

Change Order No. 14
Date: April 20th, 2021
Project Name: Collin County Digital Upgrade
Customer Name: Collin County
Customer Project Mgr: Capt. Chris Havey

The purpose of this Change Order: Document changes to the contract products and services

<p>This Change Order provides for changes to products and services as listed:</p> <ul style="list-style-type: none"> • Define the BDA system replacement for the CC Jail and Courthouse • Add Antenna system parts and services for Juvenile detention book-in area • Add ADP Encryption licenses for the radio consoles • Descope select technical training courses • Reallocate the descope training course credits towards the purchase of Security Monitoring and Remote Security Update Services for a single year. Any remaining funds will be used towards a Radio Repair Bank Balance. • Adjust project completion date <p>Total Value = \$388,753.48 Total Contract change (Net) = \$0.00</p>
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Contract # 00208254 **Contract Date:** December 2016

In accordance with the terms and conditions of the contract identified above between Collin County Sheriff's Office and Motorola Solutions, Inc., the following changes are approved:

Contract Price Adjustments

This Change Order (#14)	\$0.00
Original Contract Value:	\$10,707,781.00
Previous Change Order amounts for Change Order numbers <input type="text" value="00"/> through <input type="text" value="13"/> :	\$773,156.03
New Contract Value	\$11,480.937.03

Completion Date Adjustments

Original Completion Date:	20 April 2018
Current Completion Date prior to this Change Order:	28 February 2021
New Completion Date:	31 July 2021

Changes in Equipment: *(additions, deletions or modifications)* Include attachments if needed

Add the following equipment:

- 1) BDA system for the Collin County Jail and Courthouse (see attached)
- 2) Add Antenna system for Juvenile detention book-in area (see attached)
- 3) Add ADP Encryption licenses for the radio consoles (below) = \$6,770.00

QTY	NOMENCLATURE	DESCRIPTION
1	T8063	MCC 7500 SECURE VPM UPGRADE
8	CA00245AA	ADD: ADP ALGORITHM
2	T7586	KVL 4000 FLASHPORT UPGRADE
2	CA01635AA	ENH: SW UPGRADE TO CURRENT ASTRO 25
2	CA01641AA	ADD: ADP PRIVACY

Changes in Services: *(additions, deletions, or modifications)* Include attachments if needed

Add the following services:

- 1) BDA system for the Collin County Jail and Courthouse (see attached)
- 2) Add Antenna system for Juvenile detention book-in area (see attached)
- 3) Descope the following select technical training courses (below)
- a) 1st echelon radio tech training; b) System Tech resident training; c) System Manager training
- 4) Reallocate the descoped training course credits towards the purchase of Security Monitoring and Remoto Security Update Services for a single year. Any remaining funds will be used towards a Radio Repair Bank Balance

Schedule Changes: *(describe change or N/A)*

Schedule has been updated to reflect current implementation timing and Customer Requested Final Acceptance Date.

Pricing Changes: *(describe change or N/A)*

All prices and quantities are NET Sum values (original +/- adds and deletions) and include equipment and services. Total for this Change Order Request is: \$0.00 per attached matrix.

Customer Responsibilities: *(describe change or N/A)*

Review requested changes in this document, sign and return to Motorola for contract execution.

Payment Schedule for this Change Order:

(describe new payment terms applicable to this change order)

Not Applicable

Unless amended above, all other terms and conditions of the Contract shall remain in full force. If there are any inconsistencies between the provisions of this Change Order and the provisions of the Contract, the provisions of this Change Order will prevail.

IN WITNESS WHEREOF the parties have executed this Change Order as of the last date signed below.

Motorola Solutions, Inc.

Collin County

By: 

By: _____

Printed Name: MARC JOHNSON

Printed Name: _____

Title: Regional Services Mgr

Title: _____

Date: 5/14/21

Date: _____

Reviewed by: 

Date: _____

Motorola Solutions, Inc. Project Manager

Collin County Sheriff's Office					
C/C DESCRIPTION	CCSO Total	Equipment	Services	COMMENTS	
1 Collin County Courthouse and Jail Bi-Directional Amplifier (BDA) Replacements including Equipment and Services. Total cost is \$378,968.82 which is to be applied towards the existing contract committed cost identified as "Supplemental Coverage Solution, Bidirectional Amplifiers (not to exceed a total of \$500,000.)"	\$0.00	\$0.00	\$0.00	Total amount = \$378,968.82 applied to \$500,000 "Supplemental Coverage Solution fund". Remaining fund balance = \$121,031.18	
2 Add antenna system parts and services for county owned mobile control station in Juvenile detention Book-ins area. Total cost of \$3,014.66 is to be applied towards the existing contract committed cost identified as "Supplemental Coverage Solution, Bidirectional Amplifiers (not to exceed a total of \$500,000.)"	\$0.00	\$0.00	\$0.00	Total amount = \$3,014.66 applied to \$500,000 "Supplemental Coverage Solution fund". Remaining fund balance = \$118,016.52	
3 Current balance in the "Supplemental Coverage Solution, Bidirectional Amplifiers (not to exceed \$500,000)" is \$118,016.52	\$0.00	\$0.00	\$0.00		
4 Add ADP Encryption licenses for 8 Dispatch Consoles to enable interoperability with city of McKinney ADP encrypted radio system	\$6,770.00	\$6,770.00	\$0.00		
5 Remove / descope Technical Training Services per customer request. Total Credit (\$62,858) Includes the following courses: System tech resident course (except course AST1038 will be provided); 1st echelon radio tech course; System Manager course	(\$62,858.00)	\$0.00	(\$62,858.00)		
6 Reallocate the descope training course credits towards the purchase of Security Monitoring and Remote Security Update Services for a single year. Any remaining funds will be used towards a Radio Repair Bank Balance.	\$56,088.00	\$0.00	\$56,088.00		
7 Extend project completion date to 7-31-2021	\$0.00	\$0.00	\$0.00		
	This Change Order #014 Total (NET)	\$0.00	\$6,770.00	(\$6,770.00)	
	Section 9 System Pricing - CCSO Purchase Order (#215130) Total	\$10,707,781.00			
	Previous Change Order Total	\$773,156.03			
	New Contract Value	\$11,480,937.03			
	Contract Delta:	\$773,156.03			
	CCSO CO1 Total	\$9,418.80			
	CCSO CO2 Total	(\$177,039.74)			
	CCSO CO3 Total	(\$115,159.00)			
	CCSO CO4 Total	\$17,555.00			
	CCSO CO5 Total	\$16,166.67			
	CCSO CO6 Total	\$644,394.00			
	CCSO CO7 Total	\$45,820.48			
	CCSO CO8 Total	\$55,524.17			
	CCSO CO9 Total	\$16,059.43			
	CCSO CO10 Total	\$237,913.68			
	CCSO CO11 Total	\$18,935.48			
	CCSO CO12 Total	\$3,567.06			
	CCSO CO13 Total	\$0.00			



Collin County Courthouse and Jail BDA Replacement

12/1/20

The following provides the Pricing and Statement of Work for the Public Safety BDA replacement systems for the Collin County Courthouse and Jail. The work will be performed by Motorola Solutions Inc (MSI) via their subcontracted business partner MCA (formerly Crosspoint Communications.)

The following price quote is to be applied toward the existing contract cost identified as “Supplemental Coverage Solutions in contract Pricing section 13.17, Contract no. is 2016-020 between Collin County and MSI. “Supplemental Coverage Solution, Bidirectional Amplifiers (not to exceed a total of \$500,000), beyond which any in-building amplifiers will be a Collin County responsibility. “

Upon approval, this proposal will be submitted via the normal Change Order process for approval by the County and MSI.

Description	Price
Equipment	\$140,536.28
Installation, Optimization and Testing (DAQ and RSSI)	\$223,663.31
Warranty - 1 year	\$5,538.46
Total	\$369,738.05
*OPTIONAL DECOMMISSIONING - Removal of legacy BDA system	\$9,230.77
Total (with Option)	\$378,968.82

Assumptions and Exclusions:

1. Decommissioning Option -This is best effort and practice for the removal of existing feed line. (There may be instances where leaving this in place is deemed safer than removal)
2. New A/C electrical and grounding are excluded. Adequate electrical A/C power and site grounding to support the requirements of the system described are the responsibility of the customer
3. Any site/facility upgrades, or modifications are excluded and are the responsibility of the customer.
4. Any FCC licensing filings are excluded and are the responsibility of the customer or FCC license owners
5. Any required system interconnections not specifically listed are excluded such as Ethernet links or phone circuits
6. MSI is not responsible for radio interference caused or received by this system. Should the system experience interference, MSI can be contracted to investigate the source and mitigate the issue.

System Description

700/800MHz System

Operational Overview

The Bi-Directional Amplifier (BDA) System is used to provide radio system coverage within a facility that does not allow for radio system signal penetration. The network itself consists of a donor antenna network based from an antenna placed on the rooftop of the structure that collects the signal from the outside source and feeds it to an amplifier that boosts the signal and then sends it to a distributed antenna system within the buildings. The distribution network extends the outside signal to portable units operating within the structure. In the opposite direction, thus the term “bi-directional”, the signal is collected by the distribution system and sent to the amplifier, and then broadcast back to the system over the donor antenna network. Many factors need to be determined in the development of these networks to determine the size and cost of a system. Some of these factors include:

- Amount of signal level available outside of the building that can be collected by the BDA
- The area inside the structure that requires radio system coverage.
- The building architecture and its ability to block radio signals

Crosspoint Communications Statement of Work

Collin County Courthouse and Jail BDA Replacement

Crosspoint Communications Responsibilities

General Understanding

This section describes the tasks that will be required to complete this project. It discusses Crosspoint’s responsibilities and what responsibilities would be required of the customer.

All materials will be stored at one of Crosspoint’s facilities and transported to the site as needed. Crosspoint will be responsible for all shipping and transportation costs as part of this proposal

General

1. Perform all work and tasks required to install the products according to manufacturers' recommendations during installation
2. Administer safe work procedures for installation
3. Ensure the proper disposal of all debris generated from installation
4. Schedule the implementation in agreement with MSI and Collin County.
5. Coordinate the activities of all Crosspoint Communications subcontractors under this contract.
6. All work will be performed during normal working hours (Monday through Friday, 8AM to 5PM).
7. Crosspoint Communications will use the Motorola R56 Manual, Standards and Guidelines for Communication Sites as its installation guide in all situations where the customer specifications and local codes do not apply. These guidelines will be adhered to as closely as possible as allowed by the existing sites and equipment. The R56 Manual is available for review upon request. This quotation does not include bringing existing equipment and sites up to R56 standards.
8. All grounding wire, stainless steel bolts, lugs, and other small grounding hardware will be supplied by Crosspoint Communications.
9. Any work that is required to complete this project not specifically described in this statement of work will be considered above the scope of this proposal and subject to re-quotation
10. Perform testing of equipment

Implement the RF distribution network. This will include the following 700/800MHz System:

Provide and install coaxial cable between the Splitter's and the designated locations for each distribution antenna as specified in the system design provided (filename: "Collin County Courthouse & Jail Design V1.3")

Install all of the cable terminations, signal splitters, cable securing hardware.

Apply power to the system and perform system optimization that will include recording all signal levels at each antenna site.

Once the system has been completely implemented and fully tested by Crosspoint, Crosspoint Communications, along with representatives of Collin County and Motorola Solutions Inc. shall participate in a "Coverage Demonstration Procedure" (CDP). These procedures are described later in this section. Upon final acceptance, the system will be commissioned, and customer beneficial use shall begin

Collin County Responsibilities

Crosspoint will require access throughout the building in the different locations affected by the installation. Collin County will need to provide clear access to each of these locations during normal business hours.

Collin County will need to authorize the placement of the different system components. Crosspoint will review the installation schedule and responsibilities.

Collin County and Motorola Solutions Inc. will need to provide representatives to participate in the Coverage Demonstration Procedure.

It will be necessary to secure a letter of permission from the Collin County owner or system administrator prior to installation of the BDA.

Single point Ground within 6' of BDA installation

15A AC Circuit within 6' of BDA installation

If a debris collection device is necessary for ceiling tile removal additional labor charges will apply.

1. Provide all authorizations to perform the installation services.
2. Obtain and provide all approvals, permits, and agreements as required at all sites and locations.
3. Provide adequate space for equipment to be installed.
4. Provide primary electrical power at the site.
5. Provide any new roof penetrations required by the project unless they are outlined in the Crosspoint Communications statement of work section.
6. Provide Point of Contact to monitor and answer questions related to project.
7. Sign "Installation Completion Form" upon satisfactory completion of project.
8. Provide all buildings, equipment shelters, and towers required for system installation
9. Ensure communications sites meet space, grounding, power, and connectivity requirements for the installation of all equipment.
10. Obtain all licensing, site access, or permitting required for project implementation.
11. Provide any specialized cable management systems required by the project.
12. Provide all Cable run pathways.
13. Provide all fire stops and fireproof sleeves.

Assumptions

Crosspoint Communications has developed a comprehensive engineered solution contained within this proposal with the best intentions of satisfying the needs of MSI and Collin County .

Certain assumptions were made for Crosspoint Communications to design this system. The following is a list of site requirements and design assumptions for the system.

1. All existing sites or equipment locations will have enough space available for the system described as required/specified by R56.
2. All existing sites or equipment locations will have adequate electrical power in the proper phase and voltage and site grounding to support the requirements of the system described.
3. Any site/location upgrades or modifications are the responsibility of the customer.
4. Approved FCC licensing are the responsibility of the end user, Collin County .
- 5 Any required system interconnections not specifically outlined here will be provided by Collin County. These may include dedicated phone circuits, microwave links, Ethernet or other types of connectivity.
7. Crosspoint Communications is not responsible for interference caused or received by the Crosspoint Communications provided equipment. Should the BDA system experience interference, Crosspoint Communications can be contracted to investigate the source and recommend solutions to mitigate the issue.

Amplifier Equipment

CriticalPoint™ Public Safety Bi-Directional Amplifier

RX-7W22 Class A PS 700/800MHz BDA

FEATURES

- Digital/programmable utilizing FPGA
- Supports public safety 700/800MHz in single band or dual band version
- Supports P25 P1/P2 digital and conventional analog communications simultaneously
- Supports FirstNet™ LTE band 14
- Single band versions include license to switch from original band to alternate band
- Single band can be upgraded to dual band via license key
- Each band supports up to 32 channels
- 2W output power for each band
- Channelized Auto Gain Control (AGC) / Channelized uplink squelch
- Built-in mandatory isolation test to prevent BDA oscillation
- Auto shutdown with alarm upon oscillation detection
- Web based GUI for intelligent configuration, SNMP supported
- NFPA compliant dry contact alarms, NEMA 4X enclosure
- FCC: PX8RX-7W22, IC: 11919A-RX7W22, UL: SGSNA/16/GZ/00003

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Specifications

Electrical			700MHz	800MHz
Frequency Range, Uplink	MHz		US: 788-805, CA: 798-806	806-824
Frequency Range, Downlink	MHz		US: 758-775, CA: 768-776	851-869
Channel Bandwidth	KHz		12.5/25/75+10MHz (LTE, US)	12.5/25/75
Number of Channels			US: 32+1 (LTE), CA: 32	32
Total Output Power, Uplink	dBm		25	
Total Output Power, Downlink	dBm		33	33
Maximum System Gain	dB		90	90
Gain Adjustment Range (1dB step)	dB		0-30	0-30
Pass Band Ripple, p-p	dB		□ 5	□ 5
Uplink Noise Figure	dB		□ 5	□ 5
System Group Delay	Bandwidth: 12.5KHz	□ sec	□ 35	□ 35
	Bandwidth: 25KHz		□ 27	□ 27
	Bandwidth: 75KHz		□ 15	□ 15
	Bandwidth: 10MHz (LTE)		□ 6.5	□ 6.5
Out-of-Band Suppression	Bandwidth: 12.5KHz	dBc	≥ 80 @ filter center + 75KHz	≥ 80 @ filter center + 75KHz
	Bandwidth: 25KHz		≥ 80 @ filter center + 75KHz	≥ 80 @ filter center + 75KHz

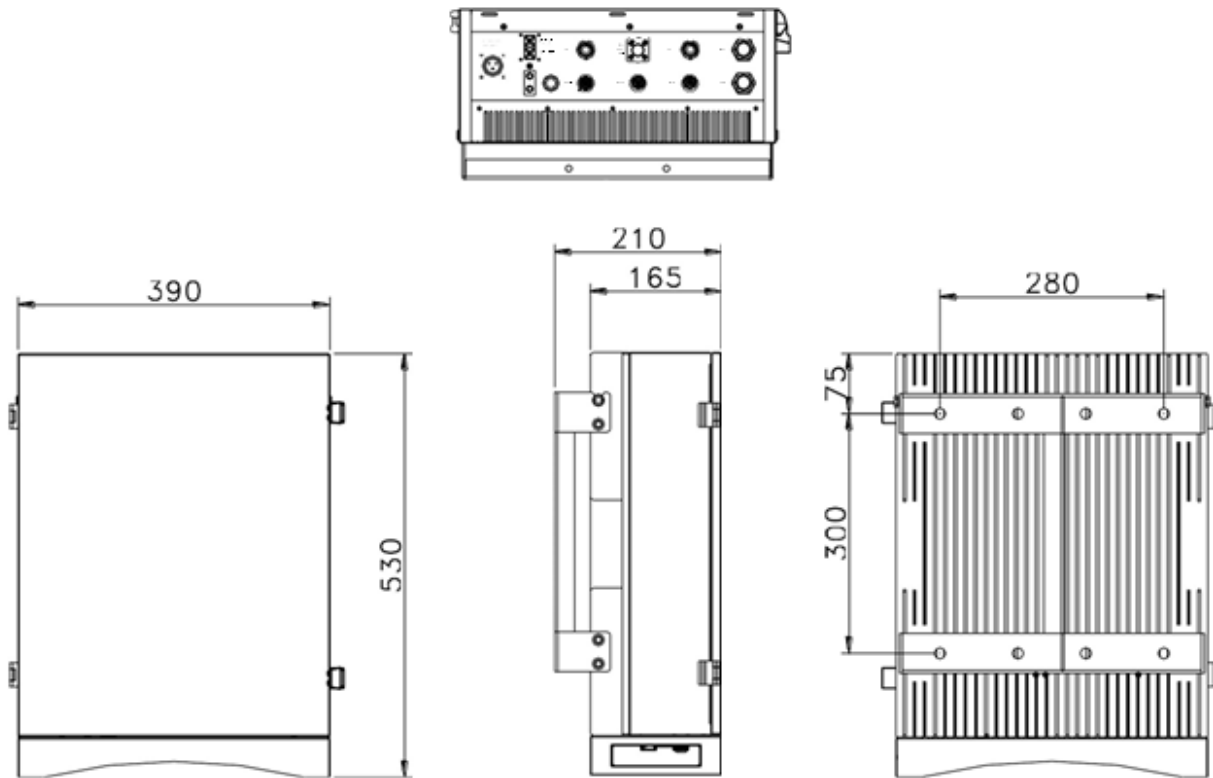
	Bandwidth: 75KHz		≥ 80 @ filter center + 200KHz	≥ 80 @ filter center + 200KHz
	Bandwidth: 10MHz (LTE)		≥ 60 @ filter edge + 0.2MHz	≥ 60 @ filter edge + 0.2MHz
Intermodulation		dBm	□ -13	□ -13
Spurious	9kHz to 1GHz	dBm	FCC Compliance	FCC Compliance
	1GHz to 12.75GHz	dBm		
Absolute Maximum RF Input Power		dBm	10	10
Input VSWR			□ 1.5	□ 1.5
Impedance		□□	50	50

Mechanical

Dimensions, H x W x D		in(mm)	20.9 x 15.4 x 8.3 (530 x 390 x 210)	
Weight (without bracket)		lb(kg)	50.7 (23)	
Power Supply		VAC	100-240/47-63Hz	
		VDC	-38 ~ -72	
Power Consumption	Single band	W	80	
	Dual band	W	100	
Enclosure Cooling			Convection	

RF Connectors		N-Female
Test Port		SMA, -22dB
Maximum Input for Dry Contact Port		24VDC, 1A / 110VAC, 0.5A
Operating Temperature	°F (°C)	-27 to +140 (-33 to +60)
Operating Humidity		□ 95%
Environmental Class		NEMA 4X
MTBF	hr	≥ 100,000 @ 77 °F

Outline Drawing



System Acceptance

Testing will comply with those outlined by the adopted fire code and the AHJ

As part of this proposal, Crosspoint Communications Inc. is providing a 95% coverage guarantee at a Delivered Audio Quality (DAQ) level of 3.4. The following table describes the subjective performance description as defined in the TIA TSB-88 Bulletin.

Testing will comply with those outlined by the adopted fire code and the AHJ

Delivered Audio Quality (DAQ) Scale Definitions

Delivered Audio Quality	Subjective Performance Description
DAQ 5.0	Speech easily understood.
DAQ 4.5	Speech easily understood. Infrequent Noise/Distortion.
DAQ 4.0	Speech easily understood. Occasional Noise/Distortion.
DAQ 3.4	Speech understandable with repetition only rarely required. Some Noise/Distortion.
DAQ 3.0	Speech understandable with slight effort. Occasional repetition required due to Noise/Distortion.
DAQ 2.0	Understandable with considerable effort. Frequent repetition due to Noise/Distortion.
DAQ 1.0	Unusable, speech present but unreadable.

RF coverage performance will be demonstrated to ensure that the coverage extension system provides a DAQ level as stated throughout the specified coverage area. The procedure is explained in the following paragraphs.

Coverage demonstration shall be considered complete and successful when the ability to send and receive intelligible voice communications over a portable radio inside each facility and the fixed test team's stationary location has been demonstrated as defined in the Coverage Demonstration Procedure (CDP).

In the event that the Coverage Demonstration does not demonstrate the required level of coverage, Crosspoint will, with the cooperation of Motorola Solutions Inc. , optimize the system and/or provide all additional labor and materials required to meet the performance criteria as defined in this proposal.

The following is required for the CDP:

Resources: Two Motorola Solutions Inc. Representatives, two Crosspoint Representatives

Equipment: Building plans with mutually agreed upon test points marked, two fully charged portable radios.

Coverage Demonstration Procedure (CDP)

A Collin County representative and Motorola and Crosspoint representative will be located at the Collin County dispatch center or control point. This team will be responsible for controlling the CDP and completing the Acceptance Test Check Sheets. This team will be called the Stationary Team.

The second Collin County, Motorola and Crosspoint representative will each be equipped with one portable radio. This team will be responsible to initiate and/or receive calls from each of the test points in the facility. This team will be called the Mobile Team.

Test calls will be initiated from the mobile team once they have reached an agreed upon test point. The test at each point will consist of the following transmissions:

- Mobile Team ---“This is mobile team testing, one two, three, four, five at location XYZ, do you read me”, “Over”
- Stationary Team --- “Affirmative, testing, one, two, three, four, five. Received your message at DAQ X.X,”, “Over”
- Mobile Team ---“Mobile team received your message at DAQ X.X,”
- Move to the next location.

The stationary team will be responsible for all documentation for both teams.

Failed Test Points

If a transmission fails in either direction, the mobile team will move 2-5' from the previous test position and the test point procedure will be repeated. If the test point fails this second attempt, it will be noted as a failed test point. A failed test point is any point that is graded at less than a DAQ level of 3.4 in either direction. Transmissions including the test message will be the only transmissions that are graded.

Proof of 95% Reliability

Test points will be determined during the acceptance-testing phase of the implementation. Locations will be evenly distributed throughout the area.

Collin County and Motorola Solutions Inc. will supervise the entire test. Coverage will be tested and verified for both talk-in and talk-out directions. Extrapolation of results from tests in one direction to reach conclusions about the other direction will not be acceptable. A failure in either the inbound or outbound direction will constitute a failed test location.

A successful test point shall be one that provides delivered audio quality of at least DAQ 3.4 in both the inbound and outbound directions. A failure in either the inbound or the outbound direction at a test location will constitute a failed test location. If the first test call (inbound or outbound) is unsuccessful, the field team will be allowed to move up to 5' and a retry will be permitted. If the second attempt to communicate fails that test location will be deemed a failure.

The following information will be submitted to Collin County and Motorola Solutions Inc. at the conclusion of the acceptance testing previously described. Once this document is signed the warranty period shall begin.

SeeHawk Post Grid Testing of the Jail and Courthouse will be performed to document RSSI signal levels throughout the facilities.

BDA System Acceptance Document

Collin County approves and accepts the Collin County Courthouse and Jail BDA replacement system as implemented in its present form. The System Acceptance Test Plan has been successfully completed and the customer has commenced beneficial use of the system.

Collin County
Representative

Crosspoint Communications
Representative

Signature

Signature

Position

Title

Date

Motorola Solutions Inc.
Representative

Additional Witness

Signature

Signature

Position

Position

Date

Date

System Warranty

All manufacturer warranties apply. New equipment provided by Crosspoint features a full one-year parts and labor warranty from the factory. Crosspoint's on-site warranty service is offered for 90 days after system acceptance. Copies of the manufacturer's warranty are available upon request.

Service agreement on equipment can be written to cover all infrastructures on a 24 x 7 basis. If Motorola Solutions Inc. so, chooses after the warranty period has expired, a maintenance agreement will be developed to cover malfunctions, electronic components, and failure. Negligence, abuse and Acts of God are not covered under a service agreement.

Crosspoint Communications will provide Service on the equipment with parts support from the factory. Crosspoint's maintenance during the warranty period is performed between the hours of 8AM and 5PM Monday through Friday

What the Warranty Does Not Cover

- Defects or damage resulting from use of the Product in other than its normal and customary manner.
- Defects or damage from misuse, accidents, water, or neglect.
- Defects or damage from improper testing, operation, maintenance, installation, alteration, modification, or adjustment.
- Breakage or damage to antennas unless caused directly by defects in material workmanship.
- Products, which have had the serial number, removed or made illegible.
- Freight cost to and from the repair depot.
- Scratches or other cosmetic damage to Product surfaces that does not affect the operation of the Product.
- A Product subjected to unauthorized Product modifications, disassembles or repairs.
- Normal and customary wear and tear

Motorola Quote: Collin County Project TX-16i101a – Juvenile Detention Radio Installation

Description	Ext Price
<p>Control Station implementation for the Juvenile Detention center sergeant's office Book-ins area.</p> <p>Provide, install, and test indoor antenna system for the customer provided APX4500 control station with power supply and tray and mic.</p> <p>Hardware product includes indoor mobile antenna, antenna mounts and coaxial cable and connectors.</p>	\$3,014.66

Parts

Qty	Item #	Description
1	ANXMBC800	Mobile to Base Ant Conversion Kit w/N Female
1	MXRBMLPV700	760-870 MHz 4dBi Lo-Pro Black NMO Mt Ant
30	CW-412-RG142	RG142 Coax
1	R/FRFN1005-C1	N Male connectors for RG142
1	R/FRFU600-1C1	RG142 Mini UHF Male Crimp N/G/D