

Twin Peaks Tunnel Trackway Improvement Project

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San Francisco, CA

State of Good Repair - LRT

- SFMTA Agency Overview
- SFMTA SOGR Program Overview
- Twin Peaks Track Replacement Project

SFMTA Agency Overview

Multimodal Transportation Agency



SFMTA Agency Overview

SFMTA Capital Programs

- Accessibility
- Bicycle
- Central Subway
- Facility
- Fleet
- Parking
- Pedestrian
- Information Technology/
Communication
- Safety
- School
- Security
- Taxi
- Traffic Calming
- Traffic/Signals
- Transit Fixed Guideway
- Transit Optimization/
Expansion

SFMTA Agency Overview

Current Transportation System Challenges



Network, fleets and facilities in urgent need of upgrading



Fragmented network is perceived as unsafe by new users



High rate of collisions in northeast San Francisco

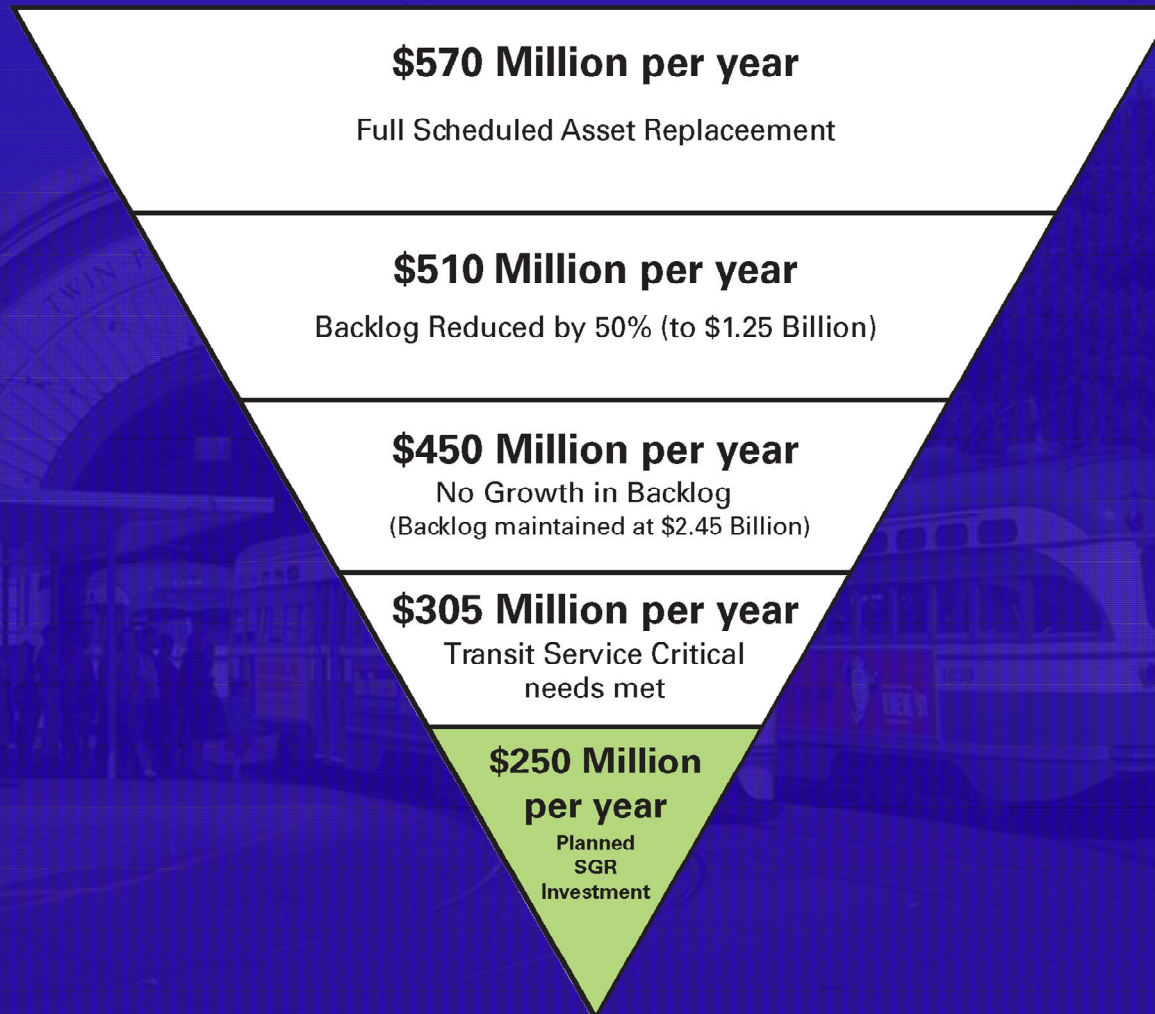


Need for transit & bicycle lanes; traffic calming for pedestrian safety



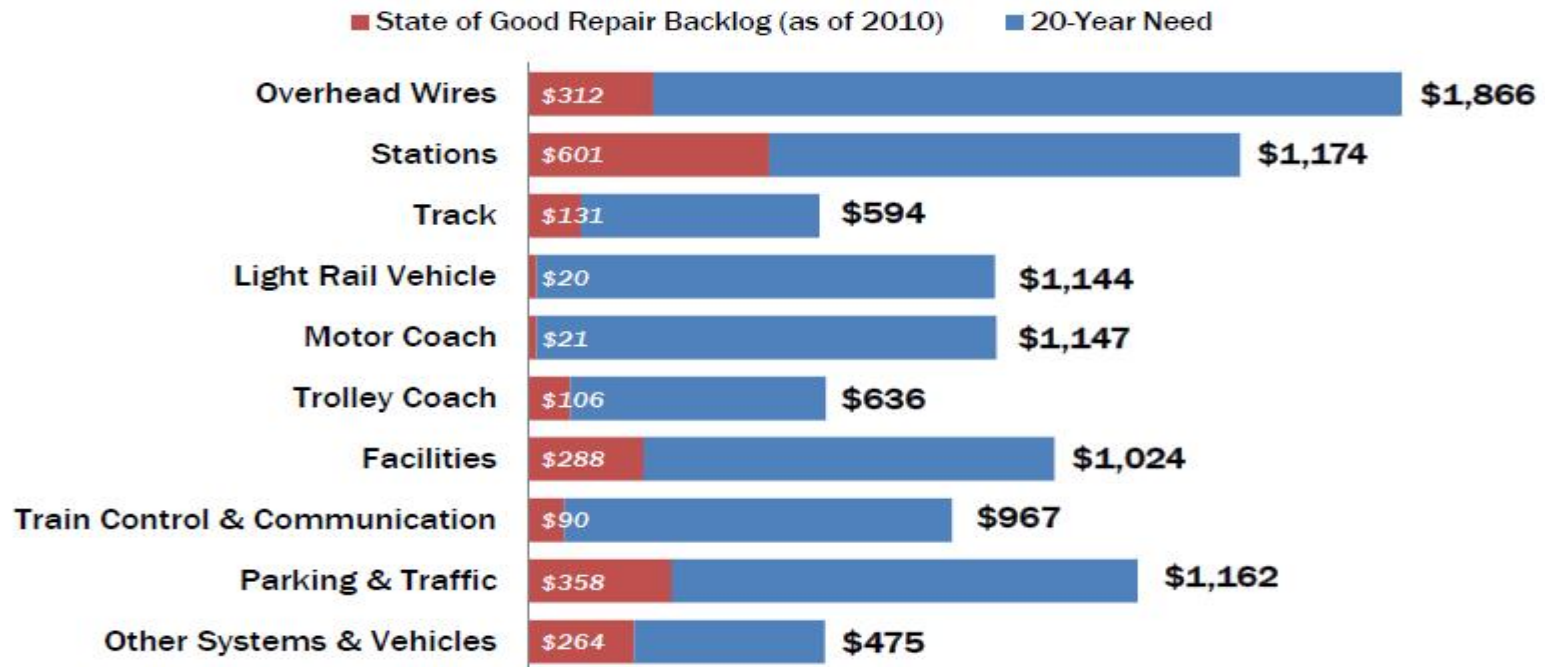
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SFMTA SOGR Program Overview



SFMTA SOGR Program Overview

20-year Unconstrained Total Needs = \$10.2 B

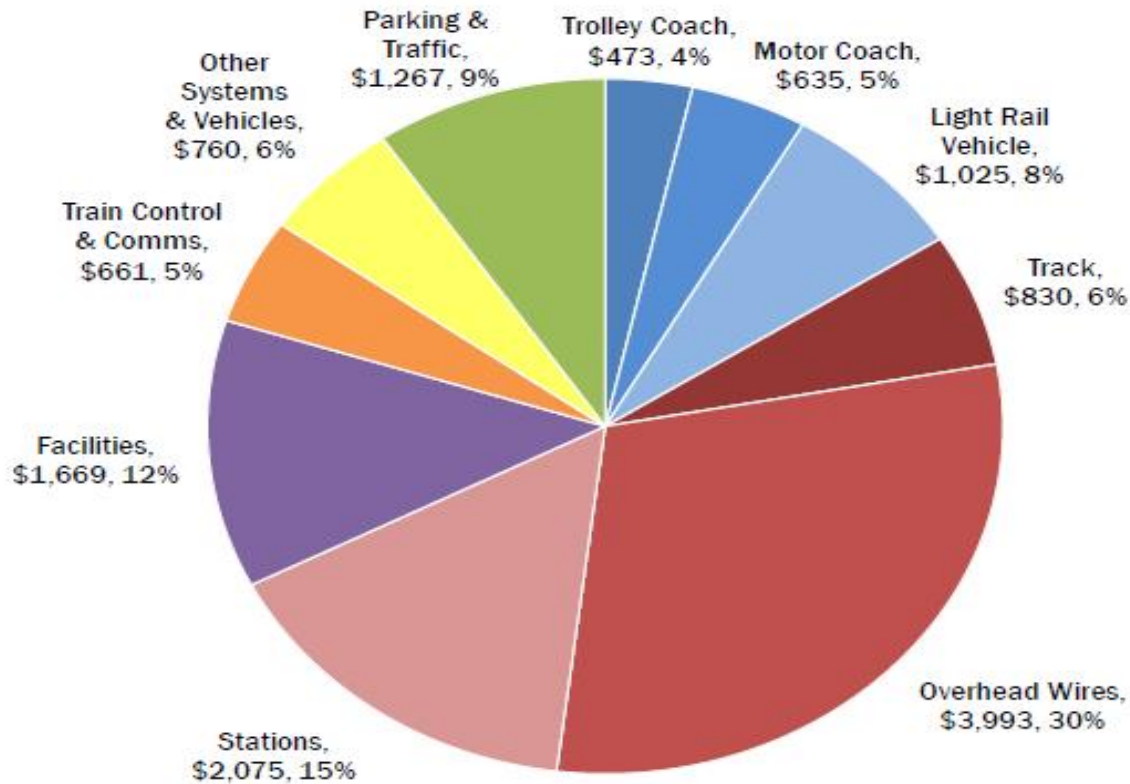


\$ millions

18

SFMTA SOGR Program Overview

Total Current Value of SFMTA Assets = \$13.4 B



millions

SFMTA SOGR Program Overview

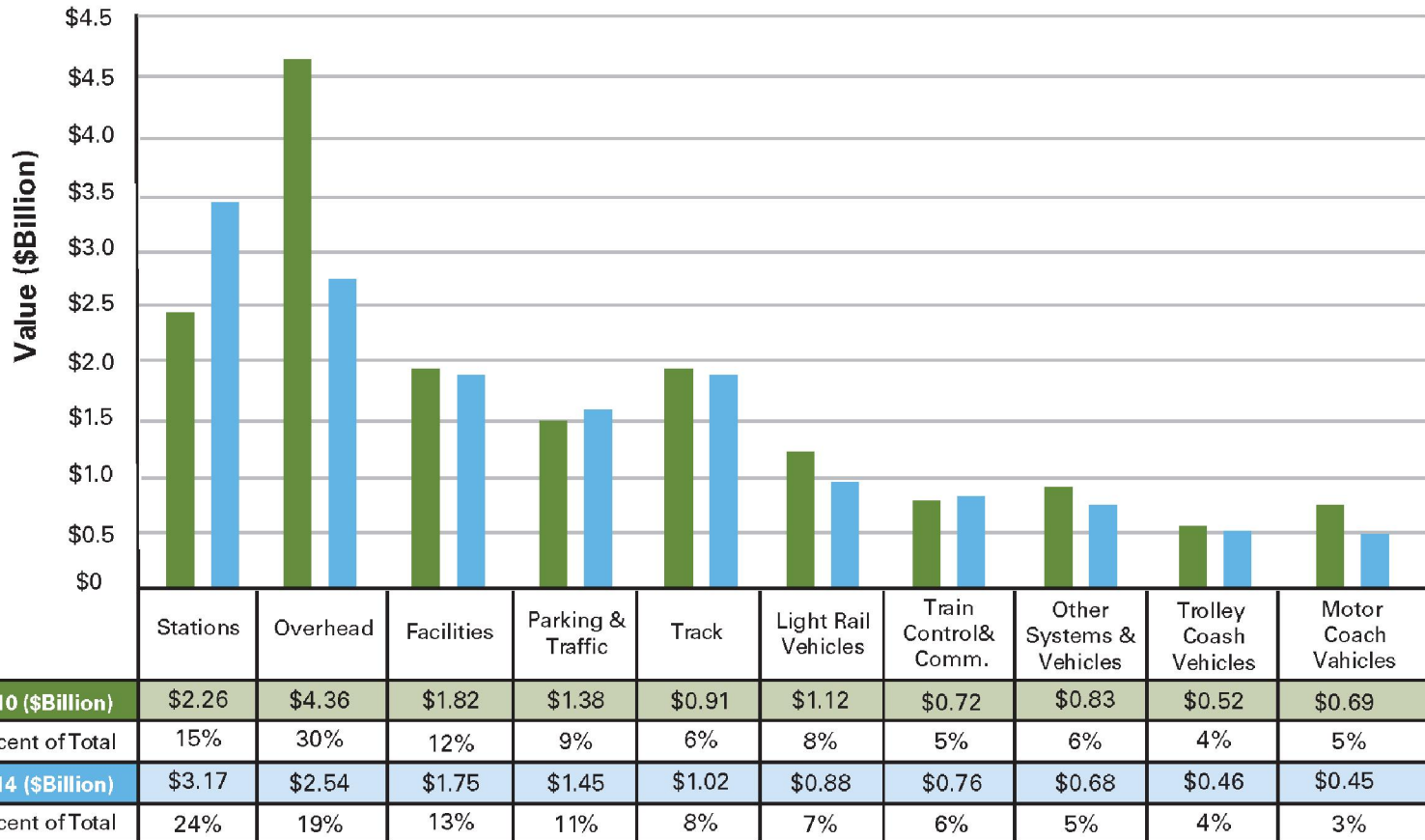
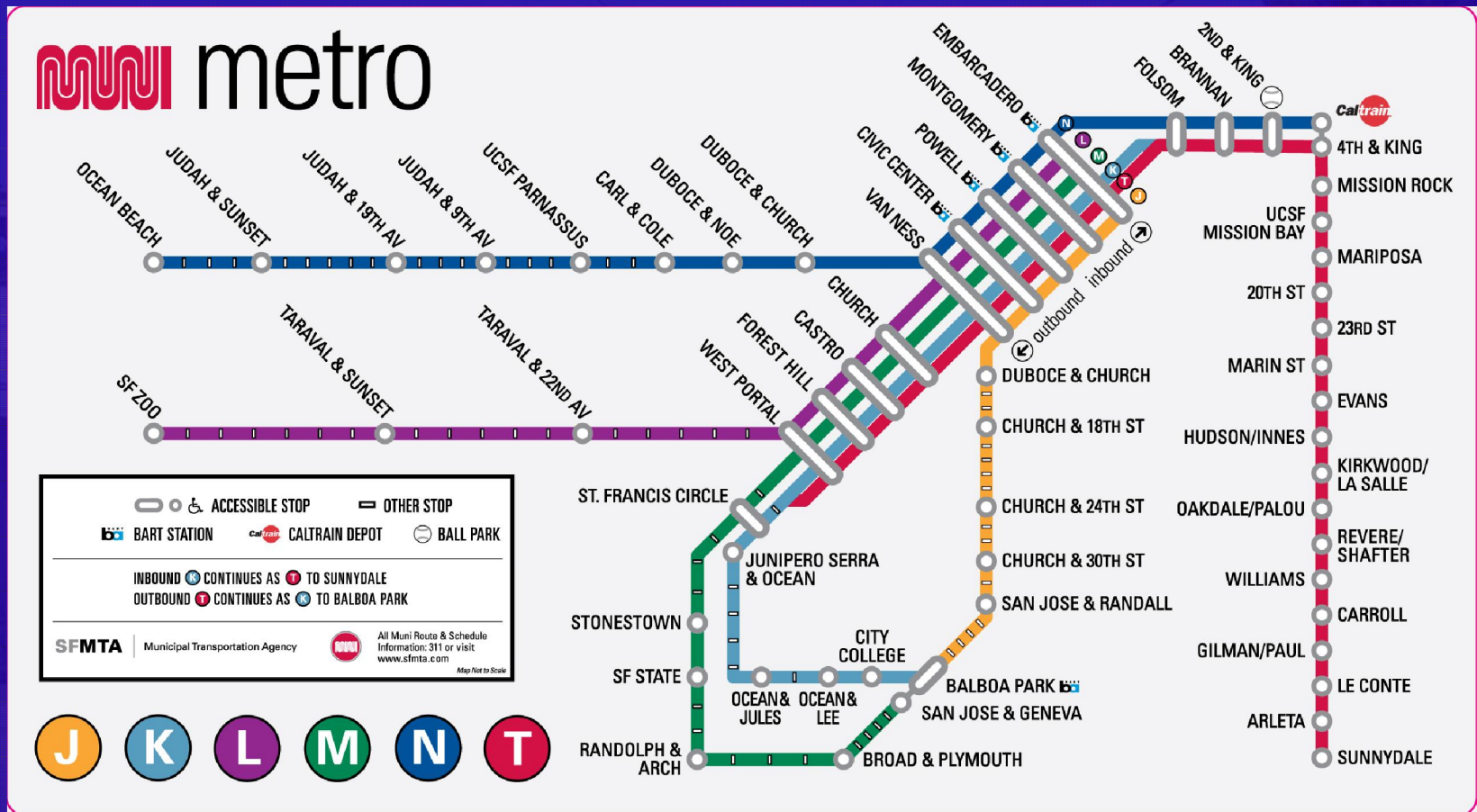
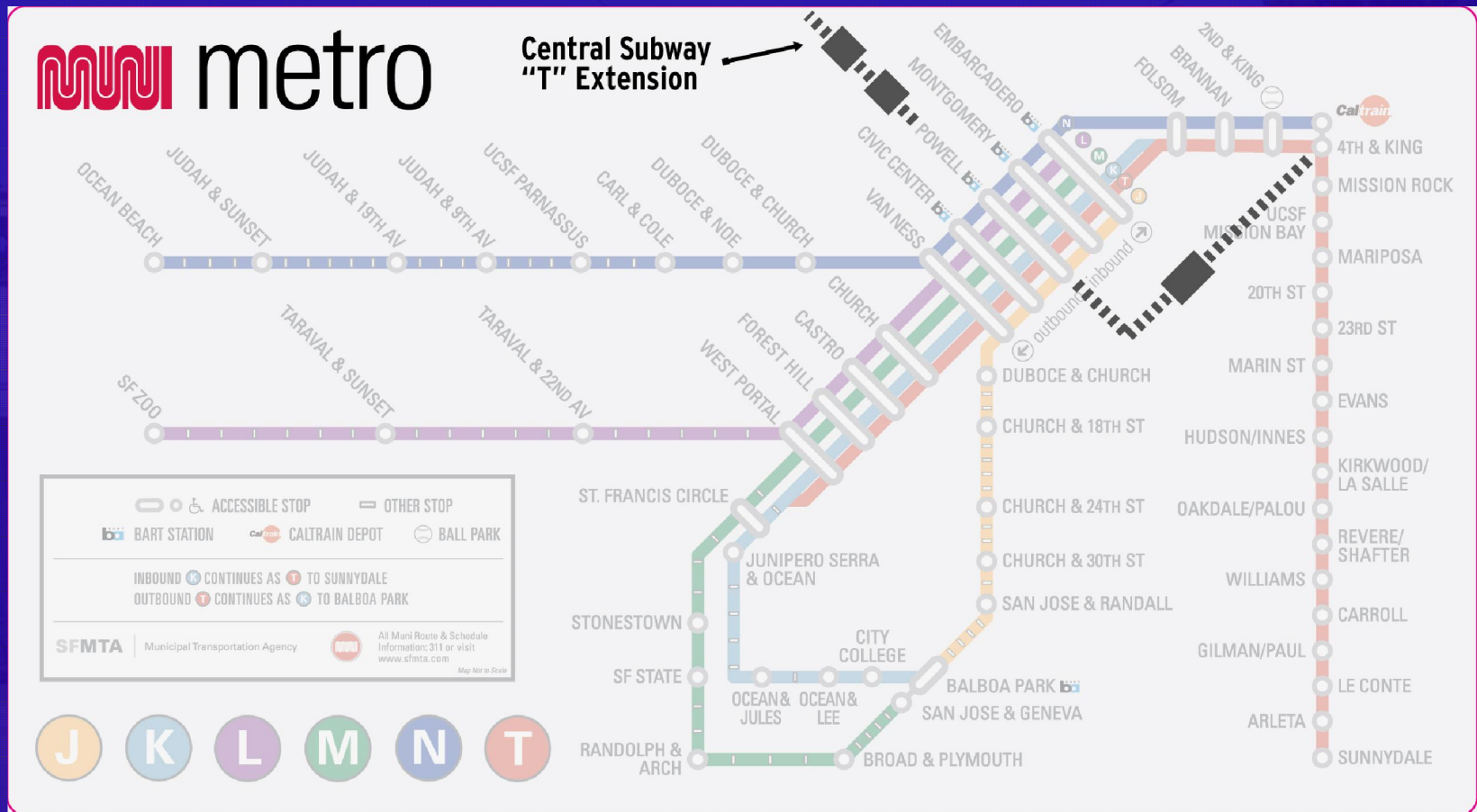


Figure 3: Total Asset Replacement Value by Asset Class, 2010 and 2014 Comparison

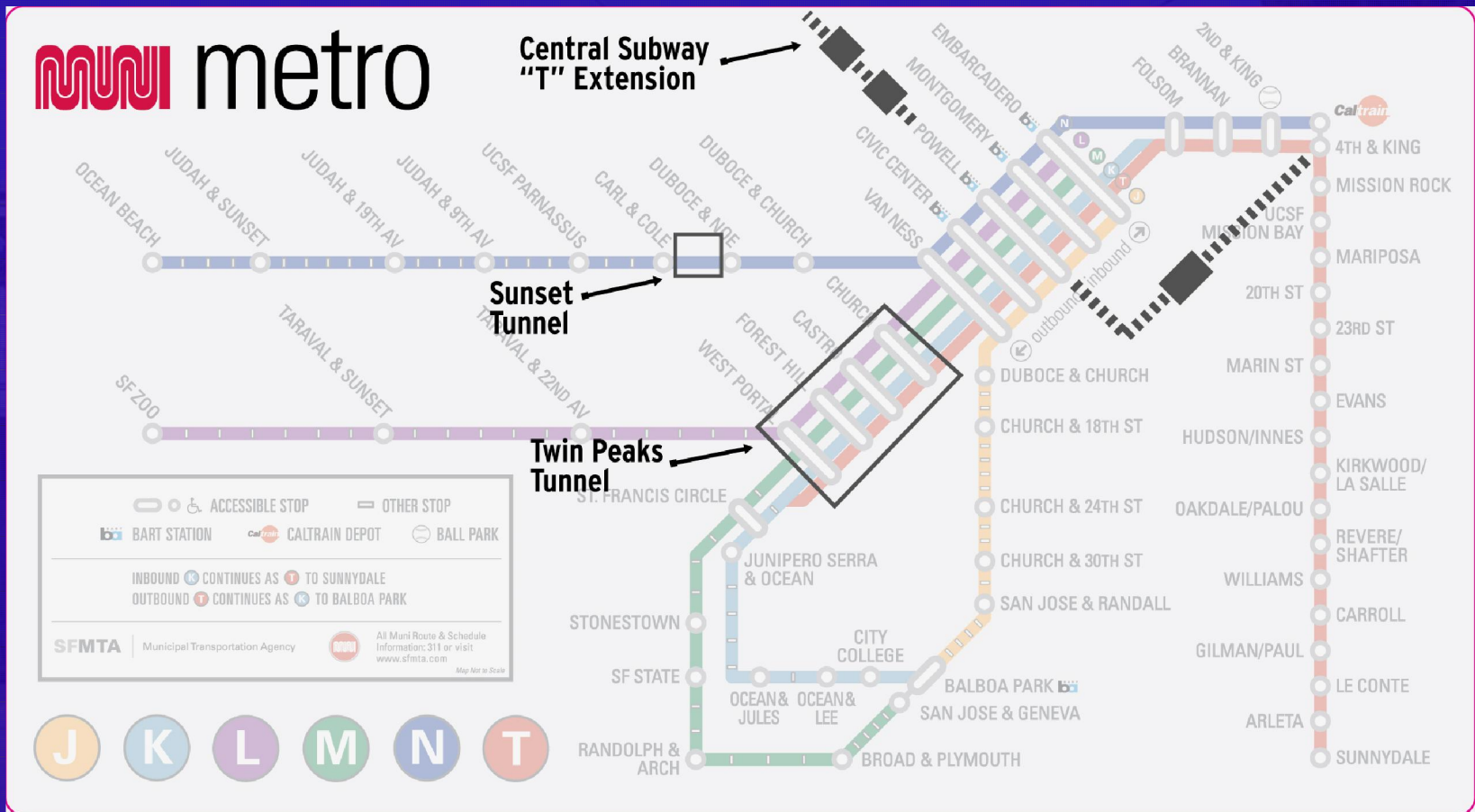
SFMTA SOGR Program Overview



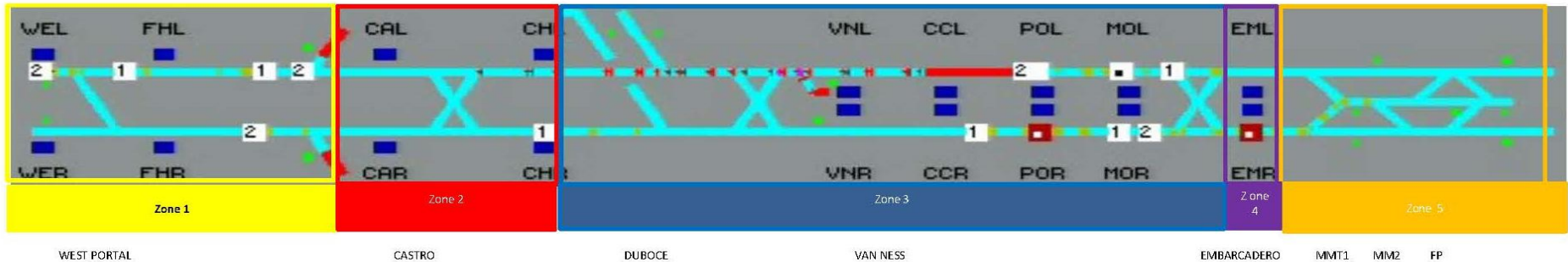
SFMTA SOGR Program Overview



SFMTA SOGR Program Overview



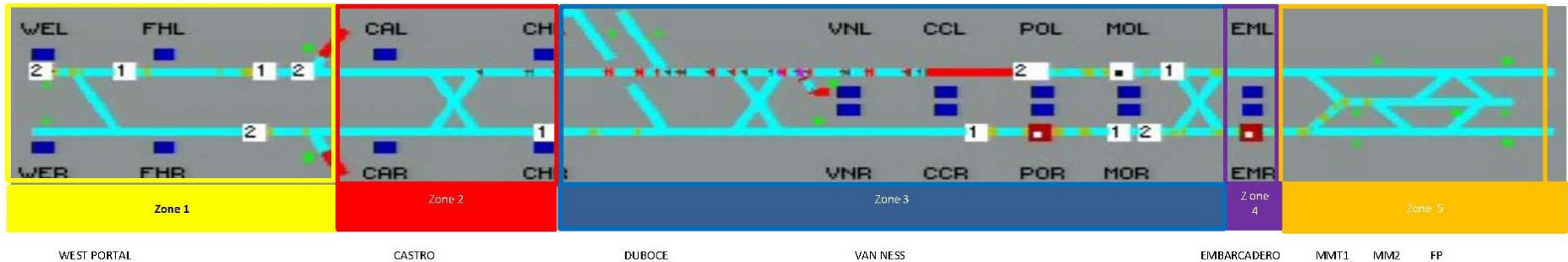
SFMTA SOGR Program Overview



Activity Name	Start	Finish	Zones	Area	Direction	Oct 19	Oct 26	Nov 02	Nov 09																	
						M	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	
All Zones	08-Dec-14 A	06-Apr-16																								
Overhead	23-Oct-15	08-Nov-15																								
OCS - SFMTA Maintenance	23-Oct-15	08-Nov-15																								
OCS Maintenance - Friday 1:30am to 3:00am	23-Oct-15	23-Oct-15	All Zones	Overhead	Track Right																					
OCS Maintenance - Sunday 1:30am to 3:00am	25-Oct-15	25-Oct-15	All Zones	Overhead	Track Left																					
OCS Maintenance - Friday 1:30am to 3:00am	30-Oct-15	30-Oct-15	All Zones	Overhead	Track Right																					
OCS Maintenance - Sunday 1:30am to 3:00am	01-Nov-15	01-Nov-15	All Zones	Overhead	Track Left																					
OCS Maintenance - Friday 1:30am to 3:00am	06-Nov-15	06-Nov-15	All Zones	Overhead	Track Right																					
OCS Maintenance - Sunday 1:30am to 3:00am	08-Nov-15	08-Nov-15	All Zones	Overhead	Track Left																					
Signal	08-Dec-14 A	06-Apr-16																								
Signal - SFMTA Maintenance	08-Dec-14 A	06-Apr-16																								
Signal Maintenance - Times/Locations Vary	08-Dec-14 A	06-Apr-16	All Zones	Signal	None																					
Wayside	08-Dec-14 A	06-Apr-16																								
Track - SFMTA Maintenance	08-Dec-14 A	06-Apr-16																								
Track Maintenance - Times/Locations Vary	08-Dec-14 A	06-Apr-16	All Zones	Wayside																						
ATCS SMC	27-Oct-15	28-Oct-15																								
ATCS SMC Upgrade(Train WP-MMT)	27-Oct-15*	28-Oct-15	All Zones	Wayside	Both																					

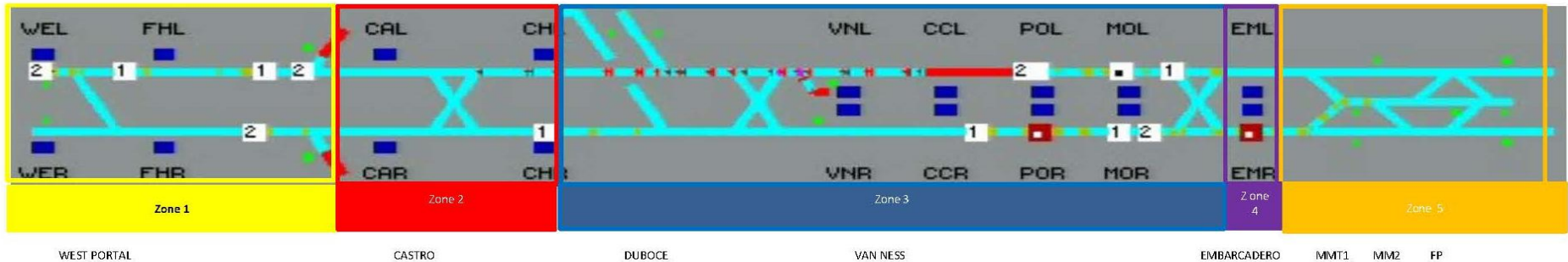


SFMTA SOGR Program Overview



Activity Name	Start	Finish	Zones	Area	Direction	Oct 19					Oct 26					Nov 02					09				
						M	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M
Special Event	31-Oct-15	31-Oct-15																							
Special Event	31-Oct-15	31-Oct-15																							
No Weekend Daytime or Early Shutdown	31-Oct-15	31-Oct-15																							
Halloween	31-Oct-15*	31-Oct-15	Special Event	Special Event																					

SFMTA SOGR Program Overview



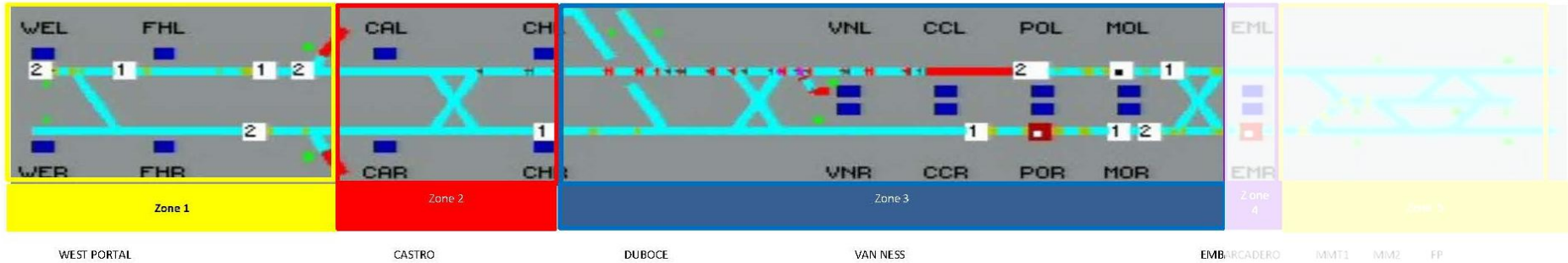
Activity Name	Start	Finish	Zones	Area	Direction	Oct 19		Oct 26		Nov 02		09
						M	T	F	S	S	M	T
Sunset Tunnel	06-Nov-15	13-Nov-15										
Wayside	06-Nov-15	13-Nov-15										
Sunset Tunnel Rail Replacement (Full Weekend Shutdown)	06-Nov-15	13-Nov-15										
Sunset Tunnel Rail - (full shutdown down Fri 8pm to Mon 4am)	06-Nov-15	13-Nov-15	Sunset Tunnel	Wayside								

SFMTA SOGR Program Overview



Activity Name	Start	Finish	Zones	Area	Direction	Oct 19				Oct 26				Nov 02				09
						M	T	F	S	S	M	T	F	S	S	M	T	F
Zone 1	28-Oct-15	29-Oct-15																
Wayside	28-Oct-15	29-Oct-15																
Radio - Eureka to Forest Hill - Track Left	29-Oct-15	29-Oct-15																
Radiax Cable & Install	29-Oct-15	29-Oct-15	Zone 1	Wayside	Track Left													
Radio - Forest Hill to West Portal - Track Left	28-Oct-15	28-Oct-15																
Radiax Cable & Install	28-Oct-15	28-Oct-15	Zone 1	Wayside	Track Left													

SFMTA SOGR Program Overview



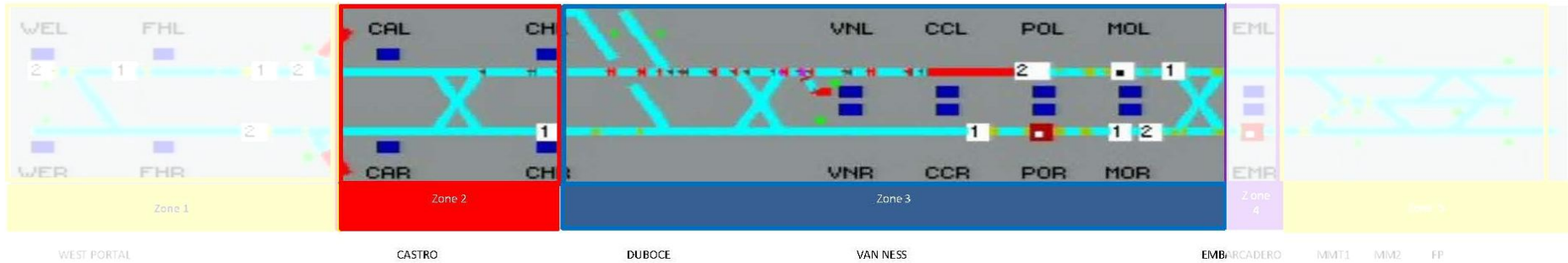
Activity Name	Start	Finish	Zones	Area	Direction	Oct 19			Oct 26			Nov 02			109										
						M	T	F	S	S	M	T	W	T	F	S	S	M	T	W	F	S	S	M	
Zone 1 thru 3	16-Oct-15 A	06-Nov-15																							
Wayside	16-Oct-15 A	06-Nov-15																							
BL Tunnell Work	16-Oct-15 A	06-Nov-15																							
Install Tunnell Phones Van Ness - ET1308 (NOT WORKING WHILE	16-Oct-15 A	06-Nov-15	Zone 1 thru 3	Wayside	Inbound																				Install

SFMTA SOGR Program Overview



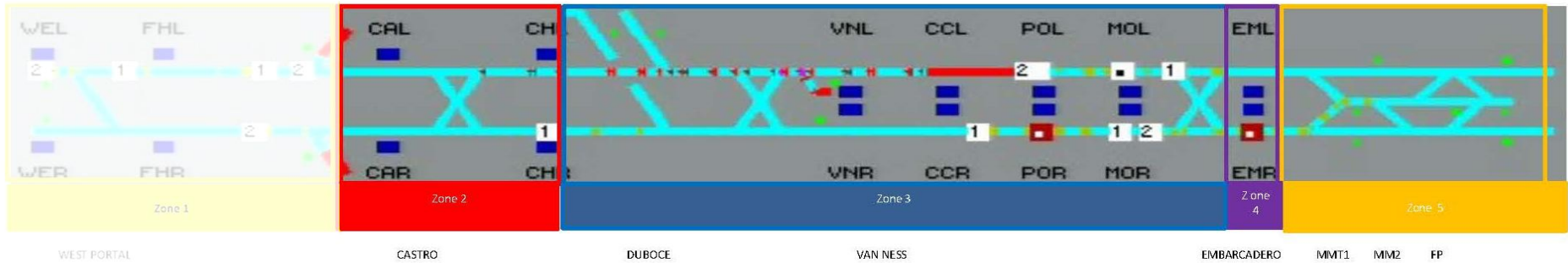
Activity Name	Start	Finish	Zones	Area	Direction	Oct 19			Oct 26			Nov 02			09										
						M	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M
Zone 2	19-Oct-15	20-Oct-15																							
Station	19-Oct-15	19-Oct-15																							
BL Church Station	19-Oct-15	19-Oct-15																							
Demobilize Tools & Materials	19-Oct-15	19-Oct-15	Zone 2	Station																					
Wayside	19-Oct-15	20-Oct-15																							
Radio - Church to Castro - Track Left	19-Oct-15	20-Oct-15																							
Cable Hangers	19-Oct-15*	20-Oct-15	Zone 2	Wayside	Track Left																				
Radio - Castro to Eureka - Track Left	19-Oct-15	19-Oct-15																							
Cable Hangers	19-Oct-15*	19-Oct-15	Zone 2	Wayside	Track Left																				

SFMTA SOGR Program Overview



Activity Name	Start	Finish	Zones	Area	Direction	Oct 19					Oct 26					Nov 02					09
						M	T	F	S	S	M	T	F	S	S	M	T	F	S	S	M
Zone 2 & 3	22-Oct-15	08-Nov-15																			
Wayside	22-Oct-15	08-Nov-15																			
BL Tunnell Work	22-Oct-15	08-Nov-15																			
Install Tunnell Brackets ET1425-1402 (NOT WORKING WHILE ATCS)	22-Oct-15*	08-Nov-15	Zone 2 & 3	Wayside	Inbound																In

SFMTA SOGR Program Overview



Activity Name	Start	Finish	Zones	Area	Direction	Oct 19					Oct 26					Nov 02					09
						M	T	F	S	S	M	T	F	S	S	M	T	F	S	S	M
Zone 2-5	28-Oct-15	30-Oct-15																			
Wayside	28-Oct-15	30-Oct-15																			
ATCS SMC	28-Oct-15	30-Oct-15																			
ATCS SMC Final Testing (Train WP-MMT)	28-Oct-15*	30-Oct-15	Zone 2-5	Wayside	Both																

ATCS SMC Final Testing

SFMTA SOGR Program Overview



Activity Name	Start	Finish	Zones	Area	Direction	Oct 19					Oct 26					Nov 02					09				
						M	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M
Zone 4 & 5	10-Oct-15 A	07-Nov-15																							
Wayside	10-Oct-15 A	07-Nov-15																							
Radio - Justin Herman to Embarcadero - Track Left - Ladder	10-Oct-15 A	24-Oct-15																							
Cable Hangers - 3 DAYS ONLY - SATURDAYS	10-Oct-15 A	24-Oct-15	Zone 4 & 5	Wayside	Track Left																				
Radio - Embarcadero to Justin Herman - Track Right - Ladder	07-Nov-15	07-Nov-15																							
Cable Hangers - 1 DAY ONLY - SATURDAY	07-Nov-15*	07-Nov-15	Zone 4 & 5	Wayside	Track Right																				

SFMTA SOGR Program Overview



Activity Name	Start	Finish	Zones	Area	Direction	Oct 19					Oct 26					Nov 02					09				
						M	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M
Zone 5	23-Oct-15	01-Nov-15																							
Wayside	23-Oct-15	01-Nov-15																							
MUNI Training	23-Oct-15	23-Oct-15																							
MUNI Training Class walk-thru Embarcadero to Ferry Portal (1am-3am)	23-Oct-15*	23-Oct-15	Zone 5	Wayside																					
BL Tunnell Work	24-Oct-15	01-Nov-15																							
Layout Tunnell Brackets ET1924 to JHVS	24-Oct-15*	25-Oct-15	Zone 5	Wayside	Outbound																				
Layout Tunnell Brackets JHVS to ET1922	01-Nov-15*	01-Nov-15	Zone 5	Wayside	Inbound																				

- MUNI Training Class walk-thru Embarcadero
- Layout Tunnell Brackets ET1924 to JHVS
- Layout Tunnell Brackets JHVS to ET1922

Twin Peaks Track Replacement Project

- Replace 4 1/2 miles of track from 1975
- Seismic Upgrades from 1918 tunnel
- Systems Upgrades
- 21 weekend service shutdowns
- Noise impact mitigations from similar project experience

Twin Peaks Track Replacement Project

- Replace 4 Electrified Switch Machines
- Clean and Repair Drain Lines
- Lighting Improvements
- Replace Fire Suppression Valves
- New Fire Alarm at West Portal Station

Twin Peaks Track Replacement Project

TABLE 2 Work Shifts

Shift	Day	9pm	10	11	12am	1	2	3	4	5-7	8	9	10	11	12pm	1	2	3pm
1	SUN	Red	Red	Red														
2	MON	Blue	Blue	Blue	Red	Red	Red	Red			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
3	TUES	Green	Green	Green	Blue	Blue	Blue	Blue			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
4	WED	Orange	Orange	Orange	Green	Green	Green	Green			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
5	THURS	Dark Blue	Dark Blue	Dark Blue	Orange	Orange	Orange	Orange			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
6	FRI				Dark Blue	Dark Blue	Dark Blue	Dark Blue			Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
7	SAT																	
		Red	Blue	Green	Orange	Dark Blue												

NIGHT SHIFT (9pm - 5am)

DAY SHIFT (8am - 4pm)

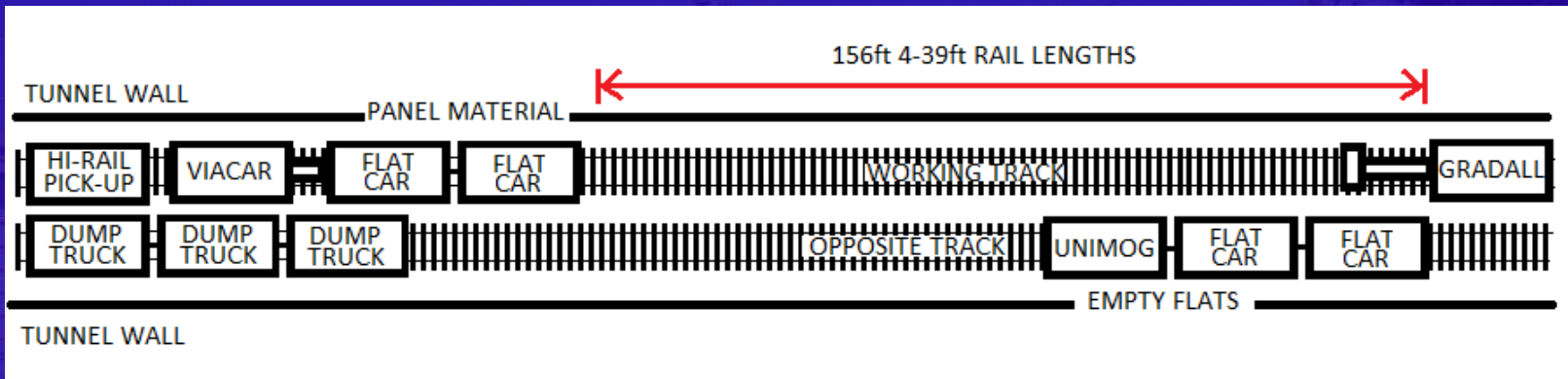
- Final Design Study – Nightly Closures

Twin Peaks Track Replacement Project

9pm													
9:30													
10:00													
10:30													
11:00													
11:30													
12:00													
12:30													
1:00													
1:30													
2:00													
2:30													
3:00													
3:30													
4:00													
4:30													
5:00													
SHIFT													
END													
TIME													
WORK STEPS	1) Safety talk and prep time	2) Power de-energizing & diversion set-up. Remove ATCS signal cable	3) Equip & material enter R.O.W., crews travel to tunnel work site	4) Remove joint bars & cut track into 13 foot panels	5) Remove 13 foot track panels and load to flat cars	6) Remove old ballast	7) Layout pre-plated ties	8) Install 39 foot rails w/joint bars and clip rails to ties	9) Position track jacks to set horizontal and vertical alignment	10) Unload new ballast	11) Ballast tamping	12) Install / splice ATCS signal cable & surface ballast	13) Inspect track, remove diversion equip, restore power

- Final Design Study – Nightly Closures

Twin Peaks Track Replacement Project



- Mobilization of Hi-Rail Equipment and Removal of old rail/ties

Twin Peaks Track Replacement Project

	Tunnel Work Duration	Rail Replacement Production Rates (Per Shift)	Seismic Retrofit	Approximate Total Tunnel Work Hours	Comments
TWIN PEAKS TUNNEL - 22,800 TF Total Track Replacement					
CER - Complete Shutdown	4 weeks	1280 TF	35 days	600	Complete shutdown assumed to be 24 hour work days, 6 days a week. Seismic Retrofit work assumed to be 2x8 hour shifts/day.
CER - Weekend Shutdowns	10 weekends	2880 TF	12 weekends	700	Weekend shutdown assumed to be 56 hours from Friday 9pm to Monday at 5am. Seismic Retrofit can be done concurrently with rail replacement.
CER - Nightly Shutdown	50 nights and 2 weekends	480 TF	12 weekends	1000	9pm to 5am, 5 days a week
Final Design Study	230 nights and 13 weekends	156 TF Open Tunnel 78 TF Divided Tunnel	90 nights 5 weekends, Some work concurrent with rail replacement	2500	Nightly and weekends shutdown hours assumed to be the same as CER. Seismic Retrofit can be done concurrently with rail replacement.
Final Contract Plan	21 weekends	1080 TF	Concurrent with rail replacement	1000	Weekend shutdown assumed to be 47 hours from Friday 10pm to Sunday 9pm
SUNSET TUNNEL – 9,500 TF Total Track Replacement					
Assumed in contract	15 weekends	1,000 to 1,200 TF	Some structural and systems work concurrent with rail replacement	860	10 weekends planned for rail replacement, 5 for structures and auxiliary work. Weekend shutdown planned to be 57 hours from Friday 8pm to Monday 5am
Actual production rate	14 weekends +1 non-production weekend	800 TF	Some structural and systems work concurrent with rail replacement	TBD	12 weekends actual to complete rail replacement, 2 additional available for auxiliary work. Actual weekend Friday 10pm to Sunday 9pm

Twin Peaks Track Replacement Project



N BUS SHUTTLE **BOARD HERE**

Due to track system improvements
Friday, 7PM, To Monday, 1AM
May 8th – May 11th
N Bus (NON OWL) to Ocean Beach

For more information visit:
www.sfmta.com/sunnettunnel or contact 311

在此處搭乘 N 穿梭巴士
從周五晚 7 時到周日收車時
5 月 8 日 - 5 月 11 日
N 巴士駛往 Ocean Beach
了解詳情, 請上網 www.sfmta.com/sunnettunnel
或致電 311

Debido a la construcción
Desde las 7PM viernes
Hasta 1AM el lunes
mayo 8 - mayo 11
Aborden el autobús N(NO OWL) aquí
para el servicio a Ocean Beach
llame al 311 o visite www.sfmta.com/sunnettunnel

For Muni route, schedule, fare and accessible services information anytime: Visit www.sfmta.com or contact 311
☎ 311 Free language assistance / 免費語言協助 / Ayuda gratis con el idioma / Сервисы бесплатной помощи на разных языках / Assistance linguistique gratuite / 免費的語言支援 / 311 免費多語言 / Língua grátis para se ajudar / 311 免費多語言服務 / 311 免費多語言服務



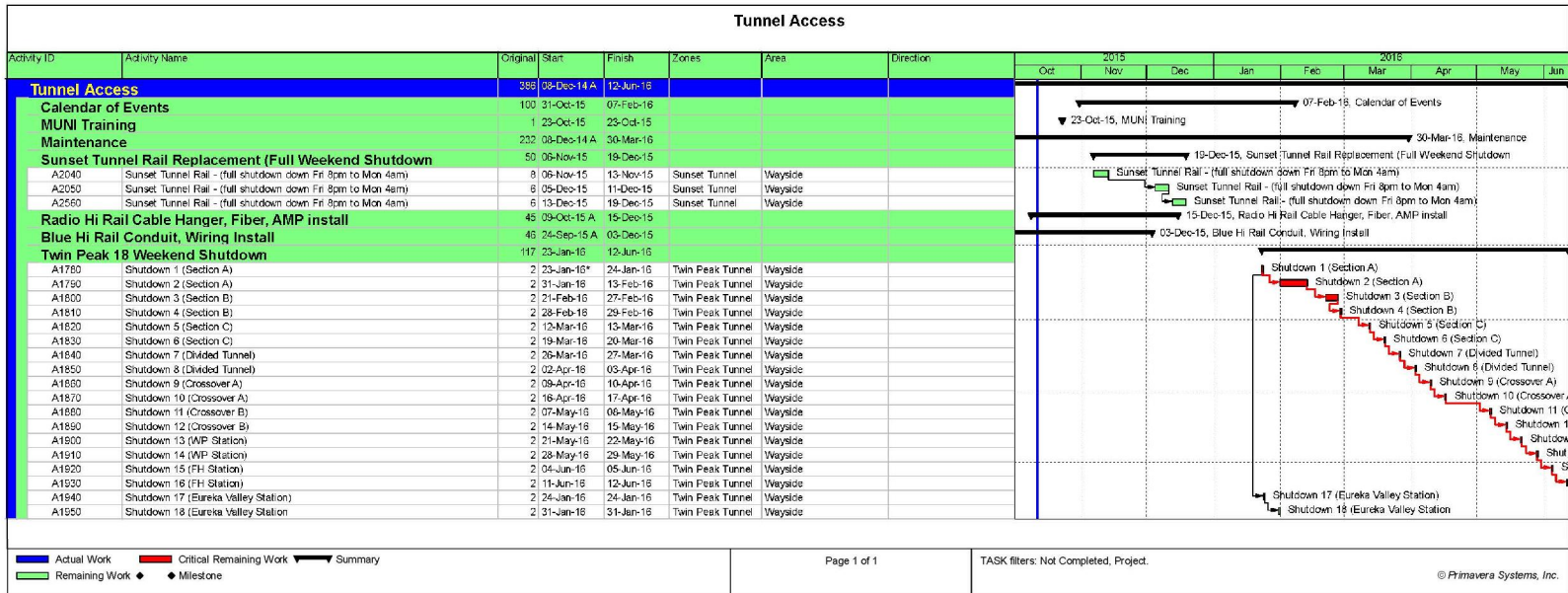
SFMTA
Municipal
Transportation
Agency

3

Twin Peaks Track Replacement Project

- Night Noise Mitigations
- Daytime Ballast Delivery
- Equipment Sound Attenuation
- Broadband (white noise) Back Up Alarms
- Continuous Noise Monitoring & Recording

Twin Peaks Track Replacement Project



SOGR - Sunset Tunnel



SFMTA Photography Department | sfmta.com/photo

SOGR - Sunset Tunnel



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SOGR - Sunset Tunnel



SOGR - Sunset Tunnel



SOGR - Sunset Tunnel



SOGR - Metro Tunnel



SOGR - Metro Tunnel



Twin Peaks 1916 Construction

