

**DRAFT
REPORT VOLUME III – APPENDICES
PART 3 OF 4
APPENDICES 7-4 THROUGH 7-10**

**SOUTHERN CALIFORNIA ACCELERATED
RAIL ELECTRIFICATION PROGRAM**



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Prepared for

Southern California Regional Rail Authority

February 10, 1992

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DRAFT

REPORT VOLUME III – APPENDICES

Part 3 of 4

Appendices 7-4 through 7-10

Prepared By:

**Los Angeles County Transportation Commission
South Coast Air Quality Management District
Southern California Regional Rail Authority**

DeLeuw Cather & Company

Booz·Allen & Hamilton Inc.

Frederic R. Harris Inc.

ICI General Chemicals

LTK Engineering Services

Myra L. Frank & Associates, Inc.

Seelye, Stevenson, Valve & Knecht

Sharon Greene & Associates

Southern California Edison Inc.

Southern California Gas Company

Southwest Research Institute

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South Coast Air Coast Quality Management District

Southern California Edison

Southern California Gas Company

Southern California Regional Rail Authority

Southern Pacific Transportation Company

Union Pacific Railroad

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Unit Costs for Traction Power Supply Distribution - System Without Autotransformers

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UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
69 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	53,000	53,000	
LINE POSITION.....	1	EA	117,000	117,000	
CIRCUIT BREAKERS.....	2	EA	61,000	122,000	
REVENUE METERING	1	EA	20,000	20,000	
115 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	84,000	84,000	
LINE POSITION.....	1	EA	135,000	135,000	
CIRCUIT BREAKERS.....	2	EA	118,000	236,000	
REVENUE METERING	1	EA	30,000	30,000	
230 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	310,000	310,000	
LINE POSITION.....	1	EA	461,000	461,000	
CIRCUIT BREAKERS.....	2	EA	353,000	706,000	
REVENUE METERING	1	EA	80,000	80,000	
LINE TRAPS	1	EA	25,000	25,000	
TRANSMISSION LINE					
69 kV, SINGLE CIRCUIT.....	1	MI	135,000	135,000	
115 kV, SINGLE CIRCUIT.....	1	MI	165,000	165,000	
230 kV, SINGLE CIRCUIT.....	1	MI	210,000	210,000	
INTERFACE WITH TRACTION SUBSTATION					
SITE WORK.....	1	LOT	10,000	10,000	
LANDSCAPING	0	LOT	20,000	0	
GROUNDING SYSTEM.....	1	LOT	15,000	15,000	
CABLE AND DUCTBANKS.....	1	LOT	10,000	10,000	
CONCRETE AND STEELWORK.....	1	LOT	5,000	5,000	
HOUSING	0	LOT	40,000	0	
MISCELLANEOUS EQUIPMENT.....	1	LOT	10,000	10,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
UTILITY COST ESTIMATE			497,000	700,000	1,842,000

UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
69 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	53,000	53,000	
LINE POSITION.....	2	EA	117,000	234,000	
CIRCUIT BREAKERS.....	4	EA	61,000	244,000	
REVENUE METERING	2	EA	20,000	40,000	
115 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	84,000	84,000	
LINE POSITION.....	2	EA	135,000	270,000	
CIRCUIT BREAKERS.....	4	EA	118,000	472,000	
REVENUE METERING	2	EA	30,000	60,000	
230 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	310,000	310,000	
LINE POSITION.....	2	EA	461,000	922,000	
CIRCUIT BREAKERS.....	4	EA	353,000	1,412,000	
REVENUE METERING	2	EA	80,000	160,000	
LINE TRAPS	2	EA	25,000	50,000	
TRANSMISSION LINE					
69 kV, DOUBLE CIRCUIT.....	1	MI	200,000	200,000	
115 kV, DOUBLE CIRCUIT.....	1	MI	240,000	240,000	
230 kV, DOUBLE CIRCUIT.....	1	MI	300,000	300,000	
INTERFACE WITH TRACTION SUBSTATION					
SITE WORK.....	1	LOT	10,000	10,000	
LANDSCAPING	0	LOT	20,000	0	
GROUNDING SYSTEM.....	1	LOT	15,000	15,000	
CABLE AND DUCTBANKS.....	1	LOT	15,000	15,000	
CONCRETE AND STEELWORK.....	1	LOT	7,500	7,500	
HOUSING	0	LOT	40,000	0	
MISCELLANEOUS EQUIPMENT.....	1	LOT	15,000	15,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
UTILITY COST ESTIMATE			833,500	1,188,500	3,216,500

25 kV TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER FEEDING ONE TRACK					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
HV DISCONNECT SWITCH					
69 kV.....	1	EA	45,000	45,000	
115 kV.....	1	EA	37,000	37,000	
230 kV.....	1	EA	160,000	160,000	
HV CIRCUIT BREAKER					
69 kV.....	1	EA	61,000	61,000	
115 kV.....	1	EA	118,000	118,000	
230 kV.....	1	EA	353,000	353,000	
TRACTION TRANSFORMERS					
20 MVA, 69 kV.....	1	EA	203,000	203,000	
30 MVA, 69 kV.....	0	EA	303,000	0	
20 MVA, 115 kV.....	1	EA	253,000	253,000	
30 MVA, 115 kV.....	0	EA	353,000	0	
20 MVA, 230 kV.....	1	EA	515,000	515,000	
30 MVA, 230 kV.....	0	EA	635,000	0	
LV SWITCHGEAR					
CIRCUIT BREAKERS, 25 kV.....	3	EA	45,000	135,000	
HOUSING.....	1	EA	75,000	75,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	100,000	100,000	
SPECIAL EQUIPMENT					
POWER FACTOR CORRECTION.....	0	EA	100,000	0	
HARMONIC FILTERS.....	0	EA	150,000	0	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	15,000	SQ. FT.	4.7	70,500	
SITE WORK.....	15,000	SQ. FT.	5.5	82,500	
LANDSCAPING	1	LOT	25,000	25,000	
GROUNDING SYSTEM.....	15,000	SQ. FT.	1.3	19,500	
MISCELLANEOUS EQUIPMENT.	1	LOT	50,000	50,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
ELECTRIFICATION VOLTAGE			25 kV	25 kV	25 kV
SUBSTATION COST ESTIMATE			1,296,500	1,395,500	2,015,500

25 kV TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS FEEDING TWO TRACKS					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
HV DISCONNECT SWITCH					
69 kV.....	2	EA	45,000	90,000	
115 kV.....	2	EA	37,000	74,000	
230 kV.....	2	EA	160,000	320,000	
HV CIRCUIT BREAKER					
69 kV.....	2	EA	61,000	122,000	
115 kV.....	2	EA	118,000	236,000	
230 kV.....	2	EA	353,000	706,000	
TRACTION TRANSFORMERS					
20 MVA, 69 kV.....	2	EA	203,000	406,000	
30 MVA, 69 kV.....	0	EA	303,000	0	
20 MVA, 115 kV.....	2	EA	253,000	506,000	
30 MVA, 115 kV.....	0	EA	353,000	0	
20 MVA, 230 kV.....	2	EA	515,000	1,030,000	
30 MVA, 230 kV.....	0	EA	635,000	0	
LV SWITCHGEAR					
CIRCUIT BREAKERS, 25 kV.....	7	EA	45,000	315,000	
HOUSING.....	1	EA	175,000	175,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	100,000	100,000	
SPECIAL EQUIPMENT					
POWER FACTOR CORRECTION.....	0	EA	100,000	0	
HARMONIC FILTERS.....	0	EA	150,000	0	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	22,500	SQ. FT.	4.7	105,750	
SITE WORK.....	22,500	SQ. FT.	5.5	123,750	
LANDSCAPING	1	LOT	25,000	25,000	
GROUNDING SYSTEM.....	22,500	SQ. FT.	1.3	29,250	
MISCELLANEOUS EQUIPMENT.	1	LOT	75,000	75,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
ELECTRIFICATION VOLTAGE			25 kV	25 kV	25 kV
SUBSTATION COST ESTIMATE			1,996,750	2,194,750	3,434,750

50 kV TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER FEEDING ONE TRACK					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
HV DISCONNECT SWITCH					
69 kV.....	1	EA	45,000	45,000	
115 kV.....	1	EA	37,000	37,000	
230 kV.....	1	EA	160,000	160,000	
HV CIRCUIT BREAKER					
69 kV.....	1	EA	61,000	61,000	
115 kV.....	1	EA	118,000	118,000	
230 kV.....	1	EA	353,000	353,000	
TRACTION TRANSFORMERS					
20 MVA, 69 kV.....	0	EA	203,000	0	
30 MVA, 69 kV.....	1	EA	303,000	303,000	
20 MVA, 115 kV.....	0	EA	253,000	0	
30 MVA, 115 kV.....	1	EA	353,000	353,000	
20 MVA, 230 kV.....	0	EA	515,000	0	
30 MVA, 230 kV.....	1	EA	635,000	635,000	
LV SWITCHGEAR					
CIRCUIT BREAKERS, 50 kV.....	3	EA	55,000	165,000	
HOUSING.....	1	EA	75,000	75,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	100,000	100,000	
SPECIAL EQUIPMENT					
POWER FACTOR CORRECTION.....	0	EA	100,000	0	
HARMONIC FILTERS.....	0	EA	150,000	0	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	15,000	SQ. FT.	4.7	70,500	
SITE WORK.....	15,000	SQ. FT.	5.5	82,500	
LANDSCAPING	1	LOT	25,000	25,000	
GROUNDING SYSTEM.....	15,000	SQ. FT.	1.3	19,500	
MISCELLANEOUS EQUIPMENT.	1	LOT	50,000	50,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
ELECTRIFICATION VOLTAGE			50 kV	50 kV	50 kV
SUBSTATION COST ESTIMATE			1,426,500	1,525,500	2,165,500

50 kV TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS FEEDING TWO TRACKS					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
HV DISCONNECT SWITCH					
69 kV.....	2	EA	45,000	90,000	
115 kV.....	2	EA	37,000	74,000	
230 kV.....	2	EA	160,000	320,000	
HV CIRCUIT BREAKER					
69 kV.....	2	EA	61,000	122,000	
115 kV.....	2	EA	118,000	236,000	
230 kV.....	2	EA	353,000	706,000	
TRACTION TRANSFORMERS					
20 MVA, 69 kV.....	0	EA	203,000	0	
30 MVA, 69 kV.....	2	EA	303,000	606,000	
20 MVA, 115 kV.....	0	EA	253,000	0	
30 MVA, 115 kV.....	2	EA	353,000	706,000	
20 MVA, 230 kV.....	0	EA	515,000	0	
30 MVA, 230 kV.....	2	EA	635,000	1,270,000	
LV SWITCHGEAR					
CIRCUIT BREAKERS, 50 kV.....	7	EA	55,000	385,000	
HOUSING.....	1	EA	175,000	175,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	100,000	100,000	
SPECIAL EQUIPMENT					
POWER FACTOR CORRECTION.....	0	EA	100,000	0	
HARMONIC FILTERS.....	0	EA	150,000	0	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	22,500	SQ. FT.	4.7	105,750	
SITE WORK.....	22,500	SQ. FT.	5.5	123,750	
LANDSCAPING	1	LOT	25,000	25,000	
GROUNDING SYSTEM.....	22,500	SQ. FT.	1.3	29,250	
MISCELLANEOUS EQUIPMENT.	1	LOT	75,000	75,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
ELECTRIFICATION VOLTAGE			50 kV	50 kV	50 kV
SUBSTATION COST ESTIMATE			2,266,750	2,464,750	3,744,750

SWITCHING STATION					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
LV SWITCHGEAR					
CIRCUIT BREAKERS, 25 kV.....	5	EA	45,000	225,000	
CIRCUIT BREAKERS, 50 kV.....	5	EA	55,000	275,000	
HOUSING.....	1	EA	125,000	125,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	75,000	75,000	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	5,000	SQ. FT.	4.7	23,500	
SITE WORK.....	5,000	SQ. FT.	5.5	27,500	
LANDSCAPING	1	LOT	15,000	15,000	
GROUNDING SYSTEM.....	5,000	SQ. FT.	1.3	6,500	
CONCRETE AND STEELWORK..	1	LOT	20,000	20,000	
MISCELLANEOUS EQUIPMENT.	1	LOT	15,000	15,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
SWITCHING STATION COST ESTIMATE				962,500	1,012,500

PARALLELING STATION					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
LV SWITCHGEAR					
CIRCUIT BREAKERS, 25 kV.....	4	EA	45,000	180,000	
CIRCUIT BREAKERS, 50 kV.....	4	EA	55,000	220,000	
HOUSING.....	1	EA	100,000	100,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	75,000	75,000	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	5,000	SQ. FT.	4.7	23,500	
SITE WORK.....	5,000	SQ. FT.	5.5	27,500	
LANDSCAPING	1	LOT	15,000	15,000	
GROUNDING SYSTEM.....	5,000	SQ. FT.	1.3	6,500	
CONCRETE AND STEELWORK..	1	LOT	20,000	20,000	
MISCELLANEOUS EQUIPMENT.	1	LOT	15,000	15,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
PARALLELING STATION COST ESTIMATE				892,500	932,500

AT - GRADE DISTRIBUTION SYSTEM, ONE TRACK, 1 MILE					
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
FOUNDATIONS	36	EA	3,000	108,000	
POLES	32	EA	4,000	128,000	
TERMINATIONS					
COUNTERWEIGHTS	2	EA	5,500	11,000	
FIXED	0	EA	1,000	0	
DOWNGUYS	4	EA	1,000	4,000	
CANTILEVERS.....	34	EA	1,500	51,000	
CROSS-SPANS.....	0	EA	2,500	0	
HEADSPANS.....	0	EA	4,000	0	
MESSENGER WIRE.....	1.2	MI	18,000	21,600	
CONTACT WIRE.....	1.2	MI	22,500	27,000	
GROUND WIRE.....	1.1	MI	12,000	13,200	
MIDPOINT ANCHORS.....	1	EA	1,500	1,500	
HANGERS AND JUMPERS.....	230	EA	75	17,250	
PHASE BREAKS.....	0.10	EA	12,000	1,200	
SECTION INSULATORS.....	0.25	EA	4,000	1,000	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	0.25	EA	7,500	1,875	
HAND OPERATED.....	0.00	EA	6,000	0	
CROSSOVERS.....	0.00	EA	56,075	0	
TURNOUTS.....	0.00	EA	46,625	0	
MISCELLANEOUS HARDWARE.....	1	LOT	15,000	15,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
MAINLINE COST ESTIMATE				401,625	413,674

TUNNEL DISTRIBUTION SYSTEM, ONE TRACK, 1 MILE				
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER				
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST
SUPPORTING STEELWORK.....	132	EA	300	39,600
TERMINATIONS				
COUNTERWEIGHT.....	0	EA	5,500	0
FIXED.....	2	EA	1,000	2,000
FLEXIBLE SUPPORT ARMS.....	132	EA	500	66,000
CANTILEVERS.....	0	EA	500	0
FEEDER INSULATORS.....	90	EA	100	9,000
MESSENGER WIRE.....	0	MI	18,000	0
CONTACT WIRE.....	1.1	MI	22,500	24,750
PARALLEL FEEDER.....	1.1	MI	18,000	19,800
GROUND WIRE.....	1.1	MI	12,000	13,200
MIDPOINT ANCHORS.....	0	EA	1,500	0
HANGERS AND JUMPERS.....	0	EA	75	0
FEEDER TO CW CONNECTIONS.....	20	EA	100	2,000
PHASE BREAKS.....	0.10	EA	12,000	1,200
SECTION INSULATORS.....	0.25	EA	3,500	875
DISCONNECT SWITCHES				
MOTOR OPERATED.....	2.00	EA	7,500	15,000
HAND OPERATED.....	0.00	EA	5,000	0
CROSSOVERS.....	0.00	EA	31,425	0
TURNOUTS.....	0.00	EA	31,100	0
LIGHTNING ARRESTERS.....	2.00	EA	600	1,200
MISCELLANEOUS HARDWARE.....	1	LOT	15,000	15,000
ELECTRIFICATION VOLTAGE				25 kV
COST MULTIPLIER				1.00
MAINLINE COST ESTIMATE				209,625
				215,914

AT - GRADE DISTRIBUTION SYSTEM, TWO TRACKS, 1 MILE				
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED				
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST
FOUNDATIONS.....	72	EA	3,000	216,000
POLES.....	64	EA	4,000	256,000
TERMINATIONS				
COUNTERWEIGHT.....	4	EA	5,500	22,000
FIXED.....	0	EA	1,000	0
DOWNGUYS				
CANTILEVERS.....	68	EA	1,500	102,000
CROSS-SPANS.....	2	EA	2,500	5,000
HEADSPANS.....	2	EA	4,000	8,000
MESSENGER WIRE.....	2.4	MI	18,000	43,200
CONTACT WIRE.....	2.4	MI	22,500	54,000
GROUND WIRE.....	2.2	MI	12,000	26,400
MIDPOINT ANCHORS.....	2	EA	1,500	3,000
HANGERS AND JUMPERS.....	460	EA	75	34,500
PHASE BREAKS.....	0.20	EA	12,000	2,400
SECTION INSULATORS.....	0.50	EA	4,000	2,000
DISCONNECT SWITCHES				
MOTOR OPERATED.....	0.50	EA	7,500	3,750
HAND OPERATED.....	0.00	EA	6,000	0
CROSSOVERS.....	0.00	EA	56,075	0
TURNOUTS.....	0.00	EA	46,625	0
MISCELLANEOUS HARDWARE.....	1	LOT	30,000	30,000
ELECTRIFICATION VOLTAGE				
COST MULTIPLIER				
				25 kV
				50 kV
				1.00
				1.03
MAINLINE COST ESTIMATE				816,250
				840,738

TUNNEL DISTRIBUTION SYSTEM, TWO TRACKS, 1 MILE					
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
SUPPORTING STEELWORK.....	264	EA	300	79,200	
TERMINATIONS					
COUNTERWEIGHT.....	0	EA	5,500	0	
FIXED.....	4	EA	1,000	4,000	
FLEXIBLE SUPPORT ARMS.....	264	EA	500	132,000	
CANTILEVERS.....	0	EA	500	0	
FEEDER INSULATORS.....	180	EA	100	18,000	
MESSENGER WIRE.....	0	MI	18,000	0	
CONTACT WIRE.....	2.2	MI	22,500	49,500	
PARALLEL FEEDER.....	2.2	MI	18,000	39,600	
GROUND WIRE.....	2.2	MI	12,000	26,400	
MIDPOINT ANCHORS.....	0	EA	1,500	0	
HANGERS AND JUMPERS.....	0	EA	75	0	
FEEDER TO CW CONNECTIONS.....	40	EA	100	4,000	
PHASE BREAKS.....	0.20	EA	12,000	2,400	
SECTION INSULATORS.....	0.50	EA	3,500	1,750	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	4.00	EA	7,500	30,000	
HAND OPERATED.....	0.00	EA	5,000	0	
CROSSOVERS.....	0.00	EA	31,425	0	
TURNOUTS.....	0.00	EA	31,100	0	
LIGHTNING ARRESTERS.....	4.00	EA	600	2,400	
MISCELLANEOUS HARDWARE.....	1	LOT	30,000	30,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
MAINLINE COST ESTIMATE				419,250	431,828

AT - GRADE CROSSOVER					
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
FOUNDATIONS.....	4	EA	3,000	12,000	
POLES.....	2	EA	4,000	8,000	
TERMINATIONS					
COUNTERWEIGHT.....	1	EA	5,500	5,500	
FIXED.....	1	EA	1,000	1,000	
DOWNGUYS	2	EA	1,000	2,000	
CANTILEVERS.....	2	EA	1,500	3,000	
MESSENGER WIRE.....	0.15	MI	18,000	2,700	
CONTACT WIRE.....	0.15	MI	22,500	3,375	
HANGERS AND JUMPERS.....	20	EA	75	1,500	
SECTION BREAKS.....	1	EA	12,000	12,000	
SECTION INSULATORS.....	0	EA	3,500	0	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	0	EA	7,500	0	
HAND OPERATED.....	0	EA	5,000	0	
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
CROSSOVER COST ESTIMATE				56,075	57,757

TUNNEL CROSSOVER				
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER				
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST
SUPPORTING STEELWORK.....	6	EA	300	1,800
TERMINATIONS				
COUNTERWEIGHT.....	0	EA	5,500	0
FIXED.....	2	EA	1,000	2,000
FLEXIBLE SUPPORT ARMS.....	6	EA	500	3,000
CANTILEVERS.....	0	EA	500	0
FEEDER INSULATORS.....	14	EA	100	1,400
MESSENGER WIRE.....	0.00	MI	18,000	0
CONTACT WIRE.....	0.15	MI	22,500	3,375
PARALLEL FEEDER.....	0.15	MI	18,000	2,700
HANGERS AND JUMPERS.....	2	EA	75	150
SECTION BREAKS.....	1	EA	12,000	12,000
SECTION INSULATORS.....	0	EA	3,500	0
DISCONNECT SWITCHES				
MOTOR OPERATED.....	0	EA	7,500	0
HAND OPERATED.....	0	EA	5,000	0
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000
ELECTRIFICATION VOLTAGE				25 kV
COST MULTIPLIER				1.00
CROSSOVER COST ESTIMATE				31,425
				32,368

AT - GRADE TURNOUT					
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
FOUNDATIONS.....	2	EA	3,000	6,000	
POLES.....	1	EA	4,000	4,000	
TERMINATIONS					
COUNTERWEIGHT.....	1	EA	5,500	5,500	
FIXED.....	0	EA	1,000	0	
DOWNGUYS	1	EA	1,000	1,000	
CANTILEVERS.....	1	EA	1,500	1,500	
MESSENGER WIRE.....	0.05	MI	18,000	900	
CONTACT WIRE.....	0.05	MI	22,500	1,125	
GROUND WIRE.....	0.05	MI	12,000	600	
HANGERS AND JUMPERS.....	20	EA	75	1,500	
SECTION BREAKS.....	1	EA	12,000	12,000	
SECTION INSULATORS.....	0	EA	3,500	0	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	1	EA	7,500	7,500	
HAND OPERATED.....	0	EA	5,000	0	
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
TURNOUT COST ESTIMATE				46,625	48,024

TUNNEL TURNOUT					
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
SUPPORTING STEELWORK.....	3	EA	300	900	
TERMINATIONS					
COUNTERWEIGHT.....	0	EA	5,500	0	
FIXED.....	1	EA	1,000	1,000	
FLEXIBLE SUPPORT ARMS.....	3	EA	500	1,500	
CANTILEVERS.....	0	EA	500	0	
FEEDER INSULATORS.....	5	EA	100	500	
MESSENGER WIRE.....	0.00	MI	18,000	0	
CONTACT WIRE.....	0.05	MI	22,500	1,125	
PARALLEL FEEDER.....	0.05	MI	18,000	900	
GROUND WIRE.....	0.05	MI	12,000	600	
HANGERS AND JUMPERS.....	1	EA	75	75	
SECTION BREAKS.....	1	EA	12,000	12,000	
SECTION INSULATORS.....	0	EA	3,500	0	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	1	EA	7,500	7,500	
HAND OPERATED.....	0	EA	5,000	0	
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
TURNOUT COST ESTIMATE				31,100	32,033

APPENDIX 7-5

APPENDIX B

Unit Costs for Traction Power Supply Distribution - Autotransformer System

Utility System Provisions for One Transformer Substations	B-1
Utility System Provisions for Two Transformer Substations	B-2
25 kV Traction Power Substations with One Transformer Feeding One Track	B-3
25 kV Traction Power Substations with Two Transformers Feeding Two Tracks	B-4
Autotransformer Station	B-5
At-Grade Distribution System, One Track, One Mile	B-6
Tunnel Distribution System, One Track, One Mile	B-7
At-Grade Distribution System, Two Tracks, One Mile	B-8
Tunnel Distribution System, Two Tracks, One Mile	B-9
At-Grade Crossover	B-10
Tunnel Crossover	B-11
At-Grade Turnout	B-12
Tunnel Turnout	B-13

UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
69 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	53,000	53,000	
LINE POSITION.....	1	EA	117,000	117,000	
CIRCUIT BREAKERS.....	2	EA	61,000	122,000	
REVENUE METERING	1	EA	20,000	20,000	
115 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	84,000	84,000	
LINE POSITION.....	1	EA	135,000	135,000	
CIRCUIT BREAKERS.....	2	EA	118,000	236,000	
REVENUE METERING	1	EA	30,000	30,000	
230 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	310,000	310,000	
LINE POSITION.....	1	EA	461,000	461,000	
CIRCUIT BREAKERS.....	2	EA	353,000	706,000	
REVENUE METERING	1	EA	80,000	80,000	
LINE TRAPS	1	EA	25,000	25,000	
TRANSMISSION LINE					
69 kV, SINGLE CIRCUIT.....	1	MI	135,000	135,000	
115 kV, SINGLE CIRCUIT.....	1	MI	165,000	165,000	
230 kV, SINGLE CIRCUIT.....	1	MI	210,000	210,000	
INTERFACE WITH TRACTION SUBSTATION					
SITE WORK.....	1	LOT	10,000	10,000	
LANDSCAPING	0	LOT	20,000	0	
GROUNDING SYSTEM.....	1	LOT	15,000	15,000	
CABLE AND DUCTBANKS.....	1	LOT	10,000	10,000	
CONCRETE AND STEELWORK.....	1	LOT	5,000	5,000	
HOUSING	0	LOT	40,000	0	
MISCELLANEOUS EQUIPMENT.....	1	LOT	10,000	10,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
UTILITY COST ESTIMATE			497,000	700,000	1,842,000

UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
69 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	53,000	53,000	
LINE POSITION.....	2	EA	117,000	234,000	
CIRCUIT BREAKERS.....	4	EA	61,000	244,000	
REVENUE METERING	2	EA	20,000	40,000	
115 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	84,000	84,000	
LINE POSITION.....	2	EA	135,000	270,000	
CIRCUIT BREAKERS.....	4	EA	118,000	472,000	
REVENUE METERING	2	EA	30,000	60,000	
230 kV SUBSTATION MODIFICATIONS					
BUS EXTENSION.....	1	EA	310,000	310,000	
LINE POSITION.....	2	EA	461,000	922,000	
CIRCUIT BREAKERS.....	4	EA	353,000	1,412,000	
REVENUE METERING	2	EA	80,000	160,000	
LINE TRAPS	2	EA	25,000	50,000	
TRANSMISSION LINE					
69 kV, DOUBLE CIRCUIT.....	1	MI	200,000	200,000	
115 kV, DOUBLE CIRCUIT.....	1	MI	240,000	240,000	
230 kV, DOUBLE CIRCUIT.....	1	MI	300,000	300,000	
INTERFACE WITH TRACTION SUBSTATION					
SITE WORK.....	1	LOT	10,000	10,000	
LANDSCAPING	0	LOT	20,000	0	
GROUNDING SYSTEM.....	1	LOT	15,000	15,000	
CABLE AND DUCTBANKS.....	1	LOT	15,000	15,000	
CONCRETE AND STEELWORK.....	1	LOT	7,500	7,500	
HOUSING	0	LOT	40,000	0	
MISCELLANEOUS EQUIPMENT.....	1	LOT	15,000	15,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
UTILITY COST ESTIMATE			833,500	1,188,500	3,216,500

25 kV TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER FEEDING ONE TRACK					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
HV DISCONNECT SWITCH					
69 kV.....	1	EA	45,000	45,000	
115 kV.....	1	EA	37,000	37,000	
230 kV.....	1	EA	160,000	160,000	
HV CIRCUIT BREAKER					
69 kV.....	1	EA	61,000	61,000	
115 kV.....	1	EA	118,000	118,000	
230 kV.....	1	EA	353,000	353,000	
TRACTION TRANSFORMERS					
20 MVA, 69 kV.....	0	EA	203,000	0	
30 MVA, 69 kV.....	1	EA	303,000	303,000	
20 MVA, 115 kV.....	0	EA	253,000	0	
30 MVA, 115 kV.....	1	EA	353,000	353,000	
20 MVA, 230 kV.....	0	EA	515,000	0	
30 MVA, 230 kV.....	1	EA	635,000	635,000	
AUTOTRANSFORMERS.....	2	EA	400,000	800,000	
LV SWITCHGEAR					
DP CIRCUIT BREAKERS, 25 kV.....	4	EA	90,000	360,000	
SP CIRCUIT BREAKERS, 25 kV.....	6	EA	45,000	270,000	
HOUSING.....	1	EA	250,000	250,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	100,000	100,000	
SPECIAL EQUIPMENT					
POWER FACTOR CORRECTION.....	0	EA	100,000	0	
HARMONIC FILTERS.....	0	EA	200,000	0	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	15,000	SQ. FT.	4.7	70,500	
SITE WORK.....	15,000	SQ. FT.	5.5	82,500	
LANDSCAPING	1	LOT	25,000	25,000	
GROUNDING SYSTEM.....	15,000	SQ. FT.	1.3	19,500	
MISCELLANEOUS EQUIPMENT.	1	LOT	75,000	75,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
ELECTRIFICATION VOLTAGE			25 kV	25 kV	25 kV
SUBSTATION COST ESTIMATE			2,891,500	2,990,500	3,630,500

25 kV TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS FEEDING TWO TRACKS					
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST	
HV DISCONNECT SWITCH					
69 kV.....	2	EA	45,000	90,000	
115 kV.....	2	EA	37,000	74,000	
230 kV.....	2	EA	160,000	320,000	
HV CIRCUIT BREAKER					
69 kV.....	2	EA	61,000	122,000	
115 kV.....	2	EA	118,000	236,000	
230 kV.....	2	EA	353,000	706,000	
TRACTION TRANSFORMERS					
20 MVA, 69 kV.....	0	EA	203,000	0	
30 MVA, 69 kV.....	2	EA	303,000	606,000	
20 MVA, 115 kV.....	0	EA	253,000	0	
30 MVA, 115 kV.....	2	EA	353,000	706,000	
20 MVA, 230 kV.....	0	EA	515,000	0	
30 MVA, 230 kV.....	2	EA	635,000	1,270,000	
AUTOTRANSFORMERS.....	2	EA	400,000	800,000	
LV SWITCHGEAR					
DP CIRCUIT BREAKERS, 25 kV.....	4	EA	90,000	360,000	
SP CIRCUIT BREAKERS, 25 kV.....	10	EA	45,000	450,000	
HOUSING.....	1	EA	350,000	350,000	
SWITCHGEAR ANNEX					
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000	
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000	
HOUSING.....	1	EA	100,000	100,000	
SPECIAL EQUIPMENT					
POWER FACTOR CORRECTION.....	0	EA	100,000	0	
HARMONIC FILTERS.....	0	EA	150,000	0	
SIGNAL POWER SUPPLY					
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000	
HOUSING.....	1	EA	150,000	150,000	
CABLE AND DUCTBANKS.....	22,500	SQ. FT.	4.7	105,750	
SITE WORK.....	22,500	SQ. FT.	5.5	123,750	
LANDSCAPING	1	LOT	25,000	25,000	
GROUNDING SYSTEM.....	22,500	SQ. FT.	1.3	29,250	
MISCELLANEOUS EQUIPMENT.	1	LOT	100,000	100,000	
SUBSTATION INPUT VOLTAGE			69 kV	115 kV	230 kV
ELECTRIFICATION VOLTAGE			25 kV	25 kV	25 kV
SUBSTATION COST ESTIMATE			3,691,750	3,889,750	5,169,750

AUTOTRANSFORMER STATION				
EQUIPMENT	QUANTITY	UNIT	UNIT COST	TOTAL COST
AUTOTRANSFORMERS	2	EA	400,000	800,000
LV SWITCHGEAR				
DP CIRCUIT BREAKERS, 25 kV.....	2	EA	90,000	180,000
SP CIRCUIT BREAKERS, 25 kV.....	10	EA	45,000	450,000
HOUSING.....	1	EA	300,000	300,000
SWITCHGEAR ANNEX				
AUXILIARY POWER SUPPLY.....	1	EA	40,000	40,000
SCADA REMOTE TERMINAL UNIT.....	1	EA	40,000	40,000
HOUSING.....	1	EA	75,000	75,000
SIGNAL POWER SUPPLY				
POWER SUPPLY EQUIPMENT.....	2	EA	100,000	200,000
HOUSING.....	1	EA	150,000	150,000
CABLE AND DUCTBANKS.....	5,000	SQ. FT.	4.7	23,500
SITE WORK.....	5,000	SQ. FT.	5.5	27,500
LANDSCAPING	1	LOT	15,000	15,000
GROUNDING SYSTEM.....	5,000	SQ. FT.	1.3	6,500
CONCRETE AND STEELWORK..	1	LOT	20,000	20,000
MISCELLANEOUS EQUIPMENT.	1	LOT	15,000	15,000
ELECTRIFICATION VOLTAGE				25 kV
AUTOTRANSFORMER STATION COST ESTIMATE				2,342,500

AT - GRADE DISTRIBUTION SYSTEM, ONE TRACK, 1 MILE					
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
FOUNDATIONS.....	36	EA	3,000	108,000	
POLES.....	32	EA	4,000	128,000	
TERMINATIONS					
COUNTERWEIGHT.....	2	EA	5,500	11,000	
FIXED.....	0	EA	1,000	0	
DOWNGUYS					
CANTILEVERS.....	4	EA	1,000	4,000	
CROSS-SPANS.....	34	EA	1,500	51,000	
HEADSPANS.....	0	EA	2,500	0	
MESSENGER WIRE.....	0	EA	4,000	0	
CONTACT WIRE.....	1.2	MI	18,000	21,600	
GROUND WIRE.....	1.2	MI	22,500	27,000	
AUTOTRANSFORMER FEEDER.....	1.1	MI	12,000	13,200	
MIDPOINT ANCHORS.....	1.1	MI	24,000	26,400	
HANGERS AND JUMPERS.....	1	EA	1,500	1,500	
PHASE BREAKS.....	230	EA	75	17,250	
SECTION INSULATORS.....	0.05	EA	12,000	600	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	0.25	EA	4,000	1,000	
HAND OPERATED.....	0.25	EA	7,500	1,875	
CROSSOVERS.....	0.00	EA	6,000	0	
TURNOUTS.....	0.00	EA	56,075	0	
MISCELLANEOUS HARDWARE.....	0.00	EA	47,825	0	
	1	LOT	15,000	15,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
AT-GRADE MAINLINE COST ESTIMATE				427,425	440,248

TUNNEL DISTRIBUTION SYSTEM, ONE TRACK, 1 MILE					
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
SUPPORTING STEELWORK.....	132	EA	300	39,600	
TERMINATIONS					
COUNTERWEIGHT.....	0	EA	5,500	0	
FIXED.....	2	EA	1,000	2,000	
FLEXIBLE SUPPORT ARMS.....	132	EA	500	66,000	
CANTILEVERS.....	0	EA	500	0	
FEEDER INSULATORS.....	90	EA	100	9,000	
MESSENGER WIRE.....	0	MI	18,000	0	
CONTACT WIRE.....	1.1	MI	22,500	24,750	
PARALLEL FEEDER.....	1.1	MI	18,000	19,800	
GROUND WIRE.....	1.1	MI	12,000	13,200	
AUTOTRANSFORMER FEEDER.....	1.1	MI	24,000	26,400	
MIDPOINT ANCHORS.....	0	EA	1,500	0	
HANGERS AND JUMPERS.....	0	EA	75	0	
FEEDER TO CW CONNECTIONS.....	20	EA	100	2,000	
PHASE BREAKS.....	0.05	EA	12,000	600	
SECTION INSULATORS.....	0.25	EA	3,500	875	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	2.00	EA	7,500	15,000	
HAND OPERATED.....	0.00	EA	5,000	0	
CROSSOVERS.....	0.00	EA	31,425	0	
TURNOUTS.....	0.00	EA	32,800	0	
LIGHTNING ARRESTERS.....	2.00	EA	600	1,200	
MISCELLANEOUS HARDWARE.....	1	LOT	15,000	15,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
TUNNEL MAINLINE COST ESTIMATE				235,425	242,488

AT - GRADE DISTRIBUTION SYSTEM, TWO TRACKS, 1 MILE					
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
FOUNDATIONS.....	72	EA	3,000	216,000	
POLES.....	64	EA	4,000	256,000	
TERMINATIONS					
COUNTERWEIGHT.....	4	EA	5,500	22,000	
FIXED.....	0	EA	1,000	0	
DOWNGUYS	8	EA	1,000	8,000	
CANTILEVERS.....	68	EA	1,500	102,000	
CROSS-SPANS.....	2	EA	2,500	5,000	
HEADSPANS.....	2	EA	4,000	8,000	
MESSENGER WIRE.....	2.4	MI	18,000	43,200	
CONTACT WIRE.....	2.4	MI	22,500	54,000	
GROUND WIRE.....	2.2	MI	12,000	26,400	
AUTOTRANSFORMER FEEDER.....	2.2	MI	24,000	52,800	
MIDPOINT ANCHORS.....	2	EA	1,500	3,000	
HANGERS AND JUMPERS.....	460	EA	75	34,500	
PHASE BREAKS.....	0.10	EA	12,000	1,200	
SECTION INSULATORS.....	0.50	EA	4,000	2,000	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	0.50	EA	7,500	3,750	
HAND OPERATED.....	0.00	EA	6,000	0	
CROSSOVERS.....	0.00	EA	56,075	0	
TURNOUTS.....	0.00	EA	47,825	0	
MISCELLANEOUS HARDWARE.....	1	LOT	30,000	30,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
AT-GRADE MAINLINE COST ESTIMATE				867,850	893,886

TUNNEL DISTRIBUTION SYSTEM, TWO TRACKS, 1 MILE					
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
SUPPORTING STEELWORK.....	264	EA	300	79,200	
TERMINATIONS					
COUNTERWEIGHT.....	0	EA	5,500	0	
FIXED.....	4	EA	1,000	4,000	
FLEXIBLE SUPPORT ARMS.....	264	EA	500	132,000	
CANTILEVERS.....	0	EA	500	0	
FEEDER INSULATORS.....	180	EA	100	18,000	
MESSENGER WIRE.....	0	MI	18,000	0	
CONTACT WIRE.....	2.2	MI	22,500	49,500	
PARALLEL FEEDER.....	2.2	MI	18,000	39,600	
GROUND WIRE.....	2.2	MI	12,000	26,400	
AUTOTRANSFORMER FEEDER.....	2.2	MI	24,000	52,800	
MIDPOINT ANCHORS.....	0	EA	1,500	0	
HANGERS AND JUMPERS.....	0	EA	75	0	
FEEDER TO CW CONNECTIONS.....	40	EA	100	4,000	
PHASE BREAKS.....	0.10	EA	12,000	1,200	
SECTION INSULATORS.....	4.00	EA	3,500	14,000	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	0.00	EA	7,500	0	
HAND OPERATED.....	0.50	EA	5,000	2,500	
CROSSOVERS.....	0.00	EA	31,425	0	
TURNOUTS.....	0.00	EA	32,800	0	
LIGHTNING ARRESTERS.....	4.00	EA	600	2,400	
MISCELLANEOUS HARDWARE.....	1	LOT	30,000	30,000	
ELECTRIFICATION VOLTAGE				25 kV	50 kV
COST MULTIPLIER				1.00	1.03
TUNNEL MAINLINE COST ESTIMATE				455,600	469,268

AT - GRADE CROSSOVER				
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED				
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST
FOUNDATIONS.....	4	EA	3,000	12,000
POLES.....	2	EA	4,000	8,000
TERMINATIONS				
COUNTERWEIGHT.....	1	EA	5,500	5,500
FIXED.....	1	EA	1,000	1,000
DOWNGUYS				
CANTILEVERS.....	2	EA	1,500	3,000
MESSENGER WIRE.....	0.15	MI	18,000	2,700
CONTACT WIRE.....	0.15	MI	22,500	3,375
HANGERS AND JUMPERS.....	20	EA	75	1,500
SECTION BREAKS.....	1	EA	12,000	12,000
SECTION INSULATORS.....	0	EA	3,500	0
DISCONNECT SWITCHES				
MOTOR OPERATED.....	0	EA	7,500	0
HAND OPERATED.....	0	EA	5,000	0
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000
ELECTRIFICATION VOLTAGE			25 kV	50 kV
COST MULTIPLIER			1.00	1.03
CROSSOVER COST ESTIMATE			56,075	57,757

TUNNEL CROSSOVER				
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER				
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST
SUPPORTING STEELWORK.....	6	EA	300	1,800
TERMINATIONS				
COUNTERWEIGHT.....	0	EA	5,500	0
FIXED.....	2	EA	1,000	2,000
FLEXIBLE SUPPORT ARMS.....	6	EA	500	3,000
CANTILEVERS.....	0	EA	500	0
FEEDER INSULATORS.....	14	EA	100	1,400
MESSENGER WIRE.....	0.00	MI	18,000	0
CONTACT WIRE.....	0.15	MI	22,500	3,375
PARALLEL FEEDER.....	0.15	MI	18,000	2,700
HANGERS AND JUMPERS.....	2	EA	75	150
SECTION BREAKS.....	1	EA	12,000	12,000
SECTION INSULATORS.....	0	EA	3,500	0
DISCONNECT SWITCHES				
MOTOR OPERATED.....	0	EA	7,500	0
HAND OPERATED.....	0	EA	5,000	0
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000
ELECTRIFICATION VOLTAGE			25 kV	50 kV
COST MULTIPLIER			1.00	1.03
CROSSOVER COST ESTIMATE			31,425	32,368

AT - GRADE TURNOUT					
SIMPLE CATENARY SYSTEM, AUTO - TENSIONED					
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST	
FOUNDATIONS.....	2	EA	3,000	6,000	
POLES.....	1	EA	4,000	4,000	
TERMINATIONS					
COUNTERWEIGHT.....	1	EA	5,500	5,500	
FIXED.....	0	EA	1,000	0	
DOWNGUYS					
CANTILEVERS.....	1	EA	1,500	1,500	
MESSENGER WIRE.....	0.05	MI	18,000	900	
CONTACT WIRE.....	0.05	MI	22,500	1,125	
GROUND WIRE.....	0.05	MI	12,000	600	
AUTOTRANSFORMER FEEDER.....	0.05	MI	24,000	1,200	
HANGERS AND JUMPERS.....	20	EA	75	1,500	
SECTION BREAKS.....	1	EA	12,000	12,000	
SECTION INSULATORS.....	0	EA	3,500	0	
DISCONNECT SWITCHES					
MOTOR OPERATED.....	1	EA	7,500	7,500	
HAND OPERATED.....	0	EA	5,000	0	
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000	
ELECTRIFICATION VOLTAGE COST MULTIPLIER				25 kV	50 kV
				1.00	1.03
TURNOUT COST ESTIMATE				47,825	49,260

TUNNEL TURNOUT				
SINGLE CONTACT WIRE SYSTEM, FIXED TERMINATION, OVERHEAD FEEDER				
EQUIPMENT	QUAN- TITY	UNIT	UNIT COST	TOTAL COST
SUPPORTING STEELWORK.....	3	EA	300	900
TERMINATIONS				
COUNTERWEIGHT.....	0	EA	5,500	0
FIXED.....	1	EA	1,000	1,000
FLEXIBLE SUPPORT ARMS.....	3	EA	500	1,500
CANTILEVERS.....	0	EA	500	0
FEEDER INSULATORS.....	10	EA	100	1,000
MESSENGER WIRE.....	0.00	MI	18,000	0
CONTACT WIRE.....	0.05	MI	22,500	1,125
PARALLEL FEEDER.....	0.05	MI	18,000	900
GROUND WIRE.....	0.05	MI	12,000	600
AUTOTRANSFORMER FEEDER.....	0.05	MI	24,000	1,200
HANGERS AND JUMPERS.....	1	EA	75	75
SECTION BREAKS.....	1	EA	12,000	12,000
SECTION INSULATORS.....	0	EA	3,500	0
DISCONNECT SWITCHES				
MOTOR OPERATED.....	1	EA	7,500	7,500
HAND OPERATED.....	0	EA	5,000	0
MISCELLANEOUS HARDWARE.....	1	LOT	5,000	5,000
ELECTRIFICATION VOLTAGE			25 kV	50 kV
COST MULTIPLIER			1.00	1.03
TURNOUT COST ESTIMATE			32,800	33,784

APPENDIX 7-6

APPENDIX C

Traction Power Supply and Distribution System Segment Schedules

Substation, Switching Station, Paralleling Station and
Autotransformer Station Schedule C-1

Distribution System Schedule Segments C-2

TRACTION POWER SUPPLY SYSTEM FACILITY SCHEDULE

No.	Route Name	Traffic Type	25 kV					50 kV					25 kV AT			
			Sub. 66 kV Utility	Sub. 115 kV Utility	Sub. 230 kV Utility	Switch. Station	Par. Station	Sub. 66 kV Utility	Sub. 115 kV Utility	Sub. 230 kV Utility	Switch. Station	Par. Station	Sub. 66 kV Utility	Sub. 115 kV Utility	Sub. 230 kV Utility	AT Station
1	SP/UP Corridor	Commuter		2		3			1		2			1		2
		Commuter & Freight	5	7	7	20		1	4	3	9	16	1	4	3	14
1A	SP/UP/ATSF Corridor	Commuter		2		3			1		2			1		2
		Commuter & Freight	7	7	7	22		4	4	2	11	18	2	4	4	14
2	Baldwin Park	Commuter	2			3		1		2	2	1			6	
3	Moorpark	Commuter	2			3		1		2	2	1			4	
4	Santa Clarita	Commuter	1			2		1		2		1			4	
5	Lossan	Commuter	2		2	5		1		1	3	4	1		1	7
		Commuter & Freight	4		3	8		1		2	4		1		2	8
6	Riverside via Ont.	Commuter	2			3		1		2	2	1			4	
		Commuter & Freight	3			4		2		3		2			3	
7	Riverside via Fullerton	Commuter	2			3		1		3	2	1			4	
		Commuter & Freight	3			4		2		2		2			3	
8	Hemet to Riverside	Commuter		1		2			1	2			1		4	
9	San Bernardino to Irvine	Commuter	1	1		3		1		2	2	1			4	
		Commuter & Freight	1	1	1	4		1	1		3		1	1		3
10	Redlands	Commuter		1					1				1		1	
11	Southern Pacific	Freight	5	3	6	15		2	2	2	7		2	2	2	7
12	Santa Fe (Barstow to Ports))	Commuter	1	1		3		1	1		3		1	1		2
		Commuter & Freight	5	2	1	9		1	2	1	5	6	1	2	1	5
13	Union Pacific (Ports to Yermo)	Commuter	1	1		3		1	1		3		1	1		2
		Commuter & Freight	4	5		10		2	2		5	6	2	2		5
	Entire Network Under Consideration	Commuter	7	4	2	15		3	2	2	8		3	2	2	8
		Commuter & Freight	22	12	10	45		10	7	5	23	22	10	7	5	46

COMMUTER DISTRIBUTION SYSTEM COST ESTIMATE BY SEGMENT (in \$000's)

Base Unit Costs (in \$000's)	Single Track Cost, at-grade	25 kV	50 kV	25 kV AT
	Double Track Cost, at grade	\$402	\$414	\$427
	Single Track Cost, tunnel	\$816	\$841	\$868
	12.00% Crossover Cost, at-grade	\$210	\$216	\$235
	Turnout Cost, at-grade	\$56	\$58	\$56
Turnout Cost, at-grade	\$47	\$48	\$48	

Segment	STM	DTRM	Other Tracks	Route Miles	Crossovers	Turnouts	Segment Cost		
							25 kV	50 kV	25 kV AT
1		0.6	4.0	0.6	9	19	3,905	4,022	4,081
2		0.3		0.3	1	2	442	455	462
3		0.2		0.2		2	287	296	302
4	10.5	1.1		11.6		4	5,938	6,116	6,310
5		2.7	1.0	2.7			2,918	3,006	3,103
6	9.6	7.6		17.2		20	12,311	12,680	13,054
7	1.2			1.2			540	556	574
8							0	0	0
9	18.7	4.5	1.0	23.2	3	20	14,208	14,634	15,064
10		1.2		1.2		2	1,201	1,238	1,274
11							0	0	0
12		9.1	5.0	9.1		2	10,673	10,993	11,346
13	17.8	5.9	1.0	23.7		10	14,089	14,511	14,986
14		7.3		7.3		4	6,883	7,089	7,310
15	22.6	6.4	0.8	29.0		14	16,755	17,258	17,820
16							0	0	0
17		3.2	4.0	3.2	4	2	5,080	5,233	5,384
18		1.3		1.3	5	2	1,607	1,655	1,685
19		7.6		7.6	9		7,513	7,739	7,952
20		12.9	1.0	12.9	9	2	12,913	13,300	13,690
21	5.4	2.5	5.9	7.9		4	7,577	7,805	8,054
22	2.2	4.0	3.2	6.2		4	6,295	6,484	6,687
23	25.5	3.7	10.0	29.2		10	19,873	20,470	21,126
24	24.9	16.2	6.0	41.1	8	3	29,369	30,250	31,202
25	3.3	2.3	5.0	5.6	2	2	6,066	6,248	6,442
26		5.4		5.4		2	5,041	5,192	5,356
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
28							0	0	0
29							0	0	0
30		1.0		1.0		2	1,019	1,049	1,079
31	1.9	6.5		8.4		8	7,215	7,431	7,656
32		6.4		6.4		2	5,955	6,134	6,328
33	7.4	4.3		11.7		4	7,469	7,693	7,936
34	4.0	3.2		7.2		4	4,934	5,082	5,239
35	7.6	12.3		19.9		12	15,290	15,749	16,237

COMMUTER DISTRIBUTION SYSTEM COST ESTIMATE BY SEGMENT (in \$000's)									
Segment	STM	DTRM	Other Tracks	Route Miles	Crossovers	Turnouts	Segment Cost		
							25 kV	50 kV	25 kV AT
36							0	0	0
37		2.8		2.8		4	2,769	2,852	2,936
38							0	0	0
39							0	0	0
40							0	0	0
41							0	0	0
42							0	0	0
43							0	0	0
44							0	0	0
45							0	0	0
46							0	0	0
47							0	0	0
48	5.5			5.5			2,474	2,548	2,633
49							0	0	0
50							0	0	0
51							0	0	0
52		3.1		3.1		4	3,043	3,134	3,227
53		3.5	1.0	3.5	2	2	3,880	3,996	4,113
54		2.7		2.7		2	2,573	2,650	2,732
55	1.0			1.0			450	463	479
56							0	0	0
57							0	0	0
58							0	0	0
59							0	0	0
60							0	0	0
61							0	0	0
62							0	0	0
63							0	0	0
64							0	0	0
65							0	0	0
66							0	0	0
67							0	0	0
68	11.8	0.4	0.5	12.2		2	6,003	6,183	6,384
69	33.9	2.1	0.5	36.0		10	17,916	18,453	19,045
70							0	0	0
71		0.8	1.1	0.8		2	1,331	1,371	1,411
72	16.0	2.1		18.1		4	9,326	9,606	9,915
Total	250.5	167.5	70.7	418.0	54.0	208.0	311,227	320,564	330,468

1. UP/SP Corridor

28	0.0	0.0	0.0	0.0	0	0	0	0	0
29	0.0	0.0	0.0	0.0	0	0	0	0	0
30	0.0	1.0	0.0	1.0	0	2	1,019	1,049	1,079
31	1.9	6.5	0.0	8.4	0	8	7,215	7,431	7,656
32	0.0	6.4	0.0	6.4	0	2	5,955	6,134	6,328
33	7.4	4.3	0.0	11.7	0	4	7,469	7,693	7,936
40	0.0	0.0	0.0	0.0	0	0	0	0	0
41	0.0	0.0	0.0	0.0	0	0	0	0	0
42	0.0	0.0	0.0	0.0	0	0	0	0	0
43	0.0	0.0	0.0	0.0	0	0	0	0	0
44	0.0	0.0	0.0	0.0	0	0	0	0	0
45	0.0	0.0	0.0	0.0	0	0	0	0	0
46	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
49	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
50	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
51	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
57	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
58	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
59	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
60	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
61	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
62	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
63	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
34	4.0	3.2	0.0	7.2	0.0	4.0	4,934	5,082	5,239
66	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
	13.3	21.4	0.0	34.7	0.0	20.0	26,591	27,389	28,239

2. Baldwin Park

1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
2	0.0	0.3	0.0	0.3	1	2	442	455	462
3	0.0	0.2	0.0	0.2	0	2	287	296	302
4	10.5	1.1	0.0	11.6	0	4	5,938	6,116	6,310
5	0.0	2.7	1.0	2.7	0	0	2,918	3,006	3,103
6	9.6	7.6	0.0	17.2	0	20	12,311	12,680	13,054
7	1.2	0.0	0.0	1.2	0	0	540	556	574
9	18.7	4.5	1.0	23.2	3	20	14,208	14,634	15,064
	40.0	17.0	6.0	57.0	13	67	40,548	41,765	42,950

3. Moorpark

1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
2	0.0	0.3	0.0	0.3	1	2	442	455	462
10	0.0	1.2	0.0	1.2	0	2	1,201	1,238	1,274
12	0.0	9.1	5.0	9.1	0	2	10,673	10,993	11,346
14	0.0	7.3	0.0	7.3	0	4	6,883	7,089	7,310
15	22.6	6.4	0.8	29.0	0	14	16,755	17,258	17,820
	22.6	24.9	9.8	47.5	10	43	39,859	41,054	42,292

4. Santa Clarita

1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
2	0.0	0.3	0.0	0.3	1	2	442	455	462
10	0.0	1.2	0.0	1.2	0	2	1,201	1,238	1,274
12	0.0	9.1	5.0	9.1	0	2	10,673	10,993	11,346
13	17.8	5.9	1.0	23.7	0	10	14,089	14,511	14,986
	17.8	17.1	10.0	34.9	10	35	30,310	31,219	32,148

5. Lossan

1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
17	0.0	3.2	4.0	3.2	4	2	5,080	5,233	5,384
18	0.0	1.3	0.0	1.3	5	2	1,607	1,655	1,685
19	0.0	7.6	0.0	7.6	9	0	7,513	7,739	7,952
20	0.0	12.9	1.0	12.9	9	2	12,913	13,300	13,690
21	5.4	2.5	5.9	7.9	0	4	7,577	7,805	8,054
22	2.2	4.0	3.2	6.2	0	4	6,295	6,484	6,687
72	16.0	2.1	0.0	18.1	0	4	9,326	9,606	9,915
23	25.5	3.7	10.0	29.2	0	10	19,873	20,470	21,126
24	24.9	16.2	6.0	41.1	8	3	29,369	30,250	31,202
25	3.3	2.3	5.0	5.6	2	2	6,066	6,248	6,442
	77.3	56.4	39.1	133.7	46	52	109,524	112,810	116,217

6. Riverside via Ont.

1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
2	0.0	0.3	0.0	0.3	1	2	442	455	462
37	0.0	2.8	0.0	2.8	0	4	2,769	2,852	2,936
30	0.0	1.0	0.0	1.0	0	2	1,019	1,049	1,079
31	1.9	6.5	0.0	8.4	0	8	7,215	7,431	7,656
32	0.0	6.4	0.0	6.4	0	2	5,955	6,134	6,328
33	7.4	4.3	0.0	11.7	0	4	7,469	7,693	7,936
34	4.0	3.2	0.0	7.2	0	4	4,934	5,082	5,239
35	7.6	12.3	0.0	19.9	0	12	15,290	15,749	16,237
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
	20.9	38.2	5.1	59.1	10.0	59.0	50,327	51,837	53,365

7. Riverside-laupt via Fullerton

71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
26	0.0	5.4	0.0	5.4	0	2	5,041	5,192	5,356
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
17	0.0	3.2	4.0	3.2	4	2	5,080	5,233	5,384
18	0.0	1.3	0.0	1.3	5	2	1,607	1,655	1,685
19	0.0	7.6	0.0	7.6	9	0	7,513	7,739	7,952
20	0.0	12.9	1.0	12.9	9	2	12,913	13,300	13,690
1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
	19.7	42.1	29.8	61.8	38	45	65,490	67,455	69,414

8. Hemet - Riverside

52	0.0	3.1	0.0	3.1	0	4	3,043	3,134	3,227
69	33.9	2.1	0.5	36.0	0	10	17,916	18,453	19,045
	33.9	5.2	0.5	39.1	0	14	20,959	21,587	22,272

9. San Bernardino - Irvine

48	5.5	0.0	0.0	5.5	0	0	2,474	2,548	2,633
52	0.0	3.1	0.0	3.1	0	4	3,043	3,134	3,227
53	0.0	3.5	1.0	3.5	2	2	3,880	3,996	4,113
54	0.0	2.7	0.0	2.7	0	2	2,573	2,650	2,732
55	1.0	0.0	0.0	1.0	0	0	450	463	479
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
22	2.2	4.0	3.2	6.2	0	4	6,295	6,484	6,687
	28.4	24.4	25.0	52.8	4	30	48,145	49,589	51,138

10. Redlands

68	11.8	0.4	0.5	12.2	0	2	6,003	6,183	6,384
	11.8	0.4	0.5	12.2	0	2	6,003	6,183	6,384

11. Southern Pacific - No Commuter Traffic

12. Santa Fe

28	0.0	0.0	0.0	0.0	0	0	0	0	0
36	0.0	0.0	0.0	0.0	0	0	0	0	0
18	0.0	1.3	0.0	1.3	5	2	1,607	1,655	1,685
19	0.0	7.6	0.0	7.6	9	0	7,513	7,739	7,952
20	0.0	12.9	1.0	12.9	9	2	12,913	13,300	13,690
26	0.0	5.4	0.0	5.4	0	2	5,041	5,192	5,356
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
52	0.0	3.1	0.0	3.1	0	4	3,043	3,134	3,227
53	0.0	3.5	1.0	3.5	2	2	3,880	3,996	4,113
54	0.0	2.7	0.0	2.7	0	2	2,573	2,650	2,732
55	1.0	0.0	0.0	1.0	0	0	450	463	479
56	0.0	0.0	0.0	0.0	0	0	0	0	0
57	0.0	0.0	0.0	0.0	0	0	0	0	0
58	0.0	0.0	0.0	0.0	0	0	0	0	0
59	0.0	0.0	0.0	0.0	0	0	0	0	0
	20.7	47.6	22.8	68.3	27.0	32.0	66,450	68,443	70,501

13. Union Pacific

28	0.0	0.0	0.0	0.0	0	0	0	0	0
29	0.0	0.0	0.0	0.0	0	0	0	0	0
30	0.0	1.0	0.0	1.0	0	2	1,019	1,049	1,079
31	1.9	6.5	0.0	8.4	0	8	7,215	7,431	7,656
32	0.0	6.4	0.0	6.4	0	2	5,955	6,134	6,328
33	7.4	4.3	0.0	11.7	0	4	7,469	7,693	7,936
34	4.0	3.2	0.0	7.2	0	4	4,934	5,082	5,239
35	7.6	12.3	0.0	19.9	0	12	15,290	15,749	16,237
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
52	0.0	3.1	0.0	3.1	0	4	3,043	3,134	3,227
53	0.0	3.5	1.0	3.5	2	2	3,880	3,996	4,113
54	0.0	2.7	0.0	2.7	0	2	2,573	2,650	2,732
55	1.0	0.0	0.0	1.0	0	0	450	463	479
56	0.0	0.0	0.0	0.0	0	0	0	0	0
57	0.0	0.0	0.0	0.0	0	0	0	0	0
58	0.0	0.0	0.0	0.0	0	0	0	0	0
59	0.0	0.0	0.0	0.0	0	0	0	0	0
60	0.0	0.0	0.0	0.0	0	0	0	0	0
61	0.0	0.0	0.0	0.0	0	0	0	0	0
	21.9	43.8	2.1	65.7	2.0	42.0	53,156	54,751	56,438

SUMMARY BY ROUTES									
Route No.	Single Track Miles	Double Track Route Mile	Other Tracks	Route Miles	Crossovers	Turnouts	Overhead Distribution System Cost		
							25 kV	50 kV	25 kV AT
1	13.3	21.4	0.0	34.7	0	20	26,591	27,389	28,239
2	40.0	17.0	6.0	57.0	13	67	40,548	41,765	42,950
3	22.6	24.9	9.8	47.5	10	43	39,859	41,054	42,292
4	17.8	17.1	10.0	34.9	10	35	30,310	31,219	32,148
5	77.3	56.4	39.1	133.7	46	52	109,524	112,810	116,217
6	20.9	38.2	5.1	59.1	10	59	50,327	51,837	53,365
7	19.7	42.1	29.8	61.8	38	45	65,490	67,455	69,414
8	33.9	5.2	0.5	39.1	0	14	20,959	21,587	22,272
9	28.4	24.4	25.0	52.8	4	30	48,145	49,589	51,138
10	11.8	0.4	0.5	12.2	0	2	6,003	6,183	6,384
12	20.7	47.6	22.8	68.3	27	32	66,450	68,443	70,501
13	21.9	43.8	2.1	65.7	2	42	53,156	54,751	56,438

COMMUTER & FREIGHT DISTRIBUTION SYSTEM COST ESTIMATE BY SEGMENT (in \$000's)

Base Unit Costs (in \$000's)	Single Track Cost, at-grade	25 kV	50 kV	25 kV AT
	Double Track Cost, at grade	\$402	\$414	\$427
	Single Track Cost, tunnel	\$816	\$841	\$868
	Add-on 12.00% Crossover Cost, at-grade	\$210	\$216	\$235
	Turnout Cost, at-grade	\$56	\$58	\$56
		\$47	\$48	\$48

Segment	STM	DTRM	Other Tracks	Route Miles	Crossovers	Turnouts	Segment Cost		
							25 kV	50 kV	25 kV AT
1		0.6	4.0	0.6	9	19	3,905	4,022	4,081
2		0.3		0.3	1	2	442	455	462
3		0.2		0.2		2	287	296	302
4	10.5	1.1		11.6		4	5,938	6,116	6,310
5		2.7	1.0	2.7			2,918	3,006	3,103
6	9.6	7.6		17.2		20	12,311	12,680	13,054
7	1.2			1.2			540	556	574
8				0.0			0	0	0
9	18.7	4.5	1.0	23.2	3	20	14,208	14,634	15,064
10		1.2		1.2		2	1,201	1,238	1,274
11				0.0			0	0	0
12		9.1	5.0	9.1		2	10,673	10,993	11,346
13	17.8	5.9	1.0	23.7		10	14,089	14,511	14,986
14		7.3		7.3		4	6,883	7,089	7,310
15	22.6	6.4	0.8	29.0		14	16,755	17,258	17,820
16				0.0			0	0	0
17		3.2	4.0	3.2	4	2	5,080	5,233	5,384
18		1.3		1.3	5	2	1,607	1,655	1,685
19		7.6	7.0	7.6	9		10,662	10,982	11,303
20		12.9	4.0	12.9	9	2	14,262	14,690	15,126
21	5.4	2.5	6.9	7.9		4	8,027	8,268	8,532
22	2.2	4.0	3.2	6.2		4	6,295	6,484	6,687
23	25.5	3.7	10.0	29.2		10	19,873	20,470	21,126
24	24.9	16.2	6.0	41.1	8	3	29,369	30,250	31,202
25	3.3	2.3	5.0	5.6	2	2	6,066	6,248	6,442
26		5.4		5.4		2	5,041	5,192	5,356
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
28		24.4	5.0	24.4		4	24,764	25,507	26,324
29		1.5		1.5			1,371	1,412	1,458
30		1.0	1.0	1.0		2	1,468	1,513	1,558
31	1.9	6.5	10.0	8.4		8	11,713	12,064	12,443
32		6.4	1.0	6.4		2	6,405	6,597	6,807
33	7.4	4.3	5.0	11.7		4	9,718	10,009	10,330
34	4.0	3.2	2.0	7.2		4	5,833	6,008	6,197
35	7.6	12.3	4.0	19.9		12	17,089	17,602	18,151

COMMUTER & FREIGHT DISTRIBUTION SYSTEM COST ESTIMATE BY SEGMENT (in \$000's)

Segment	STM	DTRM	Other Tracks	Route Miles	Crossovers	Turnouts	Segment Cost		
							25 kV	50 kV	25 kV AT
36	0.6			0.6			270	278	287
37		2.8	1.0	2.8		4	3,218	3,315	3,415
38		5.8	6.0	5.8		10	8,523	8,779	9,045
39	4.4	2.5		6.9		6	4,578	4,715	4,858
40	6.4	6.9	10.0	13.3		6	13,998	14,418	14,879
41	1.5	2.0		3.5		4	2,712	2,793	2,876
42	7.2	12.7	25.0	19.9		8	26,512	27,308	28,187
43		1.0	1.0	1.0		4	1,573	1,620	1,665
44	22.2	50.0	5.0	72.2	14	46	61,226	63,063	64,964
45	79.2	44.8	10.0	124.0		32	82,751	85,234	87,961
46	0.2			0.2		2	194	200	203
47				0.0			0	0	0
48	5.5			5.5			2,474	2,548	2,633
49	1.6			1.6			720	741	766
50	0.1			0.1	2		171	176	173
51	0.1			0.1	2		171	176	173
52		3.1		3.1		4	3,043	3,134	3,227
53		3.5	1.0	3.5	2	2	3,880	3,996	4,113
54		2.7	1.0	2.7		2	3,023	3,113	3,210
55	1.0		2.0	1.0			1,349	1,390	1,436
56		11.9	2.0	11.9		2	11,883	12,240	12,631
57		14.5	1.0	14.5	2		13,797	14,211	14,664
58		19.5	2.0	19.5		2	18,831	19,396	20,018
59		36.9	1.0	36.9		6	34,497	35,532	36,667
60		7.2	25.0	7.2	3		18,016	18,557	19,155
61		5.2	10.0	5.2		2	9,356	9,637	9,949
62	3.8	2.0		5.8			3,538	3,644	3,763
63	6.1	1.7		7.8		2	4,402	4,535	4,680
64				0.0			0	0	0
65				0.0			0	0	0
66	0.1			0.1	2		171	176	173
67				0.0			0	0	0
68	11.8	0.4	0.5	12.2		2	6,003	6,183	6,384
69	33.9	2.1	0.5	36.0		10	17,916	18,453	19,045
70	2.2	1.5		3.7		4	2,570	2,647	2,725
71		0.8	1.1	0.8		2	1,331	1,371	1,411
72	16.0	2.1	16.0	18.1		4	16,523	17,019	17,574
Total	386.2	419.5	227.7	805.7	79.0	348.0	682,115	702,578	724,565

SEGM-C&F.XLS

1. UP/SP Corridor

28	0.0	24.4	5.0	24.4	0	4	24,764	25,507	26,324
29	0.0	1.5	0.0	1.5	0	0	1,371	1,412	1,458
30	0.0	1.0	1.0	1.0	0	2	1,468	1,513	1,558
31	1.9	6.5	10.0	8.4	0	8	11,713	12,064	12,443
32	0.0	6.4	1.0	6.4	0	2	6,405	6,597	6,807
33	7.4	4.3	5.0	11.7	0	4	9,718	10,009	10,330
40	6.4	6.9	10.0	13.3	0	6	13,998	14,418	14,879
41	1.5	2.0	0.0	3.5	0	4	2,712	2,793	2,876
42	7.2	12.7	25.0	19.9	0	8	26,512	27,308	28,187
43	0.0	1.0	1.0	1.0	0	4	1,573	1,620	1,665
44	22.2	50.0	5.0	72.2	14	46	61,226	63,063	64,964
45	79.2	44.8	10.0	124.0	0	32	82,751	85,234	87,961
46	0.2	0.0	0.0	0.2	0.0	2.0	194	200	203
49	1.6	0.0	0.0	1.6	0.0	0.0	720	741	766
50	0.1	0.0	0.0	0.1	2.0	0.0	171	176	173
51	0.1	0.0	0.0	0.1	2.0	0.0	171	176	173
57	0.0	14.5	1.0	14.5	2.0	0.0	13,797	14,211	14,664
58	0.0	19.5	2.0	19.5	0.0	2.0	18,831	19,396	20,018
59	0.0	36.9	1.0	36.9	0.0	6.0	34,497	35,532	36,667
60	0.0	7.2	25.0	7.2	3.0	0.0	18,016	18,557	19,155
61	0.0	5.2	10.0	5.2	0.0	2.0	9,356	9,637	9,949
62	3.8	2.0	0.0	5.8	0.0	0.0	3,538	3,644	3,763
63	6.1	1.7	0.0	7.8	0.0	2.0	4,402	4,535	4,680
34	4.0	3.2	2.0	7.2	0.0	4.0	5,833	6,008	6,197
66	0.1	0.0	0.0	0.1	2.0	0.0	171	176	173
	141.8	251.7	114.0	393.5	25.0	138.0	353,910	364,527	376,033

5.Lossan

1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
17	0.0	3.2	4.0	3.2	4	2	5,080	5,233	5,384
18	0.0	1.3	0.0	1.3	5	2	1,607	1,655	1,685
19	0.0	7.6	7.0	7.6	9	0	10,662	10,982	11,303
20	0.0	12.9	4.0	12.9	9	2	14,262	14,690	15,126
21	5.4	2.5	6.9	7.9	0	4	8,027	8,268	8,532
22	2.2	4.0	3.2	6.2	0	4	6,295	6,484	6,687
72	16.0	2.1	16.0	18.1	0	4	16,523	17,019	17,574
23	25.5	3.7	10.0	29.2	0	10	19,873	20,470	21,126
24	24.9	16.2	6.0	41.1	8	3	29,369	30,250	31,202
25	3.3	2.3	5.0	5.6	2	2	6,066	6,248	6,442
	77.3	56.4	66.1	133.7	46	52	121,669	125,320	129,143

SEGM-C&F.XLS

6. Riverside via Ont.

1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
2	0.0	0.3	0.0	0.3	1	2	442	455	462
37	0.0	2.8	1.0	2.8	0	4	3,218	3,315	3,415
30	0.0	1.0	1.0	1.0	0	2	1,468	1,513	1,558
31	1.9	6.5	10.0	8.4	0	8	11,713	12,064	12,443
32	0.0	6.4	1.0	6.4	0	2	6,405	6,597	6,807
33	7.4	4.3	5.0	11.7	0	4	9,718	10,009	10,330
34	4.0	3.2	2.0	7.2	0	4	5,833	6,008	6,197
35	7.6	12.3	4.0	19.9	0	12	17,089	17,602	18,151
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
	20.9	38.2	29.1	59.1	10.0	59.0	61,122	62,956	64,854

7. Riverside-laupt via Fullerton

71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
26	0.0	5.4	0.0	5.4	0	2	5,041	5,192	5,356
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
17	0.0	3.2	4.0	3.2	4	2	5,080	5,233	5,384
18	0.0	1.3	0.0	1.3	5	2	1,607	1,655	1,685
19	0.0	7.6	7.0	7.6	9	0	10,662	10,982	11,303
20	0.0	12.9	4.0	12.9	9	2	14,262	14,690	15,126
1	0.0	0.6	4.0	0.6	9	19	3,905	4,022	4,081
	19.7	42.1	39.8	61.8	38	45	69,989	72,088	74,201

9. San Bernardino - Irvine

48	5.5	0.0	0.0	5.5	0	0	2,474	2,548	2,633
52	0.0	3.1	0.0	3.1	0	4	3,043	3,134	3,227
53	0.0	3.5	1.0	3.5	2	2	3,880	3,996	4,113
54	0.0	2.7	1.0	2.7	0	2	3,023	3,113	3,210
55	1.0	0.0	2.0	1.0	0	0	1,349	1,390	1,436
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
22	2.2	4.0	3.2	6.2	0	4	6,295	6,484	6,687
	28.4	24.4	28.0	52.8	4	30	49,494	50,979	52,574

SEGM-C&F.XLS

11. Southern Pacific

28	0.0	24.4	5.0	24.4	0	4	24,764	25,507	26,324
29	0.0	1.5	0.0	1.5	0	0	1,371	1,412	1,458
37	0.0	2.8	1.0	2.8	0	4	3,218	3,315	3,415
38	0.0	5.8	6.0	5.8	0	10	8,523	8,779	9,045
39	4.4	2.5	0.0	6.9	0	6	4,578	4,715	4,858
40	6.4	6.9	10.0	13.3	0	6	13,998	14,418	14,879
41	1.5	2.0	0.0	3.5	0	4	2,712	2,793	2,876
42	7.2	12.7	25.0	19.9	0	8	26,512	27,308	28,187
43	0.0	1.0	1.0	1.0	0	4	1,573	1,620	1,665
44	22.2	50.0	5.0	72.2	14	46	61,226	63,063	64,964
45	79.2	44.8	10.0	124.0	0	32	82,751	85,234	87,961
5	0.0	2.7	1.0	2.7	0	0	2,918	3,006	3,103
70	2.2	1.5	0.0	3.7	0	4	2,570	2,647	2,725
	123.1	158.6	64.0	281.7	14	128	236,717	243,818	251,461

12. Santa Fe

28	0.0	24.4	5.0	24.4	0	4	24,764	25,507	26,324
36	0.6	0.0	0.0	0.6	0	0	270	278	287
18	0.0	1.3	0.0	1.3	5	2	1,607	1,655	1,685
19	0.0	7.6	7.0	7.6	9	0	10,662	10,982	11,303
20	0.0	12.9	4.0	12.9	9	2	14,262	14,690	15,126
26	0.0	5.4	0.0	5.4	0	2	5,041	5,192	5,356
27	19.7	10.3	19.7	30.0	2	16	28,100	28,943	29,856
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
52	0.0	3.1	0.0	3.1	0	4	3,043	3,134	3,227
53	0.0	3.5	1.0	3.5	2	2	3,880	3,996	4,113
54	0.0	2.7	1.0	2.7	0	2	3,023	3,113	3,210
55	1.0	0.0	2.0	1.0	0	0	1,349	1,390	1,436
56	0.0	11.9	2.0	11.9	0	2	11,883	12,240	12,631
57	0.0	14.5	1.0	14.5	2	0	13,797	14,211	14,664
58	0.0	19.5	2.0	19.5	0	2	18,831	19,396	20,018
59	0.0	36.9	1.0	36.9	0	6	34,497	35,532	36,667
	21.3	154.8	46.8	176.1	29.0	46.0	176,340	181,630	187,316

13. Union Pacific

28	0.0	24.4	5.0	24.4	0	4	24,764	25,507	26,324
29	0.0	1.5	0.0	1.5	0	0	1,371	1,412	1,458
30	0.0	1.0	1.0	1.0	0	2	1,468	1,513	1,558
31	1.9	6.5	10.0	8.4	0	8	11,713	12,064	12,443
32	0.0	6.4	1.0	6.4	0	2	6,405	6,597	6,807
33	7.4	4.3	5.0	11.7	0	4	9,718	10,009	10,330
34	4.0	3.2	2.0	7.2	0	4	5,833	6,008	6,197
35	7.6	12.3	4.0	19.9	0	12	17,089	17,602	18,151
71	0.0	0.8	1.1	0.8	0	2	1,331	1,371	1,411
52	0.0	3.1	0.0	3.1	0	4	3,043	3,134	3,227
53	0.0	3.5	1.0	3.5	2	2	3,880	3,996	4,113
54	0.0	2.7	1.0	2.7	0	2	3,023	3,113	3,210
55	1.0	0.0	2.0	1.0	0	0	1,349	1,390	1,436
56	0.0	11.9	2.0	11.9	0	2	11,883	12,240	12,631
57	0.0	14.5	1.0	14.5	2	0	13,797	14,211	14,664
58	0.0	19.5	2.0	19.5	0	2	18,831	19,396	20,018
59	0.0	36.9	1.0	36.9	0	6	34,497	35,532	36,667
60	0.0	7.2	25.0	7.2	3	0	18,016	18,557	19,155
61	0.0	5.2	10.0	5.2	0	2	9,356	9,637	9,949
	21.9	164.9	74.1	186.8	7.0	58.0	197,368	203,289	209,750

SUMMARY BY ROUTES									
Route No.	Single Track Miles	Double Track Route Mile	Other Tracks	Route Miles	Crossovers	Turnouts	Overhead Distribution System Cost		
							25 kV	50 kV	25 kV AT
1	141.8	251.7	114.0	393.5	25	138	353,910	364,527	376,033
5	77.3	56.4	66.1	133.7	46	52	121,669	125,320	129,143
6	20.9	38.2	29.1	59.1	10	59	61,122	62,956	64,854
7	19.7	42.1	39.8	61.8	38	45	69,989	72,088	74,201
9	28.4	24.4	28.0	52.8	4	30	49,494	50,979	52,574
11	123.1	158.6	64.0	281.7	14	128	236,717	243,818	251,461
12	21.3	154.8	46.8	176.1	29	46	176,340	181,630	187,316
13	21.9	164.9	74.1	186.8	7	58	197,368	203,289	209,750

DISTRIBUTION SYSTEM COST ESTIMATE BY SEGMENT (in \$000's)

SP/UP/ATSF CORRIDOR

Base Unit Costs (in \$000's)	Single Track Cost, at-grade	25 kV	50 kV	25 kV AT
	Double Track Cost, at grade	\$402	\$414	\$427
	Single Track Cost, tunnel	\$816	\$841	\$868
	Add-on 12.00% Crossover Cost, at-grade	\$210	\$216	\$235
	Turnout Cost, at-grade	\$56	\$58	\$56
		\$47	\$48	\$48

Segment	STM	DTRM	Other Tracks	Route Miles	Crossovers	Turnouts	Segment Cost		
							25 kV	50 kV	25 kV AT
28		24.4		24.4		4	22,515	23,191	23,931
29		1.5		1.5			1,371	1,412	1,458
30		1.0	6.4	1.0		2	3,897	4,014	4,143
31	1.9	6.5	8.7	8.4		8	11,128	11,462	11,821
32		6.4	7.3	6.4		2	9,239	9,516	9,823
33	7.4	4.3	11.7	11.7		4	12,732	13,113	13,537
34	4.0	3.2	2.1	7.2		4	5,878	6,055	6,245
40	6.4	6.9	13.3	13.3		6	15,483	15,947	16,459
41	1.5	2.0	7.0	3.5		4	5,861	6,037	6,227
42	7.2	12.7	39.8	19.9		8	33,170	34,165	35,272
43		1.0	1.0	1.0		4	1,573	1,620	1,665
44	22.2	50.0	5.0	72.2	14	46	61,226	63,063	64,964
45	79.2	44.8	10.0	124.0		32	82,751	85,234	87,961
46	0.2		0.2	0.2		2	284	293	299
49	1.6		1.6	1.6			1,439	1,483	1,532
50	0.1		0.1	0.1	2		216	222	221
51	0.1		0.1	0.1	2		216	222	221
57		14.5	14.5	14.5	2		19,869	20,466	21,126
58		19.5	2.0	19.5		2	18,831	19,396	20,018
59		36.9	1.0	36.9		6	34,497	35,532	36,667
60		7.2	25.0	7.2	3		18,016	18,557	19,155
61		5.2	10.0	5.2		2	9,356	9,637	9,949
62	3.8	2.0	5.8	5.8			6,147	6,331	6,540
63	6.1	1.7	7.8	7.8		2	7,911	8,148	8,414
66	0.1		0.1	0.1	2		216	222	221
Total	141.8	251.7	180.5	393.5	25.0	138.0	383,823	395,338	407,868

APPENDIX 7-7

APPENDIX D

Overall System Cost Estimate for Traction Electrification System for Each Route - System Without Autotransformers

The results for each route are presented in the following order:

- 25 kV System - Commuter Traffic
 - 50 kV System - Commuter Traffic
 - 25 kV System - Commuter and Freight Traffic
 - 50 kV System - Commuter and Freight Traffic
-
- | | | |
|-----|--------------------------|-------|
| 1. | UP/SP Corridor | D-1 |
| 2. | Baldwin Park | D-9 |
| 3. | Moorpark | D-17 |
| 4. | Santa Clarita | D-25 |
| 5. | Lossan | D-33 |
| 6. | Riverside via Ontario | D-41 |
| 7. | Riverside via Fullerton | D-49 |
| 8. | Hemet to Riverside | D-57 |
| 9. | San Bernardino to Irvine | D-65 |
| 10. | Redlands | D-73 |
| 11. | SP Yuma to Ports | D-81 |
| 12. | SF Barstow to Ports | D-89 |
| 13. | UP Ports to Yermo | D-96 |
| | Entire Network | D-105 |
| | UP/SP/ATSF Corridor | D-112 |

February 12, 1992

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 1 - SP/UP CORRIDOR - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	2	EA	700,000	1,400,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	3	EA	1,188,500	3,565,500
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	2	EA	1,395,500	2,791,000
230 kV Utility Input	1	EA	2,015,500	2,015,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	3	EA	2,194,750	6,584,250
230 kV Utility Input	1	EA	3,434,750	3,434,750
SWITCHING STATIONS	11	EA	962,500	10,587,500
PARALLELING STATIONS	8	EA	892,500	7,140,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	141.64	MI	401,625	56,886,165
Two Tracks	251.70	MI	816,250	205,450,125
Other Tracks	112.00	MI	401,625	44,982,000
Crossovers	25.00	EA	56,075	1,401,875
Turnouts	138.00	EA	46,625	6,434,250
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				50,031,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				315,187,955
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				365,218,955

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		365,218,955
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	14,608,758
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	7,304,379
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	21,913,137
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	409,045,230
YEARLY ESCALATION	5% PER YEAR	20,452,261
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	409,045,230

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

50 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC

ROUTE : ROUTE No. 1 - SP/UP CORRIDOR - COMMUTER TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,426,500	1,426,500
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	1	EA	2,165,500	2,165,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	1	EA	3,744,750	3,744,750
SWITCHING STATIONS	6	EA	1,012,500	6,075,000
PARALLELING STATION	10	EA	932,500	9,325,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	141.64	MI	413,674	58,592,750
Two Tracks	251.70	MI	840,738	211,613,629
Other Tracks	112.00	MI	413,674	46,331,460
Crossovers	25.00	EA	57,757	1,443,931
Turnouts	138.00	EA	48,024	6,627,278
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				35,045,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				324,643,594
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				359,689,344

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		359,689,344
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	14,387,574
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	7,193,787
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	21,581,361
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	402,852,065
YEARLY ESCALATION	5% PER YEAR	20,142,603
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	402,852,065

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE**25 kV SYSTEM WITHOUT AUTOTRANSFORMERS**

PROJECT : LACTC
ROUTE : ROUTE No. 1 - SP/UP CORRIDOR - COMMUTER AND FREIGHT TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	497,000	994,000
115 kV Utility Input	3	EA	700,000	2,100,000
230 kV Utility Input	3	EA	1,842,000	5,526,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	3	EA	833,500	2,500,500
115 kV Utility Input	4	EA	1,188,500	4,754,000
230 kV Utility Input	4	EA	3,216,500	12,866,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	2	EA	1,426,500	2,853,000
115 kV Utility Input	3	EA	1,525,500	4,576,500
230 kV Utility Input	3	EA	2,165,500	6,496,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	3	EA	2,266,750	6,800,250
115 kV Utility Input	4	EA	2,464,750	9,859,000
230 kV Utility Input	4	EA	3,744,750	14,979,000
SWITCHING STATIONS	20	EA	962,500	19,250,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	141.64	MI	401,625	56,886,165
Two Tracks	251.70	MI	816,250	205,450,125
Other Tracks	112.00	MI	401,625	44,982,000
Crossovers	25.00	EA	56,075	1,401,875
Turnouts	138.00	EA	46,625	6,434,250
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				93,554,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				315,187,955
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				408,742,705

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		408,742,705
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	16,349,708
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	8,174,854
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	24,524,562
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	457,791,830
YEARLY ESCALATION	5% PER YEAR	22,889,591
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	457,791,830

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

50 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 1 - SP/UP CORRIDOR - COMMUTER AND FREIGHT TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	2	EA	700,000	1,400,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	2	EA	3,216,500	6,433,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	2	EA	1,395,500	2,791,000
230 kV Utility Input	1	EA	2,015,500	2,015,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	2	EA	2,194,750	4,389,500
230 kV Utility Input	2	EA	3,434,750	6,869,500
SWITCHING STATIONS	9	EA	1,012,500	9,112,500
PARALLELING STATION	16	EA	932,500	14,920,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	141.64	MI	413,674	58,592,750
Two Tracks	251.70	MI	840,738	211,613,629
Other Tracks	112.00	MI	413,674	46,331,460
Crossovers	25.00	EA	57,757	1,443,931
Turnouts	138.00	EA	48,024	6,627,278
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				54,980,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				324,643,594
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				379,623,844

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		379,623,844
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	15,184,954
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	7,592,477
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	22,777,431
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	425,178,705
YEARLY ESCALATION	5% PER YEAR	21,258,935
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	425,178,705

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 2 - BALDWIN PARK - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	40.00	MI	401,625	16,065,000
Two Tracks	17.00	MI	816,250	13,876,250
Other Tracks	6.00	MI	401,625	2,409,750
Crossovers	13.00	EA	56,075	728,975
Turnouts	67.00	EA	46,625	3,123,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				7,511,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				36,203,850
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				43,715,100

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		43,715,100
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,748,604
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	874,302
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,622,906
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	48,960,912
YEARLY ESCALATION	5% PER YEAR	2,448,046
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	48,960,912

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 2 - BALDWIN PARK - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	2	EA	932,500	1,865,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	40.00	MI	413,674	16,546,950
Two Tracks	17.00	MI	840,738	14,292,538
Other Tracks	6.00	MI	413,674	2,482,043
Crossovers	13.00	EA	57,757	750,844
Turnouts	67.00	EA	48,024	3,217,591
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				6,990,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				37,289,966
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				44,280,216

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		44,280,216
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,771,209
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	885,604
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,656,813
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	49,593,841
YEARLY ESCALATION	5% PER YEAR	2,479,692
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	49,593,841

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 2 - BALDWIN PARK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	497,000	994,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	2	EA	1,296,500	2,593,000
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	5	EA	962,500	4,812,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	40.00	MI	401,625	16,065,000
Two Tracks	17.00	MI	816,250	13,876,250
Other Tracks	6.00	MI	401,625	2,409,750
Crossovers	13.00	EA	56,075	728,975
Turnouts	67.00	EA	46,625	3,123,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				14,060,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				36,203,850
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				50,263,850

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		50,263,850
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,010,554
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,005,277
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,015,831
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	56,295,512
YEARLY ESCALATION	5% PER YEAR	2,814,776
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	56,295,512

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 2 - BALDWIN PARK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,426,500	1,426,500
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	3	EA	1,012,500	3,037,500
PARALLELING STATION	2	EA	932,500	1,865,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	40.00	MI	413,674	16,546,950
Two Tracks	17.00	MI	840,738	14,292,538
Other Tracks	6.00	MI	413,674	2,482,043
Crossovers	13.00	EA	57,757	750,844
Turnouts	67.00	EA	48,024	3,217,591
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				9,926,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				37,289,966
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				47,216,216

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		47,216,216
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,888,649
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	944,324
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,832,973
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	52,882,161
YEARLY ESCALATION	5% PER YEAR	2,644,108
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	52,882,161

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 3 - MOORPARK - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.96	MI	401,625	8,418,060
Two Tracks	24.90	MI	816,250	20,324,625
Other Tracks	9.80	MI	401,625	3,935,925
Crossovers	10.00	EA	56,075	560,750
Turnouts	43.00	EA	46,625	2,004,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.64	MI	209,625	343,785
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				7,511,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				35,588,020
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				43,099,270

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		43,099,270
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,723,971
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	861,985
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,585,956
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	48,271,182
YEARLY ESCALATION	5% PER YEAR	2,413,559
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	48,271,182

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 3 - MOORPARK - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	2	EA	932,500	1,865,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.96	MI	413,674	8,670,602
Two Tracks	24.90	MI	840,738	20,934,364
Other Tracks	9.80	MI	413,674	4,054,003
Crossovers	10.00	EA	57,757	577,573
Turnouts	43.00	EA	48,024	2,065,021
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.64	MI	215,914	354,099
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				6,990,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				36,655,661
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				43,645,911

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		43,645,911
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,745,836
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	872,918
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,618,755
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	48,883,420
YEARLY ESCALATION	5% PER YEAR	2,444,171
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	48,883,420

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 3 - MOORPARK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	497,000	994,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	2	EA	1,296,500	2,593,000
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	5	EA	962,500	4,812,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.96	MI	401,625	8,418,060
Two Tracks	24.90	MI	816,250	20,324,625
Other Tracks	9.80	MI	401,625	3,935,925
Crossovers	10.00	EA	56,075	560,750
Turnouts	43.00	EA	46,625	2,004,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.64	MI	209,625	343,785
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				14,060,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				35,588,020
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				49,648,020

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		49,648,020
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,985,921
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	992,960
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,978,881
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	55,605,782
YEARLY ESCALATION	5% PER YEAR	2,780,289
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	55,605,782

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 3 - MOORPARK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,426,500	1,426,500
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	3	EA	1,012,500	3,037,500
PARALLELING STATION	2	EA	932,500	1,865,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.96	MI	413,674	8,670,602
Two Tracks	24.90	MI	840,738	20,934,364
Other Tracks	9.80	MI	413,674	4,054,003
Crossovers	10.00	EA	57,757	577,573
Turnouts	43.00	EA	48,024	2,065,021
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.64	MI	215,914	354,099
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				9,926,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				36,655,661
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				46,581,911

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		46,581,911
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,863,276
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	931,638
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,794,915
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	52,171,740
YEARLY ESCALATION	5% PER YEAR	2,608,587
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	52,171,740

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 4 - SANTA CLARITA - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	2	EA	962,500	1,925,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	16.48	MI	401,625	6,618,780
Two Tracks	17.10	MI	816,250	13,957,875
Other Tracks	10.00	MI	401,625	4,016,250
Crossovers	10.00	EA	56,075	560,750
Turnouts	35.00	EA	46,625	1,631,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.32	MI	209,625	276,705
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				4,755,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				27,062,235
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				31,817,485

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		31,817,485
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,272,699
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	636,350
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,909,049
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	35,635,583
YEARLY ESCALATION	5% PER YEAR	1,781,779
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	35,635,583

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 4 - SANTA CLARITA - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	16.48	MI	413,674	6,817,343
Two Tracks	17.10	MI	840,738	14,376,611
Other Tracks	10.00	MI	413,674	4,136,738
Crossovers	10.00	EA	57,757	577,573
Turnouts	35.00	EA	48,024	1,680,831
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.32	MI	215,914	285,006
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				5,125,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				27,874,102
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				32,999,352

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		32,999,352
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,319,974
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	659,987
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,979,961
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	36,959,274
YEARLY ESCALATION	5% PER YEAR	1,847,964
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	36,959,274

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 4 - SANTA CLARITA - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	16.48	MI	401,625	6,618,780
Two Tracks	17.10	MI	816,250	13,957,875
Other Tracks	10.00	MI	401,625	4,016,250
Crossovers	10.00	EA	56,075	560,750
Turnouts	35.00	EA	46,625	1,631,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.32	MI	209,625	276,705
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				7,511,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				27,062,235
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				34,573,485

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		34,573,485
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,382,939
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	691,470
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,074,409
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	38,722,303
YEARLY ESCALATION	5% PER YEAR	1,936,115
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	38,722,303

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

50 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 4 - SANTA CLARITA - COMMUTER AND FREIGHT TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	16.48	MI	413,674	6,817,343
Two Tracks	17.10	MI	840,738	14,376,611
Other Tracks	10.00	MI	413,674	4,136,738
Crossovers	10.00	EA	57,757	577,573
Turnouts	35.00	EA	48,024	1,680,831
TUNNEL DISTRIBUTION SYSTEM				
One Track	1.32	MI	215,914	285,006
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				5,125,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				27,874,102
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				32,999,352

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		32,999,352
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,319,974
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	659,987
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,979,961
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	36,959,274
YEARLY ESCALATION	5% PER YEAR	1,847,964
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	36,959,274

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 5 - LOSSAN - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	1	EA	2,015,500	2,015,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	1	EA	3,434,750	3,434,750
SWITCHING STATIONS	5	EA	962,500	4,812,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	77.14	MI	401,625	30,981,353
Two Tracks	56.40	MI	816,250	46,036,500
Other Tracks	33.00	MI	401,625	13,253,625
Crossovers	46.00	EA	56,075	2,579,450
Turnouts	52.00	EA	46,625	2,424,500
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				19,945,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				95,275,428
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				115,220,428

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		115,220,428
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	4,608,817
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	2,304,409
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	6,913,226
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	129,046,879
YEARLY ESCALATION	5% PER YEAR	6,452,344
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	129,046,879

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 5 - LOSSAN - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	1	EA	3,744,750	3,744,750
SWITCHING STATIONS	3	EA	1,012,500	3,037,500
PARALLELING STATION	4	EA	932,500	3,730,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	77.14	MI	413,674	31,910,793
Two Tracks	56.40	MI	840,738	47,417,595
Other Tracks	33.00	MI	413,674	13,651,234
Crossovers	46.00	EA	57,757	2,656,834
Turnouts	52.00	EA	48,024	2,497,235
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				16,829,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				98,168,237
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				114,997,237

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		114,997,237
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	4,599,889
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	2,299,945
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	6,899,834
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	128,796,905
YEARLY ESCALATION	5% PER YEAR	6,439,845
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	128,796,905

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

25 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 5 - LOSSAN - COMMUTER AND FREIGHT TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	497,000	994,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	2	EA	3,216,500	6,433,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	2	EA	1,296,500	2,593,000
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	1	EA	2,015,500	2,015,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	2	EA	3,434,750	6,869,500
SWITCHING STATIONS	8	EA	962,500	7,700,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	77.14	MI	401,625	30,981,353
Two Tracks	56.40	MI	816,250	46,036,500
Other Tracks	33.00	MI	401,625	13,253,625
Crossovers	46.00	EA	56,075	2,579,450
Turnouts	52.00	EA	46,625	2,424,500
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				34,107,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				95,308,968
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				129,416,468

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		129,416,468
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	5,176,659
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	2,588,329
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	7,764,988
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	144,946,444
YEARLY ESCALATION	5% PER YEAR	7,247,322
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	144,946,444

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 5 - LOSSAN - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	1	EA	2,165,500	2,165,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	1	EA	3,744,750	3,744,750
SWITCHING STATIONS	4	EA	1,012,500	4,050,000
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	77.14	MI	413,674	31,910,793
Two Tracks	56.40	MI	840,738	47,417,595
Other Tracks	33.00	MI	413,674	13,651,234
Crossovers	46.00	EA	57,757	2,656,834
Turnouts	52.00	EA	48,024	2,497,235
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				18,119,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				98,168,237
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				116,287,237

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		116,287,237
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	4,651,489
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	2,325,745
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	6,977,234
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	130,241,705
YEARLY ESCALATION	5% PER YEAR	6,512,085
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	130,241,705

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 6 - RIVERSIDE VIA ONT. - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.90	MI	401,625	8,393,963
Two Tracks	38.20	MI	816,250	31,180,750
Other Tracks	27.10	MI	401,625	10,884,038
Crossovers	10.00	EA	56,075	560,750
Turnouts	59.00	EA	46,625	2,750,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				7,511,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				53,770,375
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				61,281,625

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		61,281,625
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,451,265
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,225,633
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,676,898
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	68,635,420
YEARLY ESCALATION	5% PER YEAR	3,431,771
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	68,635,420

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 6 - RIVERSIDE VIA ONT. - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	2	EA	932,500	1,865,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.90	MI	413,674	8,645,781
Two Tracks	38.20	MI	840,738	32,116,173
Other Tracks	27.10	MI	413,674	11,210,559
Crossovers	10.00	EA	57,757	577,573
Turnouts	59.00	EA	48,024	2,833,401
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				6,990,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				55,383,486
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				62,373,736

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		62,373,736
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,494,949
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,247,475
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,742,424
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	69,858,585
YEARLY ESCALATION	5% PER YEAR	3,492,929
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	69,858,585

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

25 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 6 - RIVERSIDE VIA ONT. - COMMUTER AND FREIGHT TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	4	EA	962,500	3,850,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.90	MI	401,625	8,393,963
Two Tracks	38.20	MI	816,250	31,180,750
Other Tracks	27.10	MI	401,625	10,884,038
Crossovers	10.00	EA	56,075	560,750
Turnouts	59.00	EA	46,625	2,750,875
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				11,304,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				53,770,375
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				65,074,375

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		65,074,375
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,602,975
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,301,488
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,904,463
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	72,883,300
YEARLY ESCALATION	5% PER YEAR	3,644,165
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	72,883,300

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 6 - RIVERSIDE VIA ONT. - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,426,500	1,426,500
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	3	EA	1,012,500	3,037,500
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	20.90	MI	413,674	8,645,781
Two Tracks	38.20	MI	840,738	32,116,173
Other Tracks	27.10	MI	413,674	11,210,559
Crossovers	10.00	EA	57,757	577,573
Turnouts	59.00	EA	48,024	2,833,401
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				8,061,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				55,383,486
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				63,444,736

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		63,444,736
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,537,789
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,268,895
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,806,684
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	71,058,105
YEARLY ESCALATION	5% PER YEAR	3,552,905
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	71,058,105

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 7 - RIVERSIDE VIA FULLERTON - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	19.70	MI	401,625	7,912,013
Two Tracks	42.10	MI	816,250	34,364,125
Other Tracks	19.10	MI	401,625	7,671,038
Crossovers	38.00	EA	56,075	2,130,850
Turnouts	45.00	EA	46,625	2,098,125
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				7,511,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				54,176,150
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				61,687,400

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		61,687,400
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,467,496
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,233,748
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,701,244
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	69,089,888
YEARLY ESCALATION	5% PER YEAR	3,454,494
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	69,089,888

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 7 - RIVERSIDE VIA FULLERTON - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	2	EA	932,500	1,865,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	19.70	MI	413,674	8,149,373
Two Tracks	42.10	MI	840,738	35,395,049
Other Tracks	19.10	MI	413,674	7,901,169
Crossovers	38.00	EA	57,757	2,194,776
Turnouts	45.00	EA	48,024	2,161,069
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				6,990,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				55,801,435
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				62,791,685

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		62,791,685
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,511,667
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,255,834
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,767,501
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	70,326,687
YEARLY ESCALATION	5% PER YEAR	3,516,334
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	70,326,687

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 7 - RIVERSIDE VIA FULLERTON - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	4	EA	962,500	3,850,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	19.70	MI	401,625	7,912,013
Two Tracks	42.10	MI	816,250	34,364,125
Other Tracks	19.10	MI	401,625	7,671,038
Crossovers	38.00	EA	56,075	2,130,850
Turnouts	45.00	EA	46,625	2,098,125
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				11,304,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				54,176,150
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				65,480,150

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		65,480,150
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,619,206
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,309,603
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,928,809
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	73,337,768
YEARLY ESCALATION	5% PER YEAR	3,666,888
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	73,337,768

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

50 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 7 - RIVERSIDE VIA FULLERTON - COMMUTER AND FREIGHT

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,426,500	1,426,500
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	3	EA	1,012,500	3,037,500
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	19.70	MI	413,674	8,149,373
Two Tracks	42.10	MI	840,738	35,395,049
Other Tracks	19.10	MI	413,674	7,901,169
Crossovers	38.00	EA	57,757	2,194,776
Turnouts	45.00	EA	48,024	2,161,069
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				8,061,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				55,801,435
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				63,862,685

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		63,862,685
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,554,507
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,277,254
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,831,761
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	71,526,207
YEARLY ESCALATION	5% PER YEAR	3,576,310
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	71,526,207

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 8 - HEMET TO RIVERSIDE - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	1,996,750	0
115 kV Utility Input	1	EA	2,194,750	2,194,750
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	2	EA	962,500	1,925,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	33.90	MI	401,625	13,615,088
Two Tracks	5.20	MI	816,250	4,244,500
Other Tracks	0.50	MI	401,625	200,813
Crossovers	0.00	EA	56,075	0
Turnouts	14.00	EA	46,625	652,750
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				5,308,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				18,713,150
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				24,021,400

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		24,021,400
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	960,856
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	480,428
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,441,284
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	26,903,968
YEARLY ESCALATION	5% PER YEAR	1,345,198
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	26,903,968

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 8 - HEMET TO RIVERSIDE - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	2,266,750	0
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	33.90	MI	413,674	14,023,540
Two Tracks	5.20	MI	840,738	4,371,835
Other Tracks	0.50	MI	413,674	206,837
Crossovers	0.00	EA	57,757	0
Turnouts	14.00	EA	48,024	672,333
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				5,678,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				19,274,545
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				24,952,795

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		24,952,795
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	998,112
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	499,056
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,497,168
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	27,947,130
YEARLY ESCALATION	5% PER YEAR	1,397,356
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	27,947,130

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS
PROJECT : LACTC
ROUTE : ROUTE No. 8 - HEMET TO RIVERSIDE - COMMUTER AND FREIGHT TRAFFI

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	1,996,750	0
115 kV Utility Input	2	EA	2,194,750	4,389,500
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	33.90	MI	401,625	13,615,088
Two Tracks	5.20	MI	816,250	4,244,500
Other Tracks	0.50	MI	401,625	200,813
Crossovers	0.00	EA	56,075	0
Turnouts	14.00	EA	46,625	652,750
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				9,654,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				18,713,150
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				28,367,150

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		28,367,150
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,134,686
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	567,343
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,702,029
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	31,771,208
YEARLY ESCALATION	5% PER YEAR	1,588,560
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	31,771,208

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 8 - HEMET TO RIVERSIDE - COMMUTER AND FREIGHT TRAFFI				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	2,266,750	0
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	33.90	MI	413,674	14,023,540
Two Tracks	5.20	MI	840,738	4,371,835
Other Tracks	0.50	MI	413,674	206,837
Crossovers	0.00	EA	57,757	0
Turnouts	14.00	EA	48,024	672,333
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				5,678,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				19,274,545
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				24,952,795

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		24,952,795
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	998,112
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	499,056
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,497,168
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	27,947,130
YEARLY ESCALATION	5% PER YEAR	1,397,356
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	27,947,130

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 9 - SAN BERNARDINO TO IRVINE - COMMUTER TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	1	EA	1,395,500	1,395,500
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	1	EA	2,194,750	2,194,750
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	28.40	MI	401,625	11,406,150
Two Tracks	24.40	MI	816,250	19,916,500
Other Tracks	6.10	MI	401,625	2,449,913
Crossovers	4.00	EA	56,075	224,300
Turnouts	30.00	EA	46,625	1,398,750
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				12,990,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				35,395,613
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				48,385,613

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		48,385,613
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,935,425
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	967,712
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,903,137
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	54,191,886
YEARLY ESCALATION	5% PER YEAR	2,709,594
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	54,191,886

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 9 - SAN BERNARDINO TO IRVINE - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	1	EA	1,525,500	1,525,500
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	2,266,750	0
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	2	EA	1,012,500	2,025,000
PARALLELING STATION	2	EA	932,500	1,865,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	28.40	MI	413,674	11,748,335
Two Tracks	24.40	MI	840,738	20,513,995
Other Tracks	6.10	MI	413,674	2,523,410
Crossovers	4.00	EA	57,757	231,029
Turnouts	30.00	EA	48,024	1,440,713
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				9,768,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				36,457,481
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				46,226,231

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		46,226,231
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,849,049
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	924,525
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,773,574
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	51,773,379
YEARLY ESCALATION	5% PER YEAR	2,588,669
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	51,773,379

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 9 - SAN BERNARD. TO IRVINE - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,296,500	1,296,500
115 kV Utility Input	1	EA	1,395,500	1,395,500
230 kV Utility Input	1	EA	2,015,500	2,015,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	1,996,750	1,996,750
115 kV Utility Input	1	EA	2,194,750	2,194,750
230 kV Utility Input	1	EA	3,434,750	3,434,750
SWITCHING STATIONS	4	EA	962,500	3,850,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	28.40	MI	401,625	11,406,150
Two Tracks	24.40	MI	816,250	19,916,500
Other Tracks	6.10	MI	401,625	2,449,913
Crossovers	4.00	EA	56,075	224,300
Turnouts	30.00	EA	46,625	1,398,750
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				24,461,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				35,395,613
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				59,856,863

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		59,856,863
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,394,275
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,197,137
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,591,412
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	67,039,686
YEARLY ESCALATION	5% PER YEAR	3,351,984
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	67,039,686

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 9 - SAN BERNARD. TO IRVINE - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,426,500	1,426,500
115 kV Utility Input	1	EA	1,525,500	1,525,500
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	3	EA	1,012,500	3,037,500
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	28.40	MI	413,674	11,748,335
Two Tracks	24.40	MI	840,738	20,513,995
Other Tracks	6.10	MI	413,674	2,523,410
Crossovers	4.00	EA	57,757	231,029
Turnouts	30.00	EA	48,024	1,440,713
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				13,940,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				36,457,481
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				50,397,481

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		50,397,481
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,015,899
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,007,950
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,023,849
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	56,445,179
YEARLY ESCALATION	5% PER YEAR	2,822,259
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	56,445,179

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 10 - REDLANDS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	1	EA	1,395,500	1,395,500
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	1,996,750	0
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	0	EA	962,500	0
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	11.80	MI	401,625	4,739,175
Two Tracks	0.40	MI	816,250	326,500
Other Tracks	0.50	MI	401,625	200,813
Crossovers	0.00	EA	56,075	0
Turnouts	2.00	EA	46,625	93,250
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				2,095,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				5,359,738
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				7,455,238

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		7,455,238
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	298,210
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	149,105
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	447,314
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	8,349,866
YEARLY ESCALATION	5% PER YEAR	417,493
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	8,349,866

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

50 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 10 - REDLANDS - COMMUTER TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	1	EA	1,525,500	1,525,500
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	2,266,750	0
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	0	EA	1,012,500	0
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	11.80	MI	413,674	4,881,350
Two Tracks	0.40	MI	840,738	336,295
Other Tracks	0.50	MI	413,674	206,837
Crossovers	0.00	EA	57,757	0
Turnouts	2.00	EA	48,024	96,048
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				2,225,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				5,520,530
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				7,746,030

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		7,746,030
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	309,841
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	154,921
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	464,762
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	8,675,553
YEARLY ESCALATION	5% PER YEAR	433,778
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	8,675,553

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 10 - REDLANDS - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	1	EA	1,395,500	1,395,500
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	1,996,750	0
115 kV Utility Input	0	EA	2,194,750	0
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	1	EA	962,500	962,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	11.80	MI	401,625	4,739,175
Two Tracks	0.40	MI	816,250	326,500
Other Tracks	0.50	MI	401,625	200,813
Crossovers	0.00	EA	56,075	0
Turnouts	2.00	EA	46,625	93,250
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				3,058,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				5,359,738
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				8,417,738

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		8,417,738
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	336,710
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	168,355
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	505,064
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	9,427,866
YEARLY ESCALATION	5% PER YEAR	471,393
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	9,427,866

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 10 - REDLANDS - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	1	EA	1,525,500	1,525,500
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	2,266,750	0
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	0	EA	1,012,500	0
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	11.80	MI	413,674	4,881,350
Two Tracks	0.40	MI	840,738	336,295
Other Tracks	0.50	MI	413,674	206,837
Crossovers	0.00	EA	57,757	0
Turnouts	2.00	EA	48,024	96,048
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				2,225,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				5,520,530
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				7,746,030

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		7,746,030
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	309,841
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	154,921
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	464,762
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	8,675,553
YEARLY ESCALATION	5% PER YEAR	433,778
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	8,675,553

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 11 - SP YUMA TO PORTS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	497,000	994,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	2	EA	1,296,500	2,593,000
115 kV Utility Input	1	EA	1,395,500	1,395,500
230 kV Utility Input	1	EA	2,015,500	2,015,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	1	EA	2,194,750	2,194,750
230 kV Utility Input	1	EA	3,434,750	3,434,750
SWITCHING STATIONS	9	EA	962,500	8,662,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	123.10	MI	401,625	49,440,038
Two Tracks	158.60	MI	816,250	129,457,250
Other Tracks	64.00	MI	401,625	25,704,000
Crossovers	14.00	EA	56,075	785,050
Turnouts	128.00	EA	46,625	5,968,000
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				33,897,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				211,354,338
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				245,251,838

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		245,251,838
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	9,810,074
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	4,905,037
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	14,715,110
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	274,682,058
YEARLY ESCALATION	5% PER YEAR	13,734,103
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	274,682,058

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 11 - SP YUMA TO PORTS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	1	EA	1,525,500	1,525,500
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	0	EA	2,464,750	0
230 kV Utility Input	1	EA	3,744,750	3,744,750
SWITCHING STATIONS	4	EA	1,012,500	4,050,000
PARALLELING STATION	6	EA	932,500	5,595,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	123.10	MI	413,674	50,923,239
Two Tracks	158.60	MI	840,738	133,340,968
Other Tracks	64.00	MI	413,674	26,475,120
Crossovers	14.00	EA	57,757	808,602
Turnouts	128.00	EA	48,024	6,147,040
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				21,932,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				217,694,968
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				239,626,968

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		239,626,968
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	9,585,079
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	4,792,539
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	14,377,618
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	268,382,204
YEARLY ESCALATION	5% PER YEAR	13,419,110
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	268,382,204

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 11 - SP YUMA TO PORTS - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	497,000	994,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	3	EA	1,842,000	5,526,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	3	EA	833,500	2,500,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	3	EA	3,216,500	9,649,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	2	EA	1,296,500	2,593,000
115 kV Utility Input	1	EA	1,395,500	1,395,500
230 kV Utility Input	3	EA	2,015,500	6,046,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	3	EA	1,996,750	5,990,250
115 kV Utility Input	2	EA	2,194,750	4,389,500
230 kV Utility Input	3	EA	3,434,750	10,304,250
SWITCHING STATIONS	15	EA	962,500	14,437,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	123.10	MI	401,625	49,440,038
Two Tracks	158.60	MI	816,250	129,457,250
Other Tracks	64.00	MI	401,625	25,704,000
Crossovers	14.00	EA	56,075	785,050
Turnouts	128.00	EA	46,625	5,968,000
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				66,903,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				211,354,338
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				278,257,838

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		278,257,838
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	11,130,314
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	5,565,157
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	16,695,470
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	311,648,778
YEARLY ESCALATION	5% PER YEAR	15,582,439
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	311,648,778

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 11 - SP YUMA TO PORTS - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	1,426,500	1,426,500
115 kV Utility Input	1	EA	1,525,500	1,525,500
230 kV Utility Input	1	EA	2,165,500	2,165,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	1	EA	3,744,750	3,744,750
SWITCHING STATIONS	7	EA	1,012,500	7,087,500
PARALLELING STATION	0	EA	932,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	123.10	MI	413,674	50,923,239
Two Tracks	158.60	MI	840,738	133,340,968
Other Tracks	64.00	MI	413,674	26,475,120
Crossovers	14.00	EA	57,757	808,602
Turnouts	128.00	EA	48,024	6,147,040
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				28,958,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				217,694,968
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				246,653,718

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		246,653,718
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	9,866,149
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	4,933,074
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	14,799,223
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	276,252,164
YEARLY ESCALATION	5% PER YEAR	13,812,608
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	276,252,164

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 12 - SF BARSTOW TO PORTS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	2	EA	2,194,750	4,389,500
230 kV Utility Input	1	EA	3,434,750	3,434,750
SWITCHING STATIONS	6	EA	962,500	5,775,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	21.14	MI	401,625	8,490,353
Two Tracks	154.80	MI	816,250	126,355,500
Other Tracks	26.10	MI	401,625	10,482,413
Crossovers	29.00	EA	56,075	1,626,175
Turnouts	46.00	EA	46,625	2,144,750
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				24,853,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				149,132,730
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				173,985,980

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		173,985,980
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	6,959,439
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	3,479,720
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	10,439,159
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	194,864,298
YEARLY ESCALATION	5% PER YEAR	9,743,215
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	194,864,298

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 12 - SF BARSTOW TO PORTS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	3	EA	1,012,500	3,037,500
PARALLELING STATION	4	EA	932,500	3,730,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	21.14	MI	413,674	8,745,063
Two Tracks	154.80	MI	840,738	130,146,165
Other Tracks	26.10	MI	413,674	10,796,885
Crossovers	29.00	EA	57,757	1,674,960
Turnouts	46.00	EA	48,024	2,209,093
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				13,521,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				153,606,712
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				167,127,712

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		167,127,712
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	6,685,108
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	3,342,554
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	10,027,663
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	187,183,037
YEARLY ESCALATION	5% PER YEAR	9,359,152
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	187,183,037

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 12 - SF BARSTOW TO PORTS - COMMUTER AND FREIGHT TRAF				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	5	EA	833,500	4,167,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	5	EA	1,996,750	9,983,750
115 kV Utility Input	2	EA	2,194,750	4,389,500
230 kV Utility Input	1	EA	3,434,750	3,434,750
SWITCHING STATIONS	9	EA	962,500	8,662,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	21.14	MI	401,625	8,490,353
Two Tracks	154.80	MI	816,250	126,355,500
Other Tracks	26.10	MI	401,625	10,482,413
Crossovers	29.00	EA	56,075	1,626,175
Turnouts	46.00	EA	46,625	2,144,750
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				36,231,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				149,132,730
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				185,364,230

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		185,364,230
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	7,414,569
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	3,707,285
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	11,121,854
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	207,607,938
YEARLY ESCALATION	5% PER YEAR	10,380,397
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	207,607,938

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 12 - SF BARSTOW TO PORTS - COMMUTER AND FREIGHT TRAF				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	2	EA	2,464,750	4,929,500
230 kV Utility Input	1	EA	3,744,750	3,744,750
SWITCHING STATIONS				
PARALLELING STATION	5	EA	1,012,500	5,062,500
AT-GRADE DISTRIBUTION SYSTEM	6	EA	932,500	5,595,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	21.14	MI	413,674	8,745,063
Two Tracks	154.80	MI	840,738	130,146,165
Other Tracks	26.10	MI	413,674	10,796,885
Crossovers	29.00	EA	57,757	1,674,960
Turnouts	46.00	EA	48,024	2,209,093
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				28,025,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				153,606,712
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				181,632,212

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		181,632,212
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	7,265,288
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	3,632,644
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	10,897,933
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	203,428,077
YEARLY ESCALATION	5% PER YEAR	10,171,404
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	203,428,077

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

25 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 13 - UP PORTS TO YERMO - COMMUTER TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	2	EA	2,194,750	4,389,500
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	5	EA	962,500	4,812,500
PARALLELING STATIONS	6	EA	892,500	5,355,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	21.74	MI	401,625	8,731,328
Two Tracks	164.90	MI	816,250	134,599,625
Other Tracks	72.10	MI	401,625	28,957,163
Crossovers	7.00	EA	56,075	392,525
Turnouts	58.00	EA	46,625	2,704,250
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				22,594,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				175,418,430
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				198,012,930

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		198,012,930
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	7,920,517
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	3,960,259
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	11,880,776
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	221,774,482
YEARLY ESCALATION	5% PER YEAR	11,088,724
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	221,774,482

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE No. 13 - UP PORTS TO YERMO - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	2,266,750	2,266,750
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS				
PARALLELING STATION	3	EA	1,012,500	3,037,500
AT-GRADE DISTRIBUTION SYSTEM	4	EA	932,500	3,730,000
One Track	21.74	MI	413,674	8,993,267
Two Tracks	164.90	MI	840,738	138,637,614
Other Tracks	72.10	MI	413,674	29,825,877
Crossovers	7.00	EA	57,757	404,301
Turnouts	58.00	EA	48,024	2,785,378
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				13,521,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				180,680,983
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				194,201,983

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		194,201,983
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	7,768,079
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	3,884,040
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	11,652,119
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	217,506,221
YEARLY ESCALATION	5% PER YEAR	10,875,311
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	217,506,221

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

25 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 13 - UP PORTS TO YERMO - COMMUTER AND FREIGHT TRAFFI

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	4	EA	833,500	3,334,000
115 kV Utility Input	5	EA	1,188,500	5,942,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	4	EA	1,996,750	7,987,000
115 kV Utility Input	5	EA	2,194,750	10,973,750
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	10	EA	962,500	9,625,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	21.74	MI	401,625	8,731,328
Two Tracks	164.90	MI	816,250	134,599,625
Other Tracks	72.10	MI	401,625	28,957,163
Crossovers	7.00	EA	56,075	392,525
Turnouts	58.00	EA	46,625	2,704,250
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				37,862,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				175,418,430
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				213,280,680

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		213,280,680
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	8,531,227
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	4,265,614
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	12,796,841
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	238,874,362
YEARLY ESCALATION	5% PER YEAR	11,943,718
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	238,874,362

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

50 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ROUTE No. 13 - UP PORTS TO YERMO - COMMUTER AND FREIGHT TRAFFI

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	2,266,750	4,533,500
115 kV Utility Input	2	EA	2,464,750	4,929,500
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS	5	EA	1,012,500	5,062,500
PARALLELING STATION	6	EA	932,500	5,595,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	21.74	MI	413,674	8,993,267
Two Tracks	164.90	MI	840,738	138,637,614
Other Tracks	72.10	MI	413,674	29,825,877
Crossovers	7.00	EA	57,757	404,301
Turnouts	58.00	EA	48,024	2,785,378
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				24,164,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				180,680,983
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				204,845,483

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		204,845,483
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	8,193,819
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	4,096,910
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	12,290,729
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	229,426,941
YEARLY ESCALATION	5% PER YEAR	11,471,347
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	229,426,941

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ENTIRE NETWORK - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	4	EA	497,000	1,988,000
115 kV Utility Input	3	EA	700,000	2,100,000
230 kV Utility Input	2	EA	1,842,000	3,684,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	8	EA	833,500	6,668,000
115 kV Utility Input	5	EA	1,188,500	5,942,500
230 kV Utility Input	2	EA	3,216,500	6,433,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	4	EA	1,296,500	5,186,000
115 kV Utility Input	3	EA	1,395,500	4,186,500
230 kV Utility Input	2	EA	2,015,500	4,031,000
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	8	EA	1,996,750	15,974,000
115 kV Utility Input	5	EA	2,194,750	10,973,750
230 kV Utility Input	2	EA	3,434,750	6,869,500
SWITCHING STATIONS	25	EA	962,500	24,062,500
PARALLELING STATIONS	16	EA	892,500	14,280,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	383.08	MI	401,625	153,854,505
Two Tracks	419.50	MI	816,250	342,416,875
Other Tracks	172.90	MI	401,625	69,440,963
Crossovers	79.00	EA	56,075	4,429,925
Turnouts	348.00	EA	46,625	16,225,500
TUNNEL DISTRIBUTION SYSTEM				
One Track	3.12	MI	209,625	654,030
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				112,378,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				587,021,798
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				699,400,548

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		699,400,548
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	27,976,022
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	13,988,011
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	41,964,033
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	783,328,613
YEARLY ESCALATION	5% PER YEAR	39,166,431
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	783,328,613

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

50 kV SYSTEM WITHOUT AUTOTRANSFORMERS

PROJECT : LACTC
ROUTE : ENTIRE NETWORK - COMMUTER TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	3	EA	497,000	1,491,000
115 kV Utility Input	2	EA	700,000	1,400,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	5	EA	833,500	4,167,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	3	EA	1,426,500	4,279,500
115 kV Utility Input	2	EA	1,525,500	3,051,000
230 kV Utility Input	1	EA	2,165,500	2,165,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	5	EA	2,266,750	11,333,750
115 kV Utility Input	2	EA	2,464,750	4,929,500
230 kV Utility Input	1	EA	3,744,750	3,744,750
SWITCHING STATIONS	15	EA	1,012,500	15,187,500
PARALLELING STATION	38	EA	932,500	35,435,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	383.08	MI	413,674	158,470,140
Two Tracks	419.50	MI	840,738	352,689,381
Other Tracks	172.90	MI	413,674	71,524,191
Crossovers	79.00	EA	57,757	4,562,823
Turnouts	348.00	EA	48,024	16,712,265
TUNNEL DISTRIBUTION SYSTEM				
One Track	3.12	MI	215,914	673,651
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				94,620,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				604,632,451
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				699,252,951

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		699,252,951
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	27,970,118
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	13,985,059
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	41,955,177
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	783,163,306
YEARLY ESCALATION	5% PER YEAR	39,158,165
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	783,163,306

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ENTIRE NETWORK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	10	EA	497,000	4,970,000
115 kV Utility Input	5	EA	700,000	3,500,000
230 kV Utility Input	4	EA	1,842,000	7,368,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	12	EA	833,500	10,002,000
115 kV Utility Input	7	EA	1,188,500	8,319,500
230 kV Utility Input	6	EA	3,216,500	19,299,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	10	EA	1,296,500	12,965,000
115 kV Utility Input	5	EA	1,395,500	6,977,500
230 kV Utility Input	4	EA	2,015,500	8,062,000
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	12	EA	1,996,750	23,961,000
115 kV Utility Input	7	EA	2,194,750	15,363,250
230 kV Utility Input	6	EA	3,434,750	20,608,500
SWITCHING STATIONS	45	EA	962,500	43,312,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	383.08	MI	401,625	153,854,505
Two Tracks	419.50	MI	816,250	342,416,875
Other Tracks	172.90	MI	401,625	69,440,963
Crossovers	79.00	EA	56,075	4,429,925
Turnouts	348.00	EA	46,625	16,225,500
TUNNEL DISTRIBUTION SYSTEM				
One Track	3.12	MI	209,625	654,030
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				184,708,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				587,021,798
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				771,730,048

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TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		771,730,048
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	30,869,202
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	15,434,601
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	46,303,803
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	864,337,653
YEARLY ESCALATION	5% PER YEAR	43,216,883
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	864,337,653

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ENTIRE NETWORK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	4	EA	497,000	1,988,000
115 kV Utility Input	3	EA	700,000	2,100,000
230 kV Utility Input	2	EA	1,842,000	3,684,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	6	EA	833,500	5,001,000
115 kV Utility Input	4	EA	1,188,500	4,754,000
230 kV Utility Input	3	EA	3,216,500	9,649,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	4	EA	1,426,500	5,706,000
115 kV Utility Input	3	EA	1,525,500	4,576,500
230 kV Utility Input	2	EA	2,165,500	4,331,000
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	6	EA	2,266,750	13,600,500
115 kV Utility Input	4	EA	2,464,750	9,859,000
230 kV Utility Input	3	EA	3,744,750	11,234,250
SWITCHING STATIONS	23	EA	1,012,500	23,287,500
PARALLELING STATION	22	EA	932,500	20,515,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	383.08	MI	413,674	158,470,140
Two Tracks	419.50	MI	840,738	352,689,381
Other Tracks	172.90	MI	413,674	71,524,191
Crossovers	79.00	EA	57,757	4,562,823
Turnouts	348.00	EA	48,024	16,712,265
TUNNEL DISTRIBUTION SYSTEM				
One Track	3.12	MI	215,914	673,651
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				120,286,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				604,632,451
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				724,918,701

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		724,918,701
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	28,996,748
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	14,498,374
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	43,495,122
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	811,908,946
YEARLY ESCALATION	5% PER YEAR	40,595,447
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	811,908,946

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE - SP/UP/ATSF CORRIDOR - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	1,996,750	0
115 kV Utility Input	2	EA	2,194,750	4,389,500
230 kV Utility Input	0	EA	3,434,750	0
SWITCHING STATIONS	3	EA	962,500	2,887,500
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	13.30	MI	401,625	5,341,613
Two Tracks	21.40	MI	816,250	17,467,750
Other Tracks	0.00	MI	401,625	0
Crossovers	0.00	EA	56,075	0
Turnouts	20.00	EA	46,625	932,500
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	209,625	0
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				9,654,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				23,741,863
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				33,395,863

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TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		33,395,863
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,335,835
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	667,917
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,003,752
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	37,403,366
YEARLY ESCALATION	5% PER YEAR	1,870,168
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	37,403,366

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE - SP/UP/ATSF CORRIDOR - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	2,266,750	0
115 kV Utility Input	1	EA	2,464,750	2,464,750
230 kV Utility Input	0	EA	3,744,750	0
SWITCHING STATIONS				
PARALLELING STATION	2	EA	1,012,500	2,025,000
AT-GRADE DISTRIBUTION SYSTEM	0	EA	932,500	0
One Track	13.30	MI	413,674	5,501,861
Two Tracks	21.40	MI	840,738	17,991,783
Other Tracks	0.00	MI	413,674	0
Crossovers	0.00	EA	57,757	0
Turnouts	20.00	EA	48,024	960,475
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.00	MI	215,914	0
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				5,678,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				24,454,118
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				30,132,368

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		30,132,368
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,205,295
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	602,647
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	1,807,942
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	33,748,253
YEARLY ESCALATION	5% PER YEAR	1,687,413
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	33,748,253

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE - SP/UP/ATSF CORRIDOR - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	7	EA	833,500	5,834,500
115 kV Utility Input	7	EA	1,188,500	8,319,500
230 kV Utility Input	7	EA	3,216,500	22,515,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,426,500	0
115 kV Utility Input	0	EA	1,525,500	0
230 kV Utility Input	0	EA	2,165,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	7	EA	2,266,750	15,867,250
115 kV Utility Input	7	EA	2,464,750	17,253,250
230 kV Utility Input	7	EA	3,744,750	26,213,250
SWITCHING STATIONS	22	EA	962,500	21,175,000
PARALLELING STATIONS	0	EA	892,500	0
AT-GRADE DISTRIBUTION SYSTEM				
One Track	141.64	MI	401,625	56,886,165
Two Tracks	251.70	MI	816,250	205,450,125
Other Tracks	180.50	MI	401,625	72,493,313
Crossovers	25.00	EA	56,075	1,401,875
Turnouts	138.00	EA	46,625	6,434,250
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	209,625	33,540
Two Tracks	0.00	MI	419,250	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	31,100	0
SUBTOTAL - TRACTION POWER SUPPLY				117,178,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				342,699,268
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				459,877,518

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		459,877,518
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	18,395,101
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	9,197,550
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	27,592,651
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	515,062,820
YEARLY ESCALATION	5% PER YEAR	25,753,141
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	515,062,820

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
50 kV SYSTEM WITHOUT AUTOTRANSFORMERS				
PROJECT : LACTC				
ROUTE : ROUTE - SP/UP/ATSF CORRIDOR - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	4	EA	1,188,500	4,754,000
230 kV Utility Input	4	EA	3,216,500	12,866,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	1,296,500	0
115 kV Utility Input	0	EA	1,395,500	0
230 kV Utility Input	0	EA	2,015,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	1,996,750	3,993,500
115 kV Utility Input	4	EA	2,194,750	8,779,000
230 kV Utility Input	4	EA	3,434,750	13,739,000
SWITCHING STATIONS	11	EA	1,012,500	11,137,500
PARALLELING STATION	18	EA	932,500	16,785,000
AT-GRADE DISTRIBUTION SYSTEM				
One Track	141.64	MI	413,674	58,592,750
Two Tracks	251.70	MI	840,738	211,613,629
Other Tracks	180.50	MI	413,674	74,668,112
Crossovers	25.00	EA	57,757	1,443,931
Turnouts	138.00	EA	48,024	6,627,278
TUNNEL DISTRIBUTION SYSTEM				
One Track	0.16	MI	215,914	34,546
Two Tracks	0.00	MI	431,828	0
Crossovers	0.00	EA	32,368	0
Turnouts	0.00	EA	32,033	0
SUBTOTAL - TRACTION POWER SUPPLY				73,721,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				352,980,246
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				426,701,246

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		426,701,246
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	17,068,050
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	8,534,025
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	25,602,075
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	477,905,395
YEARLY ESCALATION	5% PER YEAR	23,895,270
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	477,905,395

APPENDIX 7-8

APPENDIX E

Overall System Cost Estimate for Traction Electrification System for Each Route - Autotransformer System

The results for each route are presented in the following order:

- 25 kV Autotransformer System - Commuter Traffic
- 25 kV Autotransformer System - Commuter and Freight Traffic

1.	UP/SP Corridor	E-1
2.	Baldwin Park	E-5
3.	Moorpark	E-9
4.	Santa Clarita	E-13
5.	Lossan	E-17
6.	Riverside via Ontario	E-21
7.	Riverside via Fullerton	E-25
8.	Hemet to Riverside	E-29
9.	San Bernardino to Irvine	E-33
10.	Redlands	E-37
11.	SP Yuma to Ports	E-41
12.	SF Barstow to Ports	E-45
13.	UP Ports to Yermo	E-49
	Entire Network	E-53
	UP/SP/ATSF Corridor	E-57

February 12, 1992

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 1 - SP/UP CORRIDOR - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	1	EA	3,630,500	3,630,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	1	EA	5,169,750	5,169,750
AUTOTRANSFORMER STATIONS	16	EA	2,342,500	37,480,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	141.64	MI	427,425	60,540,477
Double Track	251.70	MI	867,850	218,437,845
Other Tracks	112.00	MI	427,425	47,871,600
Crossovers	25.00	EA	56,075	1,401,875
Turnouts	138.00	EA	47,825	6,599,850
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				64,330,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				334,889,315
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				399,220,065

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		399,220,065
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	15,968,803
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	7,984,401
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	23,953,204
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	447,126,473
YEARLY ESCALATION	5% PER YEAR	22,356,324
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	447,126,473

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 1 - SP/UP CORRIDOR - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	2	EA	700,000	1,400,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	2	EA	3,216,500	6,433,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	2	EA	2,990,500	5,981,000
230 kV Utility Input	1	EA	3,630,500	3,630,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	2	EA	3,889,750	7,779,500
230 kV Utility Input	2	EA	5,169,750	10,339,500
AUTOTRANSFORMER STATIONS	14	EA	2,342,500	32,795,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	141.64	MI	427,425	60,540,477
Double Track	251.70	MI	867,850	218,437,845
Other Tracks	112.00	MI	427,425	47,871,600
Crossovers	25.00	EA	56,075	1,401,875
Turnouts	138.00	EA	47,825	6,599,850
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				77,102,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				334,889,315
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				411,992,065

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		411,992,065
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	16,479,683
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	8,239,841
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	24,719,524
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	461,431,113
YEARLY ESCALATION	5% PER YEAR	23,071,556
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	461,431,113

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 2 - BALDWIN PARK - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	6	EA	2,342,500	14,055,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	40.00	MI	427,425	17,097,000
Double Track	17.00	MI	867,850	14,753,450
Other Tracks	6.00	MI	427,425	2,564,550
Crossovers	13.00	EA	56,075	728,975
Turnouts	67.00	EA	47,825	3,204,275
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				18,580,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				38,348,250
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				56,928,500

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		56,928,500
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,277,140
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,138,570
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,415,710
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	63,759,920
YEARLY ESCALATION	5% PER YEAR	3,187,996
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	63,759,920

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 2 - BALDWIN PARK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	5	EA	2,342,500	11,712,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	40.00	MI	427,425	17,097,000
Double Track	17.00	MI	867,850	14,753,450
Other Tracks	6.00	MI	427,425	2,564,550
Crossovers	13.00	EA	56,075	728,975
Turnouts	67.00	EA	47,825	3,204,275
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				19,626,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				38,348,250
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				57,974,500

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		57,974,500
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,318,980
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,159,490
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,478,470
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	64,931,440
YEARLY ESCALATION	5% PER YEAR	3,246,572
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	64,931,440

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 3 - MOORPARK - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	20.96	MI	427,425	8,958,828
Double Track	24.90	MI	867,850	21,609,465
Other Tracks	9.80	MI	427,425	4,188,765
Crossovers	10.00	EA	56,075	560,750
Turnouts	43.00	EA	47,825	2,056,475
TUNNEL DISTRIBUTION SYSTEM				
Single Track	1.64	MI	235,425	386,097
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				13,895,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				37,760,380
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				51,655,630

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		51,655,630
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,066,225
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,033,113
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,099,338
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	57,854,306
YEARLY ESCALATION	5% PER YEAR	2,892,715
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	57,854,306

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 3 - MOORPARK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	3	EA	2,342,500	7,027,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	20.96	MI	427,425	8,958,828
Double Track	24.90	MI	867,850	21,609,465
Other Tracks	9.80	MI	427,425	4,188,765
Crossovers	10.00	EA	56,075	560,750
Turnouts	43.00	EA	47,825	2,056,475
TUNNEL DISTRIBUTION SYSTEM				
Single Track	1.64	MI	235,425	386,097
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				14,941,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				37,760,380
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				52,701,630

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TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		52,701,630
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,108,065
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,054,033
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,162,098
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	59,025,826
YEARLY ESCALATION	5% PER YEAR	2,951,291
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	59,025,826

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 4 - SANTA CLARITA - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	16.48	MI	427,425	7,043,964
Double Track	17.10	MI	867,850	14,840,235
Other Tracks	10.00	MI	427,425	4,274,250
Crossovers	10.00	EA	56,075	560,750
Turnouts	35.00	EA	47,825	1,673,875
TUNNEL DISTRIBUTION SYSTEM				
Single Track	1.32	MI	235,425	310,761
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				13,895,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				28,703,835
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				42,599,085

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		42,599,085
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,703,963
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	851,982
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,555,945
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	47,710,975
YEARLY ESCALATION	5% PER YEAR	2,385,549
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	47,710,975

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 4 - SANTA CLARITA - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	16.48	MI	427,425	7,043,964
Double Track	17.10	MI	867,850	14,840,235
Other Tracks	10.00	MI	427,425	4,274,250
Crossovers	10.00	EA	56,075	560,750
Turnouts	35.00	EA	47,825	1,673,875
TUNNEL DISTRIBUTION SYSTEM				
Single Track	1.32	MI	235,425	310,761
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				17,283,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				28,703,835
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				45,987,585

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		45,987,585
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,839,503
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	919,752
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,759,255
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	51,506,095
YEARLY ESCALATION	5% PER YEAR	2,575,305
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	51,506,095

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 5 - LOSSAN - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	1	EA	5,169,750	5,169,750
AUTOTRANSFORMER STATIONS	7	EA	2,342,500	16,397,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	77.14	MI	427,425	32,971,565
Double Track	56.40	MI	867,850	48,946,740
Other Tracks	33.00	MI	427,425	14,105,025
Crossovers	46.00	EA	56,075	2,579,450
Turnouts	52.00	EA	47,825	2,486,900
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				29,309,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				101,127,348
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				130,436,348

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		130,436,348
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	5,217,454
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	2,608,727
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	7,826,181
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	146,088,709
YEARLY ESCALATION	5% PER YEAR	7,304,435
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	146,088,709

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 5 - LOSSAN - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	1	EA	3,630,500	3,630,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	1	EA	5,169,750	5,169,750
AUTOTRANSFORMER STATIONS	8	EA	2,342,500	18,740,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	77.14	MI	427,425	32,971,565
Double Track	56.40	MI	867,850	48,946,740
Other Tracks	33.00	MI	427,425	14,105,025
Crossovers	46.00	EA	56,075	2,579,450
Turnouts	52.00	EA	47,825	2,486,900
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				37,124,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				101,127,348
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				138,251,348

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		138,251,348
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	5,530,054
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	2,765,027
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	8,295,081
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	154,841,509
YEARLY ESCALATION	5% PER YEAR	7,742,075
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	154,841,509

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 6 - RIVERSIDE VIA ONT. - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	20.90	MI	427,425	8,933,183
Double Track	38.20	MI	867,850	33,151,870
Other Tracks	27.10	MI	427,425	11,583,218
Crossovers	10.00	EA	56,075	560,750
Turnouts	59.00	EA	47,825	2,821,675
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				13,895,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				57,050,695
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				70,945,945

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		70,945,945
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,837,838
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,418,919
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	4,256,757
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	79,459,458
YEARLY ESCALATION	5% PER YEAR	3,972,973
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	79,459,458

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 6 - RIVERSIDE VIA ONT. - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	3	EA	2,342,500	7,027,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	20.90	MI	427,425	8,933,183
Double Track	38.20	MI	867,850	33,151,870
Other Tracks	27.10	MI	427,425	11,583,218
Crossovers	10.00	EA	56,075	560,750
Turnouts	59.00	EA	47,825	2,821,675
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				14,941,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				57,050,695
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				71,991,945

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		71,991,945
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,879,678
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,439,839
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	4,319,517
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	80,630,978
YEARLY ESCALATION	5% PER YEAR	4,031,549
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	80,630,978

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 7 - RIVERSIDE VIA FULLERTON - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	19.70	MI	427,425	8,420,273
Double Track	42.10	MI	867,850	36,536,485
Other Tracks	19.10	MI	427,425	8,163,818
Crossovers	38.00	EA	56,075	2,130,850
Turnouts	45.00	EA	47,825	2,152,125
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				13,895,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				57,403,550
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				71,298,800

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TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		71,298,800
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,851,952
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,425,976
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	4,277,928
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	79,854,656
YEARLY ESCALATION	5% PER YEAR	3,992,733
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	79,854,656

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 7 - RIVERSIDE VIA FULLERTON - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	3	EA	2,342,500	7,027,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	19.70	MI	427,425	8,420,273
Double Track	42.10	MI	867,850	36,536,485
Other Tracks	19.10	MI	427,425	8,163,818
Crossovers	38.00	EA	56,075	2,130,850
Turnouts	45.00	EA	47,825	2,152,125
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				14,941,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				57,403,550
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				72,344,800

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TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		72,344,800
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,893,792
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,446,896
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	4,340,688
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	81,026,176
YEARLY ESCALATION	5% PER YEAR	4,051,309
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	81,026,176

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 8 - HEMET TO RIVERSIDE - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	3,691,750	0
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	33.90	MI	427,425	14,489,708
Double Track	5.20	MI	867,850	4,512,820
Other Tracks	0.50	MI	427,425	213,713
Crossovers	0.00	EA	56,075	0
Turnouts	14.00	EA	47,825	669,550
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				14,448,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				19,885,790
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				34,334,040

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		34,334,040
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,373,362
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	686,681
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,060,042
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	38,454,125
YEARLY ESCALATION	5% PER YEAR	1,922,706
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	38,454,125

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE
25 kV AUTOTRANSFORMER SYSTEM
PROJECT : LACTC
ROUTE : ROUTE No. 8 - HEMET TO RIVERSIDE - COMMUTER AND FREIGHT TRAFFI

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	3,691,750	0
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	33.90	MI	427,425	14,489,708
Double Track	5.20	MI	867,850	4,512,820
Other Tracks	0.50	MI	427,425	213,713
Crossovers	0.00	EA	56,075	0
Turnouts	14.00	EA	47,825	669,550
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				14,448,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				19,885,790
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				34,334,040

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		34,334,040
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,373,362
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	686,681
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,060,042
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	38,454,125
YEARLY ESCALATION	5% PER YEAR	1,922,706
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	38,454,125

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE**25 kV AUTOTRANSFORMER SYSTEM****PROJECT : LACTC****ROUTE : ROUTE No. 9 - SAN BERNARDINO TO IRVINE - COMMUTER TRAFFIC**

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	4	EA	2,342,500	9,370,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	28.40	MI	427,425	12,138,870
Double Track	24.40	MI	867,850	21,175,540
Other Tracks	6.10	MI	427,425	2,607,293
Crossovers	4.00	EA	56,075	224,300
Turnouts	30.00	EA	47,825	1,434,750
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				17,283,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				37,580,753
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				54,864,503

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		54,864,503
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,194,580
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,097,290
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,291,870
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	61,448,243
YEARLY ESCALATION	5% PER YEAR	3,072,412
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	61,448,243

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 9 - SAN BERNARD. TO IRVINE - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	1	EA	2,990,500	2,990,500
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	3	EA	2,342,500	7,027,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	28.40	MI	427,425	12,138,870
Double Track	24.40	MI	867,850	21,175,540
Other Tracks	6.10	MI	427,425	2,607,293
Crossovers	4.00	EA	56,075	224,300
Turnouts	30.00	EA	47,825	1,434,750
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				23,710,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				37,580,753
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				61,290,753

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		61,290,753
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,451,630
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,225,815
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,677,445
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	68,645,643
YEARLY ESCALATION	5% PER YEAR	3,432,282
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	68,645,643

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 10 - REDLANDS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	1	EA	2,990,500	2,990,500
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	3,691,750	0
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	1	EA	2,342,500	2,342,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	11.80	MI	427,425	5,043,615
Double Track	0.40	MI	867,850	347,140
Other Tracks	0.50	MI	427,425	213,713
Crossovers	0.00	EA	56,075	0
Turnouts	2.00	EA	47,825	95,650
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				6,033,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				5,700,118
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				11,733,118

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TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		11,733,118
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	469,325
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	234,662
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	703,987
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	13,141,092
YEARLY ESCALATION	5% PER YEAR	657,055
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	13,141,092

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 10 - REDLANDS - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	1	EA	2,990,500	2,990,500
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	3,691,750	0
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	1	EA	2,342,500	2,342,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	11.80	MI	427,425	5,043,615
Double Track	0.40	MI	867,850	347,140
Other Tracks	0.50	MI	427,425	213,713
Crossovers	0.00	EA	56,075	0
Turnouts	2.00	EA	47,825	95,650
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				6,033,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				5,700,118
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				11,733,118

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		11,733,118
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	469,325
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	234,662
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	703,987
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	13,141,092
YEARLY ESCALATION	5% PER YEAR	657,055
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	13,141,092

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 11 - SP YUMA TO PORTS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	0	EA	1,188,500	0
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	1	EA	2,990,500	2,990,500
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	0	EA	3,889,750	0
230 kV Utility Input	1	EA	5,169,750	5,169,750
AUTOTRANSFORMER STATIONS	10	EA	2,342,500	23,425,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	123.10	MI	427,425	52,616,018
Double Track	158.60	MI	867,850	137,641,010
Other Tracks	64.00	MI	427,425	27,355,200
Crossovers	14.00	EA	56,075	785,050
Turnouts	128.00	EA	47,825	6,121,600
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				40,027,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				224,518,878
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				264,545,878

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		264,545,878
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	10,581,835
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	5,290,918
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	15,872,753
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	296,291,383
YEARLY ESCALATION	5% PER YEAR	14,814,569
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	296,291,383

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE**25 kV AUTOTRANSFORMER SYSTEM****PROJECT : LACTC****ROUTE : ROUTE No. 11 - SP YUMA TO PORTS - COMMUTER AND FREIGHT**

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	497,000	497,000
115 kV Utility Input	1	EA	700,000	700,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	1	EA	2,891,500	2,891,500
115 kV Utility Input	1	EA	2,990,500	2,990,500
230 kV Utility Input	1	EA	3,630,500	3,630,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	1	EA	5,169,750	5,169,750
AUTOTRANSFORMER STATIONS	7	EA	2,342,500	16,397,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	123.10	MI	427,425	52,616,018
Double Track	158.60	MI	867,850	137,641,010
Other Tracks	64.00	MI	427,425	27,355,200
Crossovers	14.00	EA	56,075	785,050
Turnouts	128.00	EA	47,825	6,121,600
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				46,938,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				224,518,878
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				271,457,628

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TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		271,457,628
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	10,858,305
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	5,429,153
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	16,287,458
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	304,032,543
YEARLY ESCALATION	5% PER YEAR	15,201,627
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	304,032,543

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 12 - SF BARSTOW TO PORTS - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	2	EA	2,342,500	4,685,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	20.54	MI	427,425	8,779,310
Double Track	47.60	MI	867,850	41,309,660
Other Tracks	22.80	MI	427,425	9,745,290
Crossovers	27.00	EA	56,075	1,514,025
Turnouts	32.00	EA	47,825	1,530,400
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				14,288,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				62,916,353
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				77,204,853

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		77,204,853
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	3,088,194
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,544,097
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	4,632,291
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	86,469,435
YEARLY ESCALATION	5% PER YEAR	4,323,472
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	86,469,435

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 12 - SF BARSTOW TO PORTS - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	2	EA	3,889,750	7,779,500
230 kV Utility Input	1	EA	5,169,750	5,169,750
AUTOTRANSFORMER STATIONS	5	EA	2,342,500	11,712,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	21.14	MI	427,425	9,035,765
Double Track	154.80	MI	867,850	134,343,180
Other Tracks	46.80	MI	427,425	20,003,490
Crossovers	29.00	EA	56,075	1,626,175
Turnouts	46.00	EA	47,825	2,199,950
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				34,780,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				167,246,228
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				202,026,728

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		202,026,728
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	8,081,069
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	4,040,535
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	12,121,604
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	226,269,935
YEARLY ESCALATION	5% PER YEAR	11,313,497
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	226,269,935

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE**25 kV AUTOTRANSFORMER SYSTEM****PROJECT : LACTC****ROUTE : ROUTE No. 13 - UP PORTS TO YERMO - COMMUTER TRAFFIC**

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	1	EA	833,500	833,500
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	1	EA	3,691,750	3,691,750
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	2	EA	2,342,500	4,685,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	21.74	MI	427,425	9,292,220
Double Track	43.80	MI	867,850	38,011,830
Other Tracks	2.10	MI	427,425	897,593
Crossovers	2.00	EA	56,075	112,150
Turnouts	42.00	EA	47,825	2,008,650
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				14,288,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				50,360,110
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				64,648,610

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		64,648,610
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	2,585,944
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	1,292,972
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	3,878,917
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	72,406,443
YEARLY ESCALATION	5% PER YEAR	3,620,322
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	72,406,443

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE No. 13 - UP PORTS TO YERMO - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	3,691,750	7,383,500
115 kV Utility Input	2	EA	3,889,750	7,779,500
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	5	EA	2,342,500	11,712,500
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	21.74	MI	427,425	9,292,220
Double Track	164.90	MI	867,850	143,108,465
Other Tracks	74.10	MI	427,425	31,672,193
Crossovers	7.00	EA	56,075	392,525
Turnouts	58.00	EA	47,825	2,773,850
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				30,919,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				187,276,920
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				218,196,420

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		218,196,420
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	8,727,857
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	4,363,928
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	13,091,785
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	244,379,990
YEARLY ESCALATION	5% PER YEAR	12,219,000
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	244,379,990

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE

25 kV AUTOTRANSFORMER SYSTEM

PROJECT : LACTC
ROUTE : ENTIRE NETWORK - COMMUTER TRAFFIC

COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	3	EA	497,000	1,491,000
115 kV Utility Input	2	EA	700,000	1,400,000
230 kV Utility Input	1	EA	1,842,000	1,842,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	5	EA	833,500	4,167,500
115 kV Utility Input	2	EA	1,188,500	2,377,000
230 kV Utility Input	1	EA	3,216,500	3,216,500
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	3	EA	2,891,500	8,674,500
115 kV Utility Input	2	EA	2,990,500	5,981,000
230 kV Utility Input	1	EA	3,630,500	3,630,500
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	5	EA	3,691,750	18,458,750
115 kV Utility Input	2	EA	3,889,750	7,779,500
230 kV Utility Input	1	EA	5,169,750	5,169,750
AUTOTRANSFORMER STATIONS	56	EA	2,342,500	131,180,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	383.08	MI	427,425	163,737,969
Double Track	419.50	MI	867,850	364,063,075
Other Tracks	172.90	MI	427,425	73,901,783
Crossovers	79.00	EA	56,075	4,429,925
Turnouts	348.00	EA	47,825	16,643,100
TUNNEL DISTRIBUTION SYSTEM				
Single Track	3.12	MI	235,425	734,526
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				195,368,000
SUBTOTAL - TRACTION POWER DISTRIBUTION				623,510,378
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				818,878,378

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		818,878,378
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	32,755,135
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	16,377,568
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	49,132,703
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	917,143,783
YEARLY ESCALATION	5% PER YEAR	45,857,189
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	917,143,783

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ENTIRE NETWORK - COMMUTER AND FREIGHT TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	10	EA	497,000	4,970,000
115 kV Utility Input	5	EA	700,000	3,500,000
230 kV Utility Input	4	EA	1,842,000	7,368,000
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	12	EA	833,500	10,002,000
115 kV Utility Input	7	EA	1,188,500	8,319,500
230 kV Utility Input	6	EA	3,216,500	19,299,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	10	EA	2,891,500	28,915,000
115 kV Utility Input	5	EA	2,990,500	14,952,500
230 kV Utility Input	4	EA	3,630,500	14,522,000
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	12	EA	3,691,750	44,301,000
115 kV Utility Input	7	EA	3,889,750	27,228,250
230 kV Utility Input	6	EA	5,169,750	31,018,500
AUTOTRANSFORMER STATIONS	14	EA	2,342,500	32,795,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	383.08	MI	427,425	163,737,969
Double Track	419.50	MI	867,850	364,063,075
Other Tracks	172.90	MI	427,425	73,901,783
Crossovers	79.00	EA	56,075	4,429,925
Turnouts	348.00	EA	47,825	16,643,100
TUNNEL DISTRIBUTION SYSTEM				
Single Track	3.12	MI	235,425	734,526
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				247,190,750
SUBTOTAL - TRACTION POWER DISTRIBUTION				623,510,378
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				870,701,128

Table continues on the next page

Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		870,701,128
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	34,828,045
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	17,414,023
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	52,242,068
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	975,185,263
YEARLY ESCALATION	5% PER YEAR	48,759,263
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	975,185,263

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE - SP/UP/ATSF CORRIDOR - COMMUTER TRAFFIC				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	833,500	0
115 kV Utility Input	1	EA	1,188,500	1,188,500
230 kV Utility Input	0	EA	3,216,500	0
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	0	EA	3,691,750	0
115 kV Utility Input	1	EA	3,889,750	3,889,750
230 kV Utility Input	0	EA	5,169,750	0
AUTOTRANSFORMER STATIONS	2	EA	2,342,500	4,685,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	13.30	MI	427,425	5,684,753
Double Track	21.40	MI	867,850	18,571,990
Other Tracks	0.00	MI	427,425	0
Crossovers	0.00	EA	56,075	0
Turnouts	20.00	EA	47,825	956,500
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.00	MI	235,425	0
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				9,763,250
SUBTOTAL - TRACTION POWER DISTRIBUTION				25,213,243
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				34,976,493

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		34,976,493
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	1,399,060
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	699,530
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	2,098,590
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	39,173,672
YEARLY ESCALATION	5% PER YEAR	1,958,684
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	39,173,672

TRACTION ELECTRIFICATION SYSTEM COST ESTIMATE				
25 kV AUTOTRANSFORMER SYSTEM				
PROJECT : LACTC				
ROUTE : ROUTE - SP/UP/ATSF CORRIDOR - COMMUTER AND FREIGHT				
COST ITEM	QUANTITY	UNITS	UNIT COST	TOTAL COST
UTILITY SYSTEM PROVISIONS FOR ONE TRANSFORMER SUBSTATIONS				
69 kV Utility Input	0	EA	497,000	0
115 kV Utility Input	0	EA	700,000	0
230 kV Utility Input	0	EA	1,842,000	0
UTILITY SYSTEM PROVISIONS FOR TWO TRANSFORMER SUBSTATIONS				
69 kV Utility Input	2	EA	833,500	1,667,000
115 kV Utility Input	4	EA	1,188,500	4,754,000
230 kV Utility Input	4	EA	3,216,500	12,866,000
TRACTION POWER SUBSTATIONS WITH ONE TRANSFORMER				
69 kV Utility Input	0	EA	2,891,500	0
115 kV Utility Input	0	EA	2,990,500	0
230 kV Utility Input	0	EA	3,630,500	0
TRACTION POWER SUBSTATIONS WITH TWO TRANSFORMERS				
69 kV Utility Input	2	EA	3,691,750	7,383,500
115 kV Utility Input	4	EA	3,889,750	15,559,000
230 kV Utility Input	4	EA	5,169,750	20,679,000
AUTOTRANSFORMER STATIONS	14	EA	2,342,500	32,795,000
AT-GRADE DISTRIBUTION SYSTEM				
Single Track	141.64	MI	427,425	60,540,477
Double Track	251.70	MI	867,850	218,437,845
Other Tracks	180.50	MI	427,425	77,150,213
Crossovers	25.00	EA	56,075	1,401,875
Turnouts	138.00	EA	47,825	6,599,850
TUNNEL DISTRIBUTION SYSTEM				
Single Track	0.16	MI	235,425	37,668
Double Track	0.00	MI	455,600	0
Crossovers	0.00	EA	31,425	0
Turnouts	0.00	EA	32,800	0
SUBTOTAL - TRACTION POWER SUPPLY				95,703,500
SUBTOTAL - TRACTION POWER DISTRIBUTION				364,167,928
TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST				459,871,428

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Continuation from the previous page

TRACTION ELECTRIFICATION SYSTEM SUBTOTAL COST		459,871,428
DETAILED DESIGN	0% OF SUBTOTAL	0
CONSTRUCTION MANAGEMENT	0% OF SUBTOTAL	0
MOBILIZATION AND DEMOBILIZATION	0% OF SUBTOTAL	0
SPARE PARTS	4% OF SUBTOTAL	18,394,857
SPECIAL TOOLS AND EQUIPMENT	2% OF SUBTOTAL	9,197,429
TRAINING AND MANUALS	0% OF SUBTOTAL	0
CONSTRUCTION INEFFICIENCY	6% OF SUBTOTAL	27,592,286
CONSTRUCTION CONTINGENCY	0% OF SUBTOTAL	0
TOTAL SYSTEM COST ESTIMATE	YEAR : 1992	515,055,999
YEARLY ESCALATION	5% PER YEAR	25,752,800
PROJECTED COST ESTIMATE (using escalation)	YEAR : 1992	515,055,999

APPENDIX 7-9

APPENDIX F

Electric Locomotive Cost Estimate

Passenger Locomotive Estimate Method #1	F-1
Passenger Locomotive Estimate Method #2	F-2
Locomotive Cost Summary	F-3

February 12, 1992

ESTIMATE OF ELECTRIC PASSENGER LOCOMOTIVE COST

Method #1: Calculate Escalation of Locomotive Price Based on the Railroad Equipment Index.

Base Price: New Jersey Transit Electric Locomotive
Built by ABB - Similar to AEM-7
June 1988 Price of \$4.6 million/unit

Index: Bureau of Labor Statistics - Producers Price Index, Railroad Equipment - Code P3743

	<u>Index</u>
June 1988	104.2
October 1991	117.3
Estimated - March 1992	118.9

Index percent increase from June 1988 to March 1992 is 14.1%

March 1992 Estimated Locomotive Price:

$$\text{\$4.6 million} \times 14.1\% \text{ increase} = \text{\$5.25 million/unit}$$

ESTIMATE OF ELECTRIC PASSENGER LOCOMOTIVE COST

Method #2: Calculate Escalation of Locomotives Price Based on LA Green Line Formula

LABOR:

Index:	Average Hourly Earning for <u>R.R. Equipment</u>	Average Hourly Earnings <u>Electrical Industrial Apparatus</u>	Average of <u>Two Indices</u>
June 1988	11.94	9.82	10.88
September 1991	14.03	10.29	-----
Estimated: March 1992	14.35 ¹	10.36	12.36
			% increase = 13.60%

MATERIAL:

Index:	Material & Material Products <u>Code 10</u>	Materials for Durable <u>Manufacturing</u>	Average of <u>Two Indices</u>
June 1988	118.00	June 1988 118.50	118.25
October 1991	119.50	November 1991 116.10	
Estimated: March 1992	119.69	March 1992 115.86	117.76
			% decrease = 0.41%

PRICE CALCULATION

Labor (40%)	\$1.84 M x 13.60%	= \$2.09
Material (50%)	\$2.30 M x <0.41>%	= \$2.29
Other (10%)	<u>\$0.46</u>	= <u>\$0.46</u>
Total:	\$4.60 M	= <u>\$4.84</u> million

March 1992 Estimated Locomotive Price: **\$4.84 million/unit**

¹ Estimated for March 1992 is based on the average increase from June 1988 through September 1991 $\$2.09 (14.03 - 11.94) \div 39 \text{ months} = .5358/\text{month} \times 6 \text{ months} + \14.03 .

ELECTRIC LOCOMOTIVE COST ESTIMATE			
PROJECT : LACTC			
COST ITEM	QUANTITY	UNIT COST	TOTAL COST
FREIGHT LOCOMOTIVE			
Base Price - GM/ASEA GF 6 C, 6000 HP, 50 kV, 60 Hz	1	4,000,000	4,000,000
Second Cab	1	200,000	200,000
Non Flamable Transformer Coolant	1	40,000	40,000
Cab Signalling, including speed control	1	30,000	30,000
Cab Air Conditioning	2	20,000	40,000
Power Factor Correction	1	50,000	50,000
Harmonic Filters	1	50,000	50,000
TOTAL FREIGHT LOCOMOTIVE COST			4,410,000
PASSENGER LOCOMOTIVE			
Base Price - ALP44 ABB, 7000 HP, 12.5 kV/25 kV, 60 Hz	1	5,250,000	5,250,000
Second Cab	0	200,000	0
Non Flamable Transformer Coolant	0	40,000	0
Cab Signalling, including speed control	0	30,000	0
Cab Air Conditioning	0	20,000	0
Power Factor Correction	1	50,000	50,000
Harmonic Filters	1	50,000	50,000
TOTAL PASSENGER LOCOMOTIVE COST			5,350,000

APPENDIX 7-10

**TOTAL COSTS* RELATED TO RAILROAD IMPROVEMENTS
UP/SP/ATSF CONSOLIDATED CORRIDOR
25Kv, Minimum Vertical Clearance**

<u>PROJECT ADD-ONS</u>	<u>COMMUTER & FREIGHT AMT.</u>
A. Construction	922,587,758.00
B. Locomotives	
C. Contractors Mobilization/Demobilization (5% of A)	46,129,387.90
D. Testing and Operations Mobilization (2% of A)	18,451,755.16
E. Owners Insurance (8% of A)	73,807,020.64
F. Mitigation (2% of A)	18,451,755.16
G. Right-of-Way	
H. Force Account (8% of A)	73,807,020.64
I. Employee Training (3% of A)	27,677,632.74
J. Construction Change Orders (12% of A & F, 2% of B)	112,924,741.58
K. Project Services (25% of A & F, 1% of B, 10% of J)	246,552,352.45
L. Subtotal (A thru K)	1,540,389,424.27
M. Project Reserve (20% of L)	308,077,884.85
N. Total Cost in 1992 Dollars (L + M)	1,848,467,309.12
O. Annual Inflation:	
4% 1992 thru 1995	
5% 1996 thru 2000	
6% 2001 thru 2010	

*Locomotives, Shops & Ancillary Fac., Locomotive Change Fac., and Control Center not included

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Cost</u>								
			#28		#29		#30		#31		#32	
<u>New Track Construction</u>												
(Mainline subballast up)												
Single Track	T.F.	120		0		0		0		0	30,003	3,600,360
Double Track	T.F.	230		0	8,920	2,051,600	15,840	3,643,200	33,792	7,772,160	4,000	920,000
<u>New Track Construction</u>												
(Yard sub-ballast up)												
Single Track	T.F.	105		0		0	15,840	1,663,200	2,600	273,000	13,120	1,377,600
<u>Upgrading Siding To Mainline</u>												
Single Track	T.F.	85		0		0	15,840	1,346,400	2,600	221,000	13,120	1,115,200
<u>Track Removal</u>												
Single Track	T.F.	7		0		0		0		0		0
<u>Interlockings</u>												
Crossover #34	L.S.	260,000		0		0		0		0		0
Crossover #24	L.S.	190,000		0		0		0	4	760,000	4	760,000
Crossover #20	L.S.	160,000		0	2	320,000		0		0		0
Crossover #14	L.S.	120,000		0		0		0		0		0
Crossover #10	L.S.	90,000		0		0		0		0		0
Turnouts #34	L.S.	130,000		0		0		0		0		0
Turnouts #24	L.S.	95,000		0		0		0	2	190,000	2	190,000
Turnouts #20	L.S.	80,000		0		0	2	160,000		0		0
Turnouts #14	L.S.	60,000		0		0	2	120,000		0		0
Turnouts #10	L.S.	45,000		0		0	16	720,000	20	900,000	14	630,000
Turnouts #7	L.S.	40,000		0		0		0		0		0
<u>MainLine Drainage</u>												
New Drainage	L.F.	10		0	3,920	39,200	15,840	158,400	33,792	337,920	34,003	340,030
Restored Drainage	L.F.	5		0		0		0		0		0
<u>Grading</u>	T.F.	4		0	3,920	15,680	15,840	63,360	33,792	135,168	34,003	136,012

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Cost</u>								
			#28		#29		#30		#31		#32	
Earthwork												
Excavate	C.Y.	10		0		0		0		0		0
Embankment	C.Y.	6		0		0		0		0		0
Retaining Walls												
4' High	L.F.	160		0		0		0		0		0
Grade Crossings												
Remove & Lay												
New Crossing	T.F.	250		0		0		0		0		0
Add Second Crossing												
Along Side Existing												
Crossing	T.F.	170		0		0		0		0		0
Eliminate Existing												
Crossing	E.A.	3,000		0		0		0	5	15,000	5	15,000
Signals (Wayside)												
Phase Sel & Tru-II	T.F.	160		0	17,840	2,854,400	47,520	7,603,200	70,454	11,272,640	51,123	8,179,680
Cab Signals	T.F.	7		0	17,840	124,880	47,520	332,640	70,454	493,178	51,123	357,861
Culvert Extension												
	L.F.	150		0		0	660	99,000	1,995	299,250	825	123,750
Railroad Bridge for												
Add'l Trackage	T.F.	5,200		0		0	224	1,164,800	3,410	17,732,000	860	4,472,000
Horizontal Bridge												
Clearance Improv.	L.S.	2,000,000		0		0		0	2	4,000,000	2	4,000,000
Grade Separations												
Hi-way Underpass	L.S.	14,000,000		0		0		0	5	70,000,000	5	70,000,000
Double Track Flyover												
Viaduct Structure	T.F.	1,750		0	5,000	8,750,000		0		0		0
Right-of-Way												
Acquisition	Ac.	800,000		0		0	16.4	13,120,000	23.3	18,640,000	17.6	14,080,000
ROW Addons												
		0.20		0		0		2,624,000		3,728,000		2,816,000
TOTAL COST												
				0		14,155,760		32,818,200		136,769,316		113,113,493

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	Units	Unit Costs	#33		#49		#40		#50		#34	
			Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
<u>New Track Construction</u>												
(Mainline subballast up)												
Single Track	T.F.	120	31,060	3,727,200	8,448	1,013,760	70,224	8,426,880		0		0
Double Track	T.F.	230		0		0		0	528	121,440		0
<u>New Track Construction</u>												
(Yard sub-ballast up)												
Single Track	T.F.	105		0		0		0		0		0
<u>Upgrading Siding To Mainline</u>												
Single Track	T.F.	85		0		0		0		0		0
<u>Track Removal</u>												
Single Track	T.F.	7		0		0		0		0		0
<u>Interlockings</u>												
Crossover #34	L.S.	260,000		0		0		0		0		0
Crossover #24	L.S.	190,000	4	760,000		0	6	1,140,000	6	1,140,000		0
Crossover #20	L.S.	160,000		0		0		0		0	2	320,000
Crossover #14	L.S.	120,000		0		0		0		0		0
Crossover #10	L.S.	90,000		0		0		0		0		0
Turnouts #34	L.S.	130,000		0		0		0		0		0
Turnouts #24	L.S.	95,000	2	190,000		0	2	190,000		0		0
Turnouts #20	L.S.	80,000		0	2	160,000		0		0		0
Turnouts #14	L.S.	60,000		0		0		0		0		0
Turnouts #10	L.S.	45,000	16	720,000		0	11	495,000		0		0
Turnouts #7	L.S.	40,000		0		0		0		0		0
<u>MainLine Drainage</u>												
New Drainage	L.F.	10	33,760	337,600	8,448	84,480	70,224	702,240	528	5,280		0
Restored Drainage	L.F.	5		0		0		0		0		0
<u>Grading</u>	T.F.	4	33,760	135,040	8,448	33,792	70,224	280,896	528	2,112		0

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>
			#33		#49		#40		#50		#34	
Earthwork												
Excavate	C.Y.	10		0		0		0		0		0
Embankment	C.Y.	6		0		0		0		0		0
Retaining Walls												
4' High	L.F.	160		0		0		0		0		0
Grade Crossings												
Remove & Lay												
New Crossing	T.F.	250		0		0		0		0		0
Add Second Crossing												
Along Side Existing												
Crossing	T.F.	170		0		0		0		0		0
Eliminate Existing												
Crossing	E.A.	3,000	5	15,000		0	10	30,000		0		0
Signals (Wayside)												
Phase Sel & Tru-ll	T.F.	160	31,060	4,969,600	8,448	1,351,680	70,224	11,235,840	1,056	168,960		0
Cab Signals	T.F.	7	31,060	217,420	8,448	59,136	70,224	491,568	1,056	7,392		0
Culvert Extension												
	L.F.	150	570	85,500		0	660	99,000		0		0
Railroad Bridge for Addtl Trackage												
	T.F.	5,200	320	1,664,000		0	188	977,600		0		0
Horizontal Bridge Clearance Improv.												
	L.S.	2,000,000	1	2,000,000		0		0		0		0
Grade Separations												
Hi-way Underpass	L.S.	14,000,000	5	70,000,000		0	10	140,000,000		0		0
Double Track Flyover Viaduct Structure												
	T.F.	1,750		0		0		0		0		0
Right-of-Way Acquisition												
	Ac.	800,000	4.8	3,840,000		0		0		0		0
ROW Addons												
		0.20		768,000		0		0		0		0
TOTAL COST				89,429,360		2,702,848		164,069,024		1,445,184		320,000

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Cost</u>								
			#41		#45		#46		#51		#42	
<u>New Track Construction</u>												
(Mainline subballast up)												
Single Track	T.F.	120		0	0	1,056	126,720		0			0
Double Track	T.F.	230	18,480	4,250,400	0		0	528	121,440	94,512	21,737,760	
<u>New Track Construction</u>												
(Yard sub-ballast up)												
Single Track	T.F.	105		0	0		0		0			0
<u>Upgrading Siding To Mainline</u>												
Single Track	T.F.	85		0	0		0		0			0
<u>Track Removal</u>												
Single Track	T.F.	7		0	0		0		0			0
<u>Interlockings</u>												
Crossover #34	L.S.	260,000		0	0		0		0			0
Crossover #24	L.S.	190,000		0	0		0	2	380,000	10	1,900,000	
Crossover #20	L.S.	160,000		0	0		0		0			0
Crossover #14	L.S.	120,000		0	0		0		0			0
Crossover #10	L.S.	90,000		0	0		0		0			0
Turnouts #34	L.S.	130,000		0	0		0		0			0
Turnouts #24	L.S.	95,000		0	0		0		0	1	95,000	
Turnouts #20	L.S.	80,000	1	80,000	0	2	160,000		0			0
Turnouts #14	L.S.	60,000		0	0		0		0			0
Turnouts #10	L.S.	45,000	3	135,000	0		0		0	8	360,000	
Turnouts #7	L.S.	40,000		0	0		0		0			0
<u>MainLine Drainage</u>												
New Drainage	L.F.	10	18,480	184,800	0	1,056	10,560	528	5,280	94,512	945,120	
Restored Drainage	L.F.	5		0	0		0		0			0
<u>Grading</u>	T.F.	4	18,480	73,920	0	1,056	4,224	528	2,112	94,512	378,048	

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>
			#41		#45		#46		#51		#42	
Earthwork												
Excavate	C.Y.	10		0		0		0		0		0
Embankment	C.Y.	6		0		0		0		0		0
Retaining Walls												
4' High	L.F.	160		0		0		0		0		0
Grade Crossings												
Remove & Lay New Crossing	T.F.	250		0		0		0		0		0
Add Second Crossing Along Side Existing Crossing	T.F.	170		0		0		0		0		0
Eliminate Existing Crossing	E.A.	3,000	5	15,000		0		0		0	10	30,000
Signals (Wayside)												
Phase Sel & Tru-II	T.F.	160	36,960	5,913,600		0	1,056	168,960	1,056	168,960	189,024	30,243,840
Cab Signals	T.F.	7	36,960	258,720		0	1,056	7,392	1,056	7,392	189,024	1,323,168
Culvert Extension	L.F.	150	360	54,000		0		0		0	615	92,250
Railroad Bridge for Add'l Trackage	T.F.	5,200	540	2,808,000		0	0	0		0	1,070	5,564,000
Horizontal Bridge Clearance Improv.	L.S.	2,000,000		0		0		0		0	1	2,000,000
Grade Separations												
Hi-way Underpass	L.S.	14,000,000	5	70,000,000		0		0		0	10	140,000,000
Double Track Flyover Viaduct Structure	T.F.	1,750		0		0		0		0		0
Right-of-Way Acquisition	Ac.	800,000	12.7	10,160,000		0		0		0	32.5	26,000,000
ROW Addons		0.20		2,032,000		0		0		0		5,200,000
TOTAL COST				95,965,440		0		477,856		685,184		235,869,186

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Cost</u>								
			#62		#63		#66		#57		#58	
<u>New Track Construction</u>												
(Mainline subballast up)												
Single Track	T.F.	120	38,544	4,625,280	31,152	3,738,240	528	63,360		0		0
Double Track	T.F.	230		0		0		0		0		0
<u>New Track Construction</u>												
(Yard sub-ballast up)												
Single Track	T.F.	105		0		0		0		0		0
<u>Upgrading Siding To Mainline</u>												
Single Track	T.F.	85		0		0		0		0		0
<u>Track Removal</u>												
Single Track	T.F.	7		0		0		0		0		0
<u>Interlockings</u>												
Crossover #34	L.S.	260,000		0		0		0		0		0
Crossover #24	L.S.	190,000	2	380,000		0		0		0		0
Crossover #20	L.S.	160,000		0	4	640,000	2	320,000		0		0
Crossover #14	L.S.	120,000		0		0		0		0		0
Crossover #10	L.S.	90,000		0		0		0		0		0
Turnouts #34	L.S.	130,000		0		0		0		0		0
Turnouts #24	L.S.	95,000	1	95,000		0		0		0		0
Turnouts #20	L.S.	80,000		0		0		0		0		0
Turnouts #14	L.S.	60,000		0		0		0		0		0
Turnouts #10	L.S.	45,000	4	180,000	4	180,000		0		0		0
Turnouts #7	L.S.	40,000		0		0		0		0		0
<u>MainLine Drainage</u>												
New Drainage	L.F.	10	38,544	385,440	31,152	311,520	528	5,280		0		0
Restored Drainage	L.F.	5		0		0		0		0		0
<u>Grading</u>	T.F.	4	38,544	154,176	31,152	124,608	528	2,112		0		0

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>#62</u>		<u>#63</u>		<u>#66</u>		<u>#57</u>		<u>#58</u>	
			<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>
Earthwork												
Excavate	C.Y.	10		0		0		0		0		0
Embankment	C.Y.	6		0		0		0		0		0
Retaining Walls												
<u>4' High</u>	L.F.	160		0		0		0		0		0
Grade Crossings												
Remove & Lay												
New Crossing	T.F.	250		0		0		0		0		0
Add Second Crossing												
Along Side Existing												
Crossing	T.F.	170		0		0		0		0		0
Eliminate Existing												
Crossing	E.A.	3,000		0		0		0		0		0
Signals (Wayside)												
Phase Sel & Tru-II	T.F.	160	38,544	6,167,040	31,152	4,984,320	528	84,480		0		0
Cab Signals	T.F.	7	38,544	269,808	311,521	2,180,647	528	3,696		0		0
<u>Culvert Extension</u>	L.F.	150	450	67,500	120	18,000		0		0		0
<u>Railroad Bridge for</u>												
<u>Add'l Trackage</u>	T.F.	5,200	775	4,030,000	372	1,934,400		0		0		0
<u>Horizontal Bridge</u>												
<u>Clearance Improv.</u>	L.S.	2,000,000		0		0		0		0		0
<u>Grade Separations</u>												
Hi-way Underpass	L.S.	14,000,000		0		0		0		0		0
<u>Double Track Flyover</u>												
<u>Viaduct Structure</u>	T.F.	1,750		0		0		0		0		0
<u>Right-of-Way</u>												
<u>Acquisition</u>	Ac.	800,000		0		0		0		0		0
<u>ROW Addons</u>		0.20		0		0		0		0		0
TOTAL COST				16,354,244		14,111,735		478,928		0		0

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS -- UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u> #59	<u>Cost</u>	<u>Quantity</u> #60	<u>Cost</u>	<u>Quantity</u> #61	<u>Cost</u>	<u>Quantity</u> #43	<u>Cost</u>	<u>Quantity</u> #44	<u>Cost</u>
<u>New Track Construction</u>												
(Mainline subballast up)												
Single Track	T.F.	120		0		0		0		0		0
Double Track	T.F.	230		0		0		0		0		0
<u>New Track Construction</u>												
(Yard sub--ballast up)												
Single Track	T.F.	105		0		0		0		0		0
<u>Upgrading Siding To Mainline</u>												
Single Track	T.F.	85		0		0		0		0		0
<u>Track Removal</u>												
Single Track	T.F.	7		0		0		0		0		0
<u>Interlockings</u>												
Crossover #34	L.S.	260,000		0		0		0		0		0
Crossover #24	L.S.	190,000		0		0		0		0		0
Crossover #20	L.S.	160,000		0		0		0		0		0
Crossover #14	L.S.	120,000		0		0		0		0		0
Crossover #10	L.S.	90,000		0		0		0		0		0
Turnouts #34	L.S.	130,000		0		0		0		0		0
Turnouts #24	L.S.	95,000		0		0		0		0		0
Turnouts #20	L.S.	80,000		0		0		0		0		0
Turnouts #14	L.S.	60,000		0		0		0		0		0
Turnouts #10	L.S.	45,000		0		0		0		0		0
Turnouts #7	L.S.	40,000		0		0		0		0		0
<u>MainLine Drainage</u>												
New Drainage	L.F.	10		0		0		0		0		0
Restored Drainage	L.F.	5		0		0		0		0		0
<u>Grading</u>	T.F.	4		0		0		0		0		0

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
 ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
 SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>	<u>Quantity</u>	<u>Cost</u>
			#59		#60		#61		#43		#44	
Earthwork												
Excavate	C.Y.	10		0		0		0		0		0
Embankment	C.Y.	6		0		0		0		0		0
Retaining Walls												
4' High	L.F.	160		0		0		0		0		0
Grade Crossings												
Remove & Lay												
New Crossing	T.F.	250		0		0		0		0		0
Add Second Crossing												
Along Side Existing												
Crossing	T.F.	170		0		0		0		0		0
Eliminate Existing												
Crossing	E.A.	3,000		0		0		0		0		0
Signals (Wayside)												
Phase Sel & Tru-II	T.F.	160		0		0		0		0		0
Cab Signals	T.F.	7		0		0		0		0		0
Culvert Extension	L.F.	150		0		0		0		0		0
Railroad Bridge for												
Add'l Trackage	T.F.	5,200	545	2,834,000	190	988,000		0		0		0
Horizontal Bridge												
Clearance Improv.	L.S.	2,000,000		0		0		0		0		0
Grade Separations												
Hi-way Underpass	L.S.	14,000,000		0		0		0		0		0
Double Track Flyover												
Viaduct Structure	T.F.	1,750		0		0		0		0		0
Right-of-Way												
Acquisition	Ac.	800,000		0		0		0		0		0
ROW Addons		0.20		0		0		0		0		0
TOTAL COST				2,834,000		988,000		0		0		0

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
ESTIMATE OF CAPITAL COSTS – UNIT PRICE SCHEDULE
SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>TOTAL QUANTITY</u>	<u>TOTAL COST</u>
<u>New Track Construction</u>				
(Mainline subballast up)				
Single Track	T.F.	120	211,015	25,321,800
Double Track	T.F.	230	176,600	40,618,000
<u>New Track Construction</u>				
(Yard sub-ballast up)				
Single Track	T.F.	105	31,560	3,313,800
<u>Upgrading Siding To Mainline</u>				
Single Track	T.F.	85	31,560	2,682,600
<u>Track Removal</u>				
Single Track	T.F.	7	0	0
<u>Interlockings</u>				
Crossover #34	L.S.	260,000	0	0
Crossover #24	L.S.	190,000	38	7,220,000
Crossover #20	L.S.	160,000	10	1,600,000
Crossover #14	L.S.	120,000	0	0
Crossover #10	L.S.	90,000	0	0
Turnouts #34	L.S.	130,000	0	0
Turnouts #24	L.S.	95,000	10	950,000
Turnouts #20	L.S.	80,000	7	560,000
Turnouts #14	L.S.	60,000	2	120,000
Turnouts #10	L.S.	45,000	96	4,320,000
Turnouts #7	L.S.	40,000	0	0
<u>MainLine Drainage</u>				
New Drainage	L.F.	10	385,315	3,853,150
Restored Drainage	L.F.	5	0	0
<u>Grading</u>	T.F.	4	385,315	1,541,260

SOUTHERN CALIFORNIA REGIONAL ELECTRIFICATION PROGRAM
ESTIMATE OF CAPITAL COSTS - UNIT PRICE SCHEDULE
SEGMENT COSTS RELATED TO RAILROAD IMPROVEMENTS

	<u>Units</u>	<u>Unit Costs</u>	<u>TOTAL QUANTITY</u>	<u>TOTAL COST</u>
<u>Earthwork</u>				
Excavate	C.Y.	10	0	0
Embankment	C.Y.	6	0	0
<u>Retaining Walls</u>				
4' High	L.F.	160	0	0
<u>Grade Crossings</u>				
Remove & Lay New Crossing	T.F.	250	0	0
Add Second Crossing Along Side Existing Crossing	T.F.	170	0	0
Eliminate Existing Crossing	E.A.	3,000	40	120,000
<u>Signals (Wayside)</u>				
Phase Sel & Tru-II	T.F.	160	596,045	95,367,200
Cab Signals	T.F.	7	876,414	6,134,898
<u>Culvert Extension</u>	L.F.	150	6,255	938,250
<u>Railroad Bridge for Add'l Trackage</u>	T.F.	5,200	8,494	44,168,800
<u>Horizontal Bridge Clearance Improv.</u>	L.S.	2,000,000	6	12,000,000
<u>Grade Separations</u>				
Hi-way Underpass	L.S.	14,000,000	40	560,000,000
<u>Double Track Flyover Viaduct Structure</u>	T.F.	1,750	5,000	8,750,000
<u>Right-of-Way Acquisition</u>	Ac.	800,000	107.3	85,840,000
<u>ROW Addons</u>		0.20	0	17,168,000
TOTAL COST			2,713,929	922,587,758