



# LIGHT RAIL PROGRESS REPORT

Central Phoenix/East Valley Light Rail Transit Project







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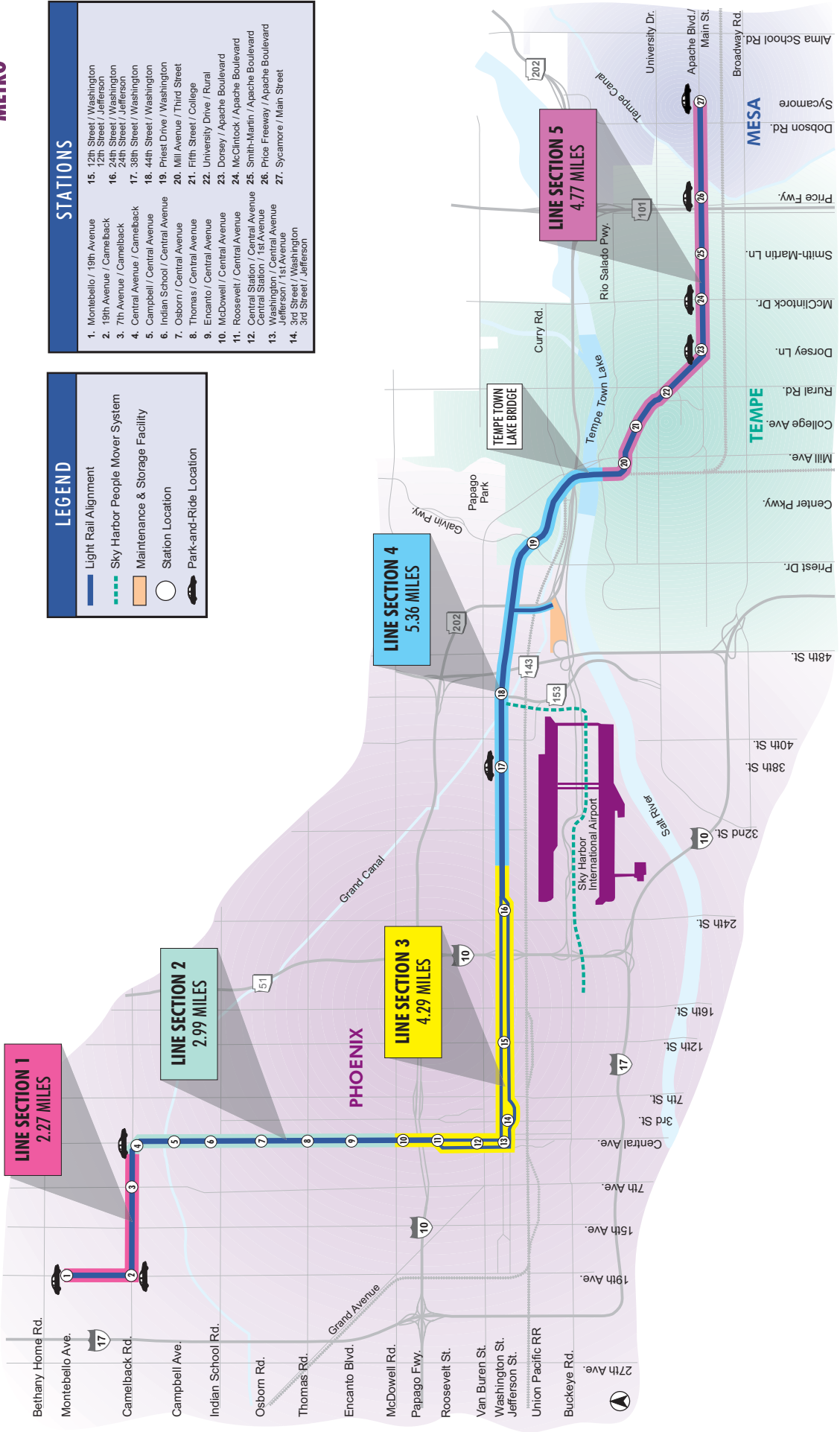
## 1. Executive Summary

The Central Phoenix/East Valley (CP/EV) Light Rail Transit Project includes the design and construction of a 19.6 mile, double track, Minimum Operable Segment that extends from 19th Avenue near Bethany Home Road in North Central Phoenix through the downtown area to and through the City of Tempe, then crosses into the City of Mesa where the project terminates at Main Street and Sycamore. The track alignment is mostly in-street median and includes 27 passenger stations and eight surface parking lots, seven of which are newly constructed, and one existing lot owned by the City of Tempe near an LRT station site that will be dedicated to transit use at no cost to the Project. An initial fleet of 36 LRVs is part of the Project. The Project also includes 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.

Major milestones/accomplishments this month include the surpassing of the 35,000 linear feet mark of track installed. In Line Section 4, the first section needed for the test track has been completed on-time and shared access has been granted to allow the systems contractor to begin system component installation. Substantial guideway construction occurred in Line Sections 3, 4, and 5 this month and continues to meet or exceed the production curves for on time completion.

The project remains on schedule and on budget. Board actions this month included the funding extension of the CAC and GEC contracts through fiscal year 2007. Real estate acquisition reached 98 percent this month of the total number of parcels needed and 92 percent of the properties are available for the contractors and utility companies to work on. The lack of real estate availability on Line Section One continues to hinder construction. The City of Phoenix, METRO and the utility companies are working on temporary work arounds to many of the issues that are still awaiting real estate access. METRO has also asked some utility companies to accelerate their relocations. This is being done on a program wide basis and is a component to the risk mitigation for on-time utility relocations to support METRO schedules.

# LIGHT RAIL STARTER SEGMENT



### LEGEND

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

### STATIONS

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

**METRO**  
**CONTRACT LOG - NOVEMBER 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 \$28,159,324 of the available \$73,354,121 planned contingency. Including Project Reserve, this leaves \$54,198,270 of contingency funds available to the project.

The project is 52.6 percent complete. Construction is 42.5 percent complete.

Since the last reporting period, the contingency decreased by \$6,805,714 as a result of executed change orders, pending change orders and Board authorized transfers.

### **Program Management & Administration**

Forecast is within budget. Contingency was decreased by \$6.5 million in order to fund increases to the Construction Administration Consultant contract through June 30, 2007.

### **Program Management Consultant**

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

### **City Administration**

Forecasts are per agreements with the cities.

### **Right-of-way Acquisition**

Cost to Date was modified from an accrual basis to actual invoiced costs.

### **PE/FEIS Engineering**

Activity is complete.

### **Engineering**

Board approval was obtained to add additional funding for this contract through June 30, 2007. The forecast was modified to reflect the mutually agreed-to staffing plan through June 30, 2009.

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

Forecasts are within budget. The work is 80.8 percent complete. Minor change orders are pending.



## **Light Rail Vehicles**

Contingency appears to be sufficient to fund the work remaining. A deductive change order for \$750,000 resulted from the decision to use the MSF as the assembly facility for the vehicles. The majority of this amount was transferred to Project Reserve.

## **Facilities**

Facilities work is 42.9 percent complete. Executed and pending change orders are expected to utilize \$15,200,000 of the \$33,100,000 available contingency. Additional expected change orders for required acceleration, additional work and expected requests for equitable adjustment are challenging to the available balance of contingency.

The forecast for prior right utilities continues to be a concern and is being evaluated. The basis of the budget was developed prior to approval of the Full Funding Grant Agreement. Since then there have been significant increases in material costs and changes in market conditions. 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 28.7 percent complete. Remaining contingency will likely be required to accelerate the systems work.

## **Construction Administration Services**

Negotiations of the Construction Administration Consultant Contract (to extend services through fiscal year 2007) concluded and were approved by the Board. The funding for the required budget increase was taken from the Project Reserve. The revised cost at completion for the federal 5309 project reduced the overall forecast to \$58,300,000.

## **Testing & Startup**

Forecast continues to show an under run 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 actions for the GEC, CAC and LRV's had the net effect of reducing the budget to \$9,000,000. Remaining Project Reserve is forecast at \$6,400,000.



## **Financing Costs**

Forecast indicates an under run 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. November Board action modified the GEC and CAC CNPA budgets. These budget changes are being evaluated and will be reflected in the next reporting period.

During the reporting period no new CNPAs were initiated. two change orders were executed for a total cost of \$11,824: One for Phoenix Streets Department and one for Phoenix Water Services. There are ten change orders pending. The City of Mesa had one change initiated for a total cost of \$30,000. The City of Tempe had two changes initiated for a total cost of \$66,289. Phoenix Public Transit had 3 changes initiated for a total credit of \$2,754. The Phoenix Aviation Department had 1 change initiated for a total cost of \$11,000. ASU had 1 change initiated for a total cost of \$10,000. Phoenix Water Services Department had 3 changes initiated for a total credit of \$513,327.

Work continues on finalizing changes to the fiber optic work occurring throughout the alignment.

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

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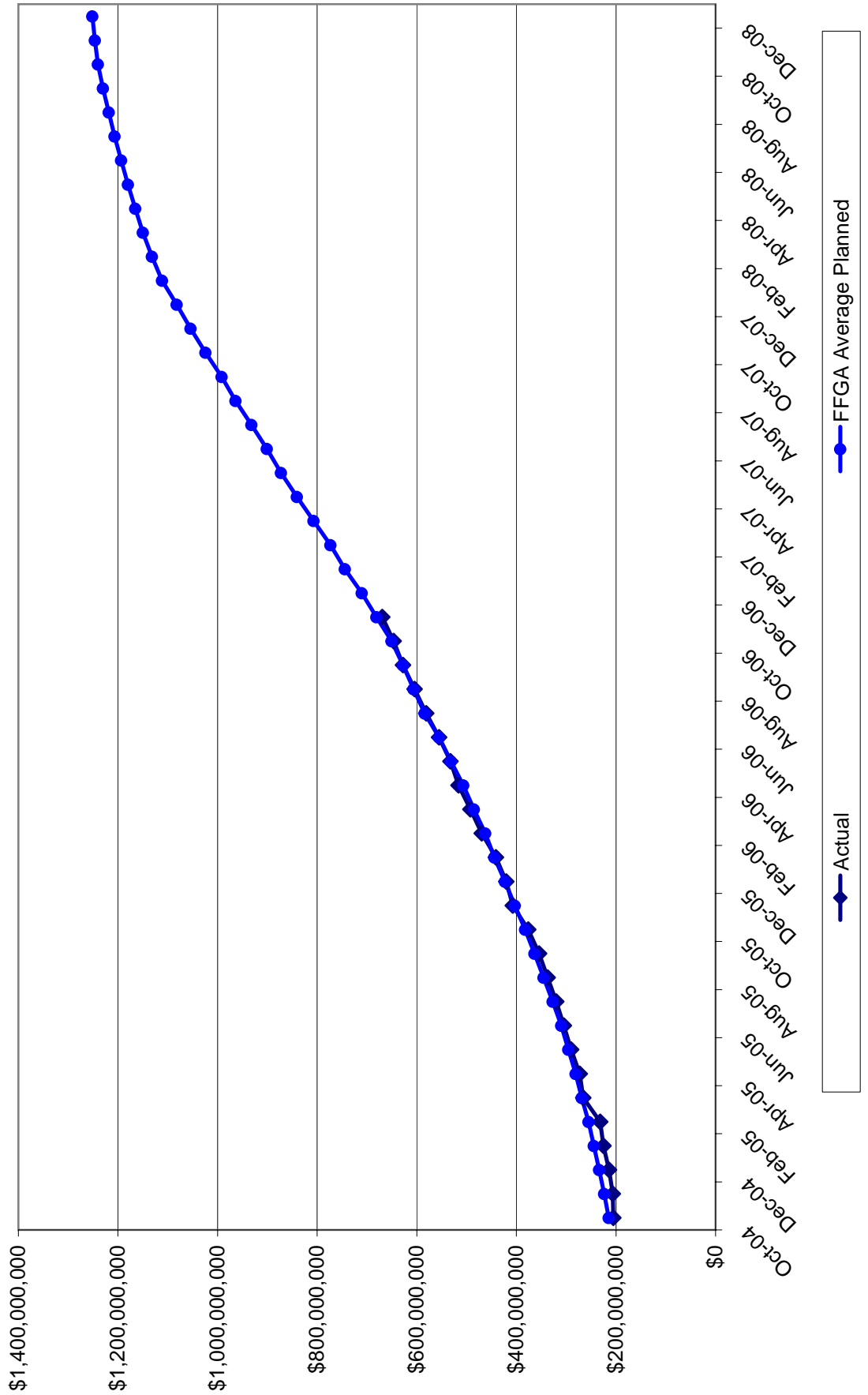
Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
50	LS1 19th Ave/Bethany - Camelback/Central	\$27,130,856	\$38,179,010	\$9,076,597	\$38,917,478	(\$738,468)
51	LS2 Camelback/Central - McDowell Road	\$38,004,059	\$49,390,734	\$12,434,938	\$49,390,734	\$0
52	LS3 McDowell Road - 28th Street	\$63,981,654	\$79,668,905	\$29,122,828	\$79,597,635	\$71,270
53	LS4 28th Street - N Approach to Town Lake	\$46,622,020	\$51,329,228	\$28,189,373	\$51,587,632	(\$258,404)
54	LS5 1st Street - Sycamore	\$49,680,435	\$69,057,651	\$30,942,619	\$69,123,995	(\$66,344)
55	Station Finishes	\$38,701,950	\$52,985,000	\$3,718,885	\$52,366,657	\$618,343
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	\$4,501,200	\$0
5K	Archaeological Investigations/Hazardous Material Removal	\$0	\$1,004,000	\$81,751	\$1,004,000	\$0
58	MSF Construction/Equipment Installation	\$57,637,721	\$64,290,942	\$59,870,055	\$63,698,689	\$592,253
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	\$21,906,410	(\$22,041)
5B	Prior Rights Utility Relocations	\$22,938,000	\$24,757,751	\$15,165,409	\$30,584,123	(\$5,826,372)
81	Contingency	\$37,491,841	\$17,633,047	\$0	\$19,686,426	(\$2,053,379)
	<b>Facilities</b>	<b>\$422,341,688</b>	<b>\$493,590,515</b>	<b>\$213,529,477</b>	<b>\$507,077,017</b>	<b>(\$13,486,502)</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	\$6,823,066	\$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	\$747,774	\$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>\$26,292,071</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	\$56,933,763	\$18,926,176	\$56,936,590	(\$2,827)
5F	Communications/Signals	\$38,220,002	\$38,583,497	\$10,898,305	\$38,632,497	(\$49,000)
81	Contingency	\$8,674,000	\$5,244,040	\$0	\$5,190,613	\$53,427
	<b>Systems</b>	<b>\$119,790,902</b>	<b>\$107,861,312</b>	<b>\$29,824,481</b>	<b>\$107,861,312</b>	<b>\$0</b>
<b>Sub Total, Construction</b>		<b>\$571,804,009</b>	<b>\$635,291,027</b>	<b>\$269,646,029</b>	<b>\$648,398,433</b>	<b>(\$13,107,406)</b>
4K	Vehicle Contract	\$115,501,823	\$116,875,456	\$25,816,264	\$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>\$25,816,264</b>	<b>\$119,422,565</b>	<b>\$0</b>
22	ROW Acquisition	\$116,214,150	\$116,734,770	\$122,453,744	\$134,000,000	(\$17,265,230)
23	ROW Contingency	\$20,081,000	\$19,560,382	\$0	\$0	\$19,560,382
20	<b>ROW</b>	<b>\$136,295,150</b>	<b>\$136,295,152</b>	<b>\$122,453,744</b>	<b>\$134,000,000</b>	<b>\$2,295,152</b>

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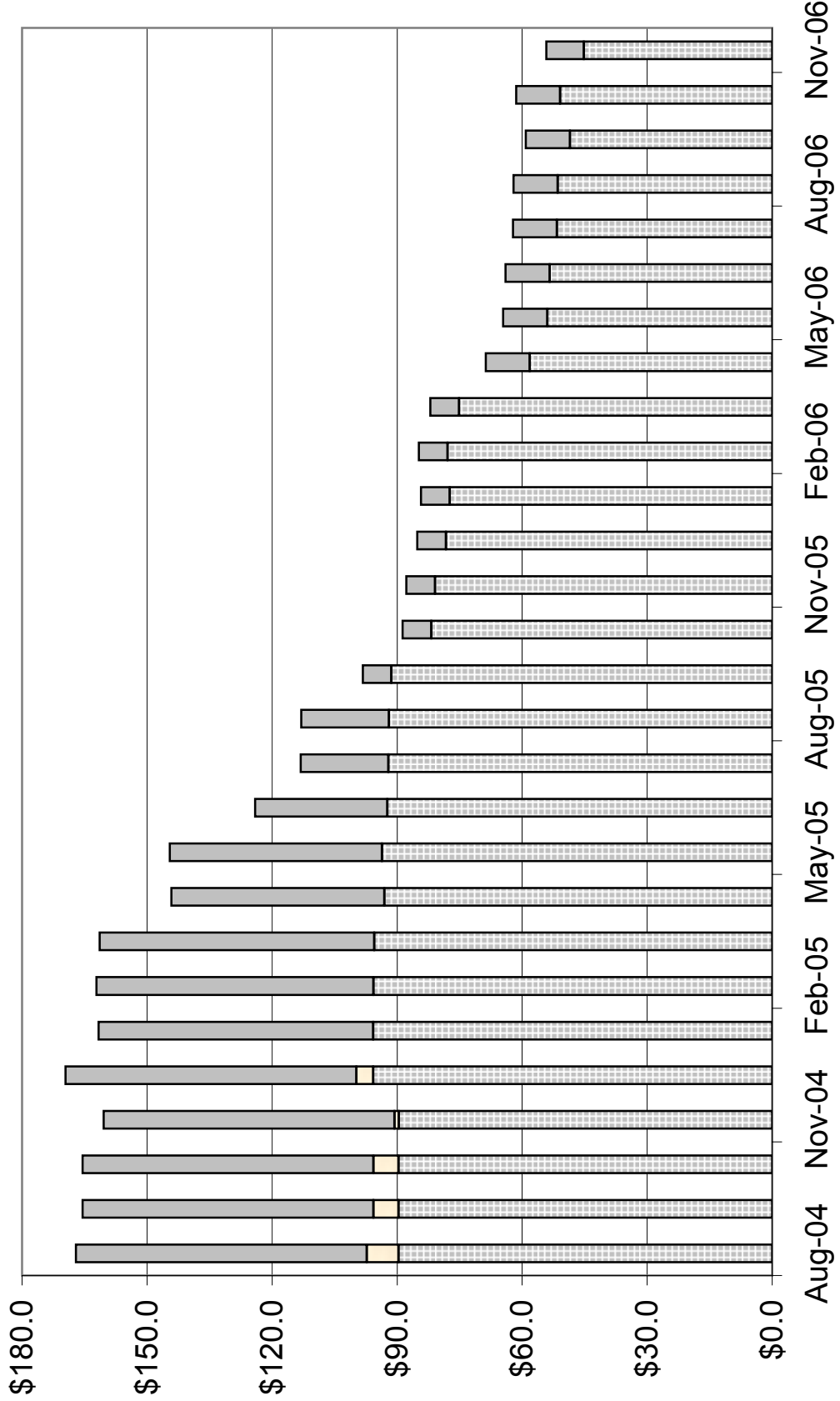
Element	Description	FFGA Attachment 3	Board Revised Budget	Current Actual \$ (To Date)	Forecast	Variance
<b>30</b>	<b>PE/FEIS Engineering</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$25,054,938</b>	<b>\$0</b>
31	Engineering	\$76,780,935	\$76,346,255	\$75,590,153	\$76,663,659	(\$317,404)
4L	Vehicle Engineering	\$5,432,358	\$6,255,358	\$5,296,061	\$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	\$14,211,593	\$23,533,231	(\$5,853,052)
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>\$96,483,979</b>	<b>\$107,762,992</b>	<b>(\$6,160,037)</b>
						<b>\$0</b>
60	CAC Contract	\$37,759,127	\$45,956,741	\$31,835,099	\$58,318,870	(\$12,362,129)
61	CAC Contingency	\$15,244,622	\$0	\$0	\$0	\$0
	<b>Construction Administration Services</b>	<b>\$53,003,749</b>	<b>\$45,956,741</b>	<b>\$31,835,099</b>	<b>\$58,318,870</b>	<b>(\$12,362,129)</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	\$25,270,154	\$43,923,154	\$305,162
62	Construction Administration Services - VMR	\$1,697,232	\$3,087,589	\$2,158,647	\$3,087,589	\$0
67	CAB Program	\$0	\$2,500,000	\$893,210	\$2,500,000	\$0
21	Administrative ROW Costs	\$696,712	\$696,712	\$527,055	\$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	\$3,720,258	\$7,000,000	\$0
18	Administrative/Management Contingency	\$0	\$5,388,523	\$0	\$1,840,441	\$3,548,082
	<b>Program Management</b>	<b>\$58,507,149</b>	<b>\$68,609,298</b>	<b>\$37,318,215</b>	<b>\$64,756,054</b>	<b>\$3,853,244</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	\$5,501,522	\$5,923,551	(\$475,551)
64	Construction Administration Services - COP	\$8,347,000	\$5,885,000	\$3,248,461	\$5,409,449	\$475,551
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>\$17,318,101</b>	<b>\$22,185,439</b>	<b>\$0</b>
75	Public Art Contracts	\$5,284,133	\$6,095,129	\$2,477,328	\$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>\$2,477,328</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>\$293,832</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>\$1,253,258,000</b>	<b>\$669,179,909</b>	<b>\$1,272,125,346</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>\$674,897,310</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\_11

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	\$2,604,013	\$5,661,173	\$677,222
A6	117 Central/Camelback Transit Center (SF)	\$6,968,744	\$6,990,150	\$2,158,546	\$7,022,524	(\$32,374)
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	\$2,595,811	\$162,850	\$2,595,811	\$0
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	\$33,220	\$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	\$4,076,099	\$1,110,498	\$2,628,002	\$1,448,097
K7	11th Street Loop Track	\$0	\$4,377,606	\$4,907	\$4,377,606	\$0
	<b>Sub Total Public Transit Department</b>	<b>\$26,546,604</b>	<b>\$31,824,017</b>	<b>\$10,294,052</b>	<b>\$30,099,721</b>	<b>\$1,724,296</b>
A3	6th Lane - Camelback (LS1)	\$9,820,210	\$9,883,190	\$7,313,282	\$9,820,210	\$62,980
D1	Additional Street/Pedestrian Lighting (LS3)	\$492,574	\$509,602	\$303,815	\$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>\$7,735,542</b>	<b>\$12,565,931</b>	<b>\$20,201</b>
A7	44th Street/Washington Transit Center (SF)	\$2,917,270	\$2,822,429	\$734,882	\$2,822,429	\$0
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	\$594,208	\$783,003	\$0
D6	People Mover - APS Duct Bank @ 40th Place	\$216,000	\$216,000	\$326,527	\$214,035	\$1,965
E9	10" Water Line at 42nd/Washington	\$67,735	\$61,269	\$47,020	\$61,269	\$0
F3	Archaeological/Hazardous Material Testing (CAC)	\$60,000	\$60,000	\$39,053	\$60,000	\$0
	<b>Sub Total Aviation Department</b>	<b>\$5,087,047</b>	<b>\$3,965,698</b>	<b>\$1,748,690</b>	<b>\$3,963,733</b>	<b>\$1,965</b>
B3	LS 1 Water/Sanitary Sewer	\$9,900,351	\$8,793,300	\$1,396,116	\$8,820,063	(\$26,763)
B4	LS 2 Water/Sanitary Sewer	\$6,255,348	\$5,245,827	\$1,165,265	\$5,305,763	(\$59,936)
B5	LS 3 Water/Sanitary Sewer	\$15,367,099	\$14,542,344	\$8,434,480	\$14,394,689	\$147,655
B6	LS 4 Water/Sanitary Sewer	\$4,935,839	\$5,315,538	\$4,277,427	\$5,317,687	(\$2,149)
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	\$1,099,400	\$86,425	\$739,855	\$359,545
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>\$36,567,204</b>	<b>\$15,709,942</b>	<b>\$36,282,222</b>	<b>\$284,982</b>
	<b>Total - Phoenix</b>	<b>\$83,768,329</b>	<b>\$84,943,051</b>	<b>\$35,488,226</b>	<b>\$82,911,607</b>	<b>\$2,031,444</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	\$1,345	\$0	\$94,081	(\$92,736)
D4	COT Additional Street Lighting (LS5)	\$345,014	\$345,014	\$199,949	\$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	\$5,040,270	\$142,468	\$4,564,270	\$476,000
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>\$9,161,079</b>	<b>\$1,550,819</b>	<b>\$8,778,245</b>	<b>\$382,834</b>
A9	Main Sycamore Transit Center	\$5,531,609	\$5,516,054	\$1,483,118	\$5,512,721	\$3,333
H3	Fiber Optic Backbone LS-3 (Mesa portion)	\$271,270	\$333,627	\$24,311	\$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>\$6,386,924</b>	<b>\$1,510,167</b>	<b>\$6,383,591</b>	<b>\$3,333</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	\$27,249	\$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	\$190,993	\$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>\$263,866</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>\$101,779,644</b>	<b>\$38,870,948</b>	<b>\$99,456,442</b>	<b>\$2,323,202</b>



### 3. Schedule Overview

The current Status of the Master Schedule is based on a data date of December 1, 2006. 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 been held to facilitate a phased startup plan and to integrate access milestones.

The new Master Schedule was completed and officially issued on June 30<sup>th</sup>, 2006.

Nearly 37,000 linear feet (7.01 miles) of guide-way has been placed in Line Sections 1, 3, 4 and 5.

The first Light Rail Vehicle has passed all tests to date and is en-route from Japan to North Jersey for further testing. The first vehicle will arrive at the MSF on December 8<sup>th</sup>, 2006.

During the last month, 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:**

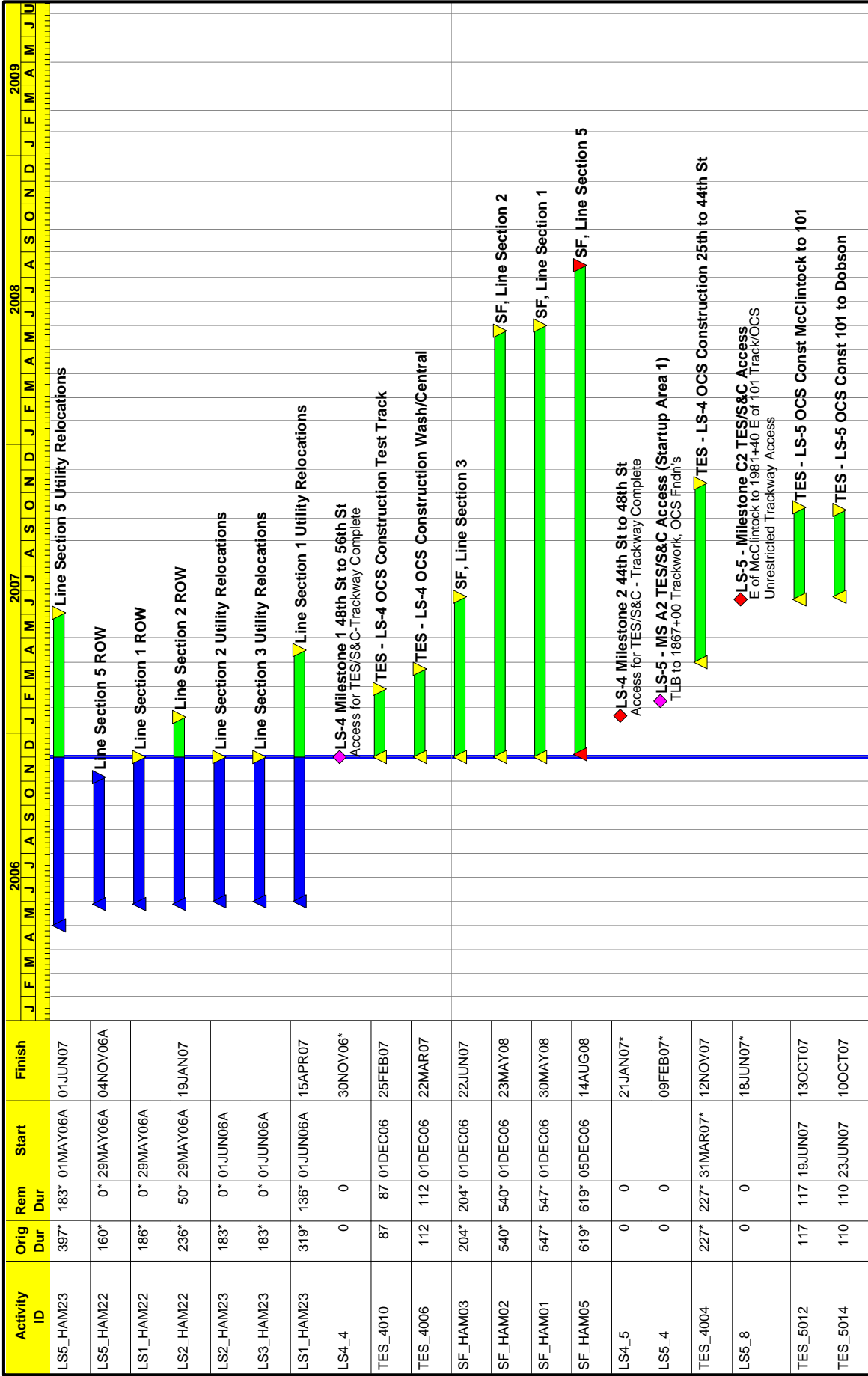
S&C: October, 2008  
Fare Collection: November, 2008  
Traction Electrification: August, 2008

**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.



Activity ID	Orig Dur	Rem Dur	Start	Finish
LS5_HAM23	397*	183*	01MAY06A	01JUN07
LS5_HAM22	160*	0*	29MAY06A	04NOV06A
LS1_HAM22	186*	0*	29MAY06A	
LS2_HAM22	236*	50*	29MAY06A	19JAN07
LS2_HAM23	183*	0*	01JUN06A	
LS3_HAM23	183*	0*	01JUN06A	
LS1_HAM23	319*	136*	01JUN06A	15APR07
LS4_4	0	0		30NOV06*
TES_4010	87	87	01DEC06	25FEB07
TES_4006	112	112	01DEC06	22MAR07
SF_HAM03	204*	204*	01DEC06	22JUN07
SF_HAM02	540*	540*	01DEC06	23MAY08
SF_HAM01	547*	547*	01DEC06	30MAY08
SF_HAM05	619*	619*	05DEC06	14AUG08
LS4_5	0	0		21JAN07*
LS5_4	0	0		09FEB07*
TES_4004	227*	227*	31MAR07*	12NOV07
LS5_8	0	0		18JUN07*
TES_5012	117	117	19JUN07	13OCT07
TES_5014	110	110	23JUN07	10OCT07



Start Date: 01AUG04  
 Finish Date: 26DEC08  
 Data Date: 01DEC06  
 Run Date: 08DEC06 14:29

6012  
 Valley Metro Rail  
 Central Phoenix/East Valley LRT  
 Revised Master

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 Sheet 1 of 3  
 Critical Path

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_3004	199*	199*	27SEP07	12APR08	TES - LS-3 OCS Construction 3rd to Roosevelt																																															
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_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		06MAR08*	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																																															





Procurement Bid Status Report as of 11/30/06						
Title	Issue Date	Pre-Bid Conf	Bid Opening	Board Award	NTP (Anticipated)	
<b>PART I – CP/EV 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	12/11/06	
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	12/18/06	
Interim Maintenance Services for MSF	11/13/06	11/21/06	12/12/06	N/A	01/15/07	
Legal Services	05/19/06	NA	07/12/06	TBD	TBD	
Legal Services (Small Claims)	05/19/06	NA	TBD	TBD	TBD	
Maintenance Management Information System	07/10/06	07/24/06	08/28/06	01/17/07	02/01/07	
IT Network Equipment – Re-bid	09/25/06	NA	10/16/06	11/30/06	12/10/06	
On Call Printing Services	11/15/06	11/29/06	12/28/06	NA	NA	
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	
Policy & Advisory Legal Services	<i>Tentative</i> 12/11/06	12/20/06	01/19/07	04/18/07	05/09/07	



## 4. Quality Assurance

### Description

The VMR Quality Assurance Manager is responsible for the establishment and implementation of a Quality Assurance Program for the Valley Metro Rail organization that meets the requirements of the Federal Transit Administration and provides adequate confidence that procured materials and services meet the technical and quality requirements of the project. The VMR 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

- The Senior Quality Assurance Engineer position was filled.
- Interviews were conducted for the Quality Assurance Manager position.

#### QUALITY MANUALS REVIEWED:

- To date all Line Section Contractor's Quality Plans have been approved. The Automated Fare Collection Quality Manual was received and reviewed in November and rejected and revision required.

#### QUALITY ASSURANCE AUDITS/SURVEILLANCES:

- The CAC commenced an audit of the TLB closeout activities in August. The scope of the audit is verification of compliance with Spec 01770, "Closeout Procedure," and Spec 01789, "Contract Record Documents.". While some closeout activities have been completed, others are still in progress. The Audit will be left open and resume as necessary to allow all items to be completed.
- The CAC and GEC visited the VAE Nortrak Birmingham, Alabama facility to perform first article inspection on pocket track 2-1 and 2-2. Results were satisfactory.

#### Cost and Schedule – Variance Analysis

- Quality Assurance activities remain within budget and on schedule.



### **Issues and Solutions**

- One Mass Electric Quality Action Request (QAR) S2006-001 is still open. Second response was rejected. Quality Action Request was issued to Mass Electric on the Traction Electrification System Contract for lack of adequate inspection personnel; lack of inspection and surveillance reports, lack of inspection and failure to implement an internal and external audit program. CAC to respond to MEC by December 10, 2006.
- All open items have been closed.

### **GEC QUALITY ASSURANCE AUDITS/SURVEILLANCES:**

- No GEC Audits were performed in November 2006.

## 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

- Construction in all five Line Sections continues to progress and Public Involvement Staff continues to meet and respond to various stakeholders addressing their concerns with construction.
- METRO is working closely with City of Phoenix Streets, Police Traffic Beaura, and Kiewit Western to develop and implement a comprehensive traffic circulation plan to address construction restrictions along 19<sup>th</sup> Avenue and Camelback Road. Stakeholders in Line Section 1 have expressed concerns at recent neighborhood association meetings about cut-through traffic, speeding, and traffic control signage.

BUSINESS ASSISTANCE



- Order and delivery of Courtesy Signage Program continues in all Line Sections. Through November, 437 signs and 310 banners (**747** 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 (LS1)	31	54	85
Line Section Two (LS2)	72	53	125
Line Section Three (LS3)	171	56	227
Line Section Four (LS4)	27	33	60
Line Section Five (LS5)	136	114	250
<b>Totals</b>	<b>437</b>	<b>310</b>	<b>747</b>

**METRO Business Outreach Program**

The following is a break down of business outreach statistics as of December 1, 2006:

- METRO Max Program Participants – 130 businesses
- Construction Signage Program – 747 Total (437 signs and 310 banners)
- City of Tempe Asset Assistance Program – Several inquiries
- City of Mesa/U.S. Bank Asset Assistance Program – Launched in October

- Management Technical Assistance (MTA) Program – 211 businesses
- ASU Market Needs Assessment - 119 businesses (99 Complete/20 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, November 14<sup>th</sup>, at AmeriSchools Academy. Prior to the meeting, LS-1 CAB members toured the LS1 portion of the alignment. During the tour members received information on the schedule and sequencing of work taking place on 19<sup>th</sup> Avenue and Camelback, including guideway and track installation, road widening, and utility installations, station and transit center construction, and the coordination efforts with the third party utility companies and where those companies are working along the alignment. Members voiced concerns with utility companies' subcontractors in regards to blocking ingress/egress and safety. METRO's Resident Engineer, Bill Blaine and Community Outreach Coordinator, Cristina Lenko stated they would address these concerns with the utility companies and thanked members for bringing this to their attention. Kiewit staff briefed CAB members on upcoming activities projected the next four weeks. 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, December 12<sup>th</sup>.



## LS-2

- LS 2 held their monthly meeting Tuesday November 20<sup>th</sup>, at Brophy College Preparatory Academy. METRO's CEO, Rick Simonetta presented a state of the system update. Mr. Simonetta provided updates on construction in each line section, the vehicle, and the maintenance and storage facility, and shared a timeline of 2007 and 2008 activities. Mr. Simonetta noted the project is 40 percent complete with planning underway on future extensions. CAB Members asked questions about dynamic testing, the upcoming marketing campaign, and the inauguration plans for the system. Chairperson Don Keuth requested METRO's Public Involvement Manager to review the evaluation process. Mr. Steere reminded members the contractor should be rated by the actions and work performed during the time period specified on the agenda. Past dealings with the contractor, positive or negative, should not be carried over month to month. Herzog received an overall rating of 90 percent. The next LS 2 CAB meeting is scheduled for Tuesday, December 19<sup>th</sup> and will be back at Brophy Preparatory Academy.

## LS-3

- LS 3 conducted their monthly meeting on Tuesday, November 14<sup>th</sup>, 2006. The general public addressed the CAB on the traffic issues and gridlock conditions experienced by businesses located near 24<sup>th</sup> Street. AWC delivered the contractor presentation, highlighting the progress achieved during the last month. CAB Members expressed their appreciation to AWC for modifying their presentation to address previous concerns on what AWC was doing to exceed the specified contract. The presentation also included a list of future intersection closures, and an in-depth description of water shutdowns and AWC's work to go "above and beyond" the contract specifications. AWC received an overall rating of 90 percent. The next LS 3 CAB meeting is scheduled for Tuesday, December 12<sup>th</sup> at METRO.

## LS-4

- LS 4 held their monthly CAB Meeting on Wednesday, November 8<sup>th</sup>, at Papago Buttes Corporate Plaza. Prior to the meeting, CAB members took a tour of Line Segment 4, and also visited the Maintenance and Storage Facility. Mr. Erik Yingling, Project Manager for SSWJV, introduced Mr. Frank Aber as the new Resident Engineer for LS4. Mr. Mike Howard, SSWJV, conducted the contractor presentation. CAB members discussed restoration of property and the procedure to understand the process. Howard Steere, METRO's Public Involvement Manager, clarified and further explained the process. Mr. Mike Carroll, President of Construction Lots, voiced concern that there are not enough marketing or public announcements for businesses impacted during construction. Mr. Carroll, shared with CAB members, his effort to host a brainstorming session with local media and discussed ways to get the message out that businesses are "open" during construction. 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, December 13<sup>th</sup> at Papago Buttes Corporate Center at 3 p.m.

### LS-5

- LS 5 CAB conducted its meeting on Thursday, November 9<sup>th</sup>, at the Escalante Community Center. Sundt/Stacy and Witbeck Joint Venture (SSWJV) presented a summary of current and upcoming work in LS5 that includes: track work at 3<sup>rd</sup> Street and Mill Avenue, pavers installation at the ASU Promenade, track construction towards University Drive and 6<sup>th</sup> Street, night work on McClintock Drive north of Apache Boulevard, driveway modification along Apache Boulevard, and scheduled upcoming 101 Freeway closures. A recommendation of 100 percent of the incentive available to Sundt/Stacy and Witbeck Joint Venture was recommended by the LS5 CAB. This month's meeting was shortened to one hour to accommodate a tour of various construction areas/phases along LS5. SSWJV lead the tour of LS5 construction and included stops at: Apache bridge over 101 Freeway (discussion of previous and upcoming bridge work including lifting portions of the bridge with winches and concrete pour on center of bridge), ASU Promenade (installation of pavers, coordination with archeology recovery, and work along Veterans Way), 3<sup>rd</sup> and Ash Street (track work), and visit to Maintenance and Storage Facility. The next LS5 CAB meeting is scheduled for Thursday, December 14<sup>th</sup> at the Escalante Community Center in Tempe at 7:30 a.m.

### Cost and Schedule – Variance Analysis

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

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

Total Miles of Street with LRT:    23.53 miles

Allocation per Mile:                 \$106,247.34

Total CAB Disbursement through October remains at **\$ 1,057,320**



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	80%
LS-4	\$567,361.00	\$340,416	\$323,395	95%
LS-5	\$507,862.00	\$203,144	\$203,144	100%

### Issues and Solutions

- **Issue:** Phoenix Spectrum Mall represented by Paul Rappaport made a request to postpone construction until after the holiday shopping season. South West Gas has commenced working at the 19<sup>th</sup> Avenue entrance.
- **Solution:** METRO, COP, Archer Western and Kiewit Western staff met with Spectrum Mall staff. It was agreed that construction would have to continue and that METRO / COP / Archer Western would work with Spectrum Mall on business access / signage and marketing of the mall tenants during the upcoming holiday season and throughout this construction.



## 6. Disadvantaged Business Enterprise Program

### Description

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

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

### Progress

- Overall DBE participation based on amounts originally awarded is 13.91 percent, participation including change order work is at 14.42 percent and DBE's have been paid 12.69 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 (LS1)
  - Kiewit Western Contractors
  - 12.10 percent Minimum DBE Participation



- 13.77 percent Committed at Bid
- 15.77 percent Current DBE Participation (based on adjusted contract amounts)
- \$8,135,144 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 Stacey & 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 Stacey & 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 Stacey & 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
  - 20.69 percent Current DBE Participation (based on adjusted contract amounts)
  - \$4,536,320 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)
  - \$1,704,759 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)
- \$11,348,562 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 did not meet during the month of November. The next advisory committee meeting is scheduled for December 19, 2006.
- November 3, 2006 METRO received the Annual Public Service Award from the Associated Minority Contractors of America. Rick Simonetta presented the evening's key note address and later in the evening award recipients were presented with certificates of appreciation from Hall of Fame Award recipient, Congressman Ed Pastor. The event took place at the Westin Kierland Resort with approximately 650 attendees representing both the public and private sectors of the construction industry.
- 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).

- Results from the strategic planning survey have been collected and compiled. Several recommendations were made including adding representation from private sector contractors, the issuance of an e-newsletter, and rotation of the Committee Chair position. A final report of the results and planned action will be provided to the METRO executive team following discussions at the December Committee meeting.

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

- DBE activities remain within budget and on schedule.

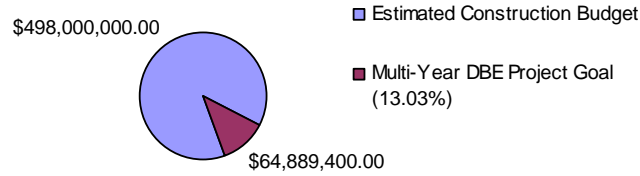
#### **Issues and Solutions**

- There are no issues to report this period.

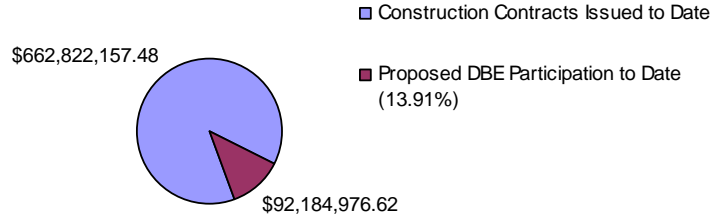


## DBE Program Overview

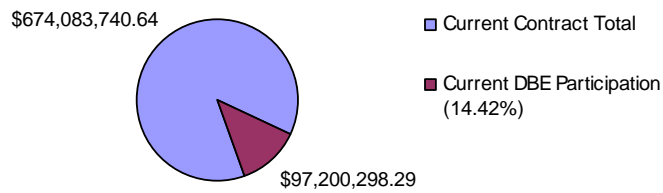
### DBE Program Overview



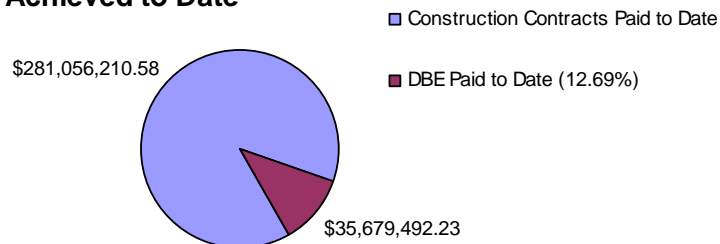
### Original Contract Amounts



### 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**

- Received the Transportation Security Administration's Security Design Review Report and circulated it to METRO staff for comment.
- Safety & Security Certification training was provided for all personnel who will be involved in this process. Two sessions were conducted.
- 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.
- Worked with the certification consultant to develop a Safety & Security Certification training class for those employees and consultants who will be involved in the process.
- Safety & security orientation for the Phoenix Police Department, Transit Bureau, Command Staff.
- There was no Fire/Life Safety and Security Committee meeting in November.
- There was no Safety and Security Certification Review Committee meeting in November.

### **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.
- As of November 28, 2006 we have discovered 27 inhumations / 4 cremations in Pueblo Grande (no new discoveries) and 70 inhumations / 45 cremations La Plaza –Tempe (17 new discovery). Primary activities have been in the Promenade of the 5th and College transit Center.
- ACS has providing 10 field archaeologist and one supervisor. ACS has maintained schedule commitments. Field crews are being shifted to meet contractor's priorities. Primary work was shifted from guideway in Veterans Way to Promenade to accommodate ASU request have the area ready for the Insight Bowl.

#### 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 contaminates we have reduced monitoring to spot checks.
- Excavated materials from 7th Ave and Camelback containing PCBs are being disposed of in Beatty, NV in December.



Regulator Compliance

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

**Cost and Schedule – Variance Analysis**

Archaeology

Original Contract Value (CAC)	\$1,500,064
Approved Change Orders	\$1,897,936
Contract Value to date	\$3,398,000
Invoiced through November 2006	(\$3,234,356)
Estimated cost December '06 through June '07	\$364,000
Estimated Total Costs through June 2007	\$3,598,356
<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
Estimated additional funds required	\$78,863

Remediation and Treatment Fund (VMR)

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 presents 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 contaminates and to see if a local land fills 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 \$3.5 million 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

- Six additional parcels came under City control since last month, and 9 additional parcels became available for construction. Presently, 98 percent of the required properties are now under city control and 92 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 1 remains. Two parcels came under City control for a total of 145 and 1 parcel was made available for construction for a total of 131. Line Section 1 contains 153 parcels.
- In Line Section 2, all 29 relocations have now been completed. Four parcels came under City control for a total of 91 and 3 parcels were made available for construction for a total of 81. Line Section 2 contains 95 parcels.
- In Line Section 3, 33 relocations have now been completed and only 3 relocations remain. A total of 258 parcels are now under City control and 242 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; eighteen building cut and re-faces were identified; thirteen have been completed and 5 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. Meetings with property owners will resume as soon as concurrence to the new process is received from the FTA.

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	\$ 19,365,482	\$ 1,753,931	\$ 21,119,413
Total	\$135,579,632	\$23,975,136	\$159,554,768
Spent To Date	\$117,447,141	\$17,348,114	\$134,795,255
Balance Available	\$ 18,132,491	\$ 6,627,022	\$ 24,759,513

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

- Real Estate continues to be one of two key issues (utilities being the other) currently driving the project schedule and creating pressure on the ROD. 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 precious 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 are the most critical, and an intense level of urgency has been raised to accelerate the acquisition process. This is the kind of commitment from all parties which will help maintain the newly revised master schedule.



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

**November 30, 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	45	<b>783</b>
Offers Accepted	106	65	224	85	1	88	36	<b>605</b>
<b>Escrow Closed Acquisition Complete</b>	<b>97</b>	<b>52</b>	<b>207</b>	<b>85</b>	<b>1</b>	<b>88</b>	<b>25</b>	<b>555</b>
Condemnation Filed	26	12	25	11	0	29	13	<b>116</b>
OIP Received	20	8	22	9	0	29	17	<b>105</b>
ROE Signed	28	31	29	14	0	4	4	<b>110</b>
Relocations Underway	1	0	3	0	0	0	0	<b>4</b>
Relocations Completed	182	29	33	28	0	40	0	<b>312</b>
<b>Parcels Under City Control</b>	<b>145</b>	<b>91</b>	<b>258</b>	<b>108</b>	<b>1</b>	<b>121</b>	<b>46</b>	<b>770</b>
Parcels Available for Construction	131	81	242	103	1	121	45	<b>724</b>
Parcels Pending Release for Construction	14	10	16	5	0	0	1	<b>46</b>



## 10. Utilities

### Description

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

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 to the utility companies they must accelerate their relocation even if it includes providing additional resources and work-around the clock so impacts to the Contractors' schedules are minimized and remain on schedule.

### 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 continues restrict 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 has allowed re-routed bus traffic from 19<sup>th</sup> Avenue between Campbell and Missouri and from Camelback Road between 23<sup>rd</sup> Avenue and 15<sup>th</sup> Avenue. Bus traffic skirts the 19<sup>th</sup> Avenue and Camelback Road intersection for approximately one year allowing utility and contractor construction in this intersection to take place with intermittent nighttime intersection closures.
- Southwest Gas (SWG) has completed most of their relocation work on Camelback Road. The newly installed gas lines cannot be placed in service and the old lines removed until the utility easement on Fry's property becomes available and SWG can work in that area. Qwest and SRPP cannot proceed until the SWG facility in the easement has been moved.



- Salt River Project Irrigation (SRPI) continues with the installation of the irrigation structures on the project as right-of-way becomes available.
- Salt River Project Power (SRPP) trenching on Camelback Road continues. Installation of street lights has begun behind the new sidewalks.
- A siphon condition at 11<sup>th</sup> Avenue will be re-constructed to eliminate the siphon at the owner's request due to increased maintenance costs for the siphon.
- Re-sequencing of all wet and dry utility relocation issues on 19<sup>th</sup> Avenue has been completed and final plans are in the field.
- Twenty-four inch sewer construction is currently planned to begin November 20, 2006.
- Forty-eight inch water plans have been delivered to the Resident Engineer and the contractor has ordered pipe. Construction will begin when the traffic has been moved from the east side to the west side of 19<sup>th</sup> Avenue.
- Southwest Gas continues relocations on 19th Avenue in several locations.
- The joint trenching for SRPP, Qwest and Cox continues by Kiewit Construction.
- Spectrum Mall property has become available and Qwest may now install a manhole on the property.
- **Line Section 2**
  - Utility conflicts and coordination issues are being addressed on case by case bases in the field. These meetings increase contractor communication, and utility company accountability.
  - MCI finished fiber optic cable - splicing is complete. At the request of LS2 requested that the abandon fiber be removed. MCI will remove the abandon fiber and will be completed by the end of December 9, 2006
  - APS is currently revising their design at Central Avenue and Thomas Road due to the sewer line being redesigned – Herzog is looking into swamping the water and sewer alignment if city approves then APS will not need to relocate. Realignment would make the sewer installation allot easier.
  - Salt River Project Water (Irrigation) agreed to relocate the SRP.
  - 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.
- Level 3 has completed relocation of duct bank and manholes at 24<sup>th</sup> Street, 22<sup>nd</sup> Street, 18<sup>th</sup> Street, 17<sup>th</sup> Street and 16<sup>th</sup> Street on Washington Street. Level 3 has started on 13<sup>th</sup> Street which should take about three weeks to complete before starting at the last manhole relocation located at 7<sup>th</sup> Street.
- 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, and METRO and Archer Western representatives has been instrumental in facilitating the necessary changes of this work.
- APS has received the Right of Entry at 24<sup>th</sup> Street and Jefferson to place two Dusk to Dawn lights poles which will allow APS to complete relocation at 24<sup>th</sup> Street and Jefferson Street.

- **Line Section 4**

- Utility conflicts and coordination issues are being addressed on 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 32<sup>nd</sup> Street and 30<sup>th</sup> Street.
- Southwest Gas needs to install several test points at SR143 and Washington.
- Sundt has started the relocation of SRP Irrigation facilities at 32<sup>nd</sup> Street and Washington Street.

- **Line Section 5**

- Solutions for utility issues are addressed weekly in the LS5 Utilities Coordination meeting.
- SRP irrigation plans were modified at Rural and Tyler. The siphon was reduced at the request of METRO. SRP Water has started construction and will be completed November 4, 2006.



- SRP Irrigation is being revised at Apache Boulevard and Price Road (SR101) intersection. SRP still doing pothole for the segment on Apache Boulevard from River to Price for possible redesign to leave Qwest duct bank in place at Price and Apache. Utility companies are ready to mobilize when revised final plans and pothole data is completed. Third party utility relocation drop dead date is December 15, 2006 and SRP Water will start January 8, 2007.
- SRP Power 69 kV, APS and Cox relocation is complete at Rural Road and Tyler.
- SRP Power major relocation plans have been submitted and approved within Line Section 5.
- Due to the Line Section 5 Contract Master Schedule revision, METRO has requested that SRP Power accelerated their relocation. SRP Power (Subcontractors NPL & TECC) have step up manpower and has accelerated relocation work. SRP plans on adding additional work forces within next two weeks. Salt River Project Power needs to accelerate the following jobs to meet the Contractor dates:
  - SRP Job No: JJC-5006, KJC-5010, KJC-3008 - McClintock to River to be completed by November 22, 2006
  - SRP Job No: SRP KJC-5012, KJC-3006 - Price to Tempe Canal to be completed by November 18, 2006
  - SRP Job No: SRP KJC-5011, JJC-5008, and KJC-3011 - River to Price to be completed by December 31, 2006.
  - SRP Job No: SRP KEC-5000, JEC-5000 – Roosevelt to Dobson to be tentative by January 31, 2007 *or sooner*.
  - SRP Job No: SRP KEC-5001, JEC-5001 - Dobson to Sycamore to be tentative by January 31, 2007 *or sooner*.
- The LS5 Contractor has completed 24-inch casing under the Union Pacific Railroad tracks at 1<sup>st</sup> Street. APS will start pulling wire, which is tentatively scheduled to be complete by December 31, 2006.
- Third party 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**
  - There were several new electrical services accounts added for Park & Ride at 3<sup>rd</sup> Avenue and Camelback Road and 38<sup>th</sup> Street and Washington Street.
  - SRP electrical services 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 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 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.
- Need to define APS and SRP Electric 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. METRO currently needs the access to Fry's, and other parcels to allow the third party utilities and contract work to continue.
- Line Section 2 – MCI must complete splicing of fiber optic cable, which is a major process getting a window to do the cut over from major customers has been a major challenge to MCI. Metro has given MCI a drop date to be completed by.

- Line Section 3 – Level 3 need to relocate manholes at two locations. The contractor is working around this area to mitigate delays.
- Line Section 4 – METRO must ensure that all utility relocations within the test track are complete.
- Line Section 5 – SRP irrigation relocation, SRP Power, Qwest and Cox still hinders the LS5 Contractor.

### Construction Photographs



SWG 4-inch High Pressure main on 19<sup>th</sup> Avenue in Line Section 1



SWG relocation 8-inch High Pressure Gas Main on 19<sup>th</sup> Avenue in Line Section 1



SRP – Temporary Shoo-Fly on Apache Boulevard in Line Section 5



SRP relocating 69 kV at Rural and Tyler in Line Section 5

Prior Rights Utility Cost Status  
Federal 5309 Project

	Percent	Budget	Earned	Cost to Date	Forecast
Line Section 1	53%	\$6,210,390	\$3,290,518	\$3,401,608	\$8,254,347
Line Section 2	71%	\$1,769,079	\$1,257,217	\$82,153	\$1,769,079
Line Section 3	86%	\$3,072,517	\$2,632,538	\$1,563,433	\$3,895,856
Line Section 4	94%	\$4,800,825	\$4,508,059	\$2,467,503	\$5,600,053
Line Section 5	93%	\$7,538,831	\$7,016,976	\$6,428,739	\$9,547,978
Maintenance Storage Facility	100%	\$320,230	\$320,230	\$397,876	\$397,876
Town Lake Bridge	100%	\$1,150,000	\$1,150,000	\$824,097	\$1,216,282
<b>Sub Total</b>	<b>81%</b>	<b>\$24,861,872</b>	<b>\$20,175,538</b>	<b>\$15,165,409</b>	<b>\$30,681,471</b>
Contingency	0%	\$1,517,420	\$0	\$0	\$1,126,171
<b>Total Prior Rights Utilities</b>	<b>76%</b>	<b>\$26,379,292</b>	<b>\$20,175,538</b>	<b>\$15,165,409</b>	<b>\$31,807,642</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

- Tempe Town Lake Bridge artist Buster Simpson will create a lighting program to be introduced at the Festival of Lights Boat Parade with the Bridge lighting kick-off. He will also produce the final installment of his bridge art projects, the pier gauge on the No. 7 bridge pier.
- An on-site pre-construction meeting was held with artist Peter Richards and Archer Western Contractors to determine installation sequence and schedule for



artwork at the Roosevelt Station. The artist will begin fabrication to comply with a January foundation pour and a March sculpture installation in 2007.

**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 / Washington Transit Center: Grading and utility work are ongoing. Archer Western Sundt / Stacey Witbek continue to coordinate access and sequencing of work.
- Central Avenue / Camelback Transit Center: Archer Western has completed the installation of junction structure (storm water detention vault) with associated other utility work continuing. Mariposa Street Cul-De-Sac work will resume after Herzog (Line Section 2) completes their SRP irrigation line and Mass Electric finishes the concrete foundation / masonry block portion of Signal Building No. 1.
- Montebello / 19th Avenue Transit Center: Demolition and utility work are ongoing. Traffic barricading and construction detours on Montebello have been implemented. Spectrum Mall management has been regularly updated on all METRO impacts to their facility.
- Station Finishes' physical link construction between couplet stations at Van Buren / 1st Avenue and Central into the Central Station Bus Transit Center is ongoing. This work includes the extension of platform / entry foundations that were constructed by the Line Section 3 Contractor.
- Eight METRO stations (7 on Line Section 3 and 1 on Line Section 4) 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 / 1st Ave Station by early February 2007.
- Station Finishes Change Notice 30A (ASU Logo Additions at Three Stations) is currently being reviewed by Archer Western. Previously undetermined Point of Interest nomenclature has been settled by ASU with the Cities of Phoenix and Tempe (there is no additional cost for this signage as it was already a bid line item and awarded).

## Cost and Schedule – Variance Analysis

- Individual station completion dates are being impacted by late steel deliveries, and delayed permit issues. The overall completion of the Station Finishes Contract continues to be analyzed and revised for issue to METRO by the Contractor.

## Issues and Solutions

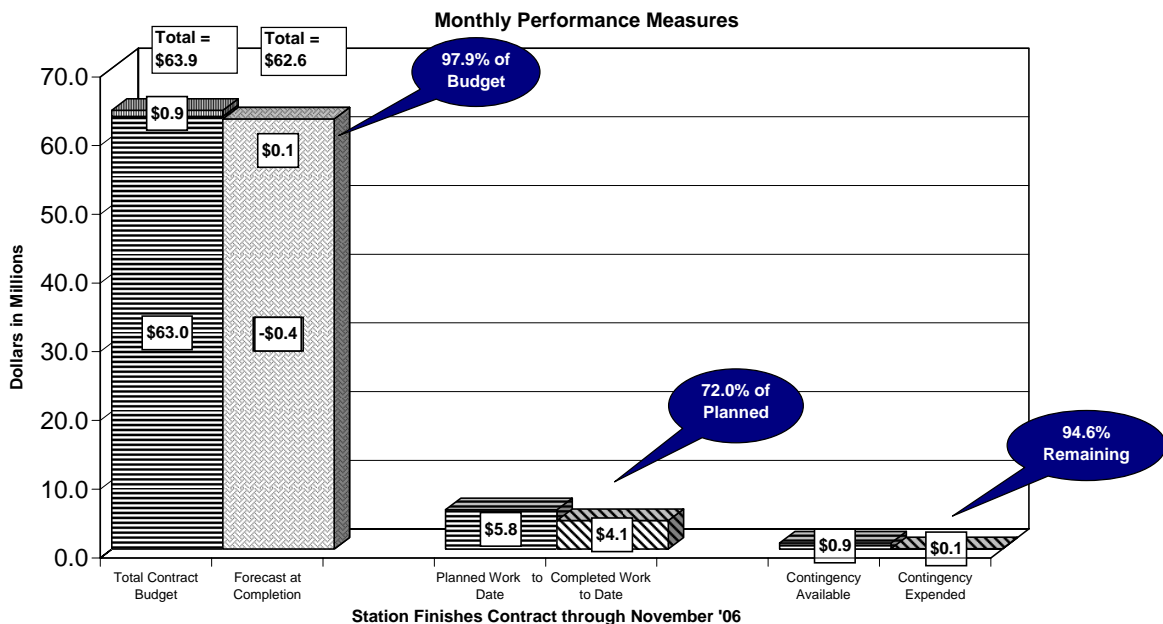
- Building department comments related to Station Finishes Permit Approval from Phoenix and Mesa resulted in additional changes at all Transit Center sites. METRO and Archer Western are continuing to resolve any potential cost and schedule impacts due to these Contract revisions.



- SRP transformer removal and LRT electrical power relocation must be completed by early January 2007 in order to avoid any risk of delay claims for Contractor's access at the Sycamore / Main Transit Center site.



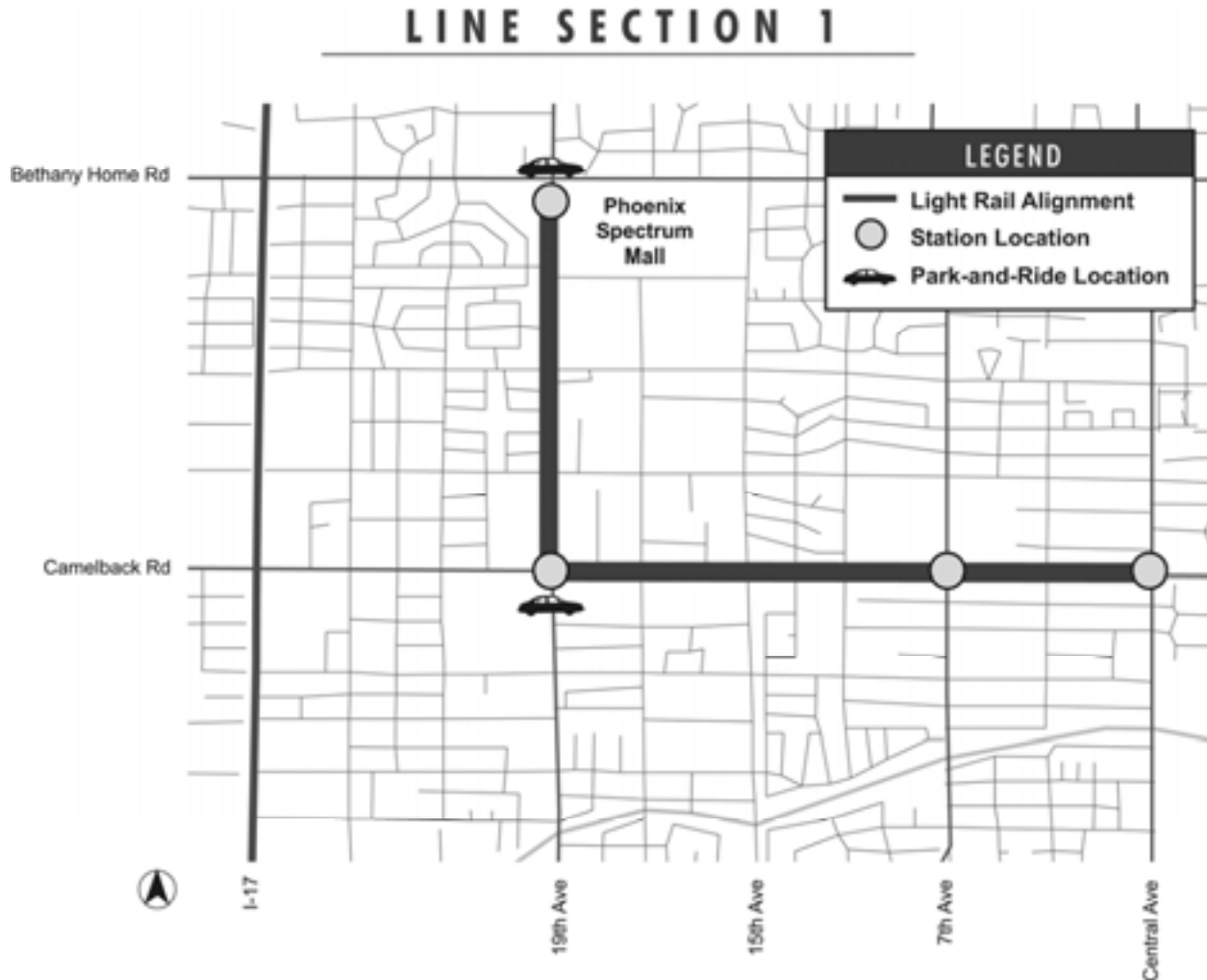
<b>Description:</b>		<b>3.2.1 Station Finishes</b>		
<b>PE/PA:</b>		Steve Gottesman		
<b>Contractor:</b>		Archer Western Contractors		
<b>Resident Architect:</b>		Doaa Aboul-Hosn		
<b>Data Through:</b>		October 31, 2006		
<b>Cumulative</b>		<b>5309</b>	<b>CNPA</b>	<b>Total</b>
1	Original Budget	\$52,985,000	\$9,988,000	\$62,973,000
2	Executed Change Orders	\$0	\$50,000	\$50,000
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$52,985,000	\$10,038,000	\$63,023,000
5	Work Scheduled	\$4,997,878	\$761,733	\$5,759,611
6	Work Earned	\$3,735,570	\$409,512	\$4,145,082
7	Actual Expenditures	\$3,718,885	\$457,000	\$4,175,885
8	Forecast to Complete Base (4-7)	\$49,266,115	\$9,581,000	\$58,847,115
9	Change Orders Pending Execution	-\$618,343	\$174,619	-\$443,724
10	Forecast at Completion (7+8+9)	\$52,366,657	\$10,212,619	\$62,579,276
11	Percent Budget Expended (7/4)	7.0%	4.6%	6.6%
12	Percent Planned (5/4)	9.4%	7.6%	9.1%
13	Earned Percent Complete (6/4)	7.1%	4.1%	6.6%
14	Schedule Performance (6/5)	0.75	0.54	0.72
15	Cost Performance (6/7)	1.00	N/A	0.99
16	Contingency Budget	\$546,000	\$371,603	\$917,603
17	Remaining Contingency	\$546,000	\$321,603	\$867,603
18	Percent Contingency Remaining (17/16)	100.0%	86.5%	94.6%
<b>Period</b>				
1	Original 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)	\$52,985,000	\$10,038,000	\$0
5	Work Scheduled (Cumm - Last Period)	\$521,574	\$220,608	\$742,182
6	Work Earned (Cumm - Last Period)	\$426,568	\$409,512	\$836,080
7	Actual Expenditures (Cumm - Last Period)	\$414,186	\$49,500	\$463,686
8	Forecast to Complete Base (4-7)	\$52,570,814	\$9,988,500	\$62,559,314
9	Change Orders Pending Execution	-\$118,343	\$174,619	\$56,276
10	Forecast at Completion (7+8+9)	\$52,866,657	\$10,212,619	\$63,079,276
11	Percent Budget Expended (7/4)	0.8%	0.5%	0.7%
12	Percent Planned (5/4)	1.0%	2.2%	1.2%
13	Earned Percent Complete (6/4)	0.8%	4.1%	1.3%
14	Schedule Performance (6/5)	0.82	1.86	1.13
15	Cost Performance (6/7)	1.03	N/A	1.80
16	Contingency Budget			
17	Remaining Contingency			
18	Percent Contingency Remaining (17/16)			



Note: No update submitted during reporting period

## 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 and miscellaneous demolition, roadway excavation, trackway grading paving pipe trenches, man holes / stand pipes installation, ACP removal at various places along the South Side of Camelback Road. This work is being performed on 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. Kiewit continues with SRPP joint trench on 19th Avenue. They also continue curb, gutter and sidewalk work on Camelback. They have begun the station foundation excavation at 7th&Camelback, completed the first 240LF of concrete trackway, placed base pavement between 3rd Avenue and 7th 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 subcontractors 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 (SRPI) 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 19th Avenue and Camelback Road and they have suspended bus operations on 19th Avenue.
- Extensive roadway milling has been complete for the first phase of existing pavement removal on Camelback Road and 19th 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.
- Planned versus actual progress is currently being evaluated as the Master Schedule revisions are being implemented.

### **Issues and Solutions**

- Real Estate, Cost-To-Cure (CTC), and SRPP Utility Easements continue to be a concern. There are several parcels in LS 1 that are not yet available or have cost-to-cure issues. And, there are several SRPP Utility Easements not yet 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**



11-01-06 CW Crews Stringing The Temporary OE At 19th And Colter For The Traffic Signals



11-01-06 KWC Crews Installing The 24 Inch SRP Irrigation Line At 19th And Colter.



11-10-06 Trackway Concrete Placement Sta 1106+00 Thru 1104+80



11-14-06 SRPP Joint Trench-Contractors West Installing Conduits In The Lateral Trench At 346+18



266 11-17-06 SRPP Jt-Contractors West Installing Joint Trench Conduit At East Lateral 346+15



11-18-06 Roadway - Combs Crews Compacting Ac At Sta. 476+00



## 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 Virginia in various states of completion, storm drainage and catch basin installation and relocation. Sanitary installations at Camelback station area, Park Central Mall and 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 Thomas.
- Herzog continues to work on Guideway excavation between Highland and Glenrosa. This includes excavation for Camelback Station and guideway.
- Installation of SRP Irrigation line and two manholes at Mariposa.
- OCS foundation construction continued Campbell and proceeds north and south.
- Herzog has completed grading the approaches and placed AC paving North and South of the Grand Canal Bridge. The bridge is anticipated to be fully opened within 3-6 weeks for traffic.
- Herzog continues to work with street light poles, and traffic signal poles restoration (or installed new), painted and placed on new foundations.
- Herzog continues to work with the intersection reconstruction at the NE and NW corners of Indian School, Highland, and Campbell
- The contractor is working on the East side of Central from Highland to Indian School Rd. They have completed the majority of the sidewalk, sandstone borders, tree wells, and are currently working on the installation of landscaping.
- Installed SRP irrigation line and manholes at Mariposa.

## Cost and Schedule – Variance Analysis

- Schedule impacts include conflicts with underground utilities and design changes.
- METRO has issued several change notices to Herzog for pricing and credit. Several change orders are being issued and performed on the job, mostly concerning utility work-a-rounds and design changes.
- Planned versus actual progress is currently being evaluated as the Master Schedule revisions are being implemented.

## Issues and Solutions

- Line Section 2 has all but 8 parcels under City control. There are no impacts to schedule at this time.

- Utility conflicts continue to occur. METRO is working diligently with Herzog and the City to perform “work-arounds” and other mitigation processes as needed to keep on schedule.
- Several major design adjustments, including waterline conflicts from Indian School to Encanto remain a challenge on LS2. METRO Design is working with the City of Phoenix to resolve ongoing conflicts.

### Construction Photos



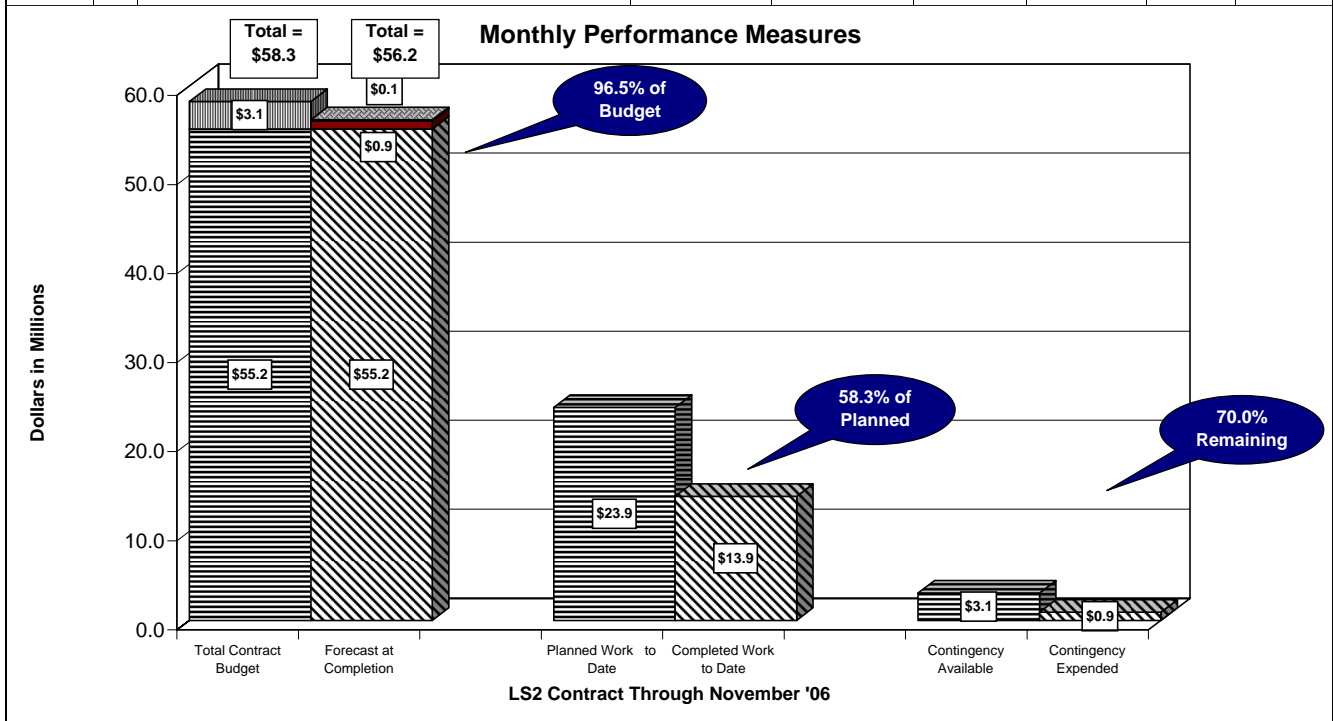
SRP Irrigation manhole and piping



Intersection reconstruction

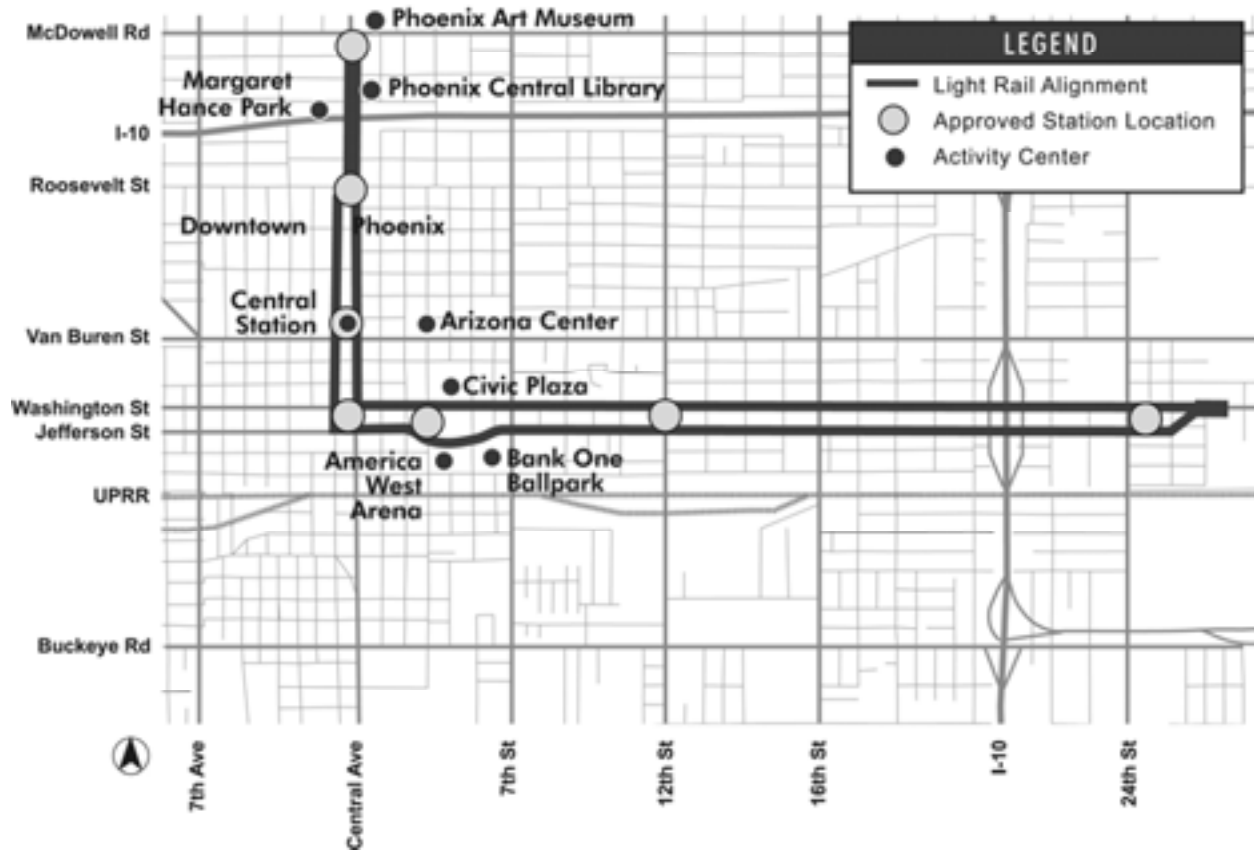


<b>Description:</b>		<b>3.1.2 Line Section 2</b>		
<b>PE/PA:</b>		<b>Alvin Livingstone</b>		
<b>Contractor:</b>		<b>Herzog Contracting Corporation</b>		
<b>Resident Engineer:</b>		<b>Marty Spong</b>		
<b>Data Through:</b>		<b>October 31, 2006</b>		
	<b>Cumulative</b>	5309	CNPA/Other	Total
1	Budget	\$48,425,124	\$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	\$20,882,745	\$3,016,024	\$23,898,769
6	Work Earned	\$12,442,926	\$1,482,215	\$13,925,141
7	Actual Expenditures	\$12,434,938	\$1,324,134	\$13,759,072
8	Forecast to Complete Base (4-7)	\$36,955,795	\$5,391,005	\$42,346,800
9	Change Orders Pending Execution	\$0	\$103,432	\$103,432
10	Forecast at Completion (7+8+9)	\$49,390,733	\$6,818,571	\$56,209,304
11	Percent Budget Expended (7/4)	25.2%	19.7%	24.5%
12	Percent Planned (5/4)	42.3%	44.9%	42.6%
13	Earned Percent Complete (6/4)	25.2%	22.1%	24.8%
14	Schedule Performance (6/5)	0.60	0.49	0.58
15	Cost Performance (6/7)	1.00	1.12	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	\$16,715	\$0	\$16,715
3	Budget Transfers	\$0	-\$128,435	-\$128,435
4	Current Budget (1+2+3)	\$49,390,733	\$6,715,139	\$56,105,872
5	Work Scheduled (Cumm - Last Period)	\$2,227,788	\$0	\$2,227,788
6	Work Earned (Cumm - Last Period)	\$2,479,374	\$219,299	\$2,698,673
7	Actual Expenditures (Cumm - Last Period)	\$2,481,374	\$187,773	\$2,669,147
8	Forecast to Complete Base (4-7)	\$46,909,359	\$6,527,366	\$53,436,725
9	Change Orders Pending Execution	-\$217,094	\$171,932	-\$45,162
10	Forecast at Completion (7+8+9)	\$49,173,639	\$6,887,071	\$56,060,710
11	Percent Budget Expended (7/4)	5.0%	2.8%	4.8%
12	Percent Planned (5/4)	4.5%	0.0%	4.0%
13	Earned Percent Complete (6/4)	5.0%	3.3%	4.8%
14	Schedule Performance (6/5)	1.11	N/A	1.21
15	Cost Performance (6/7)	1.00	1.17	1.01
16	Contingency Budget			
17	Remaining Contingency			
18	Percent Contingency Remaining (17/16)			



## 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 14 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 and foundations, irrigation as required along ROW and stations.
- AWC is working currently working their day crews 6 days per week and night crews 4 to 5 nights a week.
- AWC has completed 9 station foundations; Washington/Central, Van Buren/1<sup>st</sup> Ave, Van Buren/Central, Jefferson/1<sup>st</sup> Ave, 3<sup>rd</sup> St/Jefferson, Roosevelt/Central, 24<sup>th</sup> Jefferson, 24<sup>th</sup> Washington, 3<sup>rd</sup> St/Washington. AWC is currently placing foundations at the 12<sup>th</sup> St/Washington station. Also performing punch list work on the 9 stations that have been completed.
- AWC currently has 6 rail headings in progress throughout the alignment and has installed approximately 11,000 lf of guideway throughout the Downtown area; Segments 1, 2, 3, 4, 6, 7 and on east end of project in Segments 13 and 14. Completing turnout on Central for the McKinley Loop. AWC is providing potholing services for existing waterline and other utilities for the 11<sup>th</sup> St Wye Track design.
- Level 3 has completed relocation of duct bank and manholes at 13<sup>th</sup> street on Washington Street and has moved to Washington 7<sup>th</sup> street. AWC has

completed approximately 95 percent of traffic signal/street light conduit installation and should complete by the end of December.

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

- AWC and METRO are in negotiations concerning the master schedule milestone revision change order.

### **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/S&C contractor.
- Bi-weekly APS meetings are also continuing to better facilitate the revenue installation and expedite any required changes.
- ROW acquisition is complete with several outstanding cost-to-cure items. Sterling Hotel being the only property with ROW impact, COP has issued a notice to Sterling Hotel to remove property per the monies and agreements that have been transacted or COP will mobilize a contractor to proceed with such.

### **Construction Photos**



Guideway Excavation at 1<sup>st</sup> Ave and Adams



Trench Drain Installation at 1<sup>st</sup> Ave



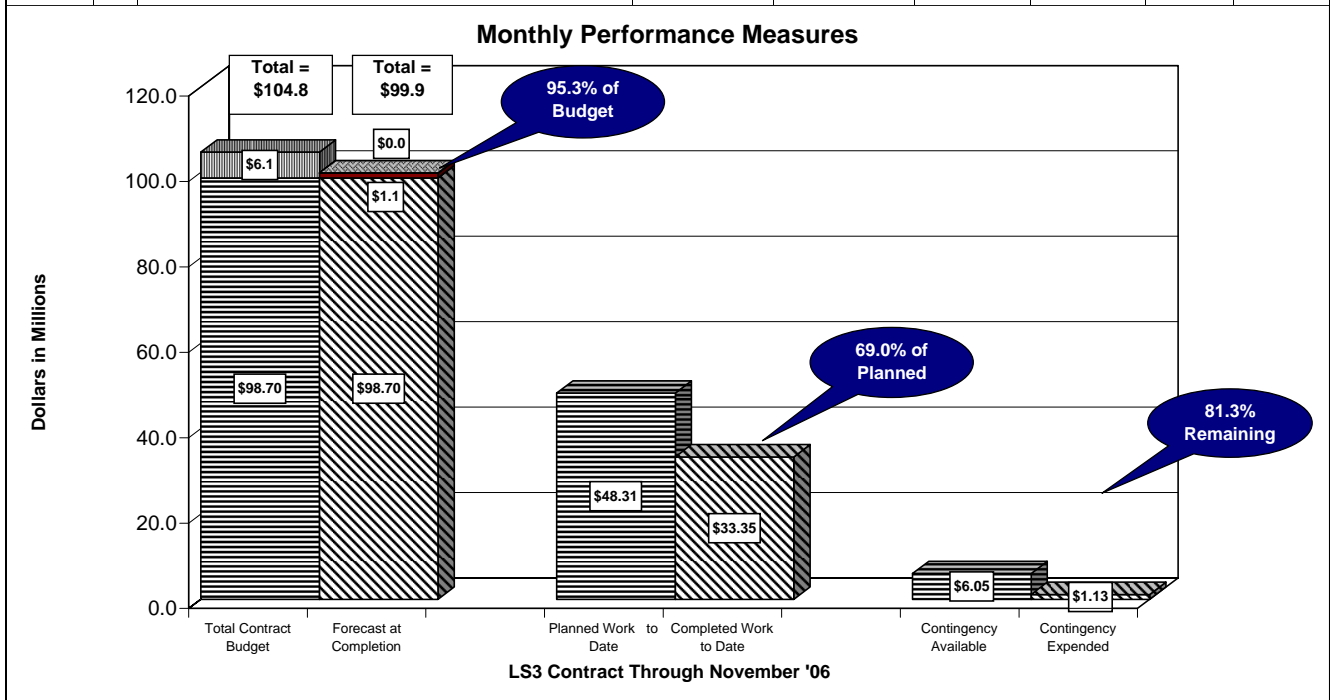
Asphalt Pavement at Jefferson 5th to 7<sup>th</sup> Streets



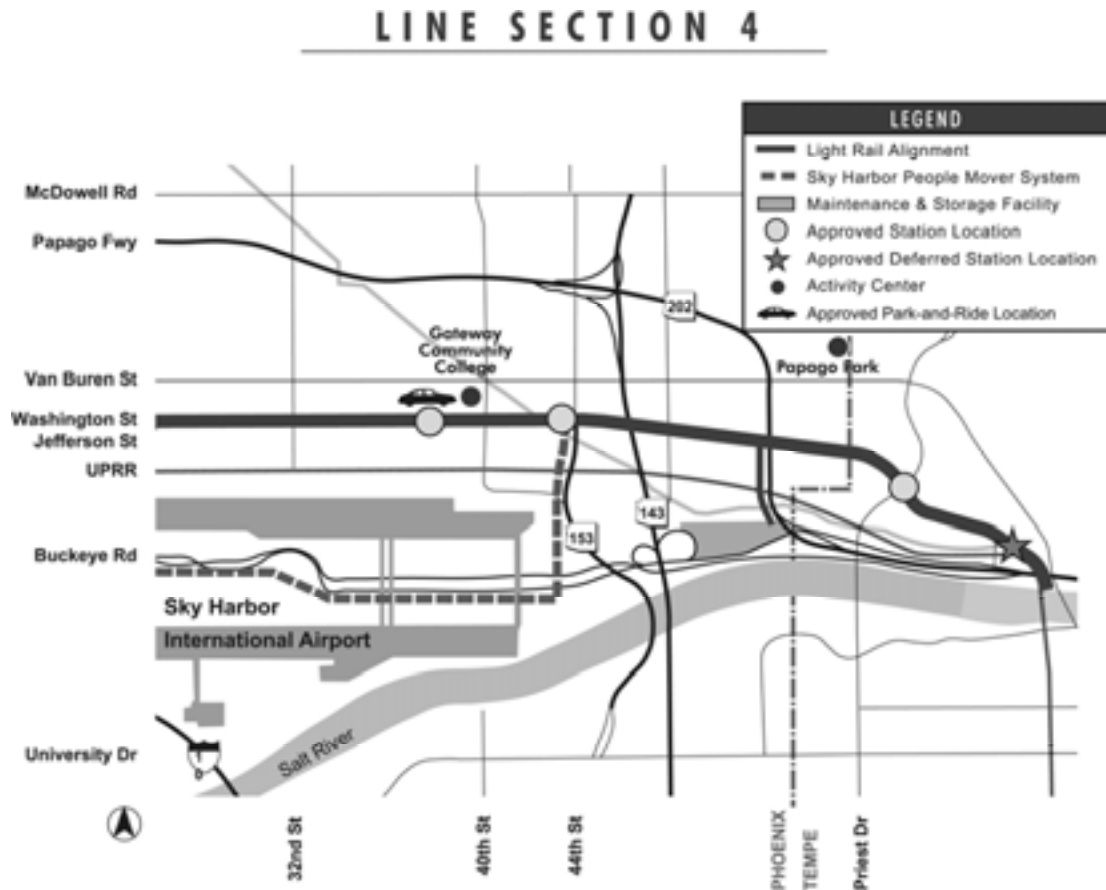
Track Installation at Washington/24<sup>th</sup> Street Station



	<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>October 25, 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	\$430,434	\$50,285	\$480,719
3	Budget Transfers	\$0	\$653,194	\$653,194
4	Current Budget (1+2+3)	\$79,679,051	\$20,155,831	\$99,834,882
5	Work Scheduled	\$38,386,060	\$9,928,511	\$48,314,571
6	Work Earned	\$25,145,233	\$8,202,184	\$33,347,417
7	Actual Expenditures	\$29,122,828	\$8,667,496	\$37,790,324
8	Forecast to Complete Base (4-7)	\$50,556,223	\$11,488,335	\$62,044,558
9	Change Orders Pending Execution	\$81,417	-\$44,331	\$37,086
10	Forecast at Completion (7+8+9)	\$79,760,468	\$20,111,500	\$99,871,968
11	Percent Budget Expended (7/4)	36.6%	43.0%	37.9%
12	Percent Planned (5/4)	48.2%	49.3%	48.4%
13	Earned Percent Complete (6/4)	31.6%	40.7%	33.4%
14	Schedule Performance (6/5)	0.66	0.83	0.69
15	Cost Performance (6/7)	0.86	0.95	0.88
16	Contingency Budget	\$5,648,232	\$402,730	\$6,050,962
17	Remaining Contingency	\$5,217,798	\$381,610	\$4,917,049
18	Percent Contingency Remaining (17/16)	92.4%	94.8%	81.3%
	<b>Period</b>			
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	\$50,480	\$25,000	\$75,480
3	Budget Transfers	\$0	\$5,524	\$5,524
4	Current Budget (1+2+3)	\$79,679,051	\$20,155,831	\$99,834,882
5	Work Scheduled (Cumm - Last Period)	\$3,399,400	\$1,261,015	\$4,660,415
6	Work Earned (Cumm - Last Period)	\$1,766,393	\$516,214	\$2,282,607
7	Actual Expenditures (Cumm - Last Period)	\$3,939,141	\$460,618	\$4,399,759
8	Forecast to Complete Base (4-7)	\$75,739,910	\$19,695,213	\$95,435,123
9	Change Orders Pending Execution	-\$314,456	-\$183,218	-\$497,674
10	Forecast at Completion (7+8+9)	\$79,364,595	\$19,972,613	\$99,337,208
11	Percent Budget Expended (7/4)	4.9%	2.3%	4.4%
12	Percent Planned (5/4)	4.3%	6.3%	4.7%
13	Earned Percent Complete (6/4)	2.2%	2.6%	2.3%
14	Schedule Performance (6/5)	0.52	0.41	0.49
15	Cost Performance (6/7)	0.45	1.12	0.52
16	Contingency Budget	\$6,398,232	\$1,231,072	\$7,629,304
17	Remaining Contingency	\$6,347,752	\$1,200,548	\$7,548,300
18	Percent Contingency Remaining (17/16)	99.2%	97.5%	98.9%



## 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

- Lakeside Drive to Center Parkway: No activities this month.
- Center Parkway to 56th Street: Punch list work is being completed at the Priest Station.



- 56th Street to 48th Street: The test track was substantially completed on November 15th on 56th Street to just west of 51st Street including the yard lead track tie-in to the MSF yard lead track; work is now underway to close out the punch list items that need to be addressed in this guide-way section.
- 48th Street to 44th Street: placed curbs/gutters, sidewalks on the south side of Washington Street within the ADOT right-of-way and completed the PCCP slabs at the south bound on ramp to SR143; completed the guide-way slabs within the ADOT right-of-way and opened all the SR143 on and off ramps to traffic as scheduled with ADOT; continued placing guide-way slabs west of SR143.
- 44th Street to 40th Street; Completed constructing grounding grid for the 44th Street Station; removed existing roadway pavement and excavated the guide-way subgrade east and west of the Washington Street bridge over the Grand Canal; placed AC pavement on the south side of Washington Street from 40th to 44th Streets and opened it up as well as the south side of the bridge to traffic; completed the construction of the OCS foundations; began the installation of the combined system ductbank.
- 40th Street to 26th Street: Continued the installation of advanced utility crossings under the LRV guide-way from 34th to 30th Streets; completed the utility relocation work on 32nd Street; demolished curbs/gutters, sidewalks and driveways from 38th to 36th Streets on the south and north sides of Washington Street and began rough grading for roadway widening.
- Washington Street Bridge: Installed the bridge railing along the south parapet wall of the bridge.

### **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 are no significant issues at this time.

### Construction Photographs



Drilling OCS foundations west of 44<sup>th</sup> Street



Substantial Completion of the first phase of the Test Track



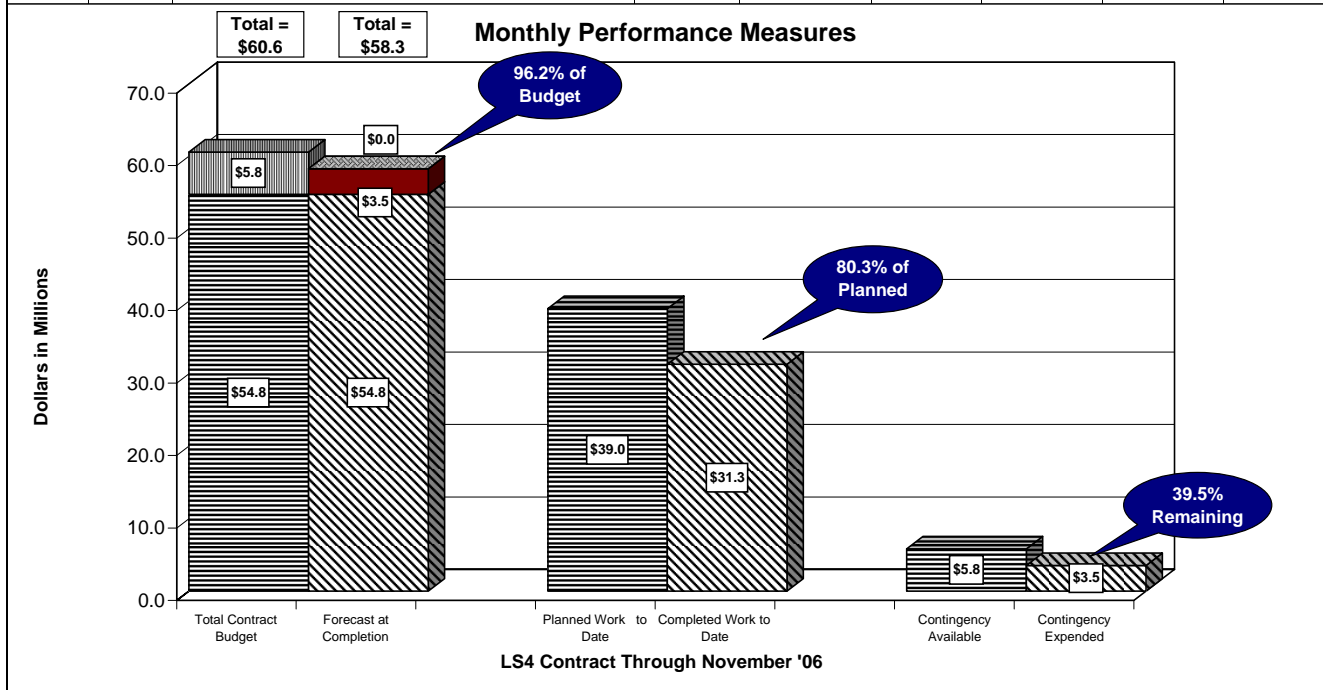
Guide-way Slab Placement under SR143



Guide-way Slab Placement 44<sup>th</sup> Street to SR143

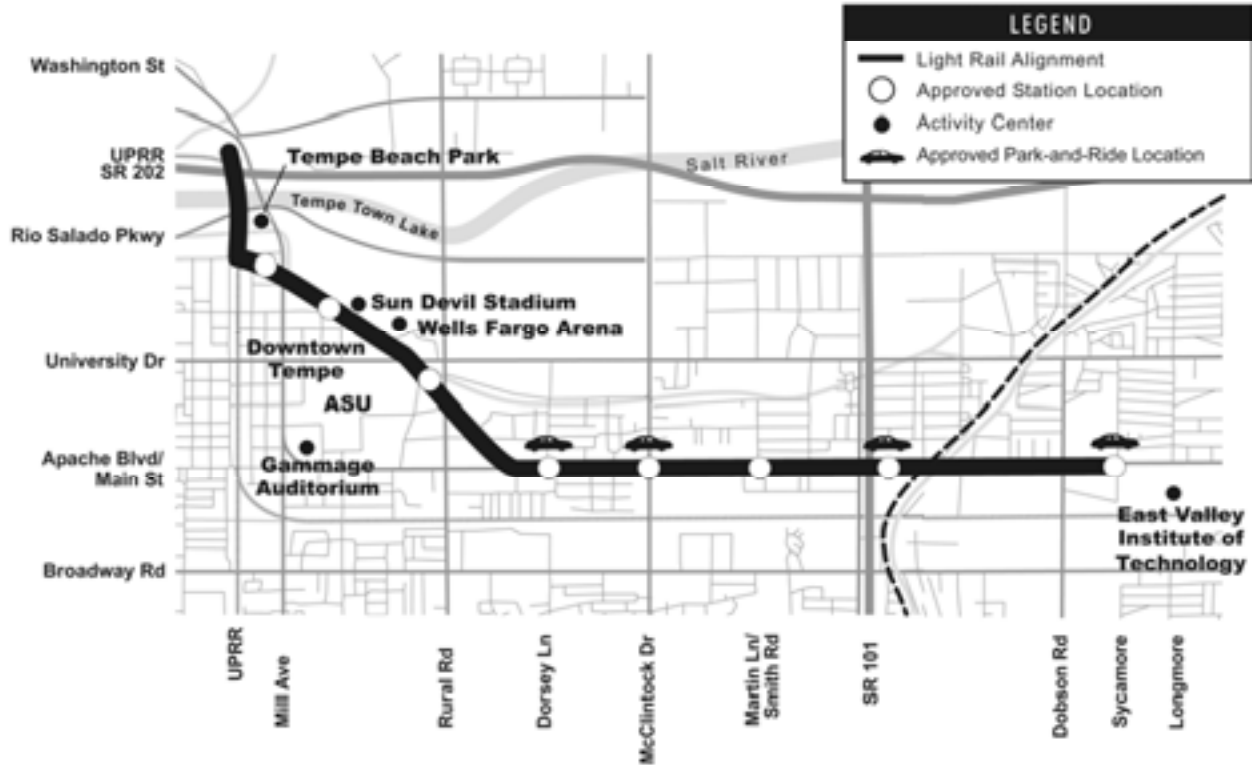


<b>Description:</b>		<b>3.1.4 Line Section 4</b>		
<b>PE/PA:</b>		<b>Avrum Loewenstein</b>		
<b>Contractor:</b>		<b>Sundt/Stacey Witbeck</b>		
<b>Resident Engineer:</b>		<b>Frank Abner</b>		
<b>Data Through:</b>		<b>October 31, 2006</b>		
<b>Cumulative</b>				
		<b>5309</b>	<b>CNPA</b>	<b>Total</b>
1	Budget	\$47,869,894	\$6,880,853	\$54,750,747
2	Executed Change Orders	\$3,459,335	\$514,836	\$3,974,171
3	Budget Transfers	\$0	\$1,713,597	\$1,713,597
4	Current Budget (1+2+3)	\$51,329,229	\$9,109,286	\$60,438,515
5	Work Scheduled	\$31,958,695	\$7,044,936	\$39,003,631
6	Work Earned	\$25,849,902	\$5,455,467	\$31,305,369
7	Actual Expenditures	\$28,189,373	\$5,656,014	\$33,845,387
8	Forecast to Complete Base (4-7)	\$23,139,856	\$3,453,272	\$26,593,128
9	Change Orders Pending Execution	\$71,923	\$882,999	\$954,922
10	Forecast at Completion (7+8+9)	\$51,401,152	\$9,992,285	\$61,393,437
11	Percent Budget Expended (7/4)	54.9%	62.1%	56.0%
12	Percent Planned (5/4)	62.3%	77.3%	64.5%
13	Earned Percent Complete (6/4)	50.4%	59.9%	51.8%
14	Schedule Performance (6/5)	0.81	0.77	0.80
15	Cost Performance (6/7)	0.92	0.96	0.92
16	Contingency Budget	\$5,662,190	\$172,633	\$5,834,823
17	Remaining Contingency	\$2,130,932	\$172,633	\$2,303,565
18	Percent Contingency Remaining (17/16)	37.6%	100.0%	39.5%
<b>Period</b>				
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	-\$529,890	\$567,768	\$37,878
3	Budget Transfers	\$0	-\$551,730	-\$551,730
4	Current Budget (1+2+3)	\$51,329,229	\$9,109,286	\$60,438,515
5	Work Scheduled (Cumm - Last Period)	\$1,776,657	\$52,061	\$1,828,718
6	Work Earned (Cumm - Last Period)	\$1,369,789	\$527,121	\$1,896,910
7	Actual Expenditures (Cumm - Last Period)	\$1,848,492	\$113,178	\$1,961,670
8	Forecast to Complete Base (4-7)	\$23,139,856	\$3,453,272	\$26,593,128
9	Change Orders Pending Execution	\$41,783	\$858,214	\$899,997
10	Forecast at Completion (7+8+9)	\$25,030,131	\$4,424,664	\$29,454,795
11	Percent Budget Expended (7/4)	3.6%	1.2%	3.2%
12	Percent Planned (5/4)	3.5%	0.6%	3.0%
13	Earned Percent Complete (6/4)	2.7%	5.8%	3.1%
14	Schedule Performance (6/5)	0.77	10.13	1.04
15	Cost Performance (6/7)	0.74	4.66	0.97
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 4,600 track feet of embedded track, with scheduled weekly placements until completion.
- The Contractor completed placement of all conduits at 1<sup>st</sup> Street to facilitate an electrical line conversion at the crossing, and for a power feed for TPSS No.10.
- The Contractor installed the grade crossing at the Ash Ave/3<sup>rd</sup> Street intersection, and about half the track westward from the intersection toward 1<sup>st</sup> Street.
- The Contractor completed all guideway ductbank work along 3<sup>rd</sup> Street (Ash to Mill), and the grounding grid for the 3<sup>rd</sup> and Mill station, then started track installation.
- The Contractor continued guideway preparation and started track layout from Mill Avenue, along the Creamery Route to 5<sup>th</sup> and College.
- The Contractor initiated installation of the grounding grid for the 5<sup>th</sup>/College station, coordinating with the Transit Center archeologists for site monitoring.
- The Contractor worked around numerous archeological data recovery operations in the ASU promenade to complete approximately one-half of this work, installing pavers, tree boxes, trees, gabion walls, sidewalks, and irrigation.
- The Contractor continued installing guideway ductbank along Veterans Way, working around archeological data recoveries.
- The Contractor completed all track installation between 6<sup>th</sup> Street and Rural Road.
- The Contractor installed the column foundations for the University/Rural station.
- The Contractor continued roadway work along the south side of Apache Boulevard, placing street light foundations, curb and gutter, and sidewalks from Dorsey to Oak Streets; Third-party utility companies continued relocations eastward along Apache Boulevard, eastward from McClintock to the Tempe Canal Bridge.
- The Contractor completed the placement of 1,000 feet of 30" storm drain along McClintock Drive, and continued placement of 24" storm drain on Apache Boulevard, eastward from McClintock.
- The Contractor completed installation of the base and stems of the center section of the 101 Freeway Bridge, and continued placing formwork for the "lost deck".
- The Contractor continued street widening and street light placements from Price Road to the Tempe Canal Bridge.



- The Contractor completed the northside approach slabs of the Tempe Canal Bridge, demolished the old bridge support structure, and began replacing the canal lining.
- The Contractor continued utility relocations and street light foundation installations from the Tempe Canal Bridge, eastward toward 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, Ash to 1<sup>st</sup> St



Paving and Tree Placement at Promenade



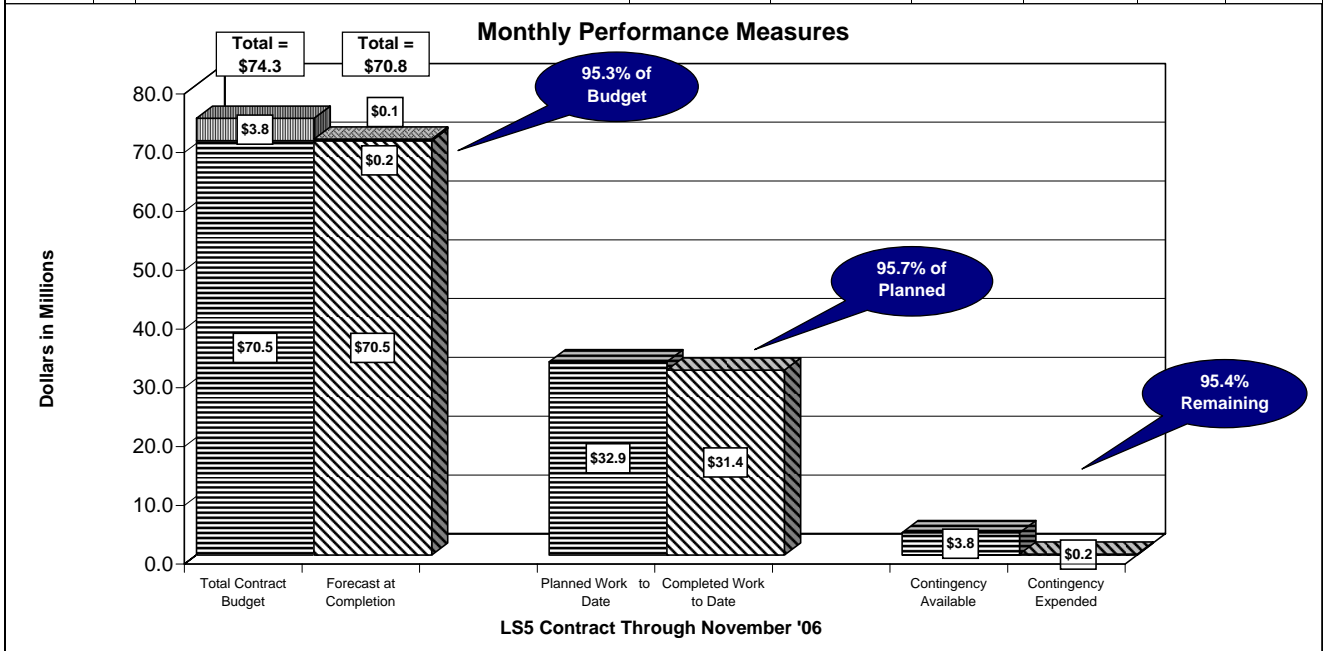
101 Freeway Bridge, Forming for New Center Girder



Canal Lining Work 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>November 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	\$174,683	\$148,556	\$323,239
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$69,057,652	\$1,721,873	\$70,779,525
5	Work Scheduled	\$32,040,415	\$814,720	\$32,855,135
6	Work Earned	\$30,944,955	\$500,756	\$31,445,711
7	Actual Expenditures	\$30,942,619	\$501,221	\$31,443,840
8	Forecast to Complete Base (4-7)	\$38,115,033	\$1,220,652	\$39,335,685
9	Change Orders Pending Execution	\$66,344	\$67,264	\$133,608
10	Forecast at Completion (7+8+9)	\$69,123,996	\$1,789,137	\$70,913,133
11	Percent Budget Expended (7/4)	10.8%	29.1%	44.4%
12	Percent Planned (5/4)	46.4%	47.3%	46.4%
13	Earned Percent Complete (6/4)	44.8%	29.1%	44.4%
14	Schedule Performance (6/5) (SPI)	0.97	0.00	0.96
15	Cost Performance (6/7) (CPI)	1.00	0.00	1.00
16	Contingency Budget	\$3,708,135	\$107,679	\$3,815,814
17	Remaining Contingency	\$3,533,452	\$106,767	\$3,640,219
18	Percent Contingency Remaining (17/16)	95.3%	99.2%	95.4%
	<b>Period</b>			
1	Budget	N/A	N/A	N/A
2	Executed Change Orders	\$26,922	\$0	\$26,922
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$69,057,652	\$1,721,873	\$70,779,525
5	Work Scheduled (Cumm - Last Period)	\$2,846,266	\$301,876	\$3,148,142
6	Work Earned (Cumm - Last Period)	\$3,192,260	\$206,785	\$3,399,045
7	Actual Expenditures (Cumm - Last Period)	\$3,181,758	\$0	\$3,181,758
8	Forecast to Complete Base (4-7)	\$65,875,894	\$1,721,873	\$67,597,767
9	Change Orders Pending Execution	-\$407,274	\$49,917	-\$357,357
10	Forecast at Completion (7+8+9)	\$68,650,378	\$1,771,790	\$70,422,168
11	Percent Budget Expended (7/4)	4.6%	0.0%	4.5%
12	Percent Planned (5/4)	4.1%	17.5%	4.4%
13	Earned Percent Complete (6/4)	4.6%	12.0%	4.8%
14	Schedule Performance (6/5)	1.12	0.00	1.08
15	Cost Performance (6/7)	1.00	0.00	1.07
16	Contingency Budget			
17	Remaining Contingency			
18	Percent Contingency Remaining (17/16)			



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



### Description

The 48<sup>th</sup> 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

- Artist completed installation of art features on southeast retaining wall.
- 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.
- Mobilization for the specialty lighting show on December 9, 2006 is now underway with testing by the artist beginning on December 7 with setup by METRO Systems.

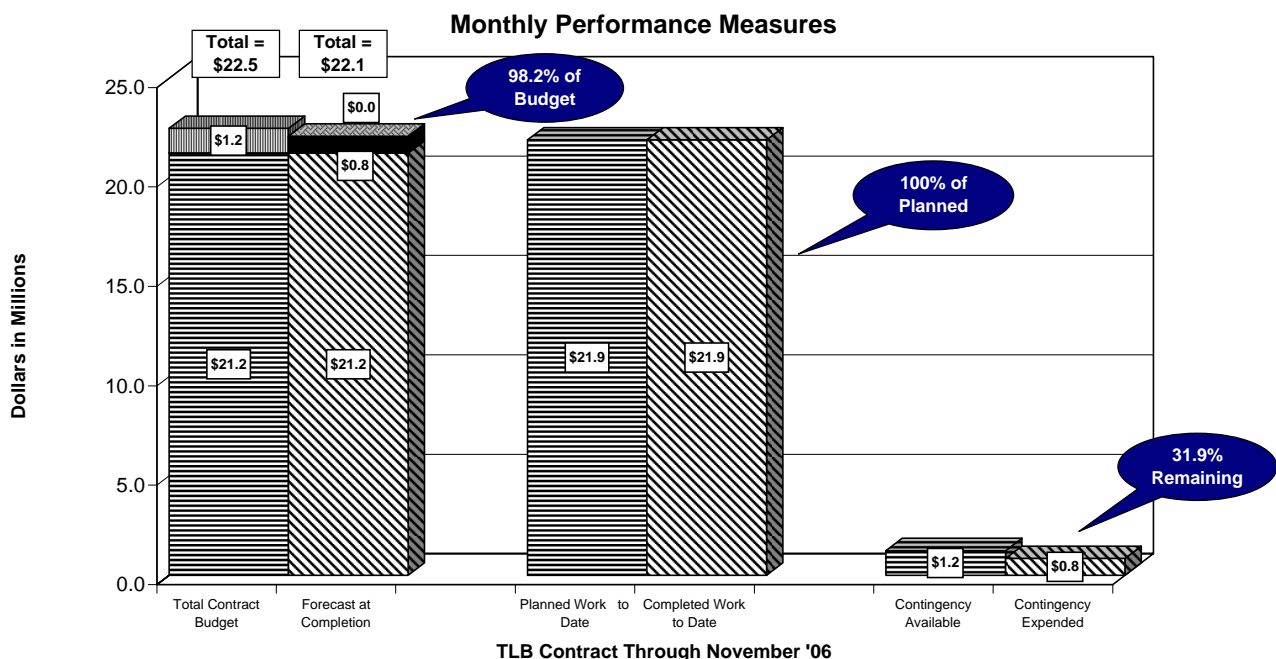
### **Construction Photographs**



Southeast Retaining Wall with Artist’s Plaques



<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)	66.1%	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	0.00	1.00
15	Cost Performance (6/7)	1.0	1.0	1.0
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)	\$30,068	\$0	\$30,068
6	Work Earned (Cumm - Last Period)	\$976,889	\$0	\$976,889
7	Actual Expenditures (Cumm - Last Period)	\$934,182	\$0	\$934,182
8	Forecast to Complete Base (4-7)	\$20,950,187	\$17,523	\$20,967,710
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)	4.3%	0.0%	4.3%
12	Percent Planned (5/4)	0.1%	0.0%	0.1%
13	Earned Percent Complete (6/4)	4.5%	0.0%	4.5%
14	Schedule Performance (6/5)	32.49	1.00	32.49
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 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 the Contractor continued working diligently to complete the life/safety essentials for the City of Phoenix Temporary Certificate of Occupancy (TCO). These efforts resulted in a conditional TCO being granted by the City of Phoenix on November 14, 2006. This is a major milestone towards final completion of this building. Coordination with follow-on contractors for the installation of office furniture and telecommunications equipment is already underway. All building systems are now being finalized in preparation for securing the Certificate of Occupancy. The delivery and installation of METRO furnished shop equipment began this month.



- At the MOE building construction continued on remaining outstanding work activities including the passenger elevator, PA and CCTV conduit installation, room finishes, tracks M2 and M3 support pedestals, compressed air piping, shop lighting fixtures, window glass installation, LRV lifts. Pre-final punch list work and pre-final clean-up has begun.
- Planting of the shrubs and trees, installation of landscape irrigation piping, as well as the placement of decomposed granite cover continued north of the MOE and MOW buildings.
- At the MOW building HVAC, plumbing, fire sprinkler, and electrical installations continue and are nearing completion. The pre-engineered mezzanine platform construction is almost complete. Installation of exterior wall panels is substantially complete with insulation and dry walling of interiors well underway. Installation of exterior windows has begun at the office areas.
- The sand distribution system installation at the yard service and cleaning platform is nearing completion.
- At the LRV Wash building the installation of mechanical and electrical systems are well under way. Work on the fire sprinkler piping system continues. The fiberglass soffit in the wash bay was installed.

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

- The Contractor's October 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



North Elevation of MOE building



View of the MOE building from the Southeast



View of the Yard Lead Track and OCS

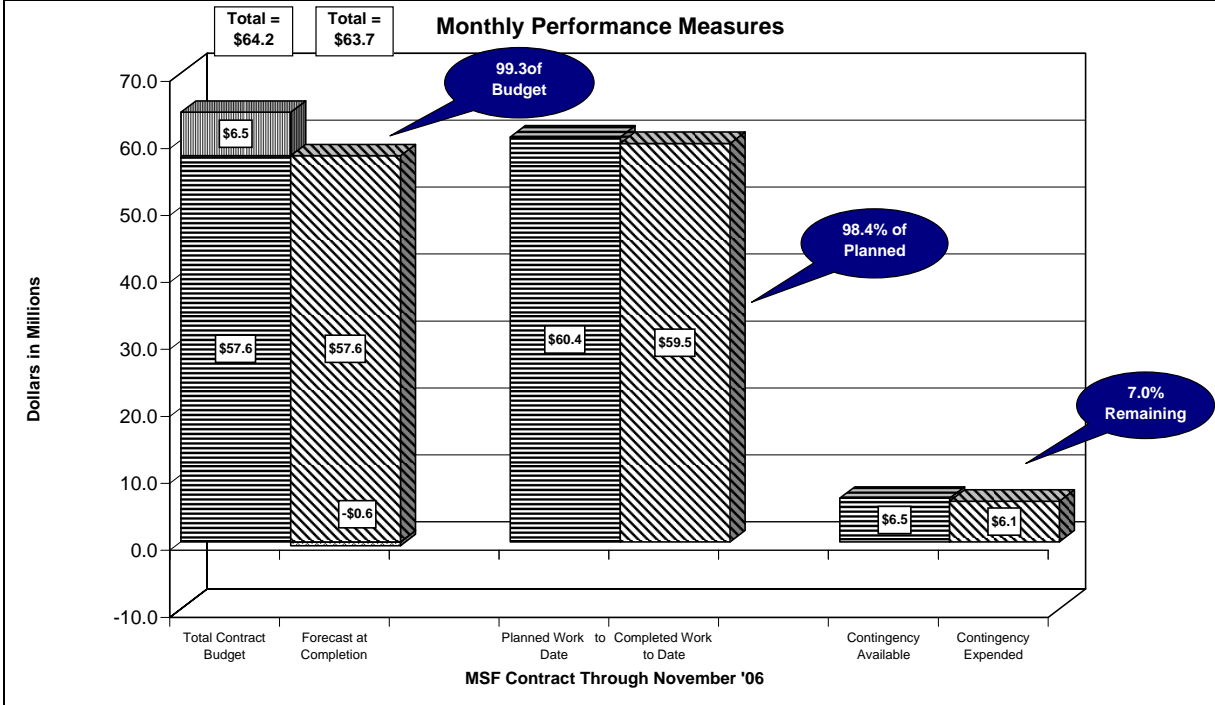


Sand distribution system supports at the Yard Service and Cleaning Platform



NOVEMBER 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>	October 31, 2006	
	<b>Cumulative</b>	5309	Total
1	Budget	\$57,637,721	\$57,637,721
2	Executed Change Orders	\$6,653,221	\$6,653,221
3	Budget Transfers	\$0	\$0
4	Current Budget (1+2+3)	\$64,290,942	\$64,290,942
5	Work Scheduled	\$60,440,080	\$60,440,080
6	Work Earned	\$59,489,824	\$59,489,824
7	Actual Expenditures	\$59,870,055	\$59,870,055
8	Forecast to Complete Base (4-7)	\$4,420,887	\$4,420,887
9	Change Orders Pending Execution	-\$592,253	-\$592,253
10	Forecast at Completion (7+8+9)	\$63,698,689	\$63,698,689
11	Percent Budget Expended (7/4)	93.1%	93.1%
12	Percent Planned (5/4)	94.0%	94.0%
13	Earned Percent Complete (6/4)	92.5%	92.5%
14	Schedule Performance (6/5)	0.98	0.98
15	Cost Performance (6/7)	0.99	0.99
16	Contingency Budget	\$6,513,772	\$6,513,772
17	Remaining Contingency	\$452,804	\$452,804
18	Percent Contingency Remaining (17/16)	7.0%	7.0%
	<b>Period</b>		
1	Budget	N/A	N/A
2	Executed Change Orders	-\$230,814	-\$230,814
3	Budget Transfers	\$0	\$0
4	Current Budget (1+2+3)	\$60,440,080	\$60,440,080
5	Work Scheduled (Cumm - Last Period)	\$2,014,221	\$2,014,221
6	Work Earned (Cumm - Last Period)	\$1,915,820	\$1,915,820
7	Actual Expenditures (Cumm - Last Period)	\$2,095,913	\$2,095,913
8	Forecast to Complete Base (4-7)	\$58,344,167	\$58,344,167
9	Change Orders Pending Execution	-\$80,217	-\$80,217
10	Forecast at Completion (7+8+9)	\$60,359,863	\$60,359,863
11	Percent Budget Expended (7/4)	3.5%	3.5%
12	Percent Planned (5/4)	3.3%	N/A
13	Earned Percent Complete (6/4)	3.2%	N/A
14	Schedule Performance (6/5)	0.95	0.95
15	Cost Performance (6/7)	0.91	0.91
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 P&R 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>. The new design will be complete and approved in time to be included in the total P&R bid package in April 2007.
- Providing 90 spaces, the Dorsey and Apache P&R 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 P&R 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 P&R 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 P&R 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 P&R 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.

### **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 for construction yards by the line section contractors.



## Issues and Solutions

- Processing of variance request application for Central & Camelback site that relate to reduction of setbacks, landscaping, wall height and on-site retention. The application for a variance hearing will parallel the next phase of final design. It may take up to 45 days for a hearing to be scheduled.

## 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. Two material deliveries were made during this month. The next scheduled inspection trip will be on December 7, 2006.
  - November 8, 2006 a Change Notice was issued to VAE Nortrak requesting a cost proposal for a proposed modification of the Equilateral Wye Track Turnouts on Line Section 3.
  - 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 Photographs



First Article Inspection of the LS2 Single Crossover

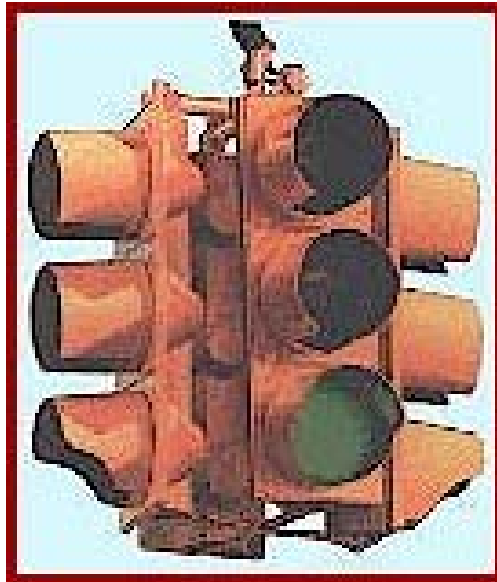


First Article Inspection LS5 Pocket Track in Birmingham, Alabama



Delivery of the 100m Right Hand Single Crossover for LS2

## 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

Description	Contract/Budget Amount	Total Payments
LS 4 Traffic Signal Poles/Mast Arms (Phoenix - PO is completed)	\$ 369,069.21	\$ 360,469.21
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**

- None.

**Construction Photographs**



City of Tempe Traffic Signal Poles and Mast Arm Photos



Delivery of the Mast Arms Structures for the LS 4 and LS 5.

## 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. VMR 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**

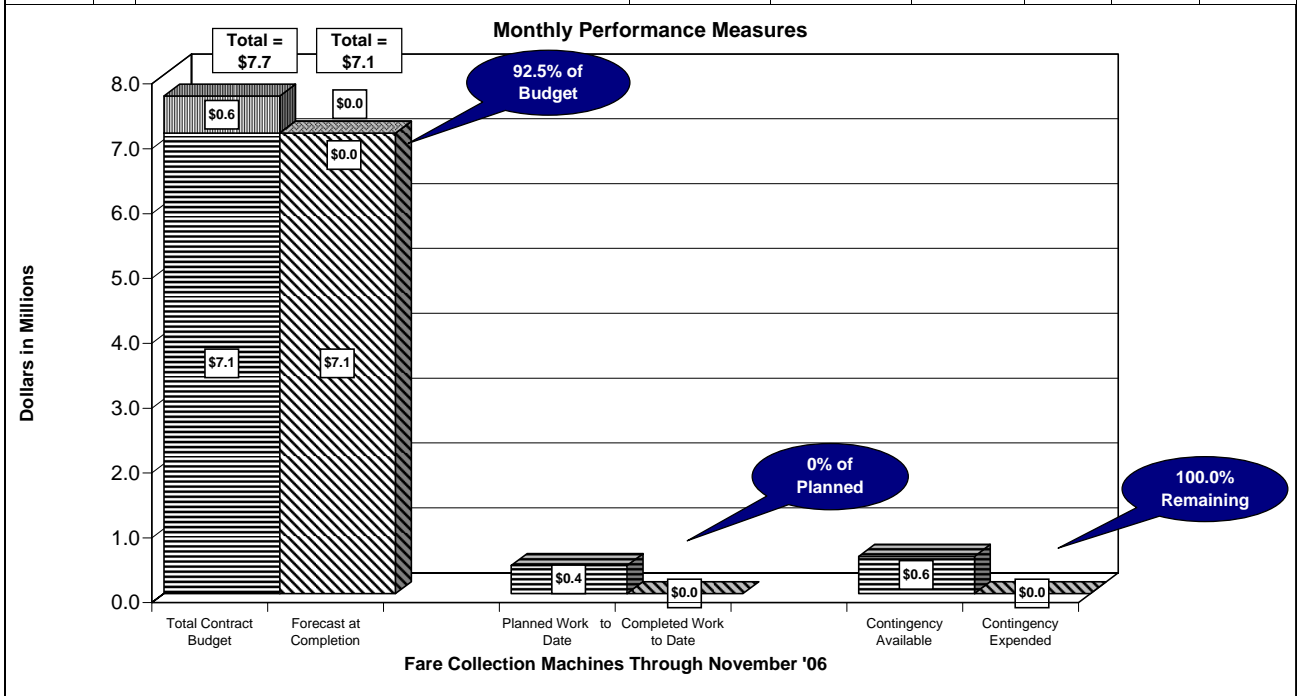
- Fare collection system activities remain on schedule and within budget at this time.

## **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>		Fare Collection Machines
<b>PE/PA:</b>		Arkady Bernshtryn
<b>Contractor:</b>		Scheidt & Bachmann USA, Inc.
<b>Resident Engineer:</b>		Thomas Klings
<b>Data Through:</b>		N/A
<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.
- METRO held Design Review Meeting No. 22 with KI on June 15, 2006. The main topics for presentation by KI and discussion were: Bumper side panel application; truck FAI; closing open items; bumper fit; master control review on mockup; climate room schedule; and vehicle delivery schedule.



- METRO/KI dialogue continues regarding vehicle final assembly in Arizona. Also, the MSF is still one option.
- 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 – 26 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.
- The final vehicle visual inspections of car 102 and 104 have been completed (car 104 has been shipped from KS-Osaka on October 31, 2006 and November 1, 2006). Cars 105 and 106 have been subjected to this inspection, but open items remain. The open items list for car 103 has been prepared by KS, but YTT will need to discuss this early next week. Underframe inspections for the 2<sup>nd</sup> lot of 17 cars has commenced from November 2, 2006.
- 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.
- Car 102 has completed climate testing and has been shipped back to Osaka/Plant. Vehicle will not ship to METRO until January 7, 2007. Modifications and finishing need to be done prior to shipping to the United States.
- 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.
- Cars 103 and 104 were shipped from Osaka and will arrive at the MSF for final assembly in December. Truck frames and components were also shipped from Osaka as well but KI will assemble and static test completed trucks at the Hudson-Bergen maintenance shop in New Jersey. Work continues on subsequent cars in Osaka and shipments from Japan are scheduled at about four (4) cars per month.



- Car 102 successfully completed the climate test and has been shipped back to the Osaka plant for completion. The car will be shipped in early February after static testing and some low speed running has been completed.
- 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;s 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

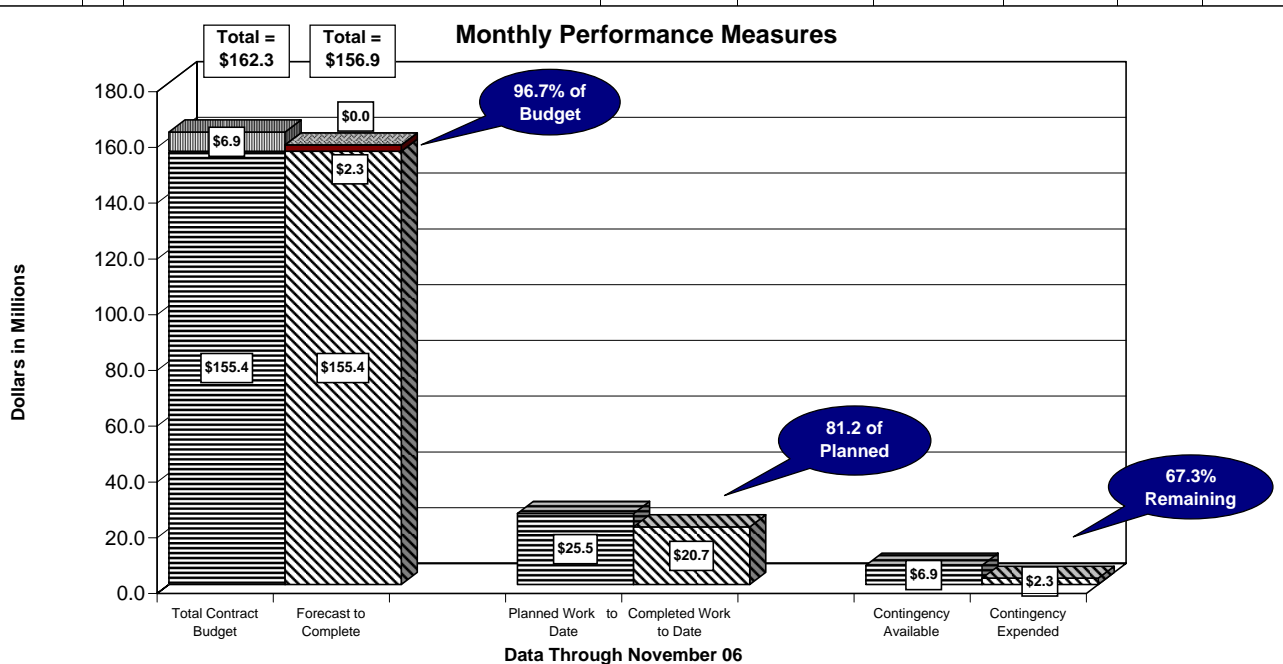
## Construction Photographs



November 1, 2006  
Mass-pro Semi Complete Carbody Ship 2



<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>September 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	\$25,485,702	N/A	\$25,485,702
6	Work Earned	\$20,702,833	N/A	\$20,702,833
7	Actual Expenditures	\$25,816,264	N/A	\$25,816,264
8	Forecast to Complete Base (4-7)	\$91,809,192	N/A	\$91,809,192
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)	21.9%	N/A	16.4%
12	Percent Planned (5/4)	21.7%	N/A	16.2%
13	Earned Percent Complete (6/4)	17.6%	N/A	13.1%
14	Schedule Performance (6/5)	0.81	N/A	0.81
15	Cost Performance (6/7)	0.80	N/A	0.80
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%	100.0%	67.3%
<b>Period</b>				
1	Original Budget	\$115,369,780	\$40,050,160	\$155,419,940
2	Executed Change Orders	-\$750,000	\$0	-\$750,000
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)	\$5,329,264	N/A	\$5,329,264
6	Work Earned (Cumm - Last Period)	\$0	N/A	\$0
7	Actual Expenditures (Cumm - Last Period)	\$638,980	N/A	\$638,980
8	Forecast to Complete Base (4-7)	\$116,986,476	N/A	\$116,986,476
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)	0.5%	N/A	0.4%
12	Percent Planned (5/4)	21.7%	N/A	16.2%
13	Earned Percent Complete (6/4)	21.7%	N/A	16.2%
14	Schedule Performance (6/5)	1.00	N/A	0.00
15	Cost Performance (6/7)	0.80	N/A	1.00
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%	100.0%	67.3%



Note: COP Funded Data unavailable

## 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 completed roof installation at Signal Building No. 6.
  - Contractor installing door stoops at Signal Building No. 5.
  - Contractor terminating signaling system equipment at Signal Building No. 4.
  - Contractor terminating signaling system equipment at Signal Building No. 3.
  - Contractor completed excavation and installed ground grid at Signal Building No. 1.
  - Contractor installing impedance bonds and rail connections at Yard Entrance Area
- Signaling System
  - Contractor performed Factory Acceptance Testing for the Montebello Interlocking Signal Equipment and First Article Inspection of the MSF Switch Position Indicators with Metro representatives as witnesses.
- Communications System
  - Contractor continuing Final Design for Communication System.
- OCC Build Out
  - Contractor installed ceiling grid system, access flooring system, and millwork cabinetry. Received structural analysis and correction action plan of encountered rebar and cable during core drill at the OCC Building. Awaiting OCC Building Management approval.
- Coordinating with other Contracts
  - Master Schedule Update. Contractor provided mitigation schedule cost impacts to support revised facilities access and system milestone dates.
  - On-going coordination with LS4 Contractor for the Yard Entrance Area to support installation wayside signaling system. Installed mainline impedance bonds and associated rail connections.
  - On-going coordination with MSF Contractor to support required systems startup interfaces, such as telephone, 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. Planned progress is currently being evaluated as the master schedule revisions are being implemented.

### Issues and Solutions

- Fiber and Microduct Installation. Contractors are concerned that microduct and fiber installation may more difficult than anticipated. Setup demonstration next month for Contractors to pull microduct and fiber through the innerduct of communication system ductbanks.



SB No. 1 - Installation of Ground Grid System



SB No. 3 - Installed McKinley LCP



SB No. 6 - Installing Parapet Roof Frame



Yard Entrance - Installing Impedance Bond and Connections



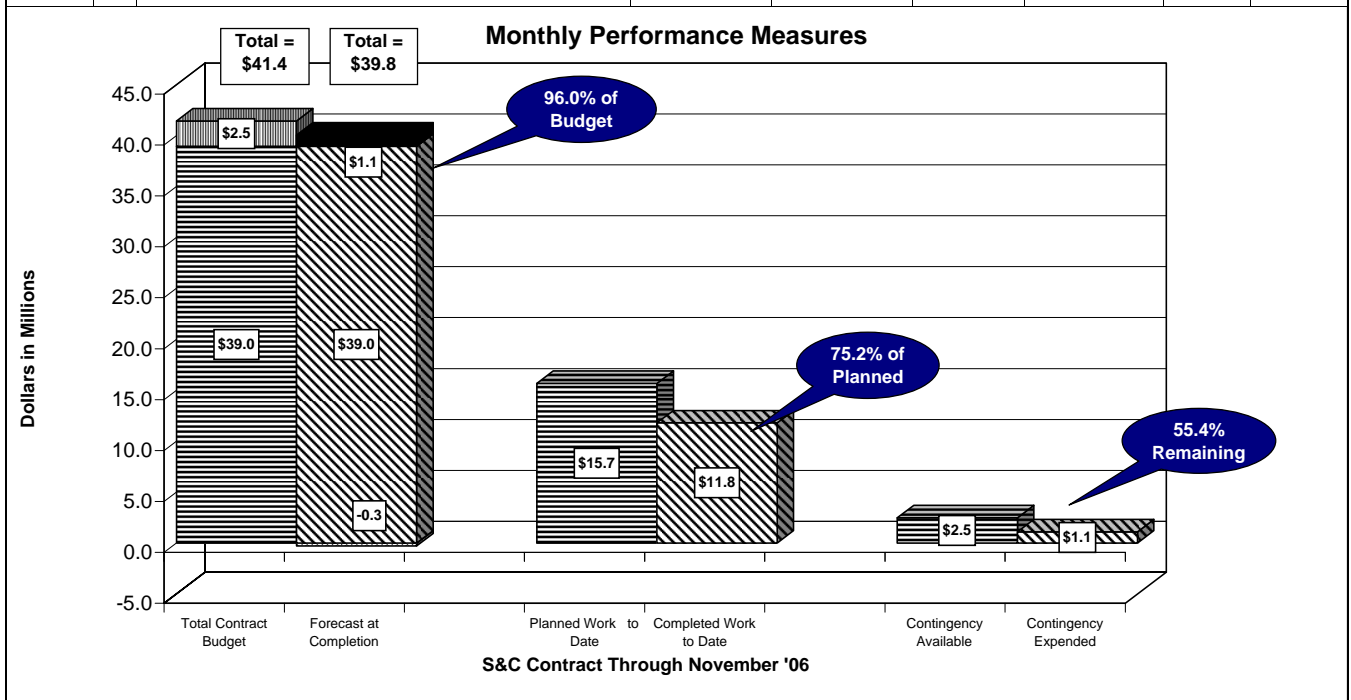
OCC - Installed Access Flooring System



OCC - Completed Cabinetry and Millwork



<b>Description:</b>		<b>3.7.4 Signals &amp; Communications</b>		
<b>PE/PA:</b>		Leslee O' Connell		
<b>Contractor:</b>		Mass Electric		
<b>Resident Engineer:</b>		Steve Kyauk		
<b>Data Through:</b>		October 15, 2006		
<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	\$1,106,735	-\$210	\$1,106,525
3	Budget Transfers		\$0	\$0
4	Current Budget (1+2+3)	\$38,583,497	\$1,480,595	\$40,064,092
5	Work Scheduled	\$15,525,305	\$162,517	\$15,687,822
6	Work Earned	\$11,721,436	\$80,560	\$11,801,996
7	Actual Expenditures	\$10,898,305	\$1,384,253	\$12,282,558
8	Forecast to Complete Base (4-7)	\$27,685,192	\$96,342	\$27,781,534
9	Change Orders Pending Execution	\$49,000	-\$332,782	-\$283,782
10	Forecast at Completion (7+8+9)	\$38,632,497	\$1,147,813	\$39,780,310
11	Percent Budget Expended (7/4)	28.2%	93.5%	30.7%
12	Percent Planned (5/4)	40.2%	11.0%	39.2%
13	Earned Percent Complete (6/4)	30.4%	5.4%	29.5%
14	Schedule Performance (6/5)	0.75	0.50	0.75
15	Cost Performance (6/7)	1.08	0.06	0.96
16	Contingency Budget	\$2,388,332	\$93,913	\$2,482,245
17	Remaining Contingency	\$1,281,597	\$94,123	\$1,375,720
18	Percent Contingency Remaining (17/16)	53.7%	100.2%	55.4%
<b>Period</b>				
1	Original Budget	N/A	N/A	N/A
2	Executed Change Orders	\$224,479	-\$210	\$224,269
3	Budget Transfers	\$0	\$0	\$0
4	Current Budget (1+2+3)	\$38,583,497	\$1,480,595	\$40,064,092
5	Work Scheduled (Cumm - Last Period)	\$1,070,714	\$16,576	\$1,087,290
6	Work Earned (Cumm - Last Period)	\$976,400	\$12,605	\$989,005
7	Actual Expenditures (Cumm - Last Period)	\$1,012,729	\$1,354,253	\$2,366,982
8	Forecast to Complete Base (4-7)	\$37,570,768	\$126,342	\$37,697,110
9	Change Orders Pending Execution	-\$219,479	-\$332,782	-\$552,261
10	Forecast at Completion (7+8+9)	\$38,364,018	\$1,147,813	\$39,511,831
11	Percent Budget Expended (7/4)	2.6%	91.5%	5.9%
12	Percent Planned (5/4)	2.8%	1.1%	2.7%
13	Earned Percent Complete (6/4)	2.5%	0.9%	2.5%
14	Schedule Performance (6/5)	0.91	0.76	0.91
15	Cost Performance (6/7)	0.96	N/A	0.42
16	Contingency Budget	\$2,388,332	\$93,913	\$2,482,245
17	Remaining Contingency	\$1,281,597	\$94,123	\$1,375,720
18	Percent Contingency Remaining (17/16)	53.7%	100.2%	55.4%



## 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.

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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**

- Final Design Review Meeting for TPSS and OCS was held on October 10 & 11, 2006.
- Traction Power Substation No. 1 and 2
  - Interior Rough-In and HVAC work 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. 3
- Traction Power Substation No. 5
  - CMU wall construction has been completed.
- Traction Power Substation No. 6
  - Interior Rough-In work progressed.
  - Installation of wall mounted equipment progressed.
- Traction Power Substation No. 7
  - Dielectric Floor has been poured.
  - Interior Rough-In work has commenced.
  - Stucco has been applied to parapet framing.
- Traction Power Substation No. 8
  - Door adjustments have been made.
- Traction Power Substation No. 9
  - Installation of TPSS equipment continues to progress.
  - Door adjustments have been made.
- Traction Power Substation No. 10
  - CMU wall construction has commenced.



- Traction Power Substation No. 11
  - No work performed.
- Traction Power Substation No. 15
  - AC Switchgear and Rectifier-Transformer have been delivered to the substation.
- Maintenance of Equipment Building
  - Installation of conduits in TPSS No. 16 progressed.
- Overhead Contact System
  - OCS re-adjustments in the North Yard and Yard Lead progress. Installation of headspans and cantilever arms in the South Yard progressed.
  - OCS poles installation in the Test Track area continued to progress.
- 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 December 14, 2006 for resubmittal. Permit will be available 10 working days after resubmittal.
  - The TES Contractor has provided sealed drawing for the DC Equipment. City of Phoenix DSD is reviewing drawings for permit. Copy of DS drawings provided to Mesa Electrical Reviewer for preliminary review.
  - 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. Tempe has engaged an electrical engineer to provide design for relocation of the underground electrical serving the mobile home park. The design will be followed by re-routing of the underground electrical. The schedule access to this site is January 15, 2007
  - The drawings for TPSS No.16 (Shop Substation) were approved on November 11, 2006 and a permit is 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 production 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.
- Planned versus actual progress is currently being evaluated as the Master Schedule revisions are being implemented.

### **Issues and Solutions**

- None

### **Construction Photographs**



**Metal Panel Installation at TPSS No. 1**



**Door Adjustments at TPSS No. 2**



**Ductbank Installation at TPSS No. 3**



**CMU Installation at TPSS No. 5**



**Interior Rough-In at TPSS No. 6**



**Stucco Application at TPSS No. 7**



**Installation of CMU Walls at TPSS No. 10**



**TPSS No. 15 Equipment Delivery**



**Cable Tray Supports at TPSS No. 16**



**Re-Adjustment of Headspans in the North Yard**



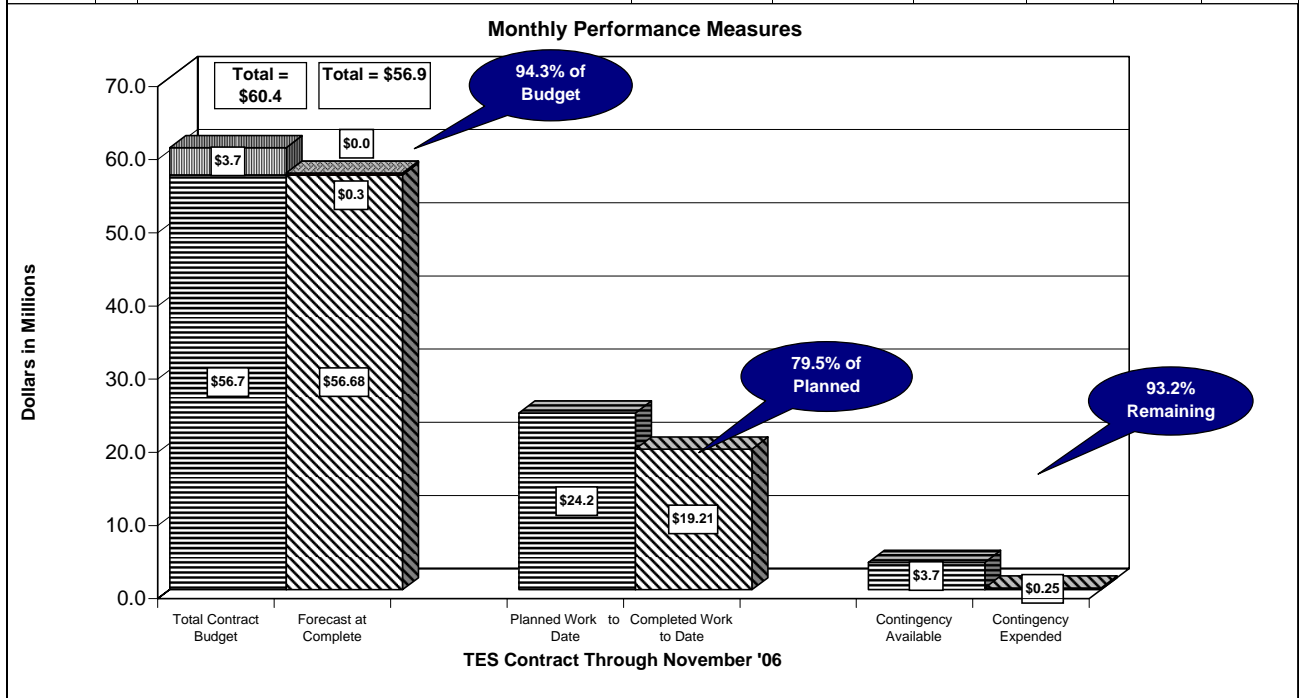
**Cantilever Installations in the South Yard**



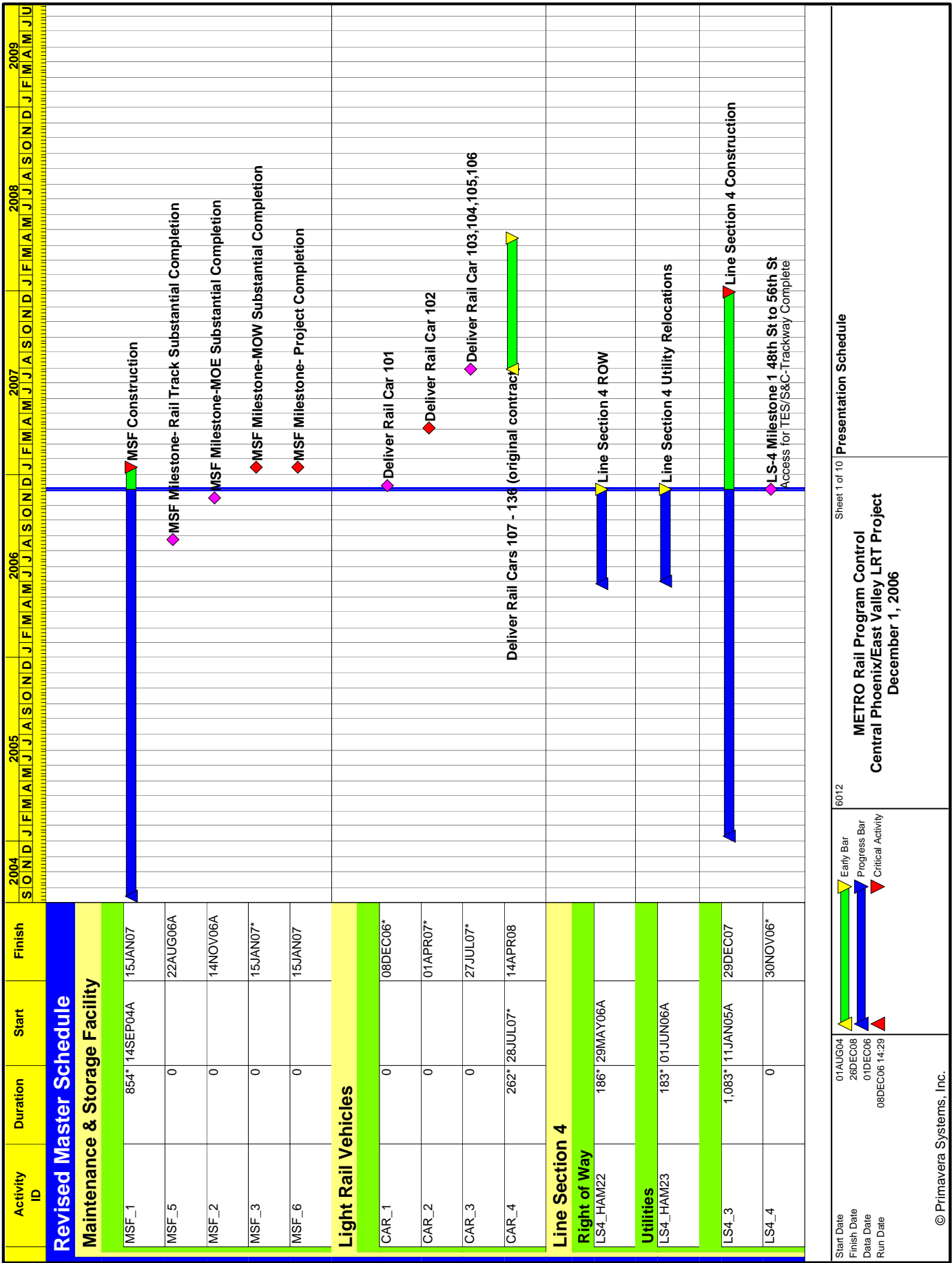
**Setting OCS Poles in the Test Track**



<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>September 30, 2006</b>
Cumulative		<b>5309</b>
1	Budget	\$56,681,003
2	Executed Change Orders	\$252,760
3	Budget Transfers	\$0
4	Current Budget (1+2+3)	\$56,933,763
5	Work Scheduled	\$24,160,406
6	Work Earned	\$19,206,683
7	Actual Expenditures	\$18,926,176
8	Forecast to Complete Base (4-7)	\$38,007,587
9	Change Orders Pending Execution	\$2,827
10	Forecast at Completion (7+8+9)	\$56,936,590
11	Percent Budget Expended (7/4)	33.2%
12	Percent Planned (5/4)	42.4%
13	Earned Percent Complete (6/4)	33.7%
14	Schedule Performance (6/5)	0.79
15	Cost Performance (6/7)	1.01
16	Contingency Budget	\$3,721,000
17	Remaining Contingency	\$3,468,240
18	Percent Contingency Remaining (17/16)	93.21%
Period		
1	Budget	N/A
2	Executed Change Orders	\$59,407
3	Budget Transfers	\$0
4	Current Budget (1+2+3)	\$56,933,763
5	Work Scheduled (Cumm - Last Period)	\$1,483,346
6	Work Earned (Cumm - Last Period)	\$0
7	Actual Expenditures (Cumm - Last Period)	\$0
8	Forecast to Complete Base (4-7)	\$56,933,763
9	Change Orders Pending Execution	-\$57,314
10	Forecast at Completion (7+8+9)	\$56,876,449
11	Percent Budget Expended (7/4)	0.0%
12	Percent Planned (5/4)	2.6%
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	\$3,468,240
18	Percent Contingency Remaining (17/16)	93.21%



NOTE: No new updates were submitted during the reporting period



Sheet 1 of 10 | Presentation Schedule

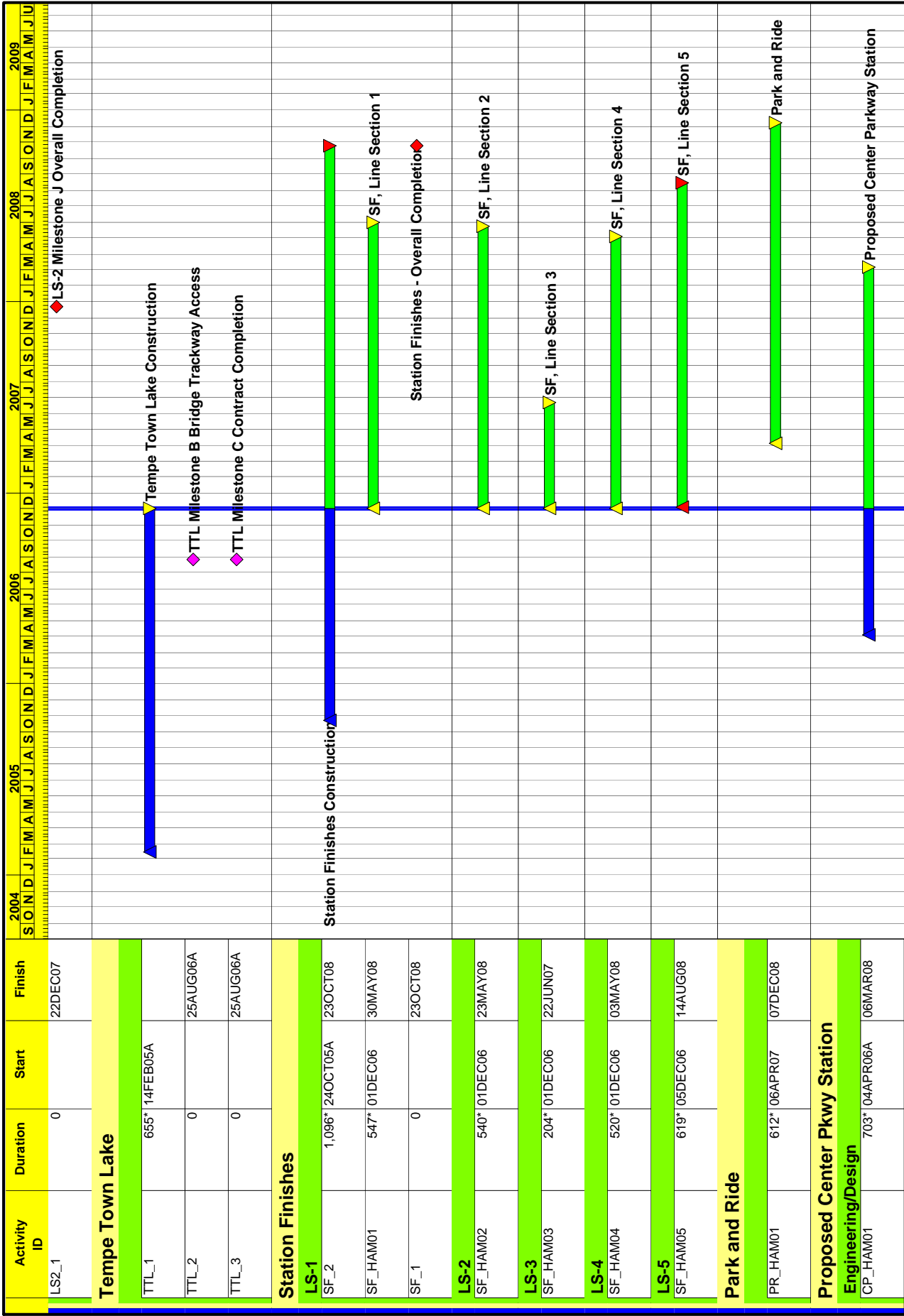
**METRO Rail Program Control**  
**Central Phoenix/East Valley LRT Project**  
 December 1, 2006

6012

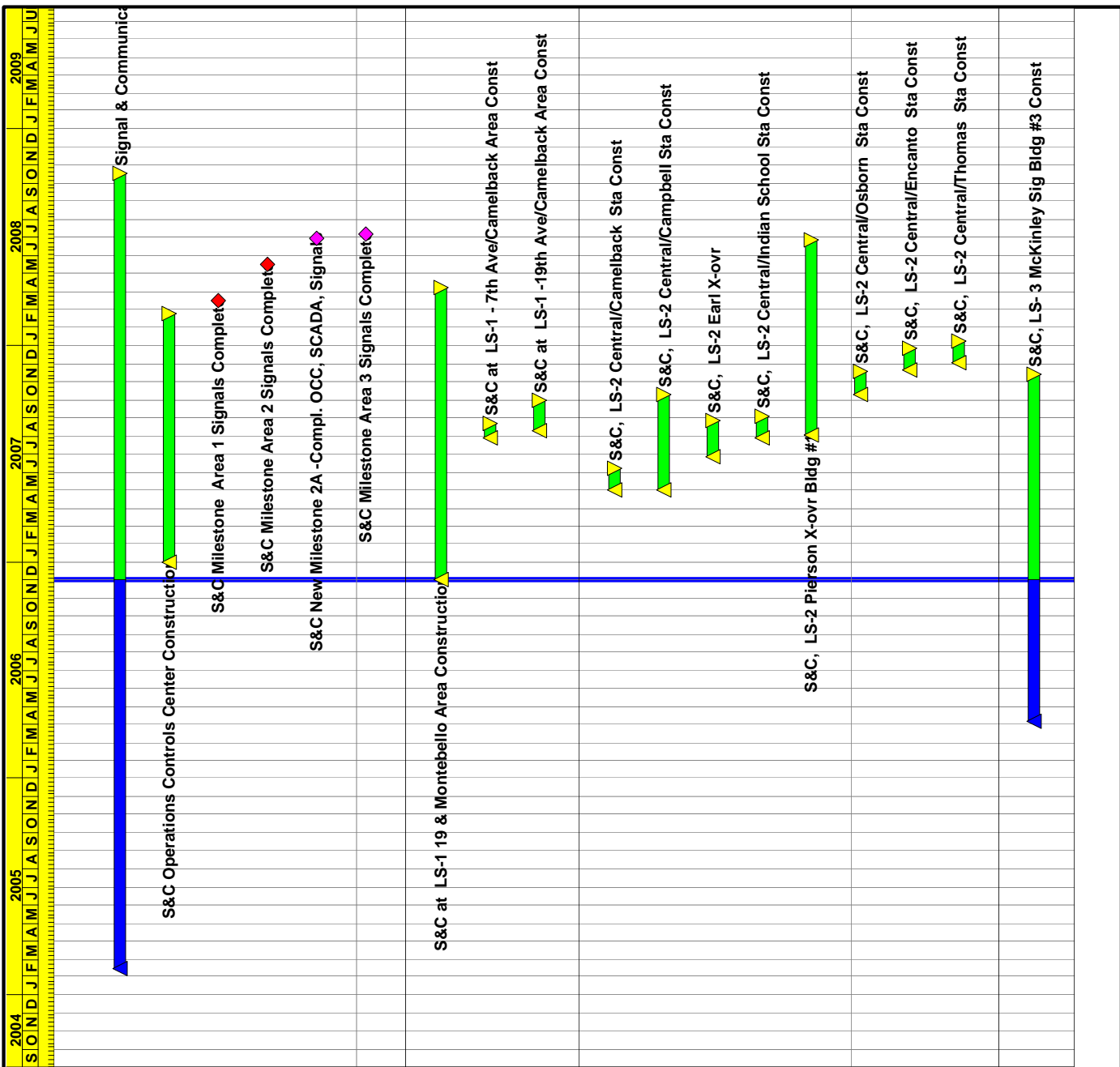
Start Date	01AUG04
Finish Date	26DEC08
Data Date	01DEC06
Run Date	08DEC06 14:29







Activity ID	Duration	Start	Finish
<b>Signal &amp; Communications</b>			
<b>Contract Summary</b>			
SC_001	1,341*	14FEB05A	16OCT08
SC_OCC1	419	01JAN07*	23FEB08
SC_992	0		15MAR08*
SCM2B_2	0		15MAY08*
SCM2A_2	0		28JUN08*
SC_999	0		06JUL08*
<b>LS-1</b>			
SC_1001	494*	01DEC06	07APR08
SC_1003	25	28JUL07	21AUG07
SC_1002	50	11AUG07	29SEP07
<b>LS-2</b>			
SC_2102	37	02MAY07	07JUN07
SC_2003	160	02MAY07	08OCT07
SC_2002	62	27JUN07	27AUG07
SC_3004	37	28JUL07	02SEP07
SC_2001	329	02AUG07	25JUN08
SC_2005	37	11OCT07	16NOV07
SC_2006	37	20NOV07	26DEC07
SC_2100	37	02DEC07	07JAN08
<b>LS-3</b>			
SC_3300	586*	06APR06A	12NOV07















## 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
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