

Article 6 - Saugus Public Safety Dispatch Equipment Special Town Meeting April 9, 2018

Funding Sources	Amount
Authorization to borrow 4.9.18	\$ 420,000.00
Public Safety Earmark funding provided by State Delegation	\$ 50,000.00
Vote of Town Meeting May 2016 for Public Safety Radio Equipment	\$ 38,000.00
	\$ 508,000.00

The current Saugus Police and Fire Department radio communications systems are configured with transmitter and receiver devices located thru out the town in various locations to provide coverage for the portable and mobile radios to operate effectively.

These complex, vital, mission critical systems require connectivity between the multiple devices and their remote locations back to the headquarters dispatch and control equipment. The current method of connectivity utilized is leased copper circuits provided by Verizon. These copper circuits due to their age and condition are prone to regular failure and are increasingly unreliable. Verizon has announced that the copper circuits currently provided will not be supported after January of 2016, therefore the Town must choose another method of connectivity to support the public safety communications systems.

The unreliability of the legacy connectivity currently used provides a certain level of risk to the general public and the police officers and firefighters who depend on reliable effective communications. Safety is compromised when a leased circuit fails, because the circuits are owned by an outside vendor, the town has little recourse or remedy to prevent or correct these failures from occurring or to insist on a timely repair.

The options available for alternate connectivity include continuing with Verizon using their new fiber optic network or town investment in either a microwave or fiber optic solution.

The leased fiber option would require a significant increase in recurring costs and put the town at a disadvantage as the connectivity would still be provided by an outside source with no cost control or guaranteed reliability for the foreseeable future and no return on the investment.

The other option would be for the town to purchase dedicated microwave equipment to be located at each site to carry the connectivity back to support the radio networks. This option currently has a budget of \$150K with no recurring costs but limited expansion and lack of a Townwide connectivity support option.

The option that offers the most advantages for the town would be to invest in the expansion of the existing town owned fiber optics network currently installed. This investment would offer the town a reasonable expectation of return on investment as the need for connectivity for all aspects of technology continues to increase, and the ability to contain these requirements with town owned resources reduces recurring charges and dependency on outsourced solutions.

The fiber optic solution provides support for not only the police and fire radio systems but offers many other connectivity solutions for the town. Among the multiple uses of town owned fiber include remote data transmissions from remote water sites to support the DPW, remote cameras, systems monitoring and alerts, IP based telephone systems to eliminate recurring line charges and IP access thru out the town from the fiber network eliminating the need for each computer to have separate paid portals for internet access are among the many uses that ultimately reduce the towns reliance on recurring costs for connectivity. The investment in a robust town owned fiber network is the best possible option for the current needs and to

support future requirements, ownership and control of this valuable asset is beneficial to the long term interests of the town.

In addition, as the fire and police legacy fixed radio equipment reaches its end of life, any replacement equipment will require IP connectivity as the current connectivity method of analog audio is no longer supported for current production and future system infrastructures.

The town should plan for a capital purchase and replacement of the legacy police and fire communications infrastructure in the next two years due to end of life and product support as the equipment is approaching 10 years old. The recommended life expectancy of public safety mission critical radio equipment is 7-10 years. This planning should include the fire and police repeaters, satellite receivers, mutual aid support equipment as well as the dispatch console which is in excess of 16 years old. A budget figure of \$600K would be a reasonable expectation for this equipment.

APRIL 2018

**Technologies, Inc.**

5 Whitmore Rd. Revere, MA 02151 P (781) 289-3000 F (781) 289-7300 www.allcomm1.com

3/22/2018

Saugus Police & Fire Departments**Chief Domenic DiMella/Chief Mike Newbury****27 Hamilton Street****Saugus, MA 01906****Police Radio System P25 Analog Mixed Mode Simulcast****Fire Radio System Analog Simulcast****Replacement of End of Life Components Budgetary Costs**

Qty	Nomenclature	Description	Unit Price	Total Price
		2 Position 20 Channel Zetron Max Dispatch Console		
1	905-0378	ZETRON MAX 1 Position 10 Channel DB15 Package	\$ 25,029.00	\$ 25,029.00
3	905-0380	ZETRON MAX Standard Workstation Bundle-2nd Op.	\$ 8,343.00	\$ 25,029.00
3	930-0222	Individual Call Software Feature Set	\$ 834.00	\$ 2,502.00
3	930-0225	Event Replay	\$ 1,668.60	\$ 5,005.80
4	905-0330	Desktop microphone	\$ 481.95	\$ 1,927.80
1	901-9677	Max radio gateway RJ21	\$ 2,025.00	\$ 2,025.00
4	901-9675	MAX radio gateway DB15	\$ 2,085.75	\$ 8,343.00
2	901-9674	M6080 Aux I/O	\$ 688.50	\$ 1,377.00
3	930-0227	MDC1200 signaling Decode/Encode	\$ 166.05	\$ 498.15
1	709-0167-10	25 Pair cable M180-M90 10'	\$ 48.60	\$ 48.60
1	950-9351	Connectorized punch block	\$ 65.00	\$ 65.00
4	709-7968-10	MAX Radio Gateway to Tail Cable	\$ 54.00	\$ 216.00
2	J9726A	HP 2920-24G 24 Port Network Switch	\$ 1,225.20	\$ 2,450.40
2	J4859C	1000BASE-LX SFP 1310nm 10KM	\$ 72.64	\$ 145.28
1	901-9686	MAX Central	\$ 2,668.95	\$ 2,668.95
1	930-0231	MAX Manager	\$ 2,587.95	\$ 2,587.95
8	950-0884	Zetron monitor speaker	\$ 388.80	\$ 3,110.40
8	6987	Zetron monitor speaker cable	\$ 3.59	\$ 28.72
1	930-0221	Block of 10 radio channel licenses	\$ 2,502.90	\$ 2,502.90
7	950-0588	Dual unit rack mount option	\$ 121.50	\$ 850.50
1	360091	42U Equipment Rack	\$ 147.60	\$ 147.60
2	8622	12/24 Screws For Racks	\$ 4.92	\$ 9.84
1	443818	Rack Vertical Ground Bar	\$ 117.91	\$ 117.91
1	10605-019	Rack Isolation Kit	\$ 86.59	\$ 86.59
12	10559-700	Rack Stand-Offs/tie Downs	\$ 9.70	\$ 116.40
2	PAN-WMPH2E	Panduit Horizontal Rack management	\$ 102.95	\$ 205.90
4	0184469Y02	Rack Cable Support Bar	\$ 106.50	\$ 426.00
1	MA-LBP-6A	Horizontal Lacer Bars	\$ 100.24	\$ 100.24
1	13560	Cat6 STP 1000'	\$ 181.98	\$ 181.98
1	584094	Tripp Lite - 15' 1.44kW Single-Phase Metered PDU + Isobar	\$ 198.46	\$ 198.46
8	5900	CAT6A Patch Cable-5'	\$ 4.40	\$ 35.20
2	MO15138	Cat6A Ethernet Network Patch Cable, 7ft Blue	\$ 12.57	\$ 25.14
2	MO15140	Cat6A Ethernet Network Patch Cable, 7ft White	\$ 12.57	\$ 25.14
1	378554	16-14AWG #8 Ring Terminal	\$ 6.31	\$ 6.31
1	317964	14AWG 2 Conductor	\$ 68.22	\$ 68.22
1	371756	#0 PWR Cable	\$ 77.49	\$ 77.49
2	499630	102Ah Telecom Battery	\$ 838.94	\$ 1,677.88
4	E16842102134	WorkStation UPS	\$ 269.93	\$ 1,079.72
1	E16842111016	Rack UPS	\$ 466.07	\$ 466.07
1	01-SSC-0217	Dell Router/Firewall	\$ 355.60	\$ 355.60
1	MGMT-PC	Management CSM PC	\$ 1,039.22	\$ 1,039.22
1	NCH-VRS	NCH-VRS RECORDING SOFTWARE- Radio Station (Single)	\$ 206.07	\$ 206.07
1	STD-600	RDL STD-600 Passive Audio Divider/Combiner - 600 Ohm	\$ 70.83	\$ 70.83
1	KIWISYS	Syslog Software	\$ 300.00	\$ 300.00
4	E16826125017	Trackball Mouse	\$ 121.78	\$ 487.12
4	E16824217206	ELO 22" multi-touch monitor	\$ 820.88	\$ 3,283.52
4	E16824994064	Ergotron LX Wall Mount LCD Monitor Arm	\$ 189.00	\$ 756.00
8	7281	Cat5e Shielded Inline Coupler	\$ 3.27	\$ 26.16
8	8751	USB extension	\$ 6.94	\$ 55.52
4	E16812196189	DVI Extension	\$ 33.78	\$ 135.12
1	378554	16-14AWG #8 Ring Terminal	\$ 6.31	\$ 6.31
1	317964	14AWG 2 Conductor	\$ 68.22	\$ 68.22

1	371758	#0 PWR Cable	\$	77.49	\$	77.49
1	530838	ICT N+1 100A PWR Supply	\$	1,440.00	\$	1,440.00
1	525768	Intelligent Distribution Module 180A TCP=IP	\$	880.00	\$	880.00
2	96147	10 1/2"H Black Aluminum Panel, Black	\$	36.41	\$	72.82
2	28610	3 1/2"H Aluminum Panel, Black	\$	13.91	\$	27.82
3	501257	Heavy Duty Shelf	\$	121.25	\$	363.75
1	CBLMGMT	Cable Management	\$	450.00	\$	450.00
1	GND	Grounding	\$	450.00	\$	450.00
1	HDWR	Site Hardware	\$	450.00	\$	450.00
1	ELEC	Site Electrical	\$	850.00	\$	850.00
40	STAGING	System Design, Staging, Configuration	\$	108.50	\$	4,340.00
160	SVC2016	Install, programming, set-up, optimization	\$	108.50	\$	17,360.00
8	SVC2016	Dispatcher Training	\$	108.50	\$	868.00
1	XMP-0344-EBS		\$	7,000.00	\$	7,000.00
Console Total						\$ 132,883.11
Disptach Center Console Furniture*BUDGETARY Prediction						
1	Eaton Wright-Line 4 Position Sit to Stand Operator Positions		\$	70,000.00	\$	70,000.00
Sub-Total						\$ 70,000.00

		Control Station Power Distribution Rack System				
2	530836	ICT N+1 100A PWR Supply	\$	1,440.00	\$	2,880.00
2	525768	Intelligent Distribution Module 180A TCP=IP	\$	880.00	\$	1,760.00
1	387103	14Ga 2 Conductor Power Cable	\$	249.50	\$	249.50
3	371756	#0 Power Cable	\$	82.35	\$	247.05
8	MAGNALUG	180 Degree Lugs	\$	3.36	\$	26.88
2	496951	12-10Ga Terminals	\$	7.23	\$	14.46
1	378554	14-16Ga Terminals	\$	5.84	\$	5.84
2	360091	42U Equipment Rack	\$	147.60	\$	295.20
2	N82E16812120330	Tripplite Switched Vertical PDU	\$	684.60	\$	1,369.20
2	10605-019	Rack Isolation Kit	\$	86.59	\$	173.18
30	10559-700	Stand-Off Tie Down	\$	9.73	\$	291.90
4	10039	Cat6 Patch panel	\$	69.56	\$	278.24
1	85-600-320 BK	Cat6 Plenum 1000'	\$	409.32	\$	409.32
3	360714	Cable Ladder Racks 10' X 12" Black	\$	86.60	\$	259.80
100	2875-THHN-GI-Y	#6 Green Ground Wire Copper Stranded	\$	1.62	\$	162.00
2	77894	Ground Terminals #6 1/4" Single Hole	\$	96.25	\$	192.50
50	25144	Ground Terminal #4 Dual Hole 3/8"	\$	3.15	\$	157.50
20	412520	Ground Terminal # 8 Dual Hole 1/4"	\$	2.34	\$	46.80
3	56336	Anchor Kit	\$	22.92	\$	68.76
2	CCP0.50-MS	1/2" TechFlex	\$	39.00	\$	78.00
2	CCP0.75-MS	3/4" TechFlex	\$	37.37	\$	74.74
2	CCP0.25-MS	1/4" TechFlex	\$	26.00	\$	52.00
2	91213	Heat Shrink Assortment	\$	64.23	\$	128.46
1	MA-PCD-4-4-45SC	Vertical cable Duct	\$	194.05	\$	194.05
3	MA-LBP-6A	Horizontal Lacer Bar	\$	100.24	\$	300.72
2	MA-IEC-18X4	18' Low Noise Power Cords	\$	63.18	\$	126.36
2	MA-IEC-6X4	6' Low Noise Power Cords	\$	52.65	\$	105.30
2	QNP-2	2RU-Pandult Neat Patch	\$	101.71	\$	203.42
2	443818	Rack Vertical Ground Bar	\$	235.82	\$	471.64
6	28610	TESSCO 19" 3RU Panel	\$	13.91	\$	83.46
1		MISC Mounting Hardware and Wire Management	\$	4,500.00	\$	4,500.00
80	Man Hours Labor	Installation, Set-Up, Optimization	\$	108.50	\$	8,680.00
Sub-Total				\$		23,886.28

		Police/Fire Channel Console Gateway		
1	TN91100020J400	Console Gateway 2 Channel ACDC12 aux12	\$ 10,974.64	\$ 10,974.64
1	901-9725	MAX Digital Radio Gateway	\$ 2,182.95	\$ 2,182.95
1	930-0270	P25 DFSI Interface License	\$ 834.30	\$ 834.30
1	950-0588	Dual Unit Rack Mount Option	\$ 121.50	\$ 121.50
		Relay base, for industrial relay with 2 or 4 DPDTs, push-in connection	\$ 6.65	\$ 13.30
2	651-2900934	Plug-in Industrial relay with power contacts 4 DPDT	\$ 9.80	\$ 19.60
5	MO5900	Cat6A STP Patch Cable -5'	\$ 4.39	\$ 21.95
8	X-310S-E	Web-Enabled Advanced I/O Controller	\$ 349.93	\$ 2,799.44
8	E16833997219	POE Injector	\$ 22.54	\$ 180.32
1	X-332-24I	Web-Enabled Advanced I/O Controller	\$ 713.07	\$ 713.07
1	HDWR	Site Hardware	\$ 125.00	\$ 125.00
1	GND	Grounding	\$ 125.00	\$ 125.00
8	SVC2017	Staging	\$ 108.50	\$ 868.00
24	SVC2017	Installation	\$ 108.50	\$ 2,604.00
Sub-Total			\$	21,583.07
		BAPERN North District Control Station		
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00	\$ 686.00
1	KWD-5100CV	License Key for P25	\$ 402.50	\$ 402.50
1	930-0229	Kenwood Gateway License	\$ 251.10	\$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05	\$ 85.05
1	BR19FP-KNX5	West Crystal Bracket	\$ 56.00	\$ 56.00
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50	\$ 1,085.00
Sub-Total			\$	2,565.65
		Police Surrounding Towns UHF Control Station		
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00	\$ 686.00
1	KWD-5100CV	License Key for P25	\$ 402.50	\$ 402.50
1	930-0229	Kenwood Gateway License	\$ 251.10	\$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05	\$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50	\$ 1,085.00
Sub-Total			\$	2,509.65
		AREAWIDE 3 Radio		
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00	\$ 686.00
1	KWD-5100CV	License Key for P25	\$ 402.50	\$ 402.50
1	930-0229	Kenwood Gateway License	\$ 251.10	\$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05	\$ 85.05
1	BR19FP-KNX5	West Crystal Bracket	\$ 56.00	\$ 56.00
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50	\$ 1,085.00
Sub-Total			\$	2,565.65

AREAWIDE 4 Radio			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1	KWD-5100CV	License Key for P25	\$ 402.50 \$ 402.50
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,509.65
Square 1 Mail Radio			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1		DMR License	\$ 60.00 \$ 60.00
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
1	BR19FP-KNX5	West Crystal Bracket	\$ 56.00 \$ 56.00
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,223.15
DPW Control Station			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,107.15
METRO North District Control Station			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,107.15
Fire Surrounding Towns UHF Control Station			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1	KWD-5100CV	License Key for P25	\$ 402.50 \$ 402.50
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,509.65
METROWHITE Control Station			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,107.15
METRORED Control Station			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,107.15
School Dept Control Station			
1	NX5800BK	Kenwood Control Station UHF 40 Watt, 1024 Channel	\$ 686.00 \$ 686.00
1	930-0229	Kenwood Gateway License	\$ 251.10 \$ 251.10
1	709-7977-10	MAX Gateway Cable	\$ 85.05 \$ 85.05
10	Man Hours Labor	Programming, Installation, Interface	\$ 108.50 \$ 1,085.00
Sub-Total			\$ 2,107.15
HQ Antenna Systems Tower			
1	CS4552-1205SN	RFI UHF Combiner-12 Port	\$ 15,246.17 \$ 15,246.17
4	317465	TESSCO 1/2" NM Connector	\$ 22.00 \$ 88.00

2	337942	TESSCO Polyphaser Lightning Arrestor UHF	\$	113.40	\$	226.80
1	MISC 5	Cable Mgmt, Mounting Hardware, Connectors	\$	850.00	\$	850.00
13	MISC 6	Jumpers from Polyphasers to Radios	\$	67.88	\$	882.44
2	43950	Larger Ground Bus Bar	\$	87.98	\$	175.96
1	MISC 10	#2 Ground Wire, Compression Fittings, Hardware	\$	650.00	\$	650.00
20	Man Hours Labor	Design, Install, Set-Up, Optimization Labor	\$	108.50	\$	2,170.00
		Sub-Total			\$	20,289.37

Square 1 Mail RECEIVER SITE

		RX AS-IP 470-520M 2Rx Only ACDC/12- (TBAS071 Software			
1	TB9444H2200000J4AC	License Included)	\$	7,746.03	\$ 7,746.03
1	TBAS050	SFE P25 Common Air Interface (CAI)	\$	3,942.27	\$ 3,942.27
2	MO-8629	Stage,Tune,Align	\$	108.50	\$ 217.00
2	574623	Setup, Install	\$	108.50	\$ 217.00
1	533434	Battery Backup Charger	\$	152.73	\$ 152.73
1	79933	APS1250 UPS	\$	667.44	\$ 667.44
1	ANL80	80A ANL Fuse	\$	15.00	\$ 15.00
1	ANL500	500A ANL Fuse	\$	20.00	\$ 20.00
2	ANLFH	ANL Fuse Holder	\$	15.00	\$ 30.00
1	371756	#0 Power Cable	\$	82.35	\$ 82.35
4	MAGNALUG	90 Degree Battery Lug	\$	3.36	\$ 13.44
1	CUR438	180 Degree Battery Lug	\$	15.00	\$ 15.00
1	484499	Rackmount AC Power Strip-12 outlet	\$	72.72	\$ 72.72
1	X-301-E	Web Relay	\$	272.93	\$ 272.93
1	CBLMGMT	Cable Management	\$	450.00	\$ 450.00
1	GROUNDING	Buss Bar & Grounding	\$	450.00	\$ 450.00
1	341596	DDB 60" Indoor Cabinet	\$	1,296.00	\$ 1,296.00
1	J9726A	HP2920-24G 24 Port Network Switch	\$	1,225.20	\$ 1,225.20
2	J4859C	1000Base-LZ-SFP 1310nm 10 KM	\$	72.64	\$ 145.28
1	55234	30"Hx23"Wx25"D Cabinet	\$	786.65	\$ 786.65
1	SITEHRDWR	Site Hardware	\$	800.00	\$ 800.00
8	SVC2014	Design	\$	108.50	\$ 868.00
32	SVC2014	Setup and Programming/Staging	\$	108.50	\$ 3,472.00
42	SVC2014	Installation/Optimization	\$	108.50	\$ 4,557.00

Sub-Total \$ 27,514.04

Resco RECEIVER SITE

		RX AS-IP 470-520M 2Rx Only ACDC/12- (TBAS071 Software			
1	TB9444H3200000J4AC	License Included)	\$	7,746.03	\$ 7,746.03
1	TBAS050	SFE P25 Common Air Interface (CAI)	\$	3,942.27	\$ 3,942.27
2	MO-8629	Stage,Tune,Align	\$	108.50	\$ 217.00
2	574623	170ah Telecom Battery	\$	562.64	\$ 1,125.28
1	533434	Battery Backup Charger	\$	152.73	\$ 152.73
1	79933	APS1250 UPS	\$	667.44	\$ 667.44
1	ANL80	80A ANL Fuse	\$	15.00	\$ 15.00
1	ANL500	500A ANL Fuse	\$	20.00	\$ 20.00
2	ANLFH	ANL Fuse Holder	\$	15.00	\$ 30.00
1	371756	#0 Power Cable	\$	82.35	\$ 82.35
4	MAGNALUG	90 Degree Battery Lug	\$	3.36	\$ 13.44
1	CUR438	180 Degree Battery Lug	\$	15.00	\$ 15.00
1	CBLMGMT	Cable Management	\$	450.00	\$ 450.00
1	GROUNDING	Buss Bar & Grounding	\$	450.00	\$ 450.00
1	J9726A	HP2920-24G 24 Port Network Switch	\$	1,225.20	\$ 1,225.20
2	J4859C	1000Base-LZ-SFP 1310nm 10 KM	\$	72.64	\$ 145.28
32	SVC2014	Setup and Programming/Staging	\$	108.50	\$ 3,472.00
42	SVC2014	Installation/Optimization	\$	108.50	\$ 4,557.00

Sub-Total \$ 24,326.02

FD/PO HQ RECEIVER SITE

		Rptr AS-IP 470-520M 2Rx Only ACDC/12- (TBAS071 Software			
1	TB9444H3200000J4AC	License Included)	\$	7,746.03	\$ 7,746.03
1	TBAS050	SFE P25 Common Air Interface (CAI)	\$	3,942.27	\$ 3,942.27
2	MO-8629	Stage,Tune,Align	\$	108.50	\$ 217.00
2	574623	170ah Telecom Battery	\$	562.64	\$ 1,125.28
1	533434	Battery Backup Charger	\$	152.73	\$ 152.73
1	79933	APS1250 UPS	\$	667.44	\$ 667.44
1	ANL80	80A ANL Fuse	\$	15.00	\$ 15.00
1	ANL500	500A ANL Fuse	\$	20.00	\$ 20.00
2	ANLFH	ANL Fuse Holder	\$	15.00	\$ 30.00
1	371756	#0 Power Cable	\$	82.35	\$ 82.35
4	MAGNALUG	90 Degree Battery Lug	\$	3.36	\$ 13.44
1	CUR438	180 Degree Battery Lug	\$	15.00	\$ 15.00
1	MISC	Antenna Mounting Kit	\$	650.00	\$ 650.00
1	CBLMGMT	Cable Management	\$	450.00	\$ 450.00
1	GROUNDING	Buss Bar & Grounding	\$	450.00	\$ 450.00
1	J9726A	HP2920-24G 24 Port Network Switch	\$	1,225.20	\$ 1,225.20
2	J4859C	1000Base-LZ-SFP 1310nm 10 KM	\$	72.64	\$ 145.28

32	SVC2014	Setup and Programming/Staging	\$	108.50	\$	3,472.00
42	SVC2014	System Installation/Optimization	\$	108.50	\$	4,557.00
		Sub-Total			\$	24,976.02

Tower Road Site P25 Simulcast Repeater PD/FD

Rptr P25 470-520MHz. 100W ACDC12/12

TBAS061 & TBAS062 Software License Included

1	TB9435H3M00000J4BC		\$	15,633.81	\$	15,633.81
	TBAS067	SFE P25 Common Air Interface (CAI)	\$	3,942.27	\$	-
1	76282	SFE Digital Fixed Station Interface	\$	438.21	\$	438.21
1	76282	Sinclair Duplexer	\$	1,221.00	\$	1,221.00
1	0112004B04	N-Male-N- Male Jumper	\$	93.60	\$	93.60
1	0112004U04	N-Male-BNC- Male Jumper	\$	71.90	\$	71.90
		Rptr P25 440-480M 100W ACDC12/12				
		TBAS061 & TBAS062 Software License Included				
1	TB9435H2M00000J4BC		\$	15,633.81	\$	15,633.81
1	76282	Sinclair Duplexer	\$	1,221.00	\$	1,221.00
1	0112004B04	N-Male-N- Male Jumper	\$	93.60	\$	93.60
1	0112004U04	N-Male-BNC- Male Jumper	\$	71.90	\$	71.90
1	437497	Shelving	\$	181.40	\$	181.40
6	574623	170ah Telecom Battery	\$	562.64	\$	3,375.84
1	533434	Battery Backup Charger	\$	152.73	\$	152.73
1	79933	APS1250 UPS	\$	667.44	\$	667.44
1	ANL80	80A ANL Fuse	\$	15.00	\$	15.00
1	ANL500	500A ANL Fuse	\$	20.00	\$	20.00
3	ANLFH	ANL Fuse Holder	\$	15.00	\$	45.00
1	371756	#0 Power Cable	\$	82.35	\$	82.35
10	MAGNALUG	90 Degree Battery Lug	\$	3.36	\$	33.60
2	CUR438	180 Degree Battery Lug	\$	15.00	\$	30.00
40	TF3-4	4 AWG TelcoFlex III Red	\$	2.69	\$	107.60
40	TF3-4	4 AWG TelcoFlex III Gray	\$	2.69	\$	107.60
4	CPGIRD/BLKBATID	Battery ID Heatshrink	\$	12.50	\$	50.00
2	R5MANL2SN	Distribution Block Power	\$	33.60	\$	67.20
2	V12DB-1424	Distribution Block Ground	\$	33.60	\$	67.20
1	484499	Rackmount AC Power Strip-12 outlet	\$	72.72	\$	72.72
1	J9726A	HP2920-24G 24 Port Network Switch	\$	1,225.20	\$	1,225.20
2	J4859C	1000Base-LZ-SFP 1310nm 10 KM	\$	72.64	\$	145.28
1	ENVIROMUX-MINI-LXOB	Environmental Monitoring Server	\$	455.00	\$	455.00
1	ENVIROMUX-TRH-E7	Temperature/Humidity Sensor	\$	68.00	\$	68.00
7	ENVIROMUX-LD-LC1-5	Liquid Sensor	\$	21.00	\$	147.00
1	ENVIROMUX-M-DCS	Door Contact Sensor	\$	6.00	\$	6.00
1	X-301-E	Web Relay Dual	\$	272.93	\$	272.93
1	CBLMGMT	Cable Management	\$	450.00	\$	450.00
1	GROUNDING	Buss Bar & Grounding	\$	450.00	\$	450.00
1	SITEHRDWR	Site Hardware	\$	600.00	\$	600.00
16	SVC2014	Setup and Programming/Staging	\$	108.50	\$	1,736.00
30	SVC2014	System Installation/Optimization	\$	108.50	\$	3,255.00

Sub-Total \$ 48,364.92

PD FD Simulcast Repeaters at Heritage Heights

Rptr P25 470-520MHz, 100W ACDC12/12

TBAS061 & TBAS062 Software License Included

1	TB9435H3M00000J4BC		\$	15,633.81	\$	15,633.81
1	TBAS067	SFE P25 Common Air Interface (CAI)	\$	3,942.27	\$	3,942.27
1	76282	SFE Digital Fixed Station Interface	\$	438.21	\$	438.21
1	76282	Sinclair Duplexer	\$	1,221.00	\$	1,221.00
1	0112004B04	N-Male-N- Male Jumper	\$	93.60	\$	93.60
1	0112004U04	N-Male-BNC- Male Jumper	\$	71.90	\$	71.90
		Rptr P25 440-480M 100W ACDC12/12				
		TBAS061 & TBAS062 Software License Included				
1	TB9435H2M00000J4BC		\$	15,633.81	\$	15,633.81
1	76282	Sinclair Duplexer	\$	1,221.00	\$	1,221.00
1	0112004B04	N-Male-N- Male Jumper	\$	93.60	\$	93.60
1	0112004U04	N-Male-BNC- Male Jumper	\$	71.90	\$	71.90
1	8629	Shelving	\$	22.00	\$	22.00
6	574623	170ah Telecom Battery	\$	562.64	\$	3,375.84
1	533434	Battery Backup Charger	\$	152.73	\$	152.73
1	79933	APS1250 UPS	\$	667.44	\$	667.44
1	ANL80	80A ANL Fuse	\$	15.00	\$	15.00
1	ANL500	500A ANL Fuse	\$	20.00	\$	20.00
2	ANLFH	ANL Fuse Holder	\$	15.00	\$	30.00
1	371756	#0 Power Cable	\$	82.35	\$	82.35
10	MAGNALUG	90 Degree Battery Lug	\$	3.36	\$	33.60
1	CUR438	180 Degree Battery Lug	\$	15.00	\$	15.00
2	ANT500F6	Telewave 6 dB Gain Omni	\$	1,027.82	\$	2,055.24
1	565018	20' Side Arm Mast	\$	181.80	\$	181.80
200	329307	7/8" Transmission Line	\$	6.54	\$	1,308.00
2	337942	Lightning Arrestor	\$	113.40	\$	226.80
1	484499	Rackmount AC Power Strip-12 outlet	\$	72.72	\$	72.72
4	303572	7/8" DM-Female Connector	\$	30.87	\$	123.48
4	353041	7/8" N-Male Connector	\$	32.21	\$	128.84
2	46568	N-Male-N-Male Superflex Jumper	\$	73.07	\$	146.14
2	309873	7/8" Ground Kit	\$	22.82	\$	45.64
1	341596	DDB 60" Indoor Cabinet	\$	1,296.00	\$	1,296.00
1	J9726A	HP2920-24G 24 Port Network Switch	\$	1,225.20	\$	1,225.20
2	J4859C	1000Base-LZ-SFP 1310nm 10 KM	\$	72.64	\$	145.28
1	ENVIROMUX-MINI-LXOB	Environmental Monitoring Server	\$	455.00	\$	455.00
1	ENVIROMUX-TRH-E7	Temperature/Humidity Sensor	\$	68.00	\$	68.00
3	ENVIROMUX-LD-LC1-5	Liquid Sensor	\$	21.00	\$	63.00
2	ENVIROMUX-M-DCS	Door Contact Sensor	\$	6.00	\$	12.00
1	X-301-E	Web Relay	\$	272.93	\$	272.93
1	CBLMGMT	Cable Management	\$	450.00	\$	450.00
1	GROUNDING	Buss Bar & Grounding	\$	450.00	\$	450.00
1	SITEHRDWR	Site Hardware	\$	1,500.00	\$	1,500.00
10	SVC2014	Setup and Programming/Staging	\$	108.50	\$	1,085.00
70	SVC2014	System Installation/Optimization	\$	108.50	\$	7,595.00
50	SVC2014	Antenna Install Tower Labor	\$	108.50	\$	5,425.00

Sub-Total

\$ 67,166.13

		Tower Road GPS Disciplined Master Oscillator		
1	SecureSync	Spectracom Master Oscillator SecureSync	\$ 5,803.00	\$ 5,803.00
1	MOA5901	Cat6A patch cable- 7'	\$ 5.59	\$ 5.59
200	59520	Times Microwave Systems - 3/8" LMR400 Coaxial Cable	\$ 0.99	\$ 198.00
4	338985	Times Microwave Systems - N Male Hex/Knurl Connector	\$ 10.80	\$ 43.20
1	310778	Times Microwave Systems - Ground Kit for LMR-400	\$ 25.20	\$ 25.20
1	329727	GPS Timing Antenna, 26dB Amplifier	\$ 202.50	\$ 202.50
1	300951	GPS ANTENNA MOUNT	\$ 22.32	\$ 22.32
1	354405	GPS Lightning Arrestor	\$ 25.35	\$ 25.35
2	17232	BNC/F Tee Adaptor	\$ 9.75	\$ 19.50
2	288028	dbSpectra, Inc. - 50 OHM Load BNC 1/4W	\$ 8.10	\$ 16.20
4	448902	3' RG142P Jumper BNCM - BNCM	\$ 36.83	\$ 147.32
4	SVC2018	Staging	\$ 108.50	\$ 434.00
20	SVC2018	Installation	\$ 108.50	\$ 2,170.00

Sub-Total

\$ 9,112.18

		Heritage Heights GPS Disciplined Master Oscillator		
1	SecureSync	Spectracom Master Oscillator SecureSync	\$ 5,803.00	\$ 5,803.00
1	MOA5901	Cat6A patch cable- 7'	\$ 5.59	\$ 5.59
200	59520	Times Microwave Systems - 3/8" LMR400 Coaxial Cable	\$ 0.99	\$ 198.00
4	338985	Times Microwave Systems - N Male Hex/Knurl Connector	\$ 10.80	\$ 43.20
1	310778	Times Microwave Systems - Ground Kit for LMR-400	\$ 25.20	\$ 25.20
1	329727	GPS Timing Antenna, 26dB Amplifier	\$ 202.50	\$ 202.50
1	300951	GPS ANTENNA MOUNT	\$ 22.32	\$ 22.32
1	354405	GPS Lightning Arrestor	\$ 25.35	\$ 25.35
2	17232	BNC/F Tee Adaptor	\$ 9.75	\$ 19.50

**All pricing as per our current Massachusetts ITT57
State Contract.
Manufacturers Warranty Applies
Delivery: Within 12 weeks A.R.O
Quote valid for 120 days from above date**

- The Police and Fire emergency radio communications system is comprised of many remote radio sites located throughout the town to provide adequate coverage for police officers and firefighters operating in the field.
- The current analog radio system depends on leased Verizon copper circuits to operate and provide connectivity to the remote radio sites.
- Verizon has discontinued support for these older copper circuits and is in the process of phasing them out.
- The copper circuits in use now are prone to failure and service disruptions to the police and fire radio systems on a regular basis.
- These failures have resulted in the radio systems not operating and impeding communications from police and fire units in the field.
- The current police and fire radio system infrastructure and dispatch console has become end of life and must be replaced, many of this equipment has been in constant service since 1999.
- Replacement parts are more and more difficult to obtain.
- New infrastructure requires an IP connectivity which can only be obtained with fiber optic or microwave types of linkage.

Article 6: Public Safety Radio Infrastructure

Saugus Public Safety Radio Issues

2/2/18-2/3/18 (2 days)

Tower Hill Mariah Rd (Main Site)

Issue: certain areas in town Police Officers unable to hear or transmit
Both Verizon and All-Comm needed... Copper lines failed.
Repaired.

3/2/2018

Resco site

Repeater Down.

Issue: Police Radios unreadable on east side/heavy static
All-Comm-Verizon called –copper lines failed.
Repaired

3/9/2018

Resco site

Issue: Fire Department cannot hear dispatch
All-Comm-Verizon called.
Repeater down/copper lines failed.
Repaired

3/12/2018

Resco site 2AM

Issue: Dispatch Radio constant static cannot hear Police officer transmitting
All-Comm notified.
Disabled repeater to stop static, but reduced radio coverage for officers.
10:00am
All-Comm re-activated Resco repeater/copper lines failing
Repaired

3/17-3/18-3/19 2018 (chasing issues for 3 days)

Resco Site

Issue: Loud static/radios both department intermittent on transmitting and receiving.
Radio transmissions working then failing.
All-Comm-Verizon notified.
Verizon checked lines/copper lines failing- (**side note**: not many copper lines left to jump to or use)
Repaired.

Summary:

It appears the Verizon copper lines are failing at a steady pace. A Verizon response for repair is a day on average.

The weather also appears to have an impact on the system. Water getting into the copper lines causing static and failure.

The transmission lines from the station to the repeater sites/ Tower Hill, Sq. 1, Heritage Heights, Resco are in need of upgrading.

The reality of the situation is that our radio equipment and repeater lines are at its end of life approx. 20years old.

Verizon is phasing out copper lines and the repair of them.

At any time our repeater sites could fail completely and our police/fire radio system will be in inoperable.

Also,

There is a cost for diagnosis and repair of these sites and lines.

At this time the cost is approx. \$2,500.00.