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To Whom It May Concern:

On behalf of Buncombe County Schools, I would like to lend my full support to The Office of the Sheriff COPS grant application that is being submitted to you. This grant, in providing enforcement/EMS band radio Bi-Directional Amplification (BDA) repeaters enhancing emergency radio communication signal strength in our secondary schools, will be an invaluable tool in responding to emergency situations, making them safer for students and emergency responders.

The successful partnership between Buncombe County Schools and the Sheriff's Department demonstrates the proactive approach taken to make our schools and community safer. With funding for this technology, we can ensure that communications during emergency situations will be accessible for law enforcement.

I thank you in advance for your careful consideration of this grant request and for the considerable contribution this would mean for our community.

Sincerely,

Tony Baldwin, Ed. D.
Buncombe County Schools Superintendent

2018 COPS Office STOP School Violence: SVVP Grant – Buncombe County Sheriff's Office

Project Narrative

School Safety Planning Efforts

Every Year the Buncombe County Schools work to compile a three year strategic plan that carefully considers all possible aspects of school safety and innovation. A copy of the most recent document is attached to this application. Our current request to purchase technology for expedited notification of local law enforcement during an emergency will greatly enhance overall security in our schools and enhance the Buncombe County Schools comprehensive school safety strategy.

A number of After Action Reports from school shooting incidents around the county have highlighted first responder radio communications issues. In many cases, public safety radio coverage inside the school buildings has been a major problem. Modern building construction materials and methods have resulted in buildings that are difficult for radio signals to penetrate. Energy efficient windows, masonry walls, multi-story construction with some below ground levels, and numerous interior classroom walls all contribute to greatly attenuated radio penetration inside schools.

Funding Request and Integration

The most effective solution to radio penetration issues is the installation of a Bi-Directional Amplifier (BDA) at each building with impaired coverage. A BDA installation consists of installing a donor antenna on the roof of the building, where outdoor signals are the strongest. That antenna is connected to a radio repeater located on the inside of the building. The

radio repeater inside the building is tuned to the range of public safety frequencies used by the local jurisdiction and rebroadcasts those frequencies inside the building. In a large building such as a school, rebroadcasting those frequencies from a single point at the repeater location will not cover the entirety of the interior of the building, so a network of small antennas, known as a Distributed Antenna System (DAS), is installed throughout the building to insure radio coverage throughout the building. The combination of the BDA with the DAS is the most common solution to interior radio coverage issues.

Buncombe County uses a 700 MHz trunked P25 radio system to provide two-way radio communications for all county public safety personnel, to include all fire department, EMS, and law enforcement officers. The county's Department of Information Technology maintains the system in a two-cell, simulcast configuration from 13 different tower sites around the county. Each of the two cells using five different frequency pairs to provide for one control channel and four talk-paths per cell. Approximately 80 system talk groups have been established to meet the needs of fire, EMS, and law enforcement personnel. The system provides generally good outdoor coverage throughout the county, but issues have been noted inside many buildings.

Management and Implementation Plan

In Buncombe County schools, the Buncombe County Sheriff's Office places specially trained School Resource Officers (SROs) into all middle and high schools to maintain day-to-day school security. These SROs should ideally rely on their portable P25 radios to maintain contact with the BCSO dispatch center, both in terms of the SRO calling dispatch for assistance and for dispatch alerting the SRO to problems that have been called into the 911 center. In addition, in the event of an active shooter situation, incoming BCSO deputies would ideally rely on the P25

radios to coordinate their operations inside the school and maintain contact with the Incident Command (IC) and the dispatch center. Unfortunately, a number of SROs have reported serious problems with radio coverage inside their schools that result in the SROs normally not being able to contact BCSO dispatch using their radio. This same problem would affect all fire, EMS, and law enforcement personnel responding to an active shooter or any kind of emergency situation inside the effected schools.

Buncombe County operates 42 schools in six districts. Of those 42 schools, eight are High Schools, seven are Middle Schools, and 27 are elementary, primary, or intermediate schools. SROs report that 22 of those 42 schools have limited or no radio coverage. Of the 22 schools with radio coverage issues, nine are reported to have no coverage by the SROs.

To verify the reporting of the SROs, an independent survey was conducted by technical personnel from several fire departments within the county. The fire personnel team used several identical portable radios that had been programmed to read the Received Signal Strength Information (RSSI) of the control channel of the county's P25 system. Prior to the survey, the ability of the portable radios to measure RSSI was checked against a laboratory-calibrated Anritsu spectrum analyzer to confirm the accuracy of the signal level measurements. The survey teams selected two high schools that had been reported to have radio coverage issues by the SROs. The teams conducted a room-by-room test to measure signals levels. The teams also attempted to transmit over the trunked system from every room in the school and judge the received audio quality. Surveys of the two schools showed that significant portions of the buildings did not meet the minimum RSSI level called for in Section 510 of the International Fire Code (2015 edition). The 2015 IFC Code for Section 510, which is the same language specified in the 2018 North Carolina Fire Code, calls for a minimum signal level of -95 dBm. The two

schools surveyed were found to have an acceptable level of signal in only about 1/4 to 1/3 of the building. The talk tests confirmed that the radios would not reliably and clearly work when the RSSI was much worse than -95 dBm. The signal coverage issues reported by the SROs were confirmed the survey team.

The poor levels of signal penetration found within the schools is a serious issue, not just for everyday contact between the SROs and their dispatch, but for all incoming emergency services personnel responding to school shootings or other serious school emergencies. The most effective solution to provide radio coverage inside the schools is the installation of BDA/DAS systems in all 22 schools with reported coverage issues (little to no signal). In terms of prioritizing the schools to get BDA/DAS installation, the nine schools with no reported coverage should be remediated first.

To estimate funding required, Buncombe County looked at a recently awarded contract to install BDA/DAS systems in schools in Union County, N.C. After soliciting proposals from several vendors, Union county awarded a contract to install BDA/DAS systems in 15 schools for \$1.192M. Average cost per school was about \$80K, with the cost per school averaging about \$63K for each elementary school, \$68K for each middle school, and \$125K for each high school (although one atypical high school came in at about \$190, greatly skewing the average cost for a high school). If Buncombe County were to be awarded a \$500K grant, coupled with the county's matching contribution of \$125K, the resulting \$625K could fund the installation of 7-8 schools using the average cost figure of \$80K per school. Using a reasonable average of \$100K average for high schools, the \$625K could alternately fund six high schools. Actual costs would not be known until requests for proposal have been issued and vendor responses have been assessed.

In attempting to prioritize schools, Buncombe County emergency call data shows the high schools generate a larger call volume than the middle or elementary schools, in part because the student population is much higher for the average high school. In addition, the SROs feel the high schools are more likely to produce a shooting or other violent incident requiring a significant incoming response team. The SROs have reported that of the eight high schools in the county, five have significant signal coverage issues. The grant funding would be prioritized to fund BDA/DAS systems for the five high schools with signal coverage issues and any remaining funds directed at providing BDA/DAS systems for the middle schools with the highest call volumes and poorest signal coverage. A document listing the volume of calls between law enforcement and the Schools is attached to this grant to illustrate this point.

The intention of Buncombe County would be to use the grant funding to issue a Request for Proposal (RFP) for acquisition and installation of BDA/DAS systems in eight schools (five high schools and three middle schools). Prior to submission of proposals, prospective vendors would be invited to a mandatory pre-bid conference that would include a walk-thru tour of the eight schools. School drawings and RSSI test data will be provided to all vendors. Vendors will be asked to provide turn-key solutions for all eight schools. All installed BDA/DAS systems will be required to meet the specifications of IFC Section 510. As each system is installed, an acceptance test will be conducted by the county to insure compliance with Section 510. As specified in Section 510, signal level will be tested with calibrated radios to insure full functionality on the county's P25 radio system. A minimum of a one year warranty will be required. Vendors will be required to submit references from at least three similar BDA/DAS customers. Vendors will be responsible for acquiring all the necessary permits and insuring compliance with county building and fire codes.

The project will be managed by Buncombe County Department of Information Technology (IT). Buncombe IT will issue the RFP, evaluate the vendor proposals, select the winning bid, supervise and coordinate the installations, and conduct the acceptance tests. Should the bids exceed the funding available, IT would modify the RFP to include fewer schools and have vendors submit revised bids to lower the cost.

Sustainability Plan

The successful completion of this project will bring county radio signal levels into IFC Section 510 compliance, which would result in adequate signal levels throughout the selected schools to allow the SROs to maintain contact with their dispatch and also to allow for operational communications by incoming response teams (Fire/EMS/Law) in the event of a serious emergency such as an active shooter situation. Without such a project, the possibility of dire consequences in the event of school shooting incident are greater than can be accepted. The prospect of teams of responding public safety officials trying to deal with a major incident without being able to reliably communicate with each other or with the Incident Commander are truly frightening.

Our hope is to up-fit as many of the schools that have poor radio reception with BDA/DAS systems as possible with this grant. We estimate available funding will cover eight of the schools. All interested parties including, the Buncombe County Sheriff, EMS, Fire, Buncombe County School Administration, and County Information Technology management, agree that the lack of radio communication in any of our public schools creates a significant risk and threatens overall school safety. For this reason we plan to request funding from County and

School funds in future budget cycles until every county school building has adequate radio communications’.

Budget Narrative

2018 COPS Office STOP School Violence: SVVP Grant – Buncombe County Sheriff's Office

The Buncombe County Sheriff's Office (BCSO) is requesting funding to enhance the Buncombe County Public Schools comprehensive school safety strategy by purchasing and installing technology that will allow for the expedited notification of local law enforcement during an emergency. Many of the County public school buildings have little or no portable radio signal strength to maintain contact with the BCSO dispatch center, for calling for assistance and for dispatch alerting the School Resource Officers (SROs) to problems that have been called into the 911 center. In the event of an active shooter situation, incoming BCSO deputies would ideally rely on the P25 radios to coordinate their operations inside the school and maintain contact with the Incident Command (IC) and the dispatch center. Unfortunately, a number of SROs have reported serious problems with radio coverage inside their schools that result in the SROs not being able to contact BCSO dispatch. This same problem would affect all fire, EMS, and law enforcement personnel responding to any kind of emergency situation inside the effected schools.

Phase One - \$36,000

A consultant will be hired to conduct a Site Survey to obtain a formal determination as to the extent of radio coverage in the 45 County School buildings. A local Communications Company (Motorola local distributor/servicer) has quoted \$800 per school building to test and map the extent of radio connectivity in each room of the 45 school locations. We estimate the survey will take two days at each school location. Informal site surveys have been conducted by

our School Resource Officers (SRO's) Indicating 22 of the 45 Schools have little or no radio connectivity. The information from this formal site survey will be used to draft the RFP in phase two of this request.

45 schools X estimated \$800 per School = \$36,000 in Site Survey Consultants Fees

Phase Two - \$588,994

The intention of Buncombe County would be to use the remaining grant funding to issue a Request for Proposal (RFP) for acquisition and installation of Bi-Directional Amplifier (BDA) /Distributed Antenna System (DAS) systems in an estimated eight schools (five high schools and three middle schools). The RFP process and subsequent award will be managed by Buncombe County's Information Technology Department with the technical skills in the use and installation of such equipment. Results of the site surveys in phase one will be used to develop the RFP. Prior to submission of proposals, prospective vendors would be invited to a mandatory pre-bid conference that would include a walk-thru tour of the eight schools. School drawings and Received Signal Strength Information (RSSI) test data will be provided to all vendors. Vendors will be asked to provide turn-key solutions for all eight schools. All installed BDA/DAS systems will be required to meet the specifications of International Fire Code (IFC) Section 510. As each system is installed, an acceptance test will be conducted by the county to insure compliance with Section 510. As specified in Section 510, signal level will be tested with calibrated radios to insure full functionality on the county's P25 radio system. A minimum of a one year warranty will be required. Vendors will be required to submit references from at least three similar BDA/DAS customers. Vendors will be responsible for acquiring all the necessary permits and insuring compliance with county building and fire codes.