020*
Status	*Ongoing*
Project Sponsor Action	*SFMTA is developing mitigation measures.*
PMOC Recommendation	*The PMOC recommends that SFMTA log and track cost and schedule impacts of the COVID-19 pandemic.*
Issue/Concern	*Resource availability of the electrical specialty subcontractor (Abbett) continues to be a major concern. SFMTA stated that resources required from Abbett to complete the OCS work on schedule are significantly lacking. SFMTA stated that, because the OCS work is on the critical path, a decision to resolve the issue needs to be made soon to prevent the delay of the CSP schedule. Based on the current progress, the delay on the critical path is approximately three months.*
Date Identified	*June 2020*
Status	*Ongoing*
Project Sponsor Action	*SFMTA is working with the general contractor to seek additional resources.*
PMOC Recommendation	*The PMOC recommends resolving the issues by the end of 2020 to avoid impacts on the project schedule.*

1.4. Key Indicators Dashboard

Table 1 – Key Indicators Dashboard

Project Sponsor:				San Francisco Municipal Transportation Agency	
Project Name:				Central Subway Project	
Date:				*September 30, 2020*	
Project Detail					
Oversight Frequency:				**Monthly**	
Element	**Status**			**Prior Status**	**Issue or Concern**
	●	●	●		
	G	**Y**	**R**		
PMP		●		●	*The Project Management Plan (PMP) was last updated in April 2019. It is recommended that SFMTA update the PMP by the end of 2020 to include project impacts resulting from COVID-19, which should include protocols and transition in preparation for revenue service.*
MCC			●	●	*When evaluating Management Capacity and Capability (MCC), resource availability for the electrical specialty subcontractor continues to be an issue, which is impacting the construction progress on the critical path.*
Cost*			●	●	*SFMTA is updating the CSP EAC to include the reallocation of project funds, global settlement, and COVID-19 impacts.*
Schedule			●	●	*COVID-19 impacts and a specialty subcontractor's resource availability are impacting the critical path work.*
Quality	●			●	*None.*
Safety	●			●	*None.*
Risk			●	●	*COVID-19 related issues and upcoming system integration/operational readiness are major risks.*

Legend	
Green	*Satisfactory: No Corrective Action necessary*
Yellow	*Caution: Risk/Issues exist. Corrective Action may be necessary.*
Red	*Elevated for immediate Corrective Action: Significant risk to the health of the project.*

*Note: With regard to cost, the PMOC should indicate the following status:
Yellow – forecast cost exceeds the project budget by up to 3%
Red – forecast cost exceeds the project budget by more than 5%

1.5. Core Accountability Items

Table 2 shows the core accountability items for the project, including the current status of the project and the major issues and how they are being addressed.

Table 2 – Core Accountability Items

		Original (Grant)	Current Forecast	PMOC Assessment of Current Forecast
Cost	Capital Cost Estimate	$1,578,300,000	*$1,658,000,000*	Unacceptable
Contingency	Unallocated Contingency	$74,722,000	$6,882,669	Unacceptable
	Total Contingency	$185,500,000	*($53,151,763)*	Unacceptable
Schedule	Revenue Service Date	12/26/2018	*03/31/2022* (SFMTA forecast)	Optimistic

Project Progress		**Amount ($)**	**Percent of Total**
Total Expenditures	Actual cost of all eligible expenditures completed to date	*$1,600,723,759*	*>100%*
Planned Cost to Date[1]	Actual value of work completed to date	*$1,593,491,019*	*>100%*

Contract Status		**Amount ($)**	**Percent of Total**
Total Contracts Awarded	Value of all contracts (design, support, construction, equipment) awarded; 0% of total value to be awarded	*$1,508,970,014*	*100%*
Construction Contracts Awarded[1]	Value of construction contracts awarded; 0% of total construction value to be awarded	*$1,137,848,462*	*100%*
Physical Construction Completed[1]	*Earned* Value of physical construction (infrastructure) completed; 93.8% of total construction value completed	*$1,273,187,220*	*93.8%*

Rolling Stock Vehicle Status	**Date Awarded**	**No. Ordered**	**No. Delivered**
	2017	*24*	*24*
Next Quarterly Project Review Meeting Date:	*To Be Determined (TBD)*		

[1] *SFMTA CSP September 2020 Monthly Report*

2. OBSERVATIONS AND FINDINGS

2.1. Summary of Monitoring Activities

- *September 17, 2020 – Weekly Schedule Review Meeting and Monthly PMOC/SFMTA Meeting*
- *October 7, 2020 – Quarterly Project Review Meeting (QPRM) Preparation Meeting*
- This report reflects financial information SFMTA provided in September 2020 (financial cutoff date of August 31, 2020) and information obtained in the above-referenced meetings.
  Note: Items that have changed from the previous month's report are indicated in *italics*. Other information is unchanged.

2.2. Oversight Triggers

- *If Tutor Perini Corporation (TPC) does not substantially complete the work by March 2021, an FTA risk assessment is recommended to evaluate the reasonableness of the targeted RSD (March 31, 2022.*

2.3. Project Management Plan and Sub-Plans

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

2.4. Management Capacity and Capability

2.4.1. Agency Staff

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

2.4.2. Contractor Staff

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

2.5. National Environmental Policy Act Process and Environmental Mitigation

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.

2.6. Project Delivery Method and Procurement

The project delivery method is Design-Bid-Build.

2.7. Design

Design is complete.

2.8. Value Engineering and Constructability Reviews

All contracts are under construction.

2.9. Real Estate Acquisition and Relocation

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

SFMTA submitted the Real Estate Acquisition Management Plan (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.

2.10. Third-Party Agreements and Utilities

2.10.1. Bay Area Rapid Transit

No updates to report related to Bay Area Rapid Transit (BART).

2.10.2. California Public Utilities Commission

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/FTA QPRMs and were in attendance at the *October 16, 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 RSD. This potential risk is being monitored in the risk register, and mitigation strategies have been identified.

2.10.3. San Francisco Public Utilities Commission

No updates to report.

2.10.4. San Francisco Department of Public Works

The San Francisco Department of Public Works (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. SFMTA is following the SFDPW guidelines.

2.10.5. San Francisco Parks and Recreation Department

No updates to report.

2.10.6. 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.

2.11. Construction

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

Contract 1251 (UR #2). This completed contract included the relocation of utility lines within the footprint of the proposed Union Square/Market Street Station (UMS) 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 closeout is now underway. SFMTA presented the final cost data for the contract at the August 2018 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. *The amount of $1.4 million has already been transferred to unallocated contingency.*

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 LRT between 4th and King streets and the tunnel portal, and all LRT track and systems components. *As of the end of September 2020, the construction of the stations and the Surface, Track, and Systems (STS) contract were 93.97 percent complete based on the value of completed construction.*

Table 3 shows the forecast date for completion of construction for each work package for the August and September 2020 schedule updates.

Table 3 – Forecast Construction Completion Dates for CSP Work Packages

Work Package	*August 2020 Forecast Construction Completion Date*	*September 2020 Forecast Construction Completion Date*
1253 – Union Square/Market Street Station	*2/11/2021*	*3/31/2021*
1254 – Chinatown Station	*2/11/2021*	*3/31/2021*
1255 – Yerba Buena/Moscone Center Station	*2/11/2021*	*3/31/2021*
1256 – Surface, Track, and Systems	02/25/2021	*03/31/2021*

Source: SFMTA Monthly Progress Reports for *August and September 2020*

Union Square/Market Street Station (UMS): The contractor began the installation of the advertisement light box at the concourse level. Construction of stairs and elevators continued throughout the station. The contractor continued installing the fire protection, security system, and emergency lighting throughout the station. The installation of the glass enclosure around the elevators and escalators at the north and south concourses is substantially complete. The installation of Mechanical, Electrical, and Plumbing (M/E/P) and security and fire protection components continued throughout the station. The contractor completed installing the unistrut for ceiling panels and Light Emitting Diode (LED) artwork at the concourse level. The pavement renovation at the platform station, north concourse, south concourse, and street/surface continued.

Chinatown Station (CTS): The installation of M/E/P and fire protection components continued throughout the station. The contractor completed the installation of escalators Nos. 5 and 6 at the upper mezzanine level. Work on elevators Nos. 1, 2, 3, and 4 at the platform and concourse levels continued. The contractor completed the installation of the sewer work along Washington Street. The electrical switchgear installation continued at the headhouse platform level. The contractor completed the installation of the Glass Fiber Reinforced Concrete (GFRC) panels at the concourse level. The installing of GFRC panels at the upper mezzanine and plaza level is ongoing. The contractor continued erecting structural steel for the station agent booth at the concourse level. The street work, monitoring, and surveying activities are ongoing. The emergency ventilation fan installation at the headhouse continued. The contractor continued utility construction at the intersection of Stockton and Washington streets. The contractor began the tie-in work to manhole No. 908 at the Washington/Stockton intersection.

Yerba Buena/Moscone Station (YBM): The installation of M/E/P components, interior walls, and stairs continued throughout the station. Installation of escalators Nos. 3 and 4 and elevators Nos. 3 and 4 continued. The contractor completed installing light poles near stair 6, rough-in PDS sign and fire alarm devices at elevators Nos. 3 and 4. The installation of gates, benches, metal wall panels, station agent booth and fronts at escalators and elevators at the headhouse concourse continued. Work on the street-level elements such as elevator shafts and steel framing continued. The installation of electric vehicle controls at the station mezzanine continued. The contractor continued the ceiling installation at the headhouse concourse. The artwork installation at the headhouse concourse continued. The contractor installed kiosk frame and rough-in kiosks at the headhouse concourse level. The contractor completed placing concrete sidewalk sections along Clementina Street. The terroxy fill, terrazzo, metal wall panels, station agent booth and fronts at escalators and elevators at the headhouse concourse continued.

Surface, Track, and Systems (STS): The traction power conduit and other electrical conduit installation inside the tunnels continued. The tunnel lighting and mini power installation is ongoing. Installation of the standpipe in the tunnel and cross passages was completed. The OCS hanger installation inside the tunnel continued. The platform construction at 4th Street and Brannan Street continued. The installation of the ATCS and radio system continued. The Fire Department Connection (FDC) work near the 4th Street portal continued. The installation of the ATCS began. The installation of blast doors at tunnel cross passages began. SFMTA is still

awaiting an Encroachment Permit from California Department of Transportation (Caltrans) for work at the Interstate 80 (I-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

Work on track had been suspended pending delivery of new track to replace the nonconforming 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 and is projected to be completed the first quarter of 2021. SFMTA retained ownership of the nonconforming 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 make progress on the installation of conduits and OCS support equipment in the tunnels.

2.12. Vehicle Technology and Procurement

The four 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 service for ongoing tracking of these assets in which the federal government has a financial interest.

2.13. Project Cost

2.13.1. Project Cost Control Systems

SFMTA continued to maintain the Trend Log and logs of Change Order Requests (CORs), Proposed Contract Changes (PCCs), Notice of Potential Claims (NOPCs), 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 Contract Modification (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.

2.13.2. Project Cost (*as of September 2020*)

FFGA cost estimate: $1.578 billion

Total contingency: *Negative $53.2 million (minimum contingency is $25 million). The following numbers were reported by SFMTA.*

Actual Cost (AC): *1,600,723,759 an increase of $6.6 million since the August 2020 report (over 100 percent of the total project budget).*

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

Earned Value (EV): *$1,474,388,295 – increased by $1.4 million since the August 2020 report.*

Cost Performance Index (CPI): *0.93*

SFMTA is reporting the CPI as a measure of cost efficiency on the 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. The PMOC recommends that SFMTA update the CPI to reflect the EAC based on the current project cost and schedule projections, including outstanding claims and COVID-19 impacts.

2.13.3. 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 Contract 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, and the value reflects SFMTA's assessment of the likelihood that the change would ultimately be approved through the contract dispute resolution process.

Table 4 shows the overall budget, trends, and contingency status for the entire CSP program. Note that the values in Table 4 reflect the project status as of the end of *August* 2020 as reported in SFMTA's latest Monthly Progress Report dated *September* 2020. Claims and denied CORs are not included in the cost forecast in Table 4.

2.13.4. Change Order Control

SFMTA is maintaining its management tools for tracking potential contract changes such as executed change orders for Contract 1300. As of the September 30, 2020 reporting period, SFMTA is reporting the value of the approved changes and potential changes to the overall project at $139.9 million and $8.7 million respectively. The $8.7 million represents the amount for the Contract 1300 as summarized below:

- *1253 Union Square/Market Street Station, $3.1 million*
- *1254 Chinatown Station, $2.2 million*
- *1255 Yerba Buena/Moscone Station, $1.3 million*
- *1256 Surface Trackwork and Systems, $2.1 million*

2.13.5. Cost Contingency

The total available contingency (approved contingency less approved contract changes) as of the *SFMTA report dated September 2020 is at negative $53,151,763*, which *is significantly* below the minimum required contingency of $25 million.

Table 4 – Budget and Contingency Status for Central Subway Project[1]

		CONTRACT COST					CONTINGENCY					BUDGET	VARIANCE
	COST ELEMENT	ORIGINAL CONTRACT VALUE / September 2013 SUPPLEMENTAL BUDGET	APPROVED CHANGES	CURRENT CONTRACT VALUE [a + b]	POTENTIAL CHANGES	ESTIMATE AT COMPLETION (EAC) [c + d]	ORIGINAL CONTINGENCY / Sep 2013 SUPPLE-MENTAL CONTINGENCY (Include CN 1250 & CN1251)	CONTINGENCY ADJUSTMENT TRANSFERS	REVISED AUTHORIZED CONTINGENCY (Include CN1250 & CN1251) [f + g]	REMAINING CONTINGENCY AFTER APPROVED CHANGES DEDUCTED [h - b]	*REMAINING* CONTINGENCY AFTER POTENTIAL CHANGES DEDUCTED [i - d]	*ORIGINAL* CONTRACT VALUE + REVISED AUTHORIZED CONTINGENCY [a + b]	BUDGET - ESTIM... CO...
		a	b	c	d	e	f	g	h	i			k
SCC 10-50	CONSTRUCTION CONTRACT PACKAGES												
1250	UTILITY RELOCATION PACKAGE #1	9,273,939	2,694,211	11,968,150		11,968,150	1,953,377	740,834	2,694,211			11,968,150	
	Contract 1250 Department of Technology	166,756		166,756		166,756						166,756	
1251	UTILITY RELOCATION PACKAGE #2	16,832,550	3,836,531	20,669,081		20,669,081	5,367,297	(1,530,766)	3,836,531			20,669,081	
	Contract 1251 Department of Technology	75,615		75,615		75,615						75,615	
1252	GUIDEWAY TUNNEL	233,584,015	(72,762)	233,511,253	-	233,511,253	23,658,464	(23,731,226)	(72,763)			233,511,253	(1)
1300	STATIONS	839,676,400	101,974,251	941,650,651	8,695,014	950,345,665	20,000,000	20,000,000	44,671,397	(57,302,854)	(65,997,868)	884,347,797	(65,997,868)
	1253 UNION SQUARE/MARKET ST STATION [UMS]	294,030,590	9,731,219	303,761,809	3,031,536	306,793,345	5,000,000	15,000,000	20,000,000	10,268,781	7,237,245	314,030,590	7,237,245
	1254 CHINA TOWN STATION [CTS]	247,567,810	53,634,870	301,202,680	2,229,107	303,431,787	5,000,000	5,000,000	10,000,000	(43,634,870)	(45,863,977)	257,567,810	(45,863,977)
	1255 YERBA BUENA/ MOSCONE STATION [YBM]	158,089,000	4,552,316	162,641,316	1,317,034	163,958,350	5,000,000		5,000,000	447,684	(869,350)	163,089,000	(869,350)
	1256 SURFACE TRACKWORK & SYSTEMS [STS]	139,989,000	34,055,845	174,044,845	2,117,337	176,162,183	5,000,000	*22,708,106*	9,671,397	(24,384,448)	(26,501,786)	149,660,397	(26,501,786)
OTHER		38,239,187	23,938,659	62,177,846		62,177,846	1,160,000	1,060,000	25,098,659	1,160,000	1,160,000	63,337,846	1,160,000
	SCC 10 - 50 Construction Sub-total	1,137,848,462	132,370,890	1,270,219,352	8,695,014	1,278,914,366	52,139,137	(3,461,158)	76,228,035	(56,142,854)	(64,837,868)	1,214,076,497	(64,837,868)
SCC 60-80	SOFT COSTS PACKAGES												
60	ROW, LAND, EXISTING IMPROVEMENTS	36,511,799	(4,265,478)	32,246,321		32,246,321	1,000,000	(1,000,000)	0	0	0	32,246,321	0
70	VEHICLES	24,108,712	(7,308,712)	16,800,000		16,800,000	2,276,941	(2,276,941)	0	0	0	16,800,000	0
80	PROFESSIONAL SERVICES	310,518,041	19,126,155	329,644,196		329,644,196	18,221,079	(16,862,657)	1,358,422	1,358,422	1,358,422	331,002,618	1,358,422
	SCC 60 - 80 Construction Sub-total	371,138,552	7,551,965	378,690,517	0	378,690,517	21,498,020	(20,139,598)	1,358,422	1,358,422	1,358,422	380,048,939	1,358,422
SCC 90	UNALLOCATED CONTINGENCY						3,845,945	7,608,606	11,454,551	1,632,668	1,632,668	1,632,668	1,632,668
TOTAL		1,508,987,014	139,922,855	1,648,909,869	8,695,014	1,657,604,883	77,483,102	(15,992,150)	89,041,008	(53,151,763)	(61,846,777)	1,595,758,104	(61,846,779)

SCC Breakdown of Forecast Construction Costs Not Available

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

2.13.6. Funding

Table 5 shows federal, state, and local project funding and expenditures. The awarded funding now represents *96.1 percent* of the project budget.

Table 5 – Project Funding, as of *September 2020*

	Funding	
	Committed Funding Sources	Total Awarded Funds to Date
Federal		
Sect. 5309-NS	$942,200	$942,200
Sect. 5307-OBAG	$15,980	$15,980
CMAQ	$41,025	$41,025
Federal Subtotal	**$999,205**	**$999,205**
State		
TCRP	$14,000	$14,000
State RIP	$12,498	$12,498
Prop. 1B (I-Bond) PTIMSE	$308,601	$312,236
Prop. 1A (HSR-Bond)	$61,308	$61,308
State Subtotal	**$396,407**	**$400,042**
Local		
LCTOP	$4,000	$4,000
Operating	$4,970	$12,570
MTA	$0	$475
Prop. B Pop Baseline	$26,985	$20,125
Prop. K	$143,542	$138,692
TSF Transit	$3,191	$3,191
Local Subtotal	**$182,688**	**$179,053**
CPT 544 Total	**$1,578,300**	**$1,578,300**

Source: SFMTA Monthly Progress Report for *September 2020*

2.14. Project Schedule

As of the end of *September 2020*, the project was more than 1,000 days late, based on the projected RSD of *March 31, 2022.* The substantial completion date for Contract 1300 is now forecast to be *March 31, 2021, which is greater than 1,000 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.

2.14.1. Project Schedule Data (as of *September 2020*)

The project's EV is *$1,474,388,295 and its* Planned Value (PV) is *$1,593,491,019.* The project's Schedule Performance Index (SPI) is 0.92. SPI is a measure of schedule efficiency on a project. It is the ratio of EV to PV. 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 EV and PV. The current value of *0.92* indicates that the project is significantly behind schedule.

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, which was held in 2009. The FTA-recommended schedule contingency for the current stage of the project is four months.

2.14.2. Schedule Contingency

All contingency in the schedule has been consumed, and there are more than 12 months of negative float from the baseline schedule. *The schedule submitted by SFMTA dated September 2020 forecasts an RSD of March 31, 2022*, which represents *764* days of additional delay. SFMTA submitted an FFGA Schedule Extension letter to the FTA on December 6, 2018, with a request to extend the FFGA RSD to May 26, 2020, and FTA issued an approval letter on February 27, 2019.

2.14.3. Critical Path Summary *(Baseline Schedule)*

CTS Install Guidewalls, Slurry Walls, and Install Surface Deck (complete)

CTS Excavate Headhouse and Bracing (complete)

CTS Sequential Excavation Method (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 *March 31, 2022*)

2.14.4. Three-month Look-ahead

The following activities are planned over the next three months:

Contract 1300

UMS:

- *Completion of the following:*
  - *All structural concrete work*
  - *Stairs, elevators, and escalators*
  - *Ceiling panels*
  - *Emergency lighting at tunnel tie-in on the platform level*
  - *CCTV/Communication at tunnel tie-in on the platform level*

  - *Station agent booth*
  - *Application of anti-graffiti coating*
- *Continued construction installation and testing of the following:*
  - *Fireproofing*
  - *Terrazzo flooring and stairs*
  - *Glass wall panels*
  - *Artwork on concourse and platform level*
  - *Light fixtures and controls at Ellis Entrance*
  - *Fire alarm/PA/security systems*
  - *Overhead plumbing, fire protection piping, and overhead fixtures and electrical*
  - *Frames and pressurized doors at intermediate strut level*
  - *Access controls*
  - *HVAC and EV start-up and testing*
  - *Power and lighting start-up and testing*
  - *Fire alarm/PA/security systems start-up and testing*
  - *Permanent Pacific Gas & Electric (PG&E) historic streetlights at O'Farrell and Stockton streets*
  - *Traffic cabinets*
  - *OCS Installation*
  - *Installation of traction conduits*

CTS:

- *Complete installation of elevators 1, 2, 3, and 4*
- *Complete installing M/E/P at surface, plaza, and roof levels at headhouse*
- *Complete construction of PCC 50 Chinatown Plaza*
- *Obtain San Francisco Department of Building Inspection (SFDBI) Green tag*
- *Obtain electrical power from PG&E*
- *Begin component and system testing*
- *Abandon dewatering wells on Stockton Street*
- *Complete traction power conduit installation and OCS at cavern*
- *Complete underground utility construction (sewer, domestic water, Automatic Water Suppression System (AWSS)) along Washington Street*

- *Complete street restoration along Stockton Street*

YBM:

- *Install handrails at stairs 2, 3, 5, 7, and 8*
- *Install piping under platform stair 3*
- *Install stairway runnels and terrazzo steps at stair 7*
- *Install ceiling metal panes and coiling door grille at headhouse roof*
- *Remove all scaffolding and install southwest glass of elevator fronts at the headhouse concourse level*
- *Continue installing doors and door hardware*
- *Install benches, rough in FSD, torque conduit racks, pull fire alarm wire, and deliver and install kiosk frames at the platform level*
- *Continue interior finishes on mezzanine and concourse levels within the station box*
- *Continue installation of sculpture at the surface level*
- *Complete installation of artwork in the headhouse concourse level*
- *Complete installation of elevators 3 and 4*
- *Complete installation of escalators 3 and 4*
- *Complete installation and finish grinding of platform and concourse station terrazzo floors*
- *Complete installation and finish grinding of concourse headhouse terrazzo floor*
- *Complete platform kiosks*
- *Complete station agent booth*
- *Complete surface plaza area*
- *Complete systems start-up and acceptance testing*
- *Pull AT&T wires to all building levels*
- *Set, trim, and terminate devices*
- *Complete FA system*
- *Complete installation and testing of CU equipment*

STS

- *Complete OCS/street light pole installation*
- *Continue OCS support/wire installation in tunnel and on 4th Street*

- *Continue 4th/Brannan platform construction*
- *Continue axle counter box revisions at the 4th Street portal*
- *Continue surface signaling work on 4th Street*
- *Continue traffic signal work on 4th Street*
- *Continue street lighting work on 4th Street*

2.15. Project Risk

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, these and other major remaining project risks were evaluated.

The PMOC noted the following significant items of discussion:

- *Risk 265 – COVID-19 restrictions directly impact the progress of the work resulting in increased cost and schedule delays.*
- Risk 99 – Breakdown in relationships between SFMTA and contractors during construction results in increased claims and delays to the overall construction schedule: The 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. Risks 99 and 240 remain the top threats to the program. SFMTA stated that 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 Non-conformance Notices (NCNs), which are issued when the contractor fails to issue a Contractor Non-conformance Report (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 COVID-19 impacts and* the system integration/testing and operational readiness, 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 RSDs. SFMTA will prioritize its effort to draft a letter to the FTA to propose a revised FFGA RSD. SFMTA currently forecasts the RSD to occur in *March 2022*. *However, impact of COVID-19 could further delay the RSD. SFMTA is conducting a risk refresh to incorporate the COVID-19 cost and schedule impacts. SFMTA indicated that the letter will be ready for transmittal in the near future with backup information associated with the proposed RSD extension included.*

2.16. Quality Assurance/Quality Control

2.16.1. QA/QC Plan Implementation

The Contract 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 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 NCN in which non-conforming work is identified by SFMTA's quality assurance staff.

The quality concerns for the Contract 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.

As of September 30, 2020, TPC's Quality Manager had filed 552 CNCRs (one more since August). Under review were 10 new items (no change from August), 29 other items had responses identified but not yet approved (one less since August), the proposed responses to 7 items were disapproved (3 more since August), and 30 items had approved responses that were not yet implemented (2 less since August). In addition, 423 items were closed (one more since August), and 53 items had been voided (no change from August).

2.17. Safety and Security

2.17.1. Safety and Security Management Plan

An updated Safety and Security Management Plan (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 along 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 in *early 2021.* SFMTA has hired a Start-up and Testing Manager for the program.

2.17.2. 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.

2.17.3. Construction Safety

There were no recordable incidents in the month of September 2020. The performance metrics relating to accidents per working hour remain well below the Occupational Safety and Health Administration (OSHA) goals for similar construction. The current incident statistics for the project are shown in Table 6, as well as where they are not applicable (NA).

Table 6 – Construction Safety Data

Through September 2020	Number of Incidents	Incident Rate[1]	Goal
Contract 1300			
OSHA Recordable Accidents	*46*	*2.10*	<3.4
Job Transfer/Restricted Duty Incidents	0	0.00	NA
Lost Time Incidents	*11*	*0.50*	<1.6
Total Incidents	*57*	*2.60*	NA
Hours Worked	*4,387,764*		

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

2.18. Americans with Disabilities Act

There are no Americans with Disabilities Act (ADA) issues for the project at this time.

2.19. Buy America

There are no Buy America issues.

2.20. Start-up, Commissioning, Testing

SFMTA submitted a draft of the RAP in April 2019. 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 recommends commencement of the OP #54

review in the first quarter of 2021, which is approximately six to nine months prior to the current targeted 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

ATTACHMENT A – LIST OF ACRONYMS

AC	Actual Cost
ADA	Americans with Disabilities Act
AHA	Alternative Hazard Analysis
ATCS	Automated Train Control System
AWSS	Automatic Water Suppression System
BART	Bay Area Rapid Transit
BRT	Bus Rapid Transit
Caltrans	California Department of Transportation
CAR	Corrective Action Request
CCE	Current Cost Estimate
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CMod	Contract Modification
CNCR	Contractor Non-conformance Report
COR	Change Order Request
CPI	Cost Performance Index
CPUC	California Public Utilities Commission
CQM	Contractor's Quality Manager
CSP	Central Subway Project
CSSP	Construction Safety and Security Plan
CTS	Chinatown Station
DBE	Disadvantaged Business Enterprise
DBOM	Design Build Operate and Maintain
DF	Designated Function
EAC	Estimate at Completion
EV	Earned Value
FD	Final Design
FDC	Fire Department Connection
FFGA	Full Funding Grant Agreement
FLSC	Fire and Life Safety Committee

FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GFRC	Glass Fiber Reinforced Concrete
I-80	Interstate 80
LED	Light Emitting Diode
LRT	Light Rail Transit
LRV	Light Rail Vehicle
MCC	Management Capacity and Capability
M/E/P	Mechanical, Electrical, and Plumbing
MMRP	Mitigation Monitoring Reporting Program
Muni	Common Public Reference to SFMTA
NA	Not Applicable
NCN	Non-conformance Notice
NOPC	Notice of Potential Claim
NTP	Notice to Proceed
O&M	Operations and Maintenance
OCS	Overhead Contact System
OHA	Operational Hazard Analysis
OP	Oversight Procedure
OSHA	Occupational Safety and Health Administration
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
PV	Planned Value
QA/QC	Quality Assurance/Quality Control
QPRM	Quarterly Project Review Meeting
RAMP	Real Estate Acquisition Management Plan
RAP	Rail Activation Plan

RE	Resident Engineer
ROD	Record of Decision
RSD	Revenue Service Date
SBE	Small Business Enterprise
SCIL	Safety Certifiable Item List
SEM	Sequential Excavation Method
SEPP	Security and Emergency Preparedness Plan
SFDBI	San Francisco Department of Building Inspection
SFDPW	San Francisco Department of Public Works
SFMTA	San Francisco Municipal Transportation Agency
SIT	Systems Integration Test
SOP	Standard Operating Procedure
SPI	Schedule Performance Index
SSCP	Safety and Security Certification Plan
SSCRC	Safety and Security Certification Review Committee
SSCVR	Safety and Security Certification Verification Report
SSMP	Safety and Security Management Plan
SSO	State Safety Oversight
SSPP	System Safety Program Plan
STS	Surface, Track, and Systems
TBD	To Be Determined
TBM	Tunnel Boring Machine
TPC	Tutor Perini Corporation
TVA	Threat and Vulnerability Analysis
UMS	Union Square/Market Street Station
YBM	Yerba Buena/Moscone Center Station

ATTACHMENT B – SAFETY AND SECURITY CHECKLIST

Project Overview			
Project Mode (Rail, Bus, BRT, Multimode)	Light Rail Transit		
Project Phase (Project Development, Engineering, Construction, Start-up)	Construction		
Project Delivery Method (Design/Build, DBOM, CMGC, etc.)	Design-Bid-Build		
Project Plans	**Version**	**Review by FTA**	**Status**
Safety and Security Management Plan (SSMP)	2014	2011	Revision 1 Update submitted to FTA 02/25/2011. Not submitted to Federal Railroad Administration (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 or Security and Emergency Preparedness Plan (SEPP)	2009		Not submitted to FTA. Not submitted to FRA.
Construction Safety and Security Plan (CSSP)	2012		Health and Safety. Construction Safety Standards Revision 3, June 27, 2012.
Area of Focus	**Y/N**	**Notes/Status**	
Safety and Security Authority			
Is the project sponsor 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 project sponsor's Security Plan or SSPP as per 49 CFR 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.	
Did the oversight agency participate in the last Quarterly Program Review Meeting?	N		
Has the project sponsor submitted its safety certification plan 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 that was revised in November 2011 was submitted to the CPUC and was approved. CPUC attends monthly certification review meetings conducted by SFMTA.	

Area of Focus	Y/N	Notes/Status
Has the project sponsor implemented security directives issues by the Department Homeland Security and/or Transportation Security Administration?	NA	Currently, there are no Transportation Security Administration directives or programs applicable to the project. If any arise during the course of the project, the activities to comply will be developed and shown on a revision of the project safety and security activities schedule.
SSMP Monitoring		
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	Y	The PMOC reviewed the CSP SSMP and provided a spot report to FTA in May 2011. FTA approved the CSP SSMP on May 16, 2011. A follow-up Adherence Audit was conducted September 14-16, 2011. The audit found that CSP is conducting its activities in accordance with the SSMP.
Does the project sponsor review 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 project sponsor 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 supervising project Safety and Security Certification.
Does the project sponsor 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 project sponsor established staffing requirements, procedures, and authority for safety and security activities throughout all project phases?	Y	
Does the project sponsor 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 project sponsor allocated sufficient resources to oversee or carry out safety and security activities?	Y	
Has the project sponsor 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 project sponsor implement regularly scheduled meetings to track to resolution any identified hazards and/or vulnerabilities?	Y	
Does the project sponsor 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 (Contract 1300) work package status meetings. The status of safety and security certifications is reviewed at weekly project management meetings.
Does the project sponsor ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.	Y	
Has the project sponsor ensured the development of safety design criteria?	Y	Design is complete and construction is underway.

Area of Focus	Y/N	Notes/Status
Has the project sponsor ensured the development of security design criteria?	Y	Design is complete and construction is underway.
Has the project sponsor 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 project sponsor verified construction specifications conformance?	Y	This is ongoing as construction progresses and is verified through the Safety and Security Certification process.
Has the project sponsor identified safety and security critical tests to be performed prior to passenger operations?	N	Currently being developed.
Has the project sponsor verified conformance with safety and security requirements during testing, inspection, and start-up phases?	N	Project is in construction, and the RSD is about 14 months in the future.
Does the project sponsor evaluate change orders, design waivers, or test variances for potential hazards and/or vulnerabilities?	Y	
Has the project sponsor ensured the performance of safety and security analyses for proposed workarounds?	NA	Currently no work-arounds have been identified.
Has the project sponsor 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	The second draft of the Rail Activation Plan (RAP) has been completed. An Integration Matrix has been implemented for all disciplines and includes 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 project sponsor issued final safety and security certification?	N	Project is in the construction phase.
Has the project sponsor issued the final safety and security verification report?	N	Project is in the construction phase.
Construction Safety		
Does the project sponsor have a documented/implemented Contractor Safety Program with which it expects to comply?	Y	Health and Safety Construction Safety Standards Revision 3, June 27, 2012.
Does the project sponsor's contractor(s) have a documented companywide safety and security program plan?	Y	
Does the project sponsor'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.
How do the project sponsor's OSHA statistics compare 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 project sponsor to improve its safety record?	NA	Statistics are favorable. No action needed.
Federal Railroad Administration		
If shared track, has the project sponsor submitted its waiver request application to FRA? (Please identify specific regulations for which waivers are being requested.)	NA	No shared track. No waivers are anticipated.

Area of Focus	Y/N	Notes/Status
If shared corridor: has the project sponsor specified specific measures to address shared corridor safety concerns?	NA	This is not a shared corridor.
Is the Collision Hazard Analysis underway?	NA	
Other FRA required Hazard Analysis – Fencing, etc.?	NA	
Does the project have Quiet Zones?	N	
Does FRA attend the Quarterly Review Meetings?	N	

ATTACHMENT C – TOP 5 PROJECT RISKS

Top Risks Discussed at Most Recent Meeting:

Risk 265 – *COVID-19 directly impacts the progress of the work resulting in increased cost and schedule delays.*

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 from 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 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.

Risks 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 a possible mitigation measure of having CPUC audit tests conducted by others. SFMTA is working with CPUC to advance the certification process that must be completed in advance of testing.

ATTACHMENT D – AWARDED CONTRACTS

The following sections provide the status of ongoing contracts associated with the CSP. Note that the Disadvantage Business Enterprise (DBE) participation percentages are updated by SFMTA on a quarterly basis. The current values are through *September 30, 2020.*

Contract No.	***1250***	
Contract Description:	**UR #1 (Yerba Buena/Moscone Center Station [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%
	Small Business Enterprise (SBE) Participation	97%
Schedule:	Notice to Proceed (NTP) issued January 2010. Substantial completion in June 2011.	
Issues or Concerns:		

Contract No.	**1251**	
Contract Description:	**UR #2 (Union Square/Market Street Station [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 closeout 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 closeout.	
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	*$941.9 million*
	% Expended	*93.97%*
	SBE Participation	22.9%
Schedule:	NTP issued June 17, 2013. Substantial Completion planned February 2018 and *forecast March 2022*.	
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. Prime: CSDG**	
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. Prime: HNTB-B&C**	
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:	Work is ongoing.	
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:	Work is ongoing.	
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:		

ATTACHMENT E – PROJECT MILESTONES/KEY EVENTS

	(P = Planned Date, A = Actual Date, F = Forecast Date)
Preliminary Engineering (PE)	Authorized in July 2002 (A)
Record of Decision (ROD):	Issued November 26, 2008 (A)
FD:	Authorized in January 2010 (A)
FFGA Request:	Submitted September 2011 (A)
FFGA Executed:	October 11, 2012 (A)
Groundbreaking: (Utility Relocation Contract)	February 9, 2010 (A)
Tunnel Excavation Complete (hole through):	June 2, 2014 (southbound); June 11, 2014 (northbound) (A)
Cross Passages Complete:	December 20, 2014 (P); April 15, 2015 (A)
Tunneling Substantial Completion:	April 15, 2015 (A)
Station Construction NTP:	June 17, 2013 (A)
Station Construction Substantial Completion:	February 24, 2018 (P); *March 31, 2021 (F)*
RSD:	December 26, 2018 (P); *March 31, 2022 (F)*

Schedule contingency management criteria were developed from the FTA Risk Assessment prior to entry into FD. Minimum schedule contingency levels at various project milestones or "hold points" were agreed to with SFMTA at Risk Workshop #4, which was held in 2009. The FTA-recommended schedule contingency for the current stage of the project is four months.

ATTACHMENT F – ROADMAP TO REVENUE OPERATIONS *(To be updated in 1st Quarter 2021)*

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				
Prepare Schedule for Testing (update)				
Finalize Test Procedures				
Conduct System Integrated Testing with trains, including procedures and reports				
Complete Testing Reports				
Operating Plan, Rules, and Training				
Finalize Operating Plan				
Finalize/revise SOPs, manuals, and rulebook as applicable				
Operations Manuals				
Staffing and Operations Plan				
Training of Operations and Maintenance (O&M) personnel				

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Emergency response plan, training, and drills				
Facility and Right-of-Way Maintenance Plan, Equipment, Facilities, and Training				
Maintenance Schedules and Procedures				
Spare Parts Requirements				
Maintenance Manuals				
Maintenance Training				
Pre-Revenue Operations				
Finalize and/or update RAP and/or Pre-Revenue Operations Plan				
Implement Rail Activation Committee				
Develop/revise SSPP & Security Plan (approved by State Safety Oversight (SSO))				
FTA Office of Safety & Security Readiness Review				
PMOC OP-54 Readiness for Revenue Operations Review Report, Phase I				

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				
Pre-Revenue Operations				
Public Outreach				
Develop Safety Outreach Plan				
Provide Community Outreach				
Grand Opening Plan				
Construction Closeout				
Closeout of Non-Conformance Reports				
Punch List Complete				
Certificates of Occupancy/Substantial Completion				
Safety, Security, and Fire-Life Safety Certifications				
Update/Finalize SSMP				
Finalize and/or update Safety Certifiable Item List (SCIL) and SSCP				
Implement Safety and Security Certification Committee				

Roadmap to Revenue Operations - Central Subway Project, San Francisco Municipal Transportation Agency – DRAFT				
Description	**Estimated Start Date**	**Estimated Completion Date**	**Actual Completion Date**	**Notes**
Implement Fire Life Safety Committee				
Preliminary Hazard Analysis (PHA)				
Threat and Vulnerability Analysis (TVA)				
Design Criteria Reflecting Safety and Security Requirements				
Review status of quality non-conformances				
Closeout of non-safety critical items				
Closeout of safety critical items				
Complete Safety & Security Certification Verification Report (SSCVR)				
Document Workarounds/Open Items List				
Verify emergency drills, tabletops, training, etc. are completed				
SSO final certification/signature				

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 RSD				
FFGA RSD				

ATTACHMENT G – PROJECT MAP