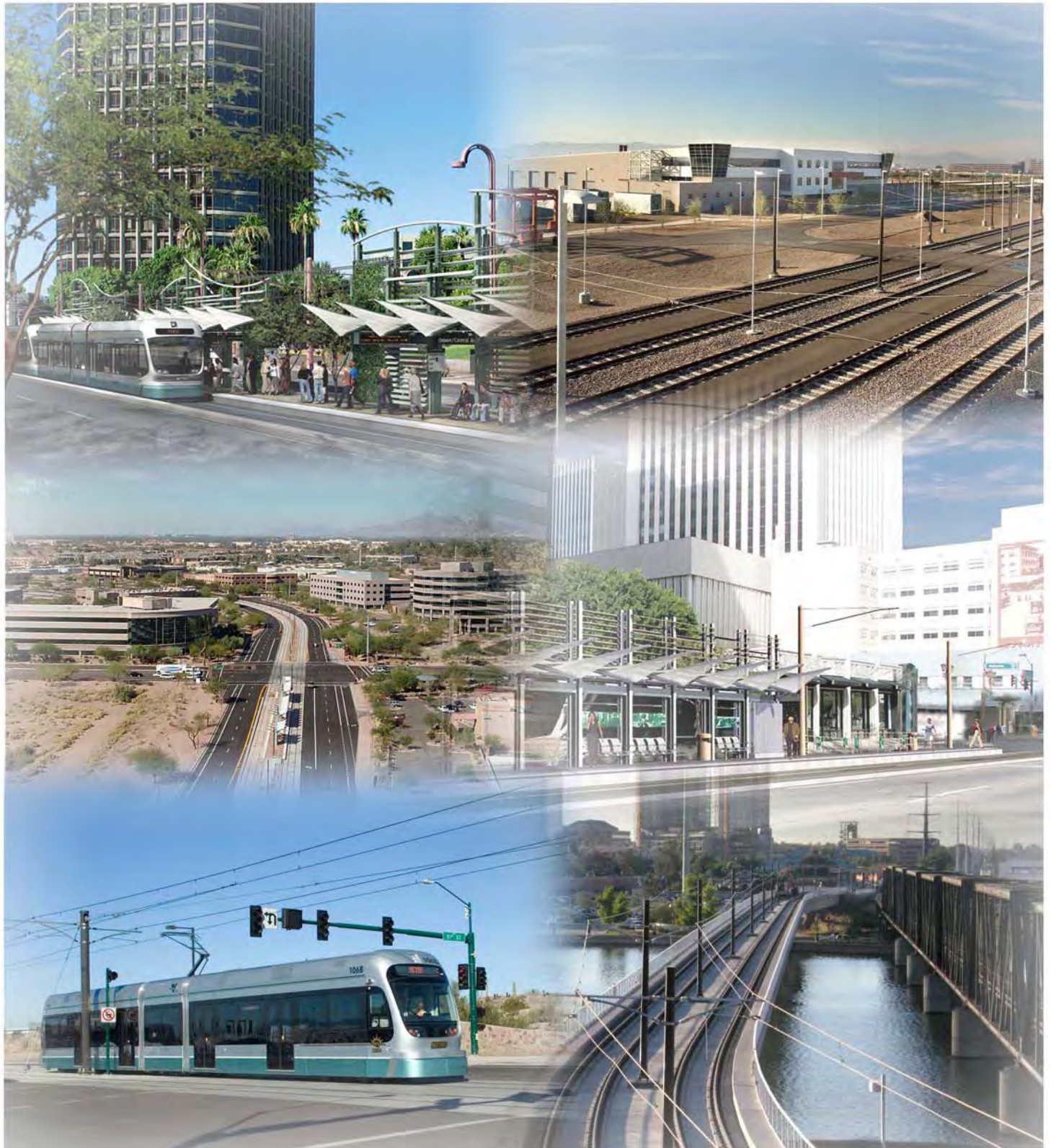




# LIGHT RAIL PROGRESS REPORT

Central Phoenix/East Valley Light Rail Transit Project







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## 1. Executive Summary

The Central Phoenix/East Valley (CP/EV) Light Rail Transit Project includes the design and construction of a 19.6 mile, double track, Minimum Operable Segment that extends from 19th Avenue near Bethany Home Road in North Central Phoenix through the downtown area to and through the City of Tempe, then crosses into the City of Mesa where the project terminates at Main Street and Sycamore. The track alignment is mostly in-street median and includes 27 passenger stations and eight surface parking lots, seven of which are newly constructed, and one existing lot owned by the City of Tempe near an LRT station site that will be dedicated to transit use at no cost to the Project. An initial fleet of 36 LRVs is part of the Project. The Project also includes an Operations and Maintenance Center (formally known as the Maintenance and Storage Facility) to support the 36 light rail vehicles located South of Washington Street and East of 48th Street in Phoenix. Propulsion power for the LRVs will be delivered by a Traction Electrification System consisting of wayside substations distributing propulsion power through an Overhead Catenary System (OCS). The Project will also include a Signals and Communications System consisting of both wayside and traffic signals. The entity responsible for project delivery, Valley Metro Rail (METRO), is a sub-recipient to the grantee, the City of Phoenix. The Project has a budget of \$1,412,000,000, with a Revenue Operations Date of December 2008.

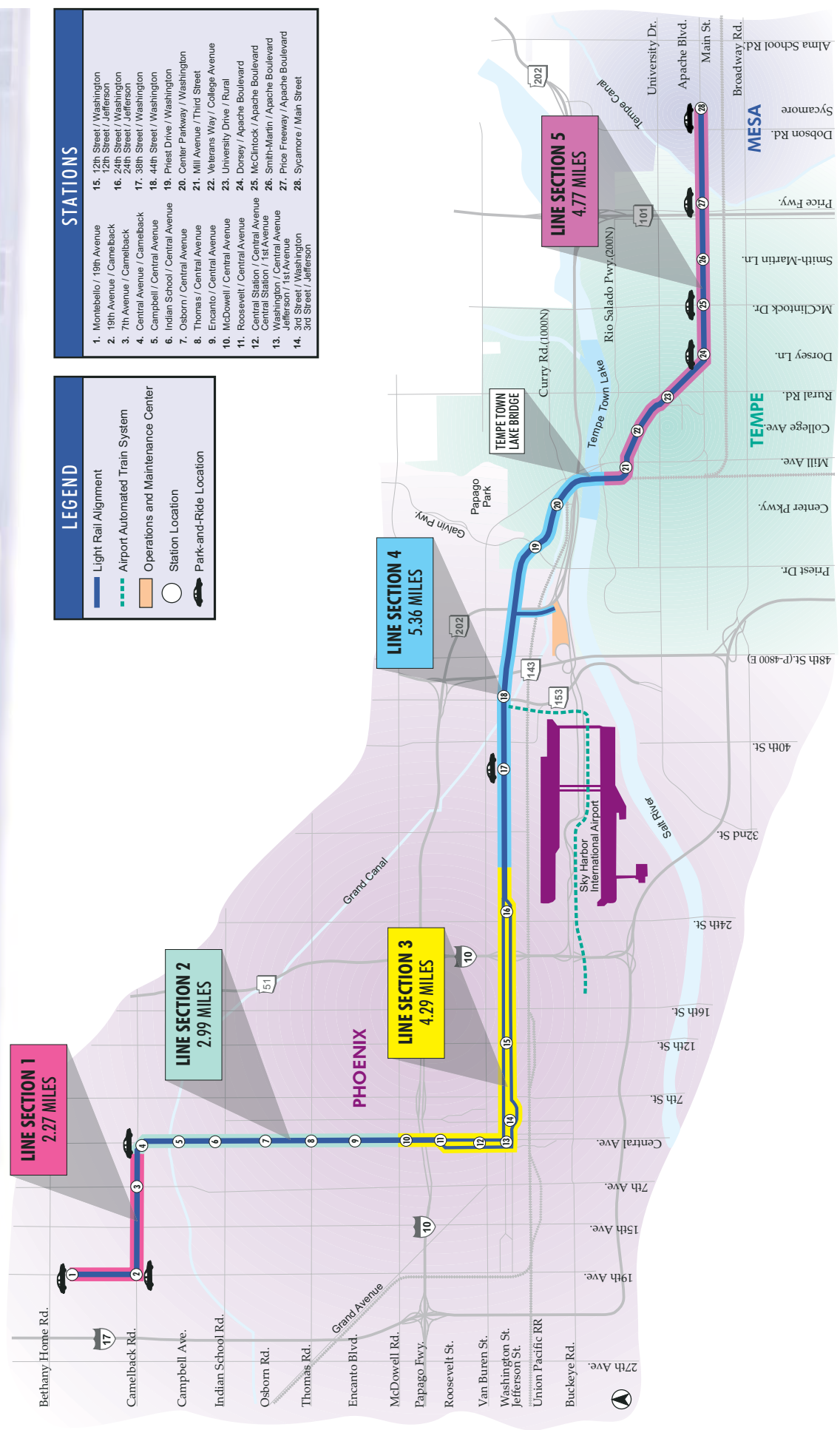
METRO opened for operations on December 27<sup>th</sup>, 2008. The day was filled with celebrations along the alignment and the trains were at capacity. Estimated ridership for the Grand Opening weekend exceeded 150,000. During the days after opening the trains continued to be at capacity and this has continued through December. Operations also had their first large event after grand opening with the New Years Eve Block Party. This was also a huge success and ridership was at capacity.

The CP/EV project continues to work on closeout items and some completion of contract work. Most of the work that remains is in the signals and communications arena and the build out and testing of software at the Operations Control Center. Contract closeout will continue for the first half of 2009. This will include final payments to contractors and final compliance reporting to the FTA to comply with the grant requirements.

Congratulations to all involved on a job well done.



# METRO LIGHT RAIL STARTER LINE



STATIONS	
1. Montebello / 19th Avenue	15. 12th Street / Washington
2. 19th Avenue / Camelback	16. 24th Street / Washington
3. 7th Avenue / Camelback	17. 38th Street / Jefferson
4. Central Avenue / Camelback	18. 44th Street / Washington
5. Campbell / Central Avenue	19. Priest Drive / Washington
6. Indian School / Central Avenue	20. Center Parkway / Washington
7. Osborn / Central Avenue	21. Mill Avenue / Third Street
8. Thomas / Central Avenue	22. Veterans Way / College Avenue
9. Encanto / Central Avenue	23. University Drive / Rural
10. McDowell / Central Avenue	24. Dorsey / Apache Boulevard
11. Roosevelt / Central Avenue	25. McClintock / Apache Boulevard
12. Central Station / Central Avenue	26. Smith-Martin / Apache Boulevard
13. Washington / Central Avenue	27. Price Freeway / Apache Boulevard
14. Jefferson / Washington	28. Sycamore / Main Street
14. 3rd Street / Jefferson	

LEGEND	
	Light Rail Alignment
	Airport Automated Train System
	Operations and Maintenance Center
	Station Location
	Park-and-Ride Location

**CONTRACT LOG - DECEMBER 2008**

ITEM	CONTRACT NUMBER	CONTRACT DESCRIPTION	CONTRACTOR
<b>1. PROGRAM MANAGEMENT &amp; ENGINEERING</b>			
1	LRT-99-001	GEC - DEIS/FEIS/PE	PB Americas, Inc.
2	LRT-02-001	GEC - Final Design	PB Americas, Inc.
3	LRT-02-001	GEC - DSDC	PB Americas, Inc.
4	LRT-98-001-PMC	Project Management Consultant	HDR, Inc. and Parsons Transportation Group, Inc., a Joint Venture
5	LRT-03-005-CAC	Construction Administration Services	Post, Buckley, Schuh & Jernigan, Inc., and PGH Wong Engineering, Inc., a Joint Venture
<b>2. CONSTRUCTION</b>			
6	LRT-03-007-B48	48th Street Bridge Replacement	FNF Construction, Inc.
7	LRT-04-017-MSF	Maintenance & Storage Facility (MSF)	Sundt/Stacy & Witbeck, Joint Venture
8	LRT-04-020-LS1	Line Section 1	Kiewit Western Co
9	LRT-04-019-LS2	Line Section 2	Herzog Contracting Corp
10	LRT-04-021-LS3	Line Section 3	Archer Western Contractors
11	LRT-04-018-LS4	Line Section 4	Sundt/Stacy & Witbeck, Joint Venture
12	LRT-04-022-LS5	Line Section 5	Sundt/Stacy & Witbeck, Joint Venture
13	LRT-05-042-PNR	Park and Rides Montebello & 19th Avenue 19th Avenue & Camelback Central & Camelback 38th St. & Washington	Kiewit Western Company Kiewit Western Co. MRM Construction Services MRM Construction Services
14	LRT-05-042-PNR-RB	Park and Rides (Re-Bid) Price & Apache Sycamore & Main	Sundt / Stacy and Witbeck, Joint Venture
15	LRT-04-028-SF	Station Finishes	Archer Western Contractors
16	LRT-04-040-TLB	Town Lake Bridge	PCL Civil Constructors, Inc.
17	LRT-05-036-WPM	Wheel Profiling Machine	Simmons Machine Tool Corp
<b>3. SYSTEM ELEMENTS</b>			
18	LRT-03-001	Light Rail Vehicles (LRV)	Kinkisharyo International, L.L.C. and Mitsui & Co. (U.S.A), Inc., CPEV Joint Venture
19	LRT-04-039-S&C	Signals and Communications	Mass Electric Corp.
20	LRT-04-014-TES	Traction Electrification System	Mass Electric Corp.
21	LRT-06-053-FCS	Fare Collection System	Scheidt & Bachmann USA, Inc.
22	LRT-06-071-LCM	Light Rail Car Mover	Brandt Road Rail Corp
23	LRT-07-076-MSFF	Modular Furniture for MSF	Southwest Business Furnishings
24	LRT-06-060-MMIS	Maintenance Management Information System	Mincom, Inc.
<b>4. PUBLIC ART</b>			
25	02-002-04	LS4 Design Team Artist/Station Artist	Laurie Lundquist
26	02-002-03	LS2 Design Team Artist/Station Artist	Ilan Averbuch
27	02-002-04	LS1 Design Team Artist/Station Artist	Robert Adams
28	02-002-05	LS5 Design Team Artist/Station Artist	Norie Sato/Bill Will
29	02-002-01	LS3 Design Team Artist	Janet Zweig
30	05-041-ART	Bridge Design Team Artist	Buster Simpson
31	02-002-07	LS3 Design Team Artist	Laurie Lundquist
32	02-002-08	LS3 Design Team Artist	Robert Adams
33	02-002-09	44th Street Station Artist	Mona Higuchi
34	02-002-10	38th Street Station Artist	Stuart Keeler/Michael Machnic
35	02-002-11	Central / Roosevelt Station Artist	Peter Richards
36	02-002-12	Central / McDowell Station Artist	Michael Maglich
37	02-002-13	First Street Station Artist	Stephen Farley
38	02-002-14	Third Street Station Artist	Cliff Garten
39	02-002-15	Central Station, Station Artist	Ries Niemi
40	02-002-16	12th Street Station Artist	Victor Zaballa
41	02-002-17	Fifth Street / College Station Artist	Tad Savinar
42	02-002-18	Central / Campbell Station Artist	Al Price
43	02-002-19	Central / Indian School Station Artist	Mary Lucking
44	02-002-20	Central / Osborn Station Artist	Thomas Sayre
45	02-002-21	Central / Thomas Station Artist	Brian Goldbloom
46	02-002-23	Third Street / Mill Station Artist	Catherine Widgery
47	02-002-24	Apache Stations - Lighting Artist	Dan Corson
48	02-002-25	Apache Stations - Cultural Weave Artist	Christine Bourdette
49	02-002-26	Apache Stations - Vertical Objects Artist	Suikang Zhao
50	02-002-27	Apache Stations - Paving Artist	Benson Shaw

**CONTRACT LOG - DECEMBER 2008**

ITEM	CONTRACT NUMBER	CONTRACT DESCRIPTION	CONTRACTOR
51	02-002-28	Longmore Station Artist	Brad Konick
52	02-002-29	19th Avenue / Camelback Station Artist	Josh Garber
53	02-002-30	7th Avenue / Camelback Station Artist	Nubia Owens
54	02-002-31	24th Street Station Artist	Kevin Berry
55	02-002-32	Central / Encanto Station Artist	Jamex & Einar de la Torre
<b>5. MISC. CONSTRUCTION &amp; SERVICES</b>			
56	LRT-05-046-ERS	Environmental Remediation Service	Environmental Response Inc
57	LRT-04-031-PCS	Power Consulting Services	RW Beck
58	LRT-06-052-MF	Modular Furniture	Facilitec, Inc.
59	LRT-06-065-TCS	Telecom Carrier Services	Time Warner Telecom
60	LRT-06-057-WLI	WAN/LAN and IPT Voice Sys Equipment	Calence, Inc.
61	LRT-04-034-SPC	Strategic Planning Consulting Services	Davis Consulting
62	LRT-05-045-DCS	Document Control Services	LKG-CMC, Inc
63	LRT-05-037-ACS	Audit Consulting Services	Clifton Gunderson LLP
64	LRT-05-038-RMS	Risk Management Services	Ashton Tiffany, LLC
65	LRT-06-069-SSC	Safety & Security Certification Services	Booz Allen Hamilton, Inc.
66	LRT-06-067-ITS	Info Technology-Office Network Support	World Wide Technology, Inc.
67	LRT-07-082-TCS	Telecommunications Services for MSF	Qwest Communications
68	LRT-07-073-TS	Transportation Services	Alternate Concepts, Inc.
69	LRT-07-086-MSFM	Interim Maintenance Services for MSF	DMS Facility Services
70	LRT-07-088-PALS	Policy and Advisory Legal Services	Thompson Coburn, LLP
71	LRT-07-095-MAC	Marketing & Advertising Consulting Services	Park & Co.
72	LRT-08-096-EPGO	Grand Opening Event Planning Consulting Services	Entertainment Solutions, Inc.
73	LRT-08-104-ORS	Offsite Records Storage Services	Archive Systems, Inc.
74	LRT-08-108-ARM	Armored Car & Cash Processing Services	Brink's U.S.
75	LRT-08-109-FMSO	Facilities Maintenance Services	DMS Facility Services
76	LRT-08-110-SS	Security Services	The Wackenhut Corporation
77	LRT-08-111-FMCL	Cleaning Services	DMS Facility Services
78	LRT-08-112-FMLK	Lands Keeping Services	DMS Facility Services
<b>6. OWNER FURNISHED MATERIALS</b>			
79	LRT-04-009-MP1	Rail (MP1)	Progress Rail Corporation
80	LRT-04-010-MP2	Concrete Crossties (MP2)	CXT Inc
81	LRT-04-030-MP5	Ballasted Special Trackwork (MP5)	VAE Nortrak North America Inc
82	LRT-04-032-MP8	Girder Rail (MP8)	VAE Nortrak North America Inc
83	LRT-04-033-MP9	Girder Rail Special Trackwork (MP9)	VAE Nortrak North America Inc
84	LRT-04-015-MP3	Traffic Signal Hardware (MP3)	Various
85	LRT-06-072-SE	Shop Equipment for Maintenance Facility	Wissota Supply Company, Inc
86	LRT-07-078-MLE	Spray Paint Booth Manlifts at MSF	MGM Equipment Source
87	LRT-08-108-ADV	Aerial Device Vehicles	Altec Industries, Inc.
<b>7. FUTURE LIGHT RAIL EXTENSIONS</b>			
88	LRT-06-050-DCS	Design Criteria & Standards	Stantec Consulting
89	LRT-06-055-PSS	Planning Support Services	HDR Engineering, Inc.
90	LRT-07-077-PCES	Planning, Conceptual Engineering & Environmental Studies for Future Light Rail Extensions - Mesa-Tempe	HDR / S.R. Beard & Associates
91	LRT-07-077-PCES	Planning, Conceptual Engineering & Environmental Studies for Future Light Rail Extensions - I-10/Glendale	URS Corporation
92	LRT-07-075-PENW	Northwest LRT Extension Engineering Services	DMJM+Harris, Inc.
93	LRT-07-091-PICS-HDR	On-Call Public Involvement Consulting Services	HDR, Inc.
94	LRT-07-087D-CMNW	Northwest LRT Extension Construction Manager at Risk Design Phase Services	Sundt/Stacy & Witbeck, Joint Venture
95	LRT-07-089-NWA	Northwest LRT Extension Public Art for Glendale Station	Merge Conceptual Design, LLC
96	LRT-07-089-NWA	Northwest LRT Extension Public Art for Northern Station	Deborah Mersky
97	LRT-07-089-NWA	Northwest LRT Extension Public Art for Dunlap Parking	PhenomenArts, Inc.
98	LRT-07-089-NWA	Northwest LRT Extension Public Art for Dunlap Station	Colab Studio, LLC
99	LRT-08-102-GIS	On-Call Geographic Information Systems Consulting Services	Jacobs Carter Burgess



## **2. Cost Overview**

### **Federal 5309 Project**

The project budget for the Federal 5309 program is \$1,412,125,346. Known pending and executed change orders are valued at \$100,371,811 of the available \$107,384,774 planned contingency.

Including Project Reserve, this leaves \$8,214,220 of budgeted contingency funds available to the project.

The project is 96.9 percent complete, a 2.4 percent increase from the last reporting period. Construction is 97.3 percent complete, a 2.0 percent increase.

### **Program Management and Administration**

Forecast is within budget.

### **Program Management Consultant**

Staffing plan for fiscal year 2009 has been incorporated within the overall forecast of this contract unit, and the forecast is projecting an under-run to the budget.

### **City Administration**

Forecasts are per agreements with the cities.

### **Right of Way Acquisition**

Forecast and budget are currently at \$126,500,000.

### **PE/FEIS Engineering**

Activity is complete.

### **Engineering**

Forecast for the remaining work is slightly above the budget. The costs are being monitored.

### **Owner Furnished Equipment/Materials**

Forecasts are within budget.

### **Light Rail Vehicles**

Contingency appears to be sufficient to fund the remaining work.

### **Facilities**

Facilities work is 98.1 percent complete. This is a 0.6 percent increase from the previous reporting period. Executed and pending change orders are expected to utilize \$71,459,806 of the \$76,426,400 available contingency.



## **Systems**

Systems work is 92.5 percent complete, an increase of 9.4 percent since the last period. Executed and pending change orders are expected to utilize \$12,286,207 of the \$13,139,720 available contingency.

## **Construction Administration Services**

Forecast and budget have been increased consistent with the December Board action to extend services for contract close-out purposes.

## **Testing and Startup**

Forecast appears sufficient to complete the work. Receipt of invoices over the next several months will establish the final costs.

## **Art Program**

Forecast appears sufficient to complete the work.

## **Unallocated Design Contingency**

Budget was utilized to fund variances between bid amounts and original budgets.

## **Project Reserve**

The budget is currently at \$1,200,000.

## **Financing Costs**

The budget and forecast are \$118,400,000.

## **Concurrent Non Project Activities Project**

The budget for Concurrent Non Project Activities is \$121,347,000, based on the Valley Metro Rail Board approved amount contained in the Five Year Capital Program and Operating Forecast document.

Close out of contract packages continues, resulting in final adjustments to the scope of work and costs.

**Valley Metro Rail Program Control  
CP/EV LRT Project  
Project Budget Status  
Federal 5309 Project**

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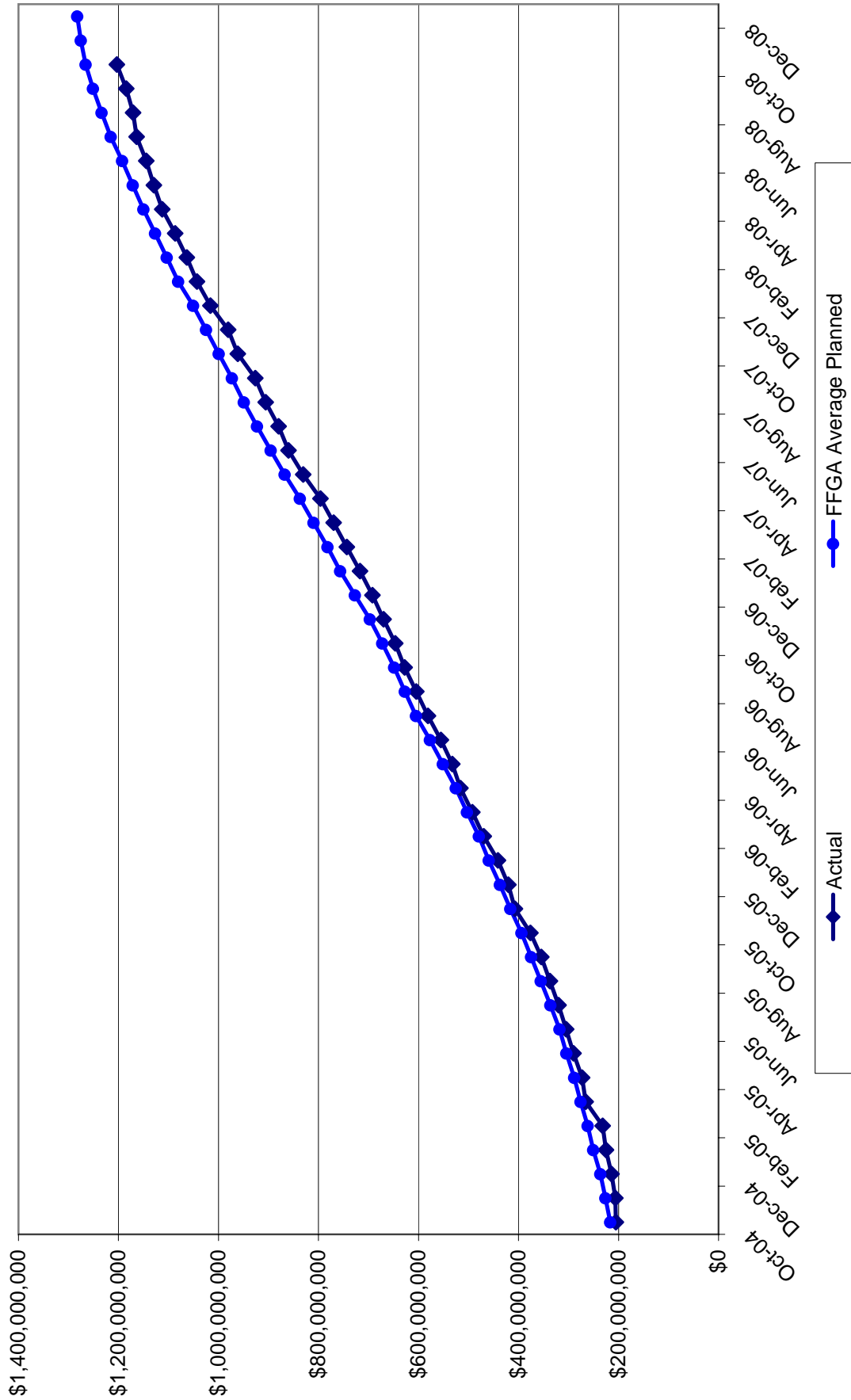
Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
50	LS1 19th Ave/Bethany - Camelback/Central	\$27,130,856	\$48,709,653	\$45,309,843	\$48,694,291	\$15,362
51	LS2 Camelback/Central - McDowell Road	\$38,004,059	\$53,589,650	\$52,315,505	\$53,589,644	\$6
52	LS3 McDowell Road - 28th Street	\$63,981,654	\$102,811,829	\$101,476,844	\$103,006,551	(\$194,722)
53	LS4 28th Street - N Approach to Town Lake	\$46,622,020	\$52,248,076	\$52,350,356	\$52,350,356	(\$102,280)
54	LS5 1st Street - Sycamore	\$49,680,435	\$79,703,294	\$78,904,890	\$79,713,033	(\$9,739)
55	Station Finishes	\$38,701,950	\$53,214,735	\$52,608,980	\$53,214,734	\$1
56	Park and Ride Facilities	\$15,104,339	\$22,778,912	\$21,764,314	\$22,778,912	\$0
57	Miscellaneous Construction	\$7,505,200	\$850,659	\$521,018	\$700,665	\$149,994
5K	Archaeological Investigations/Hazardous Material Removal	\$0	\$7,372,689	\$5,697,403	\$7,372,689	\$0
58	MSF Construction/Equipment Installation	\$57,637,721	\$65,400,000	\$65,400,000	\$65,400,000	\$0
5G	MSF Underfloor Wheel Profiling System	\$0	\$980,107	\$967,068	\$976,193	\$3,914
59	48th Street Bridge Restoration	\$2,014,013	\$2,824,232	\$2,837,136	\$2,837,136	(\$12,904)
5A	Town Lake Bridge	\$15,529,600	\$21,759,753	\$21,759,751	\$21,759,751	\$2
5B	Prior Rights Utility Relocations	\$22,938,000	\$25,730,390	\$28,613,848	\$31,000,000	(\$5,269,610)
81	Contingency	\$37,491,841	\$8,168,528	\$0	\$2,062,148	\$6,106,380
	<b>Facilities</b>	<b>\$422,341,688</b>	<b>\$546,142,507</b>	<b>\$530,526,956</b>	<b>\$545,456,103</b>	<b>\$686,404</b>
4A	Rail Procurement	\$1,306,200	\$1,273,506	\$1,279,492	\$1,279,492	(\$5,986)
4B	Concrete Crosstie Procurement	\$900,000	\$903,395	\$870,575	\$870,575	\$32,820
4C	Traffic Signal Hardware	\$8,060,100	\$8,463,100	\$8,495,383	\$8,511,385	(\$48,285)
4D	Ballasted Special Trackwork Procurement	\$2,532,414	\$2,291,497	\$2,257,456	\$2,257,456	\$34,041
4E	Crossing Panel Procurement	\$380,100	\$0	\$0	\$0	\$0
4F	Girder Rail Procurement	\$15,079,742	\$14,725,878	\$14,714,519	\$14,724,278	\$1,600
4G	Girder Rail Special Trackwork Procurement	\$0	\$5,712,656	\$5,679,818	\$5,712,656	\$0
81	Contingency	\$1,412,863	\$90,072	\$0	\$0	\$90,072
	<b>Owner Furnished Materials/Equipment</b>	<b>\$29,671,419</b>	<b>\$33,460,104</b>	<b>\$33,297,243</b>	<b>\$33,355,842</b>	<b>\$104,262</b>
5D	Automated Fare Collection System	\$10,755,800	\$7,803,786	\$5,574,463	\$7,803,786	\$0
5E	Traction Power Substations/Overhead Catenary System	\$62,141,100	\$61,174,610	\$58,597,656	\$61,174,611	(\$1)
5F	Communications/Signals	\$38,220,002	\$43,604,215	\$35,830,594	\$43,604,215	\$0
81	Contingency	\$8,674,000	\$828,701	\$0	\$827,500	\$1,201
	<b>Systems</b>	<b>\$119,790,902</b>	<b>\$113,411,312</b>	<b>\$100,002,713</b>	<b>\$113,410,112</b>	<b>\$1,200</b>
	<b>Sub Total, Construction</b>	<b>\$571,804,009</b>	<b>\$693,013,923</b>	<b>\$663,826,912</b>	<b>\$692,222,057</b>	<b>\$791,866</b>
4K	Vehicle Contract	\$115,501,823	\$118,406,051	\$99,922,555	\$118,406,051	\$0
4N	LRT Vehicle Contract Contingency	\$5,775,001	\$16,514	\$0	\$0	\$16,514
	<b>LRT Vehicles</b>	<b>\$121,276,824</b>	<b>\$118,422,565</b>	<b>\$99,922,555</b>	<b>\$118,406,051</b>	<b>\$16,514</b>
22	ROW Acquisition	\$116,214,150	\$117,181,379	\$125,771,765	\$126,500,000	(\$9,318,621)
23	ROW Contingency	\$20,081,000	\$9,318,621	\$0	\$0	\$9,318,621
20	<b>ROW</b>	<b>\$136,295,150</b>	<b>\$126,500,000</b>	<b>\$125,771,765</b>	<b>\$126,500,000</b>	<b>\$0</b>

**Valley Metro Rail Program Control  
CP/EV LRT Project  
Project Budget Status  
Federal 5309 Project**

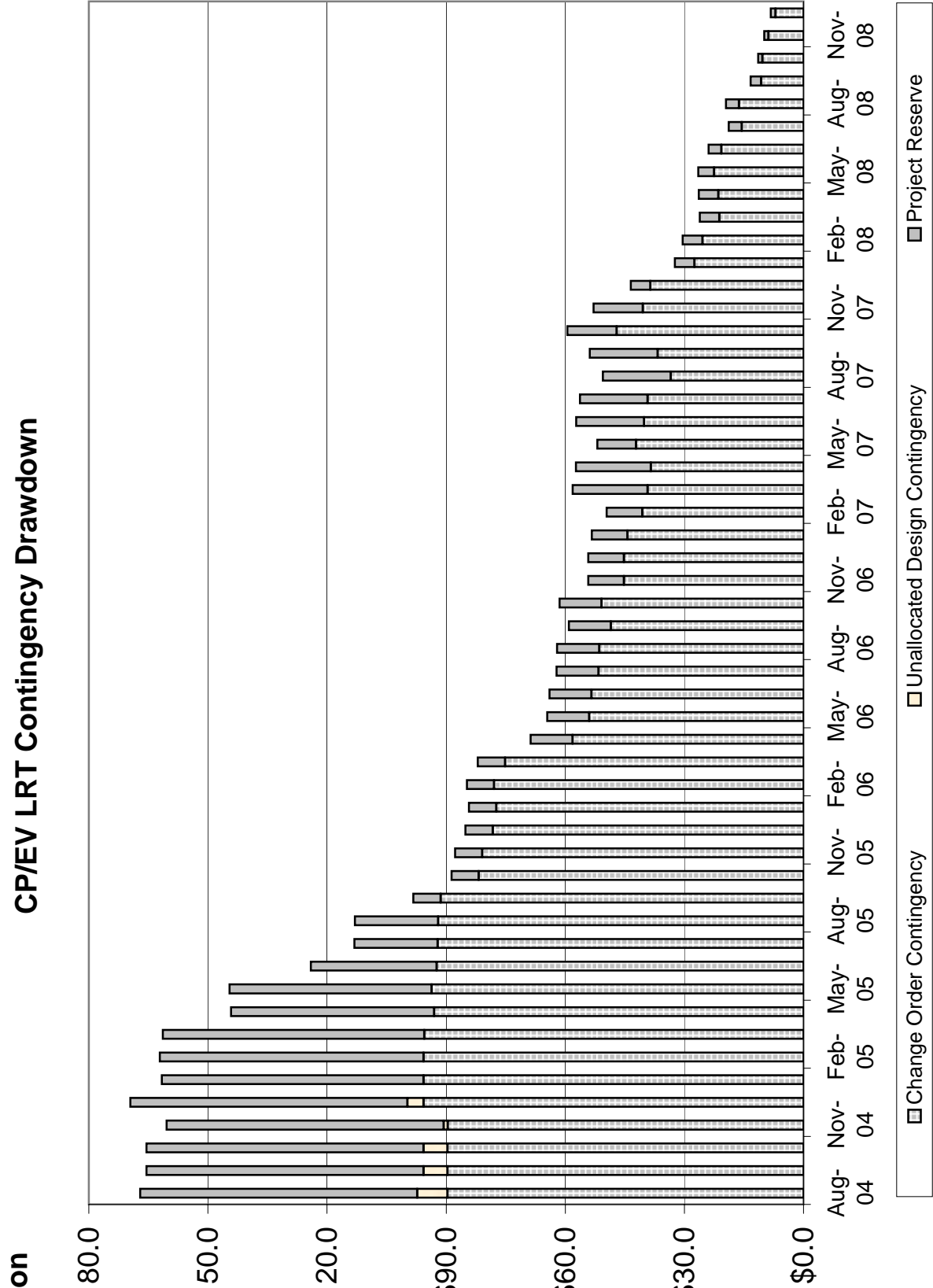
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Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
<b>30</b>	<b>PE/FEIS Engineering</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$25,169,700</b>	<b>\$25,169,700</b>	<b>(\$114,762)</b>
31	Engineering	\$76,780,935	\$76,346,255	\$77,248,280	\$77,321,047	(\$974,792)
4L	Vehicle Engineering	\$5,432,358	\$7,305,671	\$6,107,439	\$6,313,404	\$992,267
20	ROW Engineering	\$1,016,370	\$1,321,163	\$1,266,226	\$1,266,226	\$54,937
32	Design Services During Construction	\$14,160,426	\$22,674,151	\$22,411,297	\$23,368,803	(\$694,652)
33	Engineering Contingency	\$0	\$0	\$0	\$0	\$0
34	DSDC Contingency	\$0	\$0	\$0	\$0	\$0
	<b>Engineering</b>	<b>\$97,390,089</b>	<b>\$107,647,240</b>	<b>\$107,033,242</b>	<b>\$108,269,480</b>	<b>(\$622,240)</b>
60	Construction Administration Services	\$37,759,127	\$56,281,460	\$54,967,735	\$56,281,460	\$0
61	CAC Contingency	\$15,244,622	\$0	\$0	\$0	\$0
	<b>Construction Administration Services</b>	<b>\$53,003,749</b>	<b>\$56,281,460</b>	<b>\$54,967,735</b>	<b>\$56,281,460</b>	<b>\$0</b>
10	PE Administrative/Management Costs	\$4,363,526	\$4,363,526	\$8,388,002	\$8,388,002	(\$4,024,476)
11	Administrative/Management - VMR	\$43,915,047	\$42,729,717	\$35,290,288	\$37,816,371	\$4,913,346
62	Construction Administration Services - VMR	\$1,697,232	\$2,067,564	\$1,814,592	\$1,910,468	\$157,096
67	CAB Program	\$0	\$2,500,000	\$2,486,057	\$2,500,000	\$0
21	Administrative ROW Costs	\$696,712	\$557,660	\$703,684	\$736,330	(\$178,670)
76	Administrative/Management Art Program Costs	\$414,632	\$414,632	\$10,667	\$414,632	\$0
16	Administrative/Management - ADOT	\$420,000	\$1,087,676	\$623,342	\$708,342	\$379,334
17	Agency Insurance Cost	\$7,000,000	\$7,000,000	\$7,386,352	\$7,500,000	(\$500,000)
18	Administrative/Management Contingency	\$0	\$388,523	\$0	\$1,135,153	(\$746,630)
	<b>Program Management</b>	<b>\$58,507,149</b>	<b>\$61,109,298</b>	<b>\$56,702,984</b>	<b>\$61,109,298</b>	<b>\$0</b>
10	PE Administrative/Management Costs	\$12,832,472	\$12,832,472	\$12,255,028	\$12,255,028	\$577,444
21	Administrative ROW Costs	\$1,016,571	\$828,502	\$791,139	\$791,139	\$37,363
76	Administrative/Management Art Program Costs	\$549,061	\$464,266	\$255,988	\$255,988	\$208,278
12	Administrative/Management - PMC	\$32,736,326	\$32,115,900	\$31,913,521	\$33,236,784	(\$1,120,884)
4M	Administrative Vehicle Costs	\$1,337,322	\$561,908	\$553,400	\$553,400	\$8,508
63	Construction Administration Services - PMC	\$4,581,527	\$6,250,231	\$4,603,510	\$5,407,661	\$842,570
	<b>Program Management Consultant</b>	<b>\$53,053,279</b>	<b>\$53,053,279</b>	<b>\$50,372,586</b>	<b>\$52,500,000</b>	<b>\$553,279</b>
10	PE Administrative/Management Costs	\$3,158,439	\$3,158,439	\$2,331,563	\$2,492,799	\$665,640
13	Administrative/Management - COP	\$2,986,000	\$5,448,000	\$4,047,918	\$4,047,918	\$1,400,082
64	Construction Administration Services - COP	\$8,347,000	\$5,885,000	\$7,950,722	\$7,950,722	(\$2,065,722)
14	Administrative/Management - COT	\$6,797,000	\$6,797,000	\$6,797,000	\$6,797,000	\$0
15	Administrative/Management - COM	\$897,000	\$897,000	\$552,458	\$897,000	\$0
	<b>City Administration</b>	<b>\$22,185,439</b>	<b>\$22,185,439</b>	<b>\$21,679,661</b>	<b>\$22,185,439</b>	<b>\$0</b>
75	Public Art Contracts	\$5,284,133	\$6,213,049	\$5,360,889	\$6,213,049	\$0
77	Art Program Contingency	\$999,000	\$70,084	\$0	\$70,084	\$0
	<b>Public Art</b>	<b>\$6,283,133</b>	<b>\$6,283,133</b>	<b>\$5,360,889</b>	<b>\$6,283,133</b>	<b>\$0</b>
<b>70</b>	<b>Start-Up and Testing</b>	<b>\$31,000,000</b>	<b>\$23,000,000</b>	<b>\$18,072,505</b>	<b>\$23,000,000</b>	<b>\$0</b>
<b>80</b>	<b>Unallocated Design Contingency</b>	<b>\$7,575,241</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>85</b>	<b>Project Reserve</b>	<b>\$69,829,000</b>	<b>\$1,201,257</b>	<b>\$0</b>	<b>\$1,825,914</b>	<b>(\$624,657)</b>
<b>SUBTOTAL</b>		<b>\$1,253,258,000</b>	<b>\$1,293,752,532</b>	<b>\$1,228,880,534</b>	<b>\$1,293,752,532</b>	<b>\$0</b>
<b>90</b>	<b>Financing Costs</b>	<b>\$158,867,346</b>	<b>\$118,372,814</b>	<b>\$49,018,379</b>	<b>\$118,372,814</b>	<b>\$0</b>
<b>TOTAL CP/EV PROJECT</b>		<b>\$1,412,125,346</b>	<b>\$1,412,125,346</b>	<b>\$1,277,898,913</b>	<b>\$1,412,125,346</b>	<b>\$0</b>

### Plan versus Actual Costs



# CP/EV LRT Contingency Drawdown



**Valley Metro Rail Program Control  
CPI/EV LRT Project  
Project Budget Status  
CNPA Project**

Element	Description	Board Approved Total	Revised Budget/Estimate	Current Actual \$ (To Date)	Forecast	Variance
A1	Bus Bays (LS2)	\$985,000	\$984,756	\$642,568	\$726,305	\$258,451
A2	Phoenix Art Museum Left Turn Signal	\$99,000	\$99,083	\$66,442	\$91,968	\$7,115
A5	19th/Montebello Transit Center (SF)	\$6,317,000	\$6,224,310	\$5,840,634	\$6,231,772	(\$7,462)
A6	117 Central/Camelback Transit Center (SF)	\$7,101,000	\$7,103,693	\$9,103,578	\$9,592,176	(\$2,488,483)
A7	44th Street/Washington Transit Center Real Estate	\$4,650,000	\$4,649,580	\$4,467,450	\$4,467,450	\$182,130
B1	Washington Street Bike Lane (LS4)	\$867,000	\$834,912	\$789,522	\$842,830	(\$7,918)
F4	Civic Plaza Street Support System	\$340,000	\$340,044	\$340,045	\$340,045	(\$1)
F5	Additional Water Services to the Pueblo Grande Museum - LS4	\$82,000	\$89,285	\$81,792	\$81,792	\$7,493
F6	Central/Camelback Bus Bays Relocation	\$180,000	\$180,435	\$62,354	\$140,179	\$40,256
F7	COP Landscape Irrigation Restoration Central Ave	\$92,000	\$93,413	\$91,807	\$91,807	\$1,606
G8	PPT CNPA Additional Point of Interest Signs	\$92,000	\$67,245	\$67,245	\$67,245	\$0
H2	Fiber Optic COP	\$490,000	\$440,926	\$388,293	\$495,209	(\$54,283)
K6	Washington/Jefferson 16th to 26th Street, Property Access	\$3,559,000	\$3,273,119	\$2,372,458	\$2,437,994	\$835,125
K7	11th Street Loop Track	\$4,652,000	\$5,122,370	\$4,369,002	\$5,118,259	\$4,111
L8	PPT CNPA-3rd St/Washington APD Medallions	\$0	\$6,850	\$6,782	\$6,850	\$0
M4	Taylor Street Pedestrian Crossing	\$0	\$6,756	\$0	\$6,756	\$0
	<b>Sub Total Public Transit Department</b>	<b>\$29,414,000</b>	<b>\$29,516,777</b>	<b>\$28,689,972</b>	<b>\$30,738,637</b>	<b>(\$1,221,860)</b>
A3	6th Lane - Camelback (LS1)	\$8,955,000	\$8,954,921	\$8,523,884	\$8,642,572	\$312,349
D1	Additional Street/Pedestrian Lighting (LS3)	\$540,000	\$521,724	\$514,091	\$538,307	(\$16,583)
E3	Seal Coat versus Rubber Overlay (LS 1)	\$264,000	\$264,342	\$218,964	\$218,964	\$45,378
E4	Seal Coat versus Rubber Overlay (LS 3)	\$1,607,000	\$1,533,050	\$1,544,073	\$1,556,530	(\$23,480)
E5	Seal Coat versus Rubber Overlay (LS 4)	\$380,000	\$430,896	\$378,590	\$380,003	\$50,893
G9	3/8" AC Leveling Course	\$166,000	\$166,000	\$166,000	\$166,000	\$0
K3	Red Light Enforcement	\$61,000	\$59,753	\$49,782	\$49,782	\$9,971
M1	Removable Steel Curb at 7th/Jefferson	\$6,000	\$5,989	\$5,989	\$5,989	\$0
	<b>Sub Total Streets Department</b>	<b>\$11,813,000</b>	<b>\$11,936,675</b>	<b>\$11,401,373</b>	<b>\$11,558,147</b>	<b>\$378,528</b>
A7	44th Street/Washington Transit Center (SF)	\$3,019,000	\$3,016,433	\$2,932,805	\$3,016,433	\$0
C6	APM Utility Connections	\$23,000	\$22,717	\$22,717	\$22,717	\$0
D2	44th Street Station People Mover Foundation (LS4)	\$756,000	\$783,003	\$756,400	\$756,400	\$26,603
D6	People Mover - APS Duct Bank @ 40th Place	\$327,000	\$326,527	\$356,944	\$356,944	(\$30,417)
E9	10" Water Line at 42nd/Washington LS 4	\$57,000	\$61,159	\$57,389	\$57,389	\$3,770
F3	Archaeological/Hazardous Material Testing (CAC)	\$60,000	\$60,000	\$57,471	\$58,801	\$1,199
	<b>Sub Total Aviation Department</b>	<b>\$4,242,000</b>	<b>\$4,269,839</b>	<b>\$4,183,726</b>	<b>\$4,268,684</b>	<b>\$1,155</b>
B3	LS 1 Water/Sanitary Sewer	\$14,354,000	\$13,794,439	\$9,158,685	\$13,631,043	\$163,396
B4	LS 2 Water/Sanitary Sewer	\$8,647,000	\$8,530,407	\$4,882,561	\$7,526,891	\$1,003,516
B5	LS 3 Water/Sanitary Sewer	\$20,602,000	\$20,943,058	\$18,170,368	\$20,615,602	\$327,456
B6	LS 4 Water/Sanitary Sewer	\$7,208,000	\$6,962,340	\$6,962,341	\$6,962,341	(\$1)
B7	Water and Sanitary Sewer Lines - 48th St. Bridge Replacement	\$156,000	\$155,767	\$142,862	\$142,862	\$12,905
J1	Catholic Protection for Waterlines LS1	\$744,000	\$743,645	\$480,199	\$743,645	\$0
J2	Catholic Protection for Waterlines LS2	\$505,000	\$504,657	\$385,368	\$504,657	\$0
J3	Catholic Protection for Waterlines LS3	\$29,000	\$0	\$0	\$0	\$0
J5	Catholic Protection for Waterlines LS4	\$350,000	\$85,620	\$85,620	\$85,620	\$0
	<b>Sub Total Water Services Department</b>	<b>\$52,595,000</b>	<b>\$51,719,933</b>	<b>\$40,268,004</b>	<b>\$50,212,661</b>	<b>\$1,507,272</b>
	<b>Total - Phoenix</b>	<b>\$98,064,000</b>	<b>\$97,443,224</b>	<b>\$84,543,075</b>	<b>\$96,778,129</b>	<b>\$665,095</b>
A8	5th/College Transit Center	\$635,000	\$630,730	\$622,657	\$628,261	\$2,469
AA	COT SRP Prior Rights TC Relocation	\$232,000	\$235,400	\$20,000	\$220,000	\$15,400
B8	Terrace / Apache Waterline Coordination (Design Only)	\$35,000	\$35,611	\$35,295	\$47,997	(\$12,386)
C1	Additional Communications Conduits	\$28,000	\$32,499	\$27,775	\$27,775	\$4,724

**Valley Metro Rail Program Control  
 CP/EV LRT Project  
 Project Budget Status  
 CNPA Project**

Element	Description	Board Approved Total	Revised Budget/Estimate	Current Actual \$ (To Date)	Forecast	Variance
C2	COT ASU Pedestrian Signal	\$122,000	\$122,000	\$107,754	\$108,754	\$13,246
C7	Parking Facility 5th/Farmer	\$112,000	\$110,701	\$85,740	\$112,187	(\$1,486)
C8	COT Waterline @ Cremery Route	\$82,000	\$94,081	\$82,061	\$82,061	\$12,020
D4	COT Additional Street Lighting (LS5)	\$280,000	\$325,994	\$279,956	\$279,956	\$46,038
D7	COT Additional Conduit @ McClintock/Apache	\$8,000	\$7,990	\$7,990	\$7,990	\$0
E6	Rubberized Asphalt LS5	\$625,000	\$633,406	\$537,949	\$595,141	\$38,265
F2	McClintock / Apache Storm Drain	\$116,000	\$123,153	\$114,689	\$114,689	\$8,464
F9	Rubber Asphalt - Tempe	\$489,000	\$522,165	\$464,026	\$464,026	\$58,139
G1	McClintock Park and Ride - CNPA	\$5,581,000	\$5,580,729	\$5,580,729	\$5,580,729	\$0
G3	Tempe Admin Costs	\$723,000	\$722,808	\$722,808	\$722,808	\$0
G5	Misc Changes directed by COT	\$0	\$15,690	\$0	\$15,690	\$0
G7	Apache/McClintock Par & Ride Garage	\$176,000	\$466,033	\$0	\$456,601	\$9,432
H3	Fiber Optic COT	\$397,000	\$429,702	\$361,652	\$383,940	\$45,762
J4	Catholic Protection of Waterline LS4 CO#15	\$140,000	\$158,638	\$139,620	\$139,620	\$19,018
J9	University Drive Station Bus Interface	\$0	\$0	\$0	\$0	\$0
K1	Veteran's Way- 5th/College TC	\$8,000	\$7,645	\$6,772	\$6,772	\$873
K2	Bus Shelter Electrification	\$10,000	\$11,076	\$9,766	\$9,766	\$1,310
K4	Washington/Center Parkway Station	\$4,734,000	\$4,694,112	\$4,005,849	\$4,427,924	\$266,188
L1	TLB 4th of July Electrical	\$25,000	\$19,350	\$12,089	\$19,350	\$0
L2	COT CNPA - Additional Mill/Overlay	\$466,000	\$574,377	\$521,935	\$568,575	\$5,802
L3	Price.Apache PnR Modifications (PnR-RB)	\$0	\$57,743	\$57,743	\$57,743	\$0
L5	COT McClintock Park & Ride (see G7)	\$0	\$0	\$0	\$0	\$0
L7	COT CNPA Prince/Apache PnR Waterline	\$0	\$116,844	\$102,480	\$102,480	\$14,364
L9	Landscape Island at Terrace/Apache	\$0	\$7,776	\$0	\$7,776	\$0
N1	Replace Bougainvilleas on Stadium Drive	\$0	\$21,771	\$0	\$21,771	\$0
N4	Tempe Market Analysis	\$44,000	\$44,378	\$43,728	\$43,728	\$650
XX	Tempe Miscellaneous Force Account Work LS5	\$21,000	\$0	\$20,000	\$0	\$0
	<b>Sub Total Tempe</b>	<b>\$15,089,000</b>	<b>\$15,802,402</b>	<b>\$13,971,063</b>	<b>\$15,254,110</b>	<b>\$548,292</b>
A9	Main Sycamore Transit Center	\$5,355,000	\$5,333,461	\$4,426,893	\$5,056,042	\$277,419
H4	Fiber Optic Backbone LS-4 (Mesa portion)	\$879,000	\$807,050	\$722,088	\$823,272	(\$16,222)
M2	Mesa Additional Grind & Overlay	\$281,000	\$281,383	\$246,792	\$246,792	\$34,591
M3	Mesa Additional Grind & Overlay on Dobson	\$233,000	\$232,677	\$204,073	\$204,073	\$28,604
N3	Mesa Market Analysis	\$19,000	\$18,542	\$18,542	\$18,542	\$0
XX	Mesa Miscellaneous Force Account Work LS5	\$5,000	\$0	\$4,399	\$0	\$0
	<b>Sub Total Mesa</b>	<b>\$6,772,000</b>	<b>\$6,673,113</b>	<b>\$5,622,787</b>	<b>\$6,348,721</b>	<b>\$324,392</b>
C9	ASU Logo Additions	\$73,000	\$72,010	\$72,010	\$72,010	\$0
E2	ASU Steam Line	\$8,000	\$8,189	\$8,189	\$8,189	\$0
H1	Fiber Optic ASU	\$1,182,000	\$1,104,468	\$961,562	\$1,061,938	\$42,530
	<b>Sub Total ASU</b>	<b>\$1,263,000</b>	<b>\$1,184,667</b>	<b>\$1,041,761</b>	<b>\$1,142,137</b>	<b>\$42,530</b>
AB	Cityscape CNPA in LS3	\$5,000	\$27,543	\$23,846	\$27,543	\$0
E1	(APS) Duct Bank at 48th St. Utility Bridge, Archaeological Support	\$72,000	\$76,309	\$57,870	\$57,870	\$18,439
F8	Rojo Lofts Property	\$82,000	\$81,998	\$20,185	\$81,998	\$0
	<b>Sub Total Other</b>	<b>\$159,000</b>	<b>\$185,850</b>	<b>\$101,901</b>	<b>\$167,411</b>	<b>\$18,439</b>
	<b>Grand Total CNPA</b>	<b>\$121,347,000</b>	<b>\$121,289,256</b>	<b>\$105,280,587</b>	<b>\$119,690,508</b>	<b>\$1,598,748</b>



### 3. Schedule Overview

The current Status of the Master Schedule is based on a data date of January 1, 2009. The schedule reflects an actual on-time completion of Saturday, December 27, 2008.

Track Installation							
Line Section	Bid Quantity		Installed		Remaining		Percent Complete
	LF	Miles	LF	Miles	LF	Miles	
Total	224,968	42.61	224,968	42.61	0	0.00	100.0%
OCS Pole and Down Guy Anchor Foundations							
Line Section	Bid Quantity		Installed		Remaining		Percent Complete
	LF	Miles	LF	Miles	LF	Miles	
Total	1,400		1,400		0		100.0%
Station Finishes							
Stations to S&C	Bid Quantity		Complete		Remaining		Percent Complete
Total	33		33		0		100.0%
Traction Electrification							
Area	Description		U/M	Bid Quantity	Installed	Percent Complete	
TPSS # 1 Thru 15	Feeders & Negative Returns		LF	135,580	135,580	100.0%	
Yard	500 kcmil Feeder Cable		LF	2,175	2,175	100.0%	
Line Sections/Yard	OCS Pole Assemblies		EA	1,478	1,478	100.0%	
Line Sections/Yard	OCS Wire		LF	259,790	259,790	100.0%	
Line Sections/Yard	OCS Cantilever Assemblies		EA	2,027	2,027	100.0%	
Signals and Communications							
Area	Description		U/M	Bid Quantity	Installed	Percent Complete	
Stations	Local Wire Installed		EA	33	33	100.0%	
Stations	Communications Cabinet Equipment Installed		EA	33	33	100.0%	
Stations	Communications Device Kits		EA	33	33	100.0%	
Stations	Terminate Devices		EA	33	33	100.0%	
Line Sections	Backbone Fiber		LF	262,873	262,873	100.0%	
Line Sections	Street Traffic Fiber		LF	159,803	159,803	100.0%	
Line Sections	City Use Fiber		LF	245,991	245,991	100.0%	



**Major Milestones**

**Civil:**

Line Section 1 Completion	October, 2008
Line Section 2 Completion	October, 2008
Line Section 3 Completion	October, 2008
Line Section 4 Completion (Complete)	December, 2007
Line Section 5 Completion (Complete)	March, 2008
Station Finishes	December, 2008
Park and Ride	December, 2008

**Systems:**

Signals and Communications	December, 2008
Fare Collection	December, 2008
Traction Electrification	December, 2008

**Startup:**

Start Int. Testing Area 1 (24 <sup>th</sup> Street to the Mill Pocket Track)	May, 2008
Start Int. Testing Area 2 (LS3 and Balance of LS5)	October, 2008
Start Integrated Testing Area 3 (All of LS2 and LS1)	November, 2008



Procurement Bid Status Report as of 12/24/08						
Title	Issue Date	Pre-Bid Conf	Bid Opening	Board Award	NTP (Anticipated)	
<b>PART I – CP/EV LRT PROJECTS</b>						
Insurance Brokers Services	TBD	NA	TBD	TBD	TBD	
Sponsorship Opportunity	9/7/08	NA	10/2/08	12/17/08 Board Review	TBD	
<b>PART II – LONG RANGE DEVELOPMENT PROJECTS</b>						
Architectural/Engineering On-Call Consultant Services - Future Extension Projects	1/21/08	2/12/08	3/17/08	Reactivated (Evaluations Complete)	Reactivated (Evaluations Complete)	



## 4. Quality Assurance

### Description

The METRO Quality Assurance Manager is responsible for the establishment and implementation of a Quality Assurance Program for the Valley Metro Rail organization that meets the requirements of the Federal Transit Administration and provides adequate confidence that procured materials and services meet the technical and quality requirements of the project. The METRO Quality Assurance Manager is assisted by the Quality Assurance Managers for the GEC for design, the GEC for LRT Vehicle procurement and the CAC for construction, installation, inspection and testing.

Individually and collectively, the Quality Assurance Managers are responsible for ensuring the effective implementation of the Quality Assurance Programs for their respective organizations and contractors. The Quality Assurance Managers are responsible for approval of quality programs, assessment of compliance with quality programs through inspections, audits and surveillances and for identifying nonconforming materials, parts and services and assuring effective corrective action.

### Progress

#### Closeout Activities

- All open Quality Action Requests (QAR's) have been addressed and are now closed. Two (2) NCR's require further effort to close. This report is current up to January 6, 2009 even though it is the December report. I wanted to include all items completed prior to my departure on Friday.
- The Quality Assurance Department is in the process of packaging and handover of required files to Document Control.

#### General

- Continued review of quality related submittals as required.

NCR and QAR Logs show all NCR's and QAR's for all contracts, including MP contracts. Columns for "New" and "Closed" represent changes in quantity(s) for this months report. Mass Electric has no remaining NCR's open on subcontractor work for the TES contract or the S&C contract.

#### **CAC Nonconformance Report Log (NCR):**

Total NCR's Written	New NCR's	Closed NCR's	Remaining NCR's	NCR's Projected to be Closed in January
224	0	9	2	2



**CAC Quality Action Request Log (QAR):**

Total QAR's Written	New QAR's	Closed QAR's	Remaining QAR's	QAR's Projected to be Closed in January
38	0	9	0	0

**Cost and Schedule – Variance Analysis**

- Quality Assurance activities remain within budget and on schedule.

**Issues and Solutions**

- Discrepancies regarding track switch machines have been addressed by MEC, Nortrak and Contec. No recent report of switch problems has been initiated by the METRO testing personnel.
- Final Punch List items continue to be addressed at the Station Finishes, TES, S&C, and Park-and-Ride contracts.

## 5. Public Involvement



### Description

The Public Involvement Section is responsible for sharing information on the Project with stakeholders along the light rail alignment, documenting questions and concerns expressed by these stakeholders and ensuring that appropriate Project staff addresses them, and providing answers and feedback to those stakeholders on the outcome. At this stage of the Project, PI Area Coordinators are working with stakeholders in their respective line sections to provide the latest information on construction status, traffic circulation, landscaping finishes, and follow-on contract progress/impacts. They are also sharing information on business assistance programs with the owners and managers of businesses located along the light rail corridor.

### Progress

- Public Involvement Staff successfully trained over 500 Volunteers for the Grand Opening. Volunteers include the general public, businesses, neighborhood associations and non-profit organizations. Fifteen training sessions were conducted throughout the valley.
- Post Grand Opening Training for internal METRO staff was also conducted. Approximately 100 METRO ambassadors were trained and will be present at the stations to assist the public in the use of the fare boxes, understanding the signage, boarding and exiting the trains, and to be of general assistance in answering questions.
- Public Involvement staff continues to promote the safety around light rail campaign. There were safety presentations to neighborhood groups, schools, and businesses along the CP/EV alignment and the surrounding metropolitan area.
- PI successfully supported all Grand Opening efforts.

### Schedule Status

- Public Involvement activities remain on schedule.

### Issues and Solutions

- None.



## 6. Disadvantaged Business Enterprise Program

### Description

It is the Disadvantaged Business Enterprise (DBE) Program Section's responsibility to administer the DBE participation requirements mandated by the Federal Government as a condition of the receipt of funding. These participation requirements are established by the City of Phoenix Equal Opportunity Department through the DBE Program Plan and are conveyed to Valley Metro Rail, as a sub-recipient, through the Civil Rights Office of the Public Transit Department.

The DBE Program Section is responsible for ensuring that procurement and contract language, specific to the program, accurately reflects current requirements. During the procurement process, the DBE Program Section is responsible for responding to Requests for Information, presenting the DBE documentation requirements at pre-bid conferences, and conducting contractor and DBE subcontractor training sessions. At Bid Opening, the accuracy of DBE documentation submitted with each bid must be verified and each bidder must be found either responsive or non-responsive. Upon contract execution, pre-construction meetings are held and reporting/compliance requirements are addressed in more detail. Monthly utilization reports are submitted by each prime contractor and are reviewed by the DBE Program Section. Field issues and variances in the planned utilization are addressed on an on-going/as-needed basis. In order to ensure adequate DBE participation and the availability of DBE contractors, on-going outreach activities are also conducted to facilitate networking of DBEs with prime contractors and to encourage DBE certification of non-certified small businesses.

### Progress

- Overall DBE participation is unchanged from the last reporting period. Based on amounts originally awarded is 14.44 percent, participation including change order work is at 15.16 percent and DBE's have been paid 15.20 percent of construction dollars to date.

### Procurement Activities

- There were no DBE related procurement activities this period.

### Contract Compliance

The summary below does not include DBE participation for professional services contracts related to future extensions or METRO's DBE vendors. Very little change is occurring at this point in the project. While some DBE activity is occurring it is limited to wrap-up activities or addressing punch-list items. Final participation will be calculated as each contract is closed out, audited, and final payments issued. Currently MP8, MP9, and Line Section 5 are being audited. Audits will begin shortly on the GEC and PMC contracts.

- Line Section 1 - Kiewit Western Contractors
  - 12.10 percent Minimum DBE Participation
  - 13.77 percent Committed at Bid



- 15.81 percent Current DBE Participation (adjusted contract amounts)
- \$9,185,101 Total DBE Subcontracted Amount
- Currently processing final contract closeout. Outstanding Labor Compliance issues need to be addressed before this can be completed.
- Line Section 2 - Herzog
  - 12.10 percent Minimum DBE Participation
  - 15.69 percent Committed at Bid
  - 19.79 percent Current DBE Participation (adjusted contract amounts)
  - \$11,845,156 Total DBE Subcontracted Amount
- Line Section 3 - Archer Western Contractors
  - 12.30 percent Minimum DBE Participation
  - 13.59 percent Committed at Bid
  - 15.99 percent Current DBE Participation (adjusted contract amounts)
  - \$16,543,403 Total DBE Subcontracted Amount
- Line Section 4 - Sundt/Stacy and Witbeck
  - 11.50 percent Minimum DBE Participation / 12.03 percent Committed at Bid
  - 12.32 percent Final DBE Participation
  - \$7,776,591 Total DBE Subcontracted Amount
  - Contract Closed
- Line Section 5 - Sundt/Stacy and Witbeck
  - 14.90 percent Minimum DBE Participation / 16.73 percent Committed at Bid
  - 17.64 percent Final DBE Participation (adjusted contract amounts)
  - \$13,990,411 Total DBE Subcontracted Amount
- Station Finishes - Archer Western Contractors
  - 12.20 percent Minimum DBE Participation
  - 12.98 percent Committed at Bid
  - 14.45 percent Current DBE Participation (adjusted contract amounts)
  - \$9,501,543 Total DBE Subcontracted Amount



- Operations and Maintenance Center – Sundt/Stacy and Witbeck (Contract Closed)
  - 7.34 percent Minimum DBE Participation
  - 7.54 percent Committed at Bid
  - 8.21 percent Current DBE Participation (adjusted contract amounts)
  - \$4,973,643 Total DBE Subcontracted Amount
- Traction Electrification - Mass Electric
  - 10.00 percent Minimum DBE Participation
  - 11.17 percent Committed at Bid
  - 11.05 percent Current DBE Participation (adjusted contract amounts)
  - \$6,421,080 Total DBE Subcontracted Amount
- Signals and Communications - Mass Electric
  - 11.00 percent Minimum DBE Participation
  - 11.67 percent Committed at Bid
  - 11.05 percent Current DBE Participation (adjusted contract amounts)
  - \$4,524,834 Total DBE Subcontracted Amount
- Construction Administration Consultant - PBS&J/PGH Wong Joint Venture
  - 21.00 percent Minimum DBE Participation
  - 25.35 percent Committed at Bid
  - 32.29 percent Current DBE Participation (adjusted contract amounts)
  - \$12,288,109 Total DBE Subcontracted Amount
- Program Management Consultant - SRBA/Parsons Joint Venture
  - 1.5 percent Minimum DBE Participation (established post contract award)
  - 0 percent Committed at Bid
  - 4.25 percent Current DBE Participation (based on adjusted contract amounts)
  - \$1,704,758 Total DBE Subcontracted Amount



- General Engineering Consultant - Parsons Brinckerhoff
  - 13.00 percent Minimum DBE Participation
  - 13.89 percent Committed at Bid
  - 16.06 percent Current DBE Participation (adjusted contract amounts)
  - \$11,392,061 Total DBE Subcontracted Amount
- Fare Collection System - Scheidt Bachmann
  - 8.20 percent Minimum DBE Participation
  - 8.39 percent Committed at Bid
  - 8.39 percent Current DBE Participation (adjusted contract amounts)
  - \$627,000 Total DBE Subcontracted Amount
- Material Procurements - Multiple Suppliers
  - 3.00 percent Minimum DBE Participation
  - 3.00 percent Committed at Bid
  - 3.00 percent Current DBE Participation (adjusted contract amounts)
  - \$1,770,322.77 Total DBE Subcontracted Amount
- Tempe Town Lake Bridge - PCL Civil Constructors – Contract Closed Out
  - Final Participation 20.80 percent (adjusted contract amounts)
  - \$4,559,765.58 Total DBE Subcontracted Amount
- Archaeological Services; DBE Prime, Archaeological Consulting Services Inc.
  - \$3,240,597 Total DBE Amount
- Park-and-Rides; DBE Prime, MRM Construction
  - 20.50 percent Minimum DBE Participation
  - 53.00 percent Committed at Bid
  - 70.21 percent Current DBE Participation (adjusted contract amounts)
  - \$3,913,359 Total DBE Subcontracted Amount
- Park-and-Rides; Kiewit Western Contractors
  - 20.50 percent Minimum DBE Participation
  - 23.68 percent Committed at Bid



- 23.68 percent Current DBE Participation (adjusted contract amounts)
- \$1,850,777 Total DBE Subcontracted Amount
- Park-and-Rides; Sundt, Stacy and Witbeck
  - 20.50 percent Minimum DBE Participation
  - 31.79 percent Committed at Bid
  - 32.28 percent Current DBE Participation (adjusted contract amounts)
  - \$2,860,170 Total DBE Subcontracted Amount

#### Outreach Activities

- On December 16, 2008 METRO staff met with the DBE Outreach Advisory Committee. Pattie Tellez, formerly with Kuniklo and representing the United Latino Business Coalition, has been appointed as Committee Chair. The purpose of the December meeting was to discuss lessons learned from the CP/EV Project, accomplishments, challenges, and where the committee should focus its efforts moving forward.

#### Issues / Resolutions

- A dispute has arisen between Archer Western Contractors (AWC) and DBE subcontractor, Taylor Made Security. AWC is withholding payment for theft of materials that purportedly occurred while Taylor Made personnel were to be patrolling construction sites. Resolution on the issue has not been reached at this time.
- A dispute has also arisen between AWC and DBE subcontractor, Techni-Weld. Final acceptance of material provided by Techni-Weld was issued in August 2008; however, AWC has refused to release retention held. Resolution on this issue has not been reached at this time.
- Both MP8 and MP9 final DBE utilization reports indicate a lower level of participation than was originally committed at time of bid. Documentation substantiating the reduced participation has been requested of the prime contractor, VAE Nortrak, but has not been received to date.

#### **Cost and Schedule – Variance Analysis**

- DBE activities remain within budget and on schedule.



## 7. System Safety and Security

### Description

The System Safety and Security Department is responsible for establishing requirements for the identification, evaluation, and minimization of safety and security risks throughout all phases of the project, including revenue operations.

The Section has developed and is administering provisions of the System Safety Program Plan, the System Security Program Plan, and the Safety and Security Certification Plan.

### Progress

- Completed Safety and Security Certification of the METRO system. All Certificates of Compliance and the Certificate of System Safety were signed, and the *Safety & Security Certification Verification Report* was distributed, well in advance of the start of revenue service.
- Completed procedures for fare inspections and distributed to the Phoenix Police Transit Bureau and East Valley Security (Wackenhut).
- Completed final preparations for Grand Opening ceremonies, events and METRO operations.
- Observed various tests, inspections, etc. in preparation for revenue service.
- Conducted light rail vehicle familiarization training program for the Mesa Fire Department.
- Conducted the Fire/Life Safety and Security Committee, and Safety and Security Certification Review Committee meetings.
- Monitored the successful launch of METRO on December 27, 2008.

### Construction Safety Statistics – Project Closeout (2005 through 2008)

METRO Construction Incident Rate	2005 through 2008
	<b>1.3</b>
OSHA National Construction Incident Rate = 5.30	

METRO Construction Lost Time Rate	2005 through 2008
	<b>0.1</b>
OSHA National Construction Lost time Rate = 2.20	

Total Project Hours Worked, All Contractors, 2005 through 2008 – <b>5,558,453</b>
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### Issues and Solutions

- None.



## 8. Environmental Management

During design and construction, the Environmental Manager is responsible for overseeing the compliance with federal and State environmental laws/regulations, the Project's environmental/historic preservation obligations, implementing the requirements of the Final Environmental Impact Statement (FEIS), Record of Decision (ROD), and Section 106 Memorandum of Agreement.

The Environmental Manager is also responsible for review of all proposed Project changes to determine if the proposed change is consistent with the Project Definition as stated in the FEIS and to determine if the change presents any environmental impact not addressed in the FEIS/ROD. If a proposed change results in potential new impacts, the Manager shall document those impacts and secure FTA concurrence with the change, definition of impacts and proposed mitigation.

### Progress

#### Archaeology Monitoring

- Monitoring and data recovery is complete and closed.

#### Archaeology Testing and Analyses

- A total of 1,688 person-hours were charged for archaeological services in support of the METRO CP/EV light rail transit project during the month of December. Of these, 782 hours were charged for analysis and reporting for Phoenix, 906 hours were charged for analysis and reporting for Tempe. In addition, \$6,624.50 was invoiced to other direct costs. These costs were as follows:

Purpose	Expense
<b>Phoenix</b>	
Pollen Extraction	\$910.00
AMS Dating (Radiocarbon)	\$2,975.00
Photocopies	\$9.50
<b>Tempe</b>	
Pollen Extraction	\$350.00
AMS Dating (Radiocarbon)	\$2,380.00



### Report Preparation

- The following first in-house draft chapters have been completed. They are currently going through the first round of edits:
  - Chapter 2: Environment and Paleoenvironment
  - Chapter 4: Geomorphology and Soils
  - Chapter 6: Archaeological Monitoring
  - Chapter 16: Historic Resources

### Pueblo Grande/La Plaza Site descriptions

- The Pueblo Grande and La Plaza site description chapters are in progress. The first in-house draft of the data recovery methods and feature descriptions/analyses for Pueblo Grande are scheduled to be completed March 1, 2009. The first in-house draft of the data recovery methods and feature descriptions/analyses for La Plaza are scheduled to be completed April 1, 2009.

### Pueblo Grande/La Plaza Bioarchaeology

- Mortuary feature descriptions are in progress. Data entry into the osteology database is in progress. This was projected to be complete in December, but has taken longer; we project it to be complete in January. The analyses and discussion of pathologies and spatial distribution of the remains are in progress. The first in-house draft of Bioarchaeology volume is scheduled to be completed in sections:
  - Pueblo Grande Osteology – April 1, 2009
  - La Plaza Osteology – April 1, 2009
  - Pueblo Grande Mortuary – May 1, 2009
  - La Plaza Mortuary – May 1, 2009
  - Complete Volume – June 1, 2009

### Lithics Analysis (Chipped stone, ground and pecked stone, miscellaneous stone objects)

- The total lithics analyzed to date, including critical and non-critical, is 17,609. This is 100 percent of the Pueblo Grande, La Plaza, and non-site collections. The draft report on the stone tools and manufacturing waste materials is in progress. The first in-house draft of the Lithics chapter is scheduled to be completed April 1, 2009.

### Ceramics Analysis

- The total ceramics analyzed in October was 13,001. This includes 10 from Pueblo Grande, 12,958 from La Plaza, and 33 from non-site contexts. The pottery sherds remaining to be analyzed includes: 93 from Pueblo Grande, 6,402 from La Plaza, and 2 from Dutch Canal Ruin. We have scheduled the ceramic analysis to be complete by the end of January. The first in-house draft of the Ceramics chapter is scheduled to be completed April 1, 2009.



### Faunal and Shell Analysis

- Faunal remains and shell artifact analyses are complete. All of the faunal and shell specimens from Pueblo Grande and La Plaza have been analyzed. A total of 17,495 specimens from both sites has been analyzed. This includes 4,823 from Pueblo Grande, 12,629 from La Plaza, and 42 from non-site contexts. The first in-house draft of the Faunal and Shell chapters are scheduled to be completed April 1, 2009.

### Archaeobotanical Analysis

- Processing: All of the selected pollen and flotation samples have been processed by the respective laboratories.
- Analysis Summary:
  - 318 pollen samples counted; 27 pollen samples remain to be counted
  - 313 pollen samples scanned; 32 pollen samples remain to be scanned
  - 319 flotation samples analyzed; 19 flotation samples remain to be analyzed
- Ninety-one percent of the pollen analysis and 91 percent of the flotation analysis are complete. Ninety-one percent of the paleoethnobotanical analysis is completed. The first in-house draft of the Paleoarchaeobotanical chapter is scheduled to be completed 4/6/09.

### Water Control (canals, reservoirs, etc.)

- The water control analysis and chapter is in progress. The canals in Line Sections 1, 2, 3, 4, and the western portion Line Section 5 have been documented and described. The analyses and descriptions of the canals at Las Acequias are in progress. The first in-house draft of the Water Control chapter is scheduled to be completed 5/1/09.

### **Contaminated and Hazardous Materials**

- No activity.

### **Regulatory Compliance**

- No activity.



### Cost and Schedule – Variance Analysis

#### Archaeology Monitoring FY'08

Task Order 2 – Cost +Fee construction monitoring FY'08	\$227, 906
Billed as of April 30, 2008	(\$228,772)
Balance available	(\$0)
Disallowed fee	\$1,866
Agency reserve for data recovery through end of construction	\$0

#### Archaeology Testing and Analyses

Contract Value	\$2,697,095
Invoiced Through November 30, 2008	(\$1,395,035)

#### Hazardous Materials Assessment (CAC)

Original Contract Value	\$499,488
Contract Value to date	\$499,488
Invoiced through February 29, 2008	(\$486,967)
Task orders open	(\$0)
Expended and Committed	\$486,967
Cost to complete	\$486,967

#### Remediation and Treatment Fund (METRO)

Budget	\$1,004,000
Expended	(\$96,811)
ERI invoiced to date	(\$96,811)
Open Task orders	(\$0)
Transferred to Archaeology Monitoring-Data Recovery	(\$650,000)
Funds Available	\$257,189
Estimated cost to complete	\$98,811

### Issues and Solutions

- None.



## 9. Real Estate

### Description

The LRT Project travels down main business arterials in the cities of Phoenix, Tempe and Mesa and approximately 769 parcels of property are affected. The number of right-of-way certifications required within this 20-mile corridor is in excess of 2,500. This number includes all easements required by the project, such as utility, irrigation, sidewalk, traffic, slope, landscape and temporary construction, as well as all of the normal fee acquisitions. Real Estate staffs from the project cities are responsible for obtaining all of the necessary property rights required to construct and operate the LRT system. Oversight and coordination of the cities' activities is provided by the METRO Real Estate Manager.

### Progress

- Presently, all of the required properties are under City control and are available for construction. Extensive coordination between METRO and City staff has enabled the project to obtain these properties in a manner sufficient to support construction.
- In Line Section 1, all 183 relocations have been completed. All 149 parcels are under City control and are available for construction.
- In Line Section 2, all 29 relocations have been completed. All 92 parcels are under City control and are available for construction.
- In Line Section 3, all 36 relocations have been completed. All 254 parcels are under City control and are available for construction.
- In Line Section 4, all 28 relocations have been completed. All 108 parcels are under City control and are available for construction.
- In Line Section 5, all 41 relocations have been completed. All 162 parcels are under City control and are available for construction.
- Project-wide, twenty building cut and re-faces were identified; all twenty building cut and re-faces have been completed. These building modifications required structural engineering analysis, architectural and utility modifications, procurement of relevant contractors, and extensive permitting processes.
- The FTA Real Estate Program Compliance Review cited nine areas of noncompliance. Presently, all citations have been adequately addressed and the FTA has rendered a final decision as of November 8, 2007. All issues have been resolved and all FTA decisions have been accepted by the Project. The FTA reserves the right to review legal settlements at a future date.
- An updated Real Estate Acquisition Summary table is included at the end of this section.



**Cost and Schedule – Variance Analysis**

- A focused real estate effort was initiated to accelerate the acquisition process and thus eliminate a negative impact to the project schedule. The Cities worked diligently with METRO to improve and streamline processes wherever possible.
- The overall real estate forecast is still within the budget and actual costs are within the budget plus contingency for the real estate contract unit.

**Issues and Solutions**

- Efforts continue to be focused on completing cost-to-cure work. No parcels are impeding construction work.

**CENTRAL PHOENIX / EAST VALLEY  
LIGHT RAIL TRANSIT PROJECT  
REAL ESTATE ACQUISITION SUMMARY**

**December 31, 2008**

ACTIVITY								Totals
	1 PHX	2 PHX	3 PHX	4 PHX	4 TEMPE	5 TEMPE	5 MESA	
Full Takes	40	0	11	2	0	16	0	<b>69</b>
Partial Takes	109	92	243	105	1	102	44	<b>696</b>
<b>Total Affected Parcels</b>	<b>149</b>	<b>92</b>	<b>254</b>	<b>107</b>	<b>1</b>	<b>118</b>	<b>44</b>	<b>765</b>
Offers Accepted	136	86	251	103	1	116	44	<b>737</b>
<b>Escrow Closed Acquisition Complete</b>	<b>136</b>	<b>86</b>	<b>251</b>	<b>103</b>	<b>1</b>	<b>116</b>	<b>44</b>	<b>737</b>
In Condemnation	13	6	3	3	0	1	0	<b>26</b>
In Negotiations	0	0	0	1	0	1	0	<b>2</b>



## 10. Utilities

### Description

The METRO Utility Manager is responsible for managing and overseeing the relocation of all privately owned utilities (irrigation, natural gas, nitrogen lines, fiber optics, power, private force mains, private communication lines, private irrigation lines, cable television, and telecommunications) necessary to allow LRT construction, including those with and without prior rights. Utilities with prior rights include SRP Power, SRP Irrigation, Qwest (local and long distance), Southwest Gas, WilTel, MCI and APS. Relocation of privately owned utilities is performed by private utility companies and their contractors, preferably prior to beginning LRT construction. Relocation of publicly-owned utilities is accomplished within the civil construction contracts by METRO contractors.

### Progress

- There are no utility conflicts or coordination issues within any of the Line Sections, Park-and-Ride, TPSS, Station Platforms or Transit Centers.
- Induced Voltage and Stray Current.
  - The light rail vehicles are still experiencing unexpectedly high voltage levels. Specialists from the GEC and CAC are currently investigating this issue to determine the source of the voltage spikes – overhead 12 kV, 69 kV and 230 kV electric lines - pending.
  - High Rail Voltage. Unexpectedly high voltage levels have been detected along the negative return rail which is a potential safety hazard. The designers are currently investigating whether or not the negative grounding device settings can be adjusted to avoid tripping out of the substations. The ground fault test report which is related to the negative grounding device is currently under review.
  - SWG has reported that data loggers test point areas are picking up substantially high readings of stray current on SWG facilities, which is a big concern for SWG due to mandated federal guidelines. SWG is working with specialists from the GEC and CAC to investigate this issue to determine the source of the stray current.

### Cost and Schedule – Variance Analysis

- Costs incurred to date for prior rights utilities are within the Utility Budget.

### Issues and Solutions

- Induced voltage and stray current – pending identification of the source of the problem.

## 11. Architecture

### Public Art



### Description

Public art projects will be a part of all Station Finishes listed in Section 4.1.3 with the exception of the platform at 19<sup>th</sup> Avenue and Camelback. Additional artworks will be placed at the 19<sup>th</sup> Avenue and Camelback Park-and-Ride and at the Tempe Town Lake Bridge. Artworks will include stand alone sculptures, integrated architectural finishes, entryway canopies, lighting, paving and landscaping elements. Artists will install their work in conjunction with the Station Finishes, Park-and-Ride, and Town Lake Bridge construction schedule.

### Progress

- Line Section 1
  - Montebello: Installed.
  - 19<sup>th</sup> Avenue/Camelback: Installed.
  - Camelback/7<sup>th</sup> Avenue: Installed.
- Line Section 2
  - Camelback: Installed. Need additional decomposed granite to cover the base of the sculpture.
  - Campbell: Installed
  - Osborn: Installed.



- Indian School: Installed.
- Thomas: Installed.
- Encanto: Installed.
- Line Section 3
  - McDowell: Four of the bronze sculptures have been installed. One more has been fabricated and will be installed in January; three more will be fabricated and installed in the spring.
  - Roosevelt: Installed.
  - Van Buren: Installed.
  - Central/Washington – Installed.
  - Third Street: Artwork and lighting have been installed; however, some additional rewiring and programming is required.
  - Twelfth Street: Artwork and lighting have been installed; however, some additional rewiring and programming is required.
  - Twenty-Fourth Street: installed.
- Line Section 4
  - 38<sup>th</sup> Street: artwork installed. Bronze pavers insert locations being marked in every month for partial install in December 2008 and completion (last five) in February 2009.
  - Forty-Fourth Street: installed
  - Priest/Washington: artwork is installed, waiting for Archer Western Contractors to install the lighting.
- Tempe Town Lake
  - Artwork has been completed except for the final programming of the bridge lighting.
- Line Section 5
  - Mill/3rd Avenue: Installed.
  - College/5th Avenue: installed
  - Apache Boulevard Stations
    - Sculpture: Installed.
    - Paving: Installed.
    - Trellis boxes: Installed.

- Lighting: Neon Cactus has been installed at Dorsey. Text Lights have been installed at Smith Martin. Water Bottles have been installed with the neon lights but need to work with Archer Western regarding conduit that was not installed. Neon Louvers are scheduled to be installed in January.
- Sycamore/Main: installed
- General Progress
  - Working with Archer Western Contractors (AWC) to resolve the lighting and final work issues.

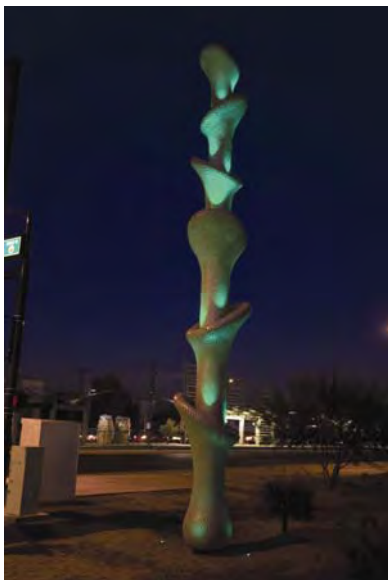
### Cost and Schedule – Variance Analysis

- Working with AWC to install artwork at the Dorsey/Apache station, this is out of sequence with their construction schedule due to art fabrication delays. Public Art activities remain within budget.

### Issues and Solutions

- Continuing to monitor contract schedule issues. Except for the stations noted above, artwork installation is on schedule within the latest AWC construction schedule.

### Construction Photographs



19<sup>th</sup> Avenue and Camelback  
Josh Garber



12<sup>th</sup> Street and Jefferson  
Victor Mario Zaballa

## Station Finishes



### Description

The METRO Station Finishes (SF) Contract includes twenty-eight stations, four transit centers and installation of art pieces by twenty-seven artists. Amenities within the fully accessible stations include shading trellises with overhead canopies, irrigated trees and landscape, patron seating and leaning rails, drinking fountains, map cases, directional signage and trash receptacles. Types of art pieces include stand-alone sculptures, paving treatments, lighting treatments and integrated art within the station structures.

The Station Finishes architects prepared the construction drawings in five separate packages that correspond to each civil line section. These documents along with an art reference volume have been combined together and are currently under construction by Archer Western Contractors, the METRO Station Finishes Contractor.

System elements that are located in the station areas include surveillance cameras (CCTV), a public address system (PA), emergency call boxes (ECB), variable message boards (VMB) automated ticket vending machines (TVM) and Stand-alone Validators (SAV).

### Progress

- Montebello and 19<sup>th</sup> Avenue Transit Center: Work is ongoing intermittently. The contractor is finalizing completed utility work and other site improvements, and has completed structural steel and canopy installation.
- Work on underground utilities is completed and structural steel installation is completed at the Central Avenue and Camelback Transit Center. Construction of site screen walls



is completed. Canopy installation is completed. Artwork installation is completed. The brick paver sidewalk is completed. The contractor completed the Mariposa Cul De Sac and associated driveways and the main driveway entrance paving.

- Washington and 44<sup>th</sup> Street Transit Center: Installation of Interior wall assemblies and miscellaneous finishes continue intermittently at Operator Facility Building (OPF3).
- Sycamore and Main Street Transit Center: Landscaping work is completed. Installation of interior finishes continues intermittently at Operator Facility Building (OPF4).
- Contractor completed constructing the foundation, and the masonry for Operator Facility Building north of the Montebello/19<sup>th</sup> Avenue Station (OPF1) roofing installation is complete. Work continues intermittently on miscellaneous finishes.
- Stations:
  - Canopy Installation has been completed for 33 Stations. This completes canopy installation for all stations.
  - Louver Installation is completed for 33 stations. This completes canopy installation for all stations.
  - Electrical/Communications Cabinet Installations have been completed for 33 Stations. This completes electrical / communications cabinet installation for all stations.
  - Paver installation has been completed for 33 Stations.
  - The contractor is completing handrail installation, painting and sealing, and miscellaneous contract and change order work at all of the stations.
  - Punchlists have been developed for 31 stations. Additional requests for substantial completion have been submitted for two stations and one transit center. Punchlists are being developed for these.
  - Work is ongoing at 33 Stations.
- The Signals and Communications contractor has access to 33 station platforms.

### **Cost and Schedule – Variance Analysis**

- Substantial completion has been granted for twelve stations. Punchlist work for all of the stations.
- Contractor has submitted a Request for Equitable Adjustment in the amount of \$4,800,000. The REA is currently under review.

### **Issues and Solutions**

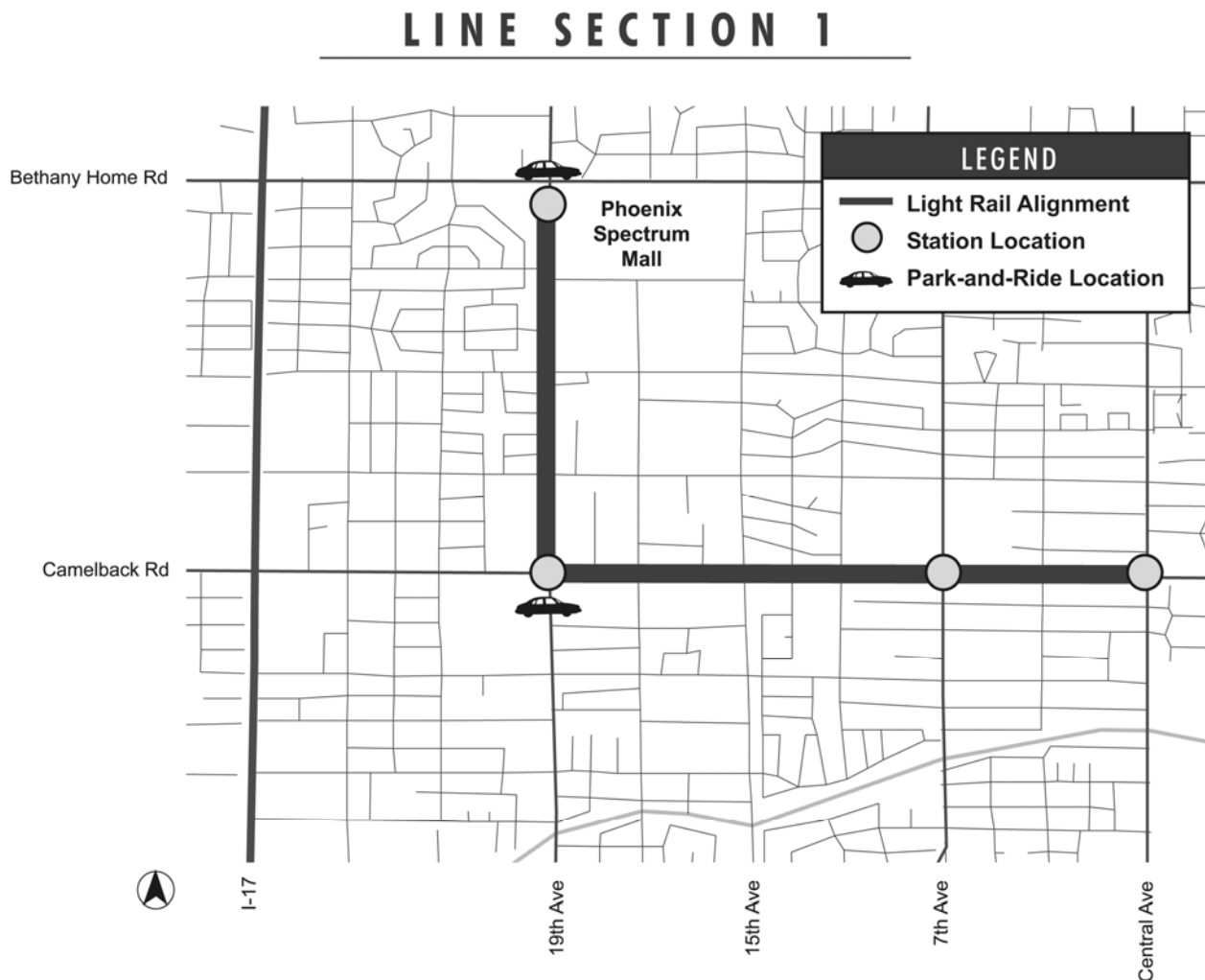
- Replacement seating to replace defective seating will not be delivered in time for opening. Contractor will install repaired seating in the interim.
- Some electrical issues are necessary to be resolved prior to DSD granting Certificates of Occupancy. Those issues include UL listings for Emergency Call Boxes, and Ticket



Vending Machines, as well as sign off by a registered electrical engineer on all the changes at the stations in Phoenix. Follow-up with contractors and other appropriate personnel to resolve these issues is ongoing.

## 12. Facilities

### Line Section 1



### Description

Line Section 1 is 2.27 miles in length, and begins on 19th Avenue south of Bethany Home Road to a point west of the Central Avenue and Camelback Road Station. The construction work in this contract includes demolition, relocation of public utilities, roadway and drainage modifications, systems ductbank installation to the substation site interface, station foundations, signing and marking, irrigation, landscaping, et cetera.

There are three stations in Line Section 1. They are at 19th Avenue and Montebello, 19th Avenue and Camelback Road, and 7th Avenue and Camelback Road.

### Progress

- The Contractor was granted Substantial Completion on Milestone E (Final Completion) on July 18, 2008.
- The Contractor has completed all items shown on the Substantial Completion punchlist.



- All track milestones are substantially complete.
- All Contract utility work is substantially complete.
- Final rubber asphalt placement and striping has been completed.
- All new traffic signal systems in the Line Section 1 alignment have been accepted by the City of Phoenix.

**Cost and Schedule – Variance Analysis**

- A revised schedule has been developed to reflect re-sequencing the work to support overall Program Milestones. Milestone D was completed April 22nd, and Milestone E (final project milestone) was substantially complete July 18, 2008. Final acceptance is pending completion of all punchlist items, resolution of three quality issues, resolution of payroll issues, and final settlement on bid item quantities and changes.

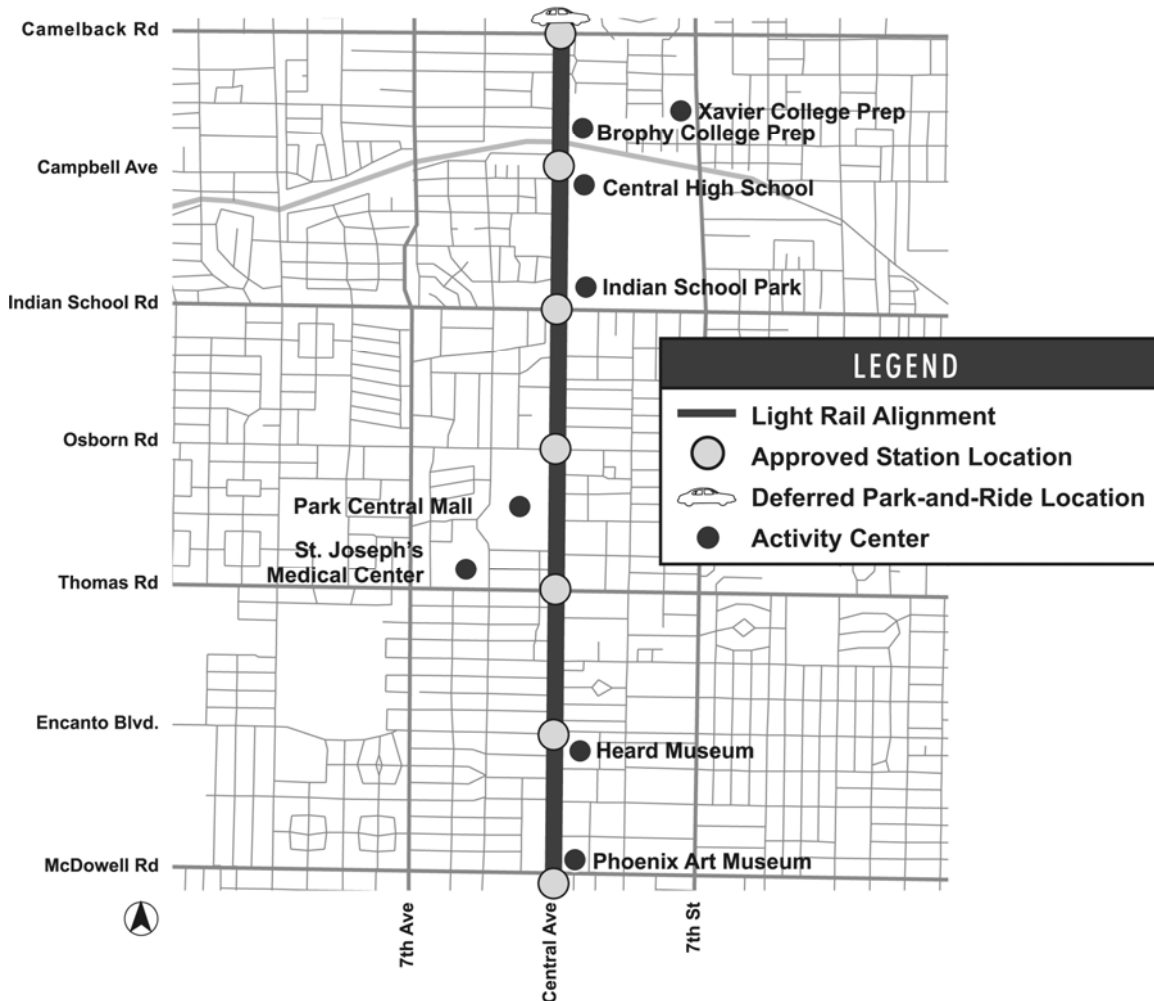
**Issues and Solutions**

- The RE is attempting to avoid any new changes at this point in the contract. However, Contractor is still being directed to address recently noted cost-to-cure issues, resulting in additional change work.
- Three quality issues remain, which currently are being tracked by nonconformance reports. The Contractor has requested to track these issues as warranty items to facilitate closing the contract. The Agency has approved this action for the sanitary sewer laterals on 19<sup>th</sup> Avenue, and for a small area of track at 7<sup>th</sup> Avenue that is out of specification for track gauge. However, the Agency is requiring the repair of nonconforming asphalt at the 19<sup>th</sup> Avenue and Camelback Road intersection prior to closing out the Contract.
- Change Order 90 revised the Contractual Milestone Dates (see chart below). One more Change Order will need to be issued in order to bring the final completion dates in line.

Milestone Number	Description	Original Contract Milestone Dates	CO No. 26 Revised MS Dates	CO No. 90 Revised MS Dates
A1	7th Avenue Station	27-Nov-06	26-Jan-07	2-Apr-07
A2	Camelback Station	27-Nov-06	9-Feb-07	22-Jun-07
A3	Montebello Station	5-Jul-07	31-May-07	27-Aug-07
B	Rail Access Camelback	3-May-07	22-Aug-07	22-Aug-07
D	Rail Access 19th Avenue	5-Jul-07	10-Jan-08	10-Jan-08
E	Final Completion	1-Nov-07	26-Mar-08	25-Jul-08

Line Section 2

**LINE SECTION 2**



**Description**

Line Section 2 begins at a point on Camelback Road just west of the Central Avenue/Camelback Road Station, and continues south on Central Avenue to a point approximately 200 feet north of the Central Avenue/McDowell Road intersection. The construction work in this contract includes demolition, relocation of public utilities, roadway improvements, drainage modifications, systems ductbank installations, station foundations, installation of systems ductbank and conduits, streetlights, traffic signals, OCS pole foundations, preparation of trackbed, and installation of embedded track. It also includes replacement of the Grand Canal Bridge on Central Avenue.

This Line Section will have six stations at the following locations: Central/Camelback, Central/Campbell, Central/Indian School, Central/Osborn, Central/Thomas and Central/Encanto.



## **Progress**

- Herzog has completed all contract and Change Order work related to infrastructure on the project and continues to work on punch out issues.
- Herzog has completed installation of the guideway and turn over to follow-on contractors.
- Herzog has completed all the Station foundations and turned over to follow-on Contractors.
- Herzog has completed 98 percent of punch list activities.
- Herzog has completed final AC Rubber Paving, and thermo plastic traffic striping. Pavement marking installation continues.
- Herzog's sub contractor punching Traffic Signals with COP/GEC and completed installation of Traffic Controller in the Cabinets.

## **Cost and Schedule – Variance Analysis**

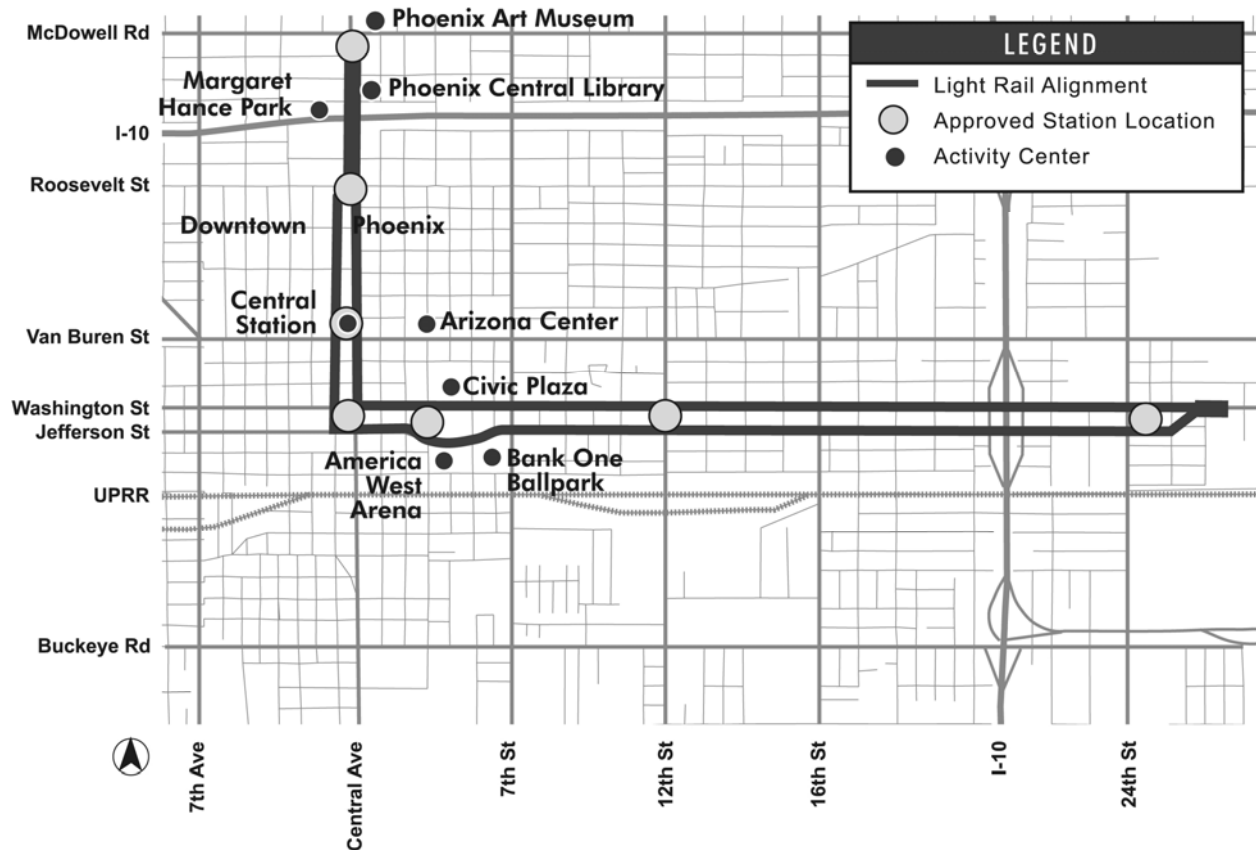
- The contractor has developed a new schedule to reflect re-sequencing the work to support overall Program Milestones. There are no impacts to follow-on contractors, TES installed final poles and began overhead catenary wire installation in mid-June.

## **Issues and Solutions**

- None.

Line Section 3

**LINE SECTION 3**



**Description**

Line Section 3 is 4.29 miles in length with approximately eight miles of in-street track. It begins at Central Avenue and McDowell Road and extends south on Central Avenue to Portland Avenue where the line splits into single-track alignment on the one-way streets of Central Avenue and 1st Avenue. It continues south on one-way 1st Avenue to Jefferson Street and then east on one-way Jefferson Street to its end at 26th Street. It continues on one-way Central Avenue to Washington Street and then east on one-way Washington Street to 26th Street. The eastbound leg is on 1st Avenue and Jefferson Street and the westbound leg is on Washington Street and Central Avenue. The Section traverses downtown Phoenix crossing the Deck Park Bridge and passes near America West Arena, Bank One Ballpark, the Symphony Hall, Civic Plaza and Arizona Science Center.

The work anticipated in this construction contract includes demolition, relocation of public utilities, corrosion control facilities, roadway and drainage modifications, station platform foundations, installation of systems duct bank and conduits, streetlights, traffic signals, OCS pole foundations, irrigation, landscaping, traffic signing, pavement marking, preparation of track bed and installation of embedded track. It also includes modifications of existing structures at



the Deck Park Bridge, Renaissance II Garage, Arizona Science Center/CPEG Pedestrian Bridge and ADOT I-10 Washington-Jefferson Interchange.

The seven stations with 13 platforms located within Line Section 3 are McDowell Road/Central Avenue, Roosevelt Street/Central Avenue, Roosevelt Street/1st Avenue, Van Buren Street/Central Avenue, Van Buren Street/1st Avenue, Washington Street/Central Avenue, Jefferson Street/1st Avenue, 3rd Street/Washington Street, 3rd Street/Jefferson Street, 12th Street/Washington Street, 12th Street/Jefferson Street, 24th Street/Washington Street and 24th Street/Jefferson Street.

For Right-of-Way availability and order of construction or sequencing, Line Section 3 has been divided into 15 segments. The segments are paired on the one-way street couplets with Segments 1 and 2 extending from Polk to Washington on Central and 1<sup>st</sup> Avenue, 3 and 4 from 1<sup>st</sup> Avenue to 3<sup>rd</sup> Street on Washington and Jefferson, 5 and 6 from 3<sup>rd</sup> Street to 9<sup>th</sup> Street on Washington and Jefferson, 7 and 8 from Portland to Polk on Central and 1<sup>st</sup> Avenue, 9 and 10 from 9<sup>th</sup> Street to 14<sup>th</sup> Street on Washington and Jefferson, 11 and 12 from 14<sup>th</sup> to 20<sup>th</sup> Street on Washington and Jefferson, 13 and 14 from 20<sup>th</sup> to 26<sup>th</sup> Street on Washington and Jefferson, and Segment 15 on Central Avenue from McDowell to Portland.

### **Progress**

- Archer Western Contractors (AWC) has completed the 11<sup>th</sup> Street Loop.
- AWC is in the process of completing all punch list items for final close out of the Contract.

### **Cost and Schedule – Variance Analysis**

- AWC has completed approximately 99 percent of the Contract.

### **Issues and Solutions**

- AWC has turned over all of LS3 to follow-on contractors to complete any necessary work.

**Construction Photographs**



11<sup>th</sup> Street Loop Rubberized AC Paving



AC Punch-List Repair



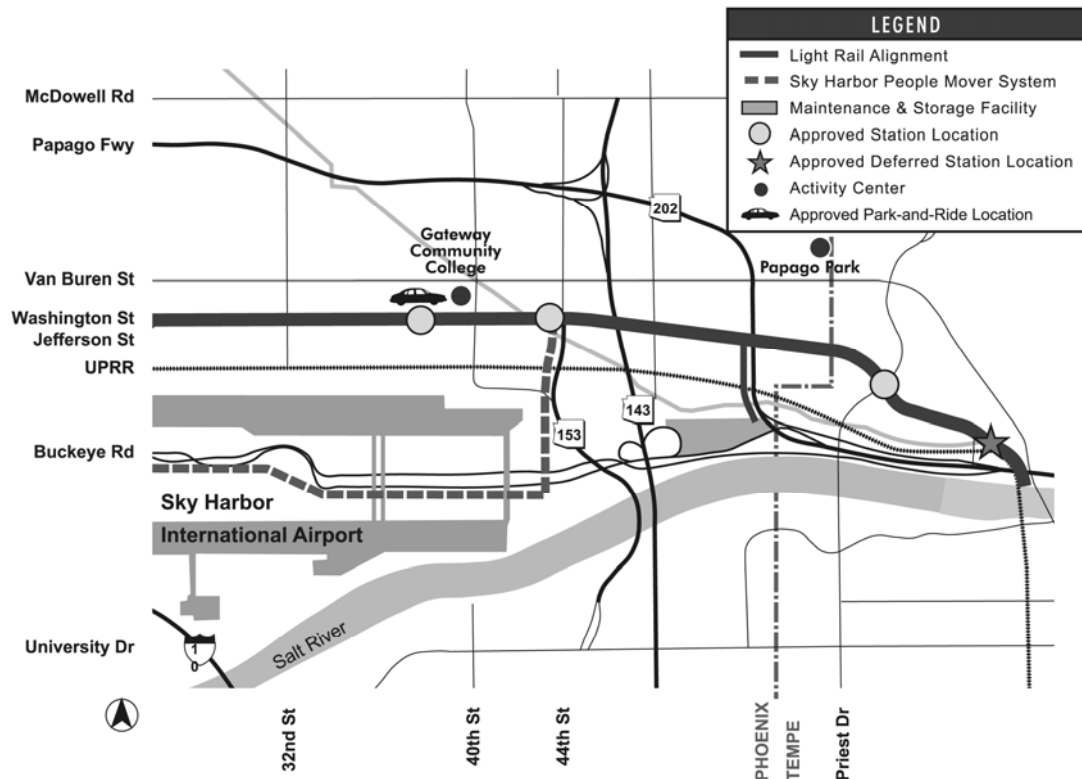
Punch List Ramp Repair



Rubberized AC Punch List Replacement

Line Section 4

LINE SECTION 4



Description

Line Section 4 guideway is approximately 5.4 miles from 26th and Washington Street to the northern limit of Tempe Town Lake. The work includes demolition, relocation of water and sewer lines, roadway improvements, drainage modifications, sidewalk and landscaping, streetlights, installation of traffic control signals, LRT station platform foundations, systems duct bank and conduits, OCS pole foundations, preparation of the tracked and sub drains, installations of track and special trackwork including the portion of the LRT Tempe Town Lake Bridge, and replacement of the Washington Street Bridge over the Grand Canal. There are three light rail stations located on Washington Street at 38th Street, 44th Street and Priest Drive.

Progress

- The work is complete.

Cost and Schedule – Variance Analysis

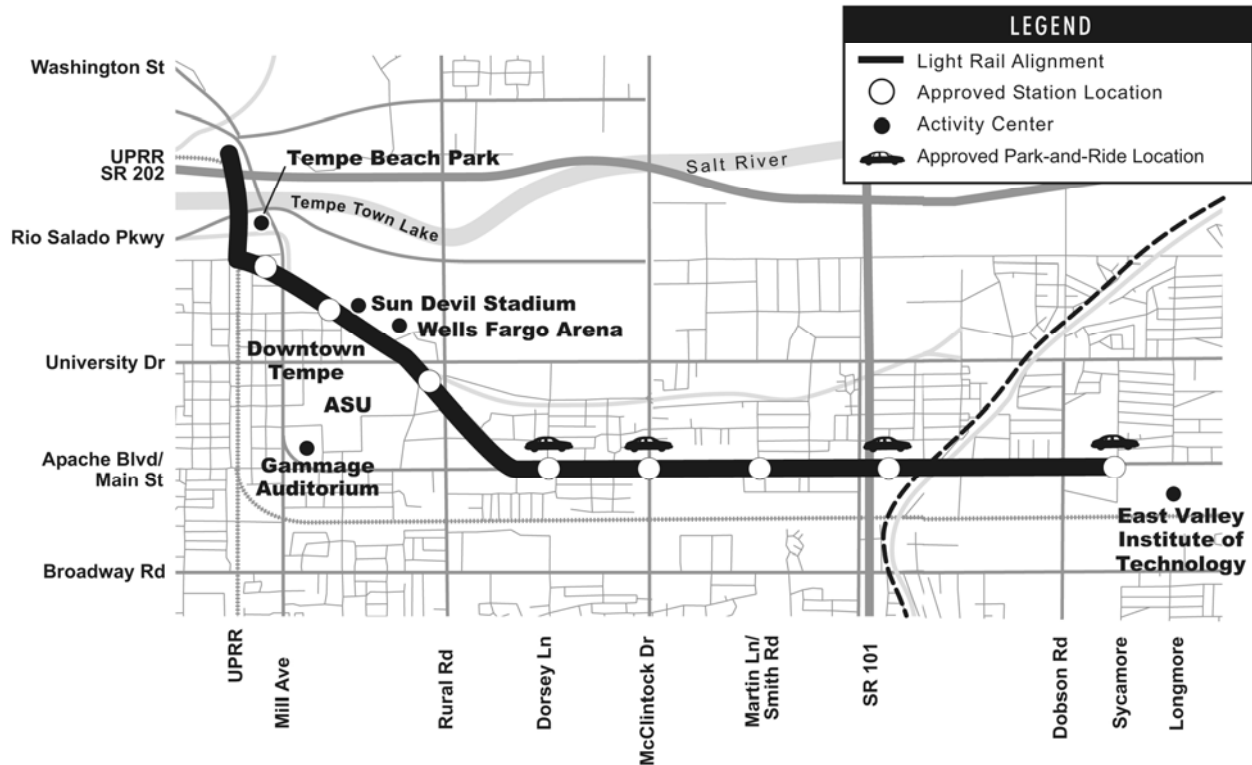
- The contract is in the progress of being closed.

Issues and Solutions

- None.

Line Section 5

**LINE SECTION 5**



**Description**

Line Section 5 is 4.7 miles in length, beginning at the 1st Street grade crossing in Tempe and progressing down the former Creamery Branch of the UPRR in Tempe, across Mill Avenue, and behind the Mission Palms resort. From there, it runs along Stadium Drive across Rural Road down Terrace Road to Apache Boulevard. It then proceeds east on Apache Boulevard and enters the City of Mesa, where it terminates in the vicinity of Main Street and Sycamore near the Tri-city Mall property.

The construction work in this contract includes demolition, relocation of public utilities, roadway and drainage modifications, station platform foundations, installation of systems duct bank and conduits, street lights, traffic signals, OCS pole foundations, preparation of track bed, and installation of embedded track. Stations are located in Tempe at 3<sup>rd</sup> and Mill, 5<sup>th</sup> and College, University and Rural, Apache and Dorsey, Apache and McClintock, Apache and Smith-Martin, Apache and Price Freeway; and in Mesa at Main and Sycamore.

**Progress**

- The Contractor has substantially completed all track milestones, station platforms, street widening and roadway paving, sidewalks, curbs and gutters, landscaping, and the ASU Promenade. Substantial completion has been granted for Milestone H. ASU has given its final acceptance for the Promenade, and acceptance for all civil work has verbally been given by Cities of Tempe and Mesa.



- The Contractor has continued coordinating with follow-on contractors in various locations in Milestones A through F since Line Section 5 substantial completion.
- All traffic signals have been activated and accepted throughout Tempe and Mesa.
- The Contractor completed all change work throughout Tempe and Mesa, and has finished punch list work. The Contractor responded to several warranty issue calls during this month.
- Testing of the light rail vehicle continues all the way to the end of the guideway east of Sycamore, without any noted rail issues.
- Contract closeout administration continues. Approval of a final contract price by the Board of Directors made funding available for payment of changes previously initiated, but not executed. The RE is currently processing these changes as agreed to in the final settlement. The Contractor is currently finalizing as-built drawings and final submittals required by the Contract. The RE will process these as they are received. The Safety Security Checklist for Line Section 5 has been submitted and approved.

### **Cost and Schedule – Variance Analysis**

- Milestones A2 through F2 are substantially complete, as are all eight station platforms. Though Milestones C2 through F2 were challenged by utility relocation delays, the Contractor has met these milestones as set in Change Order 83 for acceleration. Additional contract changes after substantial completion extended the contract work. A settlement for final project cost has been negotiated, and approved by the Board.

### **Issues and Solutions**

- Contract closeout was hampered by insufficient contingency to execute numerous changes during construction, leaving a number of these to be processed at the end of the project. Staff reductions by both the Contractor and the Line Section Field Staff has somewhat slowed the process. Both the Contractor and the Construction Administration Consultant have placed temporary staff to aid in this process.

## 48<sup>th</sup> Street Bridge Replacement



### Description

The 48th Street Bridge Replacement Contract consists of the replacement of one concrete vehicular and one utility bridge over the SRP Grand Canal, construction of underground utilities including water mains and APS ductbanks, jack and bored utility pipe casings under UPRR railroad track, curb and gutter, sidewalk and driveways, grading and fencing of the METRO rail material storage yard, and removal and replacement of asphalt concrete pavement.

### Progress

- The remaining work was completed and accepted by METRO and the City of Phoenix in May 2007.

### Cost and Schedule – Variance Analysis

- This contract was closed out after final completion, final acceptance and final payment.

### Issues and Solutions

- None.

## Town Lake Bridge



### Description

The Town Lake Bridge consists of an 11-span structure with concrete deck and steel deck truss superstructure on concrete piers. The structure has an overall length of 1,546 feet. The North and South approaches to the bridge are of retained earth fill and are approximately 1,654 feet in total length. The construction work includes cast-in-place drilled shaft pier foundations to bedrock, cast-in-place concrete pier caps, concrete abutments, concrete retaining walls, a steel truss superstructure, cast-in-place concrete deck, specialty lighting, demolition, relocation of public utilities, roadway and drainage modifications, systems duct bank conduits, streetlights, OCS pole foundations, preparation of track embankment and installation of concrete track slab. Installation of direct fixation rail for both the approaches and the bridge is included in Line Section 4 contract.

### Progress

- The Project is complete and the Contract has been closed as of March 2007.

### Cost and Schedule – Variance Analysis

- This Contract has been closed.

### Issues and Solutions

- None.

## Operations and Maintenance Center



### Description

The Operations and Maintenance Center (OMC) contract includes construction of Maintenance of Equipment (MOE) building, Maintenance of Way (MOW) building, Car Wash facility, Service and Cleaning facility, maintenance equipment and tools, entry station, track installation in the yard and shop areas, construction of yard lead track from the LRT mainline in Washington Street to the OMC site including a bridge over the UPRR railroad track and SRP Grand Canal, retaining walls and embankment, fill materials for site preparation, grading and drainage, drain channel and swales, culverts and underground drainage pipes, roadways, parking lots, landscaping, fencing, water mains for fire protection and domestic services, utility services, electrical ductbanks, OCS pole foundations, and systems ductbanks.

### Progress

- The contract is complete.

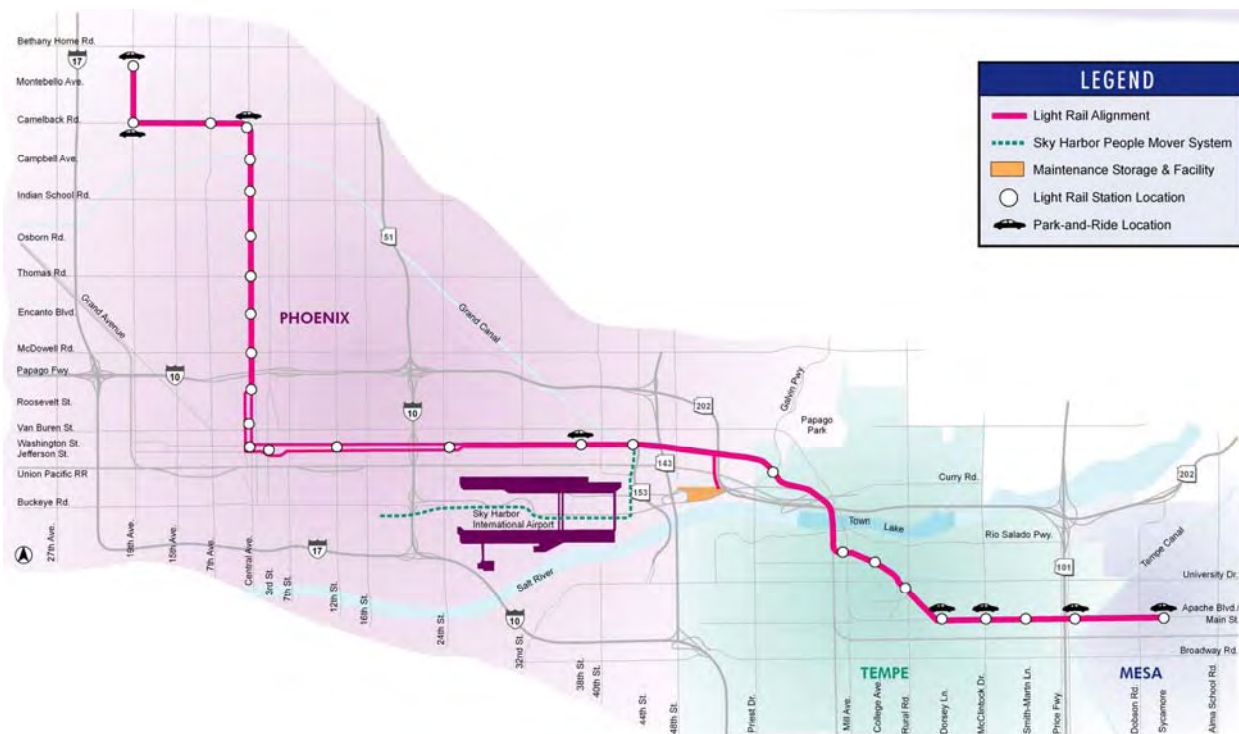
### Cost and Schedule – Variance Analysis

- This Contract has been closed.

### Issues and Solutions

- None.

## Park-and-Ride



## Description

Surface Park-and-Rides (PNR) are proposed at eight sites along the alignment, 3,513 spaces are currently provided. Sites are located at 19th Avenue and Montebello, 19th Avenue and Camelback Road, Central Avenue and Camelback Road, 38th Street and Washington Street, Dorsey Lane and Apache Boulevard, McClintock Road and Apache Boulevard, Price Freeway and Apache Boulevard, and Sycamore Drive and Main Street. The lots are adjacent to Transit Centers at 19th Street and Montebello, Central and Camelback and Sycamore and Main Street. On site security buildings are provided at 19th Avenue and Montebello, 19th Avenue and Camelback Road, McClintock Road and Apache Boulevard, Price Freeway and Apache Boulevard, and Sycamore Drive and Main Street.

The PNR construction package includes work for demolition, grading, drainage, concrete curbs, concrete sidewalks, asphalt concrete pavement, lighting, irrigation, landscaping, a security building, signing and pavement marking. CCTV security cameras and emergency telephones will be installed under the Signals and Communication construction package.

## Progress

- Kiewit worked on completing punchlist items and worked with the City of Phoenix to acquire a Temporary Certificate of Occupancy for the 19<sup>th</sup> Avenue and Montebello Park and Ride Facility. A Temporary Certificate of Occupancy was granted by the City of Phoenix.
- Kiewit worked on completing punchlist items and worked with the City of Phoenix to acquire a Temporary Certificate of Occupancy for the 19<sup>th</sup> Avenue and Camelback Park



and Ride Facility. A Temporary Certificate of Occupancy was granted by the City of Phoenix.

- MRM Construction completed construction activity at the Central Avenue/Camelback Park and Ride Facility.
- MRM Construction completed construction activity at the 38<sup>th</sup> Street/Washington Park-and-Ride Facility.
- Sundt, Stacy & Witbeck worked on punchlist activities for the Price Freeway/Apache Boulevard Park-and-Ride Facility. In an effort to obtain a Temporary Certificate of Occupancy from the City of Tempe, the Agency provided the City with a *Letter of Intent* to satisfy City requirements that required completion. The Agency committed to completing all outstanding work elements within 90-days from December 23, 2008. As a result, the City Planning Department granted a clearance.
- Sundt, Stacy & Witbeck worked on punchlist activities for the Sycamore Drive/Main Street Park-and-Ride Facility. Sundt, Stacy & Witbeck worked with the City of Mesa to obtain a Temporary Certificate of Occupancy for the facility. A Temporary Certificate of Occupancy was necessary as there were administrative requirements that the Agency was actively working to fulfill. A Temporary Certificate of Occupancy was granted by the City of Mesa.
- The Developer for the McClintock/Apache site provided a turnover to the City of Tempe on November 13<sup>th</sup> along with a certificate of occupancy for the garage. METRO Signals and Communications is completing the installation of security systems for the garage.
- The City of Tempe completed construction for an additional 100 spaces at Dorsey/Apache. METRO Signals and Communications is providing the necessary interface for the facility security system.

### **Cost and Schedule – Variance Analysis**

- Total award amount for the six sites to be constructed by METRO is \$22,295,267.

### **Issues and Solutions**

- Installation of the security building fire alarm reporting system at each of the four sites with buildings. This is necessary to obtain a Final Certificate of Occupancy for the sites.

**Park and Ride Construction Data**

No.	Park and Ride Site	Number of Spaces	Substantial Completion	Contractor
1	Montebello/19 <sup>th</sup> Avenue	794	November 1, 2008	Kiewit
2	19 <sup>th</sup> Avenue/Camelback	408	November 1, 2008	Kiewit
3	Central/Camelback	135	September 28, 2008	MRM Construction
4	38 <sup>th</sup> Street/Washington	189	September 28, 2008	MRM Construction
5	Dorsey/Apache (2-Sites)	207	November 1, 2008	City of Tempe
6	McClintock/Apache--Garage	308	November 13, 2008	Developer, Gray
7	Price Freeway/Apache	678	November 22, 2008	Sundt, Stacy & Witbeck
8	Sycamore/Main	802	November 22, 2008	Sundt, Stacy & Witbeck
<b>Opening Day Total</b>		3,521		

**Construction Photographs**



Cleaning of Parking Lot  
19<sup>th</sup> Avenue/Montebello Park-and-Ride Facility



Post-Revenue / Open to Public  
19<sup>th</sup> Ave/Camelback Park-and-Ride Facility



Post-Revenue Open to Public  
Central/Camelback Park-and-Ride Facility



Completed Parking Lot  
38<sup>th</sup> Street/Washington Park-and-Ride Facility



Parking Lot Overview  
Price/Apache Park-and-Ride Facility



Parking Lot Overview  
Sycamore/Main Park-and-Ride Facility

## Track Material Procurement



### Description

The track materials are broken down into five separate procurements as follows:

- Ballasted Special Trackwork – includes ballasted turnouts and concrete switch ties for the MSF and direct fixation fasteners for the MSF, Town Lake Bridge (TLB) and Deck Park Bridge.
- Girder Rail – rail needed for the embedded trackwork.
- Girder Rail Special Trackwork – turnouts needed for the embedded trackwork.
- Concrete Crossties – concrete crossties needed for the OMC.
- T Rail – rail for the MSF, TLB including approaches and Deck Park Bridge.

### Progress

- Girder Rail
- Embedded Special Trackwork: The Contractor continues to produce special trackwork castings and other miscellaneous materials for this contract.

### Cost and Schedule – Variance Analysis

- Track material procurement activities remain on schedule and within budget at this time.

### Issues and Solutions

- None.

## Traffic Signal Procurement



### Description

These Purchase Orders include the system-wide procurement of traffic signal poles, controllers, controller cabinets, and traffic central system upgrades for the City of Phoenix and Tempe.

### Progress

- All of traffic signal equipment for the five Line Section contracts initially ordered under these Purchase Orders has been delivered to METRO or directly to the Line Section contractors' storage yards.

### Cost and Schedule – Variance Analysis

- No Change for this month, traffic signal procurement activities has been completed; however, the Central System Upgrades for phoenix and Tempe is an ongoing activity, and will continue throughout the duration of the project.

### Issues and Solutions

- None.

## Underfloor Wheel Profiling Machine



### Description

Design, fabricate, furnish an Underfloor Wheel Profiling Machine, Mechanical Chip Collection/Removal Conveying System, and all necessary accessories, items of equipment, and mechanical, electrical, controls and structural items to re-profile wheels on Light Rail Vehicles. Deliver the machine to the OMC and install the machine within the concrete foundation constructed by the Agency in the Maintenance of Equipment building. Inspect, test, start-up the machine to ensure it is operating properly and safely and provide training to Agency staff.

### Progress

- The work is complete.

### Cost and Schedule – Variance Analysis

- The contract is closed out.

### Issues and Solutions

- None.

## 13. Systems

### Automated Fare Collection System



#### Description

Design, manufacture, furnish, assemble, test, inspect and install the LRT Automated Fare Collection System (AFCS) for use by METRO. The AFCS consists of Ticket Vending Machines (TVMs), Ticket Validators (Validators) integrated within the TVMs, a Data Collection/Information System (DC/IS), station LANs, Hand Held Verifiers (HHVs), Revenue Collection Equipment, related data communication networks to allow the TVMs to communicate with a central fare collection computer, spare parts, tools, test equipment, documentation, software listings, training, technical assistance and warranty.

#### Progress

- Milestone 1 Progress: Approved Management Plan and Master Schedule – Complete.
- Milestone 2 Progress: Approved Conceptual Design Review – Complete.
- Milestone 3 Progress: Approved Preliminary Design Review – Formal closeout of Preliminary Design Review (PDR) submittals outstanding.
- Milestone 4 Progress: Approved Final Design Review – Formal closeout of Final Design Review (FDR) submittals outstanding.



- Milestone 5 Progress: First Article Configuration Inspection Approved – Complete.
- Milestone 6 Progress: Qualification Testing – Complete.
- Milestone 7 Progress: Factory Integration Testing – Combined with Milestone 8, Pilot Station Testing.
- Milestone 8 Progress: Combined FIT/Pilot Station Testing - Complete.
- Milestone 9: Delivery of Ticket Vending Machines – Complete.
- Milestone 10 Progress: Completion of Training – 90 Percent Complete.
- Milestone 11 Progress: Field Installation Testing – 92 Percent Complete. 93 of 97 TVMs Installed, 71 fully tested and accepted, 18 conditionally accepted, and 3 not yet accepted. Fleetwide Smartcard testing underway.
- Milestone 12 Progress: Complete; report pending.

### **Cost and Schedule – Variance Analysis**

- Due to delays in obtaining power and/or addressing conduit and pad issues, five TVMs (19<sup>th</sup> and Camelback and Price and Apache Park and Ride lots, and the Sycamore and Main Transit Center) will not be ready for the start of revenue collection on January 1, 2009. Installation work will re-commence on January 5, 2009.

### **Issues and Solutions**

- Standalone Smartcard Ticket Validator – Installation complete and approved by City of Phoenix Design Services Department (DSD); testing nearing completion.
- Handheld Verifier – Handy H240 Verifiers delivered for Interim solution. Programming pending. Change Order pending for the addition of additional verifiers with the revised design following in February 2009; however, design is underway to expedite delivery.
- City of Phoenix Electrical Inspection Issues – City of Phoenix DSD has provided conditional acceptance of installations. Final modifications to address the TVM/AC assembly UL rating issue to be completed in January.

### Construction Photographs



Standalone Smartcard Ticket Validator  
Installation at Central and Van Buren Station



Standalone Smartcard Ticket Validator  
Inspection by COP DSD



Acceptance Testing at 5<sup>th</sup> and College Station



Standalone Smartcard Ticket Validator  
Installation at Central and Van Buren Station

## Light Rail Vehicle



### Description

METRO has a Contract with KINKISHARYO International, L.L.C. (KI) for two prototype and forty eight production light rail vehicles (LRVs) for a total of fifty (50) LRVs. The contract includes prototype engineering, special tools and test equipment, training, spare parts and publications. The cars are 70 percent low-floor, double-articulated LRVs with two main "A" and "B" passenger sections and a mid "C" section, joined to form one single operating unit. There are four passenger doors on each side and an operators cab at each end. The LRVs are designed to be "street friendly" with energy absorbing bumpers and crashworthy cab ends.

### Progress

- With production and testing of the LRVs approaching completion and the successful start of Operations on December 27, 2008, METRO staff members are shifting focus away from the Vehicle Procurement Contract and towards the Maintenance Contract with KI.
- Warranty Administration has begun and the "clock" has started on 48 service-ready LRVs. To date, KI has met all daily Operations service needs plus spares available at the OMC.
- Following areas still remain to be addressed:
  - Completion of Conditional Acceptance testing of cars 149 and 150.
  - Final Acceptance of remaining vehicles following vehicle burn-in.



- Completion of delivery of vehicle contract deliverables (spares, manuals, tools, etc.).
- Completion of all invoices relating to the vehicle contract.
- Completion of a change order or settlement to reconcile all outstanding vehicle contract issues (weight, vehicle delivery, Agency deliverables, Agency requested changes, etc.).
- Completion of all outstanding safety certification items.
- Closeout of all outstanding CDRLs.
- Completion of all Car History Books.
- Confirm proper operation of passenger counting and VMS (communications) systems.
- Delivery of updated vehicle specification to “as-built” status.

### **Issues and Solutions**

- KI is still awaiting a few parts to complete production of cars 149 and 150 – anticipated completion of 149 is this week, 150 is mid-February.
- In an effort to minimize vehicle APS tripping, METRO staff has directed KI to turn off regenerative braking on all vehicles – software modifications are in-process and a trial period is anticipated in the coming weeks.
- VMS issues remain at the TOD and car-to-car communications – software changes and testing are currently underway.
- Day-to-day issues – although infrequent and inconsistent as of this writing, other issues remain to be solved including: GPS and radio drop-outs, APC download problems, wheel/rail noise - track lubrication system to be turned ON, friction brake squeal, yard TPSS drop-outs. A solution for each of these issues is in-process.

## Signals and Communications



### Description

The LRT Signal and Communications (SC) Contract provides for the final design, manufacturing, installation, and testing of the integrated signal and communication system.

Major work elements include train signal equipment and communication hardware and software for controlling train movements through crossovers and interlocking, fiber-optic backbone communication transmission system (CTS), closed-circuit TV (CCTV), public address system (PA), variable message boards (VMB), Train Control System, Vehicle Management (VMS), Radio System, PABX and Telephone System including emergency telephones at Park-and-Rides and Transit Centers, Supervisory Control and Data Acquisition System (SCADA), installation of workstations and equipment in the Operations Control Center (OCC) and at the Maintenance and Storage Facility (MSF), six site-built signal buildings and three signal buildings combined with traction power substations. The work scope also includes installation of fiber-optic cables for street traffic control systems for the Cities of Phoenix, Tempe and Mesa, and installation of fiber-optic cables for ASU.

### Progress

- Signal Buildings and Signal Cases
  - Completed all remaining Operational and Dynamic Acceptance Testing activities.
  - Completed installation of the 11<sup>th</sup> Street Loop signal system equipment, except for seven inoperable switch indicators (awaiting repair and return).



- Obtained final electrical clearances for occupancy for all signal buildings in City of Phoenix.
- Communications System
  - Completed testing of redundancy paths for the Street Traffic System fiber communications system (except for Sycamore/Main mid-level switch).
  - Finalizing network testing and device end to end testing in all Rings. Performed final adjustments of CCTV cameras.
  - Completed equipment installation and continuing testing of Communications equipment at Park-and-Ride Lots and Transit Centers.
  - Completed relocation and testing of Ambient Noise Sensors (except testing of those not relocated).
- Coordinating with other Contracts
  - Station Finishes Communication Cabinets – Addressing conduit and equipment placement issues at Operator Facility 1 at 19<sup>th</sup> and Montebello Station.
- Integrated Testing
  - Completed Contractor-Lead Integrated testing. Continuing to support Agency-Lead Integrated Testing.

### **Cost and Schedule – Variance Analysis**

- The final completion target Milestone of October 3, 2008 was not met but the systems are substantially complete and ready for revenue service operations.

### **Issues and Solutions**

- Emergency Call Boxes – Obtained temporary approval by City of Phoenix to use emergency telephones until UL listing issue resolved.
- Park-and-Ride Lot and Transit Center functionality incomplete. Additional security to be provided until work complete.
- Train Tracking – working with MEC to resolve the issues.

**Construction Photographs**



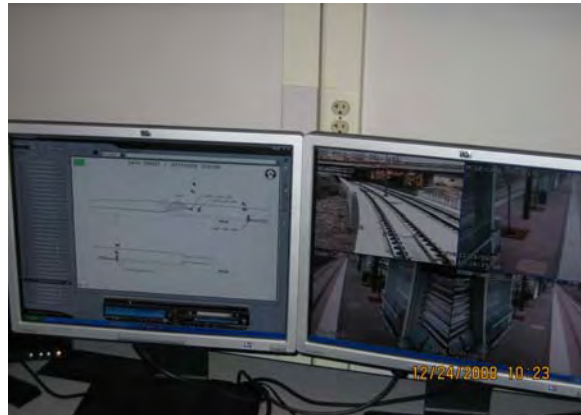
CCTV Camera Installation at Central and Camelback Station Transit Center



CTS Fiber Splicing at Price and Apache Park and Ride Lot



City of Phoenix Electrical Inspection at Signal Building No. 1



CCTV Testing at 24th and Jefferson Station from Passenger Assistance Agent Console



CCTV Camera Display at Passenger Assistance Agent Consoles



Final Adjustments at Operations Control Center in Preparation for Opening Day

## Traction Electrification System



### Description

The Traction Electrification System (TES) provides the electric power required to operate the Light Rail Vehicles (LRV). There are two main components to the TES, these are: Traction Power Substations (TPSS) that convert incoming utility power to DC power, which is used by the LRV and the Overhead Contact System (OCS), which distributes the DC power to the trackway. There are 15 Site Built 2,000 kW substations. Twelve of the substations are 22-feet by 44-feet and three are 22-feet by 57-feet. The substation buildings will be constructed of integrally colored concrete block on landscaped sites. The OCS is comprised of 20-route miles of double-track low-profile overhead catenary. The OCS will be installed on over 1,300 round painted poles. The nominal system voltage is 750 VDC. The nominal height of the OCS above the roadway is 18-feet, 6-inches.

The TES Contract provides final design of the TPSS and OCS, manufacturing, fabrication, installation, site work and testing.

### Progress

- Substations
  - Another software revision has been uploaded to the substations. Nominal substation output voltage has been lowered from 850 Vdc to 825 Vdc with the new software.
  - Fire and Intrusion Alarm tests progressed for all substations.
  - HVAC System troubleshooting progressed.



- Additional decomposed granite placed (TPSS No. 1 and 2).
- Metal louver installation completed (TPSS No. 5).
- New lock cores for substation doors have been turned over to the Agency for installation.
- Punchlist items remain outstanding.
- Overhead Contact System
  - 11<sup>th</sup> Street Loop installation and field testing including Live Wire Test has been completed.
  - Ground tests for vaults performed.
  - Downguy bonding jumpers installed.
  - Installation of pole baseplate covers, numbers, and handhole covers continues to progress.
- Coordination with other Contracts/Entities
  - SCADA testing progressed. The Contractor must correct discrepancies noted with remote control functions for various substations.
- Milestones
  - Milestone 10B and 10C are substantially complete.

### **Cost and Schedule – Variance Analysis**

- TBD.

### **Issues and Solutions**

- TPSS/LRV Compatibility Issue. The light rail vehicles are still experiencing unexpectedly high voltage levels. A possible solution may be to install large output filter capacitors in the substation. Currently working with a third party contractor to obtain a cost proposal for the filter capacitors; however, additional information is required from the TES Contractor to finalize the quote. The substation nominal output voltage has been reduced from 850 Vdc to 825 Vdc.
- High Rail Voltage. Unexpectedly high voltage levels were being detected along the negative return rail in the CBD which is a potential safety hazard. The negative grounding device (NGD) settings were adjusted per the General Engineering Consultant (GEC) direction to help reduce the quantity of NGD clamps to station ground. The ground fault test report which is related to the negative grounding device has been rejected. On December 28 light rail maintenance crews discovered that rail bond cables to the impedance bond terminals were not connected at the south end of the Culver cross-over. Once these cables were connected the high rail voltage problems have gone away.

### Construction Photographs



TPSS No. 10 – HVAC Troubleshooting



11<sup>th</sup> Street Loop Live Wire Test



Substation Fire Alarm Test



Installing Bonding Jumpers for Downguys



## **Rail Activation/System Integration**

### **Description**

The Rail Activation Plan was developed in June, 2006 to outline the process and organizational approach that METRO will employ to oversee the testing and start-up of the 20 mile light rail CP/EV system. The Rail Activation process is used to transition the Light Rail Project from the construction phase, through testing, pre-revenue operations, and finally into revenue service. The Rail Activation Team is a diverse group of Transit professionals which consists of METRO staff from Operations, Maintenance, System Engineering, Safety/Security, and Media relations, along with CAC, PMC, GEC and City staff.

This same group will participate in and oversee the System Integration process, which is the final testing process before sections of the alignment can be activated for use. The System Integrated tests are designed to prove that the various systems within the alignment work well together and meet design criteria. The primary goal of the Rail Activation Team is to ensure the project achieves revenue operations in a timely and safe manner.

### **Progress**

- METRO and the consulting staff are developing test plans and procedures related to track allocation, rail/wheel interface, clearance, and LRV dynamic testing.
- METRO, CAC and Seimens are continuing work on modifications to the substations, but this work has no impact on LRV testing.
- An investigative report was received from a CAC substation expert for review by Rail Activation Team.
- Seimens has implemented a new software revision to the substations and has begun testing.
- LRV testing was performed on the main line, with the original wheel profile, and the rail activation team is waiting for the results.
- The Rail Activation Team is observing and monitoring the progress of TES and Signal testing to determine when the expanded test track and future milestones will be achieved.
- Passenger service started on December 27, 2008 from Montebello to Sycamore and Main.
- Revenue service began January 1, 2009.
- The Transportation group has assumed "track allocation" responsibilities on September 29, 2008.
- Integrated test procedures are complete and accepted.
- Eighty percent of the integrated testing is complete. Deficiencies are being corrected and will be retested by the integrated test team.



- The Rail Activation Team and the Integrated Test Team are monitoring all systems to correct all outstanding issues.
- Track Allocation meetings are being held every Thursday at the OMC conference room.
- Track Access Training is ongoing the first Monday of the month.

Activity ID	Duration	Start	Finish
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## Master Schedule

### Operations & Maintenance Center

MSF_1	1,051*	14SEP04A	30JUN07A
MSF_6	0		30JUN07A

### Light Rail Vehicles

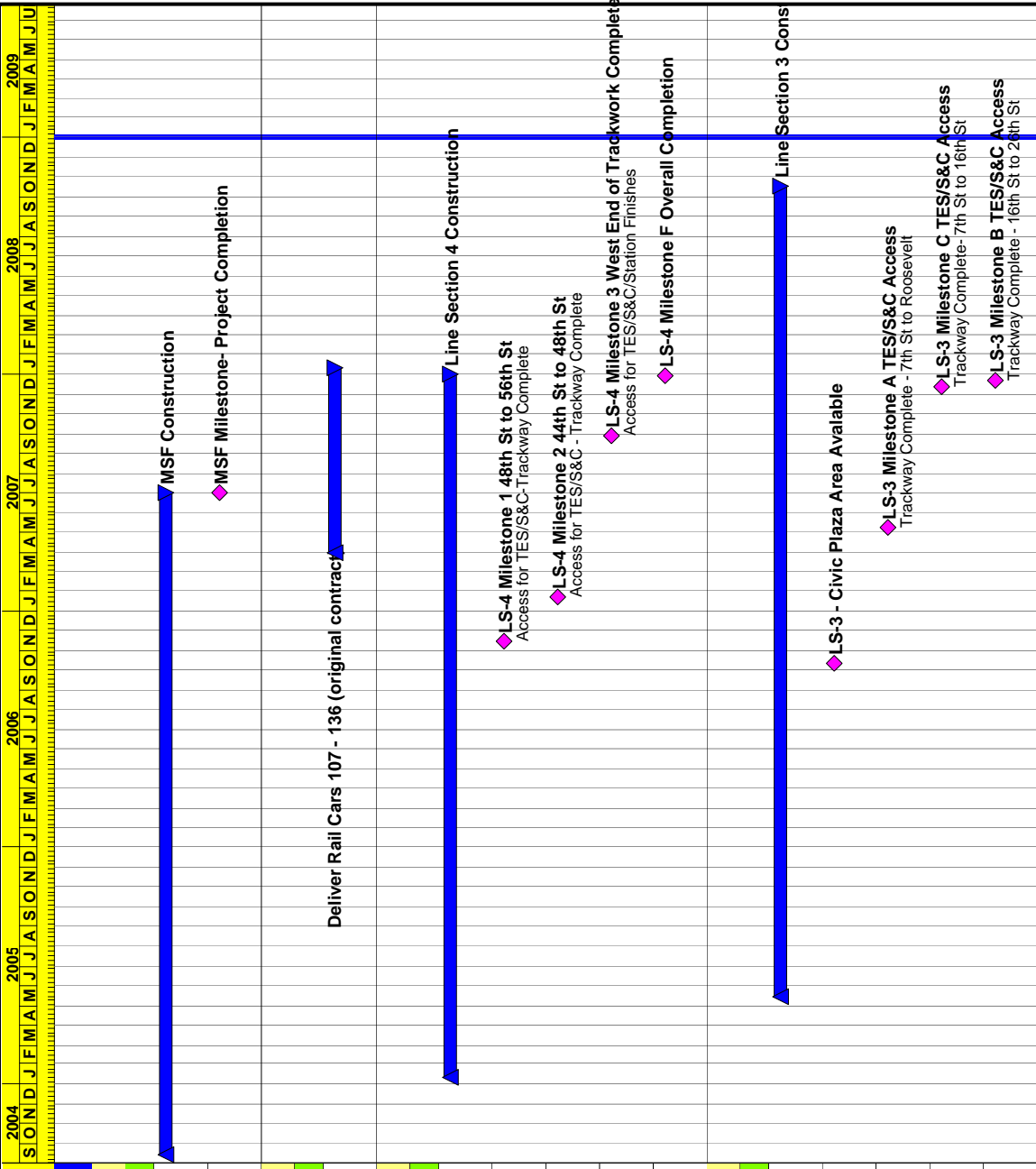
CAR_4	307*	01APR07A	11JAN08A
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### Line Section 4

LS4_3	1,085*	11JAN05A	31DEC07A
LS4_4	0		15NOV06A
LS4_5	0		21JAN07A
LS4_6	0		28SEP07A
LS4_1	0		29DEC07A

### Line Section 3

LS3_2	1,251*	16MAY05A	17OCT08A
LS3_CP01	0		11OCT06A
LS3_3	0		08MAY07A
LS3_5	0		12DEC07A
LS3_4	0		21DEC07A



Start Date: 01AUG04  
 Finish Date: 30DEC08  
 Data Date: 31DEC08  
 Run Date: 05JAN09 09:47

Legend:  
 Early Bar: Yellow arrow  
 Progress Bar: Blue arrow  
 Critical Activity: Red arrow

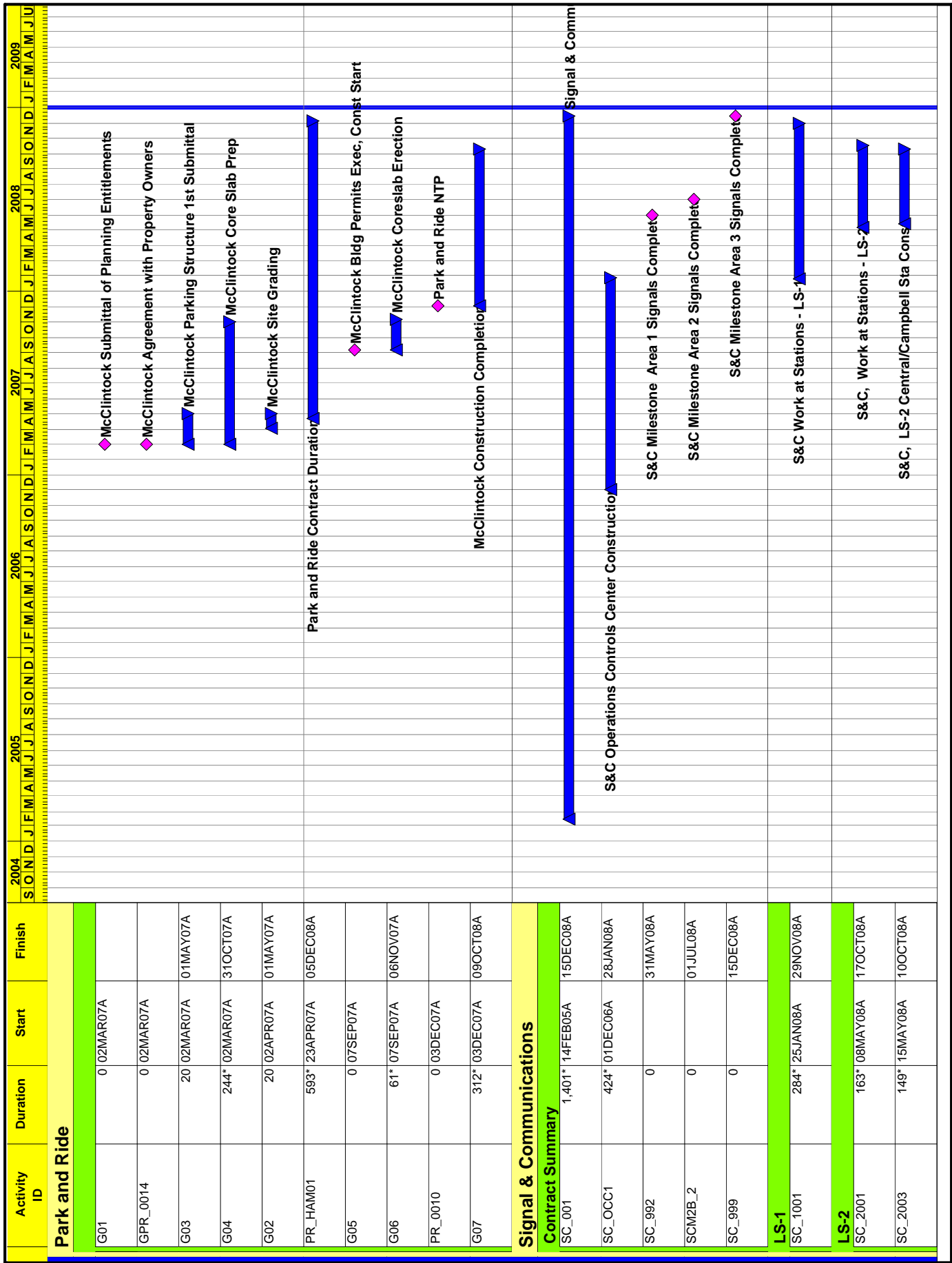
9001

METRO Rail Program Control  
 Central Phoenix/East Valley LRT Project

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## Acronyms

AASHTO	American Association of State Highway and Transportation Officials
AC	Alternating Current
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
ADOT	Arizona Department of Transportation
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
APM	Automatic People Mover
APPROX	Approximately
APS	Arizona Public Service
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASTM	American Society for Testing and Materials
ASU	Arizona State University
ATS	Automatic Train Stop
AT&T	American Telephone and Telegraph Company
AWG	American Wire Gauge
AWS	American Welding Society
BTU	British Thermal Unit
CAC	Construction Administration Consultant
CALCS	Calculations
CCTV	Closed Circuit Television
CFM	Cubic Feet Per Minute
CFS	Cubic Feet Per Second
CMU	Concrete Masonry Unit
CNPA	Concurrent Non-Project Activity
COE	US Corp of Engineers
COM	City of Mesa
COMM	Communications
COP	City of Phoenix
COT	City of Tempe
CPU	Central Processing Unit
CRSI	Concrete Reinforcing Steel Institute
CRT	Cathode Ray Tube
CTS	Carrier Transmission System
CWR	Continuous Welded Rail
CY	Cubic Yard
DBE	Disadvantaged Business Enterprise



DC	Direct Current
DSD	Development Services Department
DWG	Drawing(s)
EPA	Environmental Protection Agency
EST	Estimate, Estimated
FAA	Federal Aviation Administration
FAI	First Article Inspection
FHWA	Federal Highway Administration
FPS	Feet Per Second
FTA	Federal Transit Administration
GEC	General Engineering Consultant
HVAC	Heating, Ventilating, Air Conditioning
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IFB	Invitation For Bid
IPI	In Process Inspection
LAN	Local Area Network
LF	Linear Feet
LRT	Light Rail Transit
LRV	Light Rail Vehicle
LS	Line Section
MAG	Maricopa Association of Governments
MEC	Mass Electric Company
MISC	Miscellaneous
MOE	Maintenance of Equipment
MOW	Maintenance of Way
MPH	Miles Per Hour
OMC	Maintenance and Storage Facility
MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NRHP	National Register of Historic Places
OCC	Operations Control Center
OCS	Overhead Contact System
O&M	Operations And Maintenance
OMC	Operations and Maintenance Center



OPS	Operations
PA	Public Address
PAN	Pantograph
PBAX	Telephone Private Exchange And Controls
PCI	Prestressed Concrete Institute
PSI	Pre Shipment Inspection
PED	Pedestrian
PMC	Program Management Consultant
PNR	Park-and-Ride
PSF	Pounds Per Square Foot
PSI	Pounds Per Square Inch
PTZ	Pan Tilt Zoom
QA	Quality Assurance
QC	Quality Control
RE	Resident Engineer
RFI	Request For Information
RI	Receiving Inspection
RPM	Revolutions Per Minute
ROW	Right-of-Way
RTU	Remote Terminal Unit
S&C	Signals and Communications
SCADA	Supervisory Control and Data Acquisition
SDI	Steel Deck Institute
SJI	Steel Joist Institute
SONET	Synchronous Optical Network
SPEC	Specification
SRP	Salt River Project
SSPC	Structural Steel Painting Council
SSW	Sundt/Stacy and Witbeck
SSWJV	Sundt/Stacy and Witbeck Joint Venture
SWG	Southwest Gas Corporation
TBD	To Be Determined
TCE	Temporary Construction Easement
TES	Traction Electrification System
TTLB	Tempe Town Lake Bridge
TPSS	Traction Power Substation
TTY	Text Teletype ADA Device
TVM	Ticket Vending Machine



TWC	Train to Wayside Communications
UBC	Uniform Building Code
UL	Underwriters Laboratories Incorporated
UPRR	Union Pacific Railroad
UPS	Uninterruptible Power System
VCR	Video Cassette Recorder
VETAG	Vehicle Tagging System
VMB	Variable Message Board
VMR	Valley Metro Rail
VMS	Vehicle Management System
WAN	Wide Area Network