



# 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 .....	6
• Project Budget Status .....	8
• Plan vs. Actual .....	10
• Contingency Drawdown .....	11
• CNPA Project Budget Status.....	12
3. Schedule Overview .....	14
• Critical Path.....	16
• Procurement Bid Status Report.....	19
4. Quality Assurance .....	20
5. Public Involvement .....	22
6. Disadvantage Business Enterprise Program.....	27
• DBE Program Overview .....	32
7. System Safety and Security .....	33
8. Environmental Management .....	35
9. Real Estate.....	38
10. Utilities.....	41
• Prior Rights Utility Cost Status .....	47
11. Architecture .....	48
• Public Art.....	48
• Station Finishes.....	49
12. Facilities .....	53
• Line Section 1 .....	53
• Line Section 2 .....	57
• Line Section 3 .....	61
• Line Section 4 .....	66
• Line Section 5 .....	70
• 48 <sup>th</sup> Street Bridge Replacement .....	75
• Town Lake Bridge .....	76
• Maintenance and Storage Facility .....	79
• Park-and-Ride .....	83
• Track Material Procurement.....	86
• Traffic Signal Procurement.....	89
• Underfloor Wheel Profiling Machine.....	91
13. Systems .....	92
• Automated Fare Collection System.....	92
• Light Rail Vehicle .....	95
• Signals and Communications.....	99
• Traction Electrification System.....	104



14. Appendix .....	110
• Presentation Schedule .....	110
• Acronyms .....	120



## 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 a 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 Billion, with a Revenue Operations Date of December 2008.

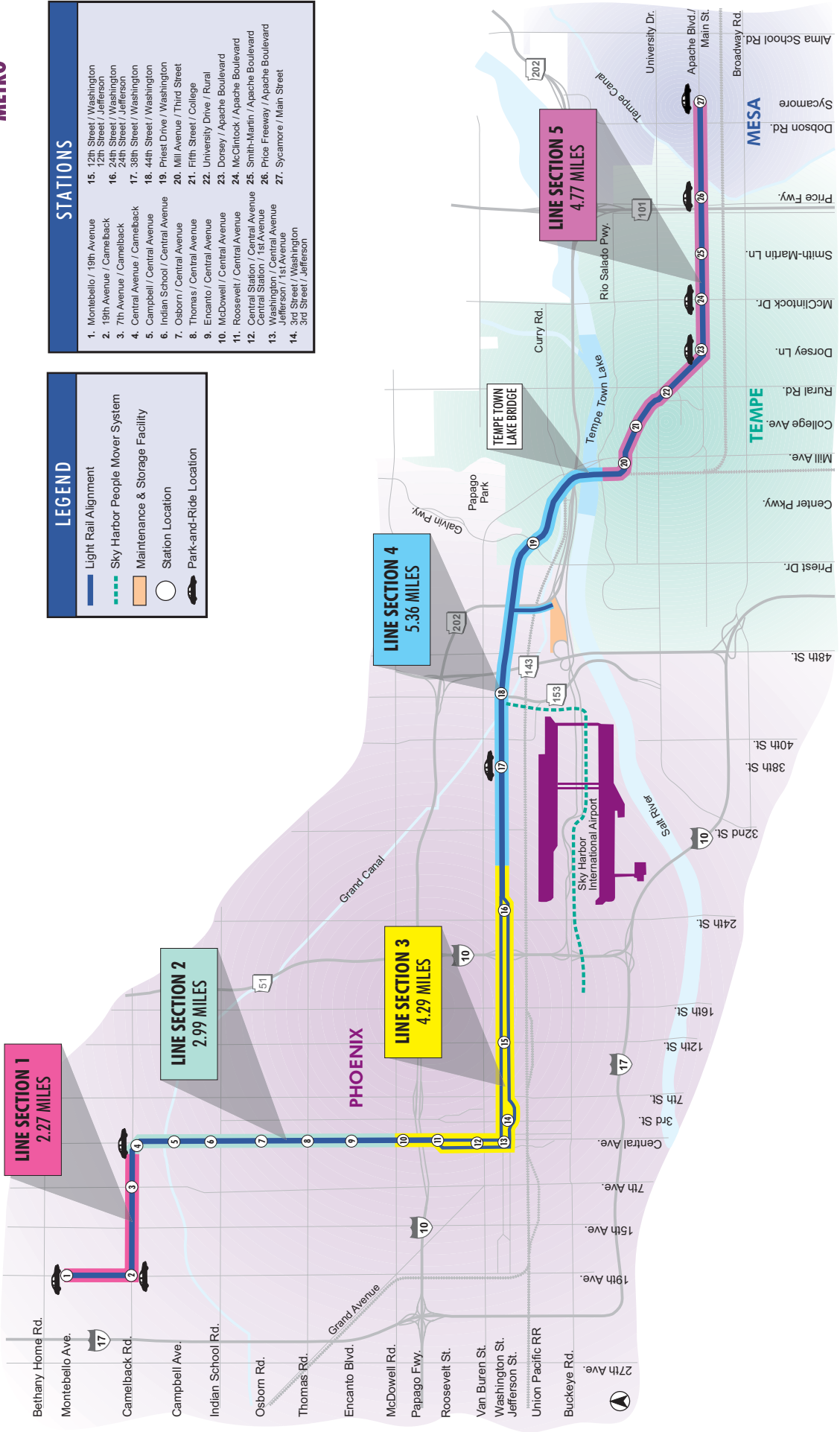
The project continues to make great progress and remains on schedule. In the month of December over 9000 linear feet of track was built bringing the total to almost 63,500 lf of track or 28 percent of the project amount. All line sections continue to ramp up with track construction and other contract work. Line Section 2 remains the only Line Section without trackwork construction being started but shortly into the New Year track construction will begin in the Indian School to Camelback corridor. Line Section 1 has begun work on 19<sup>th</sup> Ave and is moving quickly to mitigate the delays that were caused by resequenced work, property access and 3<sup>rd</sup> party utility issues. Line Sections 3, 4 and 5 also continue with track construction and are moving quickly.

The Maintenance and Storage Facility reached a milestone, in that it received the first light rail vehicles from Kinkosharyo in December. The facility has five vehicles on the ground awaiting final completion of the shop floor. The facility will be utilized by the car builder as the final assembly location for the vehicle and the facility will reach substantial completion near the end of January.

The project also celebrated the successful completion of the Tempe Town Lake Bridge contract with a "Grand Illumination" event held in conjunction with a Tempe Town Lake holiday event. The event was well attended and the bridge was illuminated and a light show followed.

The systems contracts continue to work on substation and signal house buildings. Poles and cantilever arms can now be seen along Line Section 4 and the systems work continues at the Maintenance and Storage Facility with system buildouts going on throughout the complex.

# LIGHT RAIL STARTER SEGMENT



### LEGEND

- Light Rail Alignment
- Sky Harbor People Mover System
- Maintenance & Storage Facility
- Station Location
- Park-and-Ride Location

### STATIONS

- Montebello / 19th Avenue
- 19th Avenue / Camelback
- 7th Avenue / Camelback
- Central Avenue / Camelback
- Campbell / Central Avenue
- Indian School / Central Avenue
- Osborn / Central Avenue
- Thomas / Central Avenue
- Encanto / Central Avenue
- McDowell / Central Avenue
- Roosevelt / Central Avenue
- Central Station / Central Avenue
- Washington / Central Avenue
- Jefferson / Central Avenue
- 12th Street / Jefferson
- 15th Street / Washington
- 24th Street / Washington
- 38th Street / Jefferson
- 44th Street / Washington
- Priest Drive / Washington
- Mill Avenue / Third Street
- Fifth Street / College
- University Drive / Rural
- Dorsey / Apache Boulevard
- McClintock / Apache Boulevard
- Smith-Martin / Apache Boulevard
- Price Freeway / Apache Boulevard
- Washington / Main Street
- 3rd Street / Jefferson
- 3rd Street / Jefferson

**METRO**  
**CONTRACT LOG - DECEMBER 2006**

ITEM	CONTRACT NUMBER	CONTRACT DESCRIPTION	CONTRACTOR
<b>1. PROGRAM MANAGEMENT &amp; ENGINEERING</b>			
1	LRT-99-001	GEC - DEIS/FEIS/PE	Parsons Brinckerhoff Quade & Douglas
2	LRT-02-001	GEC - Final Design	Parsons Brinckerhoff Quade & Douglas
3	LRT-02-001	GEC - DSDC	Parsons Brinckerhoff Quade & Douglas
4	LRT-98-001-PMC	Project Management Consultant	S.R. Beard & Associates LLC 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/Stacey & 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/Stacey & Witbeck, Joint Venture
12	LRT-04-022-LS5	Line Section 5	Sundt/Stacey & Witbeck, Joint Venture
13	LRT-05-042-PNR	Park and Rides	Undetermined
14	LRT-04-028-SF	Station Finishes	Archer Western Contractors
15	LRT-04-040-TLB	Town Lake Bridge	PCL Civil Constructors, Inc.
16	LRT-05-036-WPM	Wheel Profiling Machine	Simmons Machine Tool Corp
<b>3. SYSTEM ELEMENTS</b>			
17	LRT-03-001	Light Rail Vehicles (LRV)	Kinkisharyo International, L.L.C. and Mitsui & Co. (U.S.A), Inc., CPEV Joint Venture
18	LRT-04-039-S&C	Signals and Communications	Mass Electric Corp.
19	LRT-04-014-TES	Traction Electrification System	Mass Electric Corp.
20	LRT-06-053-FCS	Fare Collection System	Scheidt & Bachmann USA, Inc.
21	LRT-06-071-LCM	Light Rail Car Mover	Brandt Road Rail Corp
22	LRT-07-076-MSFF	Modular Furniture for MSF	Southwest Business Furnishings
<b>4. PUBLIC ART</b>			
23	02-002-04	LS4 Design Team Artist/Station Artist	Laurie Lundquist
24	02-002-03	LS2 Design Team Artist/Station Artist	Ilan Averbuch
25	02-002-04	LS1 Design Team Artist/Station Artist	Robert Adams
26	02-002-05	LS5 Design Team Artist/Station Artist	Norie Sato/Bill Will
27	02-002-01	LS3 Design Team Artist	Janet Zweig
28	05-041-ART	Bridge Design Team Artist	Buster Simpson
29	02-002-07	LS3 Design Team Artist	Laurie Lundquist
30	02-002-08	LS3 Design Team Artist	Robert Adams
31	02-002-09	44th Street Station Artist	Mona Higuchi
32	02-002-10	38th Street Station Artist	Stuart Keeler/Michael Machnic
33	02-002-11	Central / Roosevelt Station Artist	Peter Richards
34	02-002-12	Central / McDowell Station Artist	Michael Maglich
35	02-002-13	First Street Station Artist	Stephen Farley
36	02-002-14	Third Street Station Artist	Cliff Garten
37	02-002-15	Central Station, Station Artist	Ries Niemi
38	02-002-16	12th Street Station Artist	Victor Zaballa
39	02-002-17	Fifth Street / College Station Artist	Tad Savinar
40	02-002-18	Central / Campbell Station Artist	Al Price
41	02-002-19	Central / Indian School Station Artist	Mary Lucking
42	02-002-20	Central / Osborn Station Artist	Thomas Sayre
43	02-002-21	Central / Thomas Station Artist	Brian Goldbloom
44	02-002-23	Third Street / Mill Station Artist	Catherine Widgery
45	02-002-24	Apache Stations - Lighting Artist	Dan Corson
46	02-002-25	Apache Stations - Cultural Weave Artist	Christine Bourdette
47	02-002-26	Apache Stations - Vertical Objects Artist	Suikang Zhao
48	02-002-27	Apache Stations - Paving Artist	Benson Shaw
49	02-002-28	Longmore Station Artist	Brad Konick
50	02-002-29	19th Avenue / Camelback Station Artist	Josh Garber
51	02-002-30	7th Avenue / Camelback Station Artist	Nubia Owens
52	02-002-31	24th Street Station Artist	Kevin Berry
53	02-002-32	Central / Encanto Station Artist	Jamex & Einar de la Torre
<b>5. MISC. CONSTRUCTION &amp; SERVICES</b>			
54	LRT-05-046-ERS	Environmental Remediation Service	Environmental Response Inc
55	LRT-04-031-PCS	Power Consulting Services	RW Beck
56	LRT-06-052-MF	Modular Furniture	Facilitec, Inc.
57	LRT-06-065-TCS	Telecom Carrier Services	Time Warner Telecom
58	LRT-06-057-WLI	WAN/LAN and IPT Voice Sys Equipment	Calence, Inc.
59	LRT-04-034-SPC	Strategic Planning Consulting Services	Davis Consulting
60	LRT-05-045-DCS	Document Control Services	LKG-CMC, Inc
61	LRT-05-037-ACS	Audit Consulting Services	Clifton Gunderson LLP
62	LRT-05-038-RMS	Risk Management Services	Ashton Tiffany, LLC
63	LRT-06-069-SSC	Safety & Security Certification Services	Booz Allen Hamilton, Inc.
64	LRT-06-067-ITS	Info Technology-Office Network Support	World Wide Technology, Inc.
65	LRT-07-082-TCS	Telecommunications Services for MSF	Qwest Communications
<b>6. OWNER FURNISHED MATERIALS</b>			
66	LRT-04-009-MP1	Rail (MP1)	Progress Rail Corporation
67	LRT-04-010-MP2	Concrete Crossties (MP2)	CXT Inc
68	LRT-04-030-MP5	Ballasted Special Trackwork (MP5)	VAE Nortrak North America Inc
69	LRT-04-032-MP8	Girder Rail (MP8)	VAE Nortrak North America Inc
70	LRT-04-033-MP9	Girder Rail Special Trackwork (MP9)	VAE Nortrak North America Inc
71	LRT-04-015-MP3	Traffic Signal Hardware (MP3)	Various
72	LRT-06-072-SE	Shop Equipment for Maintenance Facility	Wissota Supply Company, Inc
73	LRT-07-078-MLE	Spray Paint Booth Manlifts at MSF	MGM Equipment Source
<b>7. FUTURE LIGHT RAIL EXTENSIONS</b>			
74	LRT-06-050-DCS	Design Criteria & Standards	Stantec Consulting
75	LRT-06-055-PSS	Planning Support Services	HDR Engineering, Inc.



## **2. Cost Overview**

### **Federal 5309 Project**

The project budget for the Federal 5309 program is \$1,412,125,346. Known pending and executed change orders are valued at \$28,125,317 of the available \$73,354,121 planned contingency. Including Project Reserve, this leaves \$54,232,277 of contingency funds available to the project.

The project is 55.0 percent complete. Construction is 45.3 percent complete.

Since the last reporting period, the contingency increased by \$34,007.

### **Program Management & Administration**

Forecast is within budget.

### **Program Management Consultant**

Staffing plan for fiscal years 2008 and 2009 are within the overall forecast of this contract unit.

### **City Administration**

Forecasts are per agreements with the cities.

### **Right-of-Way Acquisition**

No forecast change this period.

### **PE/FEIS Engineering**

Activity is complete.

### **Engineering**

No forecast change this period.

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

Forecasts are within budget.

### **Light Rail Vehicles**

Contingency appears to be sufficient to fund the work remaining.

### **Facilities**

Facilities work is 46.3 percent complete. Executed and pending change orders are expected to utilize \$15,000,000 of the \$33,100,000 available contingency. Additional expected change orders for required acceleration, additional work and expected requests for equitable adjustment are challenging the available balance of contingency.



The forecast for prior right utilities continues to be a concern and is being evaluated. Line section contractors are performing portions of the prior right utility work in place of the utilities for schedule mitigation reasons.

### **Systems**

Systems work is 29.4 percent complete. Remaining contingency will likely be required to accelerate the systems work.

### **Construction Administration Services**

Budget and forecast for work through fiscal year 2007 are in sync. Additional forecast will be obtained on a yearly basis.

### **Testing & Startup**

Forecast continues to show an underrun to the budget.

### **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**

Budget remains at \$9,000,000 and forecast at \$6,400,000.

### **Financing Costs**

Forecast indicates an underrun to the budget and is being evaluated on a periodic basis.

### **Concurrent Non Project Activities Project**

The budget for Concurrent Non Project Activities is \$94,996,637, based on the January 2006 METRO Board approved amount.

During the reporting period no new CNPAs were initiated. Three change orders were initiated for a total cost of \$772,489. The City of Tempe had one change order initiated for the Center Parkway Station at a cost of \$872,954. Phoenix Water Services had two change orders initiated for a total credit of \$100,465.

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

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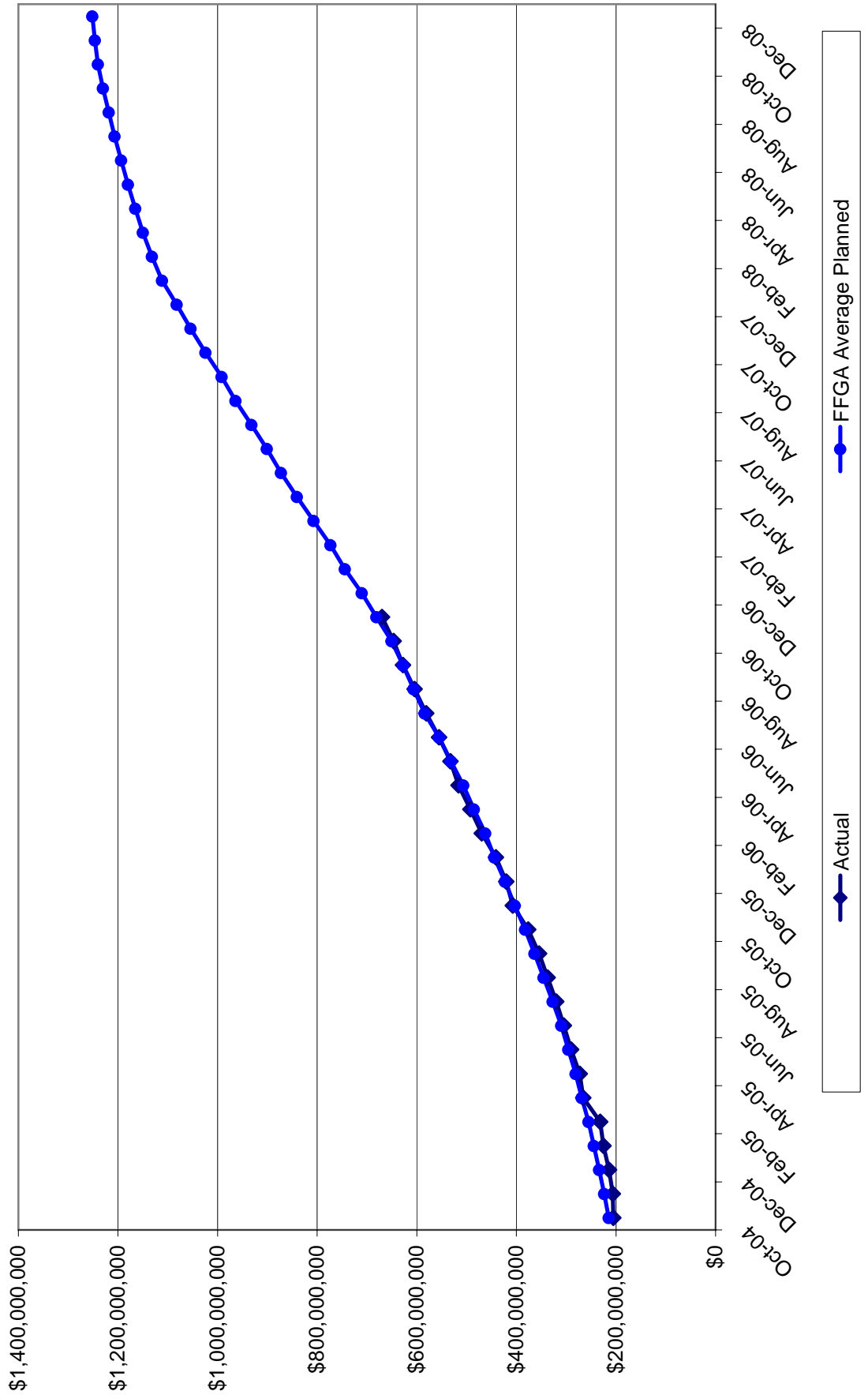
Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
50	LS1 19th Ave/Bethany - Camelback/Central	\$27,130,856	\$38,895,518	\$10,931,261	\$38,344,272	\$551,246
51	LS2 Camelback/Central - McDowell Road	\$38,004,059	\$49,390,734	\$12,434,938	\$49,390,734	\$0
52	LS3 McDowell Road - 28th Street	\$63,981,654	\$79,850,360	\$32,373,722	\$80,036,811	(\$186,451)
53	LS4 28th Street - N Approach to Town Lake	\$46,622,020	\$51,303,558	\$30,306,084	\$51,396,834	(\$93,276)
54	LS5 1st Street - Sycamore	\$49,680,435	\$69,154,659	\$34,694,845	\$69,154,659	\$0
55	Station Finishes	\$38,701,950	\$52,372,444	\$5,013,839	\$52,372,444	\$0
56	Park and Ride Facilities	\$15,104,339	\$15,104,339	\$0	\$20,907,699	(\$5,803,360)
57	Miscellaneous Construction	\$7,505,200	\$4,501,200	\$0	\$750,000	\$3,751,200
5K	Archaeological Investigations/Hazardous Material Removal	\$0	\$3,003,959	\$3,659,075	\$6,575,000	(\$3,571,041)
58	MSF Construction/Equipment Installation	\$57,637,721	\$64,290,942	\$60,952,831	\$63,937,412	\$353,530
5G	MSF Underfloor Wheel Profiling System	\$0	\$980,107	\$343,038	\$980,107	\$0
59	48th Street Bridge Restoration	\$2,014,013	\$2,824,232	\$2,824,232	\$2,824,232	\$0
5A	Town Lake Bridge	\$15,529,600	\$21,884,369	\$21,759,752	\$21,884,369	\$0
5B	Prior Rights Utility Relocations	\$22,938,000	\$24,874,973	\$15,847,911	\$30,689,722	(\$5,814,749)
81	Contingency	\$37,491,841	\$17,154,538	\$0	\$19,831,946	(\$2,677,408)
	<b>Facilities</b>	<b>\$422,341,688</b>	<b>\$495,585,932</b>	<b>\$231,141,528</b>	<b>\$509,076,241</b>	<b>(\$13,490,309)</b>
4A	Rail Procurement	\$1,306,200	\$1,271,080	\$1,251,101	\$1,279,755	(\$8,675)
4B	Concrete Cross-tie Procurement	\$900,000	\$751,492	\$718,285	\$751,492	\$0
4C	Traffic Signal Hardware	\$8,060,100	\$8,060,100	\$6,824,558	\$8,060,100	\$0
4D	Ballasted Special Trackwork Procurement	\$2,532,414	\$2,291,498	\$2,253,875	\$2,291,498	\$0
4E	Crossing Panel Procurement	\$380,100	\$360,096	\$0	\$0	\$360,096
4F	Girder Rail Procurement	\$15,079,742	\$14,725,878	\$14,497,970	\$14,725,878	\$0
4G	Girder Rail Special Trackwork Procurement	\$0	\$5,712,656	\$1,221,265	\$5,712,656	\$0
81	Contingency	\$1,412,863	\$666,400	\$0	\$638,725	\$27,675
	<b>Owner Furnished Materials/Equipment</b>	<b>\$29,671,419</b>	<b>\$33,839,200</b>	<b>\$26,767,054</b>	<b>\$33,460,104</b>	<b>\$379,096</b>
5D	Fare Collection Machines	\$10,755,800	\$7,100,012	\$0	\$7,101,612	(\$1,600)
5E	Traction Power Substations/Overhead Catenary System	\$62,141,100	\$56,933,933	\$18,926,176	\$56,985,398	(\$51,465)
5F	Communications/Signals	\$38,220,002	\$38,582,583	\$11,953,585	\$38,688,389	(\$105,806)
81	Contingency	\$8,674,000	\$5,249,324	\$0	\$5,090,453	\$158,871
	<b>Systems</b>	<b>\$119,790,902</b>	<b>\$107,865,852</b>	<b>\$30,879,761</b>	<b>\$107,865,852</b>	<b>\$0</b>
	<b>Sub Total, Construction</b>	<b>\$571,804,009</b>	<b>\$637,290,984</b>	<b>\$288,788,343</b>	<b>\$650,402,197</b>	<b>(\$13,111,213)</b>
4K	Vehicle Contract	\$115,501,823	\$116,875,456	\$28,487,043	\$116,875,456	\$0
4N	LRT Vehicle Contract Contingency	\$5,775,001	\$2,547,109	\$0	\$2,547,109	\$0
	<b>LRT Vehicles</b>	<b>\$121,276,824</b>	<b>\$119,422,565</b>	<b>\$28,487,043</b>	<b>\$119,422,565</b>	<b>\$0</b>
22	ROW Acquisition	\$116,214,150	\$116,735,720	\$124,124,891	\$134,000,000	(\$17,264,280)
23	ROW Contingency	\$20,081,000	\$19,559,432	\$0	\$0	\$19,559,432
20	<b>ROW</b>	<b>\$136,295,150</b>	<b>\$136,295,152</b>	<b>\$124,124,891</b>	<b>\$134,000,000</b>	<b>\$2,295,152</b>

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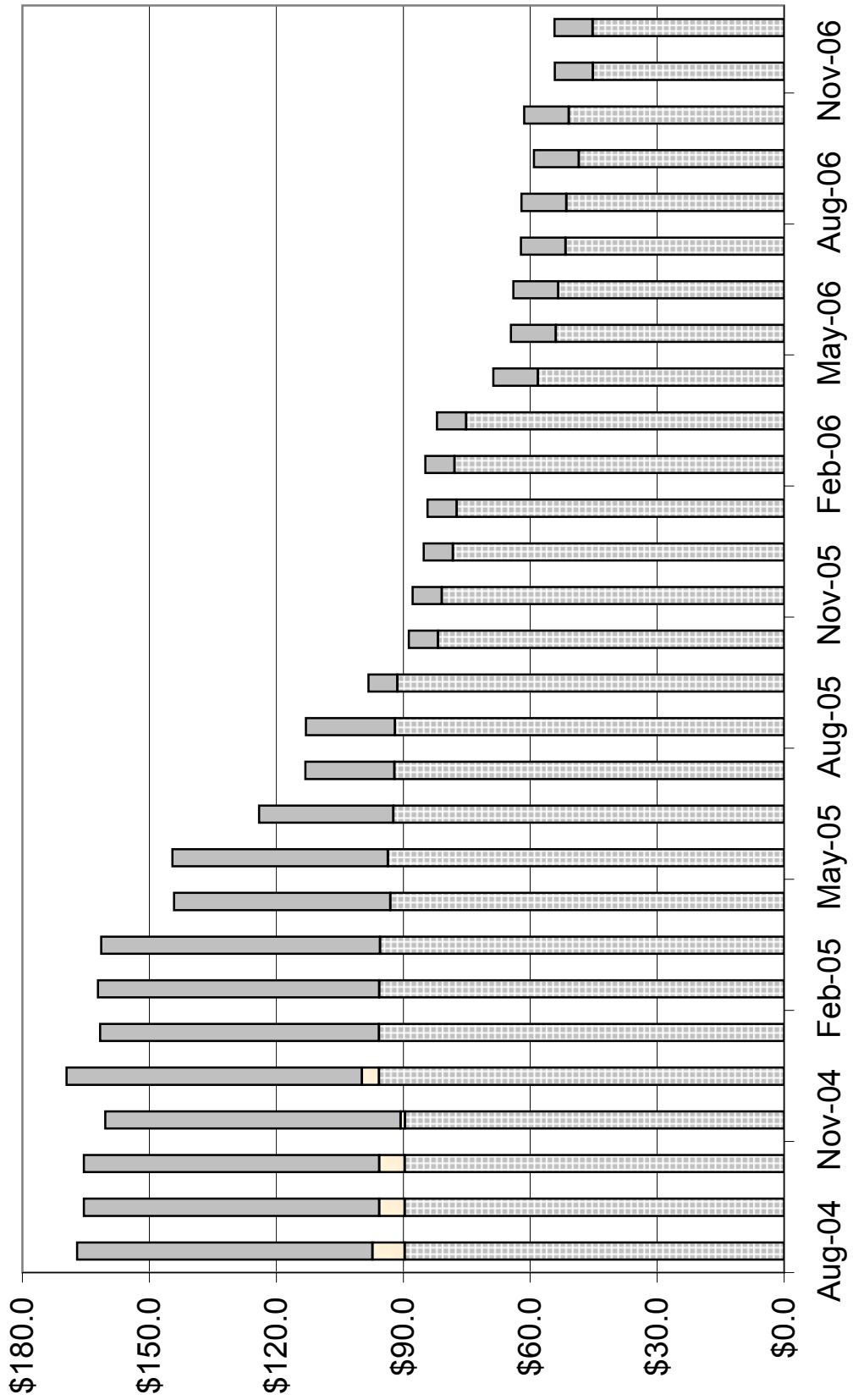
Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
<b>30</b>	<b>PE/FEIS Engineering</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$0</b>
31	Engineering	\$76,780,935	\$76,346,255	\$75,640,561	\$76,678,480	(\$332,225)
4L	Vehicle Engineering	\$5,432,358	\$6,255,358	\$5,454,044	\$6,179,930	\$75,428
20	ROW Engineering	\$1,016,370	\$1,321,163	\$1,386,172	\$1,386,172	(\$65,009)
32	Design Services During Construction	\$14,160,426	\$17,680,179	\$14,791,459	\$23,518,410	(\$5,838,231)
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>\$101,602,955</b>	<b>\$97,272,236</b>	<b>\$107,762,992</b>	<b>(\$6,160,037)</b>
						<b>\$0</b>
60	Construction Administration Services	\$37,759,127	\$43,956,782	\$29,967,145	\$54,544,459	(\$10,587,677)
61	CAC Contingency	\$15,244,622	\$0	\$0	\$0	\$0
	<b>Construction Administration Services</b>	<b>\$53,003,749</b>	<b>\$43,956,782</b>	<b>\$29,967,145</b>	<b>\$54,544,459</b>	<b>(\$10,587,677)</b>
10	PE Administrative/Management Costs	\$4,363,526	\$4,363,526	\$4,363,526	\$4,363,526	\$0
11	Administrative/Management - VMR	\$43,915,047	\$44,228,316	\$25,737,308	\$43,923,154	\$305,162
62	Construction Administration Services - VMR	\$1,697,232	\$3,087,589	\$797,539	\$1,709,675	\$1,377,914
67	CAB Program	\$0	\$2,500,000	\$1,057,319	\$2,500,000	\$0
21	Administrative ROW Costs	\$696,712	\$696,712	\$536,561	\$696,712	\$0
76	Administrative/Management Art Program Costs	\$414,632	\$414,632	\$0	\$414,632	\$0
16	Administrative/Management - ADOT	\$420,000	\$930,000	\$385,365	\$930,000	\$0
17	Agency Insurance Cost	\$7,000,000	\$7,000,000	\$5,167,038	\$7,000,000	\$0
18	Administrative/Management Contingency	\$0	\$5,388,523	\$0	\$4,989,000	\$399,523
	<b>Program Management</b>	<b>\$58,507,149</b>	<b>\$68,609,298</b>	<b>\$38,044,656</b>	<b>\$66,526,699</b>	<b>\$2,082,599</b>
10	PE Administrative/Management Costs	\$12,832,472	\$12,832,472	\$12,832,472	\$12,832,472	\$0
21	Administrative ROW Costs	\$1,016,571	\$1,016,571	\$793,865	\$981,934	\$34,637
76	Administrative/Management Art Program Costs	\$549,061	\$549,061	\$234,041	\$501,189	\$47,872
12	Administrative/Management - PMC	\$32,736,326	\$32,736,326	\$23,520,865	\$33,684,591	(\$948,265)
4M	Administrative Vehicle Costs	\$1,337,322	\$1,337,322	\$561,908	\$1,337,322	\$0
63	Construction Administration Services - PMC	\$4,581,527	\$5,081,527	\$2,539,229	\$4,215,771	\$865,756
	<b>Program Management Consultant</b>	<b>\$53,053,279</b>	<b>\$53,553,279</b>	<b>\$40,482,380</b>	<b>\$53,553,279</b>	<b>\$0</b>
10	PE Administrative/Management Costs	\$3,158,439	\$3,158,439	\$3,158,439	\$3,158,439	\$0
13	Administrative/Management - COP	\$2,986,000	\$5,448,000	\$5,558,881	\$5,979,783	(\$531,783)
64	Construction Administration Services - COP	\$8,347,000	\$5,885,000	\$3,484,175	\$5,353,217	\$531,783
14	Administrative/Management - COT	\$6,797,000	\$6,797,000	\$5,146,515	\$6,797,000	\$0
15	Administrative/Management - COM	\$897,000	\$897,000	\$263,164	\$897,000	\$0
	<b>City Administration</b>	<b>\$22,185,439</b>	<b>\$22,185,439</b>	<b>\$17,611,174</b>	<b>\$22,185,439</b>	<b>\$0</b>
75	Public Art Contracts	\$5,284,133	\$6,095,129	\$2,535,133	\$6,095,129	\$0
77	Art Program Contingency	\$999,000	\$188,004	\$0	\$188,004	\$0
	<b>Public Art</b>	<b>\$6,283,133</b>	<b>\$6,283,133</b>	<b>\$2,535,133</b>	<b>\$6,283,133</b>	<b>\$0</b>
<b>70</b>	<b>Start-Up and Testing</b>	<b>\$31,000,000</b>	<b>\$30,000,000</b>	<b>\$629,282</b>	<b>\$26,000,000</b>	<b>\$4,000,000</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>\$9,003,473</b>	<b>\$0</b>	<b>\$6,389,643</b>	<b>\$2,613,830</b>
<b>SUBTOTAL</b>		<b>\$1,253,258,000</b>	<b>\$1,253,257,998</b>	<b>\$692,997,221</b>	<b>\$1,272,125,344</b>	<b>(\$18,867,346)</b>
<b>90</b>	<b>Financing Costs</b>	<b>\$158,867,346</b>	<b>\$158,867,346</b>	<b>\$5,717,401</b>	<b>\$140,000,000</b>	<b>\$18,867,346</b>
<b>TOTAL CP/EV PROJECT</b>		<b>\$1,412,125,346</b>	<b>\$1,412,125,346</b>	<b>\$698,714,622</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  
 CPIEV LRT Project  
 Project Budget Status  
 CNPA Project

2006\_12

Element	Description	Jan 2006 Approved Total	Revised Budget/Estimate	Current Actual \$ (To Date)	Forecast	Variance
A1	Bus Bays (LS2)	\$806,300	\$984,756	\$886,480	\$963,403	\$21,353
A2	Phoenix Art Museum Left Turn Signal	\$108,770	\$99,083	\$0	\$99,083	\$0
A5	19th/Montebello Transit Center (SF)	\$6,344,743	\$6,338,395	\$2,706,613	\$5,636,173	\$702,222
A6	117 Central/Camelback Transit Center (SF)	\$6,968,744	\$6,965,150	\$2,018,198	\$6,972,524	(\$7,374)
A7	44th Street/Washington Transit Center Real Estate	\$4,649,580	\$4,649,580	\$2,680,145	\$4,900,509	(\$250,929)
B1	Washington Street Bike Lane (LS4)	\$881,613	\$914,310	\$541,535	\$930,293	(\$15,983)
F4	Civic Plaza Track Support System	\$2,208,231	\$309,005	\$162,850	\$221,579	\$87,426
F5	Additional Water Services to the Pueblo Grande Museum - LS4	\$89,285	\$89,285	\$62,262	\$89,285	(\$0)
F6	Central/Camelback Bus Bays Relocation	\$25,084	\$25,084	\$0	\$128,385	(\$103,301)
F7	COP Landscape Irrigation Restoration Central Ave	\$81,625	\$81,625	\$30,468	\$101,414	(\$19,789)
H1	Fiber Optic LS1	\$0	\$0	\$0	\$0	\$0
H2	Fiber Optic LS2	\$0	\$0	\$0	\$0	\$0
H3	Fiber Optic Backbone LS-3 (Phoenix portion)	\$287,174	\$322,417	\$37,575	\$322,417	\$0
H4	Fiber Optic Backbone LS-4 (Phoenix portion)	\$269,395	\$279,816	\$19,128	\$279,816	\$0
J6	Washington/Jefferson 16th to 26th Street, Property Access	\$3,932,769	\$4,019,643	\$1,110,498	\$2,831,780	\$1,187,863
K7	11th Street Loop Track	\$0	\$4,377,606	\$12,532	\$4,377,606	\$0
	<b>Sub Total Public Transit Department</b>	<b>\$26,546,604</b>	<b>\$29,455,755</b>	<b>\$10,268,284</b>	<b>\$27,854,267</b>	<b>\$1,601,488</b>
A3	6th Lane - Camelback (LS1)	\$9,820,210	\$9,883,190	\$7,281,563	\$9,820,210	\$62,980
D1	Additional Street/Pedestrian Lighting (LS3)	\$492,574	\$509,602	\$321,920	\$509,602	\$0
E3	Seal Coat versus Rubber Overlay (LS 1)	\$264,342	\$264,342	\$17,104	\$264,342	\$0
E4	Seal Coat versus Rubber Overlay (LS 3)	\$1,482,845	\$1,479,814	\$90,509	\$1,479,814	\$0
E5	Seal Coat versus Rubber Overlay (LS 4)	\$430,896	\$430,896	\$10,832	\$430,896	\$0
K3	Red Light Enforcement	\$0	\$18,288	\$0	\$61,067	(\$42,779)
	<b>Sub Total Streets Department</b>	<b>\$12,490,867</b>	<b>\$12,586,132</b>	<b>\$7,721,928</b>	<b>\$12,565,931</b>	<b>\$20,201</b>
A7	44th Street/Washington Transit Center (SF)	\$2,917,270	\$2,822,429	\$770,482	\$2,797,429	\$25,000
A7	Washington Street Transit Center Changes	\$906,881	\$0	\$0	\$0	\$0
A9	Main/Sycamore Transit Center	\$0	\$0	\$0	\$0	\$0
C6	APM Utility Connections	\$0	\$22,997	\$7,000	\$22,997	\$0
D2	44th Street Station People Mover Foundation (LS4)	\$919,161	\$783,003	\$606,608	\$783,003	\$0
D6	People Mover - APS Duct Bank @ 40th Place	\$216,000	\$216,000	\$326,527	\$324,562	(\$108,562)
E9	10" Water Line at 42nd/Washington LS 4	\$67,735	\$61,269	\$47,020	\$61,269	\$0
F3	Archaeological/Hazardous Material Testing (CAC)	\$60,000	\$60,000	\$38,369	\$60,000	\$0
	<b>Sub Total Aviation Department</b>	<b>\$5,087,047</b>	<b>\$3,965,698</b>	<b>\$1,796,006</b>	<b>\$4,049,260</b>	<b>(\$83,562)</b>
B3	LS 1 Water/Sanitary Sewer	\$9,900,351	\$8,820,063	\$1,534,890	\$9,900,351	(\$1,080,288)
B4	LS 2 Water/Sanitary Sewer	\$6,255,348	\$5,245,827	\$1,165,265	\$6,255,348	(\$1,009,521)
B5	LS 3 Water/Sanitary Sewer	\$15,367,099	\$14,542,344	\$8,954,171	\$15,452,475	(\$910,131)
B6	LS 4 Water/Sanitary Sewer	\$4,935,839	\$5,315,538	\$4,493,063	\$5,324,303	(\$8,765)
B7	Water and Sanitary Sewer Lines - 48th St. Bridge Replacement Contract	\$453,006	\$155,767	\$155,767	\$155,767	\$0
J1	Catholic Protection for Waterlines LS1	\$1,187,352	\$739,855	\$91,375	\$1,187,352	(\$447,497)
J2	Catholic Protection for Waterlines LS2	\$1,083,586	\$979,408	\$108,842	\$1,083,586	(\$104,178)
J3	Catholic Protection for Waterlines LS3	\$29,192	\$0	\$0	\$29,192	(\$29,192)
J5	Catholic Protection for Waterlines LS4	\$432,039	\$435,620	\$85,620	\$435,620	\$0
	<b>Sub Total Water Services Department</b>	<b>\$39,643,811</b>	<b>\$36,234,422</b>	<b>\$16,588,993</b>	<b>\$39,823,994</b>	<b>(\$3,589,572)</b>
	<b>Total - Phoenix</b>	<b>\$83,768,329</b>	<b>\$82,242,007</b>	<b>\$36,375,211</b>	<b>\$84,293,452</b>	<b>(\$2,051,445)</b>

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

Element	Description	Jan 2006 Approved Total	Revised Budget/Estimate	Current Actual \$ (To Date)	Forecast	Variance
A8	5th/College Transit Center	\$735,400	\$745,794	\$658,992	\$745,794	\$0
AA	COT SRP Prior Rights TC Relocation	\$0	\$244,080	\$0	\$244,080	\$0
B8	Terrace / Apache Waterline Coordination (Design Only)	\$38,105	\$38,104	\$35,287	\$38,104	\$0
C1	Additional Communications Conduits	\$24,000	\$32,499	\$24,271	\$32,499	\$0
C2	COT ASU Pedestrian Signal	\$0	\$114,338	\$63,158	\$114,338	\$0
C7	Parking Facility 5th/Farmer	\$116,990	\$110,701	\$110,701	\$110,701	\$0
C8	COT Waterline @ Cremery Route	\$0	\$68,609	\$67,264	\$94,081	(\$25,472)
D4	COT Additional Street Lighting (LS5)	\$345,014	\$345,014	\$219,497	\$345,014	\$0
E5	COT Rubberized AC Overlay LS4	\$671,372	\$610,983	\$15,221	\$610,983	\$0
E6	Rubberized Asphalt LS5	\$624,873	\$624,874	\$0	\$624,874	\$0
F2	McClintock / Apache Storm Drain	\$200,129	\$74,915	\$57,041	\$75,345	(\$430)
H4	Fiber Optic Backbone LS-4 (Tempe portion)	\$185,372	\$189,338	\$16,125	\$189,338	\$0
H5	Fiber Optic Backbone LS-5 (Tempe portion)	\$237,901	\$237,901	\$94,219	\$237,901	\$0
J4	Catholic Protection of Waterline LS4 CO#15	\$158,637	\$158,638	\$110,538	\$158,638	\$0
J9	University Drive Station Bus Interface	\$509,186	\$509,186	\$0	\$509,186	\$0
K1	Veteran's Way- 5th/College TC	\$0	\$7,645	\$4,826	\$7,645	\$0
K2	Bus Shelter Electrification	\$0	\$11,076	\$7,315	\$11,076	\$0
K4	Washington/Center Parkway Station	\$0	\$4,580,490	\$142,468	\$4,494,490	\$86,000
N4	Tempe Market Analysis	\$0	\$44,378	\$0	\$44,378	\$0
XX	Tempe Miscellaneous Force Account Work LS5	\$0	\$20,000	\$10,708	\$20,000	\$0
<b>Sub Total Tempe</b>		<b>\$3,846,979</b>	<b>\$8,768,563</b>	<b>\$1,637,631</b>	<b>\$8,708,465</b>	<b>\$60,098</b>
A9	Main Sycamore Transit Center	\$5,531,609	\$5,532,721	\$1,560,566	\$5,512,721	\$20,000
H3	Fiber Optic Backbone LS-3 (Mesa portion)	\$271,270	\$333,627	\$28,041	\$333,627	\$0
H4	Fiber Optic Backbone LS-4 (Mesa portion)	\$229,216	\$240,838	\$0	\$240,838	\$0
H5	Fiber Optic Backbone LS-5 (Mesa portion)	\$297,345	\$272,863	\$0	\$272,863	\$0
N3	Mesa Market Analysis	\$0	\$18,542	\$0	\$18,542	\$0
XX	Mesa Miscellaneous Force Account Work LS5	\$0	\$5,000	\$2,738	\$5,000	\$0
<b>Sub Total Mesa</b>		<b>\$6,329,442</b>	<b>\$6,403,591</b>	<b>\$1,591,345</b>	<b>\$6,383,591</b>	<b>\$20,000</b>
C9	ASU Logo Additions	\$0	\$0	\$0	\$26,392	(\$26,392)
H1	Fiber Optic Backbone LS-1	\$0	\$27,987	\$0	\$27,987	\$0
H2	Fiber Optic Backbone LS-2	\$0	\$91,367	\$32,200	\$91,367	\$0
H3	Fiber Optic Backbone LS-3	\$228,371	\$355,916	\$31,704	\$355,916	\$0
H4	Fiber Optic Backbone LS-4	\$183,411	\$229,946	\$13,424	\$229,946	\$0
H5	Fiber Optic Backbone LS-5	\$465,458	\$494,244	\$194,200	\$493,084	\$1,160
H6	Fiber Optic Comm/Signals	\$0	\$0	\$0	\$0	\$0
<b>Sub Total ASU</b>		<b>\$877,239</b>	<b>\$1,199,460</b>	<b>\$271,528</b>	<b>\$1,224,692</b>	<b>(\$25,232)</b>
E1	(APS) Duct Bank at 48th St. Utility Bridge, Archaeological Support	\$174,649	\$74,344	\$57,870	\$76,309	(\$1,965)
E8	CNPA Non City Project Reserve	\$0	\$0	\$0	\$0	\$0
F8	Rojo Loftis Property	\$0	\$14,786	\$0	\$81,998	(\$67,212)
<b>Sub Total Other</b>		<b>\$174,649</b>	<b>\$89,130</b>	<b>\$57,870</b>	<b>\$158,307</b>	<b>(\$69,177)</b>
<b>Grand Total CNPA</b>		<b>\$94,996,638</b>	<b>\$98,702,751</b>	<b>\$39,933,585</b>	<b>\$100,768,507</b>	<b>(\$2,065,756)</b>



### 3. Schedule Overview

The current Status of the Master Schedule is based on a data date of January 1, 2007. The current forecast continues to be an on-time Program completion date of Saturday, December 27, 2008.

Line Section Contract 1 continues to have critical Right-of-Way and cost-to-cure issues. Line Section 2 continues to have utility relocation issues that have impacted access dates and/or interim contract milestones. To date, the Program has been successful in mitigating the delays with a minimum of acceleration to the Civil Contracts.

Partnering meetings with all of the Major Contracts Project Managers and the Resident Engineers have continued to facilitate a phased startup plan and to integrate access milestones.

Nearly 63,500 linear feet (12.03 miles) of track has been placed in Line Sections 1, 3, 4, 5 and MSF. Over 500 of the 1400 OCS Foundations have been placed and pole setting by the TES Contractor is ongoing.

Five Light Rail Vehicles are now on-site at the MSF Facility.

Follow-up meetings continued with the Line Section Contracts, TES, S&C and Station Finishes. These reviews are focused on the development of the contractors' revised detail schedules, supporting the new Master Schedule.

#### Revised Baseline Preliminary Schedule Highlights:

##### Civil:

Line Section 1 Completion:	February, 2008
Line Section 2 Completion:	December, 2007
Line Section 3 Completion:	January, 2008
Test Track Completion:	February, 2007
Line Section 4 Completion:	December, 2007
Line Section 5 Completion:	March, 2008
MSF Completion:	January, 2007
Tempe Town Lake:	August, 2006
Station Finishes:	October, 2008
Park and Ride	October, 2008



Systems:

Signals & Communications: October, 2008

Fare Collection: November, 2008

Traction Electrification: August, 2008

Startup:

Start Integrated Testing Area 1 Washington/Jefferson/25<sup>th</sup> St to 5<sup>th</sup> St/College

(All of LS 4, parts of LS 3 & LS 5): March, 2008

Start Integrated Testing Area 2 Balance of LS 3 and Balance of LS 5

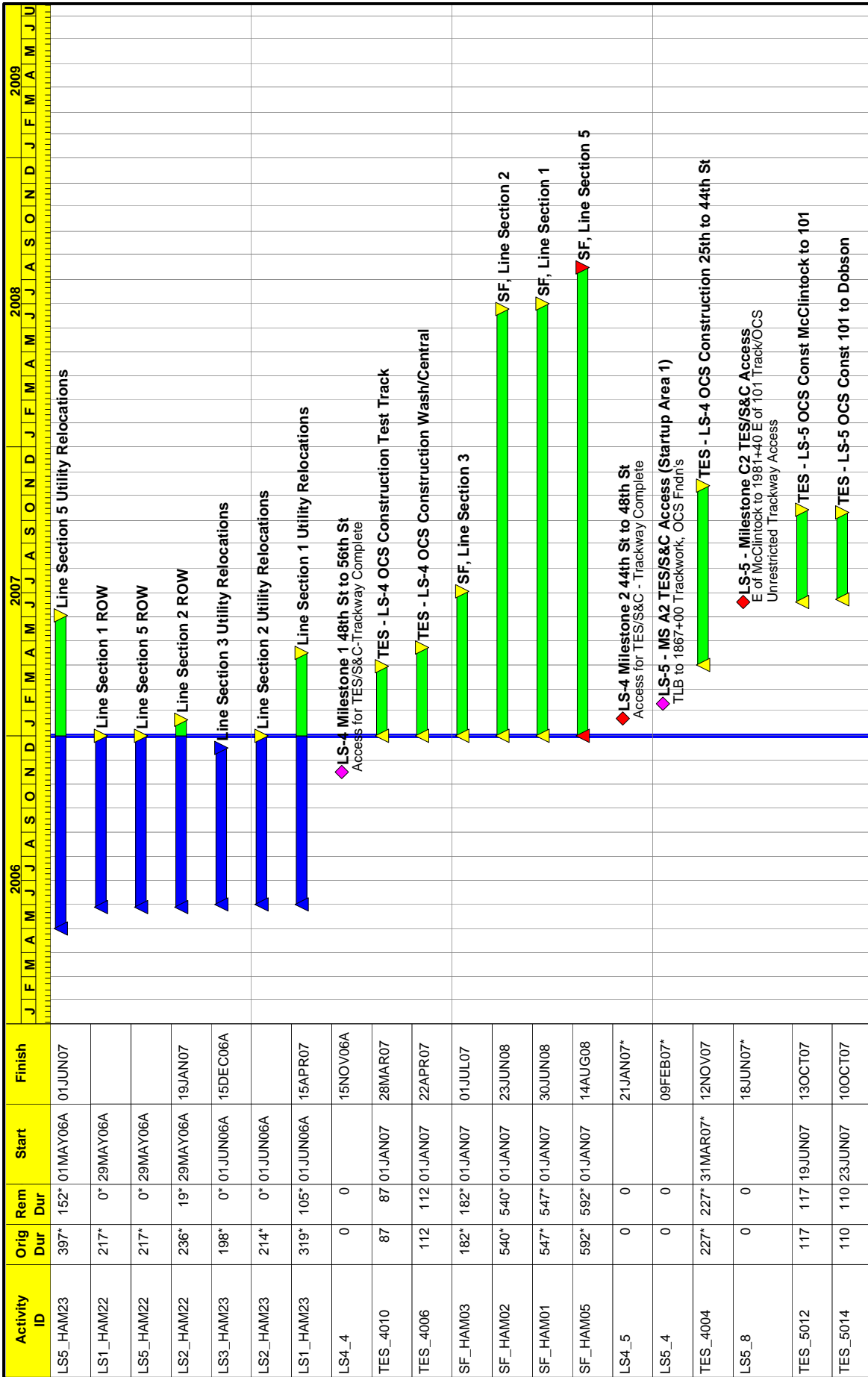
June, 2008

Start Integrated Testing Area 3 All of LS 2 and LS 1

July, 2008

Critical Path(s):

The Program critical Paths run through Right-of-Way and Private Utility relocations in the Line Sections to the completion of the Station Foundations in the Line Sections, through the Completion of the stations to a point that the Signals and Communications Contractor can install the signals equipment and wiring, through the completion of the track-way in the Line Sections, thru the installation of the Overhead Contact System (OCS) to the Phased Integrated Testing, to the Completion of the Safety Certification, to Pre-Revenue Operations to the Revenue Service date of late December, 2008.



Start Date: 01AUG04  
 Finish Date: 26DEC08  
 Data Date: 01JAN07  
 Run Date: 05JAN07 13:27

7001

**Valley Metro Rail**

**Central Phoenix/East Valley LRT**

Revised Master

Sheet 1 of 3

**Critical Path**

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Activity ID	Orig Dur	Rem Dur	Start	Finish	2006												2007												2008												2009											
					J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
SC_2002	62	62	27JUN07	27AUG07	S&C, LS-2 Earl X-ovr																																															
TES_3000	100	100	03JUL07	10OCT07	TES - LS-3 OCS Construction 16th to 26th St																																															
SC_1003	25	25	28JUL07	21AUG07	S&C at LS-1 - 7th Ave/Camelback Area Const																																															
SC_3004	37	37	28JUL07	02SEP07	S&C, LS-2 Central/Indian School Sta Const																																															
SC_2001	329	329	02AUG07	25JUN08	S&C, LS-2 Pierson X-ovr Bldg #1																																															
SC_1002	50	50	11AUG07	29SEP07	S&C at LS-1 -19th Ave/Camelback Area Const																																															
TES_1010	75	75	11OCT07	24DEC07	TES - LS-1 - OCS Construction Central/Camelback to 19th Ave																																															
TES_5016	110	110	11OCT07	28JAN08	TES - LS-5 OCS Const Dobson to EOL																																															
TES_3004	184*	184*	12OCT07	12APR08	TES - LS-3 OCS Construction 3rd to Roosevelt																																															
TES_3002	180*	180*	16OCT07	12APR08	TES - LS-3 OCS Construction 7th to 16th St																																															
TES_2020	150	150	20NOV07	17APR08	TES - LS-2 -OCS Construction																																															
TES_1090	75	75	11JAN08	25MAR08	TES - LS-1 - OCS Construction N of Bethany Home to 19th																																															
TESM10A_2	0	0		07MAR08*	TES New Milestone 10A - Compl TES Work Area 1																																															
INTTESTA_2	60	60	16MAR08	14MAY08*	Integ.Tests Area 1 -Track, Clearance, TES																																															
TESM10B_2	0	0		12APR08	TES New Milestone 10B - Compl TES Work Area 2																																															
TURNOVER_3	0	0		15MAY08*	Turnover Area 2 to VMR Operations																																															
INTTESTB_2	45	45	16MAY08	29JUN08	Integ.Tests Area 2 -Track, Clearance, TES																																															
TESM10C_2	0	0		27JUN08*	TES New Milestone 10C - Compl TES Work Area																																															
TURNOVER_4	0	0		01AUG08	Turnover Area 3 to VMR Operations																																															
INTTESTC_2	30	30	02AUG08	31AUG08	Integ.Tests Area 3 -Track, Clearance, TES																																															
TES_999	0	0		08AUG08	TES Milestone 10 - Complete TES Work																																															
TURNOVER_5	0	0		15AUG08	T/O OCC/Comm. Entire Line to VMR Operations																																															
INTTESTD_2	60	60	16AUG08	14OCT08	Integ.Tests Entire Line - Dynamic Signal & Control																																															
SCHCONT_2	41	41	15OCT08	24NOV08	Allowance for Re-Testing																																															

Activity ID	Orig Dur	Rem Dur	Start	Finish	2006												2007												2008												2009											
					J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
INTTESTC_C	0	0		24NOV08	Complete Integrated Testing																																															
SFTYCERT_2	0	0		25NOV08*	Complete Safety Certification Process																																															
PREREV_2	31	31	26NOV08	26DEC08	Pre-Revenue Operation																																															
PREREVC_2	0	0	27DEC08		Revenue Service Date (ROD)																																															



Procurement Bid Status Report as of 12/28/06						
Title	Issue Date	Pre-Bid Conf	Bid Opening	Board Award	NTP (Anticipated)	
<b>PART I – CP/IEV LRT PROJECTS</b>						
Park and Rides ( <i>Tentative</i> ) Note: significant delays in the IFB due to the design hold for the Central & Camelback site	04/06/07	04/24/07	06/06/07	07/18/07	08/06/07	
LRT Vehicle Maintenance – RFP	04/20/06	05/03/07	06/20/06	10/18/06	01/08/07	
LRT Systems and Facilities Maintenance - RFP	TBD	TBD	TBD	TBD	TBD	
LRT Transportation Services - RFP	04/27/06	05/16/06	06/27/06	11/30/06	01/08/07	
Interim Maintenance Services for MSF	11/13/06	11/21/06	12/12/06	N/A	01/15/07	
Maintenance Management Information System	07/10/06	07/24/06	08/28/06	01/17/07	02/01/07	
On Call Printing Services	11/15/06	11/29/06	12/28/06	NA	01/29/06	
Power Consulting Services	TBD	TBD	TBD	TBD	TBD	
<b>PART II – LONG RANGE DEVELOPMENT PROJECTS</b>						
Planning, Conceptual Engineering, and Environmental Studies for Future Light Rail Extensions	08/10/06	08/30/06 & 09/26/06	10/18/06	01/17/07	02/12/07	
Northwest LRT Extension Engineering Services	10/16/06	10/31/06	11/20/06	02/21/07	03/01/07	
Construction Manager at Risk for Northwest Extension Light Rail Transit Project	TBD	TBD	TBD	TBD	TBD	
Policy & Advisory Legal Services	12/18/06	N/A	01/26/07	04/18/07	05/09/07	



## 4. Quality Assurance

### Description

The METRO Quality Assurance Manager is responsible for the establishment and implementation of a Quality Assurance Program for the METRO 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

### Progress

#### Personnel

- Interviews were conducted for the Quality Assurance Manager position.

#### METRO Activities

- Audit of the CAC review/approval of Contractor Quality Control Plans. Closed.
- Reviewed the CAC 2006 audit schedule and audit files. Closed.
- Surveillance reports of observations of Contractor activities;
  - Observation for placement of embedded track along LS 4.
  - Preparatory meeting for installation of equipment in the electrical substations.

#### CAC Activities

- Eleven items on the Nonconformance Report Log were closed.
- Completed the TLB closeout activities. The scope of the audit was verification of compliance with Spec 01770, "Closeout Procedure," and Spec 01789, "Contract Record Documents." All activities were found to have been performed satisfactorily; no audit findings were issued.
- The CAC QA Engineer visited Radcliffe Steel in Berea, Ohio on December 13<sup>th</sup> to perform first article inspection on the Station Canopy Arm fabrication for the Station Finishes Contract. Results were satisfactory.



- All Line Section Contractor's Quality Plans have been approved.
- The Automated Fare Collection Quality Manual is awaiting final approval.

#### GEC Activities

- No audits were performed in December 2006.

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

- Quality Assurance activities remain within budget and on schedule.

#### **Issues and Solutions**

- None

## 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 the design plans with regard to right-of-way requirements, traffic circulation, landscaping, and locations for traction power substations and signal houses. They are also sharing information on business assistance programs with the owners and managers of businesses located along the light rail corridor.

### Progress

- Public Involvement Staff continues to meet and respond to various stakeholders addressing specific concerns with construction impacts and schedule.
- Area Reports for individual line sections have been completed by Community Relation Coordinators and will be distributed with the quarterly METRO Newsletter in January. Area Reports provide specific information on schedule, progress, CAB Updates, and Business Assistance information for stakeholders along the alignment. These monthly updates provide a regular communication tool for METRO to keep the immediately adjacent stakeholder apprised on construction activities.

Business Assistance



- Order and delivery of Courtesy Signage Program continues in all Line Sections. Through December, 456 signs and 318 banners (**774** totals) have been issued for businesses in all five Line Sections. The following table illustrates the current distribution for this program:

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

Line Section	Signs	Banners	Total
Line Section One (LS 1)	35	58	93
Line Section Two (LS 2)	75	54	129
Line Section Three (LS 3)	175	57	232
Line Section Four (LS 4)	31	33	64
Line Section Five (LS 5)	140	116	256
<b>Totals</b>	<b>456</b>	<b>318</b>	<b>774</b>

**METRO Business Outreach Program**

The following is a break down of business outreach statistics as of January 1, 2007:

- METRO Max Program Participants – **133** businesses
- Construction Signage Program – **774** Total (456 signs and 318 banners)
- City of Tempe Asset Assistance Program – Ongoing inquiries
- City of Mesa/U.S. Bank Asset Assistance Program – Continued outreach to community
- Management Technical Assistance (MTA) Program –**217** businesses
- ASU Market Needs Assessment – **105** businesses (90 Complete/15 In-Progress)

- SELF Seminars/Micro Loan Assistance – **22** Businesses
- SBDC One-on-One Consultation - **16** Businesses
- Prestamos – Chicanos Por La Causa – **3** 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.



## LS 1

- LS 1 conducted its Community Advisory Board (CAB) meeting on Tuesday, December 12 at AmeriSchools Academy. CAB members welcomed a new member to the board: Anthony Hesano of Wireless Toyz at 7<sup>th</sup> Avenue and Camelback. Jennifer Peterson & Doug Post, Archer Western, Station Finishes/Transit Center Contractors, provided scheduling details on the construction of the Montebello transit center. METRO's Steve Gottesman presented a light rail stations overview highlighting design aspects. Members asked questions regarding station safety, advertising, and maintenance/upkeep. CAB members expressed frustration with the closure of Camelback at 19<sup>th</sup> Avenue from December 11 to the 14. METRO and City of Phoenix Streets Department responded to the concerns. Kiewit shared photos of completed track work from the Camelback station and updated members on upcoming activities, including a major traffic switch moving all traffic to the south side of Camelback. Kiewit received an overall rating of 100 percent, for their effort for going "above and beyond" the contract specifications. The next LS 1 CAB meeting is scheduled for Tuesday, January 9.



## LS 2

- LS 2 held their monthly meeting Tuesday December 19, at Brophy College Preparatory Academy. METRO's Public Involvement Manager, Howard Steere, updated the board on the business support campaign. Mr. Steere noted the key message is that businesses are open and shared METRO's and City of Phoenix's strategies for communicating that message. Mr. Steere provided a status update on the campaign and distributed two examples of marketing materials that will be implemented. CAB member Jerry Cheuvront commented on the difficulty of navigating the intersections of Central Avenue. He stated the lane configuration is confusing to drivers. Other members agreed with Mr. Cheuvront's comments. Chairperson Don Keuth requested Herzog investigate the traffic set-up and make appropriate changes as soon as possible. Herzog received an overall rating of 90 percent. The next LS 2 CAB meeting is scheduled for Tuesday, January 16, again at Brophy Preparatory Academy.

## LS 3

- LS 3 conducted their monthly meeting on Tuesday, December 12, 2006. Several members of the public addressed the CAB regarding traffic issues on Washington and Jefferson Streets at 24<sup>th</sup> Street. Chairperson Berry requested that City of Phoenix Streets Department Traffic Staff be available respond to concerns expressed by stakeholders in the area. Archer Western informed CAB members that they would not be working between Christmas and New Year's Day. AWC's presentation included a list of future intersection closures and an in-depth description of water shutdowns. AWC's also communicated work "above and beyond" contract specifications. AWC received an overall rating of 80 percent. The next LS 3 CAB meeting is scheduled for Tuesday, January 9 at METRO.

## LS 4

- LS 4 held their monthly CAB Meeting on Wednesday, December 13 at Papago Buttes Corporate Plaza. Chairperson Lewis introduced new CAB member, Tom Kreitler, of Crowne Plaza. Mr. Erik Yingling, Project Manager for SSWJV, conducted the contractor presentation and showed various photos of construction. Mr. Yingling stated that major intersections in Milestone 1 and 2 areas will be completed before the end of the year. Mr. Yingling also said many new traffic signals have been placed and new intersections are being added, with old traffic signals being moved. Mr. Yingling noted most utility work in Line Section 4 is near completion. CAB members asked the contractor to provide them with specific examples of property restoration, for example, before and after photos. They noted this particular category (property restoration) is a difficult category to evaluate the contractor on, and would like more examples of how properties have been restored. The LS 4 CAB gave a recommendation of 100 percent of the incentive available to SSWJV, for going "above and beyond" the



contract specifications for the month. LS 4's next CAB meeting is scheduled for Wednesday, January 10 at Papago Buttes Corporate Center at 3 p.m.

LS 5

- LS 5 CAB conducted its meeting on Thursday, December 14, at the Escalante Community Center. METRO's Operations Manager Jay Harper, reviewed steps to Light Rail operations and startup. Mr. Harper's presentation provided for various discussions topics including: timelines, vehicle testing, vehicle production, and key issues. SSWJV provided detail on the successful Ash Street and Mill Avenue closures that occurred over the last 4 to 6 weeks in downtown Tempe. The contractor was able to utilize full closures in these areas, receiving positive buy-in from the Downtown Tempe Community to complete crossings. The contractor also provided an update on the Apache Blvd. bridge work over the 101 Freeway and pavers installation in the ASU promenade area. Questions were fielded by both the contractor and City of Tempe about upcoming work in the Rural Road and University Drive area. SSWJV received an overall rating of 100 percent for this rating period. The next LS 5 CAB meeting is scheduled for Thursday, January 11 at the Escalante Community Center in Tempe at 7:30 a.m.

**Cost and Schedule – Variance Analysis**

- Public Involvement activities remain on schedule and within budget.
- Scheduled CAB Disbursement remains the same as the previous month:

Total Available Incentive: **\$2,500,000** (10 Quarterly disbursements)

Total Miles of Street with LRT: 23.53 miles

Allocation per Mile: \$106,247.34

Total CAB Disbursement through December is at **\$1,114,057**

Line Section	Total Amount Available	Available for Award to Date	Total Award to Date	% Award to Date
LS 1	\$241,181.00	\$72,354	\$72,354	100%
LS 2	\$317,680.00	\$127,072	\$120,178	95%
LS 3	\$865,916.00	\$432,958	\$337,707	78%
LS 4	\$567,361.00	\$397,153	\$380,132	96%
LS 5	\$507,862.00	\$203,144	\$203,144	100%

**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 METRO, 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 13.89 percent, participation including change order work is at 14.65 percent and DBE's have been paid 12.13 percent of construction dollars to date.

### Procurement Activities

- There are no DBE-related procurement activities this period related to the 20-mile construction program. Final proposed DBE participation levels will be established once the outstanding construction procurements of Park-N-Rides and Miscellaneous Construction have been completed.

### 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



- 15.13 percent Current DBE Participation (based on adjusted contract amounts)
  - \$7,804,432.64 Total DBE Subcontracted Amount
- Line Section 2, Herzog
  - 12.10 percent Minimum DBE Participation
  - 15.69 percent Committed at Bid
  - 22.02 percent Current DBE Participation (based on adjusted contract amounts)
  - \$12,314,224 Total DBE Subcontracted Amount
- Line Section 3, Archer Western Contractors
  - 12.30 percent Minimum DBE Participation
  - 13.59 percent Committed at Bid
  - 16.58 percent Current DBE Participation (Based on adjusted contract amounts)
  - \$13,474,880.31 Total DBE Subcontracted Amount
- Line Section 4, Sundt/Stacy & Witbeck
  - 11.50 percent Minimum DBE Participation
  - 14.47 percent Committed at Bid
  - 11.51 percent Current DBE Participation (based on adjusted contract amounts)
  - \$6,887,600 Total DBE Subcontracted Amount
- Line Section 5, Sundt/Stacy & Witbeck
  - 14.90 percent Minimum DBE Participation
  - 16.73 percent Committed at Bid
  - 18.96 percent Current DBE Participation (based on adjusted contract amounts)
  - \$13,523,050 Total DBE Subcontracted Amount
- Station Finishes, Archer Western Contractors
  - 12.20 percent Minimum DBE Participation



- 12.98 percent Committed at Bid
- 16.13 percent Current DBE Participation (based on adjusted contract amounts)
- \$8,546,818.74 Total DBE Subcontracted Amount
- Maintenance & Storage Facility, Sundt/Stacy & Witbeck
  - 7.34 percent Minimum DBE Participation
  - 7.54 percent Committed at Bid
  - 8.11 percent Current DBE Participation (based on adjusted contract amounts)
  - \$4,676,599 Total DBE Subcontracted Amount
- Traction Electrification, Mass Electric
  - 10.00 percent Minimum DBE Participation
  - 10.20 percent Committed at Bid
  - 10.06 percent Current DBE Participation (based on adjusted contract amounts)
  - \$5,726,370.25 Total DBE Subcontracted Amount
- Signals & Communication, Mass Electric
  - 11.00 percent Minimum DBE Participation
  - 11.67 percent Committed at Bid
  - 11.51 percent Current DBE Participation (based on adjusted contract amounts)
  - \$4,611,664 Total DBE Subcontracted Amount
- Tempe Town Lake Bridge, PCL Civil Constructors
  - 12.00 percent Minimum DBE Participation
  - 14.49 percent Committed at Bid
  - 20.80 percent Current DBE Participation (based on adjusted contract amounts)
  - \$4,559,765.58 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
  - 31.25 percent Current DBE Participation (based on adjusted contract amounts)
  - \$11,990,770 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)
  - \$1,493,992 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 (based on 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 (based on 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 (based on adjusted contract amounts)



- \$1,770,322.77 Total DBE Subcontracted Amount

### Outreach Activities

- The DBE Outreach Advisory Committee met December 19, 2006 primarily to discuss the results of the strategic planning survey. The following are highlights of the survey results, a detailed report will be provided to METRO's executive management team:
  - Succession Planning: The Chair position will be rotated every two years, by appointment of the METRO CEO. A Vice Chair will also be appointed as back-up and with the expectation that the appointee will assume the chair position. The current Chair will serve in an advisory capacity as Immediate Past Chair.
  - Composition: Currently Sundt Construction is the only METRO General Contractor with a representative on the Committee. All general contractors and consultants will be invited to assign a representative to the committee.
  - Special Events: Networking events geared toward specific procurement activities will be pursued to ensure maximum DBE exposure and participation. Training and workshops will continue to be provided based on needs identified by the DBE community (i.e. certification, bonding, insurance, Davis-Bacon compliance, etc.).
  - Communication: In an effort to provide greater visibility, METRO is developing an e-newsletter focusing on DBE participation, challenges, and opportunities. METRO will be teaming with ADOT's DBE Supportive Services Department to ensure that efforts are not duplicated and that relevant information is posted to the Arizona Unified Certification Program website.
- METRO's next training workshop is scheduled for January 19, 2007. This workshop will address current contracting opportunities including the Park-N-Ride(s), Construction Management at Risk for the Northwest Corridor Extension, and planning, environmental and design services for future corridors. An overview of the planning process and timelines for future extensions will be provided. In-depth DBE compliance training will be provided to those interested in bidding on the Park-N-Ride(s).

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

- DBE activities remain within budget and on schedule.

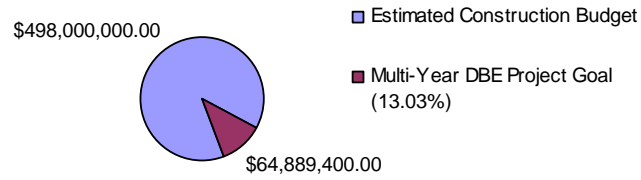
### **Issues and Solutions**

- None

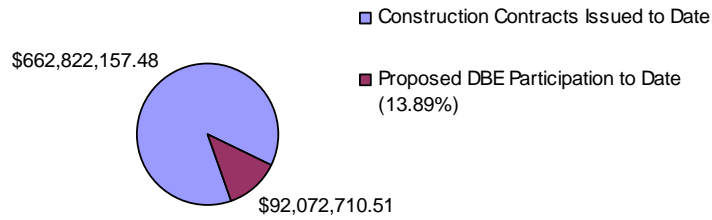


## DBE Program Overview

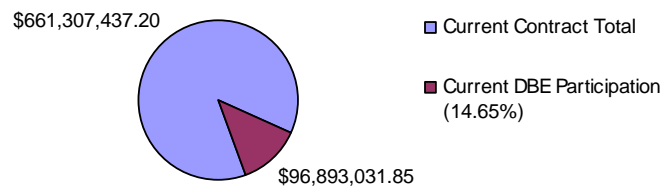
### DBE Program Overview



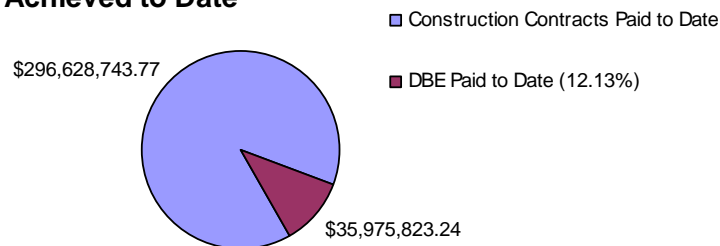
### Original Contract Amounts



### Current Participation



### Achieved to Date





## 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

- Presented METRO briefing for Phoenix Police Department Municipal Guards orientation.
- Coordinated development of a 2007 work plan for the construction safety manager.
- Provided comments to FTA on the Safety and Security Management Plan Circular.
- Reviewed plans and provided comments for restricting pedestrian access to the METRO tracks at ASU Stadium.
- Coordinated security needs for the Town Lake Bridge lighting.
- Met with the new Tempe Police Chief for a briefing on METRO.
- Participated in commissioning efforts for the MSF.
- Continued with the process to develop light rail codes and ordinances for traffic, public conduct, and fare inspection enforcement with the City of Phoenix Law Department.
- Continued working with the certification consultant to develop to checklists and brief Resident Engineers on their role.
- Continued review and comment process for METRO Standard Operating Procedures.
- There was no Fire/Life Safety and Security Committee meeting in December.
- There was no Safety and Security Certification Review Committee meeting in December.



**Cost and Schedule – Variance Analysis**

- Safety and Security activities remain within budget and on schedule.

**Issues and Solutions**

- None



## 8. Environmental Management

### Description

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

- Provided archaeological monitoring in LS 2, 3, 4 and 5 for all ground disturbance activities.
- No new discoveries occurred during December.
- ACS has provided six field archaeologists and one supervisor, and has maintained schedule commitments.

#### Contaminated and Hazardous Materials

- The Soil Monitoring and Management Plan is being implemented for excavation at Central and Camelback. To date no materials have demonstrated contamination levels above residential standards. All excavated materials suitable for backfill can be reused on site or disposed at a designated landfill. Because of low levels of contaminants we have reduced monitoring to spot checks.

#### Regulator Compliance

- Conducted field observation of contractor compliance with dust control BMPs. No substantial problems were identified.



**Cost and Schedule – Variance Analysis (To be updated)**

Archaeology

Original Contract Value (CAC)	\$1,500,064
Approved Change Orders	\$1,897,936
Contract Value to date	\$3,398,000
Invoiced through December 2006	(\$3,379,040)
Estimated cost December '06 through June '07	\$364,000
Estimated Total Costs through June 2007	\$3,743,040
<u>Additional funds required for FY 07</u>	<u>\$200,356</u>

Hazardous Materials Assessment (CAC)

Original Contract Value	\$499,488
Contract Value to date	\$499,488
Invoiced as of Sept 29, 2006	(\$370,020)
Task orders issued, not invoiced	(\$30,331)
Expended or Committed	\$400,351
Estimated Cost to Complete	175,000
Estimated total Cost	\$575,351
<u>Estimated additional funds required</u>	<u>\$78,863</u>

Remediation and Treatment Fund (METRO)

Budget	\$1,004,000
Expended or Committed	(\$179,680)
Data Recovery Report	(\$84,956)
ERI	(\$99,724)
<u>Funds Available</u>	<u>\$819,320</u>



## Issues and Solutions

- **Issue:** Suspicious soils generated at Central and Camelback may have to be transported to Beatty NV for disposal due to presence of chemicals associated with dry cleaning. Preliminary cost estimate for transport and disposal is \$50,000 for an estimated 120 CY.

**Solution:** METRO and COP to evaluate alternative means to dispose of materials due to the low levels of contaminants, and to see if a local landfill will take the materials.

- **Issue:** Archaeology technical report(s) must be completed for project close-out. Independent cost estimate for analysis and report preparation is \$3,500,000 plus \$75,000 of direct agency costs.

**Solution:** ACS has prepared scope, schedule and cost estimate for this work. Costs will be funded from Misc. Construction budget or out of under utilized Archeology Investigations/Hazardous Material Removal budget. Final budget and schedule should be negotiated in January and NTP issued in February.



## 9. Real Estate

### Description

The LRT Project travels down main business arterials in the cities of Phoenix, Tempe and Mesa and approximately 784 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. Real Estate staff members 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 METRO Real Estate staff.

### Progress

- Five additional parcels came under City control since last month, and four additional parcels became available for construction. Presently, 99 percent of the required properties are now under city control and 93 percent of the properties 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, 182 relocations have now been completed and only one remains. Three parcels came under City control for a total of 148 and a total of 131 parcels are available for construction. Line Section 1 contains 153 parcels.
- In Line Section 2, all 29 relocations have now been completed. A total of 91 parcels are under city control and two parcels were made available for construction for a total of 83. Line Section 2 contains 95 parcels.
- In Line Section 3, 34 relocations have now been completed and only two relocations remain. A total of 260 parcels are now under City control and 244 parcels are available for construction. Line Section 3 contains 260 parcels.
- In Line Section 4, all 28 relocations have now been completed. All parcels are now under city control and 104 parcels are available for construction. Line Section 4 contains 109 parcels.
- In Line Section 5, all 40 relocations have now been completed. All parcels are now under city control and a total of 167 parcels are available for construction. Line Section 5 contains 168 parcels.
- In Line Sections 1, 2, 3 and 4; 18 building cut and re-faces were identified; fifteen have been completed and three are currently underway. These building modifications require a structural engineering analysis, architectural and utility modifications, the procurement of relevant contractors and an extensive permitting process.



- The City of Phoenix Ombudsman program has been revised and a new Mediation Process has been established. FTA approval of the new process was received this month, thus allowing meetings with property owners to resume.
- An updated Real Estate Acquisition Summary sheet is included at the end of this section.

	<b>5309</b>	<b>CNPA</b>	<b>Total</b>
Budget	\$116,214,150	\$22,221,205	\$138,435,355
Available Contingency	\$ 19,559,432	\$ 1,753,931	\$ 21,313,363
Total	\$135,773,582	\$23,975,136	\$159,748,718
Spent To Date	\$118,382,902	\$17,433,553	\$135,816,455
Balance Available	\$ 17,390,680	\$ 6,541,583	\$ 23,932,263

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

- Real Estate continues to be one of two key issues (utilities being the other) currently driving the project schedule, however, a focused real estate effort has effectively reduced this concern. The Cities are working 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**

- The number of parcels that are negatively impacting the schedule has been reduced to a few. The energy of the project team is focused where it is needed most. In all line sections there are some parcels that remain unavailable for construction. Key parcels in Line Section 1 were the most critical, and an intense level of urgency has been effective in accelerating the acquisition process.



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

**December 31, 2006**

<b>ACTIVITY</b>								
	<b>1 PHX</b>	<b>2 PHX</b>	<b>3 PHX</b>	<b>4 PHX</b>	<b>4 TEMPE</b>	<b>5 TEMPE</b>	<b>5 MESA</b>	<b>Totals</b>
Full Takes	40	0	9	2	0	12	0	<b>63</b>
Partial Takes	113	95	251	106	1	109	46	<b>721</b>
<b>Total Affected Parcels</b>	<b>153</b>	<b>95</b>	<b>260</b>	<b>108</b>	<b>1</b>	<b>121</b>	<b>46</b>	<b>784</b>
Projected Relocations	183	29	36	28	0	40	0	<b>316</b>
Title Reports Completed	153	95	260	108	1	121	46	<b>784</b>
Legals sent to City	153	95	260	108	1	121	46	<b>784</b>
Appraisals Requested	153	95	260	108	1	121	46	<b>784</b>
Appraisals Completed	153	95	260	108	1	121	46	<b>784</b>
Offers Made	153	95	260	108	1	121	46	<b>784</b>
Offers Accepted	106	65	224	85	1	88	36	<b>605</b>
Escrow Closed <b>Acquisition Complete</b>	<b>101</b>	<b>53</b>	<b>212</b>	<b>85</b>	<b>1</b>	<b>88</b>	<b>7</b>	<b>567</b>
Condemnation Filed	26	12	25	11	0	29	17	<b>120</b>
OIP Received	24	8	22	9	0	29	17	<b>109</b>
ROE Signed	23	30	26	14	0	4	2	<b>99</b>
Relocations Underway	1	0	2	0	0	0	0	<b>3</b>
Relocations Completed	182	29	34	28	0	40	0	<b>313</b>
<b>Parcels Under City Control</b>	<b>148</b>	<b>91</b>	<b>260</b>	<b>108</b>	<b>1</b>	<b>121</b>	<b>46</b>	<b>775</b>
Parcels Available for Construction	131	83	244	103	1	121	45	<b>728</b>
Parcels Pending Release for Construction	17	8	16	5	0	0	1	<b>47</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.

Utility relocation continues to be one of two key issues driving the project schedule. Lack of available Right-of-Way and delays in utility relocation have affected contractor construction schedules. METRO has requested that the utility companies accelerate their relocation, so impacts to the Contractors' schedules are minimized.

### Progress

- Line Section 1
  - Right-of-way availability continues to constrain utility and contractor activities. Acquisition progress is being made. The Fry's property at 17<sup>th</sup> Avenue and Camelback Road is no longer restricting utility and contractor progress. Walgreens, CVS and properties on the northwest corner of 19<sup>th</sup> Avenue and Camelback Road have been acquired and utility work on those properties is proceeding.
  - The City of Phoenix continues to allow bus traffic to be re-routed from 19th Avenue between Campbell and Missouri and from Camelback Road between 23rd Avenue and 15th Avenue. Bus traffic will avoid the 19th Avenue and Camelback Road intersection for approximately one year allowing utility companies and contractor construction in this intersection to take place with intermittent nighttime intersection closures.
  - Southwest Gas has completed their tie-in of High Pressure and Distribution lines at 19th Avenue and Camelback Road.
  - Southwest Gas (SWG) has completed their relocation work on Camelback Road. SWG will begin relocation work at the Fry's property in a few weeks. The current issue at Fry's has been resolved and which will allow Kiewit to construct the SRP Irrigation pipe during the annual Dry Up. Qwest and SRP-Power cannot proceed in the same area until SWG facility has been relocated.



- SWG has completed placement of gas mains on 19th Avenue. The only work remaining is to remove sections of abandoned gas pipe on 19th Avenue which are in conflict with Line Section 1 contractor work.
- SWG needs to lower a gas main on Bethany Home Road and 19th Avenue that is in conflict with the proposed SRP Irrigation pipe, scheduled for relocation next month.
- The Contractor continues to work on Salt River Project Irrigation (SRPI) facilities when and where right-of-way becomes available.
- Salt River Project Power (SRPP) main trench and conduit installation on the south side of Camelback Road is 90 percent complete. SRP has started wire pulling and setting equipment. Installation of street lights has begun behind the new sidewalks.
- 19th Avenue joint trenching for SRPP, Qwest and Cox continues by Kiewit Construction from Camelback Road to Colter Drive (90 percent complete).
- Qwest will start placing conduits crossing 19th Avenue at nine different locations.
- Qwest and Cox Communication are waiting on joint trenching by Kiewit to be completed so they can start pulling/splicing new cable/fiber.
- Construction of the Transit Center at 19th Avenue and Montebello has begun with utility installations continuing.
- Line Section 2
  - Utility conflicts and coordination issues are being addressed on a case by case basis in the field. These meetings increase contractor communication and utility company accountability.
  - Currently APS redesign is on hold at Central Avenue and Thomas Road. The Line Section Contractor is looking into swapping the water and sewer alignment on the east side of Central Avenue just north of Thomas Road. If the city approves, then APS will not need to relocate. Realignment would make the sewer installation much easier to install.
  - Salt River Project Water - Irrigation agreed to relocate the SRP irrigation facilities at Central Avenue and Camelback Road once the Transfer Agreement is signed. The Agreement has been signed by the City and was forwarded to SRP for signature.
  - The project team continues to work with APS, the City of Phoenix and Herzog on design modifications for street lights and traffic signals. The City of Phoenix, METRO and APS representatives have been instrumental in facilitating the necessary changes of this work.



- Line Section 3
  - Utility conflicts and coordination issues are being addressed on a case by case basis in the field. These meetings increase contractor communication, and utility company accountability.
  - Eleven street turn-around plans are near completion. Utility conflicts were identified as SWG, Qwest and APS.
  - The project team continues to work with APS, the City of Phoenix, METRO and Archer Western representatives to implement design modifications on street lights and traffic signals. The weekly coordination meeting that is held with APS, the City of Phoenix, METRO and Archer Western representatives has been instrumental in facilitating the necessary changes of this work.
- Line Section 4
  - Utility conflicts and coordination issues are being addressed on a case by case basis in the field. These meetings increase contractor communication and utility company accountability.
  - APS still needs to demo overhead facilities, and remove power poles on Washington Street between 30<sup>th</sup> Street and 32<sup>nd</sup> Street.
- Line Section 5
  - Solutions for utility issues are addressed weekly in the LS 5 Utilities Coordination meeting.
  - SRP Irrigation plans are final at the Apache Boulevard and Price Road (SR101) intersection and Apache Boulevard and River. Third party utility relocations were identified as SWG and Cox. METRO has approved and forwarded to the City of Tempe to issue the permits.
  - Due to the Line Section 5 Contract Master Schedule revision, METRO has requested that SRP Power accelerate their relocations. SRP Power (Subcontractors NPL & TECC) has stepped up manpower and has accelerated relocation work. SRP plans on adding additional work forces within the next two weeks. Salt River Project Power needs to accelerate the following jobs to meet the Contractor dates:
    - SRP Job No: JJC-5006 (**Done**), KJC-5010 (**Done**), KJC-3008 - Apache Boulevard and McClintock will not be done until the building demo, which is scheduled for April of 2007.
    - SRP Job No: SRP KJC-5012(Minor adjustment on a piece of equipment) KJC-3006 (**Done**) - Price to Tempe Canal.



- SRP Job No: SRP KJC-5011, JJC-5008, and KJC-3011 - River to Price to be completed by January 19, 2007.
- SRP Job No: SRP KEC-5001, JEC-5001 - Dobson to Sycamore to be tentative by February 28, 2007.
- SRP Job No: SRP KEC-5000, JEC-5000 – Roosevelt to Dobson to be tentative by January 31, 2007.
- Third party major relocations have been completed from east of 1<sup>st</sup> Street and Ash to McClintock Drive.
- METRO has requested Union Pacific Railroad to expedite the relocation of a signal and communication cabinet – high priority.
- Traction Power Substations
  - APS continues defining electrical easements that are still needed for Traction Power Substations. No. 3, 4, 5, 6, 7, 8, 10, 11 and 15.
  - SRP continues defining electrical easements for Traction Power Substations. No. 1, 2, 9, 12, 13 and 14.
- New Electric Services Accounts
  - APS and SWG accounts are set up.
  - SRP electrical service accounts continue to be established for METRO.

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

- Costs incurred to-date for prior rights utilities are within the Utility Budget. We are concerned that the budget for SRP Irrigation and SRP Power will run over budget due to material costs and the fact that traffic control costs have increased.
- Utility relocation continues to be one of two key issues driving the project schedule. Lack of available Right-of-Way, METRO requirements to change utility design and delays in completion of utility design have affected contractor construction schedules. METRO is working with the cities, the utility companies and the Contractors to develop strategies to streamline processes provide additional resources and create opportunities for work-around so that impacts to the Contractors' schedules are minimized.

### **Issues and Solutions**

- Utility relocation is a big concern for this project to be on schedule. METRO has requested utility companies accelerate their relocation even if it includes providing additional resources.



- Weekly meetings continue to address any utility conflicts and coordination issues. Meetings are being held at the field office to better effect contractor communication with utilities as well as make the utilities accountable.
- Define APS and SRP Power easements for the TPSS Site number 1 thru number 12 and number 14.
- Line Section 1 - SRP Irrigation easements have been defined but not all have been obtained. Several SRP Power easements are being revised due to METRO design revisions and new-development projects. Parcel acquisitions and cost-to-cure items have been prioritized so as to coincide with the contractor's construction schedule and utility needs.
- Line Section 2 – To assure that utility companies do not delay Contractor schedule.
- Line Section 3 – The contractor is working with APS on street lights in area to mitigate any delays.
- Line Section 4 – METRO must ensure that all utility relocations within the test track are complete.
- Line Section 5 – SRP Irrigation relocation and SRP Power still hinder the LS 5 Contractor.

### Construction Photographs



SRP-Power relocation on Camelback Road in Line Section 1



SWG relocation on 19<sup>th</sup> Avenue and Camelback Road in Line Section 1



UPRR relocation at 1<sup>st</sup> Street and Ash Line Section 5



SRP relocating underground 12 kV on Apache Blvd. in Line Section 5

	Percent	Budget	Earned	Cost to Date	Forecast
Line Section 1	54%	\$6,235,390	\$3,388,259	\$3,440,255	\$8,412,279
Line Section 2	78%	\$1,765,355	\$1,374,105	\$311,822	\$1,880,355
Line Section 3	86%	\$3,072,517	\$2,632,538	\$1,868,409	\$3,895,856
Line Section 4	94%	\$4,780,945	\$4,511,736	\$2,469,855	\$5,580,173
Line Section 5	86%	\$7,555,076	\$6,466,050	\$6,550,697	\$9,867,370
Maintenance Storage Facility	100%	\$320,230	\$320,230	\$397,876	\$397,876
Town Lake Bridge	100%	\$1,150,000	\$1,150,000	\$808,997	\$1,150,000
<b>Sub Total</b>	<b>80%</b>	<b>\$24,879,513</b>	<b>\$19,842,918</b>	<b>\$15,847,911</b>	<b>\$31,183,909</b>
Contingency	0%	\$1,499,779	\$0	\$0	\$1,073,530
<b>Total Prior Rights Utilities</b>	<b>75%</b>	<b>\$26,379,292</b>	<b>\$19,842,918</b>	<b>\$15,847,911</b>	<b>\$32,257,439</b>

## 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

- Working with artists and GEC to resolve outstanding RFIs.
- Working with AWC to resolve foundation installation and scheduling issues.

#### Cost and Schedule – Variance Analysis

- Public Art activities remain on schedule and within budget.

#### Issues and Solutions

- Continuing to monitor contract schedule issues.

## Station Finishes



### Description

The Station Finishes (SF) contract includes twenty-seven 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 SF 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.

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) and automated ticket vending machines (TVM).

### Progress

- 44th Street and Washington Transit Center: Operator Facility foundations, grading and utility work are ongoing. Archer Western and Sundt/Stacy Witbeck continue to coordinate access and sequencing of their respective work.



- Central Avenue and Camelback Transit Center: No activity during the past month at this site while coordination with other contractors is ongoing to facilitate the phasing of Station Finishes contract work, when resumed.
- Montebello and 19th Avenue Transit Center: Installation of Storm Drain Pipe catch basins and manholes began as well as the installation of SRP lighting conduit. Other miscellaneous electrical utility work continues. Traffic barricading and construction detours on Montebello have been implemented and continue to be maintained. Spectrum Mall management is regularly updated on METRO construction activities in the vicinity of their facility.
- Station Finishes' physical link construction between couplet stations at Van Buren and 1st Avenue and Central into the Central Station Bus Transit Center is ongoing. This work includes the extension of platform and entry foundations that were constructed by the Line Section 3 Contractor.
- The contractor was given area access to the Priest Drive and Washington Station and the Van Buren and 1<sup>st</sup> Avenue and Central Avenue Stations. Seven other stations (five on Line Section 3 and one on Line Section 5) are in the process of being turned over to the Station Finishes Contractor; punch list work is ongoing.
- Platform and Operations Facility structural Steel is progressing through ongoing shop drawing production and design reviews. Expectation is to have accepted steel on Van Buren and 1st Avenue Station by early February 2007.
- A cost proposal was received for Station Finishes Change Notice 30A (ASU Logo Additions at Three Stations) and remains within the approved budget for this work as agreed between the Cities of Tempe and Phoenix, METRO and ASU.
- Coordination is underway between the Station Finishes and Ticket Vending Machine Contracts for updated placement of certain ticket vending machines at each station due to a change in their access design for maintenance by the manufacturer since bid award. There should not be any significant effect on either contract regarding increased cost or schedule delays. However, additional stand alone validator machines if added, may impact contract schedules and will require architectural revisions and separate concrete pads.
- A meeting was scheduled in January 2007 for a presentation by Archer Western's proposed warning paver manufacturer (Wasau Tile) to METRO Operations/Design & Construction senior staff, the GEC and CAC. This should help resolve any remaining concerns regarding final specifications and installation for the platform warning paver system.
- SRP transformer removal and LRT electrical power relocation has been completed in order to avoid any risk of delay claims for Contractor's access at the Sycamore and Main Transit Center site.

### Cost and Schedule – Variance Analysis

- Individual station completion dates are being impacted by late steel deliveries. The contractor has issued a schedule revision that is currently being reviewed by METRO.

### Issues and Solutions

- Building department comments related to Station Finishes Permit Approval from Phoenix and Mesa resulted in additional changes at all Transit Center sites. METRO and Archer Western are continuing to resolve any potential cost and schedule impacts due to these Contract revisions.

### Construction Photographs



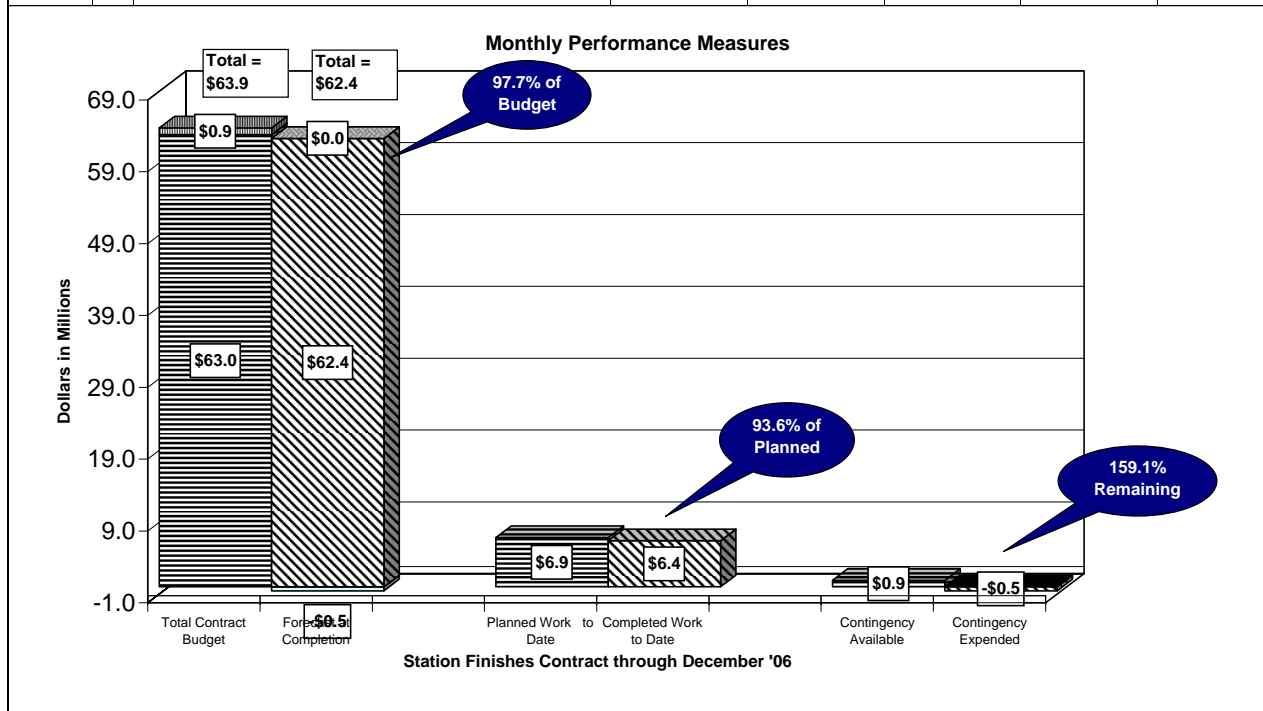
Electrical conduit installation at 44<sup>th</sup> Street and Washington Transit Center



Drainage features between Van Buren and 1<sup>st</sup> Avenue and Central Avenue Couplet Stations in Downtown Phoenix

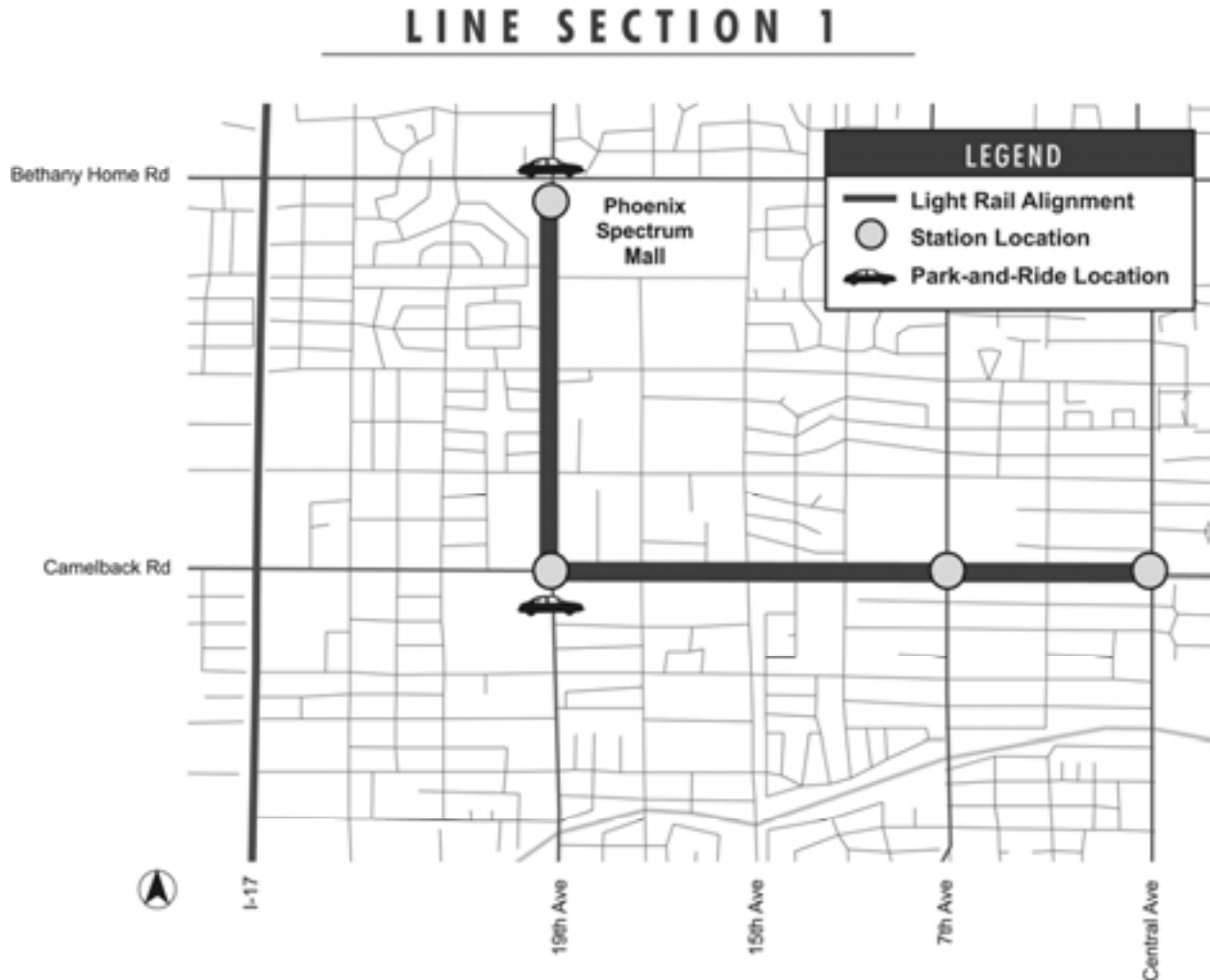


<b>Description:</b>		<b>3.2.1 Station Finishes</b>		
<b>PE/PA:</b>		Steve Gottesman		
<b>Contractor:</b>		Archer Western Contractors		
<b>Resident Architect:</b>		Doaa Aboul-Hosn		
<b>Data Through:</b>		November 30, 2006		
<b>Cumulative</b>		<b>5309</b>	<b>CNPA</b>	<b>Total</b>
1	Original Budget	\$52,985,000	\$9,988,000	\$62,973,000
2	Executed Change Orders	-\$612,556	\$70,290	-\$542,266
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$52,372,444	\$10,058,290	\$62,430,734
5	Work Scheduled	\$5,517,454	\$1,345,863	\$6,863,317
6	Work Earned	\$5,025,059	\$1,400,012	\$6,425,071
7	Actual Expenditures	\$5,013,839	\$1,393,900	\$6,407,739
8	Forecast to Complete Base (4-7)	\$47,358,605	\$8,664,390	\$56,022,995
9	Change Orders Pending Execution	\$0	\$0	\$0
10	Forecast at Completion (7+8+9)	\$52,372,444	\$10,058,290	\$62,430,734
11	Percent Budget Expended (7/4)	9.6%	13.9%	10.3%
12	Percent Planned (5/4)	10.5%	13.4%	11.0%
13	Earned Percent Complete (6/4)	9.6%	13.9%	10.3%
14	Schedule Performance (6/5)	0.91	1.04	0.94
15	Cost Performance (6/7)	1.00	N/A	1.00
16	Contingency Budget	\$546,000	\$371,603	\$917,603
17	Remaining Contingency	\$1,158,556	\$301,313	\$1,459,869
18	Percent Contingency Remaining (17/16)	212.2%	81.1%	159.1%
<b>Period</b>				
1	Original Budget	N/A	N/A	N/A
2	Executed Change Orders	-\$612,556	\$20,290	-\$592,266
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$52,372,444	\$10,058,290	-\$592,266
5	Work Scheduled (Cumm - Last Period)	\$519,576	\$584,130	\$1,103,706
6	Work Earned (Cumm - Last Period)	\$1,289,489	\$990,500	\$2,279,989
7	Actual Expenditures (Cumm - Last Period)	\$1,294,954	\$936,900	\$2,231,854
8	Forecast to Complete Base (4-7)	\$51,077,490	\$9,121,390	\$60,198,880
9	Change Orders Pending Execution	\$618,343	-\$174,619	\$443,724
10	Forecast at Completion (7+8+9)	\$52,990,787	\$9,883,671	\$62,874,458
11	Percent Budget Expended (7/4)	2.5%	9.3%	3.6%
12	Percent Planned (5/4)	1.0%	5.8%	1.8%
13	Earned Percent Complete (6/4)	2.5%	9.8%	3.7%
14	Schedule Performance (6/5)	2.48	1.70	2.07
15	Cost Performance (6/7)	1.00	N/A	1.02
16	Contingency Budget			
17	Remaining Contingency			
18	Percent Contingency Remaining (17/16)			



## 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

- Kiewit continues water line installation, storm drain and sewer line installation, private irrigation, street light installation, traffic signal work at intersections, landscape irrigation, utility removals, miscellaneous demolition, roadway excavation, trackway grading paving pipe trenches, man holes/stand pipes installation and ACP removal at various places along the South Side of Camelback Road. This work is being performed on both day and night shifts. Private irrigation tie-in work utilizing “mini dry-ups” continue to be coordinated well between KWC and Salt River Project Irrigation (SRPI). Kiewit continues with the SRPP joint trench on 19<sup>th</sup> Avenue. They also continue curb, gutter and sidewalk work on Camelback. They have begun the station foundation excavation at 7<sup>th</sup> and Camelback, completed the first 240 LF of concrete trackway, placed base pavement between 3<sup>rd</sup> Avenue and 7<sup>th</sup> Avenue and continue working on duct bank, track setup, and catenary pole foundation installation on Camelback. The conflict between the existing Storm Drain and the duct bank/catenary pole foundations discussed last month has been dealt with by using spread footings in the conflict areas.
- Southwest Gas (SWG) has completed all of the gas line relocation work on Camelback Road, but they can not put the new line in service until the utility easement for the “Payless” part of Fry’s parcel is finalized. They continue to work on 19th Avenue with two subcontractors. One subcontractor is working from Bethany Home Road south and the other subcontractor is working from Camelback Road north. Periodic line drops in the 19th Avenue and Camelback intersection are being performed at night.
- The joint trench work on Camelback continues with Salt River Project Power (SRPP) utilizing two subcontractors. Salt River Project Irrigation continues with the installation of the irrigation structures and coordinating tie-ins with Kiewit. SRPP and SRPI have the same problem with final system tie-ins as SWG, Qwest, Cox and Kiewit i.e. the unavailability of the utility easement for the “Payless” part of Fry’s parcel take.
- Traffic control has been seamlessly combined between all participants on the project and continues to be successful with few formal complaints from the various stake holders or traveling public. Kiewit has restructured traffic flow on both Camelback and 19th Avenue to one lane in each direction and the City of Phoenix (COP) has agreed to allow pre-approved nighttime full closures of the Camelback and 19th Avenue intersection. COP Transit has rerouted the Buses such that that they no longer stop at the intersection of 19<sup>th</sup> Avenue and Camelback Road and they have suspended bus operations on 19<sup>th</sup> Avenue.
- Extensive roadway milling has been complete for the first phase of existing pavement removal on Camelback Road and 19<sup>th</sup> Avenue.

## Cost and Schedule – Variance Analysis

- A revised schedule is being prepared to reschedule the out of sequence work on 19<sup>th</sup> Avenue and to work around the remaining parcel acquisitions on the project.

## Issues and Solutions

- Real Estate, cost-to-cure (CTC), and SRPP Utility Easements continue to be a grave concern. There are several parcels on LS 1 that are not yet available or have CTC issues. There are also several SRPP Utility Easements that have not yet been obtained. The Contractor and third party utilities know of the lack of these key work areas and are amending their work plans as much as possible, but crucial systems tie-ins can not be finished until the parcels and easements are available.

## Construction Photos



KWC compacting bedding for 24" water line south of Camelback.



12-04-06 Guideway - RGG crews forming the Guideway section E-2 at R Sta. 1103+50, Lt. track Central to the 3rd Ave



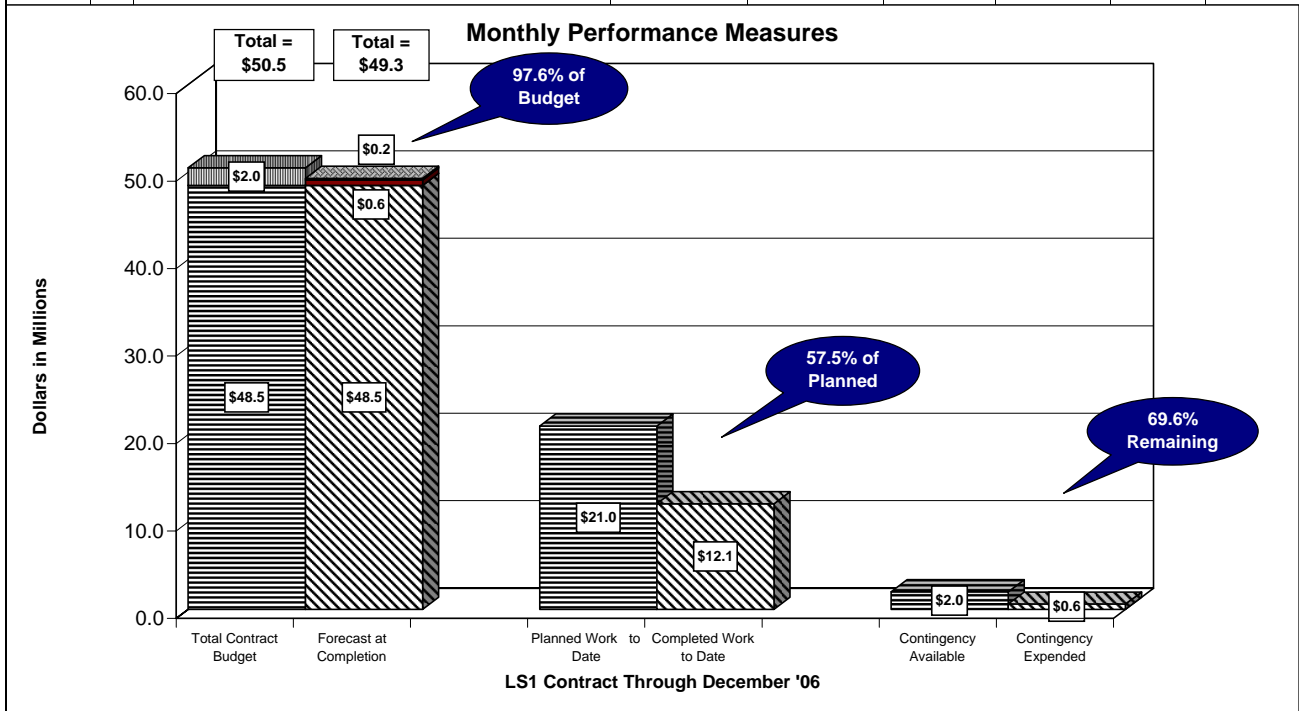
12-12-06 SWG Tie-In- Installing Cathodic Protection for the new gas main at 19th Ave.



12-13-06 5ft Sidewalk- CPI placing 2500psi concrete for the sidewalk between station 439+00 to 437+00 between 11th and 13th Aves.



<b>Description:</b>		<b>3.1.1 Line Section 1</b>		
<b>PE/PA:</b>		<b>Alvin Livingstone</b>		
<b>Contractor:</b>		<b>Kiewit Western Co.</b>		
<b>Resident Engineer:</b>		<b>Bill Blane</b>		
<b>Data Through:</b>		<b>October 31, 2006</b>		
<b>Cumulative</b>				
		5309	CNPA	Total
1	Budget	\$37,951,658	\$10,533,342	\$48,485,000
2	Executed Change Orders	\$943,859	-\$332,992	\$610,867
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$38,895,517	\$10,200,350	\$49,095,867
5	Work Scheduled	\$15,950,073	\$5,010,141	\$20,960,214
6	Work Earned	\$10,435,674	\$1,626,469	\$12,062,143
7	Actual Expenditures	\$10,931,261	\$1,626,265	\$12,557,526
8	Forecast to Complete Base (4-7)	\$27,964,256	\$8,574,085	\$36,538,341
9	Change Orders Pending Execution	-\$551,246	\$749,454	\$198,208
10	Forecast at Completion (7+8+9)	\$38,344,271	\$10,949,804	\$49,294,075
11	Percent Budget Expended (7/4)	28.1%	15.9%	25.6%
12	Percent Planned (5/4)	41.0%	49.1%	42.7%
13	Earned Percent Complete (6/4)	26.8%	15.9%	24.6%
14	Schedule Performance (6/5)	0.65	0.32	0.58
15	Cost Performance (6/7)	0.95	1.00	0.96
16	Contingency Budget	\$1,963,056	\$44,811	\$2,007,867
17	Remaining Contingency	\$1,019,197	\$377,803	\$1,397,000
18	Percent Contingency Remaining (17/16)	51.9%	843.1%	69.6%
<b>Period</b>				
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	\$716,508	\$0	\$716,508
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$38,895,517	\$10,200,350	\$49,095,867
5	Work Scheduled (Cumm - Last Period)	\$1,528,784	\$432,848	\$1,961,632
6	Work Earned (Cumm - Last Period)	\$1,385,027	\$187,071	\$1,572,098
7	Actual Expenditures (Cumm - Last Period)	\$1,854,664	\$143,724	\$1,998,388
8	Forecast to Complete Base (4-7)	\$37,040,853	\$10,056,626	\$47,097,479
9	Change Orders Pending Execution	-\$1,289,714	\$1,145,236	-\$144,478
10	Forecast at Completion (7+8+9)	\$37,605,803	\$11,345,586	\$48,951,389
11	Percent Budget Expended (7/4)	4.8%	1.4%	4.1%
12	Percent Planned (5/4)	3.9%	4.2%	4.0%
13	Earned Percent Complete (6/4)	3.6%	1.8%	3.2%
14	Schedule Performance (6/5)	0.91	0.43	0.80
15	Cost Performance (6/7)	0.75	1.30	0.79
16	Contingency Budget			
17	Remaining Contingency			
18	Percent Contingency Remaining (17/16)			



## 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 continues to install infrastructure from Camelback to Thomas in various states of completion, storm drainage and catch basin installation and relocation. Sanitary installations at Park Central Mall, pot holing for a City requested amended sewer at Mitchell. Water main installation at Thomas, Indian School and preparation for reconstruction of 24' main at Osborne. Removing SRP lines at various locations between Grand Canal Bridge and Indian School.
- Herzog continues to work on Guideway excavation between Highland and Glenrosa. This includes Installation of Campbell Station reinforcing and forming.
- Herzog successfully completed the installation of two SRP Irrigation lines and four manholes at Mariposa.
- OCS foundation construction continued.
- The Grand Canal Bridge is anticipated to be fully opened on January 19, 2007 for traffic, with Pedestrian crossing activated at the southern end of the bridge.
- Street light poles, and traffic signal poles restoration (or installed new), painted and placed on new foundations with new infrastructure installed.
- Roadway widening, clear/grub, demolition of curb/gutter, sidewalks and paving is continuing south from Indian School to Thomas. Intersection reconstruction at Indian School and Campbell continues.
- Herzog continues to work on installing sidewalk, sandstone borders, tree wells, and are currently working on the installation of landscaping at various locations.
- Relocation of Palm Trees on the west side of Central Indian School to Osborne.

## Cost and Schedule – Variance Analysis

- The contractor is developing a new schedule to reflect re-sequencing the work to support overall Program Milestones.

## Issues and Solutions

- Utility conflicts continue to occur. METRO is working diligently with Herzog and the City in a proactive, coordinated effort to resolve impacts in an expedited manner.
- METRO and Herzog are discussing a re-sequencing of infrastructure to improve the schedule for guide way turnover.
- Several major design adjustments, including waterline conflicts from Indian School to Encanto remain a challenge on LS 2. METRO Design is working with

the City of Phoenix to resolve ongoing conflicts. Variances have been issued and Change Notices issued to resolve some of the conflicts.

**Construction Photos**



Forming Campbell Station



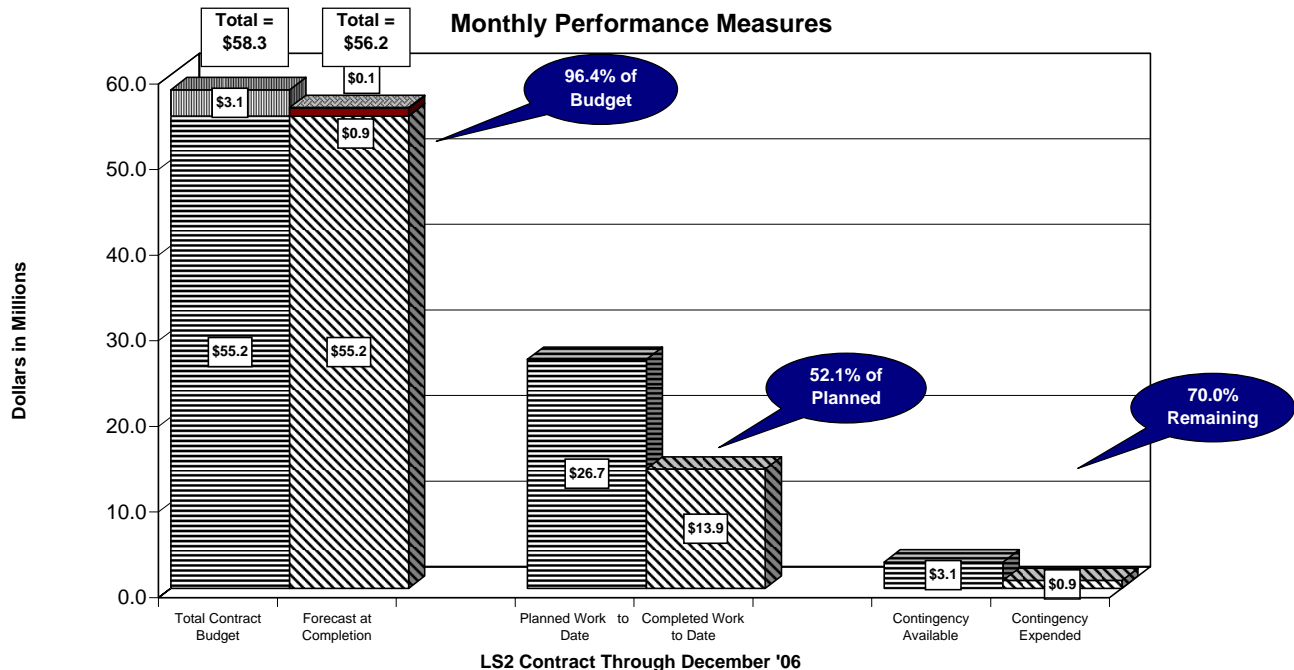
Installing Backbone Ductbank



Forming SRP Manhole



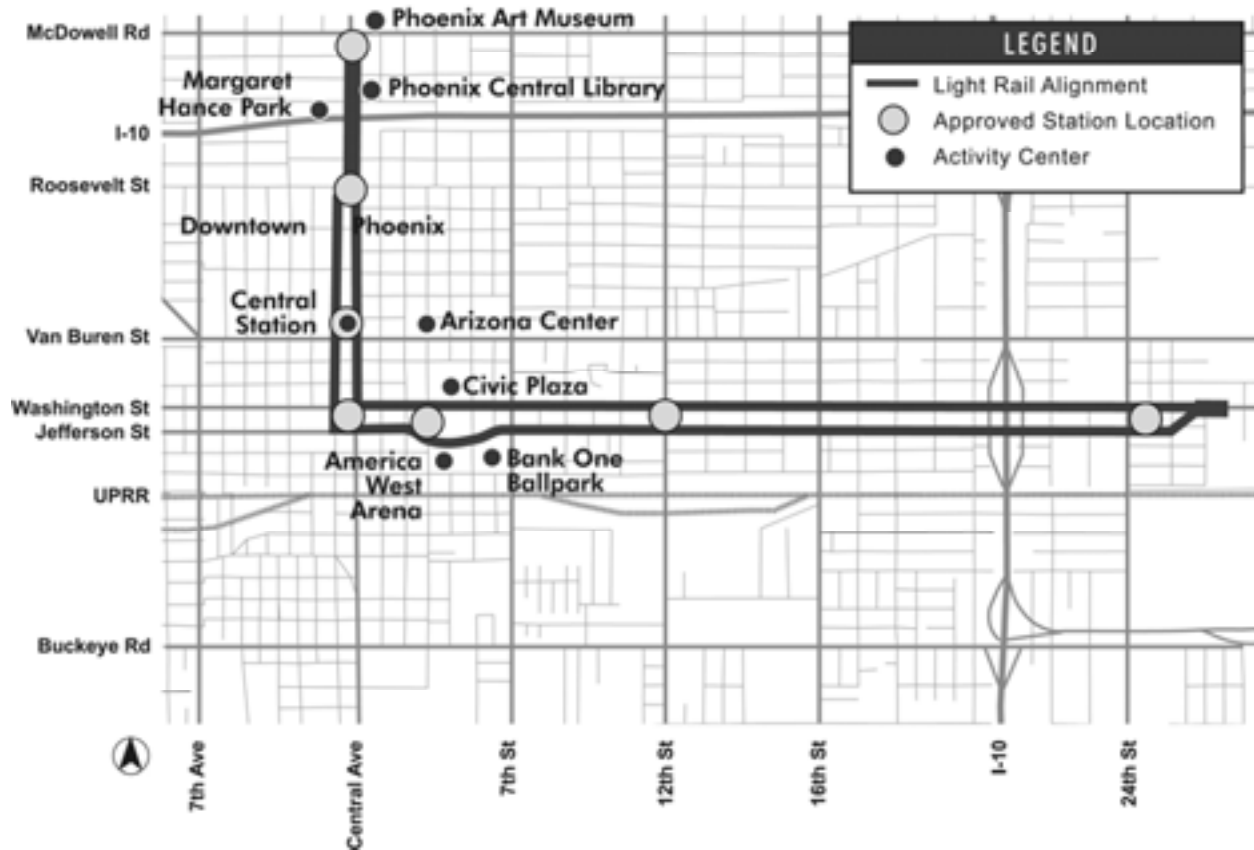
<b>Description:</b>		<b>3.1.2 Line Section 2</b>		
<b>PE/PA:</b>		<b>Alvin Livingstone</b>		
<b>Contractor:</b>		<b>Herzog Contracting Corporation</b>		
<b>Resident Engineer:</b>		<b>Marty Spong</b>		
<b>Data Through:</b>		<b>October 31, 2006</b>		
<b>Cumulative</b>		5309	CNPA/Other	Total
1	Budget	\$48,425,124	\$6,762,248	\$55,187,372
2	Executed Change Orders	\$965,609	\$72,218	\$1,037,827
3	Budget Transfers		-\$119,327	-\$119,327
4	Current Budget (1+2+3)	\$49,390,733	\$6,715,139	\$56,105,872
5	Work Scheduled	\$23,131,254	\$3,607,811	\$26,739,065
6	Work Earned	\$12,442,926	\$1,482,215	\$13,925,141
7	Actual Expenditures	\$12,434,938	\$1,403,235	\$13,838,173
8	Forecast to Complete Base (4-7)	\$36,955,795	\$5,311,904	\$42,267,699
9	Change Orders Pending Execution	\$0	\$59,936	\$59,936
10	Forecast at Completion (7+8+9)	\$49,390,733	\$6,775,075	\$56,165,808
11	Percent Budget Expended (7/4)	25.2%	20.9%	24.7%
12	Percent Planned (5/4)	46.8%	53.7%	47.7%
13	Earned Percent Complete (6/4)	25.2%	22.1%	24.8%
14	Schedule Performance (6/5)	0.54	0.41	0.52
15	Cost Performance (6/7)	1.00	1.06	1.01
16	Contingency Budget	\$3,050,401	\$13,293	\$3,063,694
17	Remaining Contingency	\$2,084,792	\$13,293	\$2,145,194
18	Percent Contingency Remaining (17/16)	68.3%	100.0%	70.0%
<b>Period</b>				
1	Budget		N/A	N/A
2	Executed Change Orders		\$0	\$0
3	Budget Transfers		\$0	\$0
4	Current Budget (1+2+3)	\$49,390,733	\$6,715,139	\$56,105,872
5	Work Scheduled (Cumm - Last Period)	\$2,248,509	\$591,787	\$2,840,296
6	Work Earned (Cumm - Last Period)		\$0	\$0
7	Actual Expenditures (Cumm - Last Period)		\$0	\$0
8	Forecast to Complete Base (4-7)	\$49,390,733	\$6,715,139	\$56,105,872
9	Change Orders Pending Execution		-\$43,496	-\$43,496
10	Forecast at Completion (7+8+9)	\$49,390,733	\$6,671,643	\$56,062,376
11	Percent Budget Expended (7/4)	0.0%	0.0%	0.0%
12	Percent Planned (5/4)	4.6%	8.8%	5.1%
13	Earned Percent Complete (6/4)	0.0%	0.0%	0.0%
14	Schedule Performance (6/5)	0.00	N/A	0.00
15	Cost Performance (6/7)	#DIV/0!	#DIV/0!	#DIV/0!
16	Contingency Budget			
17	Remaining Contingency			
18	Percent Contingency Remaining (17/16)			



Note: No update was submitted during the reporting period

## Line Section 3

### LINE SECTION 3



### Description

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

The work anticipated in this construction contract includes demolition, relocation of public utilities, corrosion control facilities, roadway and drainage modifications, station platform foundations, installation of systems duct bank and conduits, streetlights, traffic signals, OCS pole foundations, irrigation, landscaping, traffic signing, pavement



marking, preparation of track bed and installation of embedded track. It also includes modifications of existing structures at the Deck Park Bridge, Renaissance II Garage, Arizona Science Center/CPEG Pedestrian Bridge and ADOT I-10 Washington-Jefferson Interchange.

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

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

## **Progress**

- Archer Western Contractors (AWC) is continuing utility construction in segments 5 through 15 installing storm sewer, sanitary sewer and water service. AWC is continuing to install traffic features and wiring on traffic signals in segments 5 through 15. Additionally, AWC is proceeding with OCS foundations, lighting conduits, foundations, irrigation work as required along ROW and stations.
- AWC is currently working their day crews five days per week and night crews four nights a week. AWC shut down production operations during the week between Christmas and New Years (December 22 to January 2).
- AWC has requested substantial completion on the Van Buren stations (1<sup>st</sup> Avenue and Central Avenue) and METRO has issued such. AWC is continuing to work on deficiency list items on remaining seven stations. METRO will be reviewing these foundations for substantial completion acceptance next month. AWC is continuing work on foundations at the 12<sup>th</sup> Street and Washington station.
- AWC currently has six rail headings in progress throughout the alignment and has installed approximately 13,600 LF of guideway throughout the Downtown area; Segments 1, 2, 3, 4, 5, 6, 7 and on east end of project in Segments 13 and 14 as well as continuing the installation of the McKinley Loop. AWC has completed potholing services for the existing waterline and other utilities for the 11<sup>th</sup> Street Wye Track design.

- Level 3 has completed relocation of duct bank and manholes on Washington Street. AWC has completed approximately 98 percent of traffic signal and street light conduit installation and should complete by mid January.
- JOC contractor Centennial Contractors has started the large vehicle access work on alleys between 16<sup>th</sup> and 24<sup>th</sup> streets. Currently the contractor is showing a late December/early January completion date.

### Cost and Schedule – Variance Analysis

- AWC and METRO are in negotiations concerning the master schedule milestone revision change order. The interim progress schedule indicates the contractor has completed 45 percent of the work.

### Issues and Solutions

- Bi-weekly meetings with system integration contractor to address any design conflicts and coordination issues. Meetings are being held at the field office to better effect contractor communication with Line Section 3 contractor, TES and S&C contractor.
- ROW acquisition is complete with several outstanding cost-to-cure items. The demolition work on the Sterling Hotel property has been completed and is now accessible for contract work.

### Construction Photos



2<sup>nd</sup> Street/Washington Station



Pavement Sub Grade Preparation on Jefferson



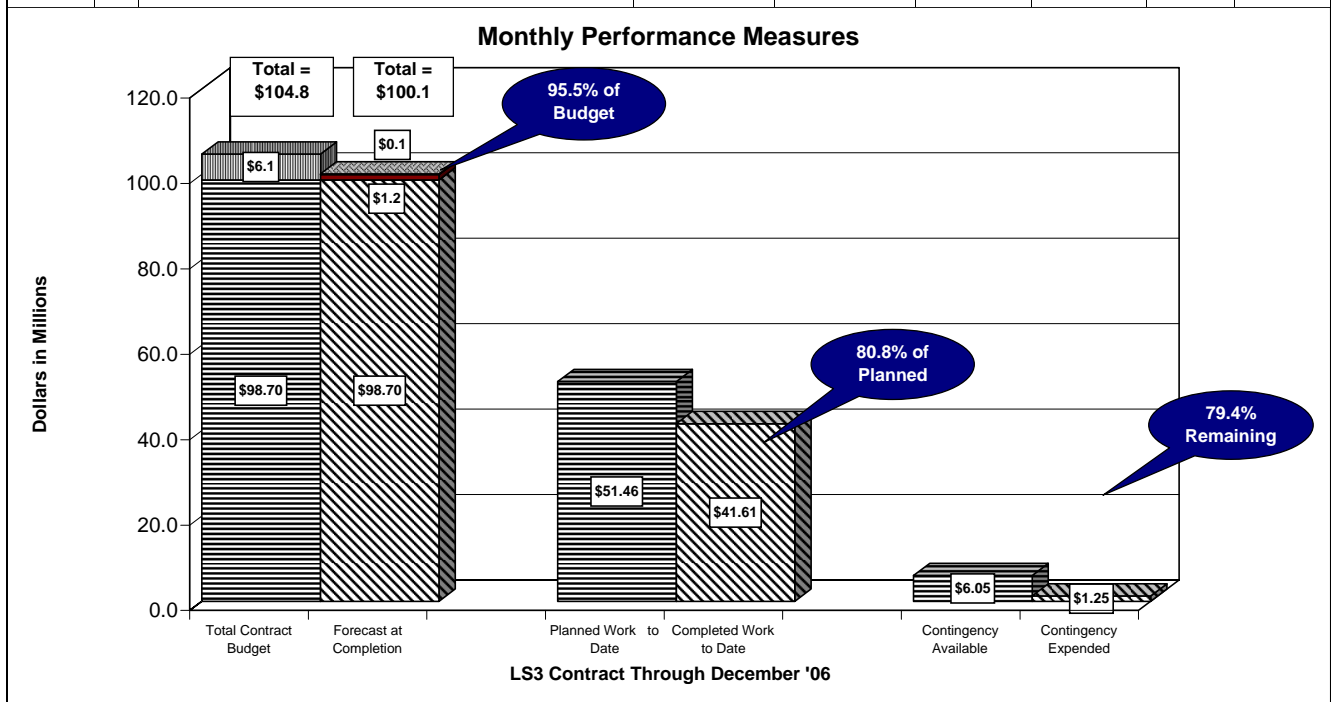
Turn-out at Central/McKinley Loop



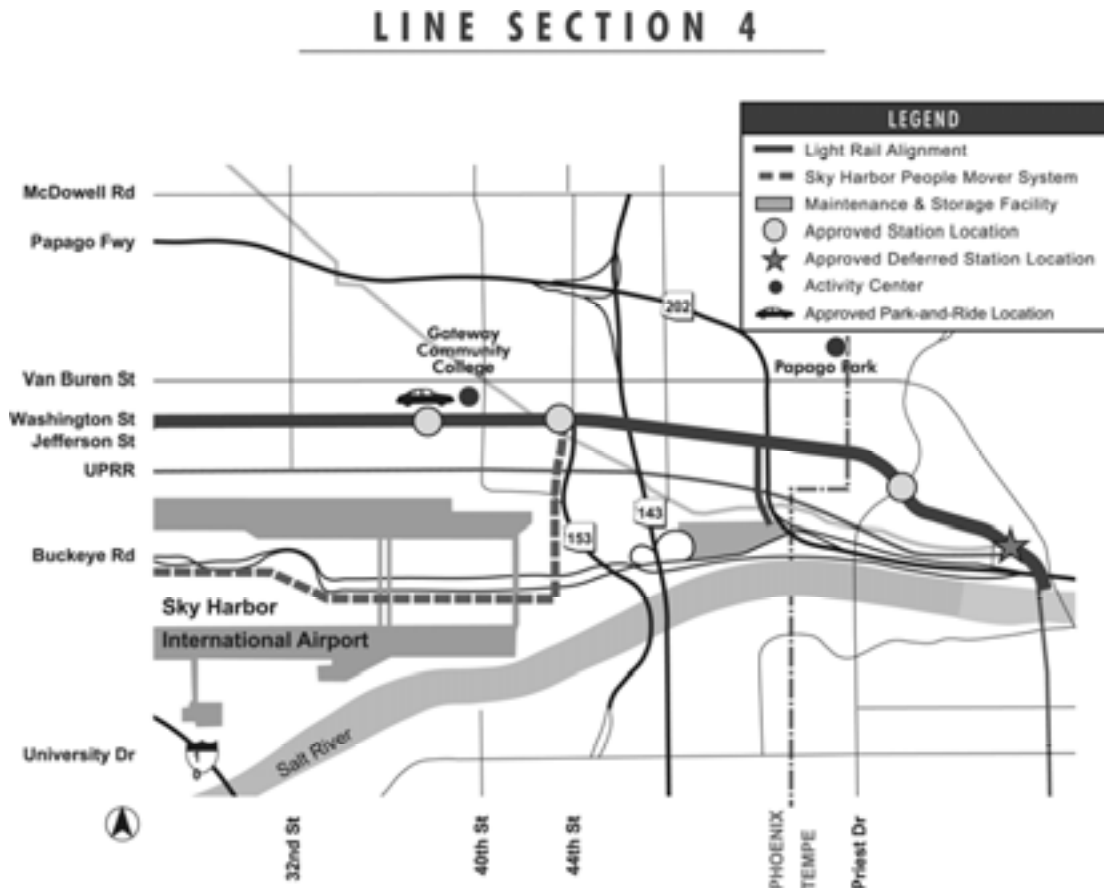
Alley Pavement for Large Vehicle Access between  
16<sup>th</sup> & 24<sup>th</sup> Streets



<b>Description:</b>		<b>3.1.3 Line Section 3</b>		
<b>PE/PA:</b>		<b>William Gustafson</b>		
<b>Contractor:</b>		<b>Archer Western</b>		
<b>Resident Engineer:</b>		<b>William Atesis</b>		
<b>Data Through:</b>		<b>November 22, 2006</b>		
	<b>Cumulative</b>	<b>5309</b>	<b>CNPA</b>	<b>Total</b>
1	Budget	\$79,248,617	\$19,452,352	\$98,700,969
2	Executed Change Orders	\$601,742	\$29,165	\$630,907
3	Budget Transfers	\$0	\$617,858	\$617,858
4	Current Budget (1+2+3)	\$79,850,359	\$20,099,375	\$99,949,734
5	Work Scheduled	\$41,649,550	\$9,812,017	\$51,461,567
6	Work Earned	\$32,367,957	\$9,237,325	\$41,605,282
7	Actual Expenditures	\$32,373,722	\$9,217,832	\$41,591,554
8	Forecast to Complete Base (4-7)	\$47,476,637	\$10,881,543	\$58,358,180
9	Change Orders Pending Execution	\$176,304	-\$44,331	\$131,973
10	Forecast at Completion (7+8+9)	\$80,026,663	\$20,055,044	\$100,081,707
11	Percent Budget Expended (7/4)	40.5%	45.9%	41.6%
12	Percent Planned (5/4)	52.2%	48.8%	51.5%
13	Earned Percent Complete (6/4)	40.5%	46.0%	41.6%
14	Schedule Performance (6/5)	0.78	0.94	0.81
15	Cost Performance (6/7)	1.00	1.00	1.00
16	Contingency Budget	\$5,648,232	\$402,730	\$6,050,962
17	Remaining Contingency	\$5,046,490	\$381,610	\$4,802,197
18	Percent Contingency Remaining (17/16)	89.3%	94.8%	79.4%
	<b>Period</b>			
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	\$171,308	-\$21,120	\$150,188
3	Budget Transfers	\$0	-\$35,336	-\$35,336
4	Current Budget (1+2+3)	\$79,850,359	\$20,099,375	\$99,949,734
5	Work Scheduled (Cumm - Last Period)	\$3,263,490	\$0	\$3,263,490
6	Work Earned (Cumm - Last Period)	\$7,222,724	\$1,035,141	\$8,257,865
7	Actual Expenditures (Cumm - Last Period)	\$3,250,894	\$550,336	\$3,801,230
8	Forecast to Complete Base (4-7)	\$76,599,465	\$19,549,039	\$96,148,504
9	Change Orders Pending Execution	\$94,887	\$0	\$94,887
10	Forecast at Completion (7+8+9)	\$79,945,246	\$20,099,375	\$100,044,621
11	Percent Budget Expended (7/4)	4.1%	2.7%	3.8%
12	Percent Planned (5/4)	4.1%	0.0%	3.3%
13	Earned Percent Complete (6/4)	9.0%	5.2%	8.3%
14	Schedule Performance (6/5)	2.21	#N/A	2.53
15	Cost Performance (6/7)	2.22	1.88	2.17
16	Contingency Budget	\$6,398,232	\$1,231,072	\$7,629,304
17	Remaining Contingency	\$6,226,924	\$1,287,528	\$7,514,452
18	Percent Contingency Remaining (17/16)	97.3%	104.6%	98.5%



## Line Section 4



### Description

Line Section 4 guideway is approximately 5.4 miles, from 26<sup>th</sup> 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 38<sup>th</sup> Street, 44<sup>th</sup> Street and Priest Drive.

### Progress

- Tempe Town Lake Bridge: Direct fixation fastener/plinth installation for the left track has begun on the north side of the bridge working to the south.
- Wells Fargo to Center Parkway: Embedded right track installation has started again with work progressing eastward toward the Tempe Town Lake Bridge



along with installation of combined systems ductbank through the Center Parkway Station location.

- 56th Street to 48th Street: The guide-way slab through the 48th Street intersection was constructed in addition to other guide-way slab placements as scheduled. Caulking of the guide-way joints has begun.
- 48th Street to 44th Street: The 44th Street intersection embedded track guide-way installation was completed as well as other guide-way slabs, curbs/gutters, and catch basins installations west of SR143.
- 44th Street to 40th Street: Excavation for the 44th street station footings has begun as well as rough grading preparation of the subgrade for guide-way construction west of the Grand Canal to 40th Street; guide-way was constructed west of the 44th Street intersection.
- 40th Street to 26th Street: Concrete curbs/gutters, driveways and sidewalks and catch basins installation continue on the south side of Washington Street from 38th Street to 34th Street as well as the fine grading of the south roadway; demolition of existing curbs/gutters and sidewalks is progress along the north side of Washington Street from 40th Street to east of 37th Street; continued installation of advanced utility crossings under the LRV guide-way between 32nd Street and 29th Street;

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

- The contract schedule is now divided into four milestones. The METRO targets for Milestones 1 and 2 have been integrated with follow-on contractors for TES and S&C to determine the earliest possible start for TES, S&C and Station Finishes in the test track area. There is no forecasted impact to the start of testing in April 2007.
- Milestone No. 1-11/15/06 for the first portion of the test track.
- Milestone No. 1A -Priest Station was successfully completed on 10/11/06.
- Milestone No. 2-1/21/07 the second half of the Test Track milestone is on schedule.

### **Issues and Solutions**

- There is a concern about the Contractor's ability to install the fiber optic micro ducts in the CSD inner duct that they installed. Expert advice was received from an experienced micro duct installation contractor and shared with the Contractor.

### Construction Photographs



Grading sub-grade prior to sidewalk installation



Rough grading for guide-way and OCS foundation drilling east of Center Parkway



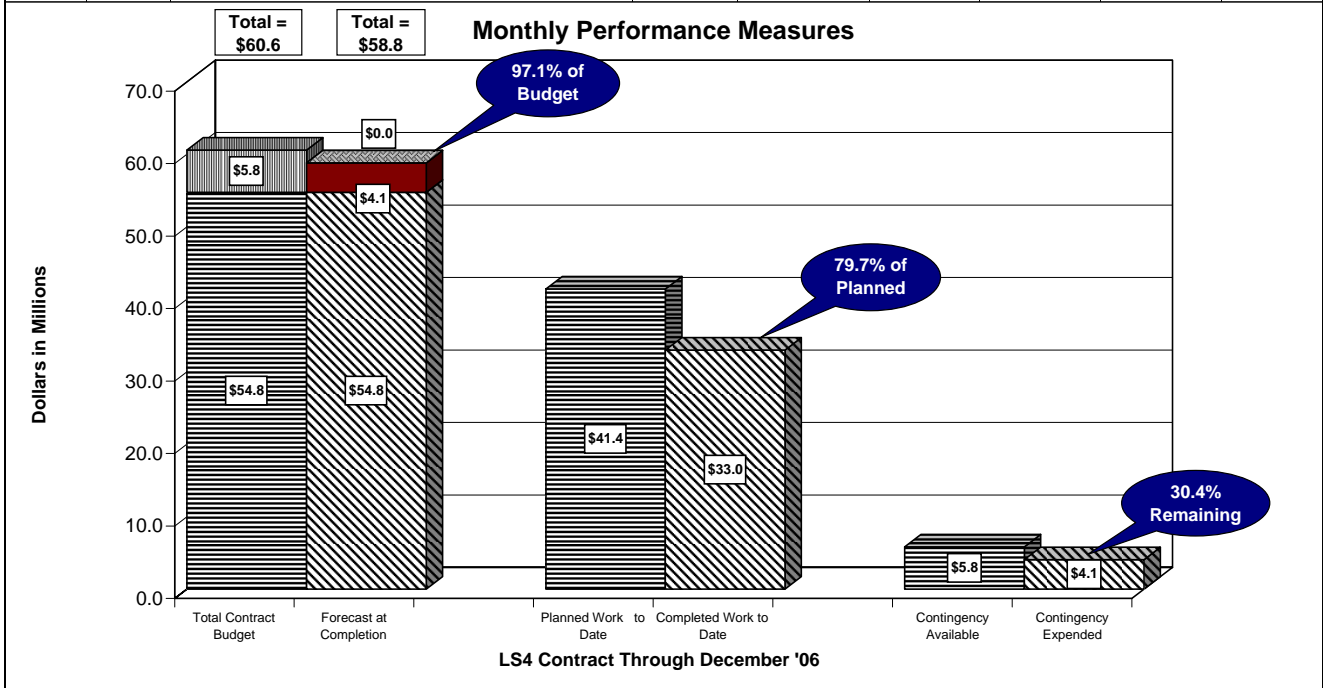
Installing plinth reinforcement at the Tempe Town Lake Bridge



DF fastener/plinth installation at Tempe Town Lake Bridge

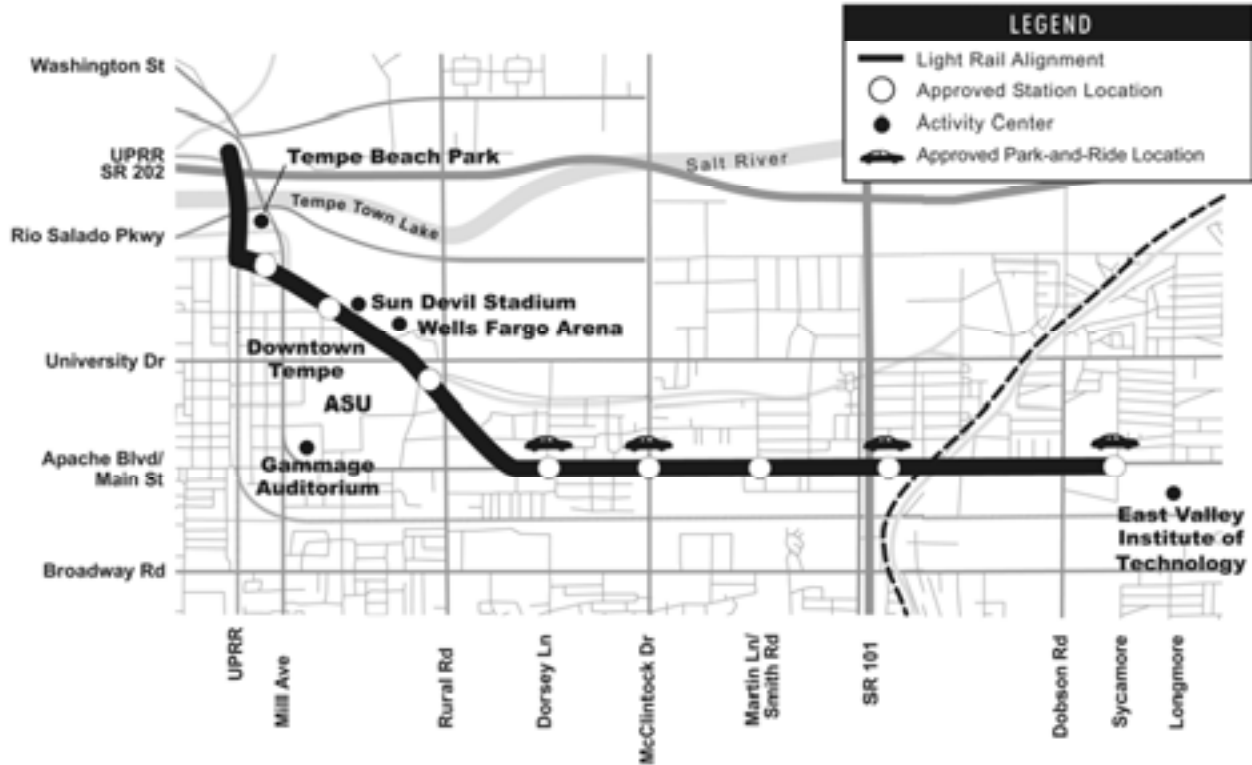


<b>Description:</b>		<b>3.1.4 Line Section 4</b>		
<b>PE/PA:</b>		<b>Avrum Loewenstein</b>		
<b>Contractor:</b>		<b>Sundt/Stacey Witbeck</b>		
<b>Resident Engineer:</b>		<b>Frank Abner</b>		
<b>Data Through:</b>		<b>November 30, 2006</b>		
	<b>Cumulative</b>	<b>5309</b>	<b>CNPA</b>	<b>Total</b>
1	Budget	\$47,869,894	\$6,880,853	\$54,750,747
2	Executed Change Orders	\$4,058,665	\$474,789	\$4,533,454
3	Budget Transfers	-\$625,000	\$953,626	\$328,626
4	Current Budget (1+2+3)	\$51,303,559	\$8,309,268	\$59,612,827
5	Work Scheduled	\$33,911,977	\$7,500,047	\$41,412,024
6	Work Earned	\$27,143,634	\$5,855,138	\$32,998,772
7	Actual Expenditures	\$30,306,084	\$5,884,050	\$36,190,134
8	Forecast to Complete Base (4-7)	\$20,997,475	\$2,425,218	\$23,422,693
9	Change Orders Pending Execution	\$0	\$881,719	\$881,719
10	Forecast at Completion (7+8+9)	\$51,303,559	\$9,190,987	\$60,494,546
11	Percent Budget Expended (7/4)	59.1%	70.8%	60.7%
12	Percent Planned (5/4)	66.1%	90.3%	69.5%
13	Earned Percent Complete (6/4)	52.9%	70.5%	55.4%
14	Schedule Performance (6/5)	0.80	0.78	0.80
15	Cost Performance (6/7)	0.90	1.00	0.91
16	Contingency Budget	\$5,662,190	\$172,633	\$5,834,823
17	Remaining Contingency	\$1,603,525	\$172,633	\$1,776,158
18	Percent Contingency Remaining (17/16)	28.3%	100.0%	30.4%
	<b>Period</b>			
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	\$599,330	-\$40,047	\$559,283
3	Budget Transfers	\$0	-\$759,971	-\$759,971
4	Current Budget (1+2+3)	\$51,303,559	\$8,309,268	\$59,612,827
5	Work Scheduled (Cumm - Last Period)	\$1,953,282	\$455,111	\$2,408,393
6	Work Earned (Cumm - Last Period)	\$1,293,732	\$399,671	\$1,693,403
7	Actual Expenditures (Cumm - Last Period)	\$2,116,711	\$228,036	\$2,344,747
8	Forecast to Complete Base (4-7)	\$20,997,475	\$2,425,218	\$23,422,693
9	Change Orders Pending Execution	-\$71,923	-\$1,280	-\$73,203
10	Forecast at Completion (7+8+9)	\$23,042,263	\$2,651,974	\$25,694,237
11	Percent Budget Expended (7/4)	4.1%	2.7%	3.9%
12	Percent Planned (5/4)	3.8%	5.5%	4.0%
13	Earned Percent Complete (6/4)	2.5%	4.8%	2.8%
14	Schedule Performance (6/5)	0.66	0.88	0.70
15	Cost Performance (6/7)	0.61	1.75	0.72
16	Contingency Budget			
17	Remaining Contingency			
18	Percent Contingency Remaining (17/16)			



Line Section 5

**LINE SECTION 5**



**Description**

Line Section 5 is 4.7 miles in length and begins at the 1st Street grade crossing in Tempe and progresses 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 approximately 7,750 track feet of embedded track, with scheduled weekly placements until completion.
- The Contractor is coordinating with Union Pacific Railroad, APS, and TES contractors to facilitate an electrical line conversion at the 1<sup>st</sup> Street crossing, and a power feed for TPSS number 10.
- The Contractor completed placing embedded track along 3<sup>rd</sup> Street, between Ash and Mill Avenues, and began the placement of the 3<sup>rd</sup> Street/Mill Avenue Station.
- The Contractor continued guideway preparation and track layout from Mill Avenue, along the Creamery Route to 5<sup>th</sup> and College, including the placement of the pocket track behind Mission Palms Hotel.
- The Contractor continued installation of the grounding grid for the 5<sup>th</sup> and College station, and coordinated with the Transit Center archeologists for site monitoring.
- The Contractor completed the ASU promenade eastward from the media road, which facilitated its use for the Insight Bowl.
- The Contractor continued preparing guideway and installing track eastward along Veterans Way to 6<sup>th</sup> Street.
- The Contractor installed the column foundations and walls for the University and Rural station.
- The Contractor continued roadway work along the south side of Apache Boulevard, placing street light foundations, curb and gutter, and sidewalks from Oak Street to McClintock Road. Third-party utility companies continued relocations eastward along Apache Boulevard, and eastward from McClintock to the Tempe Canal Bridge.
- The Contractor continued the placement of 24" storm drain on Apache Boulevard, eastward from McClintock.
- The Contractor completed placement and post-tensioning of the LRT girder in the center section of the 101 Freeway Bridge.
- The Contractor continued street widening and street light placements from Price Road to the Tempe Canal Bridge.
- The Contractor completed the north side approach slabs of the Tempe Canal Bridge and replaced the canal lining.
- The Contractor continued utility relocations and street light foundation installations from the Tempe Canal Bridge, eastward from Dobson Road in the City of Mesa.

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

- Milestone A2 has been revised to March 30, 2007 and is on schedule.

### **Issues and Solutions**

- Significant archeological data recovery in the Promenade and along Veterans' Way guideway, as well as utility conflicts, have impeded guide-way and Promenade work in the ASU area. The Contractor has accomplished significant utility relocations, and has generally worked around archeological data recoveries.
- The placement of street light conduits along Apache Boulevard by SRP-Power continues to delay street widening efforts there. The Contractor has altered its schedule to enable the utilities to complete that work expeditiously. SRP has committed to completing its work by January 2007.
- The potential for other utility conflicts is being reviewed in conjunction with the Contractor's baseline schedule and three-week "look-aheads". Resolution of utility issues is addressed weekly in the Line Section 5 Utilities Coordination meeting.
- The contractor has taken positive steps to assure positive public involvement, issuing notices to stakeholders regarding construction activities, and resolving stakeholder concerns as quickly as possible. SSWJV has received 100 percent of the Community Advisory Board incentive award for each quarter of the project.

### **Construction Photos**



Track Placement, Veterans' Way



Paving and Landscape at ASU Promenade



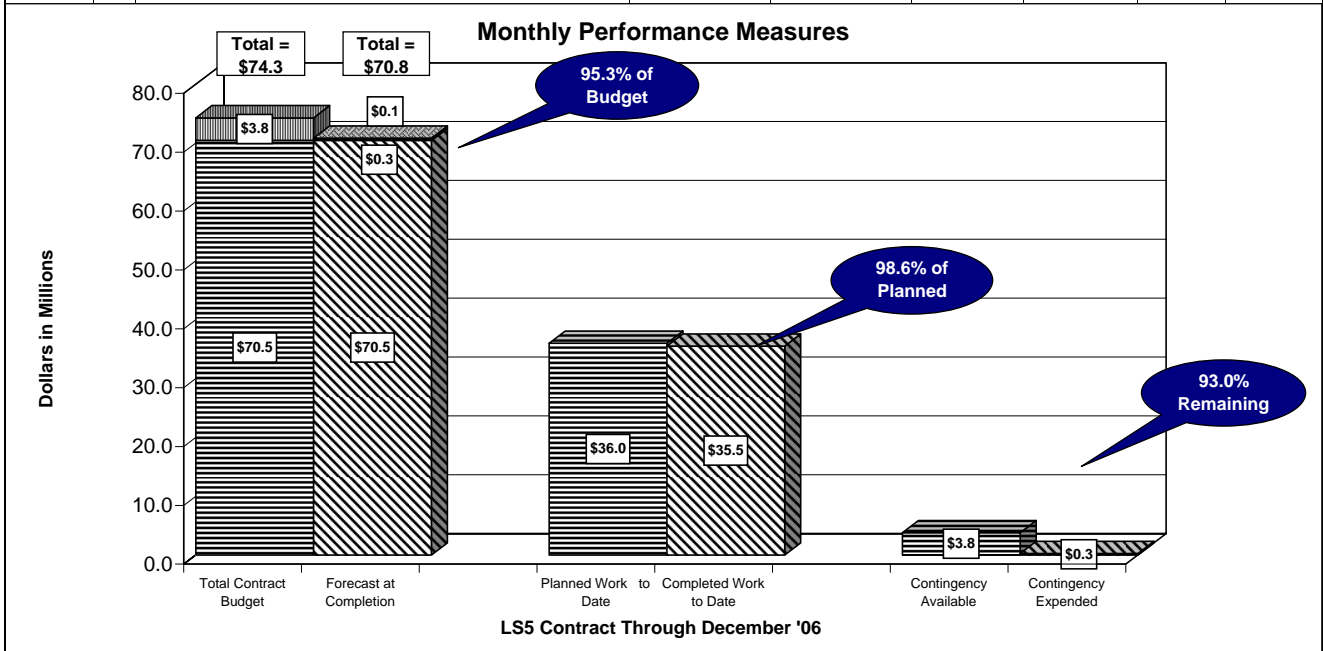
101 Freeway Bridge, Post-Tensioning  
New Center Girder



Placing Gravity Wall at Tempe Canal Bridge



<b>Description:</b>		<b>3.1.5 Line Section 5</b>		
<b>PE/PA:</b>		<b>Brian Buchanan</b>		
<b>Contractor:</b>		<b>Sundt/Stacey Witbeck</b>		
<b>Resident Engineer:</b>		<b>Sam Graham</b>		
<b>Data Through:</b>		<b>December 15, 2006</b>		
	<b>Cumulative</b>	<b>5309</b>	<b>CNPA</b>	<b>Total</b>
1	Budget	\$68,882,969	\$1,573,317	\$70,456,286
2	Executed Change Orders	\$271,690	\$148,556	\$420,246
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$69,154,659	\$1,721,873	\$70,876,532
5	Work Scheduled	\$34,877,438	\$1,094,068	\$35,971,506
6	Work Earned	\$34,697,618	\$766,236	\$35,463,854
7	Actual Expenditures	\$34,694,845	\$592,476	\$35,287,321
8	Forecast to Complete Base (4-7)	\$34,694,845	\$1,129,397	\$35,824,242
9	Change Orders Pending Execution	\$0	\$67,264	\$67,264
10	Forecast at Completion (7+8+9)	\$69,389,690	\$1,789,137	\$71,178,827
11	Percent Budget Expended (7/4)	50.2%	34.4%	49.8%
12	Percent Planned (5/4)	50.4%	63.5%	50.8%
13	Earned Percent Complete (6/4)	50.2%	44.5%	50.0%
14	Schedule Performance (6/5) (SPI)	0.99	0.00	0.99
15	Cost Performance (6/7) (CPI)	1.00	0.00	1.01
16	Contingency Budget	\$3,708,135	\$107,679	\$3,815,814
17	Remaining Contingency	\$3,436,445	\$106,767	\$3,543,212
18	Percent Contingency Remaining (17/16)	92.7%	99.2%	92.9%
	<b>Period</b>			
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	\$97,007	\$0	\$97,007
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$97,007	\$0	\$97,007
5	Work Scheduled (Cumm - Last Period)	\$69,154,659	\$1,721,873	\$70,876,532
6	Work Earned (Cumm - Last Period)	\$2,837,023	\$279,348	\$3,116,371
7	Actual Expenditures (Cumm - Last Period)	\$3,752,663	\$265,480	\$4,018,143
8	Forecast to Complete Base (4-7)	\$3,752,226	\$91,255	\$3,843,481
9	Change Orders Pending Execution	\$65,402,433	\$1,630,618	\$67,033,051
10	Forecast at Completion (7+8+9)	-\$66,344	\$0	-\$66,344
11	Forecast at Completion (7+8+9)	\$69,088,315	\$1,721,873	\$70,810,188
12	Percent Budget Expended (7/4)	5.4%	5.3%	5.4%
13	Percent Planned (5/4)	4.1%	16.2%	4.4%
14	Earned Percent Complete (6/4)	5.4%	15.4%	5.7%
15	Schedule Performance (6/5)	1.32	0.00	1.29
16	Cost Performance (6/7)	1.00	0.00	1.05
17	Contingency Budget			
18	Remaining Contingency			
19	Percent Contingency Remaining (17/16)			



## 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 work on the utility bridge is substantially complete. All that remains is the installation of the protective bollards around the APS electrical pole and punch list items noted. The Contractor is addressing the remaining work when the trades become available. No work was done this month.

### 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 has been deemed substantially complete.

### Cost and Schedule – Variance Analysis

- Milestone C which was to “Complete the Work” in 560 days was achieved on schedule effective August 28, 2006 at 560 days following Notice to Proceed. Milestone B (Unimpeded track-way access by all follow-on contractors) was achieved early on July 20, 2006.

## Issues and Solutions

- Final administrative contract closeout activities are in process.

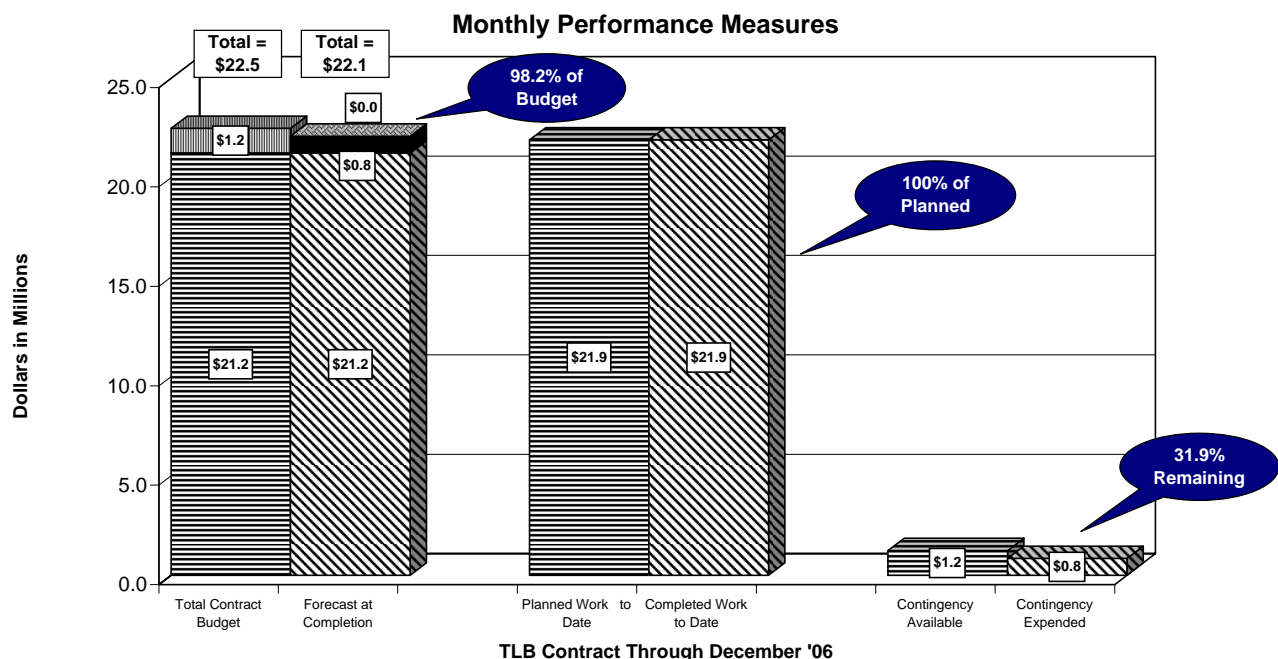
## Construction Photographs



The First Bridge Light Show  
December 9, 2006



<b>Description:</b>		<b>3.6.1 Town Lake Bridge</b>		
<b>PE/PA:</b>		<b>Bill Gustafson</b>		
<b>Contractor:</b>		<b>PCL Contractors</b>		
<b>Resident Engineer:</b>		<b>Joel Mona</b>		
<b>Data Through:</b>		<b>September 30, 2006</b>		
		<b>5309</b>	<b>CNPA</b>	<b>Total</b>
<b>Cumulative</b>				
1	Budget	\$21,219,861	\$17,523	\$21,237,384
2	Executed Change Orders	\$847,508	\$0	\$847,508
3	Budget Transfers	-\$183,000	\$0	-\$183,000
4	Current Budget (1+2+3)	\$21,884,369	\$17,523	\$21,901,892
5	Work Scheduled	\$21,884,236	\$17,523	\$21,901,759
6	Work Earned	\$21,880,614	\$15,771	\$21,896,385
7	Actual Expenditures	\$21,759,752	\$15,771	\$21,775,523
8	Forecast to Complete Base (4-7)	\$124,617	\$1,752	\$126,369
9	Change Orders Pending Execution	\$0	\$0	\$0
10	Forecast at Completion (7+8+9)	\$21,884,369	\$17,523	\$21,901,892
11	Percent Budget Expended (7/4)	99.4%	90.0%	99.4%
12	Percent Planned (5/4)	100.0%	100.0%	100.0%
13	Earned Percent Complete (6/4)	100.0%	90.0%	100.0%
14	Schedule Performance (6/5)	1.00	0.90	1.00
15	Cost Performance (6/7)	1.01	1.00	1.01
16	Contingency Budget	\$1,242,400	\$1,402	\$1,243,802
17	Remaining Contingency	\$394,892	\$1,402	\$396,294
18	Percent Contingency Remaining (17/16)	31.8%	0.0%	31.9%
<b>Period</b>				
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	\$0	\$0	\$0
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$21,884,369	\$17,523	\$21,901,892
5	Work Scheduled (Cumm - Last Period)	\$0	\$0	\$0
6	Work Earned (Cumm - Last Period)	\$0	\$0	\$0
7	Actual Expenditures (Cumm - Last Period)	\$0	\$0	\$0
8	Forecast to Complete Base (4-7)	\$21,884,369	\$17,523	\$21,901,892
9	Change Orders Pending Execution	\$0	\$0	\$0
10	Forecast at Completion (7+8+9)	\$21,884,369	\$0	\$21,884,369
11	Percent Budget Expended (7/4)	0.0%	0.0%	0.0%
12	Percent Planned (5/4)	0.0%	0.0%	0.0%
13	Earned Percent Complete (6/4)	0.0%	0.0%	0.0%
14	Schedule Performance (6/5)	#N/A	#N/A	#N/A
15	Cost Performance (6/7)	1.00	1.00	1.00
16	Contingency Budget	\$1,242,400	\$0	\$1,242,400
17	Remaining Contingency	\$394,892	\$0	\$394,892
18	Percent Contingency Remaining (17/16)	31.8%	0.0%	31.8%



Note: Contractor submitted final schedule update during previous reporting period

## Maintenance and Storage Facility



### Description

The Maintenance and Storage Facility (MSF) 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 MSF 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

- At the MOE building punch list work is ongoing on all floors. Work continues on the M2 and M3 track pits including installation of pit lighting, compressed air lines, fire sprinklers, LRV stingers, painting, grouting of the track pedestals and securing rail clips to the pedestals. The rehabilitated LRV floor jacks of the LRV lifts were reinstalled. The material lift was activated this month. Work continues to complete the passenger elevator and elevator machine room. Painting of the exterior stairs has begun. Additional work on the fire alarm and fire sprinkler piping systems as required by the COP inspections is now underway.
- At the MOE building the installation of the toilet fixtures, toilet partitions, carpeting, vinyl composition tile, roll-up coiling doors, metal doors, wooden doors



and hardware for the same are all substantially complete. Fire stop and sealing work is complete this month. The glass installation is almost complete throughout the building. Building block and surrounding wall block were found to be acceptable, less some minor punch list work.

- The construction of the MOW shade canopies was completed this month. The installation of the security lighting on the MOW shade canopies continues this month.
- Final asphalt paving was placed on portions of the entrance and interior roads. Pavement was placed at the south service road and at the Kinkisharyo staging area just east of the MOE building.
- The roadway demolition, grading, paving, along with the curb/gutter and sidewalk construction at the UPRR crossing on 48<sup>th</sup> Street was performed.
- The placement of decomposed granite cover is progressing throughout the site.
- At the MOW building, the HVAC, plumbing, fire sprinklers, and electrical rough in work is nearing completion. Installation of the exterior wall panels is just about complete as well as the glazing. Dry wall, carpet and painting were substantially completed in the offices. VCT and acoustical ceiling grids are now being installed. Tile installation in the restrooms is now underway. The storage mezzanines were completed.
- At the yard service and cleaning platform, the sand distribution system pumps are being installed. The inspector's office was set in place and utility hookups made.
- The last of the general grading was completed along the Grand Channel slopes.
- The assembly of the LRV wash equipment is now in full swing. The wire mesh wall enclosure panels are now being installed.
- Kinkisharyo delivered 5 LRV cars this month and stored them on site. They also delivered a container crane to offload and move the cars. METRO furnished office furniture and shop equipment continues to be delivered and positioned and assembled in the MOE building.

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

- The Contractor's September 2006 schedule update forecasts substantial completion of the MOE building as November 3, 2006. The contractor is presently developing a revised schedule of remaining activities for MOW Substantial Completion. Final contract completion remains forecasted for January 22, 2007.

### Issues and Solutions

- None

### Construction Photographs



LRV Wash Facility



New Cars and MOW



Site Overview from Yard Lead

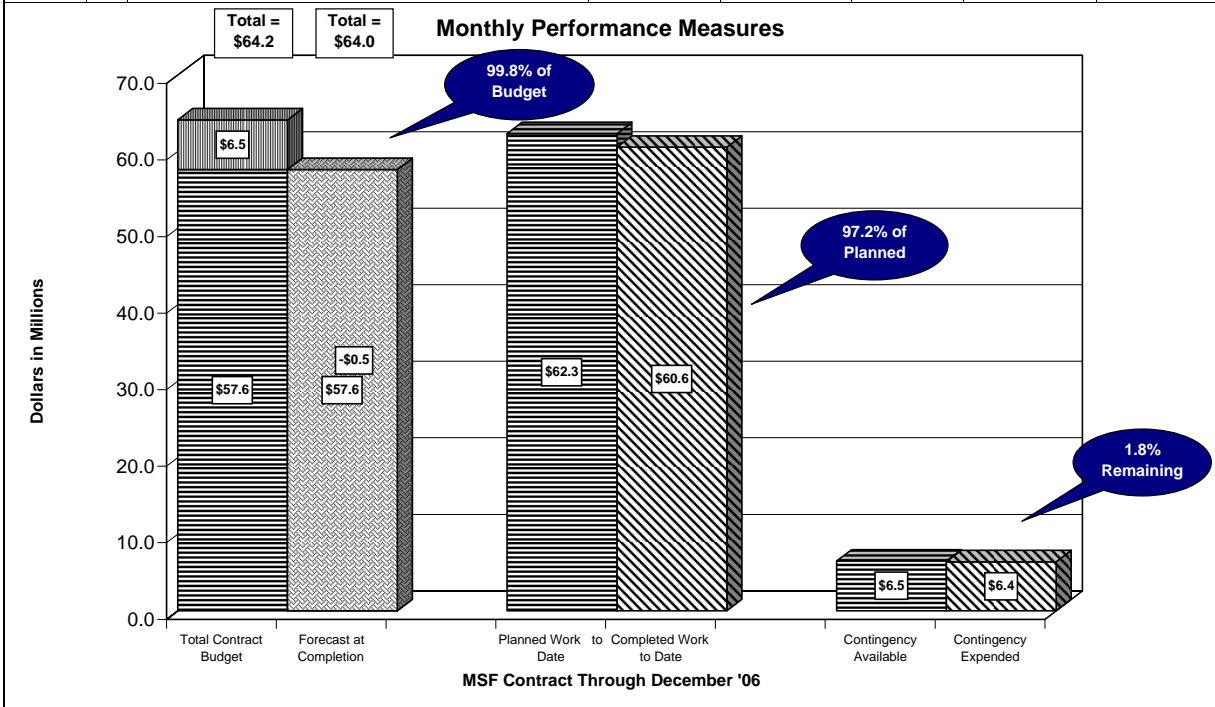


SW MOE and Inspection Platform



DECEMBER 2006 RAIL PROGRESS REPORT

<b>Description:</b>		3.5.1 Maintenance Support Facility	
<b>PE/PA:</b>		Avrum Loewenstein	
<b>Contractor:</b>		Sundt/Stacy Witbeck	
<b>Resident Engineer:</b>		Matt McMenamin	
<b>Data Through:</b>		November 30, 2006	
<b>Cumulative</b>		<b>5309</b>	<b>Total</b>
1 Budget		\$57,637,721	\$57,637,721
2 Executed Change Orders		\$6,911,205	\$6,911,205
3 Budget Transfers		-\$257,984	-\$257,984
4 Current Budget (1+2+3)		\$64,290,942	\$64,290,942
5 Work Scheduled		\$62,336,986	\$62,336,986
6 Work Earned		\$60,564,718	\$60,564,718
7 Actual Expenditures		\$60,952,831	\$60,952,831
8 Forecast to Complete Base (4-7)		\$3,338,111	\$3,338,111
9 Change Orders Pending Execution		-\$512,709	-\$512,709
10 Forecast at Completion (7+8+9)		\$63,778,233	\$63,778,233
11 Percent Budget Expended (7/4)		94.8%	94.8%
12 Percent Planned (5/4)		97.0%	97.0%
13 Earned Percent Complete (6/4)		94.2%	94.2%
14 Schedule Performance (6/5)		0.97	0.97
15 Cost Performance (6/7)		0.99	0.99
16 Contingency Budget		\$6,513,772	\$6,513,772
17 Remaining Contingency		\$115,276	\$115,276
18 Percent Contingency Remaining (17/16)		1.8%	1.8%
<b>Period</b>			
1 Budget		N/A	N/A
2 Executed Change Orders		\$257,984	\$257,984
3 Budget Transfers		\$0	\$0
4 Current Budget (1+2+3)		\$62,336,986	\$62,336,986
5 Work Scheduled (Cumm - Last Period)		\$1,896,906	\$1,896,906
6 Work Earned (Cumm - Last Period)		\$1,074,894	\$1,074,894
7 Actual Expenditures (Cumm - Last Period)		\$1,082,776	\$1,082,776
8 Forecast to Complete Base (4-7)		\$61,254,210	\$61,254,210
9 Change Orders Pending Execution		\$79,544	\$79,544
10 Forecast at Completion (7+8+9)		\$62,416,530	\$62,416,530
11 Percent Budget Expended (7/4)		1.7%	1.7%
12 Percent Planned (5/4)		3.0%	N/A
13 Earned Percent Complete (6/4)		1.7%	N/A
14 Schedule Performance (6/5)		0.57	0.57
15 Cost Performance (6/7)		0.99	0.99
16 Contingency Budget			
17 Remaining Contingency			
18 Percent Contingency Remaining (17/16)			



## Park-and-Ride



## Description

Surface Park-and-Rides (PNR) are proposed at eight sites along the alignment. Approximately 3,600 spaces are to be 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 and Main Street. The lots are adjacent to Transit Centers at 19th Street and Montebello, Central and Camelback and Sycamore and Main Street.

The Surface Parking Lots 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

- Providing 794 spaces, the 19th Avenue and Montebello site is at 100 percent design completion by the primary sub-consultant. 100 percent consolidation of plans is in process by the GEC.



- Providing 411 spaces, the 19th Avenue and Camelback site is at 100 percent design completion by the primary sub-consultant. 100 percent consolidation of plans is in process by the GEC.
- Providing 128 spaces, the Central Avenue and Camelback PNR on-board or 30 percent design submittal has been received for review and comment. The Project team met with the Development Services Department in a pre-application meeting on November 28<sup>th</sup>. A zoning variance hearing is scheduled for January 9<sup>th</sup>. The new design will be complete and approved in time to be included in the total PNR bid package in April 2007.
- Providing 90 spaces, the Dorsey and Apache PNR has been designed by the City of Tempe as a maintenance upgrade only. Completion of this work is outside of this Contract.
- Providing 189 spaces, the 38th Street and Washington Street PNR site has reached the 100 percent design completion by the primary sub-consultant. A final draft for the IGA between Gateway Community College and the City of Phoenix has been settled. One hundred percent consolidation of plans is in process by the GEC.
- Providing 330 spaces, the McClintock and Apache PNR site has reached the 100 percent design completion by the primary sub-consultant. One hundred percent consolidation of plans is in process by the GEC. The City of Tempe is working with a prospective developer to design and construct a Transit Oriented Development that would provide 300 parking spaces for park and ride use. If the development proceeds, it is to be completed for parking no later than the current surface lot opening date of December 2008. If the development does not proceed, the current surface lot will be constructed as planned.
- Providing 683 spaces, the Price Freeway and Apache PNR site has reached the 100 percent design completion by the primary sub-consultant. One hundred percent consolidation of plans is in process by the GEC.
- Providing 812 spaces, the Sycamore Drive and Main PNR site has reached the 100 percent design completion by the primary sub-consultant. One hundred percent consolidation of plans is in process by the GEC.
- The 100 percent submittal for the technical specifications that encompasses all seven sites was submitted for review and comment on December 26, 2006.

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

- The budget for all sites is \$15,104,339 with a contingency of \$1,208,300.
- A December 2005 construction estimate and projections indicate a base cost (without soft costs) of \$21,000,000. This cost does not include shade canopies, which have now been excluded from the contract.



- With the Central and Camelback site included, a bid date is scheduled for April 2007 with construction completion of all sites by December 2008. Construction start-up of some sites is necessarily delayed by their use as construction yards by the line section contractors.

### **Issues and Solutions**

- Processing of variance request application for Central and Camelback site that relate to reduction of setbacks, landscaping, wall height and on-site retention. The application for a variance hearing has been scheduled for January 9, 2007.

## 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 MSF.
- T Rail – rail for the MSF, TLB including approaches and Deck Park Bridge.

### Progress

- Girder Rail
  - On November 17, 2006 a Change Order was issued to VAE Nortrak for the purchase of 105 tons of girder rail (minimum order amount) to be used for line section completions and as spares. This material is scheduled to arrive on or about April 30, 2007.
- Embedded Special Trackwork
  - The Contractor continues to produce crossover and turnout castings and other miscellaneous materials for this contract. One material delivery was

made during this month. The First Article inspection conducted on December 7, 2006 was successful and no significant issues were found.

- The Contractor submitted their initial cost proposal for the Change Notice to modify the Equilateral Wye Track Turnouts on Line Section 3. The cost proposal is under evaluation.
- The current embedded special trackwork design of the Wye Track Geometry Layout for the 11th Street Wye Track does not provide the required tangent track between Equilateral Turnouts 3-13 and 3-14 to park a two car train. In order to provide the necessary tangent track and clear the equilateral turnout switches, the turnouts at this location must be redesigned and manufactured.

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

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

### **Issues and Solutions**

- There are no significant issues at this time.

### **Construction Photos**



First Article inspection photos of a right hand crossover for Line Section 4 at the contractor's facility in Birmingham, Alabama.

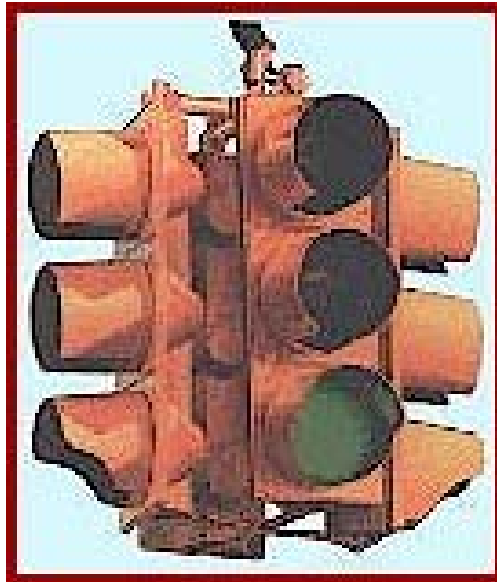


First Article inspection photos of a right hand crossover for Line Section 4 at the contractor's facility in Birmingham, Alabama.



Early morning delivery of the embedded pocket track material for Line Section 5

## Traffic Signal Procurement



### Description

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

### Progress

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

### Cost and Schedule – Variance Analysis

- Traffic signal procurement activities have been completed.
- A table showing the status of costs incurred to-date versus budget is shown below:

Description	Contract/Budget Amount	Total Payments
COP Traffic System Upgrades	\$965,112.00	\$668,893.30
COT Traffic System Upgrades	\$350,347.00	\$189,612.00
Traffic Signal Controller/Cabinets	\$2,910,916.75	\$2,629,229.26
LS 1 Traffic Signal Poles/Mast Arms (Phoenix -PO is completed)	\$209,144.33	\$209,144.31
LS 2 Traffic Signal Poles/Mast Arms (Phoenix - PO is completed)	\$309,685.98	\$309,685.97
LS 3 Traffic Signal Poles/Mast Arms (Phoenix -PO is completed)	\$1,425,604.91	\$1,321,686.32
LS 4 Traffic Signal Poles/Mast Arms	\$369,069.21	\$360,469.21

Description	Contract/Budget Amount	Total Payments
(Phoenix - PO is completed)		
LS 4 Traffic Signal Poles/Mast Arms (Tempe - PO is completed)	\$337,883.00	\$336,247.85
LS 5 Traffic Signal Poles/Mast Arms (Tempe – PO is completed)	\$941,912.82	\$859,942.43

**Issues and Solutions**

- No issues at this time.

**Construction Photos**



Delivery of the traffic signal poles for Line Section 4



Delivery of blank out panels for Line Section 4 and 5 traffic signal structures

## 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 MSF 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

- Simmons Machine Tool Corporation continues to work on the manufacturing of components and assembly of the machine. A representative from Simmons inspected the machine foundation in the MOE building and noted minor deficiencies that will be addressed before the machine arrives.

### Cost and Schedule – Variance Analysis

- Wheel profiling machine activities remain on schedule and within budget at this time.

### 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**

- Submittals review comments have been provided to the Contractor including Management Plan, Preliminary Master Program Schedule and Contract CDRL List.
- CDR meeting occurred on October 11, 2006. METRO comments and Scheidt & Bachmann, Inc. (SBI) responses have been discussed during the meeting. Resolution for the most comments has been provided and provisions have made for the changes to be included in the PDR submittals.
- Contractor currently in the Preliminary Design Phase. PDR submittals due first week of December 2006.

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

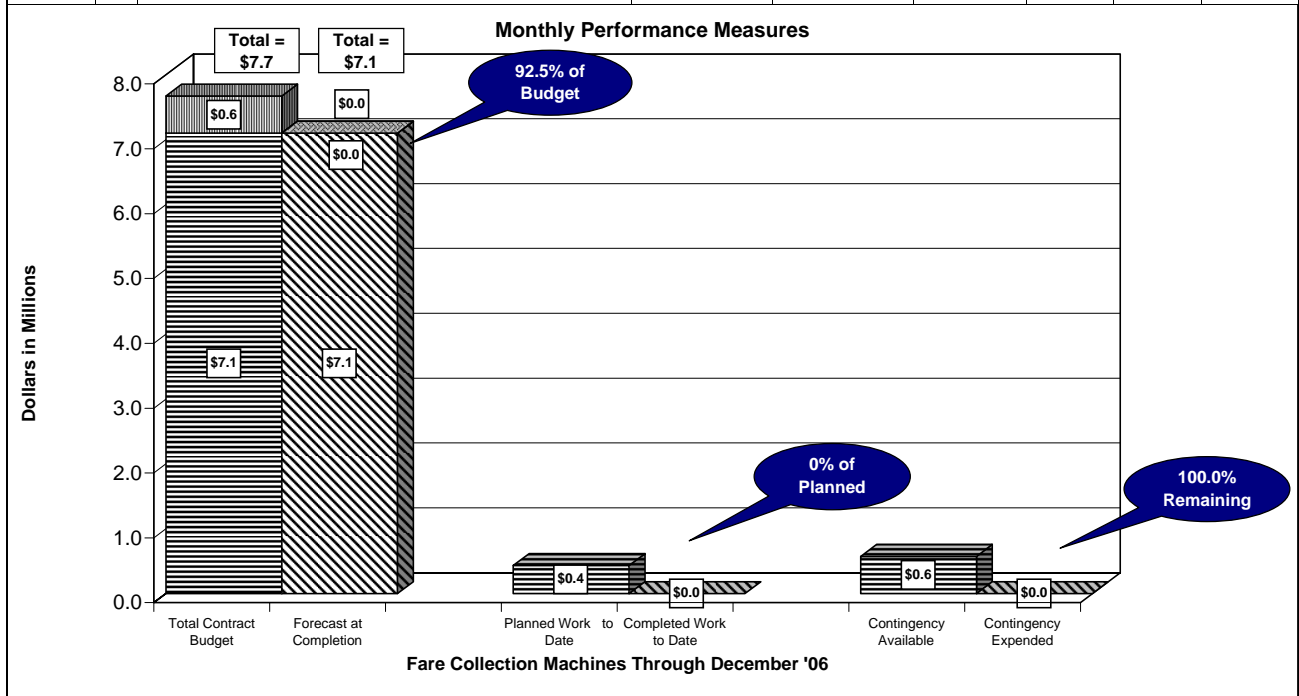
- Fare collection system activities remain on schedule and within budget at this time.

## **Issues and Solutions**

- Functioning of the ticket validator inside TVM. Ongoing discussion with SBI regarding technical requirements and presented in PDR concept of operations.



<b>Description:</b>		<b>Fare Collection Machines</b>
<b>PE/PA:</b>		<b>Arkady Bernshtryn</b>
<b>Contractor:</b>		<b>Scheidt &amp; Bachmann USA, Inc.</b>
<b>Resident Engineer:</b>		<b>Thomas Klings</b>
<b>Data Through:</b>		<b>N/A</b>
<b>Cumulative</b>		
1	Original Budget	\$7,100,012
2	Executed Change Orders	\$0
3	Budget Transfers	\$0
4	Current Budget (1+2+3)	\$7,100,012
5	Work Scheduled	\$434,397
6	Work Earned	\$0
7	Actual Expenditures	\$0
8	Forecast to Complete Base (4-7)	\$7,100,012
9	Change Orders Pending Execution	\$1,600
10	Forecast at Completion (7+8+9)	\$7,101,612
11	Percent Budget Expended (7/4)	0.0%
12	Percent Planned (5/4)	6.1%
13	Earned Percent Complete (6/4)	0.0%
14	Schedule Performance (6/5)	N/A
15	Cost Performance (6/7)	N/A
16	Contingency Budget	\$574,535
17	Remaining Contingency	\$574,535
18	Percent Contingency Remaining (17/16)	100.0%
<b>Period</b>		
1	Original Budget	\$0
2	Executed Change Orders	\$0
3	Budget Transfers	\$0
4	Current Budget (1+2+3)	\$7,100,012
5	Work Scheduled (Cumm - Last Period)	\$56,939
6	Work Earned (Cumm - Last Period)	\$0
7	Actual Expenditures (Cumm - Last Period)	\$0
8	Forecast to Complete Base (4-7)	\$7,100,012
9	Change Orders Pending Execution	\$0
10	Forecast at Completion (7+8+9)	\$7,100,012
11	Percent Budget Expended (7/4)	0.0%
12	Percent Planned (5/4)	0.8%
13	Earned Percent Complete (6/4)	0.0%
14	Schedule Performance (6/5)	N/A
15	Cost Performance (6/7)	N/A
16	Contingency Budget	
17	Remaining Contingency	
18	Percent Contingency Remaining (17/16)	



## 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 thirty-six 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 of Contract Data Requirement List items (CDRLs) the bulk of which are test procedures and reports as well as First Article Inspection (FAI) reports and Test Procedures.
- METRO held Design Review Meeting No. 23 with KI on December 5 and 6, 2006. The main topics for presentation by KI and discussion were: special tools; spare parts; operator training course; application; closing open items; and vehicle delivery schedule.



- METRO/KI dialogue continues regarding vehicle final assembly at the MSF. Final assembly will begin at the MSF mid January 2007.
- Changes for an Overhead Catenary System (OCS) Surveillance Camera Installation on two cars and an Automatic Passenger Counting System (APC) for the fleet are processed.

The following describes ongoing METRO resident inspection, quality assurance, manufacturing monitoring, and site surveillance activities at the Kinki Sharyo factory in Osaka Japan (KS-J) during June 2006:

- LRV Mass Production – 31 Trains are now in production.
- An inspection of the grit blasting is being performed and ongoing. No defects noted.
- A visual and dimensional inspection of underframe and car body was performed and ongoing. The dimensions were within tolerance, but defects were noted during the inspection. No defects remained after rework and re-inspection.
- Concealment inspections were witnessed in two stages each for cars 101 and 114. All noted defects were repaired. No defects remain.
- KS-J advised that a new rubber seal will be installed on the front headlights to improve the water tightness.
- 102 has completed climate testing and has been shipped back to Osaka/Plant. Vehicle will not ship to METRO until March 2007. Modifications and finishing need to be done prior to shipping to the United States.
- LRV 101 arrived at the MSF on December 5, 2006. LRV's 103, 104, 105, and 106 also arrived at the MSF in December. KI and METRO have just reached an agreement on two significant changes to the contract that affect activities that will be starting in the coming months. KI will perform vehicle final assembly in the MSF and KI will perform single car running tests on car 101 on METRO's designated test track. As documented in change order No. 5, the test track will be available on or before April 1, 2007.
- Faiveley completed shock and vibration testing of the APS and HVAC units at a test lab in New York. Both tests were successful and some minor modifications will be made to the design of the units.
- A successful FAI of the master controller was held at American Transit Associates, a Schaltbau representative. The master controller is part of Elin's scope of supply and will be installed in the operator seat assembly by J.R. Merritt. The unit was shipped to J.R. Merritt and the operator seat assembly FAI was done in November, 2006.

Source inspections were held at:

- PHW – relay panels
- GG Schmitt (2) – stanchions and windscreens
- TSA – traction motors
- T & B – brake resistors
- PMC – wheel and axle assemblies
- USSC – operator seat
- Knorr – friction brake equipment
- IFE – door operating equipment
- NASG – glass
- Telephone, email and drawing exchange continue between KSJ and KI on carbody issues, testing procedures and schedules, subsystem interfaces and equipment mounting, interior design and equipment installation, systems application issues, material shipments, production schedule and CDRL items.

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

- No perceptible cost or schedule variance. Car delivery remains on schedule sufficient to meet the needs of the overall program. Cost Performance Indicator of 1.0 indicates that contract remains within budget.

### **Issues and Solutions**

- None

### **Construction Photographs**



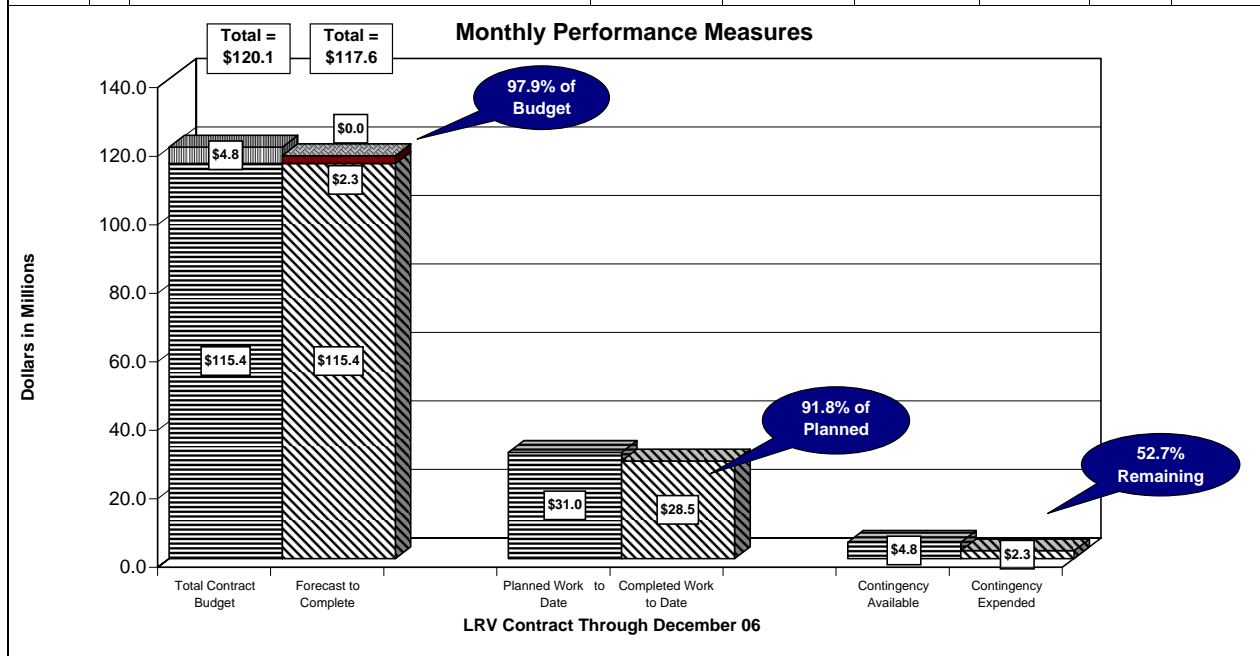
Car 101 arrives at MSF, December 5, 2006



Car 101 unloaded at MSF, December 5, 2006



<b>Description:</b>		<b>3.7.1 Light Rail Vehicles</b>		
<b>PE/PA:</b>		<b>Steve Bethel</b>		
<b>Contractor:</b>		<b>Kinkisharo International</b>		
<b>Resident Engineer:</b>		<b>John Swanson</b>		
<b>Data Through:</b>		<b>November 30, 2006</b>		
	<b>Cumulative</b>	<b>5309</b>	<b>COP Funded</b>	<b>Total</b>
1	Original Budget	\$115,369,780	\$40,050,160	\$155,419,940
2	Executed Change Orders	\$2,255,676	\$0	\$2,255,676
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$117,625,456	\$40,050,160	\$157,675,616
5	Work Scheduled	\$31,007,732	N/A	\$31,007,732
6	Work Earned	\$28,478,872	N/A	\$28,478,872
7	Actual Expenditures	\$28,487,043	N/A	\$28,487,043
8	Forecast to Complete Base (4-7)	\$89,138,413	N/A	\$89,138,413
9	Change Orders Pending Execution	\$0	N/A	\$0
10	Forecast at Completion (7+8+9)	\$117,625,456	\$40,050,160	\$157,675,616
11	Percent Budget Expended (7/4)	24.2%	N/A	N/A
12	Percent Planned (5/4)	26.4%	N/A	N/A
13	Earned Percent Complete (6/4)	24.2%	N/A	N/A
14	Schedule Performance (6/5)	0.92	N/A	N/A
15	Cost Performance (6/7)	1.00	N/A	N/A
16	Contingency Budget	\$4,768,489	\$2,135,840	\$6,904,329
17	Remaining Contingency	\$2,512,813	\$2,135,840	\$4,648,653
18	Percent Contingency Remaining (17/16)	52.7%	N/A	N/A
<b>Period</b>				
1	Original Budget	\$115,369,780	\$40,050,160	\$155,419,940
2	Executed Change Orders	\$0	\$0	\$0
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$117,625,456	\$40,050,160	\$157,675,616
5	Work Scheduled (Cumm - Last Period)	\$5,522,030	N/A	\$5,522,030
6	Work Earned (Cumm - Last Period)	\$7,776,039	N/A	\$7,776,039
7	Actual Expenditures (Cumm - Last Period)	\$2,670,779	N/A	\$2,670,779
8	Forecast to Complete Base (4-7)	\$114,954,677	N/A	\$114,954,677
9	Pending Changes	\$0	N/A	\$0
10	Forecast at Completion (7+8+9)	\$117,625,456	\$40,050,160	\$157,675,616
11	Percent Budget Expended (7/4)	2.3%	N/A	N/A
12	Percent Planned (5/4)	26.4%	N/A	N/A
13	Earned Percent Complete (6/4)	26.4%	N/A	N/A
14	Schedule Performance (6/5)	1.00	N/A	N/A
15	Cost Performance (6/7)	1.00	N/A	N/A
16	Contingency Budget	\$4,768,489	\$2,135,840	\$6,904,329
17	Remaining Contingency	\$2,512,813	\$2,135,840	\$4,648,653
18	Percent Contingency Remaining (17/16)	52.7%	N/A	N/A
Total Contract Budget		\$120.1		
Total Forecast at Completion		\$117.6		
Percent of Budget		97.9%		
Percent of Planned		91.8%		
Percent Contingency Remaining		52.7%		



Note: COP Funded Data unavailable, performance date and graph represent only the Federal 5309 portion

## 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 interlockings, 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 & Signal Cases
  - Contractor performing interior rough-in work at Signal Building No. 6.
  - Contractor pulling signal cable to wayside equipment at Signal Building No. 4.
  - Contractor forming building stoops at Signal Building No. 3.
  - Contractor performing site investigations in preparation for tenant improvement work at Signal Building No. 2.
  - Contractor completed footing installation at Signal Building No. 1. Ground grid system passed grounding test. Underslab conduit installations passed City of Phoenix DSD inspection.
  - Contractor installing remaining crossbond connections at the MSF Yard Area.
  - Completed Milestone 1C - MOE Building Telephone System Installation.
  - Contractor given access to all signal case sites.
- Signaling System
  - Final Design Submittals for all Signal Building and Case locations complete.
- Communications System
  - Contractor continuing Final Design for Communication System. Contractor currently mitigating late submission of the FDR Submittal.
- OCC Build Out
  - Contractor performed corrective action on the encountered rebar and cable during core drill at the OCC Building. Currently performing installation of fire suppression system and overhead cable trays for electrical.
- Coordinating with other Contracts
  - Master Schedule Update. Currently reviewing Contractor's mitigation schedule cost impacts to support revised facilities access and system milestone dates.
  - On-going coordination with MSF Contractor to support required systems startup interfaces, such as public address and CCTV installations.

### Cost and Schedule – Variance Analysis

- The contract is in the early stages of submittals, design and procurement with some field construction work in progress. Field construction to date has included the civil and architectural parts of five signal buildings, signal equipment installation at three signal buildings, architectural work at the OCC, track bonding at MSF and MSF Yard Entrance and installation of powered switch machines at MSF.

### Issues and Solutions

- Fiber and Microduct Installation. Line Section Contractor has performed a test micro-duct installation on Line Section 4 for demonstration purposes. Line Section Contractor was unable to complete the micro-duct pull. Internal METRO/GEC/CAC meeting was held wherein alternative micro-duct installation methods were presented. The alternative methods have been shared with the LS 4 Contractor and additional installation attempts are forthcoming.

### Construction Photographs



SB No. 1 - Installation of Underslab Conduits



SB No. 4 - Installing Exhaust Ventilation



MSF Yard - Installing Crossbond Cables



Yard Entrance - Pulling Signal Cable



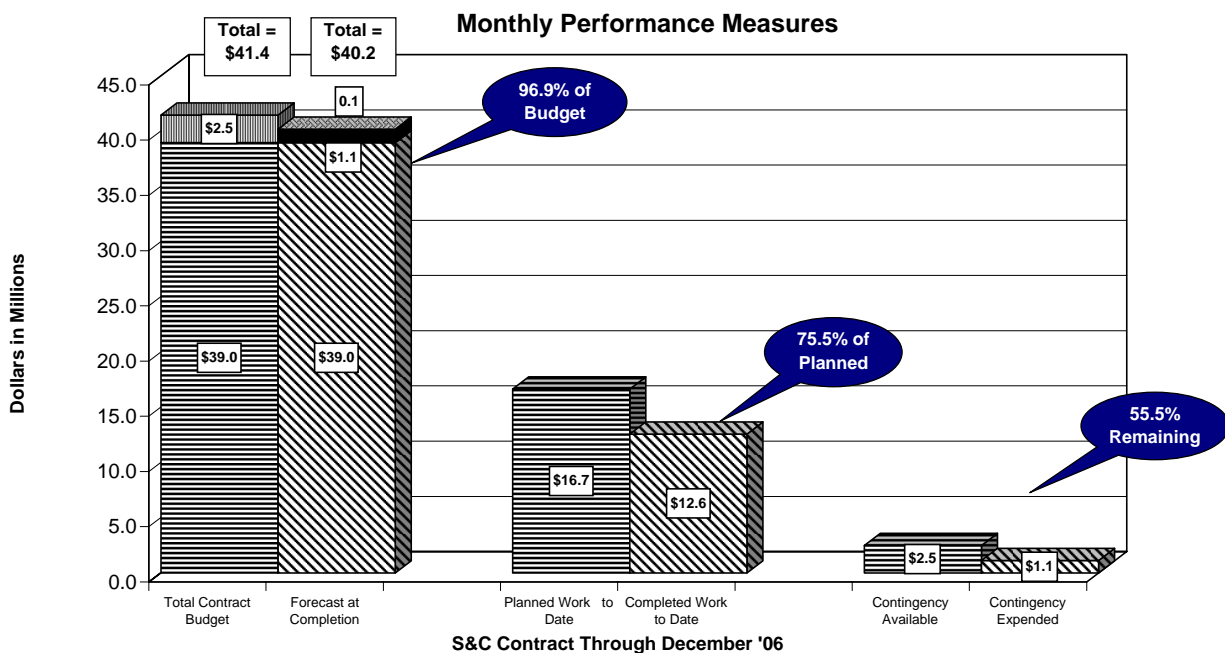
MSF MOE - Installing Telephone System



OCC - Completing Flooring and Ceiling



<b>Description:</b>		<b>3.7.4 Signals &amp; Communications</b>		
<b>PE/PA:</b>		<b>Leslee O' Conell</b>		
<b>Contractor:</b>		<b>Mass Electric</b>		
<b>Resident Engineer:</b>		<b>Steve Kyauk</b>		
<b>Data Through:</b>		<b>November 15, 2006</b>		
<b>Cumulative</b>		<b>5309</b>	<b>CNPA</b>	<b>Total</b>
1	Original Budget	\$37,476,762	\$1,480,805	\$38,957,567
2	Executed Change Orders	\$1,105,821	\$0	\$1,105,821
3	Budget Transfers		\$0	\$0
4	Current Budget (1+2+3)	\$38,582,583	\$1,480,805	\$40,063,388
5	Work Scheduled	\$16,476,198	\$176,111	\$16,652,309
6	Work Earned	\$12,488,186	\$82,969	\$12,571,155
7	Actual Expenditures	\$11,953,585	\$30,000	\$11,983,585
8	Forecast to Complete Base (4-7)	\$26,628,998	\$1,450,805	\$28,079,803
9	Change Orders Pending Execution	\$105,806	\$0	\$105,806
10	Forecast at Completion (7+8+9)	\$38,688,389	\$1,480,805	\$40,169,194
11	Percent Budget Expended (7/4)	31.0%	2.0%	29.9%
12	Percent Planned (5/4)	42.7%	11.9%	41.6%
13	Earned Percent Complete (6/4)	32.4%	5.6%	31.4%
14	Schedule Performance (6/5)	0.76	0.47	0.75
15	Cost Performance (6/7)	1.04	2.77	1.05
16	Contingency Budget	\$2,388,332	\$93,913	\$2,482,245
17	Remaining Contingency	\$1,282,511	\$93,913	\$1,376,424
18	Percent Contingency Remaining (17/16)	53.7%	100.0%	55.5%
<b>Period</b>				
1	Original Budget	N/A	N/A	N/A
2	Executed Change Orders	-\$914	\$0	-\$914
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$38,582,583	\$1,480,805	\$40,063,388
5	Work Scheduled (Cumm - Last Period)	\$950,893	\$13,594	\$964,487
6	Work Earned (Cumm - Last Period)	\$766,750	\$2,409	\$769,159
7	Actual Expenditures (Cumm - Last Period)	\$1,055,280	\$0	\$1,055,280
8	Forecast to Complete Base (4-7)	\$37,527,303	\$1,480,805	\$39,008,108
9	Change Orders Pending Execution	\$56,806	\$332,782	\$389,588
10	Forecast at Completion (7+8+9)	\$38,639,389	\$1,813,587	\$40,452,976
11	Percent Budget Expended (7/4)	2.7%	0.0%	2.6%
12	Percent Planned (5/4)	2.5%	0.9%	2.4%
13	Earned Percent Complete (6/4)	2.0%	0.2%	1.9%
14	Schedule Performance (6/5)	0.81	0.18	0.80
15	Cost Performance (6/7)	0.73	N/A	0.73
16	Contingency Budget	\$2,388,332	\$93,913	\$2,482,245
17	Remaining Contingency	\$1,282,511	\$93,913	\$1,376,424
18	Percent Contingency Remaining (17/16)	53.7%	100.0%	55.5%



## 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 and testing.

### Progress

- Traction Power Substation No. 1 and 2
  - Interior rough-in and HVAC activities have progressed.
  - Rectifier-Transformer delivered to TPSS No. 1.
  - Door and door hardware installation progressed.



- Traction Power Substation No. 3 and 4
  - Excavation of ductbanks and conduit installation progressed.
  - Installation of ground grid has been completed at TPSS No. 4.
  - Concrete for the TPSS No. 4 stem wall has been placed.
- Traction Power Substation No. 5
  - Structural steel and decking for the roof has been installed.
  - Application of the dielectric floor commenced.
- Traction Power Substation No. 6
  - Door hardware installations progressed.
  - HVAC work progressed.
- Traction Power Substation No. 7
  - Interior rough-in activities progressed.
  - HVAC exhaust duct installation progressed.
- Traction Power Substation No. 8
  - Dielectric floor repairs progressed.
- Traction Power Substation No. 9
  - Installation of TPSS equipment continues to progress.
  - Installation of fire alarm and security system commenced.
- Traction Power Substation No. 10
  - CMU wall construction nearly complete.
  - Formwork and rebar placed for the HVAC pad.
- Traction Power Substation No. 11
  - Building stemwall and slab concrete has been placed.
  - Formwork and rebar placed for the HVAC pad.
- Traction Power Substation No. 15
  - Installation of TPSS equipment progressed.
- Maintenance of Equipment Building



- TPSS No. 16
  - Installation of conduits and cable trays progressed.
  - Communications Interface Cabinet has been installed.
  - Installation of wall mounted equipment has commenced.
- Installation of Emergency Trip System (ETS) conduits commenced.
- Overhead Contact System
  - OCS installations in the MSF Yard and Test Track progressed.
  - Door bridge assemblies to the MOE building have been installed.
- Site Access/Permits
  - TPSS No. 13 was resubmitted to Mesa Building Safety. Comments were received and the designer is revising the drawings. Drawings from designer will be available on January 9, 2007 for resubmittal. Permit will be available 10 working days after resubmittal.
  - TPSS No. 14 was submitted to Mesa Building Safety for initial review. Comments are being addressed by the designer. The revised drawings should be completed by the designer by December 8, 2009 and a permit should be available 10 working days after resubmittal.
  - TPSS No. 12 (McClintock Park-and-Ride) has utility impacts which require remediation to allow the TPSS building to be constructed. The electrical engineer engaged by Tempe has completed the design of the electrical services to the mobile homes. Construction is scheduled to begin the second week of January 2007. Completion should be by the end of January with access available to the TES Contractor on February 1, 2007.
  - Phoenix DSD approved the final design drawings for the mainline substations. Permits for the electrical switchgear are available for pickup by the TES Contractor.
- Coordination with other Contracts/Entities
  - Ongoing coordination meetings are being held with the Facility Contractors. A weekly meeting is held with the MSF Resident Engineer and Contractor to coordinate the systems interfaces.

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

- The contract is in the final stages of design and procurement with some factory design and productions tests in progress. Field construction to date has included the civil and architectural parts of thirteen out of the sixteen traction power

substations, some TPSS electrical equipment installation and OCS components installation in the MSF yard and Line Section 4 Test Track areas.

### Issues and Solutions

- Mitigation Schedule. METRO currently reviewing the Contractor Mitigation Schedule Cost Impacts.

### Construction Photographs



**Bus Duct Installation at TPSS No. 15**



**Dielectric Floor Application at TPSS No. 5**



**Pole Installation for the Test Track**



**Installation of Cantilever Arms for Test Track**



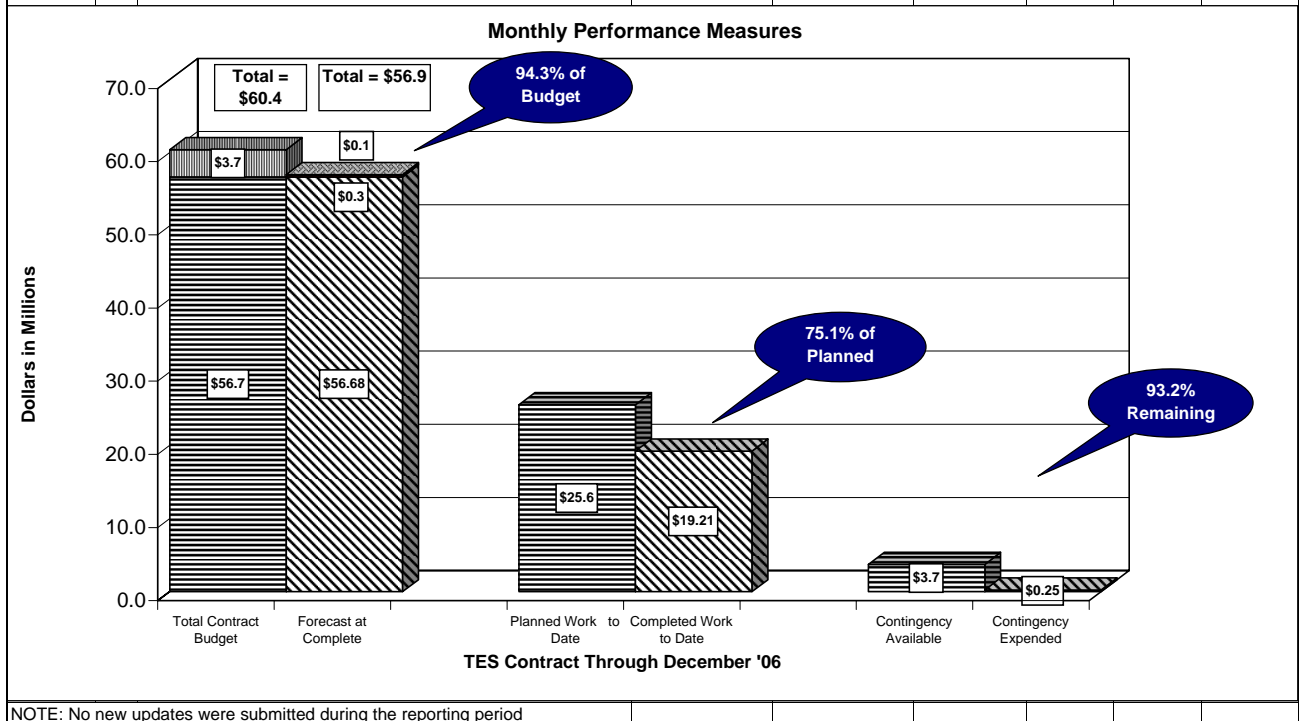
**OCS Adjustments for the Storage Lead Wire Run**



**TPSS No. 16 (Shop TPSS)**



<b>Description:</b>		<b>3.7.3 Traction Electrification Systems</b>
<b>PE/PA:</b>		<b>Alan Friend</b>
<b>Contractor:</b>		<b>Mass Electric Corporation</b>
<b>Resident Engineer:</b>		<b>Ron Wong</b>
<b>Data Through:</b>		<b>October 15, 2006</b>
Cumulative		<b>5309</b>
1	Budget	\$56,681,003
2	Executed Change Orders	\$252,930
3	Budget Transfers	\$0
4	Current Budget (1+2+3)	\$56,933,933
5	Work Scheduled	\$25,568,989
6	Work Earned	\$19,206,683
7	Actual Expenditures	\$18,926,176
8	Forecast to Complete Base (4-7)	\$38,007,757
9	Change Orders Pending Execution	\$51,465
10	Forecast at Completion (7+8+9)	\$56,985,398
11	Percent Budget Expended (7/4)	33.2%
12	Percent Planned (5/4)	44.9%
13	Earned Percent Complete (6/4)	33.7%
14	Schedule Performance (6/5)	0.75
15	Cost Performance (6/7)	1.01
16	Contingency Budget	\$3,721,000
17	Remaining Contingency	\$3,468,070
18	Percent Contingency Remaining (17/16)	93.2%
Period		
1	Budget	N/A
2	Executed Change Orders	\$170
3	Budget Transfers	\$0
4	Current Budget (1+2+3)	\$56,933,933
5	Work Scheduled (Cumm - Last Period)	\$1,408,583
6	Work Earned (Cumm - Last Period)	\$0
7	Actual Expenditures (Cumm - Last Period)	\$0
8	Forecast to Complete Base (4-7)	\$56,933,933
9	Change Orders Pending Execution	\$48,638
10	Forecast at Completion (7+8+9)	\$56,982,571
11	Percent Budget Expended (7/4)	0.0%
12	Percent Planned (5/4)	2.5%
13	Earned Percent Complete (6/4)	0.0%
14	Schedule Performance (6/5)	0.00
15	Cost Performance (6/7)	N/A
16	Contingency Budget	\$3,721,000
17	Remaining Contingency	\$3,468,070
18	Percent Contingency Remaining (17/16)	93.2%



NOTE: No new updates were submitted during the reporting period

Activity ID	Duration	Start	Finish
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Start Date: 01AUG04  
 Finish Date: 26DEC08  
 Data Date: 01JAN07  
 Run Date: 05JAN07 13:25

7001

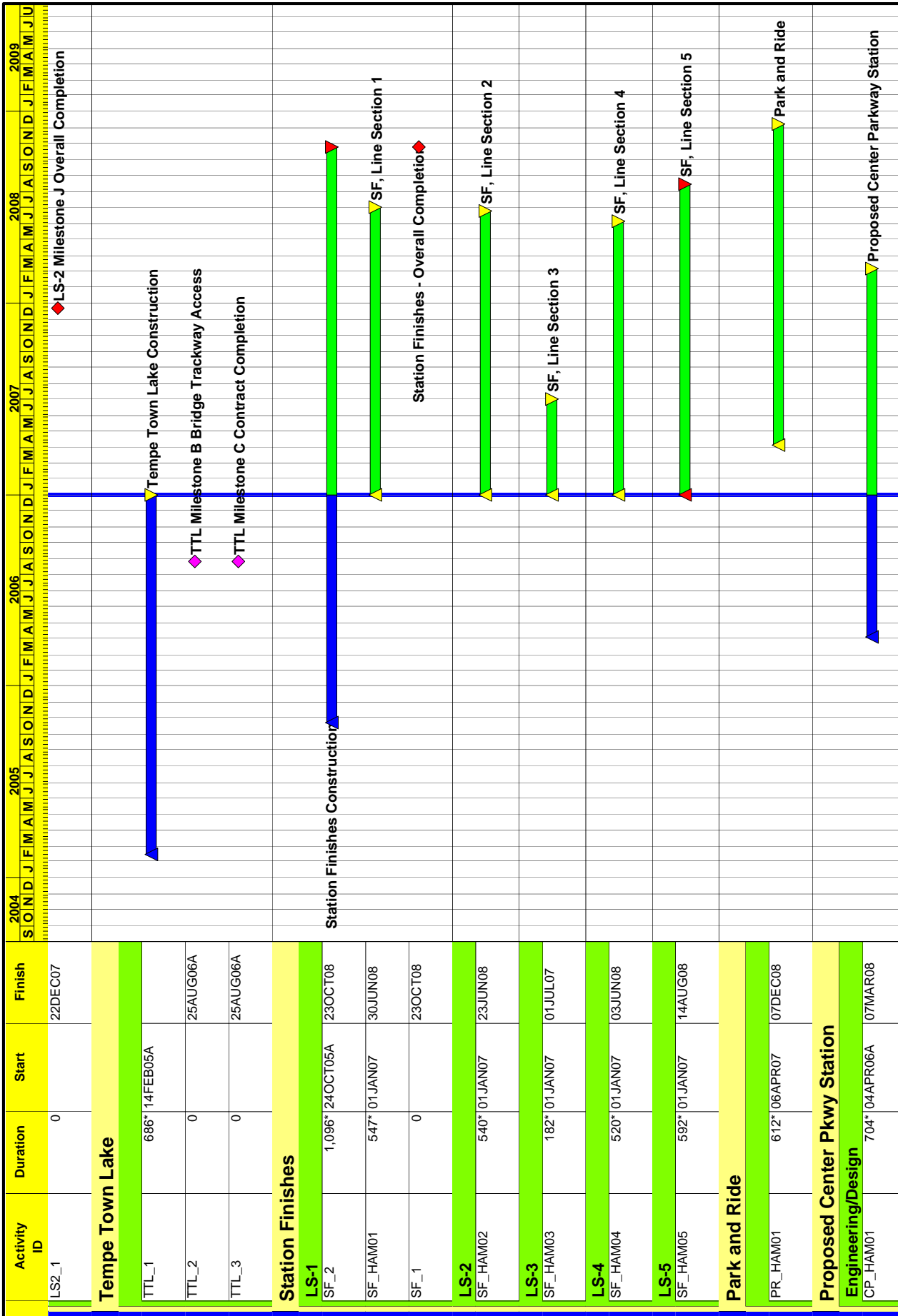
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METRO Rail Program Control  
 Central Phoenix/East Valley LRT Project  
 January 1, 2007

Sheet 1 of 10 | Presentation Schedule

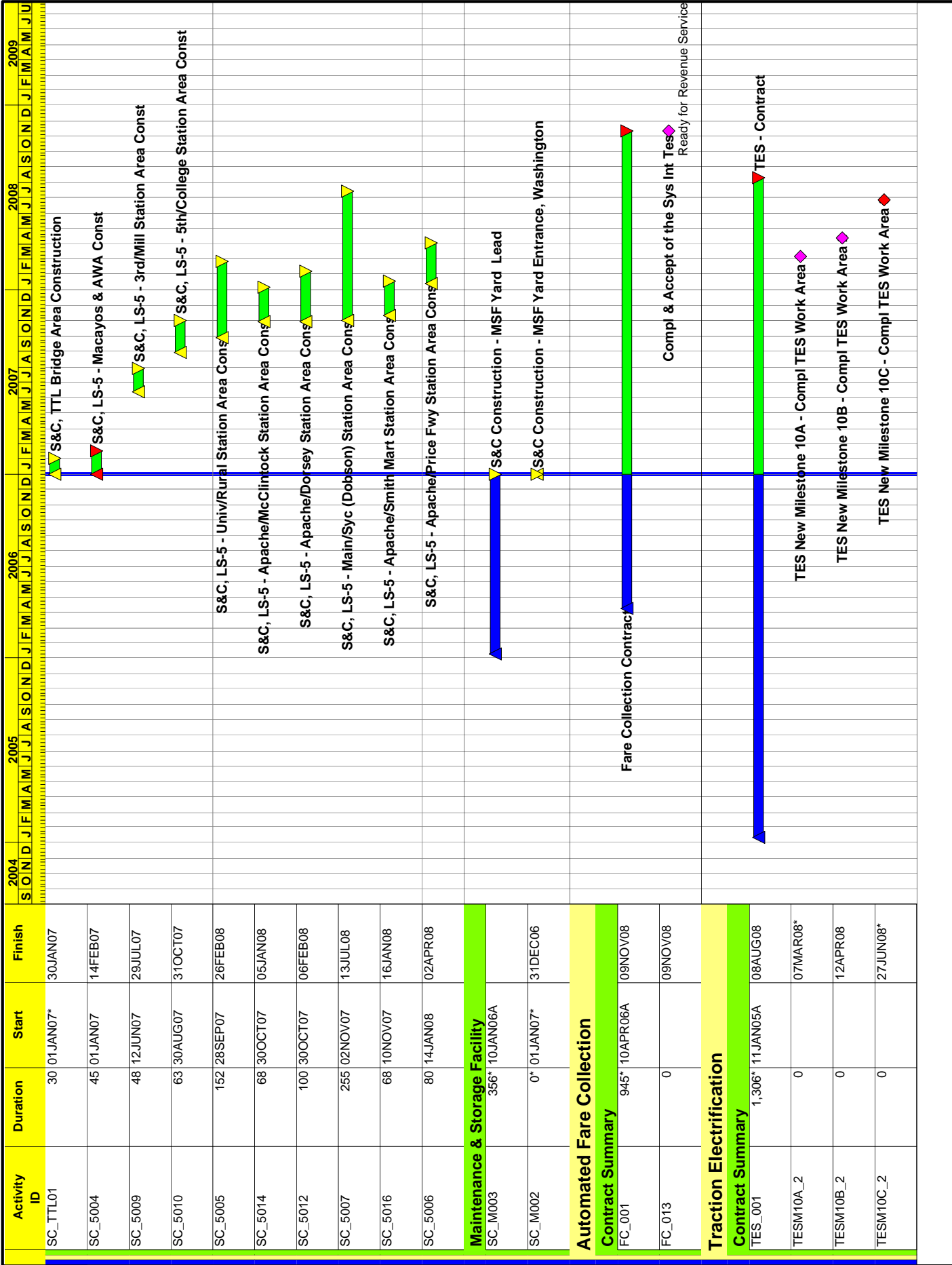




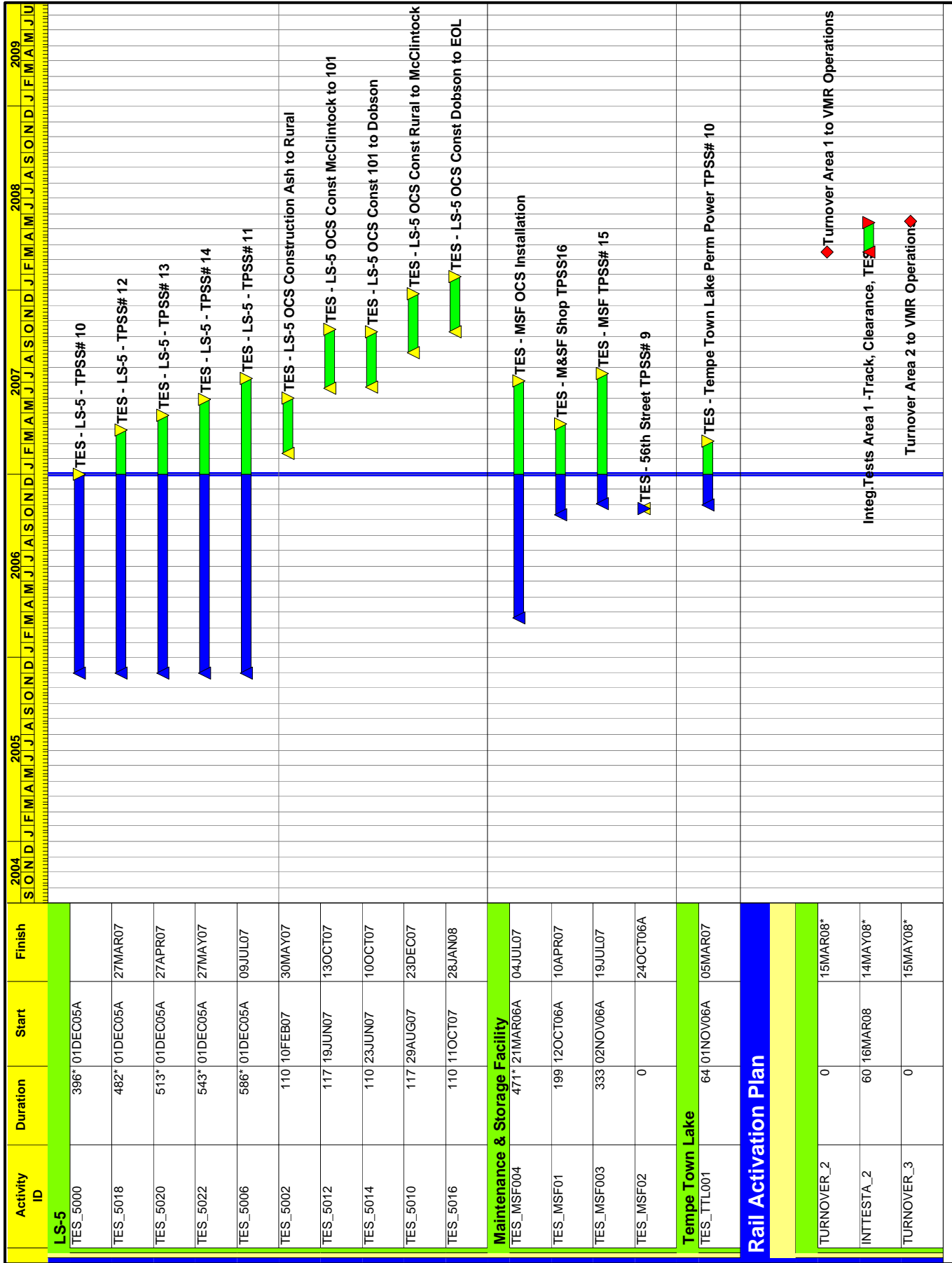
















## Acronyms

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
MSF	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
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	Registered 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