

**QUALIFICATIONS TO PROVIDE
PROFESSIONAL MICROWAVE ENGINEERING
SERVICES**

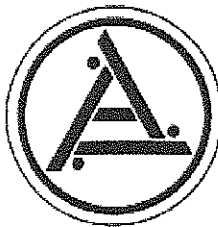
TO

**WEST VIRGINIA DHHR/STATE TRAUMA AND
EMERGENCY CARE SYSTEM**



RFQ #: BPH 80345

BY



Alexander Utility Engineering, Inc.

Professional Engineering Services-Electric Power & Communications

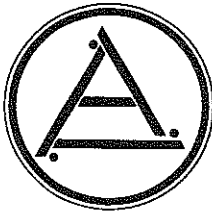
975 W. Bitters Road, San Antonio, Texas 78216 Phone: (210) 496-3200

February 12, 2008

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TRANSMITTAL LETTER



Alexander Utility Engineering, Inc.

975 W. BITTERS RD. • SAN ANTONIO, TEXAS 78216-7811 • (210) 496-3200 • FAX (210) 494-9987

February 12, 2008

Ms. Roberta Wagner
Senior Buyer
Purchasing Division
State of West Virginia
P.O. Box 50130
Charleston, WV 25305-0130

VIA: Fed-Ex

SUBJECT: Proposal for RFQ# BPH80345 – Professional Microwave Engineering Services

Dear Ms. Wagner:

Alexander Utility Engineering, Inc (AUE) is pleased to present this proposal to the State of West Virginia Department of Administration Purchasing Division to provide Professional Microwave Engineering Services to the Health and Human Resources BPH-Trauma and Emergency Care System – NOROP Center as detailed in RFQ#BPH80345.

AUE is uniquely qualified to provide these services by virtue of its previous experience of providing these same services since 1998 to the State of West Virginia DHHR and associated agencies. AUE welcomes the opportunity to update and submit our qualifications in response to the Expression of Interest requested in the above referenced RFQ. The table of contents includes an itemization of the materials included in this response.

We would be honored to be selected to continue providing the requested services. We would be glad to meet with you or your representatives to answer any questions you might have. Please feel free to contact me at 210-496-3200 x118 or to dan.banks@alexutil.com for email.

Sincerely yours,

Dan R. Banks, RCDD
Vice President – Communications

PURCHASING AFFIDAVIT

Alexander Utility Engineering, Inc.
Professional Engineering Services-Electric Power & Communications

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

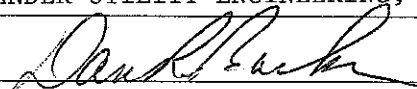
EXCEPTION: The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

LICENSING: Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY: The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit www.state.wv.us/admin/purchase/privacy for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: ALEXANDER UTILITY ENGINEERING, INC.

Authorized Signature:  Date: 02/12/2008

STATE OF WEST VIRGINIA
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON STREET, EAST
POST OFFICE BOX 50130
CHARLESTON, WEST VIRGINIA 25305-0130
02/27/2007

DAN R BANKS
ALEXANDER UTILITY ENGINEERING
975 WEST BITTERS ROAD

SAN ANTONIO TX 78216

THIS IS TO CONFIRM RECEIPT OF YOUR VENDOR REGISTRATION FEE. PAYMENT OF THE FEE ENABLES YOU TO PARTICIPATE IN THE PURCHASING DIVISION'S COMPETITIVE BID PROCESS AND ENTITLES YOU TO A ONE-YEAR SUBSCRIPTION TO THE WEST VIRGINIA PURCHASING BULLETIN. A NEW ISSUE OF THE WEST VIRGINIA PURCHASING BULLETIN IS POSTED ON OUR WEB SITE EACH WEEK. BID OPPORTUNITIES ESTIMATED AT \$25,000 OR MORE ARE ADVERTISED IN THIS PUBLICATION. WE ENCOURAGE YOU TO LOG ON AND VIEW THE BULLETIN EVERY FRIDAY SO AS NOT TO MISS IMPORTANT BIDDING OPPORTUNITIES. OUR WEB ADDRESS IS:

[HTTP://WWW.STATE.WV.US/ADMIN/PURCHASE](http://www.state.wv.us/admin/purchase)

IN ORDER TO ACCESS THE WEST VIRGINIA PURCHASING BULLETIN, YOU WILL NEED YOUR VENDOR NUMBER, GROUP NUMBER (IF ANY), AND YOUR PASSWORD WHICH ARE PRINTED BELOW. YOUR ACCESS WILL BECOME EFFECTIVE ON THE FIRST MONDAY AFTER 02/27/2007, STATE HOLIDAYS EXCLUDED.

HELPFUL TIPS: YOUR COMPUTER-GENERATED VENDOR NUMBER BEGINS WITH AN ASTERISK, BUT DO NOT USE THE ASTERISK WHEN LOGGING IN. ALSO, OUR LOGIN SCRIPT IS CASE SENSITIVE. THEREFORE, IF YOUR VENDOR NUMBER CONTAINS A CHARACTER LIKE A, B, OR C, PLEASE TYPE IT IN UPPER CASE.

IF YOU HAVE QUESTIONS, FEEL FREE TO CONTACT US AT 304-558-2311 OR TEAM@WVADMIN.GOV. THANK YOU.

SINCERELY YOURS,



VENDOR REGISTRATION

VENDOR NUMBER : *303125652
GROUP NUMBER :
PASSWORD : 031651

QUALIFICATIONS

Alexander Utility Engineering, Inc.

Professional Engineering Services-Electric Power & Communications

QUALIFICATIONS

General

- Alexander Utility Engineering, Inc. (AUE) is honored to provide this qualification information to West Virginia DHHR/State Trauma and Emergency Care System (STECS) for consideration of AUE's services to support the continued on-going professional engineering support for expansion of the State Medical Command Microwave System. This package includes a high-level summary of services plus details on the specific services requested in the RFQ #BPH80345.
- AUE has been providing these same services to various agencies of the State of West Virginia since 1998.
- Individuals authorized to make communication related representations for AUE are:

Dan R. Banks, RCDD
Vice-President – Communications
975 W. Bitters Rd.
San Antonio, TX 78216
Ofc Tel: 210-496-3200 x118

William M. Hawk, P.E.
Senior Engineer/Communications Consultant
5705 Lake View Dr.
Austin, TX 78734
Ofc Tel: 512-266-2004

Albert H. Mergel
Senior RF Designer
3375 Hidden Creek Ave.
Thousand Oaks, CA 91360
Ofc Tel: 805-241-8626

- AUE provides only Owner's Engineer services. We do not sell or install any equipment therefore maintaining a vendor independent status for our clients.
- AUE is a 37+ year consulting engineering firm providing services to the utility, educational, public safety and private enterprise industries. Services provided include the communications and electric power engineering disciplines. Full-time expert staff resources are available in both disciplines.

**West Virginia DHHR/State Trauma and Emergency Care System
Microwave System Engineering EOI**

AUE Qualifications

- AUE maintains a complete set of proprietary technical specifications that are provided to clients as project scope and details are defined. This eliminates the need to prepare time-consuming (i.e. expensive) specifications for repetitive applications.
- AUE utilizes a complete set of mechanized engineering tools to assist in project development. This includes Softwright and RadioSoft Design Program, PathLoss Path Design Program, Mechanized USGS Nationwide Database, Bentley Microstation Project Wise Engineering Programs for Internet Browser access of GIS files and databases and extensive use of FTP sites for file management of large graphic files.
- Alexander Utility Engineering, Inc. (AUE) has prepared the following information to assist West Virginia DHHR/State Trauma and Emergency Care System (STECS) become familiar with the capabilities and qualifications of AUE. Also included is the technical approach, which AUE will utilize in providing these engineering services.

AUE Staffing:

Personnel:

Power	26
Communications	13
CADD/GIS	3
Admin/Accounting	2
Associates	<u>3</u>
Total Employees	47

Registered P.E.'s / R.C.D.D.:

R.L. "Rick" Alexander, P.E. - President and CEO
Dan Banks, R.C.D.D./LAN - Vice President, Communications
Leonard Hill, P.E. - Vice President, Electric Power
William Hawk, P.E. - Senior Engineer, Communications
Mike Vorndam, P.E. - Senior Engineer, - GIS
Ralph Alonzo, P.E. - Senior Engineer - Civil Engineering
Joe Trevino, P.E. - Senior Engineer - Electric Power

AUE Business & Financial Stability:

AUE has been in continuous operations since 1971. AUE has the financial stability to support the projects. Monthly payroll is approximately \$150,000 and AUE does not carry any debt. AUE has never failed to complete a project and does not have any outstanding claims or lawsuits. AUE carries a typical \$2 million umbrella general

**West Virginia DHHR/State Trauma and Emergency Care System
Microwave System Engineering EOI**

AUE Qualifications

liability policy and a \$1 million professional liability policy. STECS can be named as additional insured without any problem.

AUE Facilities:

AUE is located in a 12,000 sq. ft. owned facility conveniently located in northern San Antonio near the San Antonio International Airport. Design, testing, and administrative personnel are provided with networked personal computers to facilitate both efficient workstations and project information flow.

AUE has established a research and development laboratory. This facility is utilized for pre-deployment testing of Radio Frequency (RF), IT hardware and software and switching systems, application development and design testing. It enables us to test the viability of customer-requested applications, develop solutions where required and design interface equipment prior to deployment.

AUE operates a fleet of 18 trucks and vans.

Equipment and software listed below is provided to the firm's personnel for the benefit of its clients.

Administration:

- PC Compatible Computers
- Microsoft Office Suite
- Sema4 Electronic Timekeeping (detailed documentation of project time)
- Oracle (Database)
- Fax Machine
- Fax/Modems
- State-of-the-art Phone System with Voice Mail and Emergency Call Out

Design:

- PC Compatible Computers
- Computer Aided Design Software (MicroStation SE/J/V8/XM)
- Geo-Graphics Web Publication Software
- Fiber Optic and CATV Design Software
- RadioSoft and Softwright RF Propagation Modeling Software
- PathLoss Software for path engineering
- CommSite Plus Intermodulation Calculation Software
- Short Circuit (equipment ratings and coordination studies)
- Power Flow (load drop calculations and cable ampacity)
- Protective Device Coordination Software
- Motor Starting Voltage Dip Analysis
- Cathodic Protection Anode Software
- Hewlett Packard 450C
- Standard Copiers (8½" X 11" through 11" X 17")

West Virginia DHHR/State Trauma and Emergency Care System

Microwave System Engineering EOI

AUE Qualifications

Technical Library (ANSI and IEEE Standards and Guides)
Vendor Library

Testing:

Z-tronics GPS based RF signal strength drive test software and hardware for lo-band thru 1GHz
Anritsu Spectrum Analyzer
Doble F3S 3-Phase Relay and Meter Calibration Set
Biddle Automatic Balance Capacitance & Dissipation Factor Test Set
Reliable Power Meter – Omega Power Quality Monitor & IBM Laptop
Multi-Amp SR-76 Single-Phase Relay Test Set
Arbiter Phase Angle-Voltage-Current-Power Meter
Multi-amp CS-7B Phase Shifter and Phase Angle Meter
Hand-held Digital Multimeters
DCI Conversion Infrared Imager
Decade Resistance Box for Calibrating Motor and Bearing RTD's
Hipotronics 120kVdc Hi-Potential Test Set
Multi-Amp JR-31/ Single Phase Analog Relay Test Set
Associated Research 5kVdc Insulation Resistance Test Set
Biddle DET Digital Earth Tester
Biddle Transformer Turns Ratio Tester
Cincinnati Clock Breaker Travel Analyzer
Biddle Digital Low Resistance Ohmmeter (contact resistance in micro-ohms)
Environmentally conditioned 300 sq. ft. Testing Laboratory
Numerous Hand-held Ammeters and Voltmeters
Standards Library with ANSI and IEEE Test Requirements

AUE performs testing in accordance with the latest edition of EIA/TIA Standards and "Acceptance Testing Specifications for Electric Power Distribution Equipment and Systems" and "Maintenance Testing Specifications for Electric Power Distribution Equipment and Systems" published by the International Electrical Testing Association (NETA).

Computer Aided Drafting and Design (CADD):

AUE provides integrated GIS design services. It does so primarily in support of engineering services carried out by the AUE staff for a wide variety of electrical power and communications clients. Recently AUE is beginning to provide centralized map hosting for clients with access via web browsers.

Output formats are MicroStation DGN and AutoCAD DWG. Digital Exchange Format (DXF) is also routinely utilized to translate DGN and DWG formats, when necessary.

**West Virginia DHHR/State Trauma and Emergency Care System
Microwave System Engineering EOI
AUE Qualifications**

Hardcopy output media includes mylar, vellum and bond paper - monochrome or color

AUE's CADD Equipment includes:

- High-end CADD Tech Workstations (20 ea.)
- HP DESIGN-JET 850C plotter (1 ea.)
- HP DESIGN-JET 750C plotter (1 ea.)
- HP DESIGN-JET 650C plotter (1 ea.)
- HP 5550CM Color Printer (2ea.)
- HP Laser Jet Printers (8 ea.)

TECHNICAL APPROACH

This section identifies the technical and practical approach that will be used in providing strategic planning process services for STECS. The four principles that AUE uses to provide services are:

The first principle is to *assemble a first-rate team* with all the skills necessary to successfully meet STECS's requirements. Already possessing an extensive, proven skill-set in the telecommunications engineering disciplines, AUE has gathered a team that can meet all of the STECS requirements.

The second principle is to *engage the STECS staff at every stage of the process*. It's important to continue the progress on the existing and proposed projects by clearly communicating the requirements with all parties. AUE will work with STECS staff to gather pre-determined information on the existing and proposed systems so as to limit any unnecessary expenditure of engineering hours and cost.

The third principle is to *solicit the current product availabilities of vendors*. This solicitation is being done on a generic budget basis without any formal quotations. AUE has been successful in working with vendors on obtaining budget information on system upgrade and improvements. These estimates are included in the long-range planning processes used by AUE. The purpose of this effort will be to assure STECS that all products contemplated for usage on this project are reliable and have a good track record.

The fourth principle, which the AUE-STECS team should apply, is the need for implementing *cost effective solutions*. All possible solutions are always considered with a 10-year net present value computation. Therefore, the end result is a planning process that is justified on performance as well as cost. AUE uses a proprietary RFP method that is tried-and-true on obtaining comparable quotations from vendors based on a clear definition of the requirements.

ENGINEERING SPECIFICS FOR STECS PROJECTS

The procurement specifications detailed in Part 3 of RFQ# BPH80345 can all be met by AUE's staff. The primary components of the project are:

- Microwave Backbone Design
- Tower Site Design and Civil Work
- Radio System Coordination
- Equipment Specifications and Training

Microwave Backbone Design

As indicated in the transmittal letter, AUE has been providing these same services to STECS and other agencies of the State of West Virginia since 1998. All of the detailed items included in the RFQ have been delivered satisfactorily by AUE.

As technology and vendor equipment changes and migrates to newer low cost and higher capacity systems, AUE stays on top of these changes by attending regular training and industry seminars for equipment vendors. In addition AUE is a member of the IEEE and stays abreast of all new technology standards approved for communication systems.

The challenges of developing reliable microwave communication systems in the mountainous regions of West Virginia have been overcome by utilizing the experience of AUE's engineering staff along with a good resource of planning tools that are needed to provide effective backbone designs.

Moving forward, AUE is prepared to assist STECS with upgrades and expansion of the statewide microwave system as necessary to meet the requirements of new systems authorized by federal homeland security initiatives or state or local initiatives.

Tower Site Design and Civil Work

AUE provides these services as ancillary to the microwave backbone design. A reliable communication system must have reliable supporting hardware for site performance.

These services are provided by AUE's team of engineers and consultants to most effectively deliver the services to STECS. Experience has proven that STECS personnel have very competent knowledge of most site requirements. Therefore, AUE provides only those services that are required which reduces the cost of the overall provisioning of these services.

The coordinated tower site design and civil work ensures that budgets will match actual expenditures and allow for the timely completion of projects. AUE has successfully completed many new projects for STECS since 1998.

AUE has developed over 20 new sites for STECS over the last few years and in general has developed approximately 50 new sites for clients across the United States.

Radio System Coordination

All RF systems are heavily controlled by the FCC and FAA. In addition public safety designated frequencies are administered and controlled by the American Public Safety Communications Officers Association (APCO). AUE is a member of APCO and stays in constant contact with FCC and FAA. Applications for new licenses are submitted promptly so that any conflicts can be identified early in the planning phase.

AUE has a complete understanding of all RF frequency licensing and channel pairs needed to provide effective communication systems. These services are provided to STECS as needed.

Equipment Specifications and Training

From AUE's experience, digital communication systems do not require as much hands-on staff support for reliable communications. Therefore, AUE specifies equipment and training that will most effectively provide services to STECS.

Vendor training is always specified in all equipment specifications. This training is included in the cost of the equipment and does not require an additional expenditure by STECS for these services.

A detailed summary of all equipment required to provide expansion of microwave to a new site is prepared by AUE. STECS personnel have utilized these summaries of equipment to satisfactorily purchase new system hardware.

RESUMES

STAFF RESUMES

The following personnel resumes are those of key AUE employees who would be involved in providing these security system consulting services for STECS.

Vice President – Communications – Mr. Dan R. Banks, R.C.D.D.

Mr. Banks has worked with the State of West Virginia and the various agencies since 1998 providing microwave engineering services for both new development of microwave systems as well as conversion of existing systems. Mr. Banks supported the reimbursement of microwave relocation efforts by various licensed communication carriers who were required by law to relocate various West Virginia microwave paths. Mr. Banks provides overall management and oversight to all engineering efforts provided to STECS.

Senior Engineer – Mr. Bill Hawk, P.E.

Mr. Hawk is one of the AUE professional engineers who are assigned tasks as necessary to provide support to the technical services of AUE's clients. Mr. Hawk will be responsible for reviewing all engineering designs prepared by AUE.

Senior RF Designer – Mr. Al Mergel

Mr. Mergel is the designated AUE representative who has worked with the State of West Virginia microwave system since 1998. He is continuing to provide services to STECS and will continue to be available in the future. His services have always been considered to be exemplary.

Senior RF Designer – Mr. Pat Worsham

Mr. Worsham provides support for two-way radio licensing and frequency coordination issues required to support STECS. Mr. Worsham is familiar with all of the licensing issues required for STECS microwave and two-way radio operations.

Senior Systems Integrator – Mr. Doug Jackson

Mr. Jackson provides overall communication technology interface for AUE's engineering designs. Mr. Jackson reviews all digital communication designs and validates the functionality of broadband designs.

President & CEO – Mr. Richard L. Alexander, P.E.

Mr. Alexander provides resources and personnel to accomplish the various projects AUE undertakes. Mr. Alexander hosts a Monday morning meeting each week to review the status of various projects and monitors the progress. He plays an active role in keeping projects on schedule and on budget.

DAN R. BANKS, R. C. D. D./N. T. S.

• Vice President - Communications Division •

- Education** Bachelor of Business Administration, St. Mary's University, 1965
Network Distribution Services, Southwestern Bell, 1965-1991
SONET Network Design, Bellcore, 1990
Project Management, Pacific Bell, 1990
- Certifications** *Registered Communication Distribution Designer, BICSI, 1990*
RCDD # 081324 (Physical communication design certification)
NTS # 20508 (Network communication design certification)
Building Industry Consulting, Communications Certification, BICSI, 1990
- Memberships** Building Industry Consulting Service International
Institute of Electrical and Electronic Engineers
Texas Society of Telephone Engineers
Federal Communications Commission Bar Association
Texas Public Power Association
Texas Electric Cooperative Association
Texas Telephone Association
Elder, Concordia Lutheran Church
- Experience** *Alexander Utility Engineering, Inc., San Antonio, Texas, 1992 - present*
Communications Division Vice President
Supervise and direct all Communications projects and personnel. Assist with corporate business development and implementation of company goals and objectives. Oversee and direct the engineering and design services of telecommunication facilities for clients with wired, wireless, and broadband requirements throughout Texas and the United States. Serve in a Principal engineering, design, and consulting capacity on major, multi-million dollar projects.
- Southwestern Bell Telephone Company, 1965 - 1991**
Career spanning 26 years, with responsibilities for outside plant engineering and design, business office functions, and special engineering team projects. Areas of responsibility included:
- Establishment of the San Antonio BDS/LAN Team for furnishing de-regulated services to clients of SWBT for private information management networks.
 - Over eleven years of complete outside plant engineering experience, including Long Range Planning, Financial Analysis, Design and Installation of Fiber Optic Networks, Loop Electronics, Copper Networks, Feeder and Distribution, Building Distribution Systems, and all Structures.
 - Management of business office functions and computer systems development throughout five state regions of SWBT for over 10 years.

WILLIAM M. HAWK, P. E.

• **Senior Engineer and Consultant** •

Education

Bachelor of Science in Electrical Engineering from Rice University, Houston, Texas, 1983 (emphasis in Circuits, Controls, and Communications)

Certifications

Registered Professional Engineer, State of Texas, 66485

Experience

***Alexander Utility Engineering, Inc., Austin, Texas, 2003 - present
Senior Engineer and Consultant***

Experienced in the planning, design, and implementation of all aspects of telecommunications systems, data networks, fiber optic networks, security systems, and radio systems as well as high-voltage electrical system relaying, metering, and telemetry. Knowledgeable in financial planning and project justification, requirements assessment and definition development, project and design team management, and interdisciplinary coordination between internal and client personnel. Numerous successful projects with local, municipal, and state governments, school districts, commercial and industrial businesses, universities and university systems, and electric utilities. Capabilities include:

- Fiber Optic, CATV, and Voice Cabling Networks
- Ethernet, IP, and SONET Networks
- Frame Relay, ISDN, and PSTN Networks
- Current and Emerging Wireless Networking Technologies
- Telephone Switching and ACD/Call Centers
- VoIP Systems and VoIP Networks
- Security Systems and Services
- Microwave and Two-Way Radio Systems
- Power Line Carrier and Broadband over Power Line
- SCADA, Telemetry, Relaying, and Substation Automation
- UPS, Backup Power Systems, and Grounding Systems
- Project Financial Planning and Analysis
- Project Budget Preparation
- Regulatory Analysis
- Strategic Planning
- Process and Change Management

Detailed project level experience is available upon request.

Navigant Consulting, Incorporated (formerly JanCom, RMI), 1991 - 2003

Lower Colorado River Authority, Austin, Texas, 1983 - 1991

ALBERT (AL) H. MERGEL

• Senior RF Designer - West Coast Operation •

Education Bachelor of Science Electrical Engineering Curriculum, West Coast University,
1971-1973

Experience *Alexander Utility Engineering, Inc., 1996 – present*
Senior RF Designer

Responsible for project engineering and management support with client(s). Provide Needs Assessments, Project Requirements, Budget Estimates, Project Schedules, Preliminary System Designs, Recommendations, Bid Specifications, Bidder Evaluations, Bid Request Documents, Bid Response Evaluations, Summaries, Final System Layouts/Site requirements, Path Designs, Material Requirements, Frequency Planning and Coordination, FCC and FAA Permitting, Factory and System Acceptance Test Evaluation, Project Oversight, and Project Completion Documentation.

Work projects include:

- West Virginia State Trauma Emergency Care System - Various phases of a multi-agency public safety project, from Pilot to Statewide.
- City of San Diego communication site audit for IT&C multi-agency public safety project.
- Dayton Power & Light (power utility) - System design and specification proposal engineering to competitively bid replacement of (30+ paths) analog microwave system with ring-loop high speed SONET 6 GHz digital microwave and multiplex.
- Arkansas State Police (public safety) - System design and specification proposal engineering to competitively bid replacement of (70+ paths) analog microwave system with multiple ring loop high speed SONET 6 GHz digital microwave and multiplex.
- Southeast Ohio Emergency Management (public safety) - System design and specification proposal engineering to competitively bid replacement of (7 paths) analog microwave system with high speed digital microwave and multiplex.
- Guadalupe Valley Electric Cooperative (power utility) – Engineering support for path design and frequency coordination.
- City of Dayton (public safety) - System design and specification proposal engineering to competitively bid replacement of (7 paths) analog microwave system with high-speed digital microwave and multiplex.

Detailed project information with associated responsibility is available upon request.

Experience *Southern California Edison, 1968 - 1996*

Senior RF Engineering and Microwave Systems Project Manager

Responsible for the Design Engineering, Planning, Budgeting, Scheduling, Project Management and Tracking of a large (\$30M) analog to 6 GHz digital microwave and multiplex replacement project (70+ paths). Project included System Design, Frequency Coordination, FCC Licensing, Specifications, Bidder Qualification, RFQ and Bid Evaluation and Award. Additional work included managing various disciplines of civil engineering, construction, client coordination (65 departments) and cutover coordination. Included were new buildings, towers, passive repeaters, site acquisition, and coordination with various State and Federal agencies. Applications included circuits for Power System Protective Relaying (66kV, 220kV, and 500 kV), Data Acquisition, SCADA, Power System Dispatch and Data, Private Line Dial Network trunking. Wide Network Management and circuits for power system operations, 2-way trunked radio, video teleconferencing, PABX, voice trunking and PA systems for generation plants, substations, customer service administration centers. Other work included Earthquake Preparedness Design and Test Committee Member, Disaster Recovery Design Team Member, engineering team design & contract negotiator for specialized site and circuits for various City, County, State and Federal agencies including GSA, USFS, CFS, BLM, LA County Communications, City of LA Communications, in addition to contract and inter-agency site and circuit requirements with LADWP, SDG&E, APS, PG&E and Cal Trans.

Prior Affiliations:

RCA Broadcast, Project Engineer

Various responsibilities for Trans-continental microwave installations

RCA International, Project Manager

Responsible for various international assignments.

PATRICK (PAT) J. WORSHAM

• Senior RF Designer •

**Education/
Training**

Associate's Degree of Applied Science in Electronics Engineering Technology from Del Mar College in Corpus Christi, Texas, 1973

Specialized Training Courses:

- Ericsson/Lower Colorado River Authority Radio System Administration
- RF Site Safety Awareness Training – Radiofrequency Safety International Corporation
- PC computer experience with the following software: SoftWright Terrain Analysis Program "TAP;" Microsoft Windows 98 and XP operating systems; Microsoft Office Suite of software products; RadioSoft (FCC licensing preparation software); and radio programming software

**Certifications/
Licenses/
Memberships**

- Chairperson of the Texas Statewide Interoperability Executive Committee (TSIEC)/Interoperability Subcommittee (tasked with development of a statewide interoperability radio communications plan), 1999 - present
- Amateur Radio License, WA5VRO, 1967 - present
- General Radiotelephone License PG0911944/Federal Communications Commission (FCC), 1973 - present
- Certified Communications Technician/The Personal Communications Industry Association (PCIA), 1982 - present
- Certificate of Competency and Voting Member, Association of Public-Safety Communications Officials International (APCO), 1982 - present
- Radio Club of America, 1999 to present
- Certificate of Participation, Association of Public-Safety Communications Officials International, 1999 Annual Conference and Exposition
- Eucharist Minister and Mass Coordinator at St. Ignatius Catholic Church

Experience

*Alexander Utility Engineering, Inc., San Antonio, Texas, Jan. 2006 - present
Senior RF Designer*

Responsible for RF Design services in support of client projects. Develop RF propagation plots for all frequency bands. Provide Radio-Soft based computer services; long-range communication studies; and on-site radio inventory and review services. Provide support for special radio system and communication projects, such as 800MHz re-banding (providing detailed RF designs); SCADA RF designs; Distribution Automation and SCADA studies; and support for relocation/re-licensing of two-way radio systems, new microwave projects, and new two-way radio system projects.

*Texas Department of Transportation, Austin, Texas, Nov. 1988 – Aug. 2005
Network Specialist III*

Experience

- Provided management support/oversight and technical assistance for TxDOT emergency tower repair contract and emergency tower replacement program. Traveled statewide to the TxDOT 25 districts to diagnose problems and failures. Developed written reports detailing recommended repairs/solutions. Consulted with TxDOT districts regarding radio communications installation, system improvements, and upgrades.
- Performed engineering work related to the design of various department radio communication systems.
- Provided design specifications for self-support radio communication towers; developed grounding specifications for radio towers and associated radio communications equipment; provided management support and technical assistance on the proper installation of radio communication towers and associated antennas; and researched and designed specifications for tower grounding and lightning protection systems.
- Designed and implemented the first radio communications 47 MHz frequency plan for the department and developed and wrote the first Radio Operations Manual for the department.
- Researched and assisted with the writing of specifications for radio communications equipment.
- Assisted districts to move to the newer technology spectrums, 150 MHz narrowband and 800 MHz systems.
- Performed AASHTO radio frequency coordination.
- Extensive knowledge of FCC and FAA Rules and Regulations; completed FCC license applications and FAA Form 7460 for radio communication tower sites; and obtained first statewide FCC license for 150 MHz narrowband 12.5 kHz radio channels for TxDOT.
- Familiar with various pieces of radio communications and electronic test equipment.
- Obtain coordinates and ground elevations for radio tower sites using Trimble PRO XRS satellite survey receiver.
- Conduct training during site visits and at the Radio Specialist Workshops.
- Obtained FCC licenses for the toll road projects in the Central Texas area and for automated weather stations.

Texas Department of Health, Austin, Texas, Nov. 1981 - Nov. 1988
Engineering Technician V, Emergency Medical Services System

Designed EMS radio systems. Traveled statewide and consulted with EMS providers, hospitals, counties, and cities regarding the installation, improvement, and repair of EMS radio communications systems and related equipment. Prepared FCC and FAA applications/forms for EMS providers, hospitals, counties, and cities. Developed a statewide EMS Radio Communications Plan. Assisted with the development/planning for the annual Texas EMS Conference and provided training at the Conference.

DOUGLAS E. JACKSON JR.

• Senior Systems Integrator - Communications •

Education

Principles of Telephone Engineering, Inc., 1972
Design Center Engineering, 1972
Right of Way Acquisition, 1974
Long Range Outside Plant Planning, 1979
Long Range Technical Planning, 1982
Principles of Digital Technology, 1983
Lightwave Systems Design, 1984
AT&T Lightwave Equipment, 1988
Fujitsu Lightwave Equipment, 1993

Memberships

Texas Society of Telephone Engineers
International Right of Way Association

Experience

Alexander Utility Engineering, Inc., San Antonio, Texas, 2000 - present
Senior Systems Integrator

Provide engineering services for electrical and optical digital infrastructure development and wireless network design. Project experience includes:

- Engineering design services for Denton Independent School District for a complete telecommunications study to provide voice and broadband service over a private optical network connecting over 30 locations.
- Engineering services as needed to maintain optical and electrical communications services and service extensions to new tenants for Brook City-Base (Brooks Development Authority).
- Provided engineering design services for a complete telecommunications study to provide voice and broadband service over a private optical network connecting over 30 locations for New Braunfels Independent School District, City of New Braunfels, and New Braunfels Utilities.
- Engineering design services for a complete telecommunication study to provide broadband services to all Medina Electric Cooperative offices and substations.
- Fiber optic engineering and design services for construction of underground and overhead cable systems and networks in and around Bryan, Texas for Bryan Texas Utilities. Provided cost estimates for conduit, boring, pipes placement, innerduct placement, and cable placements. Provided cost documentation for each phase of construction.
- Provided the City of Richardson, Texas and Richardson ISD with field engineering services and highway permit coordination for construction of joint underground and overhead fiber optic network. Project had unique placement of conduit and manholes in the medians of divided access thoroughfares.
- Contract engineering services in San Antonio and Austin for build out of local loop fiber optic services for AT&T. Work included building entrance, manhole, and underground cable access along city, county, and state highways.

Experience

Stockton Telecommunications, Inc., 1999 - 2000

Supervised design and installation of transport, power, and cable termination equipment in co-location areas as specified by SWB Network Engineers (extremely short interval projects of varying magnitude installed in SWB Central Offices in San Antonio, Lubbock, and Amarillo). Work operations included floor plan layout, cable rack routing, cable and equipment installation, power equipment installation, test and turn-up, final project acceptance, and closing. Also supervised the design and installation of lightwave and pair gain equipment in SWB Central Offices, remote terminals, and customer premises as directed by SWB Transport Engineers. Operations included detailed engineering, installation, wiring and testing, and make-ready for turn-up.

Southwestern Bell Telephone Company, 1965 - 1999

Increasing levels of responsibility, from craft/technical positions to the position of Engineering and Design Manager in 1971, with experience in the following areas:

- Network Engineering/Transport - Administered a \$12 million annual budget providing for design/installation of all electronic equipment outside the central office (an area extending from San Antonio south to the Texas Coast and Mexican border). Installations included regenerators, remote terminals, and customer premises (both optical and electrical equipment).
- Interoffice Facilities and Market Support Engineering/Planning - Administered all outside plant facilities connecting together wire center and/or cities in South and West Texas. Designed and coordinated construction of all projects, including copper cable; fiber optic cable; and microwave radio. Responsible for budget planning/coordination necessary to meet service dates. Technical support for sales force included customer presentations concerning specialized services (DS1, DS3, and route protection) and forecasting/planning for the provisioning of those services.
- *Loop Facilities Engineering/Planning - Prepared studies and submissions for approval of major projects for feeder facilities for the exchange loop network for various wire centers in Metro San Antonio. Included forecast administration, route analysis, economic studies, transmission and supervision design, and selection of appropriate pair gain equipment.*
- Loop Facilities Engineering Design - Prepared projects to extend or replace distribution cables as needed to provide service for new residential and businesses within assigned wire centers. Duties included the preparation of work prints, negotiation of floor space and right of way, preparation of all necessary permits, staking, and project coordination.

RICHARD L. ALEXANDER, P.E.

• President and CEO •

Education

Bachelor of Science in Electrical Engineering (Computer Verticle) from The University of Texas at Austin, 1973

Certifications

Registered Professional Engineer, State of Texas, 46371

Experience

Alexander Utility Engineering, Inc., San Antonio, Texas, 1981 - present

President and CEO

Responsible for overall leadership, management, and direction of the firm since 1990. Previous positions included:

- Vice President of Operations for seven years. Responsible for management and direction of the firm, including accounting and financial management, sales and marketing, and general administration. Direct involvement in developing and implementing corporate financial, marketing, and GIS systems and procedures.
- Business Manager and Marketing Director for two years. Responsible for managing the Telecommunications Division, the Management Information Division, and for corporate marketing and new business strategies.

Finley Engineering Company, 1978 - 1981

Division Manager

Established a telecommunications consulting office in San Antonio, Texas. Managed both the 25-employee San Antonio office and a 50-employee Houston office designing software for PC-based systems that assisted with design and database evaluation for communications systems, including central office study; load spreading; loop evaluation; feeder analysis; and economic sizing.

IBM Corporation, 1976 - 1978

Systems Engineer and Marketing Representative

Responsible for the coordination, installation, and implementation of business computer systems (hardware and software).

Southwestern Bell Telephone Company, 1974 - 1976

Exchange/Design Engineer

Responsible for the design and implementation of network feeder and distribution systems in Northeast Houston, including the Intercontinental Airport. Wrote and utilized numerous engineering programs to assist in the design of urban communication systems, including loop design; loading calculations and spacing; and economic sizing.

COMMUNICATIONS PROJECT EXPERIENCE

The Communication Division has experience in the following:

- ◆ Wireless Communications Services
- ◆ Fiber Optic & Copper Distribution Network Cable Design Services
- ◆ Broadband Network Design
- ◆ Consulting Services
- ◆ Security Services
- ◆ Long Range Planning
- ◆ Individual Project Experience

1.0 Wireless Communications Services Include:

Medina Electric Cooperative Microwave Upgrade South, Texas

AUE is providing design engineering services, contract administration and project management to the distribution cooperative that provides services from Hondo, Texas to the Mexico border. Includes network integration services to provide voice, data, SCADA and radio communications.

West Virginia Emergency Medical Services Microwave & Two-Way Upgrade Charleston, West Virginia

Under contract with West Virginia Emergency Medical Services Technical Support Network, AUE is providing engineering and project management services to upgrade an analog microwave system to a digital microwave system. On behalf of WVEMS TSN, AUE negotiated with the PCS licensees to develop a replacement solution for the analog microwave paths and developed a statewide plan for a complete digital microwave and two-way radio network.

Floresville Electric Light and Power Wireless Planning Study Floresville, Texas

AUE provided planning and engineering design for options to replace a lo-band two-way radio system, provide SCADA connectivity to substations and provide broadband services to Internet clients of the Utility. We also assisted the Utility in troubleshooting their wireless ISP service, providing recommendations for upgrade, replacement, and enhancement of numerous aspects of their operations and equipment configuration.

Houston Independent School District 800MHz Rebanding
Houston, Texas

AUE provided project coordination, budgeting, and project management assistance in helping the District develop the necessary approach to obtaining funding from Sprint/Nextel for the reconfiguration of its Emergency Notification System serving 385 schools and 25+ District facilities located throughout the Houston metropolitan area.

City of Richardson 800MHz Rebanding
Richardson, Texas

AUE assisted the City of Richardson in planning and developing budgets for the rebanding of its 800MHz two-way radio system. We negotiated two agreements on behalf of the City; one for its small single "1-120" channel system, and one for the engineering assessment and planning for the rebanding of its larger multi-site "NPSPAC" system. We continue to support the City and its selected vendor in working to complete the planning and rebanding of the repeaters and numerous radios, while maintaining a fully reliable and working emergency response system.

Northeast Tarrant County (NETCO) Radio Consortium 800MHz Rebanding
Bedford and Euless, Texas

AUE is working with the City of Bedford, as the licensee, and the remainder of the NETCO cities: Euless, Southlake, Westlake, Grapevine, and Colleyville, to coordinate the planning required for Motorola to reband the organization's three repeater sites and thousands of mobile and portable two-way radios. The effort is particularly interesting due to the high degree of interoperability, and resulting coordination of schedules and effort, required among and between the various entities, and within the larger Fort Worth metroplex.

Bell County Communications 800MHz Rebanding
Belton, Texas

AUE is supporting the Bell County Communications in the rebanding planning for its 800 MHz two-way radio systems. We are working closely with representatives from the county, various cities, and regional first responders to ensure a carefully coordinated system cutover with no loss of redundancy or service.

Berkeley Electric Cooperative – 220MHz Operations
Monks Corner, South Carolina

AUE is providing engineering and project management services to Berkeley Electric for design, engineering, and implementation of VHF Low/High, 220 MHz, UHF, and 800/900 MHz trunking, multicast communications and Automatic Vehicle Location (AVL) systems.

Piedmont Electric Cooperative – Microwave and Two-Way services
Hillsborough, North Carolina

AUE is providing engineering and project management services for design, engineering, and implementation of VHF Low/High, 220 MHz, UHF, and 800/900 MHz trunking, multicast communications and Automatic Vehicle Location (AVL) systems with a broadband microwave backbone network.

City of San Antonio Water System Broadband Microwave
San Antonio, Texas

AUE is providing engineering support and management for broadband Ethernet network connection remote water facilities for large water system.

Arkansas State Police Microwave Relocation
State of Arkansas

Under contract with the Arkansas State Police, AUE provided engineering and project management services required to clear 88 hops of microwave covering the State of Arkansas. The existing analog system is being replaced with a new 88-hop digital microwave system. On behalf of the Arkansas State Police, AUE negotiated a systemic solution which was provided at no cost to Arkansas by the PCS licensee.

City of Dallas Microwave Relocation
Dallas, Texas

Under contract with the City of Dallas, AUE provided engineering and project management services required to clear 11 hops of microwave in the City of Dallas. The existing 11-hop analog system was replaced with a new 17-hop digital microwave system. On behalf of the City of Dallas, AUE negotiated a systemic solution which was provided at no cost to Dallas by the PCS licensees.

City of Dayton Microwave Relocation

Dayton, Ohio

Under contract with the City of Dayton, AUE provided engineering and project management services required to clear 7 hops of microwave covering the City of Dayton. The existing 7-hop analog system was replaced with a new 7-hop digital system. On behalf of the City of Dayton, AUE negotiated a systemic solution which was provided at no cost to Dayton by the PCS licensees.

Southeast Ohio Emergency Medical Services Microwave Relocation

Gallopolis, Ohio

Under contract with Southeast Ohio Emergency Medical Services, AUE provided engineering and project management services to clear 6 hops of microwave. The existing 6-hop analog system is being replaced with a new 7-hop digital microwave system. On behalf of SEOEMS, AUE negotiated a systemic solution which is being provided at no cost to SEOEMS by the PCS licensee.

City of Austin Microwave Relocation

Austin, Texas

Under contract with the PCS licensee, AUE assisted in the engineering and development of a replacement digital microwave network for the existing emergency dispatch system.

Guadalupe Valley Electric Cooperative Microwave Relocation

Gonzales, Texas

Under contract with GVEC, AUE provided engineering and project management services required to clear 5 hops of microwave covering the GVEC operating area. The existing 5-hop analog system was replaced with a new 7-hop digital microwave system. On behalf of GVEC, AUE negotiated a systemic solution which was provided at no cost to GVEC by the PCS licensee.

Southern California Edison Microwave Relocation

Los Angeles, California

AUE provided engineering and cost estimates to Southern California Edison to assist in negotiations with PCS licensees.

**Public Service of Oklahoma Microwave Relocation
Tulsa, Oklahoma**

Under contract to the PCS licensee, AUE provided engineering and project management services for the interim and final replacement of the existing analog microwave system. The existing system was replaced with a new digital microwave system.

**City of Georgetown Communication Tower Planning
Georgetown, Texas**

AUE provided antenna structure planning support to assist the city in zoning recommendations and in maximizing revenue opportunities for use of city assets.

**Bandera Electric Cooperative, Inc. – SCADA Design
Bandera, Texas**

AUE performed an analysis of the Bandera Electric Cooperative region to determine potential designs for a SCADA communications system using 220MHz, spread spectrum, microwave, fiber or some combination of various SCADA transport mediums. The analysis includes propagation studies, communications site surveys, and antenna structure surveys.

**Central Texas Electric Cooperative (CTEC) – Spread Spectrum Microwave
Fredericksburg, Texas**

AUE assisted CTEC with the implementation of a spread spectrum microwave radio system. AUE performed feasibility studies, planning, design, and development of implementation procedures. The new system will replace leased frame-relay circuits and serve as the primary transport medium for internet service to rural customers. The spread spectrum solution is more cost effective as well as yielding greater capacity and speed than the frame-relay circuits.

**Lyntegar Electric Cooperative – 220MHz SCADA Operations
Tahoka, Texas**

AUE provided services to assist in transferring communications of existing SCADA system from cellular telephone based modems to a polling dedicated system with 220MHz radios.

2.0 Cable Design Services Include:

Denton ISD **Denton, TX**

AUE is providing turn-key planning, engineering and contract administration for construction of a 50 mile fiber optic network to connect all the campuses of the Denton Independent School District. Network will be 100% IP based support for voice, data and video applications.

New Braunfels ISD and City of New Braunfels **New Braunfels, TX**

AUE is providing turn-key planning, engineering and contract administration for construction of a 30 mile fiber optic network to connect all the campuses of the New Braunfels Independent School District and all the building locations for the City of New Braunfels Offices. Network will be 100% IP based support for voice, data and video applications.

Greater Austin Area Telecommunications Network (GAATN) **Austin, Texas**

AUE has provided services to GAATN in Austin, Texas for the maintenance of a 300 mile private fiber optic network furnished to seven(7) tax based entities in the City of Austin which include State of Texas GSC, City of Austin, Travis County, University of Texas, Austin Community College, Austin Independent School District and Lower Colorado River Authority. Services include the design and bid of network extensions and replacements.

La Grange Community Network **La Grange, TX**

AUE provided turn-key engineering and project support to the City of La Grange for construction of a combined fiber optic and wireless community network.

Richardson ISD and City of Richardson Fiber Optic Networks **Richardson & Dallas, Texas**

AUE provided turn-key engineering and contract administration for construction of a 100 mile fiber optic network to connect all the campuses of the Richardson Independent School District and all the building locations for the City of Richardson Offices. Network will be 100% IP based support for voice, data and video applications.

AT&T(TCG) Fiber Optic Networks
San Antonio and Austin, Texas

AUE is providing outside plant engineering services for design and construction of fiber optic networks. Included is turn-key permit and pole attachment agreements for utility operations.

Ohio DOT Fiber Optic Network
State of Ohio

AUE provided engineering services as a subcontractor for construction of a fiber optic network to link over 40 toll collection facilities along the Ohio Turnpike. Included was a material submittal and approval process for all materials used on the project.

MCI-Worldcom Fiber Optic Networks
San Antonio and Austin, Texas

AUE provided outside plant engineering services for design and construction of fiber optic networks.

Bell County Fiber Optic Network
Bell County, Texas

AUE provided turn-key engineering and construction services to Bell County through a teaming agreement with Red Simpson, Inc. (RSI). AUE assisted in coordinating all user group requirements into a private fiber optic based communications network, provided field engineering services and construction drawings and provided a single point of contact for construction of the network.

Dayton Power & Light Fiber Optic Network
Dayton, Ohio

AUE assisted the electric utility in developing long range plans, detailed engineering and construction management for the development of an integrated communication system that integrates all utility operational and administrative functions. Technology includes, fiber optic cabling, microwave systems, ATM/WAN/LAN systems, network management, substation automation, protective relaying, voice, data and video services.

SBC -Southwest OSP Engineering
San Antonio, Texas

AUE is providing OSP engineering services to SBC in the Central and South Texas areas for subdivision planning and design, cable reinforcement and extension, pair gain system inventories, pair gain job creation and underground conduit modifications.

City Public Service Fiber Optic Network
San Antonio, Texas

AUE provides continuing contract services to the municipal owned electric utility for a variety of services including power, communication and GIS engineering services. Communication engineering has included the budgeting, design and construction documents for a 310 mile network throughout the city to connect all electric substations, a communication building at each substation to house multiple tenants in a two-story modular construction building, SONET ring design and protective relaying design and other specific projects as required by City Public Service.

BTU Fiber Optic Network
Bryan, Texas

AUE provided services to the City of Bryan as a prime engineering consultant to develop a fiber optic network. The work consists of developing master plans, specifications for material procurement, construction drawings and follow-up during construction. Network replaced a pilot wire relay system.

City of Waco Fiber Optic Network
Waco, Texas

AUE provided engineering consulting design services to the City of Waco to advise on how to best utilize a fiber optic network that was provided for their use by the local CATV franchisee. Voice, data and video selection were provided using T-1, switched Ethernet and compressed video.

Time Warner/UA Columbia – CATV Design
San Antonio, Texas

When the initial CATV system was built for San Antonio, AUE did all the engineering and coordination with the electric, telephone and CATV company to provide space on the poles and to engineer the installation of the CATV coaxial cable and amplifier network.

3.0 Broadband Network Design Services Include:

Clear Channel Information Technologies IT Center San Antonio, Texas

AUE provided LAN design and construction project management for a new IT Operations Center for the largest owner of radio stations in the United States. This IP based network provides support for web hosting for over 400 radio stations. Features included the utilization of armored fiber optic cable for robust raised floor cable protection and integration of a VOIP voice network into the data network.

Northside ISD Broadband Network – Remote Campuses San Antonio, Texas

AUE is providing broadband cabling plans for provision of voice, data, video, intercom, Internet and Intranet communications with remote campuses located throughout the Northside ISD service area.

Concordia Lutheran Church – Campus Network San Antonio, Texas

AUE provided engineering and project management services for a BICSI Certified (R.C.D.D.) Category 5 wiring system supporting over 200 users. Design included fiber optic backbone, voice PBX, high-speed data switches, video distribution network and computer file server design. Work was coordinated with architectural firms and on-site electrical contractors to obtain the most cost-effective solutions.

Bandera Electric Cooperative – Communications Network Bandera, Texas

AUE provided engineering and project management services for a BICSI Certified (R.C.D.D.) Category 5 wiring system supporting over 100 users. Design utilized existing fiber optic networks, specified new digital PBX, interfaced the IBM Token Ring network with 100mb data and provided connections for SCADA controls.

Austin Community College - Data Network Design Study Austin, Texas

AUE provided a network design study and preparation of plans, specifications and estimate to construct a fiber optic based data network to link all eight of the Austin Community College Campuses using the GAATN system backbone. Technology selected was the ATM platform using SONET as a carrier.

Dayton Power & Light Digital Switching System
Dayton, Ohio

AUE assisted the electric utility in developing long range plans, detailed engineering and construction management for the development of an integrated communication system that integrates all utility operational and administrative functions. Technology includes, fiber optic cabling, microwave systems, ATM/WAN/LAN systems, network management, substation automation, protective relaying, voice, data and video services.

4.0 Consulting Services Include:

Brooks City-Base Privatization of USAF Telecommunications
San Antonio, Texas

AUE is providing consulting services for Brooks City-Base to assist the United States Air Force and Brooks City-Base develop a privatization plan of telecommunication facilities for the campus.

City of Ashland Broadband Business Plan Update
Ashland, Oregon

AUE provided consulting services as a subcontractor to a municipal owned utility to update a fiber optic broadband business plan.

5.0 Security Services Include:

City of Universal City Security Design Review
Universal City, Texas

AUE is providing security design services as a subcontractor to a municipal owned utility to review the security planning for utility infrastructure.

City of Austin Water & Waste Water Security Design
Austin, Texas

AUE is providing engineering services to design and facilitate the installation of security systems for video, signaling and remote monitoring of utility infrastructure sites for the City of Austin, Texas.

Piedmont Electric Membership Corp
Greenville, SC

AUE is providing cyber-security analysis services to determine the vulnerability and recommended solutions for attacks from Internet based services.

West Virginia DHHR/State Trauma and Emergency Care System
Microwave System Engineering EOI
AUE Project Experience

Lower Colorado River Authority Security Design
Austin, Texas

AUE is providing consulting services to assist in video monitoring of critical electric substations experiencing a rash of copper theft.

Brazos Electric Power Cooperative Security Design
Waco, Texas

AUE is providing engineering services to design and facilitate the installation of security systems for video, signaling and remote monitoring of utility infrastructure sites throughout the Central and North Texas areas.

6.0 Long Range Planning Services Include:

SBC Long Range Planning
San Antonio, Austin, Texas

AUE has provided long range planning services to SBC on a contract basis for development of two-year work plans for the expansion of outside plant facilities.

City of Richardson Fiber Optic Study
Richardson, Texas

AUE provided a feasibility analysis and budgetary summary for development of a fiber optic network to connect all the buildings of the city and one of the local school districts with an Interlocal Agreement.

CLIENT LISTINGS

ALEXANDER UTILITY ENGINEERING, INC.

CLIENT LIST

AFCO Technologies, Inc. San Antonio, Texas	City of San Diego, California	Lubbock Power & Light Lubbock, Texas	Cingular Wireless Dallas, Texas
AT&T Austin & San Antonio, Texas	Claiborne Electric Cooperative Homer, Louisiana	Lyntegar Electric Cooperative Tahoka, Texas	Sprint Spectrum Prairie Village, Kansas
Arkansas State Police Little Rock, Arkansas	Clear Channel Communications San Antonio, Texas	Magic Valley Electric Cooperative Mercedes, Texas	St. Mary's University San Antonio, Texas
Arndra Electric Cooperative Bandera, Texas	Contemporary Constructors, Inc. San Antonio, Texas	Marine Corps Air Ground Combat Center Twenty Nine Palms, California	Sumter Electric Cooperative Sumterville, Florida
Bell County Belton, Texas	Coyle Engineering, Inc. Boerne, Texas	MCI-Worldcom San Antonio, Texas	Telesource, Inc. Totowa, New Jersey
Centley Systems, Inc. Exton, Pennsylvania	CPS Energy San Antonio, Texas	Medina Electric Cooperative Hondo, Texas	Telspan International, Inc. Landover, Maryland
Berkeley Electric Cooperative Moncks Corner, South Carolina	Dayton Power & Light Dayton, Ohio	Mid-South Electric Cooperative Navasota, Texas	Tel West Network Services Corp. Dallas, Texas
Buebonnet Electric Cooperative Giddings, Texas	Denton ISD Denton, Texas	Mooney Aircraft Corporation Kerrville, Texas	Texas Electric Cooperative Austin, Texas
Border PCS Sandia, Texas	Denton County Denton, Texas	Morlandt Electric San Antonio, Texas	Time Warner Cable San Antonio, Texas
Brooks Development Authority San Antonio, Texas	Dept./US Army Engineering District Mobile, Alabama	National Rural Telecomm Cooperative Herndon, Virginia	Transtec Corporation Wichita, Kansas
Bryan Texas Utilities Bryan, Texas	Dixie Electric Membership Corp. Baton Rouge, Louisiana	Navigant Consulting, Inc. Austin, Texas	Tri-County Electric Cooperative Azle, Texas
Camp Stanley, Texas	East Kentucky Power Cooperative Winchester, Kentucky	Nebraska Public Power District Wayne, Nebraska	United Aerial Mapping, Inc. San Antonio, Texas
Carroll Engineers (Upper Trinity Water Dist.) Denton, Texas	Ericsson Radio Company/MACOM Dallas, Texas	NetSpace Systems, Inc. Madison, Alabama	United Cooperative Services Cleburne, Texas
CEMEX - Aggregates Division San Marcos, Texas	Ex-Cell-O Machine Tools, Inc. San Antonio, Texas	New Braunfels ISD New Braunfels, Texas	United Telecomm, Inc. San Antonio, Texas
Central & Southwest (AEP) Tulsa, Oklahoma	Ft. Belknap Electric Cooperative Olney, Texas	New Braunfels Utilities New Braunfels, Texas	United States Air Force Bergstrom AFB
Central Power & Light (AEP) Corpus Christi, Texas	Fisk Electric San Antonio, Texas	Norfolk & Southern Railroad Atlanta, Georgia	Brooks AFB Goodfellow AFB
Central Texas Electric Cooperative Fredericksburg, Texas	Floresville Electric Light & Power Floresville, Texas	Northeast Tarrant County Radio Consortium Eules, Texas	Lackland AFB Laughlin AFB, Del Rio, Texas
CH2M Hill San Antonio, Texas	Greater Austin Area Telecom Network Austin, Texas	Northside ISD San Antonio, Texas	Keesler AFB Kelly AFB
Ch. H. Guernsey & Company Oklahoma City, Oklahoma	Guadalupe Valley Electric Cooperative Gonzales, Texas	Occidental Permian LTD. Midland, Texas	Maxwell AFB Randolph AFB
Cherokee County Electric Cooperative Rusk, Texas	Guadalupe Valley Telecommunications Cooperative Canyon Lake, Texas	Peninsula Light Company Gig Harbor, Washington	Reese AFB Shepard AFB
Chiang, Patel & Yerby, Inc. Ft. Worth, Texas	Guadalupe Blanco River Authority Seguin, Texas	Piedmont Electric Cooperative Hillsborough, North Carolina	USMC Air-Yuma Vance AFB
City of Dayton, Ohio	Harris Microwave Corporation Redwood Shores, California	Posner Telecommunications San Antonio, Texas	Williams AFB
City of Austin, Texas	H. B. Zachry San Antonio, Texas	Public Utility Commission of Texas	Valero Transmission San Antonio, Texas
City of Boerne, Texas	Hill Country Waterworks Co. San Antonio, Texas	Qwest Communications	Verizon Wireless Austin, Texas
City of Brownfield, Texas	Houston ISD Houston, Texas	Reynolds-Schlattner-Chetter- Roll, Inc. San Antonio, Texas	Victoria Electric Cooperative Victoria, Texas
City of Bryan, Texas	Hypower, Inc. Ft. Lauderdale, Florida	Richardson ISD Richardson, Texas	Vintage Petroleum, Inc. Midland, Texas
City of Cedar Park, Texas	Jackson Electric Cooperative Edna, Texas	Rio Grande Electric Cooperative Brackettville, Texas	West Virginia Dept. of Health and Human Resources Charleston, West Virginia
City of College Station, Texas	Kansas Electric Cooperative Kansas City	San Antonio ISD San Antonio, Texas	Weston Building Properties San Antonio, Texas
City of Dallas, Texas	Karnes Electric Cooperative Karnes City, Texas	San Antonio Water System San Antonio, Texas	Wingate Millworks Alto, Texas
City of Denton, Texas	Kerrville Public Utility Board Kerrville, Texas	Schertz Cibolo Universal City ISD Schertz, Texas	XTO Energy, Inc. Midland, Texas
City of Eules, Texas	Kerrville State Hospital Kerrville, Texas	South Texas Electric Cooperative Nursery, Texas	Zeotech Corporation Tilden, Texas
City of Fredericksburg, Texas	Kingsville Naval Air Station Kingsville, Texas	Southeast Ohio EMS Gallipolis, Ohio	
City of Garland, Texas	Lower Colorado River Authority Austin, Texas	Southwest Research Institute San Antonio, Texas	
City of Georgetown, Texas			
City of Grand Prairie, Texas			
City of Hondo, Texas			
City of Kerrville, Texas			
City of Lampasas, Texas			
City of Mansfield, Texas			
City of New Braunfels, Texas			
City of Richardson, Texas			
City of San Antonio, Texas			
City of San Diego, California			
City of Seguin, Texas			
City of Waelder, Texas			
City of Weatherford, Texas			

CORPORATE MANAGEMENT:

R. L. Alexander, P. E.
President and CEO

Dan R. Banks, R. C. D. D./N.T.S.
Vice President - Communications

Leonard H. Hill, P. E.
Vice President - Electric Power

CORPORATE HEADQUARTERS: 975 W. Bitters Road, San Antonio, Texas 78216 / Phone: (210) 496-3200 / Fax: (210) 494-9987 / Website: www.alexutil.com

Updated: April 30, 2007

REFERENCES

COMMUNICATION DIVISION REFERENCES

City of Euless Texas
Harland C. Westmoreland
Telecommunications Officer & Assistant Chief of Police
1102 W. Euless Blvd.
Euless, TX 76040
817-685-1540

Hwestmoreland@ci.euless.tx.us

Services: RF Engineering

Dates: 2006 – Current

City of San Antonio
Hugh Miller
Information Services Manager
515 S. Frio.

San Antonio, TX 78283

210-207-7907

hmillersanantonio.gov

Services: Telecommunications Consulting

Dates: 2005 – Current

Houston Independent School District

Byron G. Thurmond

Manager – Facilities and Operations

228 McCarty Drive, Suite 101

Houston, Texas 77029-1138

713-676-9203

bthurmon@houstonisd.org

Services: 800MHz Rebanding and Two-Way Radio Engineering

Dates: 2006-Current

City of Dallas

J. Daniel Scrivner, P.E.

3131 Dawson St.

Dallas, TX 75226

214-670-7995

j.scrivener@dallascityhall.com

Services: Microwave/Two-Way Engineering & 800MHz Rebanding

Dates: 1998 and 2006 to Current

**West Virginia DHHR/State Trauma and Emergency Care System
Microwave System Engineering EOI
AUE References**

Lower Colorado River Authority

Tom Lott, P.E.

Telecommunications Engineer

3505 Montopolis

Austin, TX 78744

512-356-6049

tlott@lcra.org

Services: Fiber Optic/Microwave/Two-Way Engineering

Dates – 2004 – 2006

West Virginia EMS/HHR

Dr. William Ramsey.

State Medical Director

NOROP Center

190 Hart Field Road

Morgantown, WV 26505

304-285-3332

wramsey@wvdhhr.org

Services: Statewide Communication Plan for EMS Services

VHF/UHF and Digital Microwave

Dates: 1998 – Current

City of Richardson, Texas

Steve Graves

Chief Information Officer

P.O. Box 830309

Richardson, Texas 75083-0309

972-744-4041

steve.graves@cor.gov

Services: Microwave, Two-Way and Fiber Optic Engineering Design

Dates : 2001- Current

San Antonio City Public Service Energy

Tim Williamson, P.E.

Telecommunications Engineer

306 W. Jones Av.

San Antonio, TX 78215

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Services: Two-Way, Fiber Optic/Microwave Engineering

Dates: 1992 - Current

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Services: Wireless Communication Studies and Budgets

Dates: 2003 - 2005