

COPY



ORANGE COUNTY
NORTH CAROLINA

**Countywide Radio Communications
Interoperability and Systems Engineering
Services**

RFP# 5217

March 1, 2016

Prepared by



Engineering Associates, LLC

Communications Engineers

1220 Old Alpharetta Road, Suite 380

Alpharetta, Georgia 30005

Tel: (678) 455-7266



ENGINEERING ASSOCIATES, LLC
Communications Engineers

March 1, 2016

Mr. David Cannell, Purchasing Agent
Orange County
200 S. Cameron Street
PO Box 8181
Hillsborough, NC 27278

Dear Mr. Cannell:

Engineering Associates, LLC (EA) appreciates the opportunity to provide professional engineering and consultant services to Orange County to thoroughly evaluate current agency radio systems, provide strategic and tactical plans, and a vendor-neutral RFP for a new countywide radio communications system.

We believe that we are the best suited candidate for providing the professional services you require with the most economical, efficient and reliable results. Engineering Associates is a licensed professional engineering firm with a history of assisting clients with their technology needs for more than 65 years. We have provided state-of-the-art design services and consulting to a wide range of clients, including governments, businesses, telephone companies and wireless carriers. We have over 18 years of experience specializing in wireless and mobile radio communications systems for public safety. Engineering Associates has maintained relationships with clients for 10-20 years, providing high value consulting, engineering, and project management with minimal conflict.

Engineering Associates has an exceedingly qualified staff to assist in writing the needs and specifications of a Request for Proposal as required. We will develop functional and technical specifications while collaborating with your Emergency Services Department. We provide a complete RFP document in draft form and review it with your procurement department. We will work closely with you to help you select the system vendor best suited for your needs.

We provide technical guidance based on our years of experience to reduce conflict in the procurement and contracting process. We will diligently work to help you maintain budgetary guidelines. We will save money by applying the knowledge we have gained through experience with vendor pricing and project development as well as by reusing existing assets. Finally, we can assist with implementation to be certain that it meets your operational needs and guide you through cutover. The primary objective of Engineering Associates is to provide high value, efficient consulting engineering, and project management with minimal cost, enabling our clients and the parties they serve to succeed and thrive.

Enclosed is our proposal in accordance RFP #5217, Request for Proposal for Countywide Radio Communications Interoperability and System Engineering Services.

Regards,

ENGINEERING ASSOCIATES, LLC



Michael C. McGannon
Vice President, Wireless Engineering
1220 Old Alpharetta Road, Suite 380
Alpharetta, Georgia 30005
mmcgannon@engineeringassociates.com
(678) 455-7266 office

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INTRODUCTION (SECTION 4)

After review of the Orange County request for proposals for Radio Communications Interoperability and Systems Engineering Services, we at Engineering Associates believe that we are especially well suited to serve the County's needs. We have a solid understanding of the phases of the project the County will need to work through, where we can help the County define the scope of the communications evaluation, the need to determine whether to upgrade or replace, the project of procuring a system, and the implementation of the optimal solution. Our current projects are primarily in the implementation phase, so our engineers and staff will be readily available for the duration of this project. We have provided similar services to Clarksville, Tennessee, to assist them in achieving an alternative to their ten year old proprietary system, and choose the best method to have regional connections to the State of Tennessee system. Also, we assisted Franklin County, Virginia, develop an RFP for solutions to replace their aged VHF voice and paging systems as well as achieve interoperability with neighboring Roanoke County and the City of Roanoke. As these are situations and organizations strikingly similar to yours, we believe ourselves to be particularly well suited to provide the Engineering Services which Orange County needs.

While EA can provide all the services outlined in Section 5 of the RFP, at a minimum, our overall approach to produce an RFP for the vendor community contains the following processes:

1. Assess current system design and functionality
2. Document current and potential system facilities and locations, including towers, property, and structures
3. Outline new systems' functional requirements
4. Assist the Emergency Services Review Committee and the County in determining best system procurement options
5. Brief the Emergency Services Review Committee on relevant technology and Communications Trends
6. Prepare a voice and paging communications study report for the Emergency Services Review Committee
7. Provide procurement process services

A description of these tasks is as follows:

ASSESS CURRENT SYSTEM DESIGN AND FUNCTIONALITY: Your communications system is made up of a network of subsystems. We will perform a site inventory. We will work through the Emergency Services Department to review the numerous radio systems to understand how they are performing on a day-to-day basis and during historic critical incidents. We will also review each of the sub-systems, including equipment shelters, generators, HVAC, UPS, microwave, etc., to determine if they are operating effectively. If so, we would evaluate whether they would be useable in the new design. We will inspect the tower sites and equipment shelters that support the communications system and

identify any areas of concern; this will include collecting the existing tower structural analysis. Tower mapping and tower structural analysis is available thru EA. However, they are not included in this scope due to currently unknown quantities of new tower sites. We will collect portable radio, mobile radio, control (base) station, and console counts, channels, and configuration data.

DOCUMENT CURRENT AND POTENTIAL SYSTEM FACILITIES AND LOCATIONS, INCLUDING TOWERS, PROPERTY, AND STRUCTURES: EA will document the current system(s) facilities and equipment configurations. We will document gaps in current coverage as well as potential additional tower or structure locations by performing an RF coverage design using EDX Signal Pro. EDX Signal Pro is a commercially available propagation tool that is widely used in the industry. It allows Engineering Associates to model radio system designs for our clients, as well as allows our clients to understand the operational and coverage impacts of multiple potential tower locations. EDX is an extremely versatile design tool allowing our RF engineers to model many radio system frequency bands and microwave paths.

OUTLINE NEW SYSTEMS' FUNCTIONAL REQUIREMENTS: A radio system design is developed from operational requirements, frequencies, tower sites, systems equipment, and financial resources. Our outline of functional requirements will identify assets that can be reused in the new system and identify issues that need to be considered in a migration to new technology. We will define the requirements for the radio system, backhaul infrastructure and subsystems. We will address upgrades for towers and buildings required in your new design. To fully understand all requirements, Engineering Associates will:

Conduct interviews with radio users and dispatchers to understand their specific public safety and the numerous other department operations and how each department interacts with other departments. The new system functional requirements should focus on improving the operations of each department through strategic changes in communications technology and training. Specifically, we will work with the user groups to identify the operational issues with the current voice and paging infrastructure that need to be addressed in the design of the radio system (coverage, capacity, reliability, etc.). This will also include a review of interoperability and mutual aid plans.

Assess the service issues in the existing system current operational environment, and requirements for the new system. Our goal is to understand your current system reports and radio system history. We can then address issues including system availability, system and channel loading, and design flaws that impact future service and support.

Develop the capital budget for system alternatives, and the operational budget for on-going system maintenance and support

ASSIST THE EMERGENCY SERVICES REVIEW COMMITTEE AND THE COUNTY IN DETERMINING BEST SYSTEM PROCUREMENT OPTIONS: We will outline the options and alternatives for reaching solutions to the County's radio communications system needs. As part of this process, we will review the impact of implementing the alternatives on each agency's operations to minimize system downtime

and reduce the impact of change on end users. For the options, we will prioritize the advantages and disadvantages for Public Safety Operations. We will include cost estimates on options from our recent similar projects. Once optimal solutions are identified, we will use our experience with upgrades, replacement systems, pricing, and procurements to develop a successful procurement strategy.

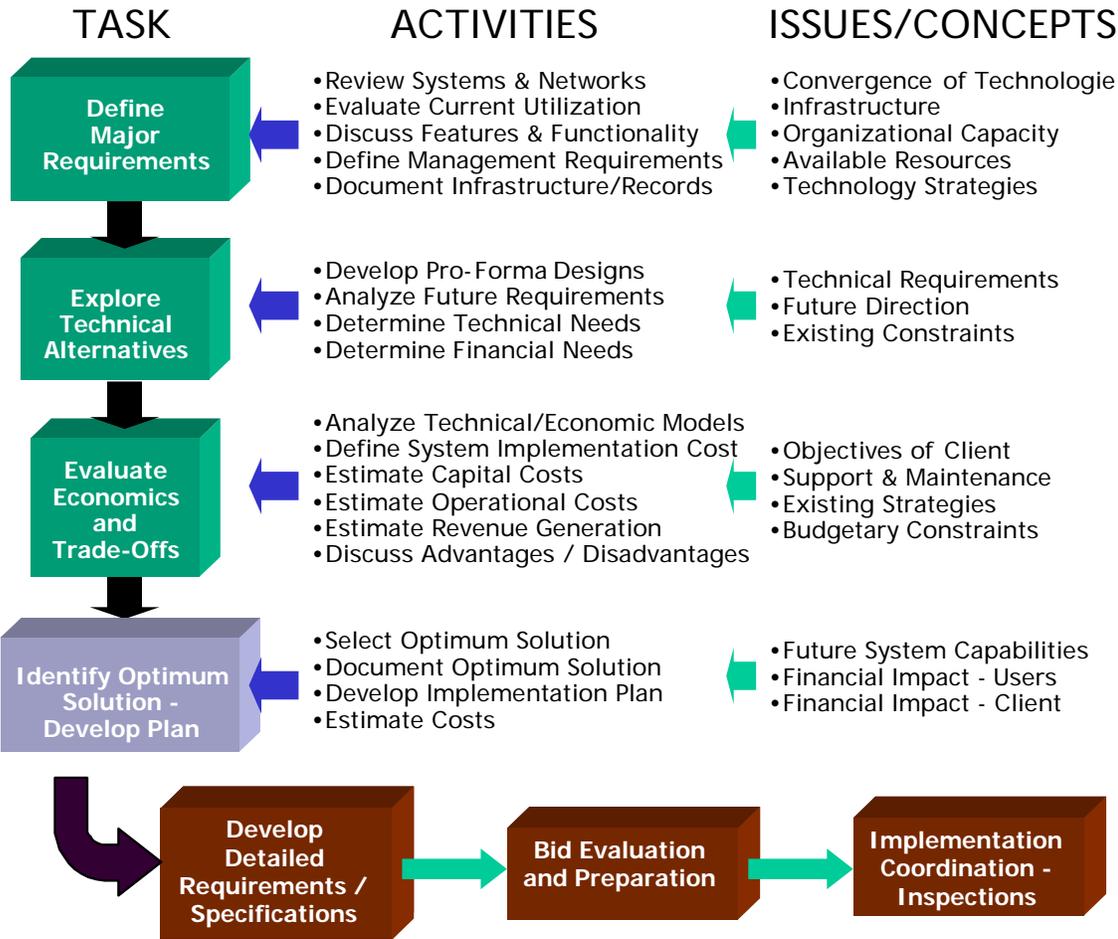
BRIEF THE EMERGENCY SERVICES REVIEW COMMITTEE ON RELEVANT TECHNOLOGY AND COMMUNICATIONS TRENDS: Engineering Associates has many years of experience designing, implementing, testing, and project managing P25 public safety radio systems. We fully understand the industry trends, and risks associated with new technology projects such as Public Safety's D Block and LTE. We can identify the impact these will have on operations and your communications system. The County will greatly benefit from our recent experience leading other municipalities through Next Generation 9-1-1 projects.

PREPARE A VOICE AND PAGING COMMUNICATIONS STUDY REPORT FOR THE EMERGENCY SERVICES REVIEW COMMITTEE: Engineering Associates will provide a preliminary outline of the organizational structure of the study report to the committee. The preliminary report will delineate the main topics and subtopics that will later be described in detail in the final report and a brief narrative description of the subject matter encompassed by each topic or subtopic. Prior to the submission of the final report, EA will present a preliminary draft of the final report to the committee.

PROVIDE PROCUREMENT PROCESS SERVICES: Engineering Associates will provide the following items to assist with the procurement process:

1. Plans and specifications for all solicitations to be issued to implement changes
2. Detailed cost estimates for all solicitations to be issued to implement changes
3. Input and assistance to the County to prepare an RFP, or, as required, more than one RFP for procuring the approved alternative infrastructure
4. A review and summary of RFP responses and highlight key differences
5. Schedule and participate in vendor interviews and product demonstrations
6. Participate in vendor selection discussions with the procurement team
7. Participate in vendor contract negotiations with the procurement team

ENGINEERING ASSOCIATES PROJECT METHODOLOGY



RESPONSE TO GENERAL REQUIREMENTS

ORGANIZATIONAL QUALIFICATIONS

Corporate Headquarters: Engineering Associates, LLC
1220 Old Alpharetta Road
Suite 380
Alpharetta, Georgia 30005

Main Phone: (678) 455-7266

Fax: (678) 456-5981

Responsible Party Developing this Proposal: Michael C. McGannon
Vice President of Wireless Engineering

Engineering Associates organization consists of Certified Professional Engineers (PE, electrical engineers, industrial engineers, operations research specialists, and resident engineers), BICSI-Certified Registered Communications Distribution Engineers (RCDD), and PMI-Certified Project Management Professionals (PMP), Operations Research Specialists, Contract Specialists, communications technicians, inspectors, designers and others. Our organization's capabilities and backgrounds range from state-of-the-art engineers to hands-on technicians. In general, Engineering Associates has the experience and desire to provide the highest quality of communications consulting and design engineering services.

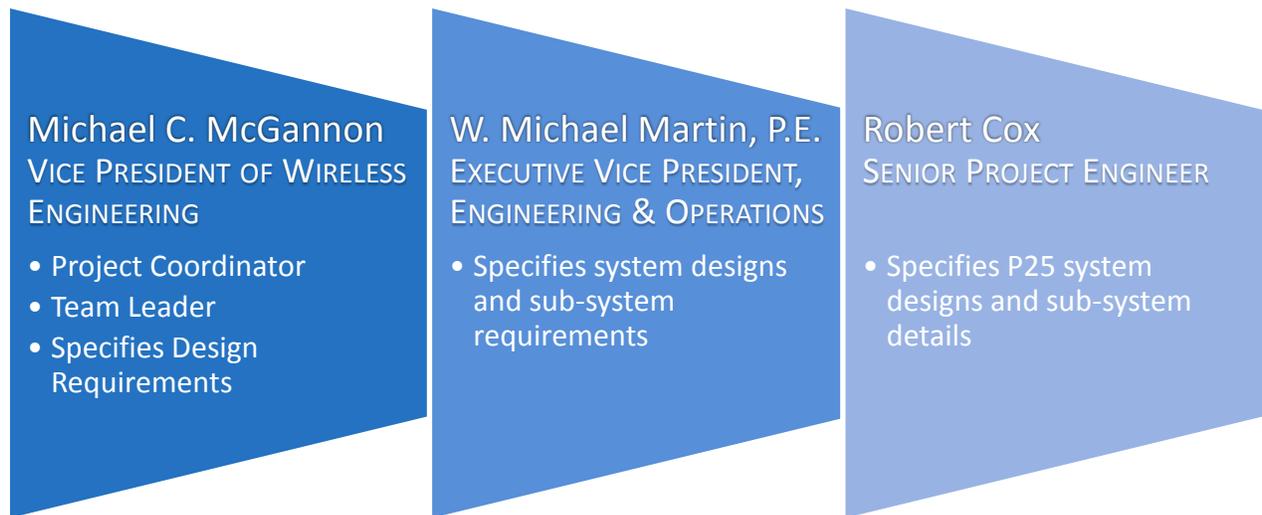
By selecting Engineering Associates, you are assured to benefit from:

- A professional staff experienced in communications engineering and consulting
- Quality designs and consulting to meet the market launch of your deployment
- Low overhead, personnel, and administrative costs with value-added engineering and optimization for reduction of system costs
- Professional objectivity with strategic analyses to define client goals and objectives

STAFF QUALIFICATIONS AND FACILITIES

The members of our team are all full time employees at our firm. Each of them has a wealth of experience working with local government radio users and will be effective from the first day of the project to the last. This team has worked together on each and every public safety radio and wireless project which Engineering Associates has completed.

The following key employees that will be working on this project are as follows:



The hourly rate for each of these individuals to be charged to Orange County for their services is \$150.00.

NAME: MICHAEL C. MCGANNON, MBA

POSITION: VICE PRESIDENT OF WIRELESS ENGINEERING

EDUCATION: *MASTER OF BUSINESS ADMINISTRATION*
GEORGIA STATE UNIVERSITY / 1993

BACHELOR OF ELECTRICAL ENGINEERING
GEORGIA INSTITUTE OF TECHNOLOGY / 1988

Mr. McGannon has eighteen years of experience in wireless systems design, project management and telecommunications consulting. He is responsible for all aspects of the wireless business at Engineering Associates, LLC. He has worked on many different wireless platforms including two-way radio, cellular, SCADA, PCS, LMDS, MMDS, 802.11 and other wireless systems, both domestically and internationally. He is co-author of PUTTING MOBILE TECHNOLOGY TO WORK, copyright 2009 and the author of A GUIDEBOOK to LAND MOBILE RADIO, copyright 2000, by the National Rural Electric Cooperative Association. The clients Mike works with are usually deploying new technologies, starting new businesses, upgrading their analog systems to digital technology or expanding their systems.

Mike provides a scope of services that includes needs analyses, feasibility studies, system audits, system engineering, site acquisition, system implementation, project management and system testing. He has worked with a variety of clients including utilities, federal, state and local governments, wireless system providers including cellular and PCS companies and domestic and international telephone companies. Mike has experience working with both analog and digital technologies including Smartnet, SmartZone, ASTRO digital, UMTS, GSM, TDMA and iDEN.

Mr. McGannon was the project manager working on improving New Hampshire Electric Cooperative's power distribution through the use of wireless technology. He assisted Orlando Utilities in the evaluation of the performance of their wireless systems including coverage, availability and reliability. Prior to coming to Engineering Associates Mike worked on wireless projects for Florida Power and Light, Florida Power, Georgia Power, Gulf Power and the iDEN technology that became Southern Link.

Also, prior to coming to Engineering Associates, LLC, Mike was the Senior Manager for Wireless Services at the Atlanta Olympic Games. As the Senior Manager, Mike was responsible for designing, implementing, and operating the 800MHz Simulcast Trunking System. This system was valued in excess of \$40 Million.

Mr. McGannon joined Engineering Associates, LLC, in 1997 to provide project management, technology and business services in the area of RF systems and large-scale telecommunications consulting projects.

PROFESSIONAL:

CHARTER MEMBER, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS VEHICULAR
TECHNOLOGY SOCIETY, ATLANTA CHAPTER

ASSOCIATION OF PUBLIC SAFETY COMMUNICATIONS OFFICIALS (APCO) INTERNATIONAL CORPORATE
MEMBER

NAME: W. MICHAEL MARTIN, P.E., P.M.P.

POSITION: EXECUTIVE VICE PRESIDENT, ENGINEERING AND OPERATIONS

EDUCATION: *BACHELOR OF ELECTRICAL ENGINEERING*
GEORGIA INSTITUTE OF TECHNOLOGY / 1986

Mr. Martin is an experienced, respected, and versatile telecom professional with extensive and diverse experience in telecommunications engineering, technical sales, consulting, and project management. He has a proven ability to bring value to projects through a positive attitude, a strong work ethic, and professionalism. He excels at understanding, documenting, and managing the details of complex projects, and has a consistent record of meeting and exceeding expectations of both employers and customers.

Mr. Martin joined Engineering Associates in 1986 and managed the Systems Engineering division from 1996-2000. In 2009 he rejoined Engineering Associates after a 9-year engagement in telecom hardware and software sales, engineering support, and project management.

The Systems Engineering division works primarily with colleges and universities, telephone companies, utilities, and municipalities. Systems engineering projects include virtually all aspects of telecommunications, including:

- Broadband Access Network Design
- Fiber to the Home / PON
- IP Routing and IPTV
- VoIP, Soft Switches, and Digital Switching
- Metro Ethernet and Ethernet Transport
- Campus Fiber Optic Networks
- Structured Premise Cabling Design
- Outside Plant Cable and Infrastructure
- Video/HFC Design
- SONET transmission networks
- Microwave Radio system design

EXPERIENCE HIGHLIGHTS:

Broadband Networks: Mr. Martin has extensive experience in both copper- and fiber-based broadband access networks. This includes system design, hands-on installation and provisioning, and verification testing of completed systems. System components have included edge routers, aggregation devices, DSLAMs, and FTTx platforms.

Fiber Optic Networks: Mr. Martin has served as Project Manager for numerous campus-wide fiber optic networking projects. These have included several different projects for NASA over a five-year period at

Kennedy Space Center in Florida, multiple projects over a 7-year engagement at the University of North Carolina at Chapel Hill, and additional projects at Iowa State University and UNC-Greensboro. Mr. Martin has had oversight and responsibility for preparation of all bid documents, including detailed design drawings, performance specifications, and testing procedures.

Structured Premise Cabling Systems: Mr. Martin has managed and designed all aspects of detailed cabling and infrastructure projects at College and University campuses. These projects include fiber optic backbone and riser systems, twisted pair Category 5 cabling for Ethernet data networking requirements, and new inside and outside infrastructure to support the newly installed cable systems. Special emphasis is typically given to the task of designing systems within older buildings to work within the constraints of the newest structured cabling design standards. Current projects include UNC-Chapel Hill, Rochester Institute of Technology, the University of Memphis, and SUNY Oswego.

Digital Switching and SONET Transport Systems: Mr. Martin has worked extensively with numerous independent telephone companies in the design and specifications for digital central office equipment (both switching and transport). Detailed specifications are written which form the basis of an RFP issued for competitive bids. After the design and bidding phase, the project management continues throughout the implementation period until the testing and final acceptance of the systems.

Fiber Optic Cable Testing: In 1990, Mr. Martin was invited by the Rural Electrification Administration (now known as the Rural Utilities Service, or RUS) to make a technical presentation at three national seminars around the country. The topic of the presentation was current trends in fiber optic cable testing. The presentation was later published as an article in a national telecommunications trade journal.

PROFESSIONAL:

LICENSED PROFESSIONAL ENGINEER IN 43 STATES

NAME: **ROBERT N. COX**

POSITION: **WIRELESS SYSTEMS ENGINEER / PROJECT MANAGER**

EDUCATION: ***BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING***
MILWAUKEE SCHOOL OF ENGINEERING / 1978

Mr. Cox joined Engineering Associates, LLC in 2005. He provides engineering services and project management on wireless projects for local, state and U.S. governmental agencies and industrial users located throughout the United States.

Mr. Cox has over twenty-five years of experience in the engineering, implementation and project management of land mobile, microwave, cellular and PCS systems. His project experience with APCO Project 25 networks: project manager and primary engineer on Gwinnett County's system upgrade project; supporting engineer for Hall County's 800 MHz procurement; frequency coordination, FCC licensing and guidance for the Western Area Regional Radio System Authority; and supporting engineer for the P25 upgrade project for Calhoun and Talladega Counties, Alabama. Mr. Cox has provided significant assistance to many local and county governments in the FCC mandated rebanding of their 800 MHz frequencies.

His cellular and PCS experience includes engineering and equipment procurement for complete network build-outs in over twenty metropolitan and rural markets throughout the United States. While at GTE Wireless, Bob directed the department responsible for the standardization of products to be used in GTE's cellular and PCS networks and the standardization of engineering practices to be followed by field operations, with over 40 switch sites and 3000 cell sites. At Contel, Bob was involved in engineering, furnishing and installing telecommunications projects for various government agencies and independent telephone companies. He was lead engineer on cellular projects when the company started up its independent cellular operation. He was involved at all levels and technical disciplines including RF design, equipment engineering, installation coordination field-testing and FCC Licensing. He designed extensive 2 GHz and 6 GHz microwave networks. He supervised purchasing and vendor management of all network equipment including microwave, transmission, power, and support systems for 11 switching offices and 360 cell sites.

PROFESSIONAL:

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, VEHICULAR TECHNOLOGY SOCIETY-
MEMBER

EXPERIENCE

Engineering Associates, LLC, is a proven professional engineering and consulting firm with over sixty-five (65) years of experience designing and implementing telecommunications networks for some of the most sophisticated and demanding users of telecommunications technology in the world. We have provided wireless consulting and engineering for more than eighteen (18) years, including public safety radio, communications systems and the procurement of those systems. EA is currently working with government and industry leaders to improve services and operations to their communities using wireless technologies.

Our government clients (homeland security, municipalities, etc.) are improving the safety of the citizens they serve by improving their communications infrastructures. Our trunked radio system projects include upgrade and replacements of 800 MHz infrastructure for clients with systems ranging in size from 3 to 15 trunked sites, 6 to 24 radio channels, 4 to 17 hops of microwave, and 700 to 3000 subscribers. Other projects have included VHF P25 public safety systems, a 450 MHz wide-area digital system, 1900 MHz PCS systems, AWS Wide Area Wireless Systems, microwave, Wi-Fi, fiber optics, CATV, Fiber-to-the-Home, digital switching and data- network design. Engineering Associates, LLC designs and implements wireless technologies that make public safety and public service operations run successfully.

Our entire company is involved in providing voice, data, and video to our clients' end-users. We continue to be cutting edge technologists on the medium required to support these functions. Specific to public safety, we are involved in state-of-the-art design services in 700 MHz LTE broadband for Public Safety. We are currently assisting a cellular carrier with their 700 MHz LTE network design and roll-out.

We prepared the RFP that will result in their procurement of their LTE system from a broadband infrastructure company. This network will be the first 700 MHz LTE system not owned by a major carrier. Early implementation testing will prove the feasibility of the same design parameters and system components which are directly applicable to a 700 MHz LTE system for Public Safety. Engineering Associates is in the forefront of being the most knowledgeable and experienced engineering/consultant firm on broadband for Public Safety.

Engineering Associates' clients include organizations such as:

- Voice, Video and Data Service Providers
- Cellular Service Providers
- Competitive Local Exchange Carriers (CLEC)
- Emergency Service Organizations
- Fortune 500 Companies
- Governmental Units (U.S. and International)
- Major High Tech Universities
- CATV Companies
- Power Companies
- PCS Providers
- NASA



Engineering Associates was originally formed to help rural telephone companies design and properly implement new telecommunications networks. Over the last 60 years, Engineering Associates has continued to progress technically. We now provide state-of-the-art design services in all of the latest technologies including 700, 800, 1900, AWS Wide Area Wireless Systems, Wi-Fi, LMDS, fiber optics, microwave, CATV, Fiber-to-the-Home, digital switching and data-network design.

Engineering Associates currently provides telecommunication services, both domestically and internationally, to organizations such as: ALLTEL/Windstream/Verizon and affiliates, AT&T affiliates, Crown Castle International, Cox Cable Communications, Nextel, GTE, NASA/Kennedy Space Center, BellSouth Corporation, CTC Wireless, the US Navy, Cellular Plus, United Telephone, major high-tech universities and Fortune 500 corporations.

Engineering Associates' design capabilities range from state-of-the-art voice, data and video networks to the latest in wireless and wireline system integration. Engineering Associates is not affiliated and never has been with any equipment suppliers or vendors which means we are completely objective and always focused on the needs of clients.



Engineering Associates provides a full range of analysis, design, management and documentation services in areas such as PCS, cellular, two-way radio, CATV, LMDS, and traditional telephone switching and transmission. Field service activities include fixed network design, analysis and implementation services, tower mapping and site audits, switch location and analysis, site acquisition, inventory management, staking, plans and specifications, construction coordination and management, and testing. Our engineers and consultants are experienced in outside plant construction, analog and digital central office switching, fiber optics, CATV, satellite, and wireless (LMDS/PCS/cellular/two-way radio) transmission.

STATEMENT OF OBJECTIVITY

Engineering Associates is not affiliated with any equipment suppliers or vendors. We are not engaged in or associated with the business of selling, servicing or renting radio communications equipment. The primary objective of Engineering Associates is to enable our clients to succeed in this highly competitive communications marketplace.

PROJECT SCHEDULE AND WORK PLAN

Work Plan	Labor Mandays	Schedule Timeframe
1) Assess Current System Design and Functionality	4	
Site Inventory and Radio Systems Review	4	30 days
Subsystem Review	2	
2) Document current and potential system facilities and locations, including towers, property, and structures	6	
Propagation Analysis	4	30 days
3) Outline New Systems' Functional Requirements	2	
Understand System Performance and Policy	2	
Understand User Needs	6	45 Days
Fundamental Design	4	
Investigate Growth and Future Technologies	2	
4) Assist the Emergency Services Review Committee in determining best system procurement options	3	
Analysis of Options, Alternatives, and Budget	2	15 days
Investigate Impact on other Projects	1	
5) Brief the Committee throughout the process on technology issues and communications trends	Included	Included
6) Prepare a recommendation report for the Committee and County	6	15 days
7) Procurement Process Services		
Provide plans and specifications for all solicitations to be issued to implement changes	3	
Provide detailed cost estimates for all solicitations to be issued to implement changes	2	30 days
Provide input and assistance to the County to prepare an RFP or, as required, more than one RFP for alternative infrastructure	10	45 days
Review and summarize RFP responses and highlight key differences	6	30 days
Schedule and participate in vendor interviews and product demonstrations	4	30 days
Participate in vendor selection discussions with the procurement team	4	30 days
Participate in vendor contract negotiations	4	30 days
Labor Total	81	

REFERENCES

OWNER	CONTRACT NAME, AWARD DATE, RELEVANT NOTES	CONTACT INFORMATION
<p>CITY OF CLARKSVILLE 135 Commerce Street Clarksville, TN 37040</p> <p>P25 Vendors Bid: Harris, Motorola, Relm</p>	<p>800MHz P25 Phase II</p> <p>July 2012</p>	<p>Mr. Al Ansley Chief of Police</p> <p>931-648-0656 al.ansley@cityofclarksville.com</p>
<p>FULTON COUNTY 130 Peachtree Street SW, Suite 3147 Atlanta, GA 30303</p> <p>P25 Vendors Bid: Harris, Motorola, Relm</p>	<p>800MHz P25 Phase II SMARTNET Migration Upgrade and Expansion</p> <p>July 2012</p>	<p>Mr. Joe Barasoain Director, Public Safety Communications, E911</p> <p>404-612-7904 Joseph.Barasoain@fultoncountyga.gov</p>
<p>HALL COUNTY 470 Crescent Drive Gainesville, GA 30501</p> <p>P25 Vendors Bid: EF Johnson, Motorola</p>	<p>System Analysis for P25 Phase II Upgrade April 2014</p> <p>800MHz New P25 System To Replace VHF</p>	<p>Mr. Marty Nix Assistant County Administrator</p> <p>770-535-8288 mnix@hallcounty.org</p>
<p>FRANKLIN COUNTY 1488 Franklin Street P.O. Box 189 Rocky Mount, VA 24151</p> <p>P25 Vendors Bid: Harris, Motorola, Tait</p>	<p>800MHz New P25 System To Replace VHF</p> <p>November 2012</p>	<p>Mr. Daryl Hatcher Director of Public Safety</p> <p>540- 483-3091 DarylHatcher@franklincountyva.org</p>
<p>NEW KENT COUNTY 11995 Courthouse Circle New Kent, VA 23124</p> <p>P25 Vendors Bid: Harris, Motorola</p>	<p>800MHz New P25 System To Replace VHF</p> <p>July 2013 – March 2015</p>	<p>Sheriff Joe McLaughlin, Jr. Office of the Sheriff</p> <p>804-966-9500 JMcLaughlinJr@co.newkent.state.va.us</p>
<p>YORK COUNTY 301-A Goodwin Neck Rd. Yorktown, VA 23692</p>	<p>800 MHz P25 Upgrade And Regionalization for YORK, JAMES CITY, and GLOUCESTER</p> <p>June 2005 - Continuing to expand</p>	<p>Mr. Terry Hall Director of Emergency Communications</p> <p>757-890-3620 hallt@yorkcounty.gov</p>

OTHER COMMUNICATIONS TECHNOLOGIES

To further demonstrate the scope and depth of our comprehensive experience, below is a listing of representative enterprise clients for whom we have worked. Naturally, we can provide additional information on these projects should you so desire.

Abilene Christian University-Abilene, TX
Simmons College-Boston, MA
Emory University-Atlanta, GA
Keene State College-Keene, NH
Iowa State University-Ames, IA
University of Missouri-Columbia, MO
Rochester Institute of Technology-Rochester, NY
University of Memphis-Memphis, TN
University of North Texas-Denton, TX
University of North Carolina at Greensboro-Greensboro, NC
University of North Carolina at Chapel Hill-Chapel Hill, NC
University of Maryland at Baltimore-Baltimore, MD
University of Tennessee at Memphis-Memphis, TN
Western Carolina University-Cullowhee, NC
State University of New York at Oswego-Oswego, NY
Denison University-Granville, OH
Savannah Airport Commission-Savannah, GA
Central State Hospital-Milledgeville, GA
Hess Oil Company-St. Croix, USVI
WSB TV and Radio-Atlanta, GA
Cox Communications-Atlanta, GA
Mississippi Power-Gulfport, MS
Southern Company-Birmingham, AL
Prime Minister, Parliament, House of Delegates-Hungary
Department of Veterans Affairs-San Juan, PR
Food and Agriculture Organization (FAO) of the United Nations-Rome, Italy
US Army Corps of Engineers-Huntsville, AL
Veterans Hospital-Columbia, SC
US Army Corps of Engineers-Riyadh, Saudi Arabia
City of Thomasville, Georgia-Thomasville, GA
Utility Board -Sylacauga, AL
City of Charlotte/Mecklenburg County-Charlotte, NC
Cobb County, GA - 911 Center Upgrade
Windstream - Fiber to the Tower
Wilkes Telephone - Outside Plant and Electronics Upgrades
Bulloch Telephone - Outside Plant and Electronics Upgrades
Alma Telephone - Outside Plant and Electronics Upgrades
Chattanooga EPB - Fiber to the Home

Verizon Wireless - Fiber to the Home
AT&T - Site Acquisition Services
SSI/CCI - 1000 Tower inventories, mapping and drawings
Emory University - Building Lease evaluation for wireless carriers
City of Johns Creek - Regional Radio System Evaluation
WARRS - Regional Radio System Consulting
City of Tuscaloosa, AL - Radio System Consulting
Orlando Utilities - Radio System Engineering and Consulting
NRECA - Guidebooks to Land Mobile Radio
Highland Telephone - Broadband Application and Implementation Services
Virgin Islands Telephone - Wireless System Consulting and Engineering
King William County, VA - Wireless System Consulting and Engineering
City of Roanoke, Roanoke County, VA - Regional Radio Systems Consulting
Bell South Entertainment - Wireless System Consulting and Engineering
City of Macon/Bibb County - Radio System Consulting and 800 MHz Rebanding
Calhoun and Talladega Counties, Alabama - 800 MHz Project 25 Upgrade
Huntsville Alabama - 800 MHz Rebanding
City of Thomasville, Georgia - 800 MHz Upgrade
City of Dothan Alabama - 800 MHz Rebanding
Gwinnett County, Georgia - 800 MHz Upgrade
Cobb County, Georgia - 911 Center Upgrades, Early Notification System
City of Albany, GA - 800 MHz rebanding, 911 Center Assessment
City of Valdosta/Lowndes County - 800 MHz Rebanding
Fayette County, GA - 800 MHz Rebanding
Hall County, Georgia - 800 MHz Project 25 New System
Dawson County, Georgia - VHF System Upgrade
Farmers Telephone - 700 MHz LTE
Sand Hill - 700 MHz LTE
BIT Wireless - 700 MHz Wi Max LTE

RESPONSE TO TECHNICAL REQUIREMENTS (SECTION 5)

The complexity of finding the best overall radio system solution to serve the needs of agencies serving the County as well as interoperability issues, is in evaluating the different technical solutions, understanding the impacts of the technology solutions on public safety operations, determining the financial alternatives for one-time costs and on-going operations, understanding the governance, network management and contractual issues. Engineering Associates' consultative approach has successfully helped many clients understand the advantages and disadvantages of available choices, both in their initial purchase and in the long-term horizon with service, maintenance and operational expenses.

Engineering Associates can and has performed all the services illustrated in Section 5 Scope of Work. Our response is to provide by example narratives of the scopes of work completed for other similar projects.

FULTON COUNTY, GEORGIA

In 2012 Engineering Associates, Inc. won the bid to provide technical assistance to Fulton County on the design, implementation and installation of an upgraded 800 MHz radio system for Public Safety. We performed a needs assessment, completed a fundamental design, provided technical specifications and procurement assistance, assisted with the vendor negotiations and contract, provided implementation and construction oversight and are leading the customer through the system and coverage testing process. The new 800 MHz APCO Project 25 phase 2 system was cutover in December of 2015. This system is providing mission critical communications to public safety and public service personnel within Fulton County including some 3000+ subscribers. The original system was a 9-site, 14 channel proprietary system installed in 1992. We assisted Fulton County with the evaluation of operations and are in the process of expanding the system from 9 sites to 15 sites in order to provide improved portable radio coverage throughout Fulton County to better support the public safety operations. Engineering Associates provided professional engineering, project management, site acquisition and integration services for this upgrade from 800 MHz proprietary technology to APCO Project 25 Phase 2 open standard technology. We have worked with Fulton County for several years providing 800 MHz rebanding expertise and tower site evaluation services.

CITY OF CLARKSVILLE, TENNESSEE

In 2012 EA was invited to provide professional engineering, consulting and project management to the City of Clarksville, TN on the design, implementation and installation of an upgraded 800 MHz radio system for Public Safety. We performed a needs assessment, completed a fundamental design, provided technical specifications and procurement assistance, assisted with the vendor negotiations and contract, provided implementation and construction oversight and lead the customer through the system and coverage testing process. Cutover to the new 800 MHz APCO Project 25 phase 2 system was

completed in May of 2014, one year after the vendor contract was signed. This system is providing mission critical communications to public safety and public service personnel within the City of Clarksville and is being switched by the State of Tennessee master site through a regional agreement. The original system was a 3-site, 8-channel proprietary system installed in 2002 that had many components that had reached the end of their useful life. Engineering Associates provided professional engineering and project management services for this upgrade from 800 MHz proprietary technology to APCO Project 25 Phase 2 open standard technology. Some of the major accomplishments were assisting the City with getting bids from multiple P25 vendors, aggressive vendor pricing through our negotiations, assisting the City with the IGA with the State of Tennessee DOC, assisting the City with Windstream to get circuits completed and assisting the City with integrating radio operations with the State. This system is one of the first to be integrated regionally with the State in Nashville and is primarily a TDMA cell off of an FDMA system that is transitioning to the newer P25 standards. Engineering Associates provided FTTP and CATP expertise to the City of Clarksville previously and we were invited back to provide assistance with their mission critical radio technology.

YORK COUNTY AND JAMES CITY COUNTY, VIRGINIA

Engineering Associates, Inc. was invited to certify the design of a new 800 MHz, APCO Project 25 radio system to serve the Counties of York and James City as well as plans for expansion into other municipalities. Engineering Associates was brought in to replace two other consulting firms that had not performed well on the project. Engineering Associates, Inc. reviewed the design and the scope of work and was invited to consult on all other phases of the project including Factory Acceptance Testing and Fleetmap development and cutover.

York County and James City County, Virginia agreed to construct a joint system in order to save both municipalities money and to ensure regional mutual aid. This system is a nine-site, twenty-channel, SmartZone APCO P25 digital system with integrated voice and data. The system cutover was May 2005. Since the cutover to the new system, the City of Poquoson, the City of Williamsburg and the College of William and Mary have joined the system as tenants. Further, Engineering Associates worked for Gloucester County, VA on the evaluation of their radio system needs. Gloucester chose to join the York, et al, 800 MHz regional radio system in 2008 with a 4-site, 6-channel simulcast system. This regional system currently provides public safety communications for over 150,000 residents and millions of annual visitors to this historic region of the United States. Engineering Associates is continuing to provide our professional engineering, consulting and project management expertise to this system.

FRANKLIN COUNTY, VIRGINIA

Engineering Associates, LLC won the bid in June, 2012 to provide technical assistance to the county on the design, implementation and installation of a new public safety radio system to replace their aging VHF system. We completed a needs assessment, and multiple propagation studies at VHF and 800 MHz

to select sites for a portable in-building design. We assisted with frequency selection and coordination issues. We provided an RFP for the county to procure an APCO Project 25 Phase 2 compliant simulcast 800 MHz system with an IP based microwave backbone. Also specified was VHF paging system infrastructure with simulcast transmitters for increased coverage and better performance. The county's radio committee chose a radio system vendor in December, 2014. The vendor's system will utilize eight sites and eight simulcast channels. Engineering Associates has been requested to assist the county during design reviews, construction, system testing, and project completion.

HALL COUNTY, GEORGIA

Engineering Associates, LLC is currently working with Hall County on the upgrade of their APCO P25 Phase I System to Phase II TDMA Technology. We are assessing vendor pricing and will complete the procurement process within the next 30 days.

In 2004, Engineering Associates won the bid to provide technical assistance to the county on the design, implementation and installation of a new radio system for their public safety operations. We completed the needs assessment, design, vendor RFP and negotiations, design review, site acquisition and negotiations, as well as FCC and FAA applications. The cutover to this new system was in March of 2007. After the initial award we were invited to assist with their 800 MHz rebanding project and we are currently working on the Frequency Reconfiguration Agreement tasks.

Hall County, Georgia implemented a seven-site, ten-channel 800 MHz SmartZone APCO P25 digital simulcast system with integrated voice and data. Engineering Associates, LLC assisted Hall County with the selection of a mobile data vendor. In addition, we assisted Hall County in deploying a 4.9 GHz Public Safety MESH network integrated with public access Wi-Fi. This MESH network was the first integrated network of its kind in the United States.

COST PROPOSAL (SECTION 6)

Per the RFP instructions, two copies have been submitted in a sealed envelope with Original copy of submittal.

REQUIRED FORMS (SECTION 8)

Attachment A

SIGNATURE AFFIDAVIT

In signing this proposal, we also certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a proposal; that this proposal has been independently arrived at without collusion with any other proposer competitor or potential competitor; that this proposal has not been knowingly disclosed prior to the opening of proposals to any other proposer or competitor; that the above statement is accurate under penalty of perjury.

The undersigned, submitting this proposal, hereby agrees with all the terms, conditions and specifications required by the County in this Request for Proposal, and declares that the attached proposal and pricing are in conformity therewith.

Michael C. McGannon

Name (Type or Print)

Vice President, Wireless Engineering

Title



Signature

Engineering Associates, LLC

Firm

1220 Old Alpharetta Road, Suite 380, Alpharetta, GA 30005

Address: (Street, City, State, Zip Code)

678-455-7266

Telephone

678-456-5981

Fax

mmcgannon@engineeringassociates.com

E-Mail

February 29, 2016

Date

Attachment B

VENDOR DATA SHEET

1. Proposing Company Name _____

Telephone _____ Toll Free Telephone _____ Fax _____

Address: _____

City: _____ State: _____ Zip + Four: _____

2. Contact Person in the event there are questions about your proposal

Name: _____ Title: _____

Telephone: _____ Toll Free Telephone: _____

Address: _____

City: _____ State: _____ Zip + Four: _____

3. Mailing address where County purchase orders/contracts are to be mailed and person the Department can contact concerning orders and billing.

Name: _____ Title: _____

Telephone: _____ Toll Free Telephone: _____

Address: _____

City: _____ State: _____ Zip + Four: _____

Attachment C

REFERENCES

Provide company name, address, contact person, telephone number, and appropriate information on the product(s) and/or service(s) used for three (3) or more installations/services with requirements similar to those included in this solicitation document. If vendor is proposing any arrangement involving a third party, the named references should also be involved in a similar arrangement.

Company Name:
Company Address:
Telephone/email:
Contact Person:
Services provided by proposer/vendor:

Company Name:
Company Address:
Telephone/email:
Contact Person:
Services provided by proposer/vendor:

Company Name:
Company Address:
Telephone/email:
Contact Person:
Services provided by proposer/vendor:

Company Name:
Company Address:
Telephone/email:
Contact Person:
Services provided by proposer/vendor:

Company Name:
Company Address:
Telephone/email:
Contact Person:
Services provided by proposer/vendor:

Attachment D

COST SUMMARY SHEET (Submit only one copy, in separate envelope with Original copy of submittal)

Personnel Costs	\$
ODC Costs	\$
TOTAL COSTS	\$

Completed cost summary sheet submitted in separate envelope with Original copy of submittal, per the RFP instructions above.

APPENDICES



Orange County
Financial Services Department
ADDENDUM #1
February 8, 2016

RFQ 5217
Countywide Radio Communications Interoperability And Systems Engineering Services

To all Vendors:

Modifications to bid documents for the above-named Request for Proposal are made as follows and shall be included in the proposed amount.

Questions received with County's responses are on page 2 of this document

All other terms and conditions shall remain the same

By: David E. Cannell, Purchasing Agent; dcannell@co.orange.nc.us / (919) 245-2651

Acknowledgement of receipt of this addendum shall be included with your submittal

Company Name: _____

By: _____

Date Received: _____

P.O. Box 8181 200 South Cameron Street Hillsborough, North Carolina 27278
Telephones: Area Code 919-245-2651 Fax: 919-636-4913



Orange County
Financial Services Department
ADDENDUM #2
February 12, 2016

RFQ 5217
Countywide Radio Communications Interoperability And Systems Engineering Services

To all Vendors:

Modifications to bid documents for the above-named Request for Proposal are made as follows and shall be included in the proposed amount.

The due date has been extended to March 1, 2016 at 5:00 pm. We anticipate issuing at least one additional addendum to address questions received

All other terms and conditions shall remain the same

By: David E. Cannell, Purchasing Agent; dcannell@co.orange.nc.us / (919) 245-2651

Acknowledgement of receipt of this addendum shall be included with your submittal

Company Name: _____

By: _____

Date Received: _____

P.O. Box 8181 200 South Cameron Street Hillsborough, North Carolina 27278
Telephones: Area Code 919-245-2651 Fax: 919-636-4913



Orange County
Financial Services Department
ADDENDUM #3
February 23, 2016

RFQ 5217
Countywide Radio Communications Interoperability And Systems Engineering Services

To all Vendors:

Modifications to bid documents for the above-named Request for Proposal are made as follows and shall be included in the proposed amount.

Questions received with County's responses are on pages 2-4 of this document

All other terms and conditions shall remain the same

By: David E. Cannell, Purchasing Agent; dcannell@co.orange.nc.us / (919) 245-2651

Acknowledgement of receipt of this addendum shall be included with your submittal

Company Name: _____

By: _____

Date Received: _____

P.O. Box 8181 200 South Cameron Street Hillsborough, North Carolina 27278
Telephones: Area Code 919-245-2651 Fax: 919-636-4913



Orange County
Financial Services Department
ADDENDUM #4
February 24, 2016

RFQ 5217
Countywide Radio Communications Interoperability And Systems Engineering Services

To all Vendors:

Modifications to bid documents for the above-named Request for Proposal are made as follows and shall be included in the proposed amount.

Questions received with County's responses are on page 2 of this document

All other terms and conditions shall remain the same

By: David E. Cannell, Purchasing Agent; dcannell@co.orange.nc.us / (919) 245-2651

Acknowledgement of receipt of this addendum shall be included with your submittal

Company Name: _____

By: _____

Date Received: _____

P.O. Box 8181 200 South Cameron Street Hillsborough, North Carolina 27278
Telephones: Area Code 919-245-2651 Fax: 919-636-4913