

# APPENDIX E

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ORDER OF MAGNITUDE COST ESTIMATES

**TRAFFIC SIGNAL COMMUNICATION MASTER PLAN  
PHASE 1 ORDER OF MAGNITUDE COST ESTIMATE**

Phase: 1 - Item 1  
 Scenario: Fiber Communications System Conversion to Ethernet  
 Prepared By: STC Traffic, Inc.  
 Date: 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install Layer 2 Ethernet Switch with 2-Dual Fiber Ports	25	EA	\$5,000.00	\$125,000.00
<b>Sub Total:</b>					<b>\$125,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$31,250.00</b>
<b>Construction Contingency (25%):</b>					<b>\$31,250.00</b>
<b>Total:</b>					<b>\$187,500.00</b>

Phase: 1 - Item 2  
 Scenario: Leased Copper Conversion to City-Owned Broadband Wireless and Connected City-Owned Copper Conversion to Ethernet  
 Prepared By: STC Traffic, Inc.  
 Date: 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install Single Radio	39	EA	\$5,000.00	\$195,000.00
2	Furnish and Install Dual Radio	82	EA	\$7,500.00	\$615,000.00
3	Furnish and Install Sectoral Antenna for Dual Radios	82	EA	\$2,000.00	\$164,000.00
4	Furnish and Install Layer 2 Ethernet Switch with 2-Dual Fiber Ports	146	EA	\$5,000.00	\$730,000.00
<b>Sub Total:</b>					<b>\$1,704,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$426,000.00</b>
<b>Construction Contingency (25%):</b>					<b>\$426,000.00</b>
<b>Total:</b>					<b>\$2,556,000.00</b>

Phase: 1 - Item 3  
 Scenario: Leased Cellular Traffic Measurement Devices Conversion to City-Owned Broadband Wireless  
 Prepared By: STC Traffic, Inc.  
 Date: 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install Single Radio	55	EA	\$5,000.00	\$275,000.00
2	Furnish and Install Dual Radio	13	EA	\$7,500.00	\$97,500.00
<b>Sub Total:</b>					<b>\$372,500.00</b>
<b>Soft Costs (25%):</b>					<b>\$93,125.00</b>
<b>Construction Contingency (25%):</b>					<b>\$93,125.00</b>
<b>Total:</b>					<b>\$558,750.00</b>

Phase: 1 - Item 4  
 Scenario: Video Monitoring at Priority Locations  
 Prepared By: STC Traffic, Inc.  
 Date: 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install CCTV Camera	28	EA	\$8,000.00	\$224,000.00
<b>Sub Total:</b>					<b>\$224,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$56,000.00</b>
<b>Construction Contingency (25%):</b>					<b>\$56,000.00</b>
<b>Total:</b>					<b>\$336,000.00</b>

**Phase:** 1 - Item 5  
**Scenario:** Dynamic Message Signs  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Dynamic Message Sign - Fixed	1	EA	\$150,000.00	\$150,000.00
2	Dynamic Message Sign - Portable	2	EA	\$20,000.00	\$40,000.00
<b>Sub Total:</b>					<b>\$190,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$47,500.00</b>
<b>Construction Contingency (25%):</b>					<b>\$47,500.00</b>
<b>Total:</b>					<b>\$285,000.00</b>

**Phase:** 1 - Item 6  
**Scenario:** Satellite Maintenance Facility Traffic Management Center  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	IBase Video Wall Server	1	EA	\$2,200.00	\$2,200.00
2	46" Television Monitors with Mounts	4	EA	\$18,000.00	\$72,000.00
<b>Sub Total:</b>					<b>\$74,200.00</b>
<b>Soft Costs (25%):</b>					<b>\$18,550.00</b>
<b>Construction Contingency (25%):</b>					<b>\$18,550.00</b>
<b>Total:</b>					<b>\$111,300.00</b>

**Phase:** 1 - Item 7  
**Scenario:** Traffic Signal Controller Ethernet Conversion Upgrade  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 170E Serial to Ethernet Converter	267	EA	\$400.00	\$106,800.00
<b>Sub Total:</b>					<b>\$106,800.00</b>
<b>Soft Costs (25%):</b>					<b>\$26,700.00</b>
<b>Construction Contingency (25%):</b>					<b>\$26,700.00</b>
<b>Total:</b>					<b>\$160,200.00</b>

**Phase:** 1 - Item 8  
**Scenario:** Communications Hub Installation  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install Layer 3 Communication Hub	4	EA	\$100,000.00	\$400,000.00
<b>Sub Total:</b>					<b>\$400,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$100,000.00</b>
<b>Construction Contingency (25%):</b>					<b>\$100,000.00</b>
<b>Total:</b>					<b>\$600,000.00</b>

## TRAFFIC SIGNAL COMMUNICATION MASTER PLAN PHASE 2 ORDER OF MAGNITUDE COST ESTIMATE

**Phase:** 2 - Item 1  
**Scenario:** Existing Communications Conduit Upgrade  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 3" PVC Conduit	250	LF	\$100.00	\$25,000.00
2	Furnish and Install Fiber Optic Vault	5	EA	\$2,500.00	\$12,500.00
3	Furnish and Install Fiber Optic Pull Box	5	EA	\$1,500.00	\$7,500.00
4	Furnish and Install Trunk SMFO Cable	170,000	LF	\$5.00	\$850,000.00
5	Furnish and Install Breakout SMFO Cable	500	LF	\$2.50	\$1,250.00
6	Furnish and Install Fiber Distribution Unit	5	EA	\$2,000.00	\$10,000.00
7	Furnish and Install Strand Splice Closure	5	EA	\$2,000.00	\$10,000.00
<b>Sub Total:</b>					<b>\$916,250.00</b>
<b>Soft Costs (25%):</b>					<b>\$229,062.50</b>
<b>Construction Contingency (25%):</b>					<b>\$229,062.50</b>
<b>Total:</b>					<b>\$1,374,375.00</b>

**Phase:** 2 - Item 2  
**Scenario:** Wireless Radio Communications to Fiber Optic Communications Upgrade  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 3" PVC Conduit	45,000	LF	\$50.00	\$2,250,000.00
2	Furnish and Install Trunk SMFO Cable	50,000	LF	\$5.00	\$250,000.00
3	Furnish and Install Breakout SMFO Cable	3,400	LF	\$2.00	\$6,800.00
4	Furnish and Install Fiber Optic Vault	68	EA	\$2,500.00	\$170,000.00
5	Furnish and Install Splice Closure	68	LF	\$2,000.00	\$136,000.00
6	Furnish and Install Fiber Distribution Unit	68	EA	\$2,000.00	\$136,000.00
7	Furnish and Install Layer 2 Ethernet Switch with 2-Dual Fiber Ports	25	EA	\$5,000.00	\$125,000.00
<b>Sub Total:</b>					<b>\$3,073,800.00</b>
<b>Soft Costs (25%):</b>					<b>\$768,450.00</b>
<b>Construction Contingency (25%):</b>					<b>\$768,450.00</b>
<b>Total:</b>					<b>\$4,610,700.00</b>

**Phase:** 2 - Item 3  
**Scenario:** Traffic Signal Equipment Upgrade on Priority Corridors  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 2070 Controller Assembly	74	EA	\$5,000.00	\$370,000.00
4	Furnish and Install CCTV Camera	46	EA	\$8,000.00	\$368,000.00
<b>Sub Total:</b>					<b>\$738,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$184,500.00</b>
<b>Construction Contingency (25%):</b>					<b>\$184,500.00</b>
<b>Total:</b>					<b>\$1,107,000.00</b>

**TRAFFIC SIGNAL COMMUNICATION MASTER PLAN  
PHASE 3 ORDER OF MAGNITUDE COST ESTIMATE**

**Phase:** 3 - Item 1  
**Scenario:** Traffic Signal Equipment Upgrade at Remaining Intersections  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 2070 Controller Assembly	193	EA	\$5,000.00	\$965,000.00
2	Furnish and Install CCTV Camera	193	EA	\$8,000.00	\$1,544,000.00
<b>Sub Total:</b>					<b>\$2,509,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$627,250.00</b>
<b>Construction Contingency (25%):</b>					<b>\$627,250.00</b>
<b>Total:</b>					<b>\$3,763,500.00</b>

**Phase:** 3 - Item 2  
**Scenario:** Video Detection Equipment Upgrade  
**Prepared By:** STC Traffic, Inc.  
**Date:** 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install Analog to Ethernet Video Encoder	155	EA	\$800.00	\$124,000.00
<b>Sub Total:</b>					<b>\$124,000.00</b>
<b>Soft Costs (25%):</b>					<b>\$31,000.00</b>
<b>Construction Contingency (25%):</b>					<b>\$31,000.00</b>
<b>Total:</b>					<b>\$186,000.00</b>

**TRAFFIC SIGNAL COMMUNICATION MASTER PLAN  
CITY FACILITIES ORDER OF MAGNITUDE COST ESTIMATE**

Phase: 1  
 Scenario: Fiber Connection to City Facilities (Police Station, Fire Station)  
 Prepared By: STC Traffic, Inc.  
 Date: 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 3" PVC Conduit	300	LF	\$100.00	\$30,000.00
2	Furnish and Install Fiber Optic Pull Box	3	EA	\$1,500.00	\$4,500.00
3	Furnish and Install Layer 2 Ethernet Switch with 2-Dual Fiber Ports	2	EA	\$5,000.00	\$10,000.00
4	Furnish and Install Breakout SMFO Cable	700	LF	\$2.00	\$1,400.00
5	Furnish and Install Fiber Distribution Unit	2	EA	\$2,000.00	\$4,000.00
6	Furnish and Install Splice Closure	2	EA	\$2,000.00	\$4,000.00
<b>Sub Total:</b>					<b>\$53,900.00</b>
<b>Soft Costs (25%):</b>					<b>\$13,475.00</b>
<b>Construction Contingency (25%):</b>					<b>\$13,475.00</b>
<b>Total:</b>					<b>\$80,850.00</b>

Phase: 2  
 Scenario: Fiber Connections to City Facilities (Fire Station 3, Otay Rec Center, Chula Vista Transit)  
 Prepared By: STC Traffic, Inc.  
 Date: 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 3" PVC Conduit	2,300	LF	\$50.00	\$115,000.00
2	Furnish and Install Fiber Optic Pull Box	14	EA	\$1,500.00	\$21,000.00
3	Furnish and Install Layer 2 Ethernet Switch with 2-Dual Fiber Ports	3	EA	\$5,000.00	\$15,000.00
4	Furnish and Install Breakout SMFO Cable	3,300	LF	\$2.00	\$6,600.00
5	Furnish and Install Fiber Distribution Unit	3	EA	\$2,000.00	\$6,000.00
6	Furnish and Install Splice Closure	3	EA	\$2,000.00	\$6,000.00
<b>Sub Total:</b>					<b>\$169,600.00</b>
<b>Soft Costs (25%):</b>					<b>\$42,400.00</b>
<b>Construction Contingency (25%):</b>					<b>\$42,400.00</b>
<b>Total:</b>					<b>\$254,400.00</b>

Phase: 3  
 Scenario: Fiber Connections to City Facilities (Fire Stations 3,4,6,7,8,9, Veterans Community Park, Monteville Community Center)  
 Prepared By: STC Traffic, Inc.  
 Date: 7/13/2017

Item #	Item Description	Quantity	Unit	Unit Price	Amount
1	Furnish and Install 3" PVC Conduit	5,400	LF	\$50.00	\$270,000.00
2	Furnish and Install Fiber Optic Pull Box	40	EA	\$1,500.00	\$60,000.00
3	Furnish and Install Layer 2 Ethernet Switch with 2-Dual Fiber Ports	9	EA	\$5,000.00	\$45,000.00
4	Furnish and Install 12 SMFO Cable	8,300	LF	\$2.00	\$16,600.00
5	Furnish and Install Fiber Distribution Unit	9	EA	\$2,000.00	\$18,000.00
6	Furnish and Install 96 Strand Splice Closure	9	EA	\$2,000.00	\$18,000.00
<b>Sub Total:</b>					<b>\$427,600.00</b>
<b>Soft Costs (25%):</b>					<b>\$106,900.00</b>
<b>Construction Contingency (25%):</b>					<b>\$106,900.00</b>
<b>Total:</b>					<b>\$641,400.00</b>