# central **T** subway

# Pouring at the Portal

Concrete forms have been installed to pour the remaining portion of the Tunnel Portal invert and track plinths



# **Progress Report**

**March 2017** 













nsportation Agency

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<u>Cover photo:</u> At the bottom of the tunnel portal ramp, the northbound and southbound tracks transition to the twin subway tunnels, curving outward slightly before running parallel to the Yerba Buena/Moscone Station just a block away. Workers have installed concrete forms to construct the remaining elements of the tunnel portal invert, and track foundations called plinths. More photos can be found starting on page 36.

<u>Above photos</u>: Crews have re-excavated the full height of the egg-shaped crosscut cavern to be able to access the inverts of the side drifts for the next phase of excavation. New ventilation systems have been installed, and the next phase of excavation is well on its way.

See the Appendix E final page for CS websites hyperlinks and public outreach on



Light streams in the south end of the station box, where the initial "rat slab" for the remaining unconstructed portions of the platform level invert has been poured.

# **Executive Summary**

Continued excavation at YBM, UMS and CTS Stations as we advance to the respective station inverts. STS continues tunnel invert drain pipe and catch basins installations in the Southbound and Northbound tunnels.

**Chinatown Station -** Headhouse excavated to 16' below Temp Level 5.0 walers and struts. Complete excavation of the Platform Caverns (North and South) of Right Side Drift and Left Side Drift Top Headings and Temp Invert for both headings. Incidental street work (minor), ongoing monitoring and surveying. Mockup for Final Waterproofing and Lining underway for the North Emergency Egress (NEE) Shaft and Tunnel.

**Union Square/Market Street Station** - North Concourse: Install utilities. Worked on PG&E #7 installation on Geary in front of the Union Square Garage. Platform Station: Completed Temp Level wales & struts; progressed to Mezzanine Level except for 3 struts blocked by ramp and began Platform Strut Level.. Ellis Annex: Worked on PG&E gas line, water line installations, AT&T work, traffic signal and traffic controller box installations and completed OCS pole and write installation Sequence 2. UMS North Entrance: Continued structural streel and fan level trench excavation, both approximately 80% complete.

**Yerba Buena/Moscone Station -** Sidewalk restoration in progress on west side of 4<sup>th</sup> Street south of Howard Street intersection. Excavation to Invert level beneath Temporary Strut Level 6 is complete to south headwall in Station Box. Placement of waterproofing and 3rd of 3 mud slabs within station box at Invert Level is complete. Installation of metal stairs at Stair 1 and Stair 4 are in progress. Placement of mechanical equipment curbs on Mezzanine Level is in progress.

**Surface, Track and Systems**– Continued 36" sewer rehabilitation. Continued 48" sewer installation. Continued MRY ductbank installation. Continued AWSS installation. Continued pavement renovation. Continued invert slab construction.

Tunnel - Contract administrative closeout is ongoing.

Total project costs to date are \$1,045.65 million, an increase of \$9.61 million over last month. The total cost to date equals 66.25% of the total project budget of \$1.578 billion. The Master Project Schedule forecasts a Revenue Service Date of November 2019.

The Stations Contractors' Safety Reports shows that one recordable accident took place this month. The rates of work site accident incidents by the marthours worked, continue to be below industry standards - see tables on page 34.

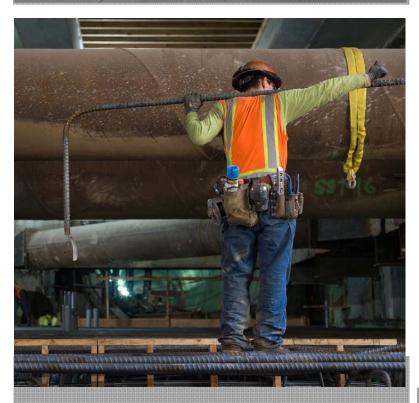
# **Key Milestones**

# Constructing the remaining sections of station box invert at YBM

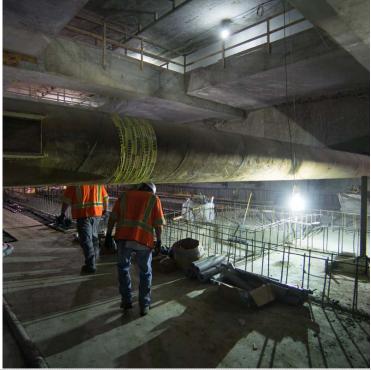


**1** Workers install concrete forms and utilities

MILESTONE	DATE EXPECTED
General	
Revenue Service	November 2019
Contract 1300 Stations, So	urface, Track, Systems
Notice to Proceed (NTP 1)	June 17, 2013 (A)
Notice to Proceed (NTP 2)	January 12, 2014 (A)
Substantial Completion	February 10, 2018



**2** Rebar is installed to construct large sections of the invert slab



**3** Concrete is poured and the next phase of construction begins

# **Costs and Schedule**

#### Costs (See Appendix A for Details)

The Current Cost Estimate (CCE) for the Central Subway Project is **\$1.578 billion** in year of expenditure dollars (\$YOE). This total project cost is shown at the top of Report 7.1, Program Project Budget. This capital cost projection incorporates allocated and unallocated contingencies to cover the risks associated with the project completion.

Total net incurred costs for the project are \$1,045.65million, a \$9.61 million increase over last month. The cost to date figure reflects expenditures through FAMIS 786 Report (\$1,009.70 million) plus the utilities joint trench Form B Reimbursement payment (\$11.20 million), invoices currently being processed (\$20.81 million) and estimates of outstanding pay requests (\$4.00 million). This incurred amount equals 66.25% of the total project budget of \$1.578 billion.

The current funding level to date is \$1,329.79 million. This represents 84% of the total project budget.

#### Earned Value Analysis

In March 2017 Report, the Preliminary Earned Value Analysis reports is based on the SFMTA March Schedule Update. The Planned Value, Earned Value, Actual Cost, Percent Complete and resulting indexes as follows:

Preliminary March Earned Value	
Overall Budgeted Cost:	\$1,578,300,000
Planned Value:	\$1,351,937,374
Earned Value:	\$1,031,886,602
Actual Cost:	\$1,045,653,328
Schedule Performance Index (SPI):	0.76
Cost Performance Index (CPI):	0.99
Percent Complete:	65.3%

. . . .

#### Schedule Highlights

The Master Project Schedule (MPS) below includes progress through March 2017. The March 2017 Schedule Update submittal from Contract 1300 Contractor was not submitted due previous update corrections that needed to be completed before TPC provide the March update. The Contract 1300 schedule represented in this report is based on the SFMTA March 2017 Schedule Update.

The MPS shows a forecast Revenue Service Date of November 2019.

The controlling critical (longest) path of the MPS runs through CTS Excavation succeeded by STS Startup & Testing, Commissioning and Pre-Revenue Activities to the Baseline Finish and Revenue Service Date. See Appendix B – Longest Path. The latest schedule shows the longest path running through the Chinatown Station (CTS). Contractor is required to implement a Recovery Schedule to put the Project back on schedule.

Schedule Contingency is fully utilized on the critical path of the MPS, which is below the Minimum Schedule Contingency level of 6 months. A schedule re-evaluation will be performed, utilizing the updated Contract 1300 Schedule. Recovery options are being implemented in key areas as work proceeds. SFMTA continues to meet with Contractor to discuss all schedule concerns and comments. Excavation and Support of the Top Right Heading & Bench was completed with lower than expected levels of production and the contractor is now working on Excavation and Support Top Right and Left Step 3 Invert of the South Platform Cavern. Despite expected ground conditions as described in the GBR, TPC's mining productivity has not been as planned. TPC has continued the mitigation effort to institute two-twelve hours shifts or six days per week, in an effort to recover some lost time. Contract 1300 Schedule shows 24 days of delay in March with a new forecasted Revenue Service Date of 14 November 2019

Contract 1300 Contractor submitted twenty-eight (28) Schedule Updates from December 2014 to March 2017. SFMTA rejected fifteen (15) Schedule Updates from December 2015 to April 2016 and June 2016 to March 2017. SFMTA approved as noted the September 2015, October 2015, November 2015 and May 2016 Schedule Updates. Contractor has been directed to develop a Recovery Schedule as required by Contract and correct out-of-sequence and Retained Logic driving many of the forecast dates. Review of schedule updates as well as identifying recovery options is ongoing.

#### Contract 1300 - WP1253 UMS / WP1254R CTS / WP1255 YBM / WP1256 STS:

The Contractor, Tutor Perini Corporation's (TPC) baseline schedule is incorporated into the master program schedule. The preliminary SFMTA Contract 1300 March 2017 schedule is used within the March Report. The SFMTA Contract 1300 March 2017 schedule is based on the approved baseline schedule logic with adjustments made for fixing retained logic and lags. The SFMTA will continue to use the SFMTA Contract 1300 schedule update as a forecasting tool going forward until the Contract 1300 Contractor submits an acceptable schedule that addresses all of SFMTA scheduling concerns.



Workers wrangle and position a large steel I-beam just lowered into the station box from the surface.

#### Work Package P-1254R (CTS) has performed the following work this month:

- Headhouse excavated to 16' below Temp Level 5.0 walers and struts
- Complete excavation of the Platform Caverns (North and South) of Right Side Drift and Left Side Drift Top Headings and Temp Invert for both headings
- Platform Caverns (North and South) begin excavation of Left and Right Side Drifts invert
- Incidental street work (minor), ongoing monitoring and surveying
- Mockup for Final Waterproofing and Lining underway for the North Emergency Egress (NEE) Shaft and Tunnel

#### Work Package P-1253 (UMS) has performed the following work this month:

- North Concourse: Worked on PG&E #7 box installation on Geary in front of the Union Square Garage
- Platform Station: Completed Temp Level wales & struts; progressed Mezzanine Level except for 3 struts blocked by ramp and began Platform Strut Level
- Ellis Annex: Worked on PG&E gas line, water line installations, AT&T work, traffic signal and traffic controller box installations, and completed OCS pole and wire installation Sequence 2
- UMS North Entrance: Continued structural steel and fan level trench excavation, both approx. 80% complete

#### Work Package P-1255 (YBM) has performed the following work this month:

Sidewalk restoration in progress on west side of 4<sup>th</sup> Street south of Howard Street intersection

- Excavation to Invert level beneath Temporary Strut Level 6 is complete to south headwall in Station Box
- Placement of waterproofing and 3rd of 3 mud slabs within Station Box at Invert Level is complete
- Placement of concrete in Invert Level sections 1, 2, 3, and 6 of 6 is completed in the Station Box
- Preparation for Invert concrete placements 4 and 5 of 6 in Station Box is in progress
- Installation of metal stairs at Stair 1 and Stair 4 are in progress
- Placement of mechanical equipment curbs on Mezzanine is complete

#### Schedule Highlights - Continued

#### Work Package P-1256 (STS) has performed the following work this month:

Continued 36" sewer installation at 4<sup>th</sup>/Brannan intersection Continued MRY ductbank at 4<sup>th</sup>/Townsend intersection Continued pavement renovation on 4<sup>th</sup> Street between King and Welsh Continued AWSS lateral installation on 4<sup>th</sup> Street between Welsh and FreeIon Completed AWSS main installation at 4<sup>th</sup>/Bryant Continued water line installation at 4<sup>th</sup>/Townsend Completed 36" sewer installation at 4<sup>th</sup>/Welsh intersection Completed 48" sewer installation at 4<sup>th</sup>/Welsh intersection Continued invert slab construction at tunnel portal Started track installation at tunnel portal

# **Master Project Schedule**

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A worker checks the air pressure on a hose inside the left side drift of the north platform cavern, while a large excavator fitted with a grinding wheel works away nearby.

# **Contracts & Construction**

#### **Construction Contracts In Progress**

#### Contract 1300: Combined Work Packages 1253, 1254, 1255, 1256

- Contractor:
- Tutor Perini Corporation
- Amount: \$846.76 million
- Contract Status: 54.73% complete construction

#### **Contracts Completed**

**Contract 1250: Moscone Station and Portal Utilities Relocation** 

Contract 1251: Union Square/Market Street Station Utility Relocation

Contract 1277: Pagoda Theater Site Demolition (Funded separately from the CS Project budget)

Contract 1252: Central Subway Tunneling

Contract SBE Participation (Updated Quarterly) See Appendix E

#### See Appendix D

# **Stations, Surface, Track and Systems**

Contract 1300 Contractor: Tutor-Perini Corporation

#### **Description of Work**

The Contract 1300 scope is to construct the Central Subway's three subway stations, one surface station, construct the 2,000 feet of surface track, and install track and operating systems throughout the new alignment. The separate station and systems work packages are presented in the following pages.

Work includes station finishes, AC and DC substations, elevators, escalators, lighting, emergency ventilation fans, HVAC fire alarm/ suppression/ protection, Cutter Soil Mixing, secant pile bottom up and Sequential Excavation Method construction, settlement monitoring, building protection, connecting to and modifying the BART Powell Street Station, PA, CCTV, signage, installation of fare collection equipment and station start-up and commissioning.

Contract I	Details	Budget/Expe	enditures⊾
Contract Awarded:	May 21, 2013	Current Budget	\$879,676,400
Notice to Proceed:	June 17, 2013	Other Project Offset	•• • • • • • • •
Substantial Completion:	February 10, 2018	Credits	\$3,123,097
Contract Award Value:	\$839,676,400	Expenditures to Date	\$472,931,531
Modifications to Date:	\$7,085,814		
Current Contract Value :	\$846,762,214		

#### 1300 Summary Schedule

Activity Name	2	)13			20	)14			20	)15			20	16			20	17			20	18			2	)19
	12	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
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Construction STS P-1256																										

## **Chinatown Station**

#### Contract 1300 - Work Package 1254R



#### **Current Work Status**

- Head house- excavated to 16' below Temp Level 5.0 walers and struts
- Complete excavation of the Platform Caverns (North and South) of Right Side Drift and Left Side Drift Top Headings and Temp Invert for both headings
- Platform Caverns (North and South) begin excavation of Left and Right Side Drifts invert
- Incidental street work (minor), ongoing monitoring and surveying
- Mockup for Final Waterproofing and Lining underway for the North Emergency Egress (NEE) Shaft and Tunnel

#### Work Expected Next Month

- Platform Caverns (North and South) continue with Left and Right Side Drift inverts
- 4' wide walkway along Chinese United Methodist Church on Washington Street to be completed

#### **Description of Work**

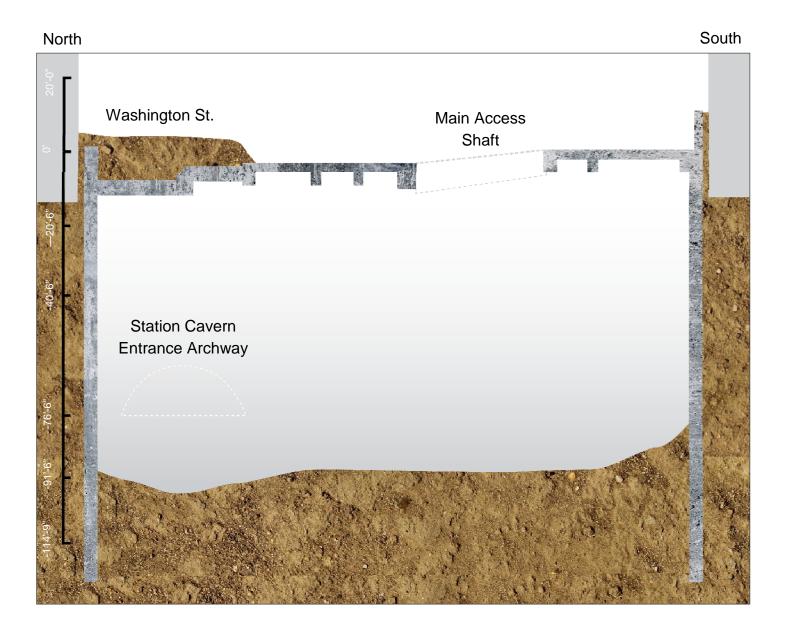
This Work Package is to construct one subway station. Includes station finishes, AC and DC Traction Power substations elevators, escalators, lighting, emergency ventilation fans, HVAC fire alarm/ suppression/ protection, slurry wall top-down construction, settlement monitoring, building protection, PA, CCTV, signage, installation of fare collection equipment and station start-up and commissioning.



#### Three Month Look Ahead

- Head house: Provide logistic support area for tunnel excavation
- North and South Platform Cavern excavation will be ongoing

#### **Station Excavation and Construction Progress Section**

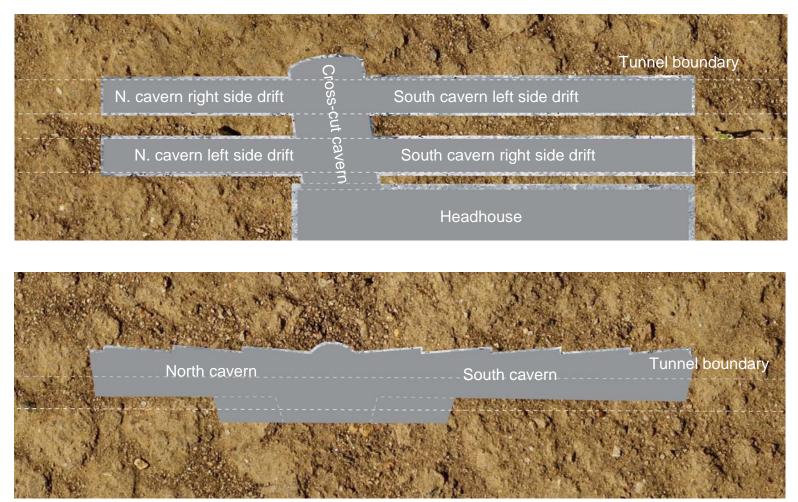




#### **Station Cavern Excavation Progress Plan and Section**

South

North



Contract	Details
Contract Awarded:	May 21, 2013
Notice to Proceed:	June 17, 2013
Substantial Completion:	February 10, 2018
Contract Award Value:	\$247,567,810
Modifications to Date:	\$2,964,460
Current Contract Value:	\$250,532,270

#### Budget/Expenditures **v**

Current Budget	\$257,567,810
Other Project Offset Credits	\$75,000
Expenditures to Date	\$131,221,079

#### CTS Three Month Schedule

y ID	Activity Name				2017			
		Mar	Apr	May	Jun	Jul	Aug	
ENTRAL SUE	BWAY PROJECT							
Construction Pl	hase							
Construction CN-1	300							
Construction CTS	Station P-1254R							
CTS.31.71.355	Install Remaining Barrel Vault Piping (1-7, 49-55, s1-s12) = 26ea						I	l
CTS.31.43.140	CTS_ Compensation Grouting - As Required							
CTS.31.71.420	BreakinTop / Bench Sidewalls for North Platform Cavern Excavation		<b>–</b>					
CTS.31.71.435	CompleteTop / Bench Invert Sidewalls & Headwall Right Side for North Platform Ci							
CTS.31.71.425	CompleteTop / Bench Invert Sidewalls & Headwall Left Side for North Platform Cav							
C.3.880	South Emergency Egress Tunnel M.E.P							
CTS.31.71.580	Excavate & Support Top Left Step 3 Invert South Platform Cavern 176Lf							
CTS.33.51.110	CTS_Perform: Utilities: Gas Line Washington/Stockton		<b>-</b>					
CTS.01.78.100	CTS_Prep/Submit Warranties (Prior to Substantial Completion)		i					
CTS.31.71.520	Initial Excavation & Support - South Emergency Egress Tunnel							
CTS.31.71.570	Excavate & Support Top Right Step 3 Invert South Platform Cavern 176Lf							
CTS.31.71.530	Complete Excavation & Support - South Emergency Egress Tunnel			3				
CTS.31.74.870	Final Lining South Emergency Egress Tunnel							
CTS.31.71.445	Install Temporary Bracing Sidewalls for North Platform Cavern Excavation							
CTS.31.71.590	CTS- Install Temporary Bracing - Sidewalls (Platform Cavern)							
CTS.31.71.455	Excavation / Support Top Center Drift & Construct Headwall for North Platform Ca							
CTS.31.71.600	Excavate & Support Top Center Drift Step 4 South Platform Cavern 176Lf							
CTS.31.71.610	Excavate & Support Center Bench Step 5 South Platform Cavern 176Lf							
CTS.31.74.550	Final Lining North Emergency Egress Tunnel							
CTS.31.71.620	Excavate & Construct Invert Step 6 South Platform Cavern 176Lf					i i		
CTS.31.71.475	Excavation / Support Center Bench Invert & Construct Headwall for North Platforn							
CTS.31.71.630	Demo Sidewalls & Repair Headwall South Platform Cavern 176Lf							
CTS.03.30.850	Concrete Stairs North Emergency Egress Tunnel							
CTS.31.71.485	Demo Sidewall, Repair Headwall for North Platform Cavern Excavation						1	
CTS.31.71.640	Stage Equipment & Construct Ramp For Crossover Breakin					•		
CTS.31.71.650	Break-in Crossover Cavern					1		
CTS.31.71.660	Excavate & Construct Left Sidewall & Headwall 268 Lf							_
CTS.31.71.670	Excavate & Construct Right Sidewall & Headwall 268 Lf							
C.3.860	North Emergency Egress Tunnel M.E.P							
CTS.31.71.495	Repair Invert Joint North Platform Cavern 110Lf							
CTS.33.31.300	CTS_Backfill & Complete Permanent Sewer Work In Washington St.							
CTS.33.11.220	CTS_Complete Water Distribution - Washington St						1	
CTS.31.71.800	TB-4 SEM Additional Flashcrete							
CTS.31.71.810	TB-5 SEM Additional Shotcrete							
CTS.31.71.820	TB-6 SEM Additional Lattice Girders							
CTS.31.71.830	TB-7 SEM Additional Steel Arches							

Schedule: Contract 1300 March 2017 Update

# **Union Square/Market Street Station**

#### Contract 1300 Work Package1253

#### **Description of Work**

This Work Package is to construct one subway station. Includes station finishes, AC and DC Traction Power substations elevators, escalators, lighting, emergency ventilation fans, HVAC fire alarm/ sup-pression/ protection, slurry wall top-down construction, settlement monitoring, building protection, PA, CCTV, signage, installation of fare collection equipment and station start-up and commissioning.

#### **Current Status This Month**

- North Concourse: Worked on PG&E #7 box installation on Geary in front of the Union Square Garage
- Platform Station: Completed Temp Level wales & struts; progressed Mezzanine Level except for 3 struts blocked by ramp and began Platform Strut Level.
- Ellis Annex: Worked on PG&E gas line, water line installations, AT&T work, traffic signal and traffic controller box installations, and completed OCS pole and wire installation Sequence 2.
- UMS North Entrance: Continued structural steel and fan level trench excavation, both approximately 80% complete.

#### Work Expected Next Month

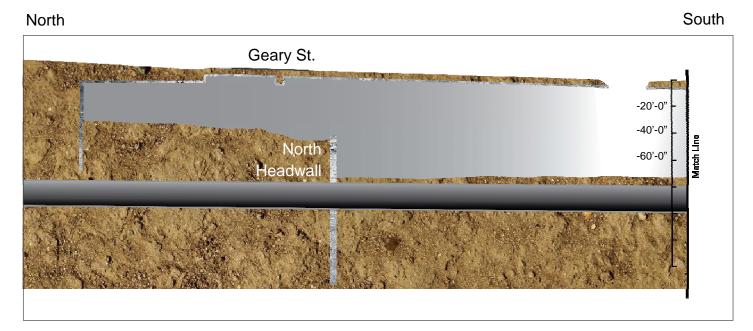
- Nighttime lane closures expected for utility work. Ellis Street expected to have nighttime intermittent closures
- North Concourse: Continue to install utilities. Excavation and structural steel deliveries. Installation of soil nail walls continues
- Platform Station: Continue to excavate and install structural & temporary steel support system
- South Concourse: Platform Station: Continue to excavate and install structural & temporary steel support system
- Ellis Annex: Complete backfilling and restoration of Ellis Street and utility installation. Begin permanent roadway restoration
- UMS North Entrance Complete fan level trench support of excavation

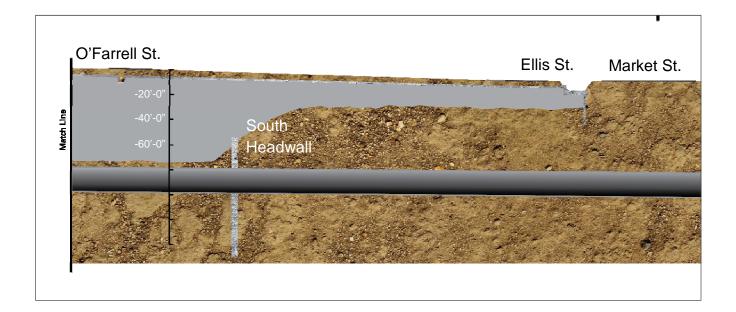


#### Three Month Look Ahead

- Platform Station: Continue to install utilities and restore street; dewatering; install permanent& temporary struts and wales; excavate bench; install studs, mesh, drain pipe & shotcrete pile walls
- Access Shaft: bottom out access shaft excavation. Install invert slab
- Access Shaft: bottom out access shaft excavation. Install invert slab
- Union Square Garage Complete testing and commissioning of new fire and life safety devices within garage and open new ramp for public use

#### **Station Excavation and Construction Progress Section**





#### Union Square Market Street Station Construction - Continued

Contract I	Details
Contract Awarded:	May 21, 2013
Notice to Proceed:	June 17, 2013
Substantial Completion:	February 10, 2018
Contract Award Value:	\$294,030,590
Modifications to Date:	\$2,188,335
Current Contract Value:	\$296,218,925

#### Budget/Expenditures 🔺

Current Budget	
Expenditures to Date	

\$314,030,590
\$189,582,582

#### **UMS Three Month Schedule**

vity ID	Activity Name					2017						
		Mar		Apr	May	Jun	Jul	Aug				
CENTRAL SU	SWAY PROJECT											
Construction P	hase											
Construction CN-												
Construction UMS												
Administrative /												
Compensation												
	vation,Construction,Restoration		1									
Excavation & Su	· · · · ·											
UMS.31.50.0250		_										
UMS.03.37.0700		0)										
UMS.31.20.1120	-		<b></b> +				 					
UMS.03.30.1525		6r	1	_								
UMS.31.20.1365			Ţ	_								
UMS.31.20.0865												
UMS.31.50.0990				_	-							
UMS.05.12.0895												
UMS.31.43.150	UMS_Compensation Grouting - As Required			_								
UMS.31.20.0970		2	-									
UMS.31.20.0975			-	_								
UMS.03.37.0875				=								
UMS.31.20.1345												
UMS.31.50.0995												
UMS.03.37.0995												
UMS.03.30.1535		10										
UMS.31.20.0980		0.			_							
UMS.05.12.1200 UMS.31.20.0985												
UMS.05.12.1220					_							
UMS.05.12.1220					_	-						
UMS.05.12.1210						_						
UMS.03.37.0990												
UMS.31.20.1030												
UMS.31.50.1050		~										
UMS.31.20.1040		*				=						
UMS.03.37.1020												
UMS.31.20.1060												
UMS.31.50.1220		-					<u> </u>					
UMS.03.37.1030		-				_	:					
UMS.05.12.2130												
						_						
UMS.05.12.1360	UMS_Attach 60 ea Platform Level Slab Stub Beam Assemblies To East Side Pile	5										

Schedule: Contract 1300 March 2017 Update

# Yerba Buena/Moscone Station

#### Contract 1300 - Work Package 1255



#### **Current Status**

- Sidewalk restoration in progress on west side of 4<sup>th</sup> Street south of Howard Street intersection
- Excavation to Invert level beneath Temporary Strut Level 6 is complete to south headwall in Station Box
- Placement of waterproofing and 3rd of 3 mud slabs within Station Box at Invert Level is complete
- Placement of concrete in Invert Level sections 1, 2, 3, and 6 of 6 is completed in the Station Box
- Preparation for Invert concrete placements 4 and 5 of 6 in Station Box is in progress
- Installation of metal stairs at Stair 1 and Stair 4 are in progress
- Placement of mechanical equipment curbs on Mezzanine is complete

#### Work Expected Next Month

- Continue interior finishes on Mezzanine & Concourse Levels
- Complete excavation to Invert Level beneath Level 6 Temporary Struts in Headhouse
- Continue installation of mud slab, waterproofing, and protective concrete for Invert

#### **Description of Work**

This Work Package is to construct one subway station. Includes station finishes, AC and DC Traction Power substations elevators, escalators, lighting, emergency ventilation fans, HVAC fire alarm/ suppression/ protection, slurry wall top-down construction, settlement monitoring, building protection, PA, CCTV, signage, installation of fare collection equipment and station start-up and commissioning.

slab sections 7 through 9 within Headhouse

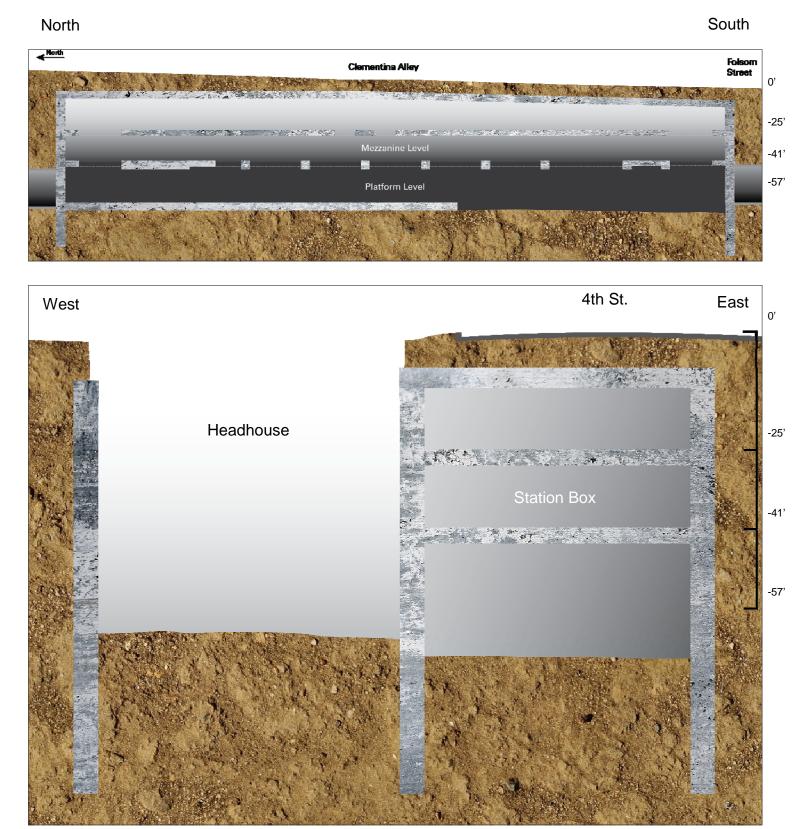
- Continue placement of Invert Level concrete slab sections within Station Box
- Begin shoring for installation of Stair 4 hatchway on adjacent to Folsom Street at south end of Headhouse
- Complete sidewalk restoration on west side of 4<sup>th</sup> Street south of Howard Street intersection
- Switch traffic and begin mobilizing for 36" force main sewer installation within intersection of 4<sup>th</sup> at Howard

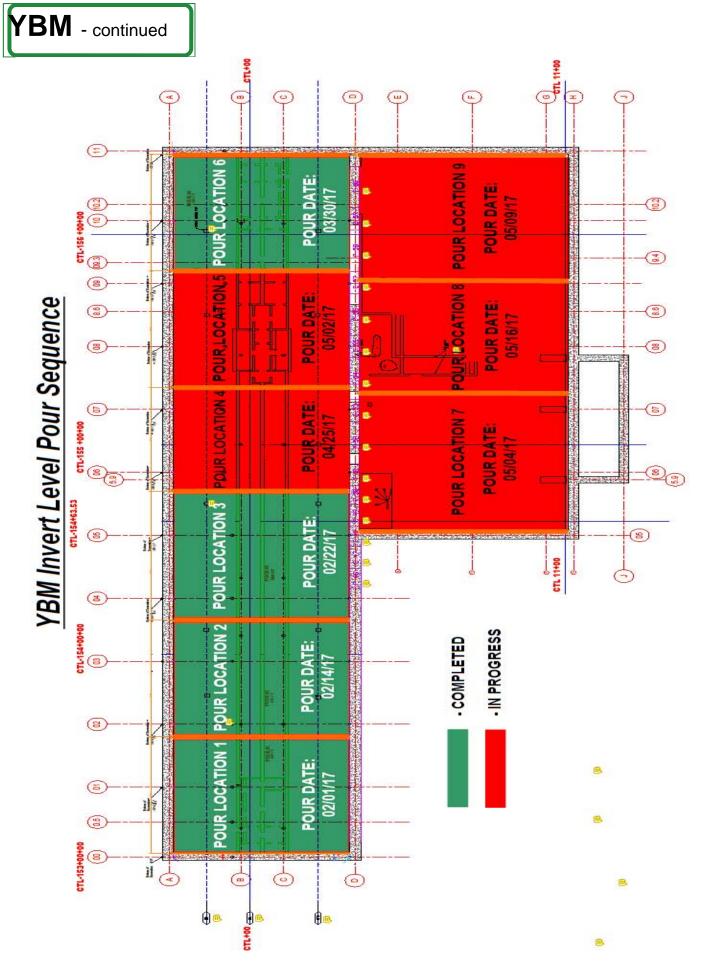
#### Three Month Look Ahead

- Continue to place Invert slab rebar and concrete within Station and Headhouse and prepare to construct Concourse and Mezzanine slabs from bottom up within Headhouse
- Continue interior finishes on Mezzanine & Concourse Levels within Station Box
- Continue placement of stairs within Station and Headhouse
- Begin installation of station power electrical vaults on Folsom Street
- Switch traffic handling and resume installation of 36" force main sewer within 4<sup>th</sup> Street and Howard Street intersection



#### **Station Excavation and Construction Progress Section**





#### Yerba Buena Moscone Station Construction - Continued

Contra	act Details	
Contract Awarded:	May 21, 2013	
Notice to Proceed:	June 17, 2013	
Substantial Completion:	February 10, 2018	
Contract Award Value:	\$158,089,000	
Modifications to Date:	\$57,052	
Current Contract Value:	\$158,146,052	

Budget/Expenditures 🔺							
Current Budget	\$163,089,000						
Other Project Offset Credits	\$415,331						
Expenditures to Date	\$97,937,943						

#### **YBM Three Month Schedule**

y ID	Activity Name					2017						
		Mar		Apr	May	Jun	Jul	Aug				
ENTRAL SUB	WAY PROJECT											
Construction Ph	ase											
Construction CN-13	100											
Construction YBM S												
Y.1.620	Open all Traffic- 4th Street											
YBM.07.14.475	Waterproofing along Slurry Walls- Stations Invert Slab (Side Only)							<u>-</u>				
YBM.03.30.870	Place 4" Aggregate Base- Station Invert Slab											
YBM.03.30.912	Form/ Rebar - Station Invert Slab Col 02-04			_								
YBM.22.14.110	YBM IV Install Trench Drains & CB's- Station Invert Slab											
YBM.34.21.0985	YBM IV 302 - Traction Power Rm: Install - NB Traction Power Ductbank Slurry											
YBM.23.31.271	YBM IV - Under-Platform Install -12" Dia Underground Pipe Duct Sector 1											
YBM.23.31.281	YBM IV - Under-Platform Install - Stub-Up Underground Pipe Duct to Aux 106											
YBM.34.21.0975	YBM IV 302 - Traction Power Rm: Install - SB Traction Power Ductbank Slurry'		-									
YBM.34.05.0260	YBM PL Install Ductbanks - NB Positive Feeder TPSS RM Penetrations to PB-0		E	1								
YBM.23.31.291	YBM IV - Under-Platform Install -12" Dia Underground Pipe Duct Sector 2		Ī									
YBM.23.31.301	YBM_IV - Under-Platform Install - Stub-Up Underground Pipe Duct to Aux 207		-				+					
YBM.34.05.0230	YBM PL Install Ductbanks - SB Positive Feeder TPSS Rm Penetrations to PB-0											
YBM.03.30.880	Place 4" Mud Slab- Station Invert Slab			<b>-</b> .								
YBM.07.14.890	Waterproofing top of 4" Mud Slab- Stations Invert Slab		i									
YBM.03.30.900	Place 2"-3" Protective Concrete- Station Invert Slab (Over Waterproofing)		1	_								
YBM.34.21.1135	YBM IV 302 - Traction Power Rm: Install -Positive Feeder Conduit To PB01 & PBI											
YBM.03.30.910	Form/ Rebar- Station Invert Slab Col 00-02			i								
YBM.26.56.190	YBM Install: Elect: Roadway Lighting (26 56 19)			•	_							
YBM.03.30.913	Form/ Rebar - Station Invert Slab Col 04-06											
YBM.03.30.911	Form/ Rebar - Station Invert Slab Col 06-08											
YBM.03.30.918	Place Concrete- Station Invert Slab Col 08-08					·· <del>···</del> ·····						
YBM.03.30.914	Form/ Rebar - Station Invert Slab Col 08-10					í 🗖						
YBM.34.05.0190	YBM UP Install: Elect: Under Platform Raceway For Negative Feeder (Traction		į.									
YBM.34.22.0350	YBM UP Install: Elect: Pull Negative Feeder Cable, Coil & Protect(Traction Pow					_						
YBM.03.30.919	Place Concrete- Station Invert Slab Col 08-10					ī						
YBM.03.30.915	Form/ Rebar - Station Invert Slab Col 10-11					·····	<u> </u>					
YBM.03.30.921	Place Concrete- Station Invert Slab Col 10-11											
YBM.31.20.580	Excavate Headhouse to Invert Level					-						
YBM.26.11.1150	YBM IV301 - Main Elect Rm: Install Penetrations Through Slurry Wall											
YBM.GP.73.2016.a												
YBM.31.71.770	Excavation Complete		!					YBM.31.7	1.77			
YBM.07.14.920	Waterproofing along Slurry Walls- Headhouse Invert Slab (Side only)							-				
YBM.03.30.930	Place 4" Aggregate Base- Headhouse Invert Slab							_				
YBM.03.30.940	Place 4" Mud Slab- Headhouse Invert Slab							_				
YBM.07.14.950	Waterproofing top of 4" Mud Slab- Headhouse Invert Slab							_				

Schedule: Contract 1300 March 2017 Update

# Systems, Trackwork, & Surface Station

#### Contract 1300 - Work Package 1256

#### **Description of Work**

This Work Package is to construct one Surface Station. Includes light rail track and systems, track invert, track safety walkways; light rail track and systems constructed on the 2,000 foot surface for the alignment from the tunnel portal, south to the tie-in to the existing Muni T-Line at Fourth and King Streets; and the surface Fourth and Brannan Street (FBS) Station.

#### **Current Status**

- Continued 36" sewer installation at 4<sup>th</sup>/ Brannan intersection
- Continued MRY ductbank at 4<sup>th</sup>/Townsend intersection
- Continued pavement renovation on 4<sup>th</sup> Street between King and Welsh
- Continued AWSS lateral installation on 4<sup>th</sup> Street between Welsh and Freelon
- Completed AWSS main installation at 4<sup>th</sup>/ Bryant
- Continued water line installation at 4<sup>th</sup>/ Townsend
- Completed 36" sewer installation at 4<sup>th</sup>/Welsh intersection
- Completed 48" sewer installation at 4<sup>th</sup>/Welsh intersection
- Continued invert slab construction at tunnel portal
- Started track installation at tunnel portal
- Started track pavement and plinth construction at tunnel portal

#### Work Expected Next Month

- Continued 48" sewer installation
- Continued 36" sewer installation
- Continued MRY ductbank installation
- Continued AWSS installation
- Continued water line installation
- Continued pavement renovation
- Continued invert slab construction at tunnel portal



- Continued installation at tunnel portal
- Continued pavement and plinth construction at tunnel portal

#### Three Month Look Ahead

- Continued waterline installation
- Continued AWSS installation
- Continued MRY ductbank installation
- Continued 36" sewer force main installation
- Continued 48" sewer force main installation
- Continued OCS pole installation
- Continued invert slab construction at tunnel portal
- Continued permanent pavement renovation
- Continued track installation
- Continued track pavement and plinth construction at tunnel portal

#### Systems, Trackwork, & Surface Station Construction - Continued

Contract Details								
Contract Awarded:	May 21, 2013							
Notice to Proceed:	June 17, 2013							
Substantial Completion:	February 10, 2018							
Contract Award Value:	\$139,989,000							
Modifications to Date:	\$1,875,966							
Current Contract Value:	\$141,864,966							

#### Budget/Expenditures

Current Budget	\$144,989,000
Other Project Offset Credits	\$2,632,766
Expenditures to Date	\$51,141,830

#### Systems, Track and Surface Station Three Month Schedule

vity ID	Activity Name	2017									
		Mar		Apr		May	Jun	Jul	Au	9	
CENTRAL SUB	WAY PROJECT		Г								
Construction Ph	ase		L								
Construction CN-13			L								
Construction STS P			L								
STS.33.31.420	STS Install New CB's Manhole. 10" & 15" Sewer Piping @ 4th St/Townsend - We										
STS.34.42.1080	STS Install: Security - SB Portal Intrusion Devices										
STS.26.05.120	STS Install: Utilities: 230Kv Electrical Transmission Casing - Assist PG&E - 4th										
STS.26.05.2720	STS_Install: OCS System - Install OCS Poles In Portal										
STS.33.11.170	STS Install: Utilities: Auxiliary Water Supply 12" Main 4th St (Through Brannan S										
STS 33.51,150	STS Pothole: Utilities: Pothole for Gas Distribution										
STS.33.31.630	Sewer Manhole relocation at King St/ 4th Street										
STS.33.51.115	STS_PG&E Design Detail Period: Utilities: Gas Distribution 6" Main/Casing - 4th		Г					i			
STS.33.11.270	STS Install: Utilities: Sewer: Casing for 10" Force Main - 4th St Sta @ Brannan {										
STS.33.11.340	STS Install: Utilities: Track Drainage- 4th St (Brannan St To Bluxome St)		L		_						
STS.33.31.260	STS Install New 18" Sewer Lateral In Welsh St To Future 48" Manhole		L								
STS.26.05.0290	STS Install: Tunnel Electrical - Unistrut For Conduit & Signal Supports - NB Porta										
STS.26.05.0530	STS Install: Tunnel Electrical - Unistrut For Conduit & Signal Supports - SB Porta		L								
STS.33.11.350	STS Install: Utilities: Track Drainage- 4th St (Bluxome St To Townsend St)		L								
STS.28.20.1790	STS_Install: Tunnel Electrical - CCTV Cameras - SB Portal To Moscone		L		1						
STS.34.42.0600	STS Install: Train Control - Train Control Signals - SB Portal to Moscone		L								
STS.34.42.2310	STS_Install: Train Control - Train Control Conduit - & JB's SB Portal To Moscone		1								
STS.26.05.0560	STS_Install: Tunnel Electrical - Telephone Conduit - & JB's SB Portal To Moscon		L								
STS.27.32.0610	STS_Install: Tunnel Electrical - Radiax Conduit - & JB's SB Portal To Moscone		L								
STS.26.05.0550	STS_Install: Tunnel Electrical - Electrical Power Conduit & JB's - SB Portal To Mo		L								
STS.26.05.0360	STS_Install: Tunnel Electrical - Electrical Power Conduit & JB's - NB Portal To Mc		L								
STS.26.05.4020	STS_Install: Tunnel Electrical - Electrical Lighting Conduit & JB's - NB Portal To N		1	 							
STS.26.05.4030	STS_Install: Tunnel Electrical - Lighting Fixtures - NB Portal To Moscone		L								
STS.28.20.0570	STS_Install: Tunnel Electrical - CCTV Conduit - & JB's SB Portal To Moscone		L								
STS.26.05.0405	STS_Install: Tunnel Electrical - Traction Power Conduit - NB Portal to Moscone		L								
STS.26.05.0640	STS_Install: Tunel Electrical - Traction Power Conduit - SB Portal to Moscone										
STS.26.05.0630	STS_Install: Tunnel Electrical - Emerg TeVSFFD TeVBlue Lights - SB Portal To M		1	[		I					
STS.33.31.250	STS_Install New Manhole, Sewer Piping & Catch Basins - East Side Welsh St/4th		L								
STS.33.31.400	STS_Install New 27" Sewer PipeCasing Connecting Offset Manhole To East MH (										
STS.33.31.445	Install New 48" Gravity Sewer Main Manhole @ 4th/Welsh St		L								
STS.26.05.2010	STS_Install: Tunnel Electrical - Mini-Power Centers EP2-EP10 - SB Portal To Mo:		L								
STS.33.31.410	STS_Install New CB's, 10" & 24" Sewer Piping @ 4th St/Townsend - East Side		1								
STS.33.31.450	Install New 48" Gravity Sewer Main - Bryant St To Welsh St.										
STS.33.31.470	Install New 48" Gravity Sewer Main Manhole @ 4th/Freelon St							1			
STS.26.05.0400	STS_Install: Tunnel Electrical - Traction Power Connection Boxes/OCS Risers N		L					1			
STS.26.05.0590	STS_Install: Tunnel Electrical - Traction Power Connection Boxes/OCS Risers SI		L								

Schedule: Contract 1300 March 2017 Update



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# **Program Components**

#### **Community Outreach**

#### Outreach public information, events and presentations for March 2017 include:

- Continued noise mitigation meetings with Tutor Perini and community stakeholders
- Ongoing outreach to merchants and residents
- Conducted meetings and face-to-face visits with various merchant stakeholders along the alignment
- Preparation and dissemination of construction notices
- Produced quarterly construction update video and other multimedia content
- Responded to constituent complaints

#### **Outreach in Support of Mitigation and Monitoring**

Team members participated in weekly progress to address neighborhood concerns

Outreach and communication efforts continue in Chinatown, Union Square, and SOMA

Weekly photo documentation of project work and editing

Weekly construction update emails sent to list of approximately 700 residents and stakeholders

#### Media Coverage

Central Su	Central Subway Media Coverage								
Date	Title (with link to story)	Source	Reporter/Writer						
3/16/2017	Last Legal Obstacle for Streetcar Loop in SF's Dogpatch Falls	SFGate	Bob Egelko						
3/17/2017	With State Supreme Court Decision, Dogpatch Streetcar Loop Clears Last Legal Hurdle	hoodline	Shane Downing						
3/22/2017	Dogpatch Muni Legal Battle Over	San Francisco News	William <u>Sandlund</u>						

#### Quality Assurance

Quality Assurance monthly activity of oversight, surveillance, audits, proactive feedback and QA records actively involves the Project construction management staff, the resident engineers, the prime construction contractor and their subcontractors.

# Stations and Systems Contract CN1300 Quality Assurance Monitoring – On Going/As Reported Previously

- UMS structural steel installation Continued Inspection/acceptance/documentation by Smith Emery CWI's of all welds associated with the ongoing Installation of some structural and mostly excavation support steel
- TPC QC Daily Inspection Reports posted to CM13 which includes TPC's Specialty Subcontractor's QC checklists and associated documentation and Smith Emery Inspection Reports; TPC's Subcontractor that provides laboratory and Inspection Services including Special Inspections required for the City of San Francisco's Department of Building Inspection (DBI) for all permitted work
- Preparatory and Initial Phase Meetings continue as scheduled. Additional Initial Phase Meetings are conducted at the request of the SFMTA or TPC QC as circumstances demand or as unanticipated issues occur
- Sequential Excavation Method (SEM) Meetings (daily at 8:00 am at the CTS site) and Instrumentation/Monitoring and Construction Management Task Force (CMTF) Meetings (Tuesdays and Fridays; changed from Thursday to better align with SEM convergence and pressure cell readings that are taken Monday and Thursday) at 9:00 am
- Bi-Weekly Quality Task Force (QTF) Meetings ongoing dialog regarding; planning for upcoming Work, identification and mitigation of in-process potentially unsatisfactory work, generation of CNCRs, welding inspection documentation and other items related to TPC's QC efforts in implementing TPC's approved Quality Control Program (QCP)
- Weekly Work Package Progress Meetings for STS, YBM, UMS and CTS
- Monthly Project Risk Mitigation, Safety and Security, MEP Progress and weekly CMB Meetings as scheduling constraints allow

#### Document comment and review:

- Contractor's submittals, e.g., review of welding, concrete (including shotcrete) and other Quality related submittals/comments as requested to support the RE's and CM, and RFIs related to quality and welding
- QA Staff continues random/spot checks of the 1300 Contractor's Field Testing lab results; the now few items requiring further action/investigation (missing or inconsistent data, compressive strength results that appear to have a very broad range of values, failure to adequately identify the location where tests/specimens are taken, non-identified low test results and such) are brought to the attention of the Contractor. Discussions continue regarding flexural specimen VS compressive strength specimens for on-gong production shotcrete panels at CTS
- Numerous meetings associated with how TPC at UMS is documenting on-going work and acceptance of work (primarily as a result of the RE's processing of pay requests predicated upon TPC QC's SE CWI's Daily Inspection Reports (DIRs) have resulted in the continuing challenging task of the development of a welding inspection log that will eventually clearly indicated exactly

#### **Quality Assurance - Continued**

what welds/connection have been included in the Monthly Pay Application as well as documenting that all welds have been performed to and accepted as required by our Contract Documents and the Welding Code (D1.1). The aforementioned continues

- Also associated with UMS steel installation is the on-going issue of TPC QC providing complete CWI DIRs in a timely manner to CM13. Currently, TPC QC is in the process of improving upon the approximately now 1 week lag of CWI DIRs being posted to CM13
- Contractor Non Conformance Reports (CNCR) Status as indicated in the TPC QC CNCR Log:
  - 9 (-11 from last month) CNCRs are currently posted to the CNCR Log as INITIAL entries (C1300 is required to generate a CNCR within 24 hours of becoming aware of what appears to be non-conforming work).
  - 10 (-16 from last month) CNCRs are currently posted to the CNCR Log as DISPOSI-TIONED and are being reviewed by associated SFMTA RE to verify that the Contractor's proposed disposition is appropriate.)
  - 35 (+23 from last month) CNCRs are currently posted to the CNCR Log as DISPOSI-TIONED (NOT ACCEPTABLE) and have been returned to the Contractor because the RE's review of the Contractor's proposed disposition determined that the proposed disposition is not appropriate and must be revised).
  - 22 (-4 from last month) CNCRs are currently posted to the CNCR Log as APPROVED because the suggested REPAIR dispositions have been approved and the CNCRs will remain open until the approved REPAIR procedure is performed.
  - ♦ 163 (+ 14 from last month) CNCRs are currently posted to the CNCR Log as CLOSED.
  - 37 (+1 from last month) CNCRs are currently posted to the CNCR Log as VOIDED (subsequent evaluation of the INITIAL CNCRs determined that a CNCR is not warranted)
  - ♦ 290 (+7 from last month) CNCRs are currently posted to the CNCR Log

#### <u>QA Issues</u>:

• None to report for this period

#### QA Concerns:

- As is typical to similar Projects, work performed prior to receipt of approval status of required submittals/RIFs with/without knowledge of QC remains a potential item(s) of concern
- TPC's Record Document (as-built) effort refinement, to include CNCRs and a timely recording of work performed that is different than what is required by the latest approved Conformed Design Drawings. Follow-up Quality Assurance Surveillance QAS076 was conducted; posted to CM13 and provided to TPC for their action. This follow-up Surveillance documents, as had previously been identified in QAS072 (provided to TPC for their corrective action - January of 2016) some lack of conformance to the requirements of the *Record Document* Specification Section 01 78 39 (As-Builts)
- Revision of and adherence to approved Required Excavation Support System (RESS) sheets at CTS, as expressed by the RE/DSP's Senior Engineers, at the daily SEM Meetings. Note that the required changes to and approval thereof of RESS sheets, prior to the start of effected Work, continues to be implemented in a most acceptable manner

 The effort associated with the UMS RE and RE Staff ensuring that only acceptable work is included in the RE's approval of the Contractor's monthly invoice. The primary issue being TPC's reluctance to provide associated documentation of TPC's QC acceptance of the work included in each monthly payment invoice

#### **Other Program QA Practices Implemented**

- Close-out of Corrective Action Requests: Close outs continued from Quality Assurance staff's Audits, Surveillances and PMOC Quarterly Reviews. The status is tracked in the Corrective Action Log that is provided to the project team and the FTA PMOC
- TPC's response to Quality Assurance Audit Report QAA 026, Implementation of TPC's Quality Control Program (QCP) was received and as resources allow, is currently under review with some additional documentation/information required prior to audit closeout; specifically associated with documentation related to mechanical couplers. This audit will be closed-out as resources allow
- Conversation with SFDBI Electrical Inspection Department has begun to develop the understanding of their role for CSP. All electrical subcontractors to the C1300 General Contractor (TPC) will be required to keep a "book" that will provide the media for the DBI Electrical Inspector to document their visits and the results of their inspections. SFDBI Electrical will be involved with electrical Work physically outside of the permitted area when the Work is "connected" to the Work on private property. TPC's Superintendent at UMS is to coordinate DBI permitted Work at YBM – in particular concrete placements for invert placements 7-9



New sections of the roadway are being restored on the east side of 4th between Brannan and Bluxome.

#### **Risk Management**

Risk Mitigation Management Meeting No. 92 was held on March 2, 2017. The Risk Assessment Committee reviewed and discussed the Projects Construction Risks with ratings above 6; and Active Construction Risks rated below 6.

During this month's meeting, one (1) new risk which was introduced at February's meeting received a risk rating. In addition, the Committee also established strategies for mitigating the potential of unforeseen issues and conditions.

Currently the Program is tracking thirty-five (35) remaining construction risks and one (1) remaining requirement risk on the Project's Risk Register. With the use of an individual risk mitigation status sheet, monthly updates are provided by the Risk owner to demonstrate the assigned mitigation strategy is being implemented or suggest recommendations to alleviate issues caused by unforeseen conditions. The status of these risk items will continue to be closely monitored by the Program.

Risk #	Risk Description	Risk Owner	Risk Rating	Contract
232	Behind Schedule - Unable to Recover from Delay to 1300 Contract	ES	20	STA
240	Unresolved Assignment of Schedule Delay Responsibility (may lead to increase cost)	ES	8	STA
234	Sequential Excavation Method at CTS - Contractor's propose method will induce subsidence	DJ	7	CTS
233	Acceptance of Shotcrete Substitution - leads to final product being inferior in performance and availability of shotcrete needed for the permanent liner.	DJ	6	STA
52	Unacceptable settlement and impact on major utilities at CTS. (OLD SEWERS AND OTHERS WITHIN 20FT SPACE BETWEEN TOP OF CAVERN AND STREET LEVEL)	DJ	6	CTS
238	Quality Program is ineffective in processing the nonconformance items causing schedule impacts	ML	6	STA
205	Prolong period of CMod's creates additional cost/causes bad blood between Resident Engineer and Contractor	ES	6	STA
229	CN1300 System Acceptance Testing	AH	6	GEN
230	SFMTA Commissioning Coordination (inaccurate time for coordination or participation from Muni Ops)	AH	6	GEN
237	Non-Conforming work is not identified by TPC's Quality Control Program	ML	6	STA

#### **Top Ten Risk**

#### Program Safety & Security

The San Francisco Municipal Transportation Agency is committed to the highest practical level of safety and security standards and practices in the public transit industry. The Safety and Security Management Plan (SSMP) components are reported on below as appropriate including, Safety and Security Committee, the Fire Life Safety and Security Committee the Construction Conformance Verification and Documentation and Contractor Safety and Security.

#### Project Management/Construction Management (PMCM) Team

Safety bulletin boards have subjects covering the complacency and daily job briefings.

#### Safety Summary for the 1300 Stations Systems Track Construction Package

During the month of March, TPC had two first aid or lost time incidents.

#### Table 1300 Stations Construction Safety Record

Table 1300 below summarizes the Month to Date and Project to Date for the Stations, Systems and Track Construction contractor and subcontractors.

#### Next Month Look Ahead

#### 1300 Contract

- 1. The CTS station now has very good air flow which is monitored at beginning of shift and half way through the shift. We will be checking documentation during the month.
- 2. At the UMS station, work continues underground with excavation. TPC is planning on breaking through the segments and into the tunnels at this site. We will monitor this activity along with how the ventilation system will be set up.
- 3. At the YBM station, invert pours have been completed inside of the station. We will now be watching the head house work.
- 4. At the STS station, work continues on the utility relocations. We will be closely watching the welding process being performed at the portal opening.

#### Program Safety & Security - continued

Project Safety Record - Contract 1300

Through Month End -Mar 2017	Lost Time Cases, <1.6						
JOB TO DATE	Tutor	Subs	Total Project	Rate*			
OSHA Recordable Accidents	5	1	6	0.58			
Job Transfer or Restricted Duty Cases	0	0	0	0.00			
Lost Time Cases	1	0	1	0.10			
Total Project Incidents	6	1	7	0.68			
Man Hours Worked Through M/E Mar 2017	891,267	1,177,589	2,068,856				

SAFETY GOALS

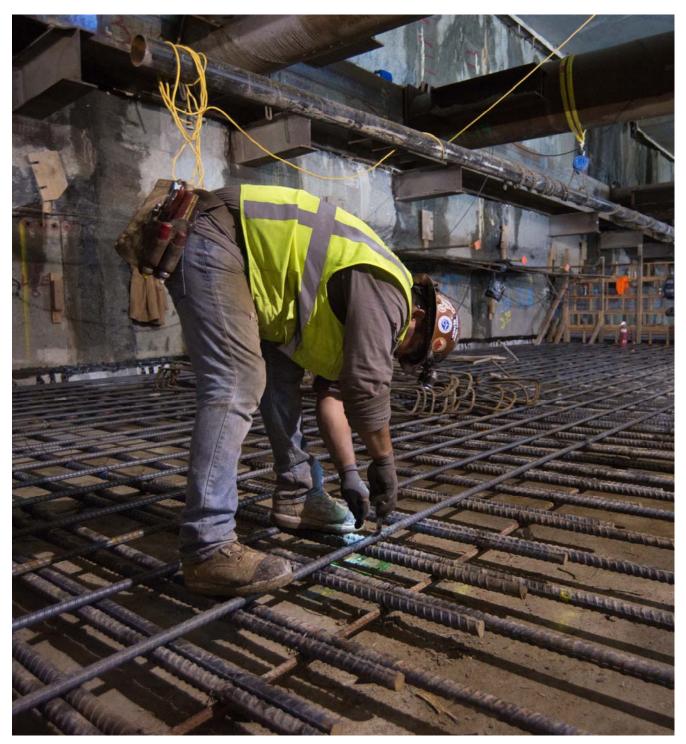
YEAR TO DATE (Month ,Day, Year to Month, Day, Year)	Tutor	Subs	Total Project	Rate*
OSHA Recordable Accidents	0	0	0	0.00
Job Transfer or Restricted Duty Cases	0	0	0	0.00
Lost Time Cases	0	0	0	0.00
Total Project Incidents	0	0	0	0.00
Man Hours Worked Through M/E Mar 2017	79,086	84,970	164,056	

\* Rate is calculated based on number of incidents divided by total number of man hours worked multiplied by 200,000 man hours. OSHA Recordable Accidents - 2008 Construction Industry Rate for Highway, Street, and Bridge Construction = 3.9

\*Classifications change at a later date due to additional information becoming available, thereby, changing the numbers on the chart. For example, what was once classified as an accident can become a first aid which leads it to no longer being recordable.

### **Technical Capacity**

No Project positions are currently open or unfilled.



A worker affixes strands of rebar to each other where they join, using lengths of wire and a pair of plyers.

#### Staffing

The Central Subway Staffing Table shows Planned and Actual full-time equivalent staff (FTEs) working on the Program by organizational function and responsibility.

	Jan-2017		Feb-2017		Mar-2017	
	Planned	Actual	Planned	Actual	Planned	Actual
Project Management						
Program Management	6.60	6.00	6.60	6.00	6.60	6.00
Quality Assurance	1.80	2.30	1.80	2.30	1.80	2.30
Contract Administration	1.40	1.40	1.40	1.40	1.40	1.40
Community Outreach	5.50	4.00	5.50	3.00	5.50	3.00
Finance	2.00	2.00	2.00	2.00	2.00	2.00
Project Controls	4.80	6.30	4.80	6.30	4.80	6.30
Subtotal	22.10	22.00	22.10	21.00	22.10	21.00
Construction Management						
CM - CN 1252	0.00	0.00	0.00	0.00	0.00	0.00
CM - CN 1300	29.98	30.98	29.98	30.98	29.98	30.98
Design Support - CN 1252	0.00	0.00	0.00	0.00	0.00	0.00
Design Support - CN 1300	12.40	12.40	12.40	12.40	12.40	12.40
Subtotal	42.38	43.38	42.38	43.38	42.38	43.38
Start Up						
Start Up / Safety & Security	3.00	2.10	2.00	2.10	2.00	2.10
Subtotal	3.00	2.10	2.00	2.10	2.00	2.10
Total	67.48	67.48	66.48	66.48	66.48	66.48

#### **Third-Party Agreements**

No activity in this reporting month.

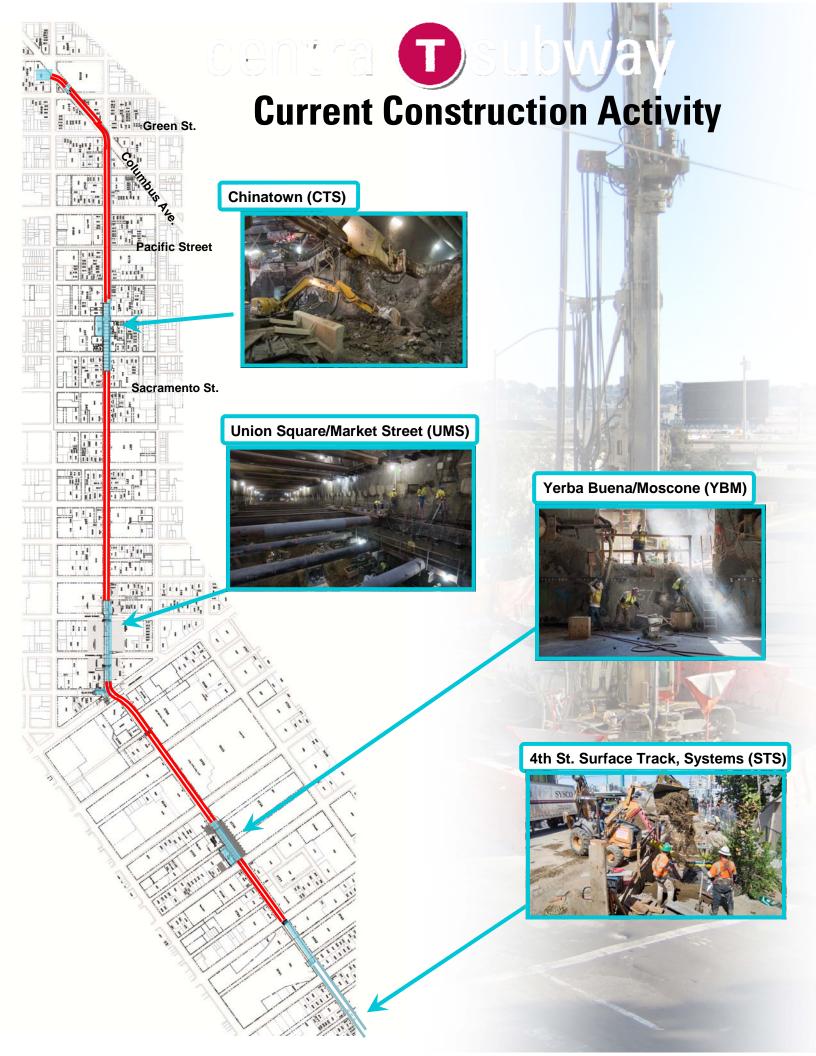
#### **LRV Procurement**

SFMTA has initiated a new light rail vehicle procurement to acquire up to 260 vehicles over the next 15 years. The scope includes the design, manufacture, delivery and testing of up to 260 light rail vehicles together with associated services, spare parts, special tools, training and documentation. This includes an initial delivery of 24 cars, scheduled for delivery from 2017 - 2018 to supplement the fleet when the SFMTA's Third Street Phase 2 - Central Subway Project extension opens.

Production of the first 12 cars continues. The third car 2003 was delivered to SFMTA March 30<sup>th</sup>, 2017, ahead of schedule. Mainline testing including load qualification testing is underway with Car 2001. Static testing continues for Car 2002. Final assembly and testing of Car 2004 is in process and is scheduled for delivery in April.



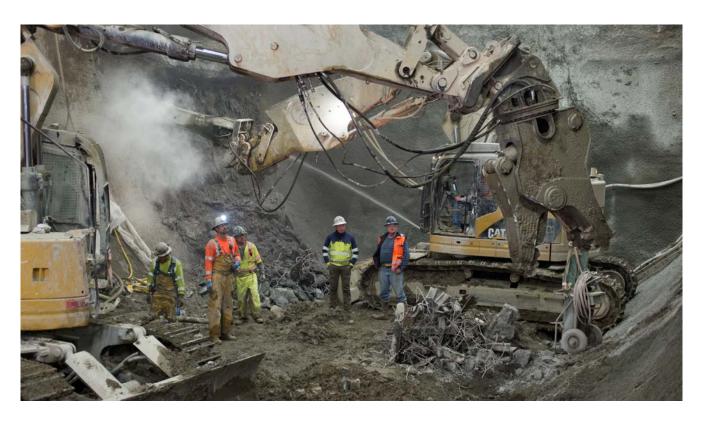
A bobcat dumps soil excavated from inside the station headhouse into a large steel bucket used to lift material to the surface for transport offsite.



# CTS



The faint outline of remaining tunnel segment pieces can be seen as it is removed during excavation of the left side drift for the north platform cavern.



Demolition jaws are moved into place to see how effective they are at removing reinforced shotcrete during excavation inside the cross-cut cavern area.

# CTS—continued

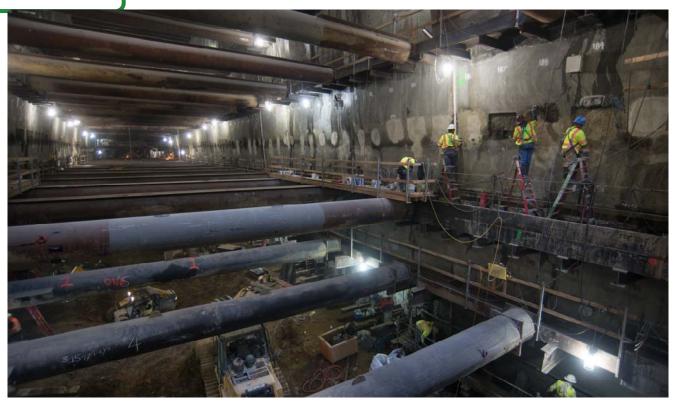


As material excavated below is brought to the surface of the headhouse, a loader collects it and distributes the load evenly in trucks for transport offsite.



A bulldozer brings excavated material from inside the station cavern to a collection area at the south end of the headhouse. Here, the driver waits for the large steel bucket that brings material to the surface to be lowered.

# UMS



A small crew applies patching to shotcrete on the west wall of the station box, while excavation and shotcrete installation work occur below.



A bobcat fitted with a jackhammer is used to remove excess concrete from exterior tangent piles, comprising the station's outer walls. In this area on the east side of the station box at O'Farrell, workers are excavating a future emergency egress stairwell.

# UMS-continued

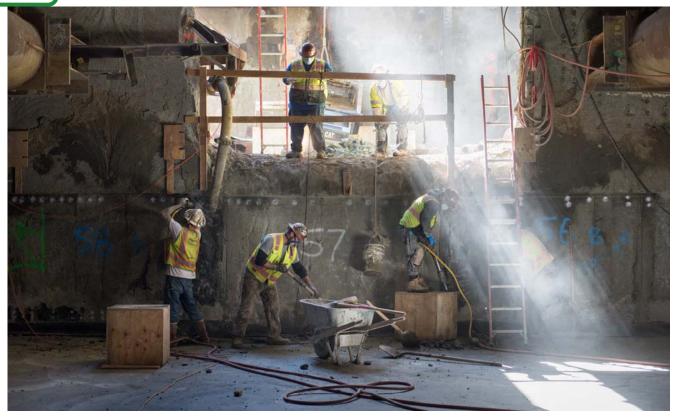


A metalworker cleans up the ends of a large steel I-beam for welding, which will be used as a bracket at the south headwall, near O'Farrell.



A bundle of utility conduits lay in a trench in a backfilled area on the south side of Ellis at Stockton and Market, where backfill and roadway restoration work are underway.

# YBM



Workers chip away at the bottom of the access portal to the station box from the headhouse, prior to constructing the station box platform level invert in this section.

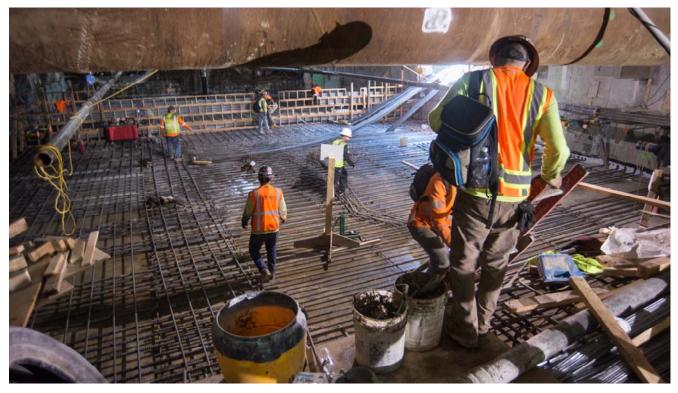


Workers install rebar at the south end of the station box's platform level, where it meets subway tunnels leading to and from the tunnel portal, only a block away.

# YBM - continued



Two men review blueprints at the access portal between the station box and headhouse during invert rebar cage assembly.



Workers arrive back at the south end of the platform level after returning from lunch, where the next two sections of the station's invert slab rebar cage are being constructed.

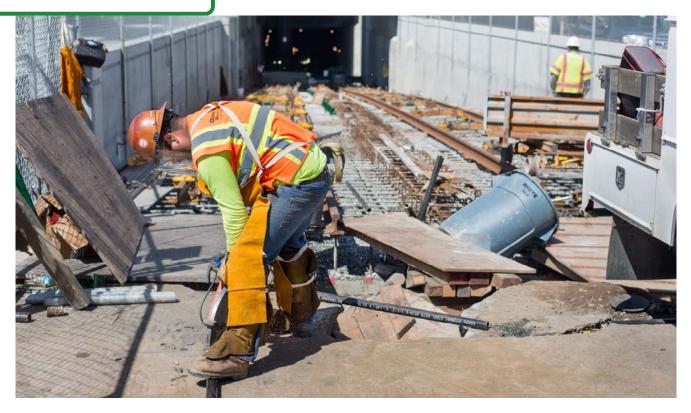


A backhoe brings a bucket of soil to bury newly-installed sewer pipes between Welsh and Bryant, on the east side of 4th.



Two new sewer lines are visible on the east side of 4th south of Bryant, as workers continue to move up the street one section of pipe at a time.

# STS—Continued



Sections of small steel pipe are cut as part of the final push to construct the remaining elements of the invert slab for the tunnel portal.



A new concrete road foundation slab is being poured at the southwest corner of 4th and Bluxome.