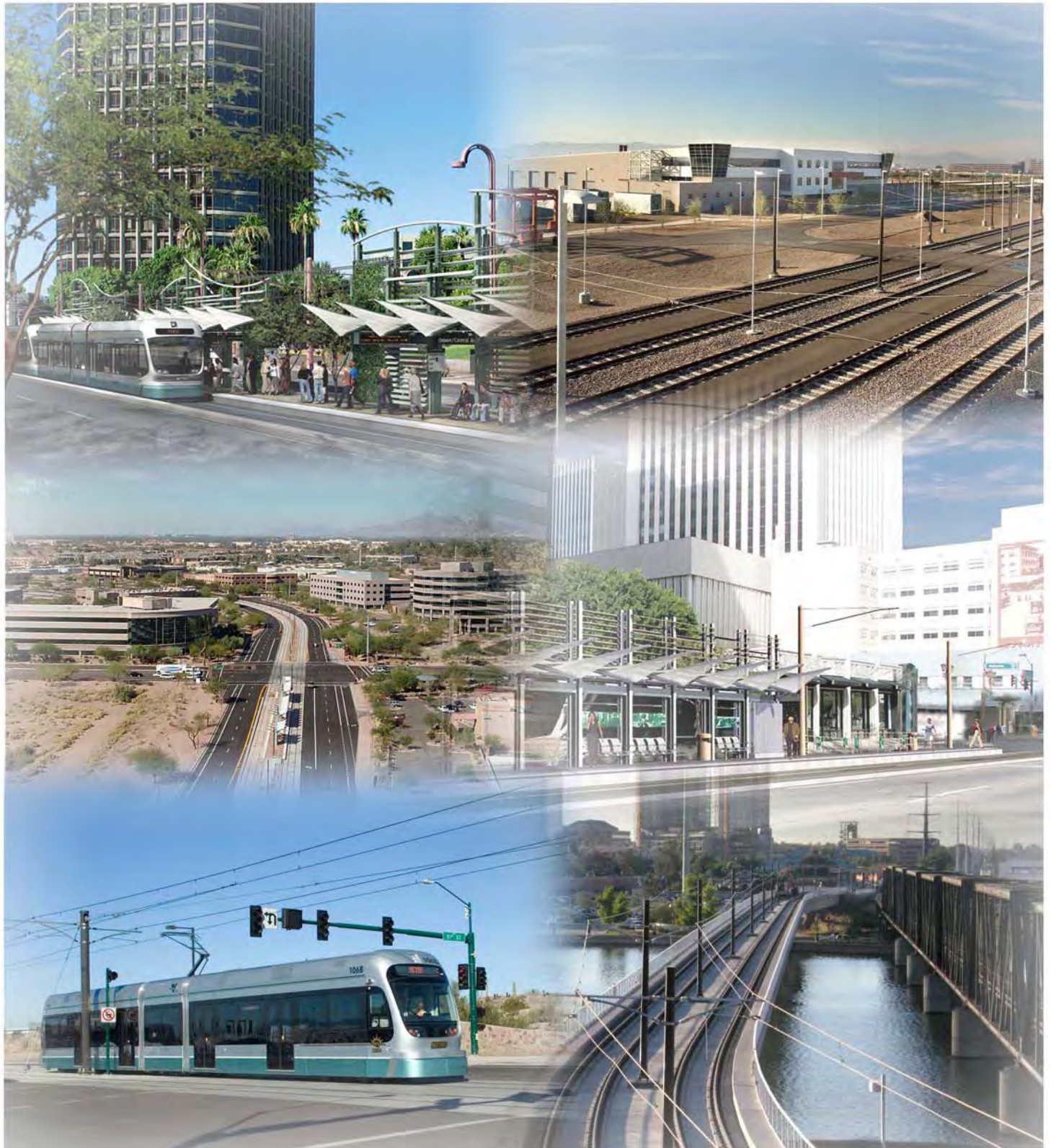




# LIGHT RAIL PROGRESS REPORT

Central Phoenix/East Valley Light Rail Transit Project







## Table of Contents

1. Executive Summary .....	3
• Map of Corridor .....	4
• Contract Log.....	5
2. Cost Overview.....	7
• Project Budget Status.....	9
• Plan vs. Actual.....	11
• Contingency Drawdown .....	12
• CNPA Project Budget Status.....	13
3. Schedule Overview .....	15
• Critical Path.....	18
• Procurement Bid Status Report.....	19
4. Quality Assurance .....	20
5. Public Involvement .....	23
6. Disadvantage Business Enterprise Program .....	27
7. System Safety and Security .....	32
8. Environmental Management .....	35
9. Real Estate.....	38
10. Utilities.....	40
• Prior Rights Utility Cost Status .....	42
11. Architecture .....	42
• Public Art.....	42
• Station Finishes.....	46
12. Facilities .....	48
• Line Section 1.....	48
• Line Section 2.....	51
• Line Section 3.....	54
• Line Section 4.....	57
• Line Section 5.....	58
• 48 <sup>th</sup> Street Bridge Replacement .....	60
• Town Lake Bridge .....	61
• Operations and Maintenance Center .....	62
• Park-and-Ride .....	63
• Track Material Procurement.....	67
• Traffic Signal Procurement.....	69
• Underfloor Wheel Profiling Machine.....	70
13. Systems .....	71
• Automated Fare Collection System.....	71
• Light Rail Vehicle.....	74
• Signals and Communications.....	77
• Traction Electrification System .....	80
• Rail Activation/System Integration.....	86



14. Appendix ..... 88

- Presentation Schedule ..... 88
- Acronyms ..... 97



## 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.

During the month of September the project was close to 94 percent complete with construction. Only the Park-and-Ride contracts continued with major civil work and that work is quickly coming to completion. Station finishes continued to work on punchlist items and is asking for substantial completion on almost every station platform. OCS wire was completed and regulated during the month of September on LS1 and LS2 in anticipation of live wire vehicle testing in mid October. The Traction Power contractor also has started work on their punchlist items including touching up paint and installing OCS base covers. Work also continued on the installation of permanent power to four substations on the north end of the project. These substations need to get permanent power before the vehicle testing can progress into Line Sections One and Two. A large number of the ticket vending machines have been installed at the station platforms and testing continues on the fare collection system.

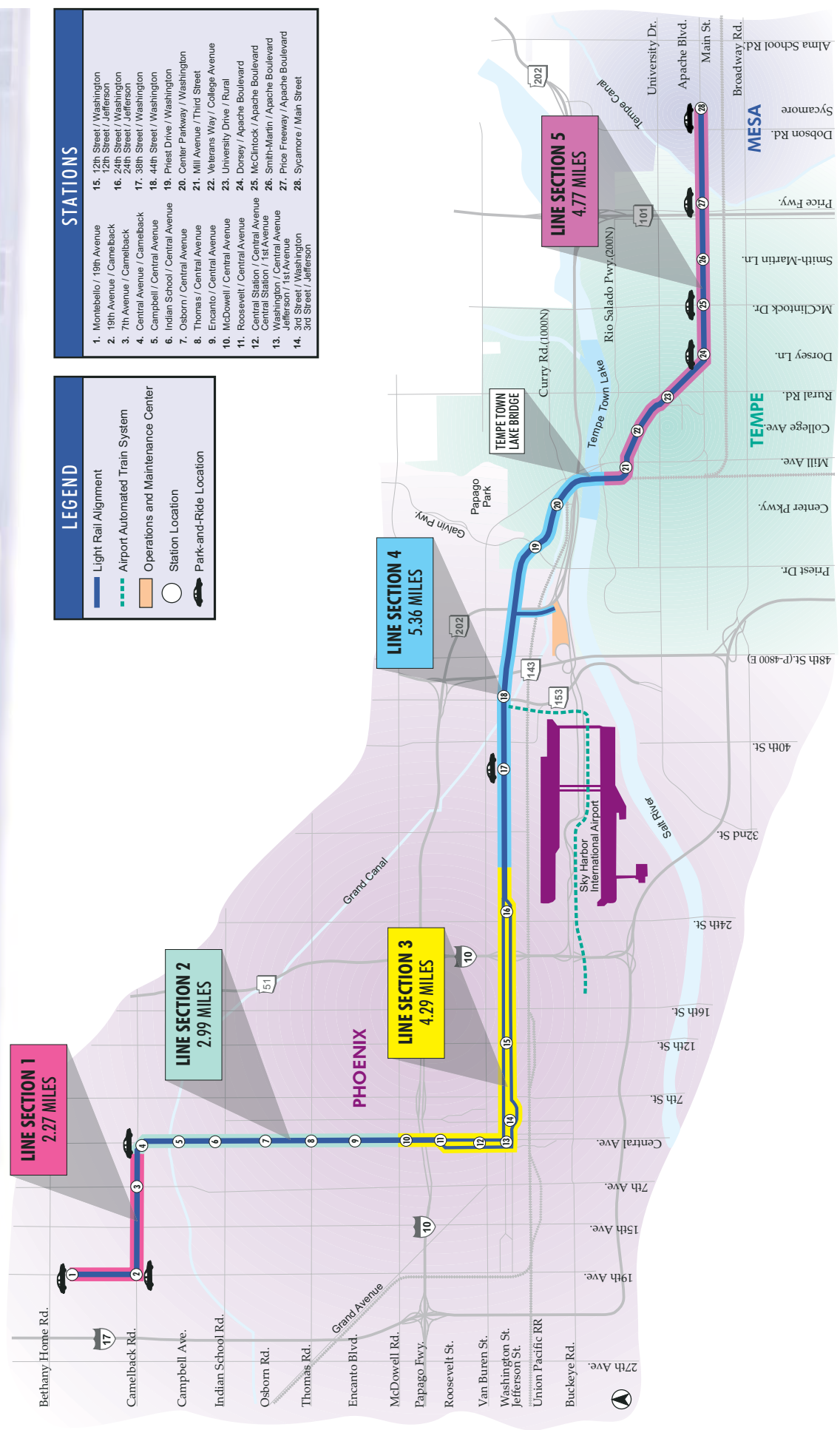
Vehicle assembly and testing continue to progress on schedule. Only two LRV's remain to be assembled for the initial fleet of 50. Forty-two LRV's have been accepted as delivered. Multiple vehicles including two and three car trains can be seen in LS3, LS4 and LS5 on a daily basis and as more guideway is made available more vehicles will be seen along the alignment. The Operations Control Center continues to be outfitted with software and computer equipment and testing continues from the Operations Control Center to various wayside elements along with the light rail vehicle.

With construction activities winding down and operations and testing commencing, public involvement activities have shifted to operational safety and public awareness to train operations. To date over two million safety related handouts and informational packets have been distributed. With testing areas continuing to expand the public awareness effort will continue to increase and reach as many people as possible. This month's outreach included a major effort to ASU football fans as the season started at ASU and Sun Devil Stadium.

The project remains on schedule for a December 27, 2008 opening.



# 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. 24th Street / Jefferson
4. Central Avenue / Camelback	18. 38th Street / Washington
5. Campbell / Central Avenue	19. 44th Street / Washington
6. Indian School / Central Avenue	20. Priest Drive / Washington
7. Osborn / Central Avenue	21. Center Parkway / Washington
8. Thomas / Central Avenue	22. Mill Avenue / Third Street
9. Encanto / Central Avenue	23. Veterans Way / College Avenue
10. McDowell / Central Avenue	24. University Drive / Rural
11. Roosevelt / Central Avenue	25. Dorsey / Apache Boulevard
12. Central Station / Central Avenue	26. McClintock / Apache Boulevard
13. Washington / 1st Avenue	27. Smith-Martin / Apache Boulevard
14. Jefferson / Washington	28. Price Freeway / Apache Boulevard
	29. 3rd Street / Jefferson
	30. 3rd Street / Jefferson

### LEGEND

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

**CONTRACT LOG - SEPTEMBER 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

**CONTRACT LOG - SEPTEMBER 2008**

ITEM	CONTRACT NUMBER	CONTRACT DESCRIPTION	CONTRACTOR
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
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.
<b>6. OWNER FURNISHED MATERIALS</b>			
74	LRT-04-009-MP1	Rail (MP1)	Progress Rail Corporation
75	LRT-04-010-MP2	Concrete Crossties (MP2)	CXT Inc
76	LRT-04-030-MP5	Ballasted Special Trackwork (MP5)	VAE Nortrak North America Inc
77	LRT-04-032-MP8	Girder Rail (MP8)	VAE Nortrak North America Inc
78	LRT-04-033-MP9	Girder Rail Special Trackwork (MP9)	VAE Nortrak North America Inc
79	LRT-04-015-MP3	Traffic Signal Hardware (MP3)	Various
80	LRT-06-072-SE	Shop Equipment for Maintenance Facility	Wissota Supply Company, Inc
81	LRT-07-078-MLE	Spray Paint Booth Manlifts at MSF	MGM Equipment Source
82	LRT-08-108-ADV	Aerial Device Vehicles	Altec Industries, Inc.
<b>7. FUTURE LIGHT RAIL EXTENSIONS</b>			
83	LRT-06-050-DCS	Design Criteria & Standards	Stantec Consulting
84	LRT-06-055-PSS	Planning Support Services	HDR Engineering, Inc.
85	LRT-07-077-PCES	Planning, Conceptual Engineering & Environmental Studies for Future Light Rail Extensions - Mesa-Tempe	HDR / S.R. Beard & Associates
86	LRT-07-077-PCES	Planning, Conceptual Engineering & Environmental Studies for Future Light Rail Extensions - I-10/Glendale	URS Corporation
87	LRT-07-075-PENW	Northwest LRT Extension Engineering Services	DMJM+Harris, Inc.
88	LRT-07-091-PICS-HDR	On-Call Public Involvement Consulting Services	HDR, Inc.
89	LRT-07-087D-CMNW	Northwest LRT Extension Construction Manager at Risk Design Phase Services	Sundt/Stacy & Witbeck, Joint Venture
90	LRT-07-089-NWA	Northwest LRT Extension Public Art for Glendale Station	Merge Conceptual Design, LLC
91	LRT-07-089-NWA	Northwest LRT Extension Public Art for Northern Station	Deborah Mersky
92	LRT-07-089-NWA	Northwest LRT Extension Public Art for Dunlap Parking	PhenomenArts, Inc.
93	LRT-07-089-NWA	Northwest LRT Extension Public Art for Dunlap Station	Colab Studio, LLC
94	LRT-08-102-GIS	On-Call Geographic Information Systems Consulting Services	Jacobs Carter Burgess



## **2. Cost Overview**

The project budget for the Federal 5309 program is \$1,412,125,346. Known pending and executed change orders are valued at \$92,741,963 of the available \$103,403,774 planned contingency.

Including Project Reserve, this leaves \$13,304,308 of budgeted contingency funds available to the project.

The project is 92.7 percent complete, which is a 0.7 percent increase from the last reporting period. Construction is 93.6 percent complete, which is a 1.2 percent increase.

Contract close-out pay applications for Line Sections 4 and 5, as well as final Request for Equitable Adjustment (REA) pay applications for Line Sections 1 and 3 are expected within the next two reporting periods. Pay applications for Station Finishes, Signals and Communications and the Light Rail Vehicle were not available by the cut-off date for this reporting period.

### **Program Management and Administration**

Forecast is within budget. A pending October Board action is expected to reduce this budget.

### **Program Management Consultant**

Staffing plan for fiscal year 2009 has been incorporated within the overall forecast of this contract unit; 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 96.6 percent complete, which is a 1.5 percent increase from the previous reporting period. Executed and pending change orders are expected to utilize \$65,101,181 of the \$72,426,400 available contingency. Final settlement of the Line Sections 1 and 3 REAs



requires funding from various sources and is being requested at the October Board meeting. Funding is available within the existing 5309 budget.

### **Systems**

Systems work is 77.6 percent complete, which is an increase of 0.2 percent since the last period. Executed and pending change orders are expected to utilize \$12,042,047 of the \$13,139,720 available contingency.

### **Construction Administration Services**

Budget and forecast for remaining work is consistent with the negotiated staffing plan.

### **Testing and Startup**

Forecast appears sufficient to complete the work. Current detail expenditures are tracking favorably with annual budget and forecast.

### **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 remains was reduced by \$650,000 to \$2,642,497 in order to contribute funds required for close-out of Line Section 5.

### **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.

During the reporting period three change orders were processed for a cost of \$143,526. Phoenix Public Transit had two change orders processed for a total cost of \$131,622. Phoenix Water Services had one change order processed for a cost of \$11,904.

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

2008\_09

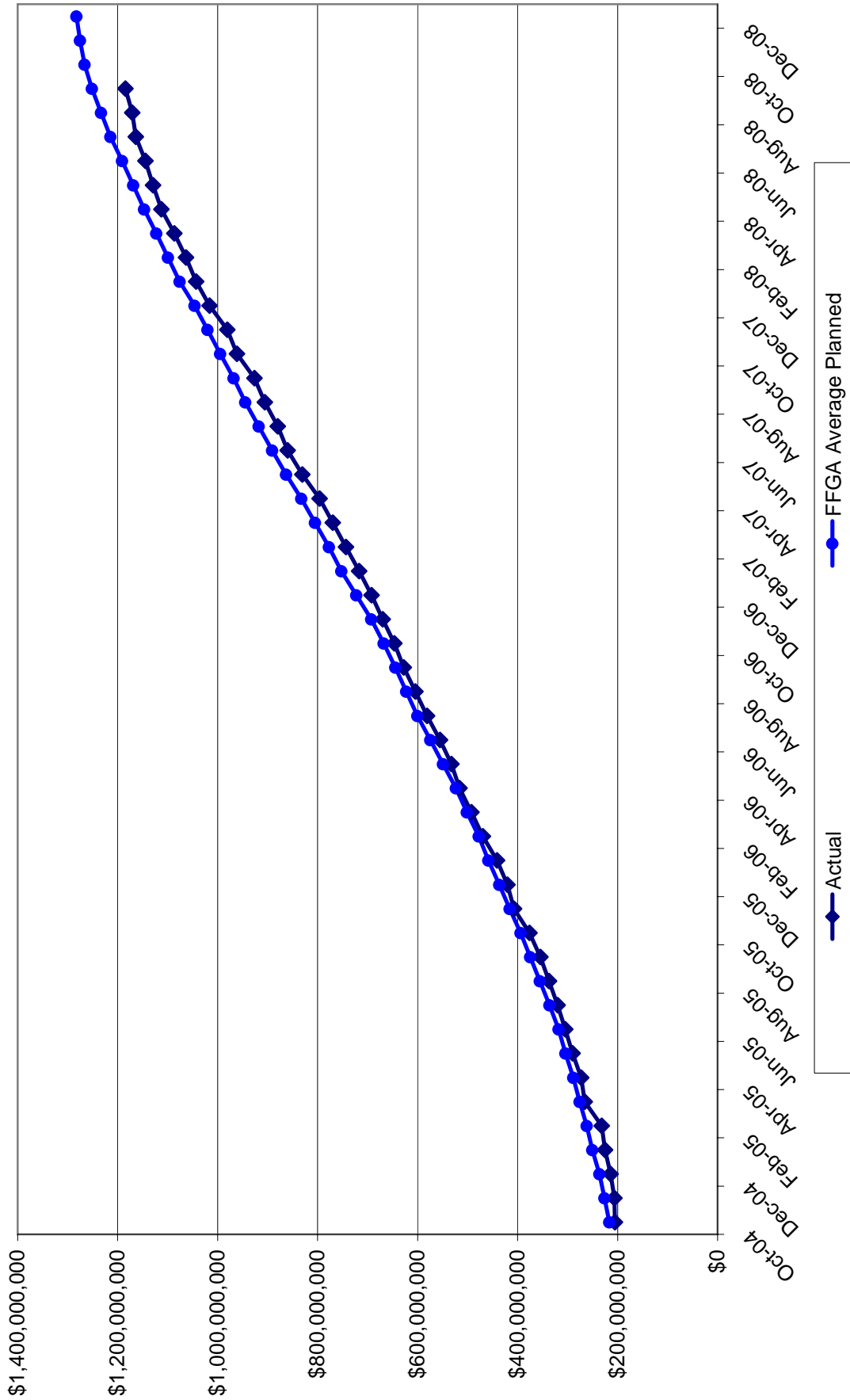
Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
50	LS1 19th Ave/Bethany - Camelback/Central	\$27,130,856	\$49,218,165	\$45,309,849	\$48,631,754	\$586,411
51	LS2 Camelback/Central - McDowell Road	\$38,004,059	\$53,562,841	\$51,803,180	\$53,633,506	(\$70,665)
52	LS3 McDowell Road - 28th Street	\$63,981,654	\$99,217,361	\$96,884,431	\$98,618,055	\$599,306
53	LS4 28th Street - N Approach to Town Lake	\$46,622,020	\$52,948,076	\$50,916,304	\$52,350,357	\$597,719
54	LS5 1st Street - Sycamore	\$49,680,435	\$75,575,539	\$76,404,895	\$79,010,144	(\$3,434,605)
55	Station Finishes	\$38,701,950	\$53,096,708	\$50,520,470	\$53,126,602	(\$29,894)
56	Park and Ride Facilities	\$15,104,339	\$22,539,065	\$17,878,414	\$22,581,222	(\$42,157)
57	Miscellaneous Construction	\$7,505,200	\$1,600,659	\$484,002	\$1,600,659	\$0
5K	Archaeological Investigations/Hazardous Material Removal	\$0	\$7,572,689	\$5,350,928	\$7,360,271	\$212,418
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	\$989,232	\$967,069	\$976,194	\$13,038
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	\$25,745,720	\$28,395,717	\$31,406,818	(\$5,661,098)
81	Contingency	\$37,491,841	\$11,742,467	\$0	\$3,551,262	\$8,191,205
	<b>Facilities</b>	<b>\$422,341,688</b>	<b>\$543,792,507</b>	<b>\$514,912,146</b>	<b>\$542,843,731</b>	<b>\$948,776</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	\$8,063,587	\$8,479,381	\$8,495,383	(\$431,796)
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	\$360,096	\$0	\$0	\$360,096
4F	Girder Rail Procurement	\$15,079,742	\$14,725,878	\$14,710,119	\$14,710,119	\$15,759
4G	Girder Rail Special Trackwork Procurement	\$0	\$5,712,656	\$5,628,848	\$5,712,656	\$0
81	Contingency	\$1,412,863	\$508,585	\$0	\$0	\$508,585
	<b>Owner Furnished Materials/Equipment</b>	<b>\$29,671,419</b>	<b>\$33,839,200</b>	<b>\$33,225,871</b>	<b>\$33,325,681</b>	<b>\$513,519</b>
5D	Automated Fare Collection System	\$10,755,800	\$7,389,662	\$1,850,773	\$7,389,662	\$0
5E	Traction Power Substations/Overhead Catenary System	\$62,141,100	\$61,138,816	\$53,831,173	\$61,275,159	(\$136,343)
5F	Communications/Signals	\$38,220,002	\$43,348,817	\$32,950,962	\$43,648,818	(\$300,001)
81	Contingency	\$8,674,000	\$1,534,017	\$0	\$1,097,673	\$436,344
	<b>Systems</b>	<b>\$119,790,902</b>	<b>\$113,411,312</b>	<b>\$88,632,908</b>	<b>\$113,411,312</b>	<b>\$0</b>
<b>Sub Total, Construction</b>		<b>\$571,804,009</b>	<b>\$691,043,019</b>	<b>\$636,770,925</b>	<b>\$689,580,724</b>	<b>\$1,462,295</b>
4K	Vehicle Contract	\$115,501,823	\$118,391,301	\$97,554,405	\$118,391,301	\$0
4N	LRT Vehicle Contract Contingency	\$5,775,001	\$31,264	\$0	\$31,264	\$0
	<b>LRT Vehicles</b>	<b>\$121,276,824</b>	<b>\$118,422,565</b>	<b>\$97,554,405</b>	<b>\$118,422,565</b>	<b>\$0</b>
22	ROW Acquisition	\$116,214,150	\$117,179,156	\$125,194,833	\$126,500,000	(\$9,320,844)
23	ROW Contingency	\$20,081,000	\$9,320,844	\$0	\$0	\$9,320,844
20	<b>ROW</b>	<b>\$136,295,150</b>	<b>\$126,500,000</b>	<b>\$125,194,833</b>	<b>\$126,500,000</b>	<b>\$0</b>

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

2008\_09

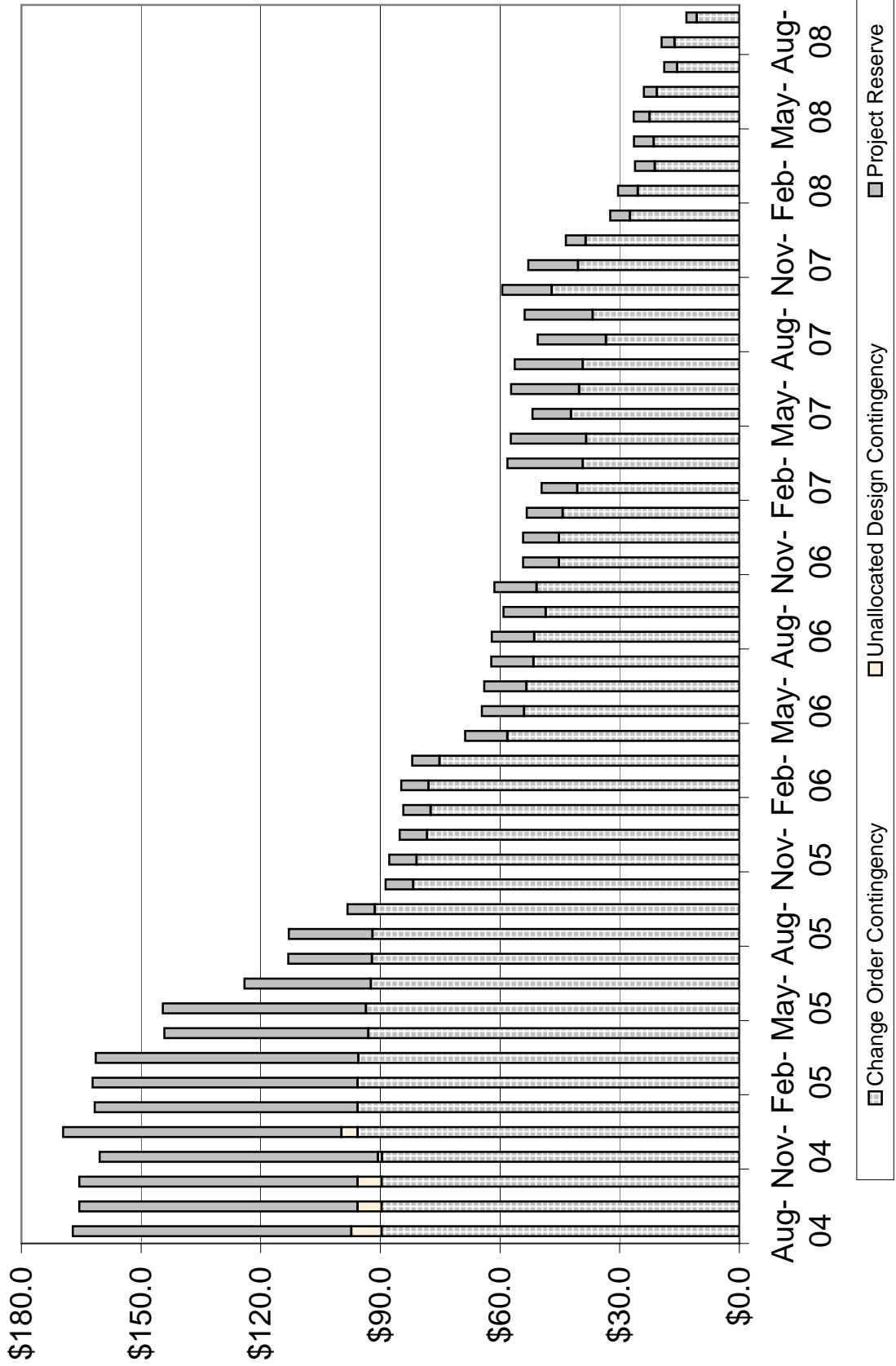
Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
<b>30</b>	<b>PE/FEIS Engineering</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$25,169,700</b>	<b>\$25,169,700</b>	<b>(\$114,762)</b>
31	Engineering	\$76,780,935	\$76,346,255	\$77,294,606	\$77,360,280	(\$1,014,025)
4L	Vehicle Engineering	\$5,432,358	\$7,305,671	\$6,000,885	\$6,343,125	\$962,546
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	\$21,168,262	\$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>\$105,729,979</b>	<b>\$108,338,434</b>	<b>(\$691,194)</b>
60	Construction Administration Services	\$37,759,127	\$54,311,124	\$51,395,678	\$54,311,124	\$0
61	CAC Contingency	\$15,244,622	\$0	\$0	\$0	\$0
	<b>Construction Administration Services</b>	<b>\$53,003,749</b>	<b>\$54,311,124</b>	<b>\$51,395,678</b>	<b>\$54,311,124</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	\$44,229,717	\$33,759,554	\$37,776,723	\$6,452,994
62	Construction Administration Services - VMR	\$1,697,232	\$3,067,564	\$1,667,144	\$1,866,428	\$1,201,136
67	CAB Program	\$0	\$2,500,000	\$2,486,057	\$2,500,000	\$0
21	Administrative ROW Costs	\$696,712	\$557,660	\$677,254	\$707,350	(\$149,690)
76	Administrative/Management Art Program Costs	\$414,632	\$414,632	\$0	\$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	\$7,182,488	\$7,500,000	(\$500,000)
18	Administrative/Management Contingency	\$0	\$388,523	\$0	\$388,523	\$0
	<b>Program Management</b>	<b>\$58,507,149</b>	<b>\$63,609,298</b>	<b>\$54,783,841</b>	<b>\$60,250,000</b>	<b>\$3,359,298</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	\$31,067,105	\$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	\$4,290,088	\$5,407,661	\$842,570
	<b>Program Management Consultant</b>	<b>\$53,053,279</b>	<b>\$53,053,279</b>	<b>\$49,212,748</b>	<b>\$52,500,000</b>	<b>\$553,279</b>
10	PE Administrative/Management Costs	\$3,158,439	\$3,158,439	\$2,159,169	\$3,115,003	\$43,436
13	Administrative/Management - COP	\$2,986,000	\$5,448,000	\$3,833,085	\$3,985,343	\$1,462,657
64	Construction Administration Services - COP	\$8,347,000	\$5,885,000	\$7,386,961	\$7,391,093	(\$1,506,093)
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>\$20,728,673</b>	<b>\$22,185,439</b>	<b>\$0</b>
75	Public Art Contracts	\$5,284,133	\$6,251,829	\$4,910,914	\$6,251,829	\$0
77	Art Program Contingency	\$999,000	\$31,304	\$0	\$31,304	\$0
	<b>Public Art</b>	<b>\$6,283,133</b>	<b>\$6,283,133</b>	<b>\$4,910,914</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>\$13,296,192</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>\$2,642,497</b>	<b>\$0</b>	<b>\$7,211,413</b>	<b>(\$4,568,916)</b>
<b>SUBTOTAL</b>		<b>\$1,253,258,000</b>	<b>\$1,293,752,532</b>	<b>\$1,184,747,888</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>\$46,699,814</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>\$1,231,447,702</b>	<b>\$1,412,125,346</b>	<b>\$0</b>

### Plan versus Actual Costs



# CP/EV LRT Contingency Drawdown

**\$ Million**



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
A1	Bus Bays (LS2)	\$985,000	\$984,756	\$639,422	\$999,470	(\$14,714)
A2	Phoenix Art Museum Left Turn Signal	\$99,000	\$99,083	\$66,442	\$99,083	\$0
A5	19th/Montebello Transit Center (SF)	\$6,317,000	\$6,250,345	\$5,440,738	\$6,250,345	\$0
A6	117 Central/Camelback Transit Center (SF)	\$7,101,000	\$7,274,904	\$8,827,363	\$9,532,203	(\$2,257,299)
A7	44th Street/Washington Transit Center Real Estate	\$4,650,000	\$4,649,580	\$4,467,450	\$4,649,580	\$0
B1	Washington Street Bike Lane (LS4)	\$867,000	\$834,912	\$770,240	\$842,830	(\$7,918)
F4	Civic Plaza Track 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	\$62,357	\$171,435	\$9,000
F7	COP Landscape Irrigation Restoration Central Ave	\$92,000	\$93,413	\$91,807	\$91,807	\$1,606
H2	Fiber Optic COP	\$490,000	\$437,820	\$275,022	\$485,550	(\$47,730)
J6	Washington/Jefferson 16th to 26th Street, Property Access	\$3,559,000	\$3,290,749	\$2,371,879	\$2,520,849	\$769,900
K7	11th Street Loop Track	\$4,652,000	\$4,761,569	\$2,834,670	\$5,021,327	(\$259,758)
L8	PPT CNPA-3rd St/Washington APD Medallions	\$0	\$6,850	\$6,782	\$0	\$0
G8	PPT CNPA Additional Point of Interest Signs	\$0	\$6,850	\$0	\$6,782	(\$67,245)
	<b>Sub Total Public Transit Department</b>	<b>\$29,414,000</b>	<b>\$29,293,745</b>	<b>\$26,276,009</b>	<b>\$31,160,411</b>	<b>(\$1,866,666)</b>
A3	6th Lane - Camelback (LS1)	\$8,955,000	\$8,954,921	\$8,475,848	\$8,954,921	\$0
D1	Additional Street/Pedestrian Lighting (LS3)	\$540,000	\$521,724	\$513,085	\$540,330	(\$18,606)
E3	Seal Coat versus Rubber Overlay (LS 1 )	\$264,000	\$264,342	\$218,964	\$244,342	\$20,000
E4	Seal Coat versus Rubber Overlay (LS 3)	\$1,607,000	\$1,598,318	\$1,480,970	\$1,586,943	\$11,375
E5	Seal Coat versus Rubber Overlay (LS 4)	\$380,000	\$430,896	\$378,590	\$380,003	\$50,893
K3	Red Light Enforcement	\$61,000	\$59,753	\$49,782	\$59,753	\$0
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>\$11,835,943</b>	<b>\$11,123,228</b>	<b>\$11,772,281</b>	<b>\$63,662</b>
A7	44th Street/Washington Transit Center (SF)	\$3,019,000	\$3,021,023	\$2,831,871	\$3,021,023	\$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	\$60,000	\$0
	<b>Sub Total Aviation Department</b>	<b>\$4,242,000</b>	<b>\$4,274,429</b>	<b>\$4,082,792</b>	<b>\$4,274,473</b>	<b>(\$44)</b>
B3	LS 1 Water/Sanitary Sewer	\$14,354,000	\$14,422,765	\$9,150,685	\$14,497,371	(\$74,606)
B4	LS 2 Water/Sanitary Sewer	\$8,647,000	\$8,512,002	\$4,869,981	\$8,163,811	\$348,191
B5	LS 3 Water/Sanitary Sewer	\$20,602,000	\$21,069,647	\$14,756,318	\$20,923,539	\$146,108
B6	LS 4 Water/Sanitary Sewer	\$7,208,000	\$7,064,621	\$6,887,929	\$6,962,340	\$102,281
B7	Water and Sanitary Sewer Lines - 48th St. Bridge Replacement	\$156,000	\$155,767	\$142,862	\$155,767	\$0
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	\$29,192	(\$29,192)
J5	Catholic Protection for Waterlines LS4	\$350,000	\$350,000	\$85,620	\$85,620	\$264,380
	<b>Sub Total Water Services Department</b>	<b>\$52,595,000</b>	<b>\$52,823,104</b>	<b>\$36,758,962</b>	<b>\$52,065,942</b>	<b>\$757,162</b>
	<b>Total - Phoenix</b>	<b>\$98,064,000</b>	<b>\$98,227,221</b>	<b>\$78,240,991</b>	<b>\$99,273,107</b>	<b>(\$1,045,886)</b>

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
A8	5th/College Transit Center	\$635,000	\$630,730	\$617,761	\$630,730	\$0
AA	COT SRP Prior Rights TC Relocation	\$232,000	\$235,400	\$20,000	\$235,400	\$0
B8	Terrace / Apache Waterline Coordination (Design Only)	\$35,000	\$35,611	\$35,295	\$35,295	\$316
C1	Additional Communications Conduits	\$28,000	\$32,499	\$27,775	\$27,775	\$4,724
C2	COT ASU Pedestrian Signal	\$112,000	\$122,000	\$107,754	\$122,000	\$0
C7	Parking Facility 5th/Farmer	\$110,701	\$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	\$323,894	\$279,956	\$279,956	\$43,938
D7	COT Additional Conduit @ McClintock/Apache	\$8,000	\$7,990	\$7,990	\$7,990	\$0
E6	Rubberized Asphalt LS5	\$625,000	\$624,874	\$637,949	\$633,406	(\$8,532)
F2	McClintock / Apache Storm Drain	\$116,000	\$123,153	\$114,689	\$114,689	\$8,464
F9	Rubber Asphalt - Tempe	\$489,000	\$522,165	\$484,026	\$487,911	\$34,254
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	\$0	\$722,808	\$722,808	(\$722,808)
G5	Misc Changes directed by COT	\$0	\$0	\$0	\$15,690	(\$15,690)
G7	Apache/McClintock Par & Ride Garage	\$0	\$466,033	\$0	\$466,033	\$0
H3	Fiber Optic COT	\$397,000	\$416,589	\$228,550	\$421,521	(\$4,932)
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	\$4,679,456	\$3,986,804	\$4,663,722	\$15,734
L1	TLB 4th of July Electrical	\$25,000	\$12,089	\$12,089	\$19,350	(\$7,261)
L2	COT CNPA - Additional Mill/Overlay	\$466,000	\$591,877	\$521,935	\$574,377	\$17,500
L3	Price-Apache PnR Modifications (PnR-RB)	\$0	\$57,743	\$0	\$57,743	\$0
L5	COT McClintock Park & Ride	\$176,000	\$0	\$0	\$359,783	(\$359,783)
L7	COT CNPA Prince/Apache PnR Waterline	\$0	\$116,844	\$102,480	\$116,844	\$0
L9	Landscape Island at Terrace/Apaxhe	\$0	\$0	\$0	\$7,776	(\$7,776)
N1	Replace Bougainvilleas on Stadium Drive	\$0	\$0	\$0	\$21,771	(\$21,771)
N4	Tempe Market Analysis	\$44,000	\$44,378	\$43,728	\$43,728	\$650
XX	Tempe Miscellaneous Force Account Work LS5	\$21,000	\$20,000	\$20,000	\$41,480	(\$21,480)
	<b>Sub Total Tempe</b>	<b>\$15,089,000</b>	<b>\$15,026,195</b>	<b>\$13,756,277</b>	<b>\$16,038,913</b>	<b>(\$1,012,718)</b>
A9	Main Sycamore Transit Center	\$5,355,000	\$5,384,431	\$4,268,799	\$5,341,439	\$42,992
H4	Fiber Optic Backbone LS-4 (Mesa portion)	\$879,000	\$812,014	\$384,742	\$863,188	(\$51,174)
M2	Mesa Additional Grind & Overlay	\$281,000	\$281,383	\$246,792	\$281,383	\$0
M3	Mesa Additional Grind & Overlay on Dobson	\$233,000	\$232,677	\$204,073	\$232,677	\$0
N3	Mesa Market Analysis	\$19,000	\$18,542	\$18,542	\$18,542	\$0
XX	Mesa Miscellaneous Force Account Work LS5	\$5,000	\$5,000	\$4,399	\$5,000	\$0
	<b>Sub Total Mesa</b>	<b>\$6,772,000</b>	<b>\$6,734,047</b>	<b>\$5,127,347</b>	<b>\$6,742,229</b>	<b>(\$8,182)</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	\$1,122,530	\$639,826	\$1,146,633	(\$24,103)
	<b>Sub Total ASU</b>	<b>\$1,263,000</b>	<b>\$1,202,729</b>	<b>\$720,025</b>	<b>\$1,226,832</b>	<b>(\$24,103)</b>
AB	Cityscape CNPA in LS3	\$5,000	\$34,643	\$23,846	\$34,643	\$0
E1	(AFS) 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>\$192,950</b>	<b>\$101,901</b>	<b>\$174,511</b>	<b>\$18,439</b>
	<b>Grand Total CNPA</b>	<b>\$121,347,000</b>	<b>\$121,383,142</b>	<b>\$97,946,541</b>	<b>\$123,455,592</b>	<b>(\$2,072,450)</b>



### 3. Schedule Overview

The current Status of the Master Schedule is based on a data date of September 1, 2008. The current forecast continues to be an on-time Program completion date of Saturday, December 27, 2008.

Design and Construction is working with METRO Operations and Mass Electric to accelerate completion and testing activities in the Signals and Communications contract in an effort to minimize the impact to METRO Operations Integrated Startup.

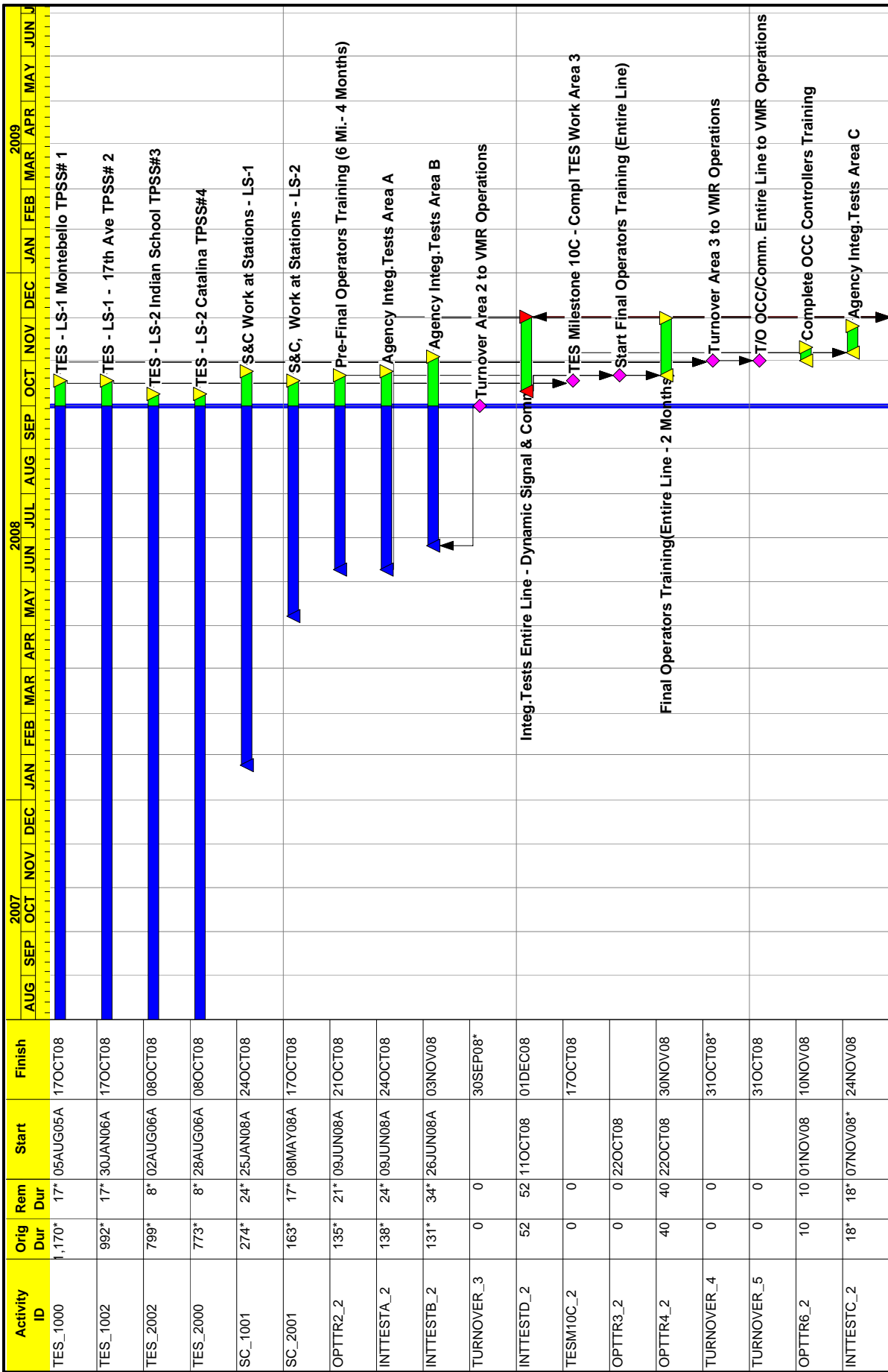
<b>Track Installation</b>							
<b>Line Section</b>	<b>Bid Quantity</b>		<b>Installed</b>		<b>Remaining</b>		<b>% Complete</b>
	<b>LF</b>	<b>Miles</b>	<b>LF</b>	<b>Miles</b>	<b>LF</b>	<b>Miles</b>	
Total	224,968	42.61	224,968	42.61	0	0.00	100.0%
<b>OCS Pole and Down Guy Anchor Foundations</b>							
<b>Line Section</b>	<b>Bid Quantity</b>		<b>Installed</b>		<b>Remaining</b>		<b>% Complete</b>
	<b>LF</b>	<b>Miles</b>	<b>LF</b>	<b>Miles</b>	<b>LF</b>	<b>Miles</b>	
Total	1,400		1,400		0		100.0%
<b>Station Finishes</b>							
<b>Stations to S&amp;C</b>	<b>Bid Quantity</b>		<b>Complete</b>		<b>Remaining</b>		<b>% Complete</b>
Total	33		33		0		100.0%
<b>Traction Electrification</b>							
<b>Area</b>	<b>Description</b>		<b>U/M</b>	<b>Bid Quantity</b>	<b>Installed</b>	<b>% Complete</b>	
TPSS # 1 Thru 15	Feeders & Negative Returns		LF	135,580	133,580	96.5%	
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%	
<b>Signals and Communications</b>							
<b>Area</b>	<b>Description</b>		<b>U/M</b>	<b>Bid Quantity</b>	<b>Installed</b>	<b>% Complete</b>	
Stations	Local Wire Installed		EA	33	32	97.0%	
Stations	Communications Cabinet Equipment Installed		EA	33	32	97.0%	
Stations	Communications Device Kits		EA	33	32	97.0%	
Stations	Terminate Devices		EA	33	32	97.0%	
Line Sections	Backbone Fiber		LF	262,873	258,663	98.4%	
Line Sections	Street Traffic Fiber		LF	159,803	157,905	98.8%	
Line Sections	City Use Fiber		LF	245,991	195,000	86.0%	



**Major Milestones**

**Civil:**

Line Section 1 Completion	July, 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



Valley Metro Rail  
Central Phoenix/East Valley LRT

8010

Sheet 1 of 2

Start Date: 01AUG04  
 Finish Date: 26DEC08  
 Data Date: 01OCT08  
 Run Date: 29SEP08 08:11

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

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Procurement Bid Status Report as of 9/25/08						
Title	Issue Date	Pre-Bid Conf	Bid Opening	Board Award	NTP (Anticipated)	
<b>PART I – CP/EV LRT PROJECTS</b>						
Facilities Maintenance Services: OMC and Line Buildings	4/13/08	4/23/08	5/28/08	9/17/08	10/1/08	
Janitorial, Cleaning, Graffiti Removal Services – OMC and Stations	5/26/08	6/2/08	7/21/08	9/17/08	10/1/08	
Lands Keeping Services – OMC and Stations	5/26/08	6/4/08	7/21/08	9/17/08	10/1/08	
Insurance Brokers Services	TBD	NA	TBD	TBD	TBD	
Armored Transport Service	5/27/08	6/18/08	7/10/08	10/15/08	11/1/08	
Security Services – Tempe/Mesa	6/10/08	NA	7/17/08	9/17/08	10/1/08	
Advertising on Trains	9/7/08	NA	9/19/08	10/15/08	11/1/08	
<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	Program Suspended	Program Suspended	



## 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

#### Civil and Systems

- Attended various CAC/Contractor weekly progress and coordination meetings.
- Attended weekly rail progress and schedule review meetings.
- Continued coordination of review/update of Program Management and Project Management Plans.
- Continue to review field activities at the various Park-and-Ride Facility sites, stations, and transit centers.
- Participated in Pre-final inspections for eight Stations on Central Avenue.
- Attended meetings to review landscape/hardscape issues with decomposed aggregate adjacent to walks/curbs and staking/pruning of trees.
- Conducted Surveillance of maintenance for checking nuts on anchor bolts of OCS poles in Test Track area.

#### Light Rail Vehicle

##### Audits

- Updates to the Engineering Change Notice books;
- Car History Books for LRV 141, 142, 143 and 146.



Inspections

- Continuing inspections of the assembly and testing process, for example:
  - Mainline and yard load testing,
  - Final vehicle inspections,
  - Interior and exterior inspections,
  - Truck inspections;
  - Wiring checks and testing of communications equipment.

Vehicle Final Assembly

- Accepted delivery: LRV 141, 142, 143, and 146.

Construction Administration Consultant Activities

Quality Manuals Reviewed

- All required Contractor Quality Assurance Manuals have been submitted and accepted. No other Contractor Quality Control manuals are to be submitted for this project.

General

- Attended weekly Resident Engineer meetings.
- Continued review of quality related submittals as required.
- Continued to provide assistance in regards to the metal artwork of a structural nature.

NCR and QAR Logs show all NCR's and QAR's for all contracts, including Material Procurement contracts, presently open. Columns for "New" and "Closed" represent changes in quantity(s) for this months report. Mass Electric has a total of two NCR's open on subcontractor work, one on the S&C contract, and one on the TES 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 September
223	3	6	23	12

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 September
38	0	0	13	7



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

- Quality Assurance activities remain within budget and on schedule.

### **Issues and Solutions**

- Discrepancies regarding track switch machines are being addressed as rapidly as possible with representatives from Nortrak, Contec, Safetrans and MEC working together to analyze and repair the problems. They are all presently onsite as of September 30, 2008.
- Punch list items continue to be addressed at the Station Finishes Contract as that contract.
- Monitoring of the Park-and-Ride contracts continues as construction progresses. A pre-final walk through and punch list of 38th Street and Washington was completed with another scheduled for October 8, 2008 at Central Avenue and Camelback.

## 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

- On Saturday, September 20<sup>th</sup>, METRO coordinated with Arizona State University to stage a “Wall” of METRO Vehicles prior to the ASU vs. University of Georgia football game. Twelve vehicles were staged on Veteran’s Way. The purpose of this exercise was to begin exposing ASU fans and the general public of the size of vehicles and introduce METRO’s safety campaign. METRO provided six safety graphics that were placed on the windows of the trains with safety messages. METRO is working closely with ASU to run a modified schedule of vehicles on Saturday, October 25, 2008 during the ASU vs. University of Oregon game.





- Over 2,075,000 Safety materials have been distributed via presentation/handout or e-mail communication by both Community Relations and Public Involvement Staff. As METRO Operations continues to expand vehicle testing from Central and McDowell Street to Sycamore and Main Street, METRO staff has increased its effort to ensure safe vehicle and pedestrian interaction within the integrated testing area by canvassing and distributing materials. Ongoing partnerships are being formed to expand Safety material distribution throughout the valley.
- Public Involvement staff is finalizing coordination with the METRO's Grand Opening Team to support the 28 station celebrations that will be held on December 27, 2008. Public Involvement staff began distributing packets inviting adjacent stakeholder to participate in station celebrations. Stakeholders will have various opportunities to participate based on physical space constraints. PI Staff will work to solidify space requirements for each submitted packet to ensure and maximize participation.

**BUSINESS ASSISTANCE**



- METRO's Courtesy Signage Program has concluded. METRO Staff began collecting both "A" frames and banners along the alignment to coincide with the sunset of city ordinances allowing courtesy signage in the public right of way. Seven hundred sixty-two signs and **455** banners (**1,217** total) were issued for businesses along the alignment. The following table illustrates the final distribution for this program:

**METRO  
Construction Signage/Banner Program  
Overall Distribution**

Line Section	Signs	Banners	Total
Line Section 1	106	89	195
Line Section 2	111	63	174
Line Section 3	269	89	358
Line Section 4	41	37	78
Line Section 5	235	177	412
<b>Totals</b>	<b>762</b>	<b>455</b>	<b>1,217</b>



### METRO Business Outreach Program

The following is a break down of business outreach statistics as of June 30, 2008:

- METRO Max Program Participants – **276** businesses
- Construction Signage Program – **1,217** (762 signs and 455 banners)
- City of Tempe Asset Assistance Program – **2**
- City of Mesa/U.S. Bank Asset Assistance Program – Open enrollment
- Management Technical Assistance (MTA) Program – **329** businesses
- ASU Market Needs Assessment – **128** businesses (107 Complete/21 In-Progress)
- SELF Seminars/Micro Loan Assistance – **22** Businesses
- SBDC One-on-One Consultation - **18** Businesses
- Prestamos – Chicanos Por La Causa – **4** Businesses

### Community Advisory Boards (CAB)

Meetings are scheduled on a monthly basis to evaluate the contractor's efforts to go "above and beyond" the contract specifications during light rail construction.



### Line Section 1

- CAB program completed July 2008

### Line Section 2

- CAB program completed May 2008.

### Line Section 3

- The Line Section 3 CAB held a meeting on Thursday, September 11, 2008. Ms. MB Finnerty, METRO Public Art Administrator, updated the members on the installation dates for station artwork. Members asked questions related to the artwork at the 12<sup>th</sup> Street station. Mr. John Farry, Director of Community Relations/Government



Affairs, provided an update on METRO's Grand Opening events. Mr. Farry noted the activities scheduled Friday through Sunday, and shared how business and community groups could be involved with the festivities. During the contractor's presentation, Archer Western provided information on the work completed since July and an overview of the remaining work. Mr. Erik Holtz indicated Archer Western would reach substantial completion on October 1. Members agreed to hold another LS3 CAB meeting during the first week of November.

Line Section 4

- CAB program completed in November 2007.

Line Section 5

- CAB program completed in March 2008.

**Cost Status**

Total Available Incentive: **\$2,500,000.00** (10 Quarterly disbursements)

Total Miles of Street with LRT: 23.53 miles

Allocation per Mile: \$106,247.34

Total CAB Disbursement through July: **\$2,486,061**

<b>Line Section</b>	<b>Total Amount Available</b>	<b>Available for Award to Date</b>	<b>Total Award to Date</b>	<b>% Award to Date</b>
<b>LS1</b>	\$241,181	\$241,181	\$239,553	99%
<b>LS2</b>	\$317,680	\$317,680	\$314,027	99%
<b>LS3</b>	\$865,916	\$865,916	\$857,257	99%
<b>LS4</b>	\$567,361	\$567,362	\$567,362	100%
<b>LS5</b>	\$507,862	\$507,862	\$507,862	100%

**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 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 15.2 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.

- 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



- 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
  - 12.30 percent Current DBE Participation (adjusted contract amounts)
  - \$7,648,263 Total DBE Subcontracted Amount
- Line Section 5 - Sundt/Stacy and Witbeck
  - 14.90 percent Minimum DBE Participation
  - 16.73 percent Committed at Bid
  - 17.64 percent Current 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 & 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 N 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

- During the month of September, outreach activities were limited to the following:
  - Meeting with the DBE Outreach Advisory Committee,
  - Meeting with the City of Phoenix Engineering and Architectural Services Division to discuss a February 2009 A&E Outreach Event,
  - Meeting with the City of Phoenix Economic Development Department, Small Business Division, to discuss future partnering opportunities,
  - Attendance of numerous industry and special events;
  - Coordinating group photo sessions for the Prime Consultant/Contractors and DBE subs for recognition at the 2008 AMCA Awards Ceremony and Profiles in Diversity events.
- On November 20, 2008 METRO will host its third annual Profiles in Diversity event. The 2008 event will highlight the contributions the DBE sub-consultants and subcontractors have made to the 20-mile Central Phoenix/East Valley project. Commemorative project photos will be provided to DBE program participants.

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

- DBE activities remain within budget and on schedule.

#### **Issues and Solutions**

- There are no issues to report this period.



## 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

- Two hundred forty METRO, consultant, contractor, utility company, and City personnel received track access safety training.
- Issued a Safety Certificate for the Track Access Safety Training Class.
- Issued an Occupancy and Test Permit for Test Zone B-West, 27<sup>th</sup>/Washington to McDowell/Central.
- Participating in the ongoing planning for the Grand Opening.
- Completed the security contract for fare inspection, patrol and park-and-ride lots in Tempe and Mesa, culminating in approval by the Board of Directors to award the contract to Wackenhut.
- Surveyed the alignment with design and construction, operations and maintenance, and City of Tempe personnel for the need for bollards to protect catenary poles.
- Presented safety briefing for new train operator's class.
- Conducted a demonstration of re-railing equipment, in conjunction with Kinkisharyo for Phoenix, Tempe, and Mesa Fire Departments.
- Conducted the August Fire/Life Safety and Security Committee, and Safety and Security Certification Review Committee meetings.



**Safety and Security Certification Status**

Contract	No. of Checklist Items	No. of Checklist Items Complete	Percent Complete	Estimated Certification Date	Comments
Town Lake Bridge	41	41	100%	Aug 2006	<b>CLOSED.</b> Certificate of Compliance is completed.
Operations and Maintenance Center	353	353	100%	Sept 2007	<b>CLOSED.</b> Certification is completed. Supplemental report submitted by RE.
Line Segment 1	121	91	75%	Oct 2008	Verification of items is continuing
Line Segment 2	127	76	60%	Nov 2008	Substantial Completion is scheduled for October 2008
Line Segment 3	214	80	20%	Oct 2008	No change.
Line Segment 4	125	125	100%	May 2008	<b>CLOSED.</b> Certificate of Compliance was approved at the May 2008 SSCRC Meeting.
Line Segment 5	107	107	100%	August 2008	<b>CLOSED.</b> Certificate of Compliance was approved at the August 2008 SSCRC Meeting.
LRV	205	21	10%	Nov 2008	Beginning to document verification of items.
Ticket Vending Machines	38	17	45%	Nov 2008	Milestone 12 (ready for revenue service) is November 2008.
Station Finishes	55	27	50%	Oct 2008	Substantial Completion scheduled for August 31, 2008.
Signals & Communications	254	191	75%	Dec 2008	Signal system acceptance test reports submitted and under review. Verification of items continuing.
Traction Electrification System	233	152	65%	Nov 2008	Final test reports will close out majority of remaining items.
Park-and-Ride 1	43	0	0%	Nov 2008	Verification of items will begin after Park-and-Ride 2
Park-and-Ride 2	42	29	69%	Nov 2008	Verification of items continuing
Park-and-Ride RB	43	0	0%	Nov 2008	Verification of items will begin after Park-and-Ride 2
Art Contracts	Art contracts will be certified on a case by case basis as each piece is installed.				



**Construction Accident Data**

METRO Construction Incident Rate	June 2008	Previous 12 Month Average
	2.3	2.23
OSHA National Construction Incident Rate = 5.30		

METRO Construction Lost Time Rate	June 2008	Previous 12 Month Average
	0	0.13
OSHA National Construction Lost time Rate = 2.20		

Total Hours Worked, June 2008 – 88,530
----------------------------------------

**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

- Pueblo Grande/La Plaza: Non-mortuary feature descriptions for Pueblo Grande and La Plaza are complete in draft form. Final descriptions and discussions will be completed once the technical data from artifact analyses are available; this is scheduled for early December of this year.
- Lithics Analysis: (Chipped stone, ground and pecked stone, miscellaneous stone objects). The total lithics analyzed in August were 795. The total lithics analyzed to date, including critical and non-critical, is 15,841. This is approximately 92.6 percent of the collection to be analyzed.
- Ceramics Analysis: The total ceramics analyzed in September were 2,226. This includes 362 from Pueblo Grande and 1,864 from La Plaza. The pottery sherds remaining to be analyzed includes: 3,215 from Pueblo Grande, 23,196 from La Plaza, 5 from Las Acequias, and 2 from Dutch Canal Ruin.
- Archaeobotanical Analysis: Processing: 104 pollen samples were sent to Texas A&M Palynology Lab for analyses. Thirteen macrobotanical samples were floated by the lab staff in August. Analysis: 30 pollen samples were counted, 48 pollen samples were scanned, and 26 flotation samples were analyzed. Remaining: 45 pollen samples and 52 flotation samples remain to be selected. Two hundred and fifty-two flotation samples and 159 pollen samples remain to be analyzed. Thirty-three percent of the pollen analysis and 14 percent of the flotation analysis are complete. Twenty-four percent of the paleoethnobotanical analysis is completed.
- Water Control (canals, reservoirs, etc.): The water control analysis and chapter is in progress.



- Bioarchaeology (Human Remains): The entire population of 146 burials has been analyzed. Isolated human bone fragments discovered during data recovery without a burial context are being inventoried.

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 August 31, 2008	(\$819,243)

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 + Committed	\$486,967
Estimated cost to complete	\$487,000

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

- ACS has under run their FY'08 estimate of labor by approximately 6,000 hours. Without correction to labor assigned to the project ACS is at risk of not completing the project on time.
- Corrective action: Received documentation of fiscal under run, revised work plan to accelerate work in FY'09, and budget adjustment. Total contract remains at \$2,697,000. Submitting request to Director of Finance for mid-year budget adjustment.



## 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, 40 of the 41 relocations have been completed, leaving only one relocation in progress. All 166 parcels are under City control and are available for construction.
- In Line Sections 1, 2, 3 and 4 eighteen building cut and re-faces were identified; all eighteen 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 sheet 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**

**September 30, 2008**

ACTIVITY								Totals
	1 PHX	2 PHX	3 PHX	4 PHX	4 TEMPE	5 TEMPE	5 MESA	
Full Takes	40	0	11	2	0	12	0	<b>65</b>
Partial Takes	109	92	243	105	1	109	45	<b>704</b>
<b>Total Affected Parcels</b>	<b>149</b>	<b>92</b>	<b>254</b>	<b>107</b>	<b>1</b>	<b>121</b>	<b>45</b>	<b>769</b>
Offers Accepted	135	85	251	102	1	120	44	<b>738</b>
<b>Escrow Closed Acquisition Complete</b>	<b>135</b>	<b>85</b>	<b>251</b>	<b>102</b>	<b>1</b>	<b>120</b>	<b>44</b>	<b>738</b>
In Condemnation	10	6	3	3	0	1	1	<b>24</b>
In Negotiations	4	1	0	2	0	0	0	<b>7</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, WiTel, 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

- Line Sections 1, 2, 3, 4 and 5 - no major utility conflicts or coordination issues.
- Park and Ride
  - 19<sup>th</sup> Avenue and Montebello – Not energized yet.
  - Camelback Road and 19th Avenue – Not energized yet.
  - Camelback Road and 3rd Avenue – Not energized yet.
  - 38th Street and Washington Street
  - 101 and Price Freeway – Not energized yet.
  - Main Street and Sycamore – Not energized yet.
- Transit Centers
  - 19th Avenue and Montebello – Not energized yet.
  - 44th Street and Washington Street
  - Main Street and Sycamore – Not energized yet.
- Traction Power Substations and Stations Platform: TPSS numbers 2 and 4 have not been energized. APS and SRP are working with MEC to get power two remaining TPSS sites.
- Station Finishes (Platform)
  - Twenty-seven station platforms have been energized, only one remains – 19<sup>th</sup> Avenue and Montebello.
- SRP 230 kV over Town Lake Bridge
  - SRP is in the process of having the phases reversed on one side of the SRP Kyrene-Bendbow 230kV line by the end of October 2008 - pending.

### Cost and Schedule – Variance Analysis

- Costs incurred to-date for prior rights utilities are within the Utility Budget. Electrical service to Stations and TPSS continues to be one of two key issues driving the project schedule.

### Issues and Solutions

- Electrical services to Stations and TPSS continue to be a priority for METRO.

### Construction Photographs



SRP onsite preparing TPSS No.1 to be energized



SRP onsite preparing TPSS No.1 to be energized



APS onsite preparing TPSS No.3 to be energized



APS onsite preparing TPSS No.3 to be energized

## 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: installation at the corner of the park and ride set for October 2008.
  - Camelback/7<sup>th</sup> Avenue: Installed.
- Line Section 2
  - Camelback: Installed except for irrigation hose connection to be provided by Archer Western Contractors.
  - Campbell: Artwork is installed. Need to confirm correct lighting placement by Archer Western Contractors.



- Osborn: Installed.
- Indian School: Terrazzo carpets have been installed. Arrows in pavements have been installed. Glass panels in the entryway should be installed in October.
- Thomas: Granite turning stones have been installed in the entryway. Granite benches which flank the trees on the station will be installed in October.
- Encanto: The cantera stone wall and bronze sculpture were installed May 27-30, 2008. The bronze turning stones are scheduled to be installed sometime in October.
- Line Section 3
  - McDowell: Working with the original fabricator to fabricate completed designs by Station Artist Michael Maglich.
  - Roosevelt: Artwork should be installed in October.
  - Van Buren: Installed.
  - Central/Washington – 1st Avenue/Jefferson: Tiles and panels have been installed at Central/Washington. At 1<sup>st</sup> Avenue/Jefferson, the terrazzo medallions have been installed and we are working out signage issues prior to the installation of panels.
  - Third Street: the artist installed the main body of the artwork and is now coordinating the installation of the electrical lighting component. This will be installed by Archer Western.
  - Twelfth Street: Working with the artist to complete the station artwork. Tiles have been ordered by Archer Western, artist is scheduled to install his tiles in October.
  - 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 November 2008 and completion (last three) in February 2009. Waiting for Archer Western Contractors to install the lighting and ground the artwork.
  - Forty-Fourth Street: Artwork is installed, working through grounding issues for art columns.
  - 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: Artwork is installed, waiting for Archer Western Contractors to install the lighting component.
  - College/5th Avenue: Artwork has been installed, waiting for Archer Western to clean the rust stains from the pedestals.
  - Apache Boulevard Stations
    - Sculpture: Hands sculpture to be installed November 1, 2008.
    - Paving: Paving has been installed.
    - Trellis boxes: installed at all of the Apache stations and is complete except for the Price/Apache station where Archer Western Contractors needs to install the trellis panel to anchor the artwork.
    - 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 October.
  - Sycamore/Main: installed
- General Progress
  - Working with Archer Western Contractors (AWC) to resolve the foundation installation and scheduling issues.
  - Working with artists and GEC to resolve the outstanding request for information 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.

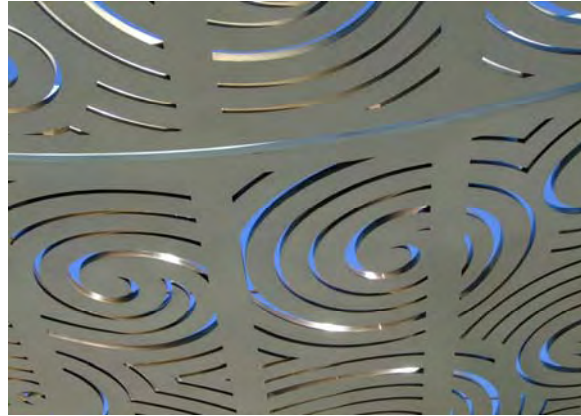
### **Issues and Solutions**

- 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



Cloud Canopy at 44<sup>th</sup> St./Washington Station  
by Mona Higuchi



Cloud Canopy detail

## 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 but intermittent. 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 of the stations.
  - Louver Installation is completed for 33 stations. This completes canopy installation for all the stations.
  - Electrical/Communications Cabinet Installations have been completed for 33 Stations. This completes electrical / communications cabinet installation for all of the 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 22 stations. Additional requests for substantial completion have been submitted for eight 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**

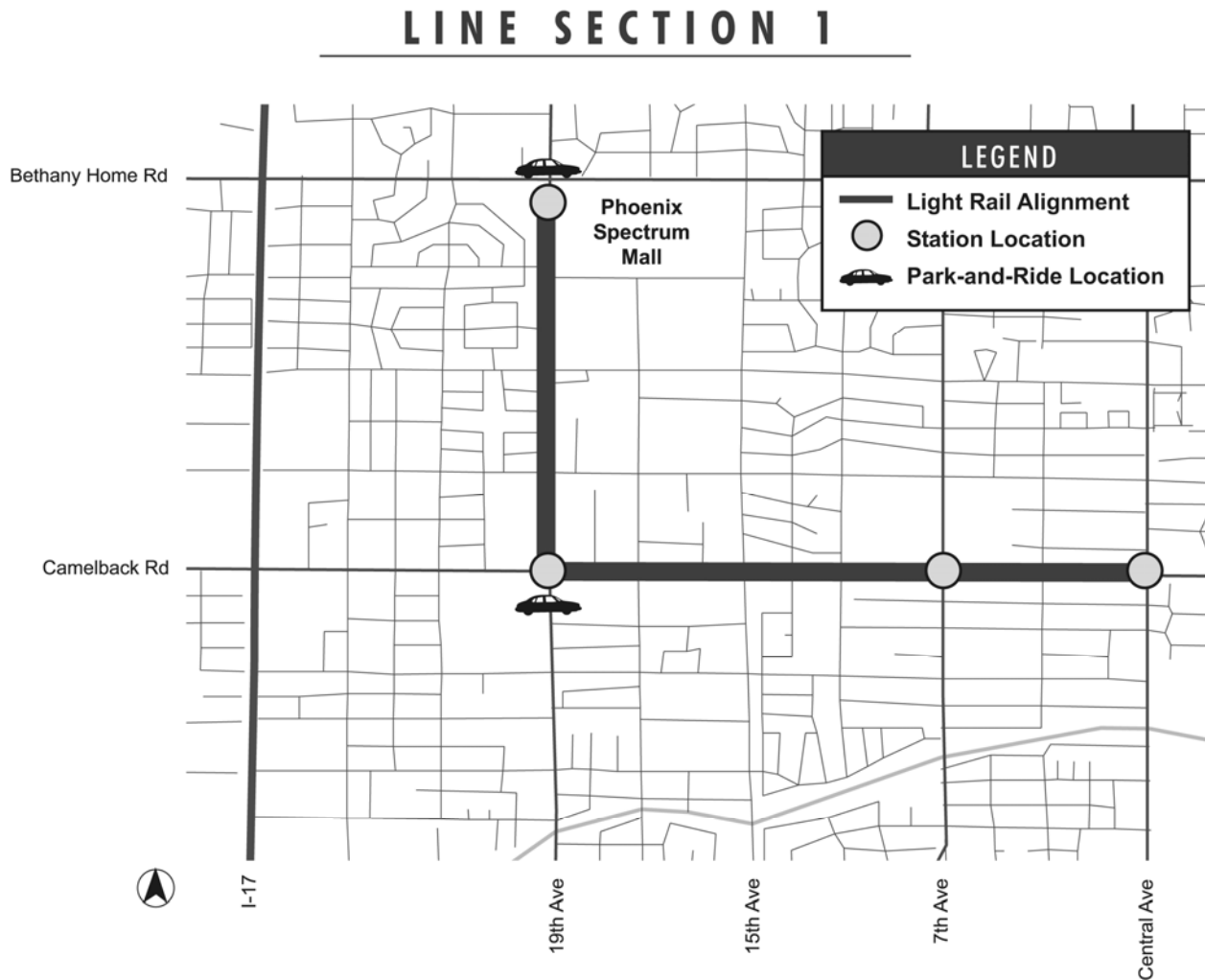
- A revised schedule has been accepted by METRO. Substantial agreement has been reached between METRO and Archer Western Contractors. The revised schedule is being implemented.
- Contractor has submitted a Request for Equitable Adjustment in the amount of \$4,800,000. The REA is currently under review.

### **Issues and Solutions**

- None.

## 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

- All track, station foundations, Civil Systems Ductbank, and roadway work, except for three conformance issues, have been completed.



- The Contractor continues to coordinate with follow on contractors working within the guideway.
- All utility work has been completed on the project. Conformance issues on two sanitary sewer laterals will require redesign and rework, to be addressed as warranty issues.
- Final AC rubber placement and striping has been completed. Quality issues at some locations will require repaving or surface rework.
- The Contractor was granted Substantial Completion on Milestone E on July 18, 2008.
- Change work to address grade transitions at back of walk along the roadway has been completed.

### **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.
- Three quality issues remain, which currently are being tracked by nonconformance reports. One of these involves sanitary sewer laterals that are failing City CCTV tests and will require a sewer redesign. The Contractor has requested to track these issues as warranty items to facilitate closing the contract.
- The City will not accept signalized intersections until all LRT related signalization is in place, including new controllers. This work is outside the scope of the LS1 contract, but METRO has directed the LS1 Contractor continue traffic signal maintenance until this work is complete. LS1 work to place the controllers cannot commence until the controllers are placed in LS3 and LS2. A change is being negotiated for this additional work.
- Change Order 90 was issued, revising 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

**Construction Photographs**



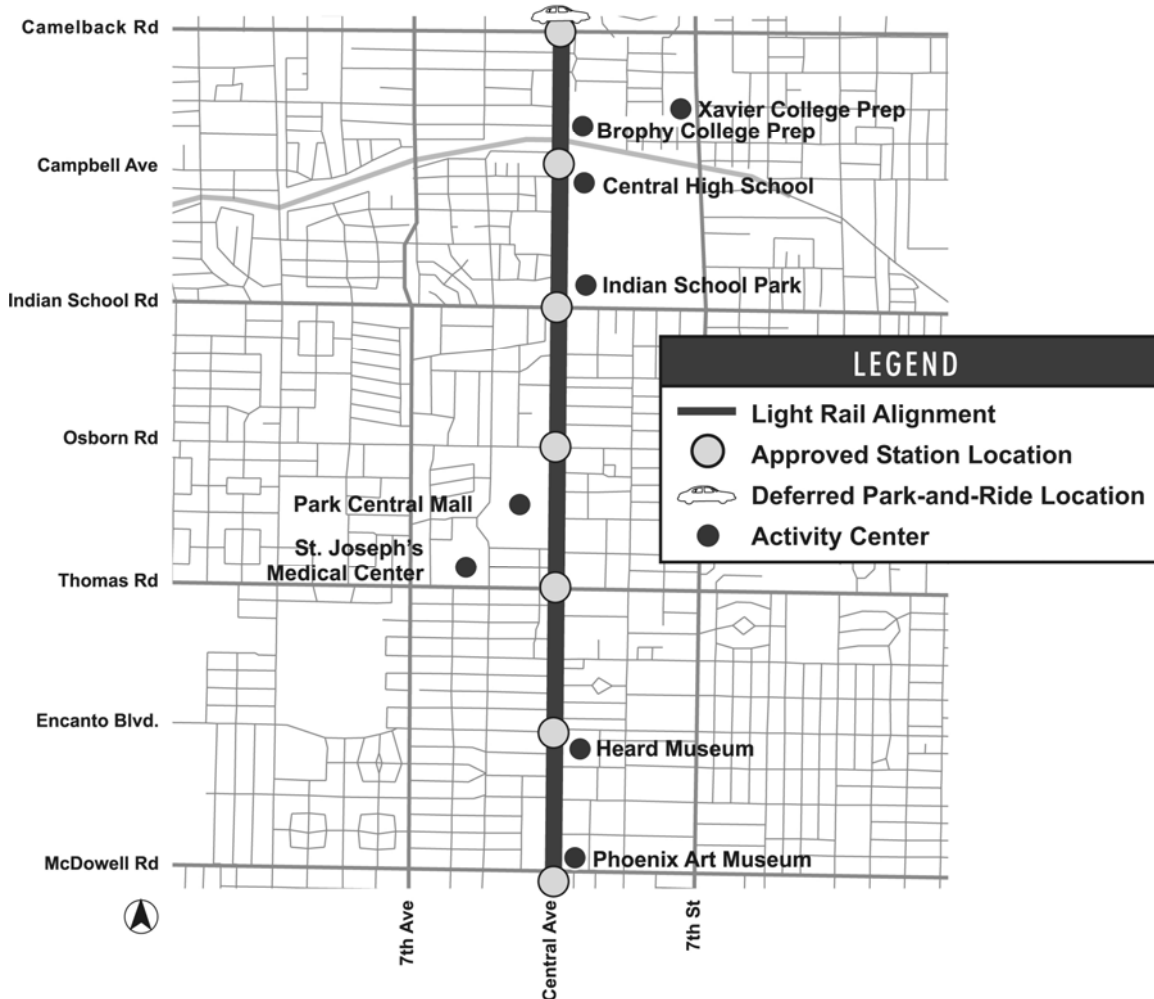
Completed Guideway on 19<sup>th</sup> Avenue



Completed Work on Camelback Avenue

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 contracted and Change Order work related to infrastructure on the project and continues to work on punch out issues. Three additional Change Orders have been issued to Herzog.
- 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 continues to work on resolution of punch list activities.
- Herzog has completed final AC Rubber Paving, also, Completed Thermo plastic traffic striping.
- Herzog's sub contractor is punching Traffic Signals with COP/GEC and preparing to install the final Traffic Controller in the Cabinets.

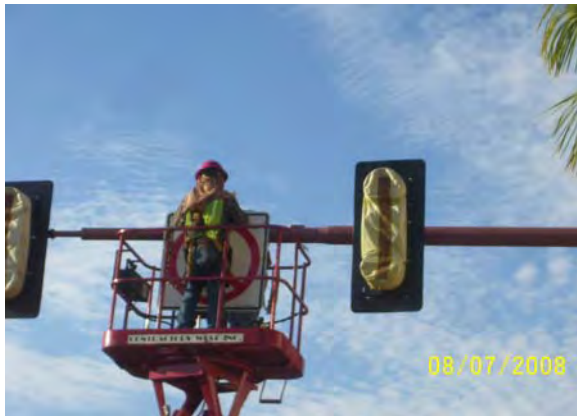
## **Cost and Schedule – Variance Analysis**

- 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 to install final poles and begin overhead cantenary wire installation mid-June.

## **Issues and Solutions**

- None.

**Construction Photographs**



Installing Traffic Signs



Replacing tactile pavers at sidewalk ramps



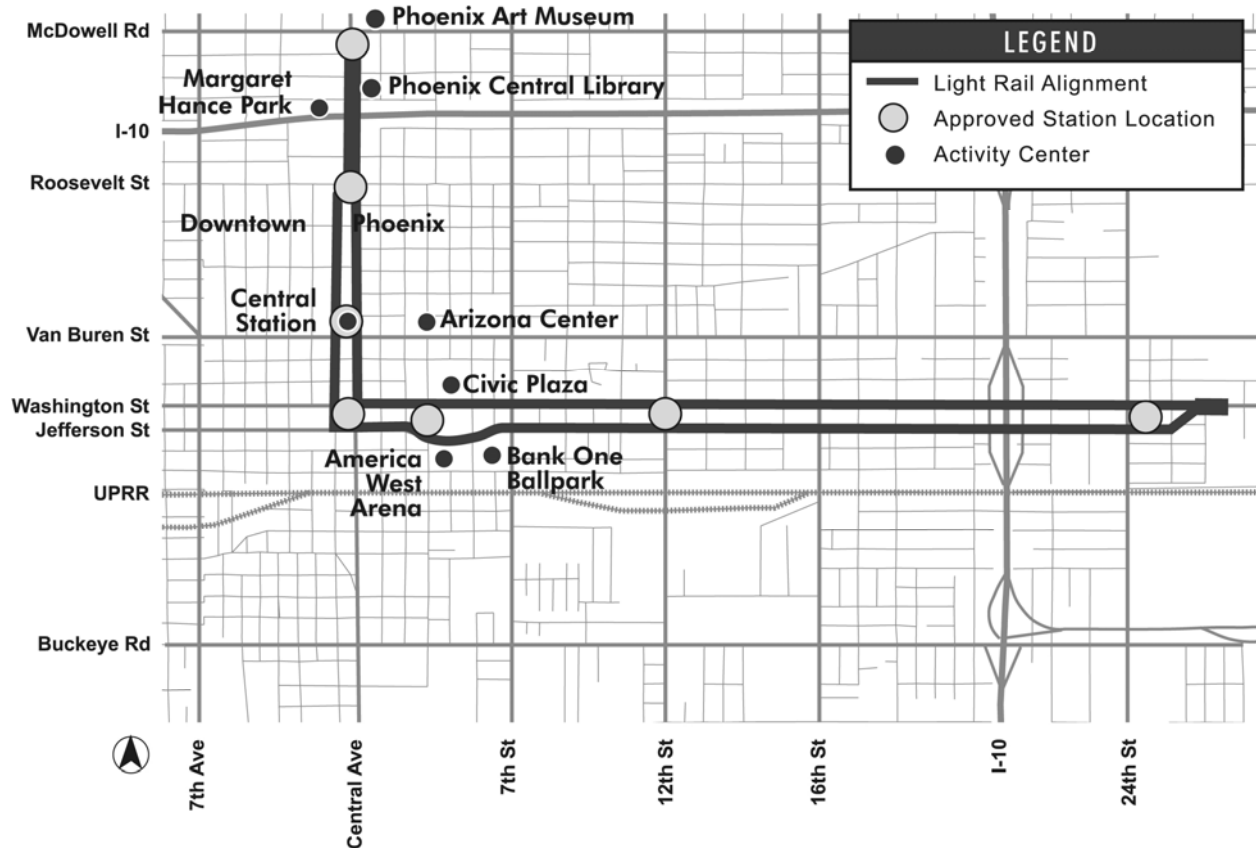
Placing Landscaping Decomposed Granite



Adjusting Traffic Signal heads

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**

- AWC is continuing to attend to punch list for traffic signals and turnover to City of Phoenix to include controller change out to the more advanced ASC3 equipment and this is progressing well. AWC is nearing completion of placing flatwork, irrigation systems and landscaping as required along ROW.
- AWC is very aggressively constructing the 11<sup>th</sup> Street Loop to meet necessary Change Order Milestones and meet the December 15, 2008 completion date.
- AWC has completed placing rubberized asphalt throughout the entire alignment. The raising of manholes and valves to include striping, signage and placing of symbols is nearing completion.
- AWC continues to install landscaping irrigation and planting material throughout the alignment and is nearing completion.

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

- AWC has completed approximately 99 percent of their project.

## **Issues and Solutions**

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

### Construction Photographs



11<sup>th</sup> Street Loop Roadway Demolition in progress



Combined Systems Duct Bank Installation for 11<sup>th</sup> Street Loop



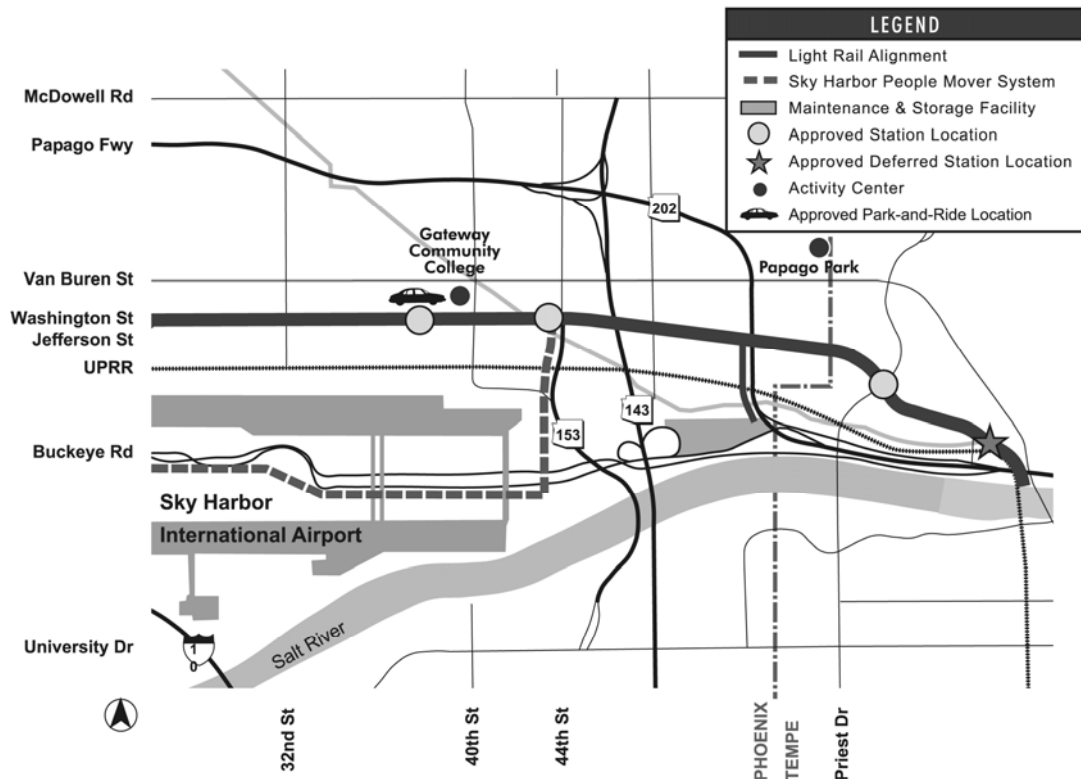
Landscape Planting and DG installations



Dry Well Installation for Parking Lot Drainage

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**

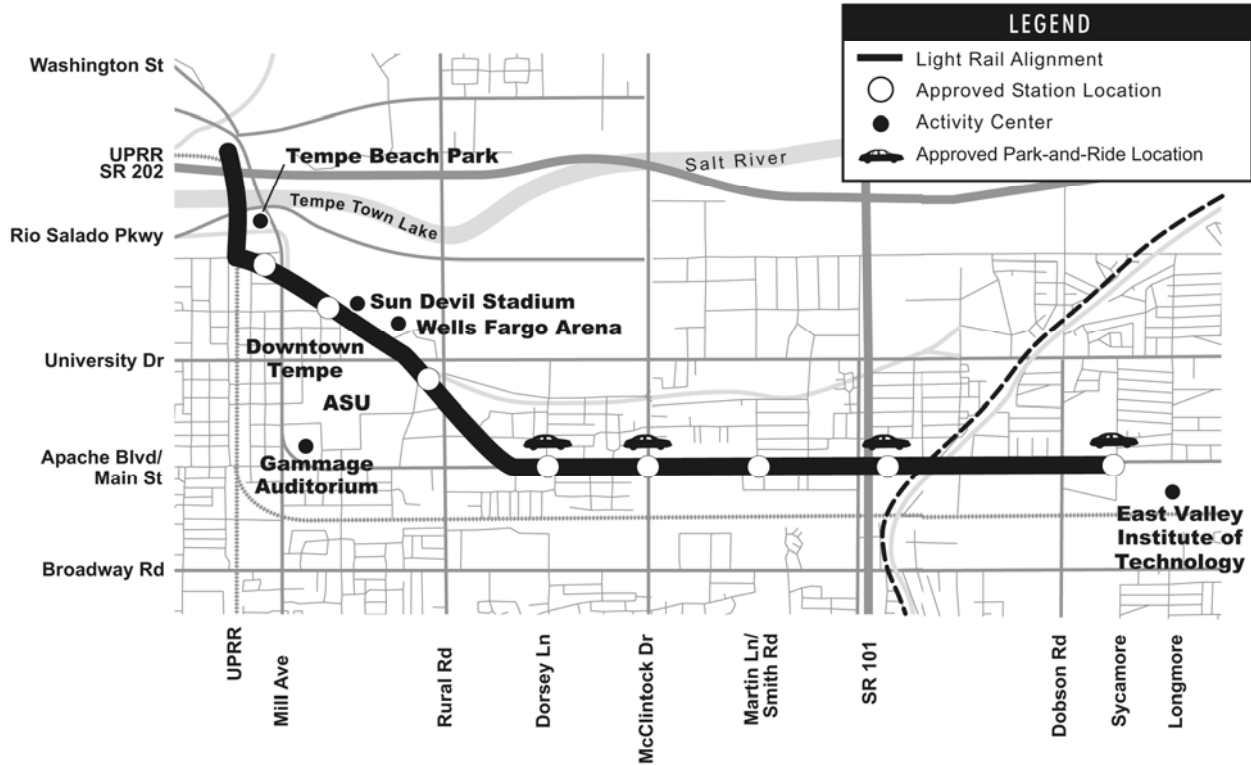
- The contract is in the progress of being closed.

**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 installed all embedded track for the project, as well as the direct fixation track at the end of the project.
- 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 two 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.

### **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 is pending Board approval.

### **Issues and Solutions**

- The Contractor faced significant challenges with existing utilities conflicts and Third Party utility relocations throughout the alignment, but now all Third Party utilities have been relocated. Only one irrigation controller waits energizing by the utility company. All other Contractor work at that location is complete.
- Pavement elevations along Apache Boulevard west of Price Road, and along Main Street east of Dobson Road, were found higher than expected from the contract drawings. This may be partially due to having to adjust control point elevations in these areas at the beginning of the project. Placing rail at the designed elevations in the intersections in these areas would have resulted in significant replacement of adjacent pavement. Top of curb elevation adjustments for the guideway curbs alleviated some of the issues between intersections. A redesign to raise the rail elevations across both intersections appears to successfully have addressed the issues in these locations. Some small modifications to the 101 Bridge deck were also made to accommodate the profile change.
- Maintenance of traffic flow throughout the project area has eased, with all major traffic restrictions removed; however, close coordination with local cities and ADOT is still required for periodic closures and shifted traffic patterns for punchlist work.
- Public support for the project remains reasonably good. The Contractor has maintained positive efforts to assure stakeholder support through advance notices and rapid resolution of stakeholder concerns. The METRO public involvement personnel assigned to the Project provided crucial support for conflict avoidance and resolution.

## 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.

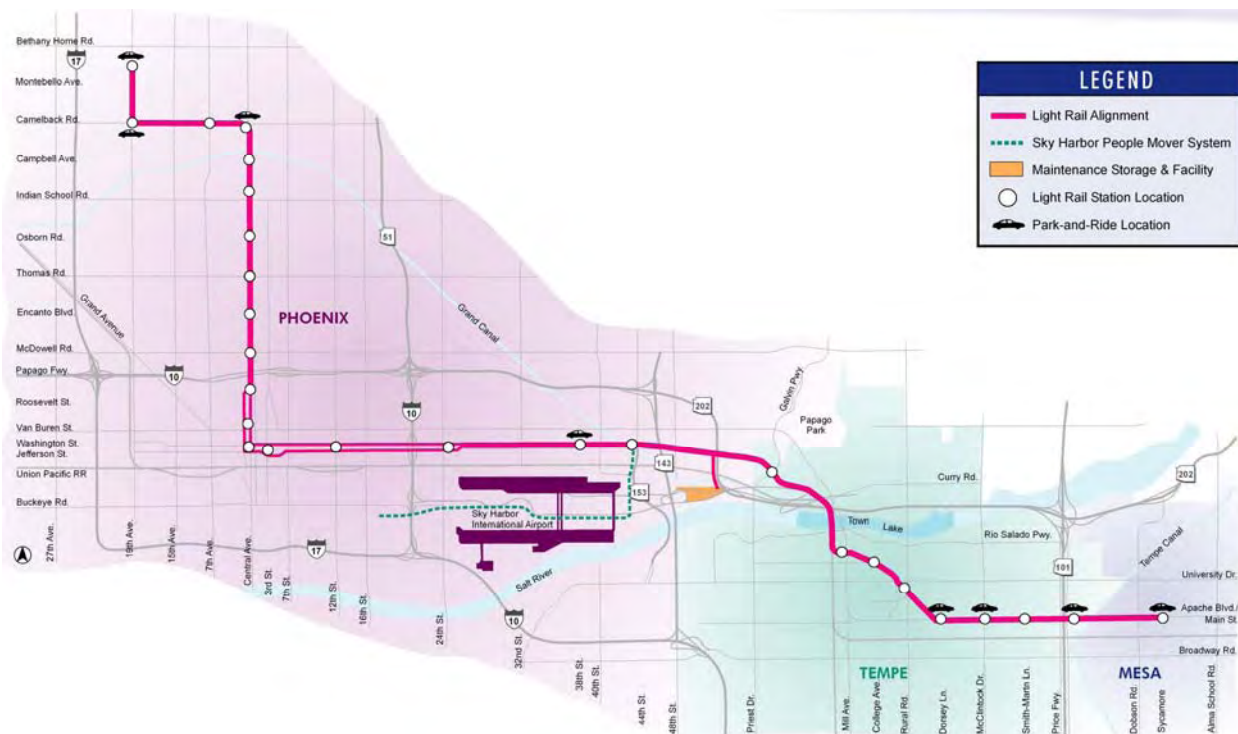
### Cost and Schedule – Variance Analysis

- 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 the preparation of the base course in preparation for paving, construction of screen wall, curbing and sidewalk for the Montebello/19<sup>th</sup> Avenue project site this month. Kiewit is currently working on interior finishes for the security building.
- During the month of September, Kiewit has been working on completing the installation of landscaping, view fencing and site furnishing for the 19<sup>th</sup> Avenue/Camelback Avenue Park and Ride Site. They continue to work on the interior finishes on the Security Building at this time.



- MRM Construction is working on punch list items for the 38<sup>th</sup> Street/Washington site.
- At the Central and Camelback site MRM Construction paved the parking areas, installed the irrigation system and planted the landscaping.
- During the month of September, Sundt/Stacy & Witbeck have been working on the installation of irrigation and landscaping at the Price Freeway/Apache Boulevard site. They are currently working on the interior of the Security Building.
- At the Sycamore and Main Park and Ride site, Sundt/Stacy & Witbeck have been working on the installation of curb, valley gutters, preparation of base material, paving, installation of the irrigation system and planting trees. They are currently working on interior finishes of the Security Building.
- The Developer for the McClintock/Apache site is in the process of constructing the garage. Signals and Communications is currently working with contractor and finalizing rough-in requirements for the safety and security systems to be installed by S&C.
- The City of Tempe is in the process of construction for an additional 100 spaces at Dorsey/Apache. The site is near completion. 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**

- Monitoring of the private Developer's progress for the McClintock/Apache site to assure that there are no less than 300 parking spaces available in December 2008.

**Park and Ride Construction Data**

No.	Park and Ride Site	Number of Spaces	Scheduled 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	310	November 1, 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>		<b>3,523</b>		

**Construction Photographs**



Painting Metal Work 19<sup>th</sup> Avenue/Montebello PNR Facility



Screen Wall Construction 19<sup>th</sup> Avenue/Montebello PNR Facility



Site Furnishings Installation  
19<sup>th</sup> Avenue/Camelback PNR Facility



Subgrade Preparation



Paving West of 3<sup>rd</sup> Avenue  
Central Ave/Camelback PNR Facility



Landscaping Installation  
Central Ave/Camelback PNR Facility



Pulling Wire for Electrical Service  
Price Road/Apache Park and Ride



Brick Paver Installation  
Price Road/Apache Park and Ride

## 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.



- Three material deliveries were made during this month. The Contractor delivered two loads of spare tongues and the remaining rail retained for the fabrication of pre-curved rail.

### **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.
- The City of Mesa requested that METRO purchase a spare traffic signal cabinets and controller. METRO has issued the purchase order for this item, and there will be a six to eight week lead time on delivery. This item will be shipped directly to the City of Mesa.

### 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 progressing.
- Milestone 4 Progress: Approved Final Design Review – Formal closeout of Final Design Review (FDR) submittals progressing.



- 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 at 3<sup>rd</sup>/Mill Station completed. Punchlist items being addressed.
- Milestone 9: Delivery of Ticket Vending Machines – All 102 TVMs, and Spare Parts and Tools, Received. Complete.
- Milestone 10 Progress: Completion of Training – Training rescheduled for November-December to avoid other training conflicts. Approval of training material submittals outstanding.
- Milestone 11 Progress: Field Installation Testing – 35 TVMs Installed, testing underway.

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

- There has been no current/regular issue of the project schedule for TVM installation and testing. The contractor is working closely with the Station Finishes contractors to work at platforms that have completed punch list items to allow proper installation. Forecasting the installation timing for upcoming stations is difficult but necessary for successful completion of machine installation.

### **Issues and Solutions**

- The use of maintenance spares for the Center Parkway Station will no longer be necessary to support the schedule. The two TVMs initially planned for installation at Price Freeway/Apache Station and are not required (single entry station), will be used at Center Parkway.
- Standalone Ticket Validator Change Order being processed as Directive Change (Force Account) to maintain design progress until contractual details can be finalized with the Contractor.
- Field installation progress is slowing due to station finishes coordination problems. Clearance issues are being resolved by introducing metal base plates to offset TVMs away from obstructions. Conduit is being checked in advance of installation in order to identify blockages for station finishes remedial action.

### Construction Photographs



Station Inspection at Thomas and Central Station



TVM Installation at McClintock and Apache Station



Testing In-Progress at Dorsey and Apache Station



Testing In-Progress at Central and Indian School 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

- METRO is continuing review of submittals for Contract Data Requirement List items (CDRLs) the bulk of which are test procedures and reports. METRO and KI are engaged in daily and weekly meetings. Main topics for presentation by KI and discussion are going to be: special tools, spare parts, operator training course, application, closing open items, vehicle delivery schedule, GE and GEO Focus Interface, and conditional acceptance testing.
- Changes for an Overhead Catenary System (OCS) Surveillance Camera Installation on two cars and an Automatic Passenger Counting System (APC) for the fleet have been processed. Testing of the APC is on going and software is being installed.



- All 50 cars have been delivered from Osaka. No further inspections are ongoing in Osaka Japan.
  - METRO resident inspections in Phoenix final assembly: LRV Mass Production – 50 Trains are now in Phoenix for final assembly.
  - Geo focus is installing equipment and static testing. Cars 138 through 140 have been inspected for delivery. Punch lists are done and waiting for title transfer.
  - A total of 42 LRVs are accepted as delivered. The last eight vehicles are in final assembly and test. Nine vehicles will start their warranty clock in September.
  - Cars 149 and 150 are in the shop for final assembly and are on schedule for delivery the end of Oct.08
  - Inspections of the interior, exterior, roof equipment, and trucks are being performed and ongoing. Some side window glass has been found to be cracked. Those pieces will be changed out. KI has started the vehicle maintenance training. The second set of classes will be starting in September. This will be ongoing through December 2008.
  - Geo Focus equipment is being installed and testing is ongoing. DVR mod's are done and tested. Latest software is being installed on the fleet. KI is studying software changes to correct our slip and slide issues on the main line.
  - Conditional acceptance testing is ongoing. Up to 40 mph in the yard. 41 vehicles are now through this process. Burn in with multi cars is in progress.
  - Main line vehicle testing has started and will be ongoing into December 2008.
  - Wheel to rail testing is ongoing and will be in test over the next couple of weeks.
  - All truck frames and components were shipped from Osaka to Phoenix for final assembly. Final assembly of LRVs is no longer being impacted by material shortages (gearboxes, APS). Telephone, email and drawing exchange continue between KS-J and KI on vehicle issues, testing procedures and schedules, subsystem interfaces and equipment mounting, interior design and equipment installation, systems application issues, material shipments, production schedule and CDRL's items.
  - Qualification testing is ongoing in the yard and main line for low speed. Car 101 is qualified to 40 mph.
  - Conditional acceptance testing procedures are set up and started February 4, 2008.

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

- Car delivery remains on schedule, sufficient to meet the needs of the overall program. Contract remains within budget.

## Issues and Solutions

- KI has experienced parts shortages. The problems mainly involved the supply of axles and APS units. METRO representatives held a series of meetings with both suppliers to evaluate the impacts to the schedule as well as to determine contingency production plans. To date, those plans are in action and the suppliers are maintaining on schedule. KI is experiencing shortage of power axles for the month of Aug. KI as a contingency plan to over come this temporary shortage. Brake pressure switches have been burning out. KI and Knorr know the problem and are working to install the fix.
- While some part shortages have impacted the delivery of LRVs in the short term, both METRO and KI remain confident that the final LRV (150) will be delivered and accepted by November 2008.

## Assembly Photographs



Car shells coming in for final assembly



Car under floor work



Car C section being prepped for final assembly



Car articulated and prepping for static testing

## 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
  - Continuing Static Field and operational Acceptance Testing activities at Pierson Interlocking and Montebello Interlocking.



- Completed installation of track circuit transformers at Sycamore, McKinley Loop, Pierson and Montebello Interlockings, to improve performance on circuits with excessive cable distances.
- Communications System
  - Began handover of Street Traffic System fiber backbone to the City of Phoenix in Area 2 for traffic control testing. Continuing splicing and testing of laterals in Area 3.
  - Continuing fiber installation of Fiber Optic Systems (City Fiber) for Mesa, Phoenix and ASU.
  - Continuing local testing at stations in Area 3. Performing network testing and device end to end testing in Ring 3 (in Areas 1 and 2).
  - Continuing Communications equipment installation at all Park and Ride Lots (except McClintock and Apache Parking Garage).
  - Began station fittings replacement and rewiring at 11 City of Phoenix platforms.
- Coordinating with other Contracts
  - Station Finishes Communication Cabinets – Continuing to coordinate power-on activities of main circuit breakers.
  - Station Finishes Communication Cabinet Air Conditioning Units – Replacing damaged Communications equipment resulting from leaking units.

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

- The final completion target Milestone of October 3, 2008 will not be met but revenue service operations in December 2008 will not be significantly impacted. Mitigation planning is underway to lessen the impact of construction delays.
- Mitigation efforts include:
  - Ring testing will be done in series
  - Re-evaluation of fixed testing duration for areas that have had some pre testing.
  - Contractor led integrated testing will take place in parallel with final ring testing.
  - Manpower levels for installation and testing will monitored closely.

### **Issues and Solutions**

- Yard Entrance Interlocking Imbalance Issue – Track circuit failures occurring in the interlocking have been attributed to traction power negative return imbalances at the yard lead. Rework to install additional insulated joints and supplemental negative returns scheduled to being on September 29, 2008.
- Embedded Switch Correspondence Problems – Issues have been noted with operation of the internal limits switches of various switch machines, which is impacting the Agency's ability to operate interlockings from the local control panels. On site

coordination, testing and repair meetings are underway to jointly address a resolution to the problem.

### Construction Photographs



Operational Testing at Montebello Interlocking



Testing of New Track Transformer Circuits at Sycamore Interlocking



Station Rewiring to Support Fittings Replacement at 1st and Van Buren Station



Switch Machine Maintenance at Sycamore Interlocking



Fiber Splice Testing at Mid Level Switch #2



Installation of ASU Fiber Near Center Parkway

## 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

- Traction Power Substation No. 1
  - HVAC System testing progressed.
  - Removal of non-compliant crushed stone commenced.
  - Received temporary power from SRP. Siemens onsite commissioning substation.
  - Building and Sitework Construction – 95 percent complete.



- Traction Power Substation Equipment Installation and Testing – 80 percent complete.
- Traction Power Substation No. 2
  - Removal of non-compliant crushed stone commenced.
  - City clearance for temporary power received.
  - Completing installation of TPSS equipment.
  - Correcting utility conduit routing.
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 80 percent complete.
- Traction Power Substation No. 3
  - Received temporary power from APS. Siemens onsite commissioning substation.
  - HVAC System testing progressed.
  - Recoating floor with dielectric floor topcoat.
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 80 percent complete.
- Traction Power Substation No. 4
  - Removal of non-compliant crushed stone commenced.
  - City clearance for temporary power received.
  - HVAC System testing progressed.
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 80 percent complete.
- Traction Power Substation No. 5
  - Installation of metal louver fence progressed.
  - Building and Sitework Construction – 90 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.



- Traction Power Substation No. 6
  - Racking and tagging cables.
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 7
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 8
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 9
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 10
  - Watertight seals have been placed for negative conduits.
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 11
  - Racking and tagging cables.
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 12
  - Racking and tagging cables.
  - Building and Sitework Construction – 90 percent complete.



- Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 13
  - Building and Sitework Construction – 95 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 14
  - Building and Sitework Construction – 90 percent complete.
  - Traction Power Substation Equipment Installation and Testing – 95 percent complete.
- Traction Power Substation No. 15
  - Punchlist items remain outstanding.
- MOE Shop and Traction Power Substation No. 16
  - Punchlist items remain outstanding.
- Traction Power Substation Performance Tests
  - Siemens has performed the substation performance tests. Reviews of the test reports indicate that the substations are not meeting specification requirements. Ongoing meetings are being held with the substation supplier.
- Overhead Contact System
  - OMC Yard and MOE Shop
    - Punchlist items remain outstanding.
  - Line Section 1
    - Outstanding items identified during aerial inspections are being addressed by the Contractor.
    - OCS pole touch-up painting has commenced.
    - Installation of OCS poles is 100 percent complete.
    - Installation of cantilever support arms is 100 percent complete.
  - Line Section 2
    - Outstanding items identified during aerial inspections are being addressed by the Contractor.
    - OCS pole touch-up painting has commenced.



- Installation of OCS poles is 100 percent complete.
- Installation of cantilever support arms is 100 percent complete.
- Line Section 3
  - Live Wire testing for Wire Runs 17 thru 28 has been performed for all speeds except for the maximum speed limit. This will be performed during the same time as the live wire tests in Line Section 1 and 2.
  - 11<sup>th</sup> Street Loop and punchlist items remain outstanding.
- Line Section 4
  - Punchlist items remain outstanding.
- Line Section 5
  - Punchlist items remain outstanding.
- Coordination with other Contracts/Entities
  - Ongoing coordination meetings are being held with the Facility Contractors on a regular basis. Closely coordinating with the Line Section 1, Line Section 2, Line Section 3, and the Station Finishes Contractor.
- Milestones
  - Milestone 10B is still outstanding pending the resolution of the noncompliant TPSS field performance tests and the resolution of the noncompliant crushed rock.
  - Milestone 10C is still outstanding pending the completion of the noncompliant TPSS field performance tests and the resolution of the noncompliant crushed rock.

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

- The contractor has completed most of the material delivery and TPSS civil construction and is primarily performing OCS construction, field testing and commissioning. Construction progress to date has included the civil and architectural parts of all sixteen traction power substations, TPSS electrical equipment installation in all sixteen of the traction power substations, OCS components installation in the OMC yard, OMC shop and parts of all Line Sections. Start up testing and commissioning has been done at the OMC, LS4 Test Track areas, and the extended 6 mile burn-in track area and is in progress for the balance of LS5. Milestone 10A for Test Area A was completed on schedule. Milestone 10B for Test Area B is nearing completion.

### **Issues and Solutions**

- TPSS/LRV Compatibility Issue. TPSS field performance tests were performed which resulted in noncompliant results. Meetings are being held on a regular basis with the substation supplier to discuss anomalies.

- Induced Voltage over Town Lake Bridge. The change notice to install a shield wire over the overhead contact wire is currently on hold. The Agency may elect to perform this work with their forces.
- Underwriters Laboratories (UL) Certification. The auxiliary transformer is not UL certified which will affect the ability to receive permanent power at substations 1 through 4. The Contractor has tested the auxiliary transformer and has sent test results to UL for further review and approval.

**Construction Photographs**



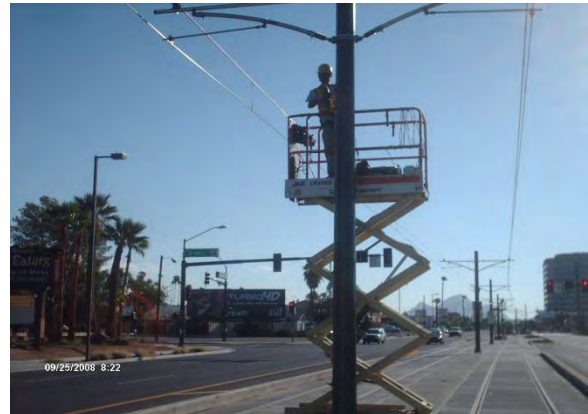
TPSS No. 2 – Removal of Non-compliant Rock



TPSS No. 4 – Testing of HVAC System



Line Section 2 – Balance Weight Adjustments



Line Section 1 – OCS Pole Touch-Up Painting



## **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.

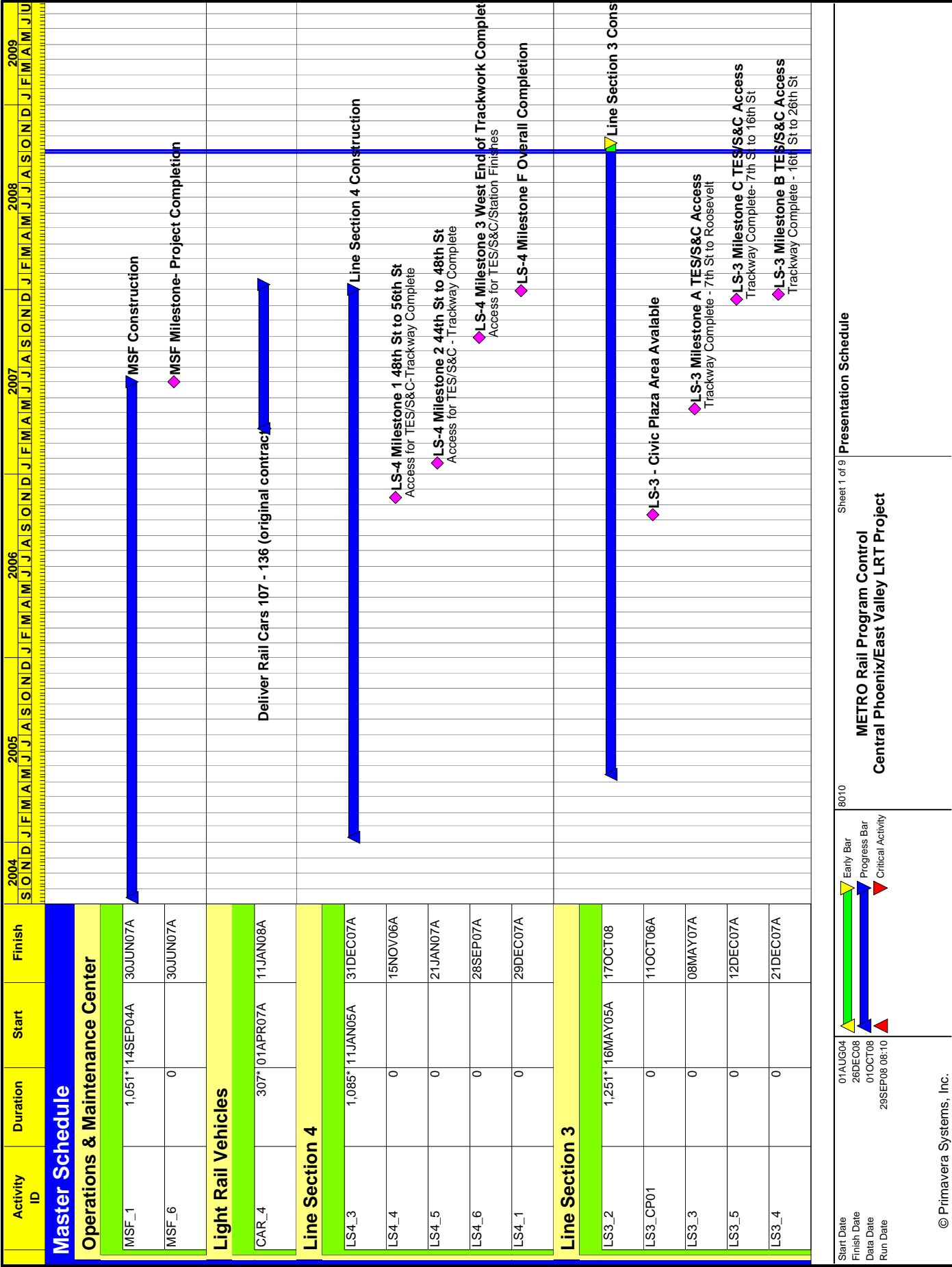
This same group will participate in and oversee the System Integration process, which is the final testing process before sections of the alignment can be activated for use. The System Integrated tests are designed to prove that the various systems within the alignment work well together and meet design 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.
- LRV testing will continue in the yard until the RAIL/LRV interface problem is corrected.
- Loram Corporation did surface rail grinding on the test track between 48<sup>th</sup> Street and 56<sup>th</sup> Street. Some improvement in wheel adhesion was realized after the grinding, but more investigation is needed.
- Final reports from Zeta-Tech are under review.
- New LRV wheel profile has been implemented and testing is ongoing. No improvement has been realized according to test reports.
- 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.
- The extended test zone (McDowell to Sycamore) has been activated and is available for METRO's use.
- Trains are running from McDowell to Main and Sycamore regularly for LRV burn-in and Transportation Supervisors training.
- The Transportation group has assumed "track allocation" responsibilities on September 29, 2008.



- The Rail Activation Team and the CAC are continually modifying the integrated test schedule to reflect changes in turnover dates.
- Rail Activation and the CAC are developing the integrated test procedures.
- Track Allocation meetings are being held every Wednesday at the OMC conference room.
- Track Access Training is ongoing every Monday at the OMC.



Sheet 1 of 9 Presentation Schedule

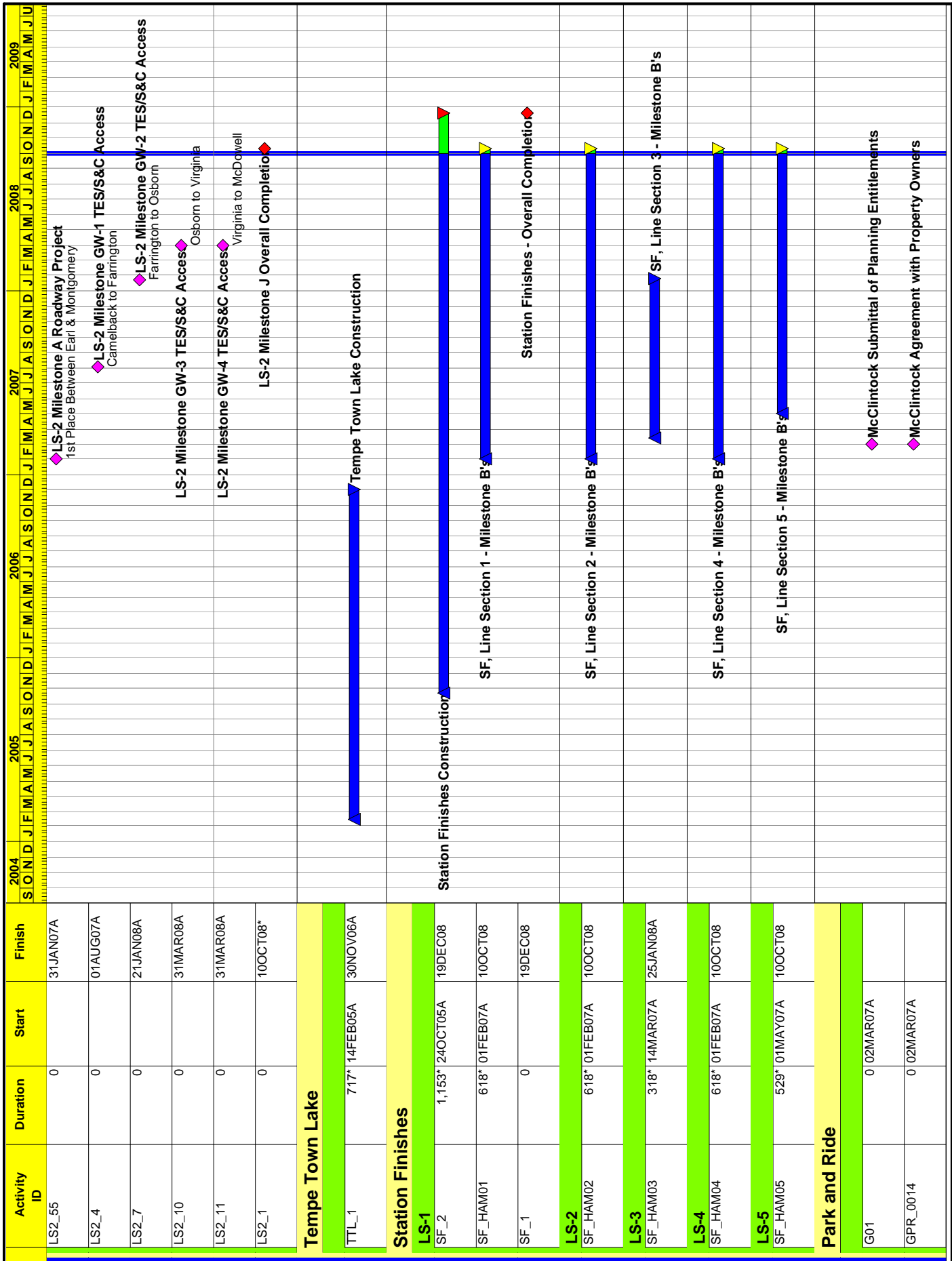
**METRO Rail Program Control**  
Central Phoenix/East Valley LRT Project

8010

Start Date: 01AUG04  
 Finish Date: 26DEC08  
 Data Date: 01OCT08  
 Run Date: 29SEP08 08:10

Legend:  
 Early Bar (Yellow)  
 Progress Bar (Blue)  
 Critical Activity (Red)



















## 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