



gai consultants



Expression of Interest

COR61694

Emergency Power Systems and Electrical Issues at
Huttonsville Correctional Center
State of West Virginia Department of Corrections

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West Virginia Purchasing Division

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Introduction

This Expression of Interest (EOI) is in response to solicitation COR61694 from the West Virginia Division of Corrections (DOC). Solicitation COR61694 describes various electrical issues at the Huttonsville Correctional Center. This project seeks to correct these electrical issues through upgrade, modification, and/or replacement of key components of the electrical system, including but not limited to the following locations:

- Main building South Side Electrical Room and associated outdoor equipment yard
- Main building North Side Electrical Room and associated outdoor equipment yard
- Waste Water Treatment Plant and associated outdoor standby generator

In addition, the following observations are noted:

- The electrical one-line diagrams are incomplete and are not entirely accurate.
- The Huttonsville Correctional Center currently has twenty-four utility electric meters on individual service drops to the various buildings. The facility is interested in combining twenty of these feeds into a single service and leaving the four more distant buildings-namely, the Arts & Crafts Building, Firing Range, Former VOC Building, and Records Storage/Farm Office-to be served by their existing utility drops.
- The emergency power system at the South Side Electric Room has voltage and current imbalance and stability problems when it transfers from utility power to standby generator power. The voltage and current problems have damaged electronic equipment, such as computers, radio chargers, surge suppressors, etc.
- The facility does not have lightning protection and the high mast lighting poles have been struck by lightning in the past, causing several temporary outages.
- The standby generators serving the South Side Electric Room, the North Side Electric Room, and the Waste Water Treatment Plant are not adequately rated to carry the entire connected electrical load. Carrying the entire connected load served by these locations for a period of three days is desired.
- There is some concern that the existing electrical installation may contain some National Electric Code violations. Identified violations would need to be corrected as a part of this project.

GAI Consultants, Inc. Overview

From its beginnings as a highly specialized geotechnical and structural engineering services firm, GAI Consultants, Inc. (GAI) has evolved into an employee-owned, multidiscipline engineering and environmental consulting firm, serving our clients worldwide in the energy, transportation, real estate, water, municipal, government, institutional, and industrial markets from offices throughout the Northeast, Midwest, and Southeastern United States.

With an award-winning and respected professional reputation in multiple engineering, environmental and technical practice areas, GAI distinguishes itself by our solid reputation of providing excellent customer service along with innovative yet practical solutions.

Qualifications and Experience

GAI's electrical engineers have extensive backgrounds in evaluating and designing normal and emergency power systems for a wide variety of facilities, including correctional institutions, medical facilities, industrial plants, universities, water treatment plants, transportation systems, and commercial office buildings. Our approach to power system design, whether it's a new installation or an upgrade or modification to an existing system, is to place a very high priority on both safety and system reliability. The following project summaries demonstrate this breadth of experience.

Bedford Hills Correctional Center Power System Upgrade

Location: New York Office of General Services (OGS), Bedford Hills, New York

Project Manager: Dominic DeVito, General Manager, Benfield Control Systems Inc., Mobile 914-584-5183

Description: Mr. Kelner provided project management, engineering, and design services for implementation of major upgrade of 13.2kV power distribution, control, protection, indication, and Medium Voltage (MV) emergency generator systems. This included designing an electrical interlock system, implementation of automatic power transfer and power restoration schemes for Main-Tie-Main breakers, and designing the interconnection scheme to tie two 13.2kV Kohler generators with the facility's power distribution system in accordance with desired sequence of operation. Additionally, Mr. Kelner designed a High Impedance Bus Differential Protection system, MV switchgears, and performed power system studies and analyses.

Pitt Tower Facilities Emergency Power System

Location: Port Authority of Allegheny County Police Department, Pittsburgh, Pennsylvania.

Project Manager: Michael Kelner, Formerly with Port Authority of Allegheny County, Office 724-772-2011

Description: Mr. Kelner provided engineering, design, and project management services for installation of an emergency generator and associated electrical equipment. Supervised the contractor team performing installation to ensure uninterrupted access to critical systems (e.g., monitoring and communication equipment systems, data center).

Mt. Washington Tunnel Restoration of Power System after Failure

Location: Port Authority of Allegheny County, Pittsburgh, Pennsylvania.

Project Manager: Michael Kelner, Formerly with Port Authority of Allegheny County, Office 724-772-2011

Description: Mr. Kelner assembled and led an emergency project team to regain functionality of the Mt. Washington Tunnel PDS after both power transformers failed, leading to hazardous levels of carbon monoxide in the tunnel. Developed and implemented an action plan to rectify the situation and prevent tunnel closure; recovered the cost of damages by coordinating with the insurance company; and renovated electrical rooms in both tunnel portals to prevent future malfunctions.

PNC Center Building Transformer Replacement

Location: 20 Stanwix Street, Pittsburgh, Pennsylvania

Project Manager: Mike Lewicki, Building Manager, Office 412-391-6647

Description: GAI engineers, acting as representatives of the building owners, provided round-the-clock monitoring of the replacement of three 4160-480/277 volt silicone power transformers that were networked together to provide reliable power to the tenants of this twenty-two story building. The transformers were on the thirteenth floor of the building and the work had to be done without interrupting electrical power to the building tenants. The transformer replacement was very successful, with no interruption to building power, no safety incidents, and no internal or external damage to the facility.

Baptist Health Hospital Power System Upgrade

Location: Little Rock, Arkansas

Project Manager: Floyd Vocque, Formerly with TME Consulting Engineers, Mobile 501-680-7804

Description: Major upgrade of power distribution system, including new CAT-ISO 13.8 kV paralleling switchgear and four new 2,250 kW, 13.8 kV diesel generators with provisions for two future diesel generators. Mr. Croud performed the power system study for this project, including the short-circuit analysis, equipment interrupting and withstand rating evaluation, and selection of the settings for the generator protection relays, the paralleling switchgear circuit breaker relays, and the utility interconnection relay. The installation was successfully commissioned in 2007.

University of Arkansas Medical Sciences Hospital Power System Upgrade

Location: Little Rock, Arkansas

Project Manager: Floyd Vocque, Formerly with TME Consulting Engineers, Mobile 501-680-7804

Description: Major upgrade of power distribution system, including new CAT-ISO 13.8 kV paralleling switchgear, four new 2,250 kW, 13.8 kV diesel generators with provisions for two future diesel generators, and new 4.16 kV and 480 volt double-ended switchboards. Mr. Croud performed the power system study for this project, including the short-circuit analysis, equipment interrupting and withstand rating evaluation, and selection of the settings for the generator protection relays, the paralleling switchgear circuit breaker relays, the utility interconnection relays, the 4.16 kV circuit breaker relays, and the 480 volt circuit breaker trip units. The installation was successfully commissioned in 2008.

Staffing Plan

The project team will include the following members:

- Wesley Sipe, Senior Design Manager – project manager.
- Michael Kelner, PE, Engineering Manager – task manager and design team lead engineer.
- Michael Croud, PE, Assistant Electrical Technical Leader – member of design team and power system study engineer.
- Jeffrey Blum, Senior Project Electrical Technical Specialist – member of design team and controls engineer.
- Al Radeshak, Senior Lead Project Designer – member of design team and lead drafter.
- Sohail Qumar, Technician – member of design team and assistant drafter.

Proposed Method of Approach

Medium Voltage Design Considerations

The Huttonsville Correctional Center's electric service from the utility consists of twenty-four separately metered 12.47 kV service drops fed from a common line installed around the facility. Many of the buildings are served from pole-top transformers, but several are served from utility-owned pad-mounted transformers. The facility would prefer to combine twenty of these separately metered feeds into a single feed with sufficient emergency generation capacity to carry the entire facility electrical load for at least three days.

GAI would examine several options for accomplishing the goals for the Huttonsville Correctional Center; of course, each option will have advantages and disadvantages. GAI would perform a feasibility analysis for several design and upgrade options. These would include the following potential solutions:

- Construction of a medium voltage substation, which the correctional center would own and have maintenance responsibilities for. This solution would likely have several alternative approaches.

- Combining as many metered feeds as practical to simplify the system's distribution, but leaving the medium voltage ownership and responsibilities with the utility. The remaining major upgrades would then take place on the low voltage portion of the system.

Once the conceptual designs are complete, GAI would present the customer with a cost/benefit comparison. This will help the customer choose the solution that will best fit their operational goals, available budget, implementation time frame, maintenance and sustainability objectives, and anticipated future load additions.

South Side Electric Room

- The existing generators, transfer switches, switchgear, and other components of the electric distribution system will be carefully documented and evaluated through field inspections. The existing single-line drawing(s) would be marked-up to reflect the existing electrical distribution system. How far down into the electrical system this documentation would go would need to be negotiated with the customer.
- Electric loading will be verified from previous utility billing provided in Addendum 5 of the solicitation. Additional load and/or power quality measurements would be performed, as necessary.
- The grounding system will be analyzed for deficiencies. Many power quality problems and other electrical system disturbances are directly related to poor or damaged grounding.
- The 300 kW generator is 29 years old and is in poor physical condition and should be replaced. The 450 kW generator is 22 years old and is in better physical condition and may be able to be reused in the South Side Electric Room's power scheme or it may be feasible to move it to another location in the facility. Regardless, the 450 kW generator should also have a plan in place for eventual replacement.
- The South Side Electric Room's power scheme is not optimally configured for reliable operation due to aged equipment and additional electrical equipment being installed over the years as the facility expanded. The redesign to improve the reliability of this portion of the electrical system is a high priority and would depend greatly on the outcome of the medium voltage conceptual design described above.
- GAI's design would focus on providing a safe and reliable electric distribution system that is capable of powering, at a minimum, the facility's critical loads for at least three days in the event of a utility power interruption.

North Side Electric Room

- The existing 380 kW generator is rated for approximately 570 amps at 480 volts. The 480 volt switchgear is rated for 2000 amps. In order to carry the entire connected 480 volt load with the existing electrical system's configuration, a new generator and a larger ATS would need to be purchased and installed. The average and peak loading on the North Side Electric Room would be verified before a new generator rating would be recommended. Ideally, the diesel fuel tank serving this generator should have adequate capacity to run the generator for at least three days of continuous operation. As with the South Side Electrical Room, the North Side Electrical Room's redesign would depend greatly on the outcome of the medium voltage conceptual design.

Waste Water Treatment Plant

- The existing 100 kW generator is approximately 40 years old, is in poor physical condition, and is well past its useful lifespan. The generator is also not adequately rated to carry the entire connected load of the Waste Water Treatment Plant. In order to carry the entire connected load,

a new generator would need to be purchased and installed. The average and peak loading on the Waste Water Treatment Plant would be verified before a new generator rating would be recommended. Ideally, the diesel fuel tank serving this generator should have adequate capacity to run the generator for at least three days of continuous operation.

- The existing Onan 800 amp ATS should be rated adequately for the entire Water Treatment Plant load. A new ATS could be added to feed the post-2011 load with the electric utility feed as the normal source and the load side of the 800 amp ATS as the emergency source.
- As with the North and South Side Electrical Rooms, the Waste Water Treatment Plant's redesign would depend greatly on the outcome of the medium voltage conceptual design.

The Huttonsville Correctional Center's lightning protection would also be reviewed with specific recommendations provided for performance improvement. As a part of a comprehensive electrical system evaluation and design package, it is strongly recommended that appropriate power system studies be completed in order to properly evaluate equipment ratings, protective device overcurrent coordination, arc flash hazards, etc. GAI's electrical engineers have extensive power system study (e.g., short-circuit, load flow, arc flash, grounding, power quality, etc.) experience and are capable of providing a complete power system analysis.

The design phase would consist of 30%, 60% and 100% submittals. After the design phase is complete, a construction package would be prepared with the required drawings and specifications necessary for construction bidding. GAI would also assist with the bidding process by attending construction pre-bid meetings and answering questions regarding the construction package.

GAI has all of the required insurance documentation listed under the "Required Documents" portion of the solicitation. This documentation will be provided to the Department of Corrections Purchasing Division upon request.

Appendix A – Resumes

Education

B.S. Aerospace Engineering
1987, The Pennsylvania
State University

Skills

Industrial Mechanical and
Electrical Utility Systems
Industrial Water and
Wastewater Treatment

Professional Employment

Senior Project Engineer at
Siemens Water Technologies,
2009-2010

General Manager Heat
Transfer at IPEG, 2007-2009
Process and Product R&D at
IPEG, 2003-2007

Product Development
Engineer at IPEG, 2001-2003
Engineering Manager at
IPEG, 1999-2001

Project/Product Engineer at
IPEG, 1997-1999

Product Engineer at IPEG,
1989-1997

Professional Summary

Mr. Sipe is Project/Product Engineering professional with proven track record of leading projects and delivering results. He quickly integrates broad industry experience into any business situation. He has the ability to manage multiple million dollar projects/products – successfully and holds a strong work ethic.

Professional Experience

- + Provided senior project/mechanical engineering support for \$100M engineering products company specializing in customized industrial water and wastewater treatment solutions primarily for the power industry. Other clients included food/beverage manufacturing and microprocessor electronics industry. Work included engineering design and analysis of process mechanical systems as well as training/mentoring new graduates.
- + Directly responsible for all fluid heat transfer products with respect to engineering, manufacturing, profit margin, development and sales. Developed and implemented the first Global Heat Transfer Council with members from China, India, Europe, Mexico and the US to determine the global market and implement global products. Product responsibility included Temperature control units (\$5M), Mechanical refrigeration portable chillers (\$1M) and plant central cooling systems (\$4M)
- + Responsible for advanced product enhancement concepts which included automated material selection valve stations, Gravimetric dosing material feeders and compressed air / membrane plastic pellet dryers. Management responsibilities included supervision, coaching and mentoring engineers, laboratory technicians, and SolidWorks CAE/CAD designers. Work included new product/ process testing for the Plastics and Heat Transfer industries. Responsible for Engineers, Designers, Laboratory and Lab Technicians who develop and test new processes and products for the Plastics and Heat Transfer Industries. Advance piping analysis for sizing, pressure drop and material transfer rates in both liquid and dilute phase material vacuum conveying.
- + Developed innovative products to meet specific market segment needs. Designed high ambient air-cooled chillers and Optical disk manufacturing cell temperature control units. Designed open architecture, low cost control systems. That allowed a 25% decrease in cost and increased flexibility in meeting application requirements. Designed niche market, air heating products to build credibility in industry, designed cost-reduced products to increase margin and profit and designed “disruptive” TCU to capture increased market share.
- + Managed, supervised and trained engineering design office consisting of eight project engineers and draftsmen who annually supported a sales



volume of \$10 million, representing hundreds of clients and projects. Responsibilities included training corporate sales force of 13 representative agencies across the country to provide applications engineering services to customers in the field/across the country. Provided engineering sales presentations and internal/external product specific training.

- + Provided engineering support to customers, sales engineers, and project engineering. Activities included multiple product line maintenance including drawing markups, revisions and analyses for fluid heat transfer units. Responsible for maintaining and modifying a complete line of temperature control units (TCU) in the plastics industry, including portable chillers, cooling towers, central chillers, pump tanks and controls. Moved product line in a corporate consolidation from Chicago to Pittsburgh.
- + Designed electromechanical fluid heat transfer units, including pressure vessels, multiphase pressure piping, three phase and control voltage control systems including PLCs and VFDs. Completed component specification, bills of material, AutoCAD drawings and ASME design calculations for customer specific orders to meet time and budget constraints. Responsibilities included Quality Control and Functional Testing of high temperature skid packages.
- + Designed, installed and commissioned an advanced heat recovery system that bypassed the condensers in 2 x 200 tons outdoor air cooled refrigeration condensing units and diverted the waste heat to indoor roof mounted condensers that provided heating to 400,000ft² production space in the heating season and exhausted the heat in the cooling season to the ambient. Used variable refrigerant flow to and fan speed control to control the high side pressure of the refrigerant system. Process cooling system was remote evaporator central chilled water system directly cooling parts and isolated cooling parts of 15 vinyl extrusion lines.



Education

M.S. Electrical Engineering
1981, Belorussian
Polytechnical University

Registrations/Certifications

Professional Engineer, PA
#PE049025E, 1997

Skills

Electrical Engineering
Mechanical Equipment
Installation and Construction
QA/QC

Affiliations

Institute of Electrical and
Electronic Engineers,
Member

Professional Employment

Eaton Electrical, 2007-2011
Port Authority of Allegheny
County, 1990-2007
State Department of
Engineering and Services,
1981-1989

Professional Summary

Mr. Kelner specializes in electrical engineering, design, and analysis. His 31 years of experience includes scheduling, project and construction management, and supervisory skills utilized for multi-million dollar capital and operating budget projects, as well as for emergency ones.

His technical expertise in engineering, design, installation, troubleshooting, and maintenance of electrical and mechanical equipment applies to:

- Transmission and distribution systems
- Protective devices and control circuitries
- Energy storage systems
- Solar Photovoltaic Cogeneration Systems
- Power factor correction equipment
- AC/DC drives
- Automation of factory equipment
- Automatic production line systems
- Electric drives and controlling/measuring apparatuses for boiler houses, pumping stations, and automatic fire-extinguishing stations
- Controlling and measuring apparatus for high-voltage and high-frequency generators, compressor stations, painting/drying lines, and vacuum ovens
- Generator stations for plant power supplies
- SCADA / RICS / SACS / RTU equipment
- UPS systems, including automation of battery chargers and inverters

Professional Experience

2012

- + Duquesne Incline Inspection, Pittsburgh PA, Port Authority of Allegheny County (PAAC). This project consisted of the electrical and mechanical inspections performed on the mechanical and electrical equipment and systems required for the operation of Duquesne Heights Incline. This project also included an evaluation of condition of both passenger cars and their mechanical and electrical components. Recommendations were provided for repairs and maintenance to improve the operation and safety of the Incline.
- + Monongahela Incline Operations Investigation, Pittsburgh PA, Port Authority of Allegheny County (PAAC). This project consisted of performing visual inspection of the mechanical and electrical systems and components, conducting comprehensive functional tests, identifying any existing problems or areas of concern and make engineering recommendations, and comparing conditions of the inspected equipment with the previously completed inspection report. This investigation also included a Power Quality



- Investigation of the DC Avtron Drives. Recommendations were provided for repairs and maintenance to improve the operation and safety of the Incline.
- + GenOn Cheswick - Compressor Installation This project consisted of providing electrical engineering services for developing a design package necessary for the qualified contractors to competitively bid the electrical work associated with the installation of the 400 HP package rotary screw compressor. This included engineering analyses and studies and development of drawings and reports associated with the electrical, control, and communication systems.
 - + National City - Wellington Tower Transformers Replacement, Pittsburgh, PA Acting as representatives of the building owners, provided round-the-clock monitoring of the replacement of three 4160-480/277 volt silicone power transformers that were networked together to provide reliable power to the tenants of this twenty-two story building. The transformers were on the thirteenth floor of the building and the work had to be done without interrupting electrical power to the building tenants. The transformer replacement was very successful, with no interruption to building power, no safety incidents, and no internal or external damage to the facility.
 - + Coal Fired Power Station - Compressor Installation Developed an electrical design package necessary to competitively bid the electrical work associated with the installation of a 400 HP package rotary screw compressor. This included engineering analyses and studies to prepare drawings and reports associated with the electrical, control, and communication systems
 - + Coal Fired Power Station - CCR Landfill This project was part of a large coal ash landfill expansion project in Virginia. The mechanical portion of the project involved designing a system for the collection and pumping of landfill leachate to a treatment plant more than a mile away. New pumps, piping, and controls were needed to transport the liquid to the treatment plant. A comprehensive flow model was generated to examine all facets of the piping and pumping for the system. The project included interfacing new equipment with existing equipment and pipelines. The electrical design was provided for the new pumps which were installed with variable frequency drives and communications interfaces to enable the pump controls to interface with the plant DCS system (Ovation).
 - + Pennsylvania Department of Environmental Protection Cresson Acid Mine Drainage (AMD) Treatment. The Cresson AMD Treatment project involves draining water from three mines that are leaching the low pH water into the local watershed. The system draws the water from the mines and pumps it into the AMD treatment facility. GAI is responsible for the electrical design to provide power to the water treatment system components. GAI is also designing the treatment building and site lighting. This project is ongoing.
 - + Coal Fired Power Station - Groundwater Control The project was to design a collection system to prevent leachate from a former coal storage site from leaking into the nearby river. The former coal pile had previously leached contaminants into the ground where the ground water carried the contaminants into the river. The seep collection system collected the ground water and pumped it to the plant to be used in the ash handling process, or into a treatment plant if the ash handling process was not operating. Acted



as the owner's engineer and review all of the electrical design documents and drawings provided by the EPC contractor. This included the P&ID and general arrangement drawings.

- + Global Tungsten & Powders Corp. in Towanda, Pennsylvania. Provided engineering, design, and procurement services for the pumping station and for the waste treatment of the discharge from the rare earth recycling process.
- + Cooling Tower Desilting Basin in Indiana County, Pennsylvania for GenOn Energy, Inc. Final design and permitting.
- + HRSG Boiler Blowdown at Brunot Island in Allegheny County, Pennsylvania for GenOn Energy, Inc. Modification of piping and tanks/sumps, and addition of heat exchangers, CO2 system, filters, and associated support equipment for HRSG Boiler blowdown.
- + East End Community Recreational Park in Charleston, West Virginia, for the Charleston Urban Renewal Authority. Design, engineering and central air services for a new park project.

2007-2011

Senior Engineer in support of electrical engineering activities. Performed management, engineering, design, and analysis tasks associated with the smart and energy storage grid projects, substation and ground grid design, system integration, reliability and power quality analyses, short circuit, load flow, arc flash and protection coordination studies. Subject Matter Expert providing recommendations on the effective use of equipment, maintenance and testing procedures, technical specification development, control systems configuration, and protective device settings. Provided professional services to customers in both public and private sectors, including the following: Weirton Steel, US Steel, NY Times, OGS NY, CNX Gas, US Navy, Peterson AFB, WVU, Amtrak, NJT, Curtiss-Wright, PGE, Lockheed-Martin, Bloomsburg WWTP, and Cargill.

1990-2007

Project Manager responsible for engineering and management associated with the overall direction, planning, development, management, safety, and coordination of Port Authority of Allegheny County electrical engineering services. Provided consulting services and design support to project engineers and managers in the Engineering and Construction, Operations, Information Technology, and Corporate Services Divisions. Managed outside contractors and consultants and in-house technical personnel to implement programs in accordance with requirements and standards of the organization.

- + Electrical System Management Program, Port Authority of Allegheny County (1998-2007). Led the effort to improve PAAC facility infrastructures and reduce costs by improving Power Factor, upgrading mechanical equipment to a more energy-efficient model, using equipment more efficiently, and renovating buildings. Developed and implemented testing and calibration procedures, procured electrical equipment, and improved performance and reliability by implementing and enforcing maintenance procedures.



- + Multiple Facilities Projects for Port Authority of Allegheny County (1990-2007). Provided engineering, design, specification development, procurement, and planning activities to maximize effectiveness of electrical and fire protection and security/CCTV equipment and systems. Managed all major facilities/locations including: Manchester Facilities, South Hills Village Facilities Projects, Mt. Lebanon and Mt. Washington Tunnels, Downtown Subway Facilities Projects, Ross Facilities, East Liberty Facilities, and West Mifflin Facilities.
- + Restoration of Denise Traction Power Substation (TPSS) in Allegheny County (2005-2006). Managed the beginning-to-end response and recovery process after total shutdown of the Denise TPSS, to include more than \$250,000 in savings and completion of major activities: conducting investigation, coordinating with DLCO to communicate existing deficiencies and requirements for recovery, developing recovery plan, and managing the progress and activities of involved parties to restore functionality of the Denise TPSS.
- + Stage II Light Rail Transit System (2001-2006). Program Manager on \$25M effort to build 5.2 miles of light rail system for the Port Authority of Allegheny County; resulted in an estimated \$2,300,000 in savings. Led the design, construction and installation of four traction power substations, two tie-breaker stations, ground grids, and 5.2 miles of double-track overhead catenary system. Subtask management between June 2003 and December 2006 included:
 - Power Distribution System Upgrade
 - System-wide Switchgear Upgrade
 - Design and Construction of Auxiliary Power Feed System
- + Medium-Voltage Switchgears Replacement in Allegheny County, Pennsylvania (1999-2002). Performed engineering and project management tasks for the effort to improve the reliability of PDS by replacing 23 kV switchgears and control equipment at all Port Authority of Allegheny County TPSSs fed by DLCO, which resulted in an estimated savings of \$1,000,000 and no transit service interruptions.
- + Pitt Tower Facilities, Emergency Power System in Allegheny County, Pennsylvania for the Port Authority of Allegheny County Police Department (1997-1998). Provided engineering, design, and project management services for installation of an emergency generator and associated electrical equipment. Supervised the contractor team performing installation to ensure uninterrupted access to critical systems (e.g., monitoring and communication equipment systems, data center).
- + Bus Duct Replacement (1996-2000). Provided engineering, design, and project management services for this effort in order to improve the safety and reliability of the Port Authority of Allegheny County Stage I Traction PDS. Supervised a contractor team in the replacement of 12 fire-hazardous bus ducts at six TPSS, testing and calibration of various electrical equipment and protective devices, and completion of system-wide repairs. Completed this



project 11 months ahead of schedule with no transit service interruptions and realized approximately \$200,000 in savings as a result.

- + Mt. Washington Tunnel Power Distribution System Failure in Allegheny County, Pennsylvania (1996-1998). Assembled and led an emergency project team to regain functionality of the Mt. Washington Tunnel PDS after both power transformers failed, leading to hazardous levels of carbon monoxide in the tunnel. Developed and implemented an action plan to rectify the situation and prevent tunnel closure; recovered the cost of damages by coordinating with the insurance company; and renovated electrical rooms in both tunnel portals to prevent future malfunctions.
- + Under-Voltage, Pilot Wire, and Transfer Trip Protection System (1992-1995). Provided engineering, design, and project management services to build state-of-the-art protection systems to improve the safety of the Light Rail Traction PDS—estimated savings of \$100,000.
- + Land Development in Butler County, Pennsylvania (2006-2008). Coordinated with government authorities to conduct the beginning-to-end process related to the legal and regulatory permits and procedures for residential property (e.g., blueprints, inspections, subdivision allocation, Erosion and Sediment Pollution Control Plan, Storm Water Management Plan, land surveys). Engineered and built 0.5 miles of two-lane roadway in compliance with the American Association of State Highway and Transportation Officials policy and other applicable codes and regulations. Designed and served as a General Contractor during the construction of the single-family house.

Publications / Presentations

2005 "Modern Technology in Traction Power Distribution System," APTA



K. Michael Croud, PE

Assistant Electrical Technical Leader

Education

B.S. Electrical Engineering
1998, University of
Pittsburgh

Registrations/Certifications

Professional Engineer,
Pennsylvania #PE078277

Skills

Electrical Engineering and
Electronics

Electrical Instrumentation
Control System Analysis and
Design

Short-Circuit, Coordination,
Arc Flash, Load Flow, Motor
Starting, and Power Factor
Correction Studies

Affiliations

Member Institute of
Electrical and Electronic
Engineers (IEEE)

Professional Employment

Eaton Corporation, 2005-
2013

Qual-Tech Engineers, Inc.,
2002-2005

The Timken Company, 1998-
2000

J&L Specialty Steel, Inc.,
Co-op 1996-1997

United States Air Force,
1985-1995

Professional Summary

Mr. Croud specializes in electrical engineering, design, and analysis. He has over 15 years of engineering experience and 10 years of electronic maintenance and supervisory experience in the U.S. Air Force. Mr. Croud has extensive experience in short circuit, protective device coordination, load flow, arc flash, transient motor starting, cable pulling, and power factor correction analyses. He has performed analyses on airports, oil refineries, oil fields, chemical plants, glass plants, steel mills, mines, hospitals, schools, universities, commercial office buildings, and a light rail system.

Mr. Croud is skilled in SKM PowerTools, ETAP PowerStation, and EasyPower.

Professional Experience

- + American Electric Power John E. Amos Generation Plant. Underground duct design for 4,500 foot North Valley to South Valley 5 kV power and fiber optic cable installation, including cable pulling tension calculations and pull box placement for complicated cable routing in mountainous West Virginia terrain.
- + American Electric Power John E. Amos Generation Plant. Engineering services for North Valley Leachate Pumping System, including preparation of bill of materials, budgetary pricing for electric distribution equipment, conduit and cable schedules, construction drawings, and short-circuit, overcurrent coordination, arc flash, and load flow power system analysis studies.
- + NRG Seward Generating Station. Served as owner's engineering representative for Seward Seep Remediation Project. Reviewed contractor submittals for compliance with project specifications. Performed construction site visits for installation of 500 kVA Seep building transformer and PLC system functional checkout. Also attended PLC factory acceptance testing prior to installation.
- + NRG Conemaugh Generating Station. Designed routing for underground and above ground 480 volt power conduit and control conduit from MCC to Gypsum Pond Sump. Revised cable and conduit schedules and construction drawings.
- + National City PNC Center building. Served as owner's representative to monitor replacement of all three of the building's utility-owned 23 kV-480 volt networked transformers located on the building's 13th floor. In order to maintain power to the building's tenants, the transformers were removed and replaced over a weekend in a careful sequence that assured sufficient power was continuously available to supply the building's mandatory electrical load. GAI was on-site full time during the rigging and movement of the transformers and witnessed reconnection and energization of two of the



three transformers. A written report was provided to the customer along with transformer information data sheets.

- + Ma'aden Phosphate Company, Ras Al Khair Phosphate Plant, Saudi Arabia. Lead engineer for analysis of power distribution system for one of the world's largest phosphate plants using ETAP software program. Responsibilities included directing data collection and ETAP modeling efforts, creation of a large quantity of protective relay and circuit breaker library models, evaluation of short-circuit analysis results, recommendations for protective device settings and improvements to the system protection, and preparation of formal reports for the customer.
- + West Virginia University (WVU) Personal Rapid Transit (PRT) system, Morgantown, West Virginia. Designed low voltage switchgear to replace failed 575 volt traction power switchgear at Substation #1. Original GE AK circuit breakers failed, resulting in a fire in the switchgear. The GE AK power breakers were used routinely for switching purposes that they were not designed for, resulting in a continual need for refurbishment. The new design placed 1600 amp, 600 volt vacuum contactors in series with modern power circuit breakers. This design allowed for routine switching of the contactors without significant wear, while also providing more reliable overcurrent protection with the electronic trip units on the new circuit breakers.
- + West Virginia University (WVU) Personal Rapid Transit (PRT) system, Morgantown, West Virginia. Specified 23 kV vacuum circuit breaker with reclosing capability to replace Westinghouse oil circuit breaker. Provided settings for new Schweitzer SEL-351S relay and provided startup support for placing the new breaker and relay into service.
- + West Virginia University (WVU) Evansdale and Downtown Campuses, Morgantown, West Virginia. Maintained power distribution system models in SKM PowerTools software for both WVU campuses in Morgantown, WV for over seven (7) years. Performed approximately thirty (30) project studies during this time period, including comprehensive studies for the overall distribution system for each campus and many individual buildings where equipment was upgraded or replaced.
- + Bayer CropScience Plant, Institute, West Virginia. Maintained the power distribution system model in the ETAP software program for over seven (7) years. Performed approximately eighteen (18) project studies during this time period, including comprehensive studies for the overall distribution system and many individual substations where equipment was upgraded or replaced. A key focus on many of these studies was to decrease arc flash incident energy values below limits established by the customer.
- + US Steel, Mon Valley Works, Pennsylvania. Lead engineer for two phases of arc flash analysis for four (4) steel processing plants in Pennsylvania. The first phase of the arc flash evaluation and labeling was for equipment rated over 1000 volts and the second phase was for equipment rated below 1000 volts. The plants covered in the scope of work were Fairless Hills, Clairton, Edgar Thomson, and Irvin.



- + Children's Hospital of Philadelphia. Performed power distribution system modeling and analysis for twelve (12) story hospital addition that was completed in two project phases. The distribution system included multiple automatic transfer switches serving life safety and critical loads, three paralleled emergency power diesel generators, and a large emergency power switchgear lineup. The short-circuit calculations revealed the worst case single-line-to-ground fault current was higher than the 100 kA interrupting rating of the emergency switchgear with all three generators paralleled. Determined most economic solution was to add a neutral grounding reactor to each emergency generator to reduce the single-line-to-ground fault current while also maintaining effective grounding to serve single-phase loads. Provided specifications to generator vendor for adding properly rated neutral grounding reactors.
- + Logan International Airport, Boston, Massachusetts. Created a comprehensive power distribution system model of the airport to reflect the entire distribution system maintained by the Massachusetts Port Authority. Recommended settings for all overcurrent protective devices to improve system protection and selective fault clearing. Supported customer over several years as recommendations were implemented in phases during scheduled maintenance outages.
- + Chevron Oil Refinery, Pascagoula, Mississippi. Provided initial overcurrent coordination settings for a major upgrade to the high and medium voltage switchgear in the older section of the refinery. The upgrade involved replacement of fifty-three (53) circuit breakers and their associated protective relays. The new overcurrent protection scheme was far more complex than the original electro-mechanical relays provided. The new scheme involved overlapping differential protection for the main transformers, distribution buses, bus tie breakers and bus tie reactors, and backup partial differential protection. Overcurrent settings were provided to Schweitzer Electric Laboratories for programming into the protection relays.
- + Chevron Oil Refinery, Pascagoula, Mississippi. Verified, corrected, and expanded existing ETAP model of refinery power distribution system that was started by Chevron personnel. After the updated model was verified for accuracy, performed short-circuit and overcurrent coordination analyses.
- + The Timken Company, Canton, Ohio. Operations Coordinator - Reliability, Harrison Steel Processing, responsible for overall supervision of mechanical and electrical maintenance crews on 4-turn rotating schedule. Primary duties included directing maintenance personnel to continuously improve reliability and cost performance of equipment, keeping all department utilities operating and implement maintenance failure prevention, and coordinating timely restoration of any outages to minimize production interruptions. Monitored and increased use of preventive maintenance, predictive maintenance, root-cause failure analysis, performance metrics, job scheduling, and associate training to achieve the highest possible levels of equipment reliability.
- + The Timken Company, Canton, Ohio. Steel Business Associate, Manufacturing Engineering. Provided electrical engineering for installation or



modification of several process-critical equipment items, including two high-pressure water descalers, an abrasive saw dust-reduction system, and various lighting projects. Engineering projects required assessment of power requirements, layout of power distribution, and design of equipment control systems.

- + J&L Specialty Steel, Inc., Midland, Pennsylvania. Associate Electrical Engineer (2 semester college co-op position). Investigated and corrected a major process line steering problem resulting in significant reductions in both surface quality defects and line downtime caused by product misalignment. Reconfigured safety switches for two ultra-high power electric arc furnaces to increase personnel safety and reduce post-downturn delays due to improper switch positioning. Utilized electronics maintenance and technical writing skills to document and test several new standardized evaluation and adjustment maintenance procedures.



Jeffrey G. Blum

Sr. Project Electrical Technical Specialist

Education

B.S. Electrical Engineering
1993, University of
Pittsburgh

A.D. Electronics 1974,
Penn Technical Institute

Skills

Electrical Engineering
Electrical Instrumentation
and Control System Analysis
and Design

Electrical / Mechanical
System Troubleshooting

Professional Employment

HydoGenLLC, a Fuel Cell
Company, 2006-2009

United States Steel, Mon
Valley Works, 2002-2006

Bricmont, Inc.,
(Inductotherm Company),
1997-2002

ITT Technical Institute,
1994-1996

Westinghouse Electric
Company, NATD/Advanced
Energy Systems Division,
Fuel Cell Test Facility,
1984-1992

Westinghouse Instrument
Service Company, Nuclear
Services Division, 1982-1984

General Electric Company,
1974-1981

Professional Summary

Mr. Blum specializes in electrical, electronic, and control systems engineering. He has extensive experience providing research, testing and development, and design for major manufacturing firms.

Mr. Blum is proficient of the following systems:

Hardware: IBMPC (MSDOS6.2, Microsoft Windows 3.11/95/98/NT/2000/XP/Vista), DEC VAXstation 3100 (VMS 5.1), and DEC DECstation (Ultrix 4.2)

PLC Systems by: Allen Bradley PLC-5, SLC100,150,500, Control Logix Series Controllers, Siemens, Mitsubishi, TI, and Siemens S7,S5

Allen Bradley, Mitsubishi and Siemens Drives. Alstom DC Drives, and Fip Level 1 systems

Networks: DH+, Siemens, H1, TCP/IP, RSLinx, and Melsecnet

Software Languages: C, Assembly, FORTRAN, and BASIC

Software: P-Spice, Tutsum, Siglab, Monarch, MatLab Wonderware MMI, Intilution iFix, RSView32, RSView Supervisory Enterprise, Studio, Factory Link, and Altom Pilot

Professional Experience

- + HydoGenLLC, a Fuel Cell Company, Manager Test Operation/Test Engineering Supervisor. Utilized past knowledge and experience gained at Westinghouse in the testing of phosphoric acid hydrogen fuel cells. Designed, constructed and commissioned testing facilities for phosphoric acid hydrogen fuel cells. Led and educated testing engineers and technicians in the correct operation and testing of fuel cells manufactured at HydroGenLLC. Provided field support to the company's projects group in Ohio.
- + United States Steel, Mon Valley Works. Responsibilities: Maintained the automation systems for the Cold Reduction Mill. This entailed the drives, PLC's, PLC software, MMI software, and mechanical systems. Equipment by Alstom/Gegelec/GE.
- + Bricmont, Inc., an Inductotherm Company, Control Systems Engineer. Responsibilities: Designed and programmed control systems software for industrial applications in the metals and emissions areas, using PLC's, VFD drives, and MMI application software and hardware. Responsible for installation and site commissioning after development of software at customer sites worldwide.
- + ITT Technical Institute, Instructor in a post-High School Teaching Institute. Responsibilities: Presented analog and digital circuit theory and the construction of these circuits in a laboratory setting to present their



General Electric Company,
Management and Technical
Services, Space Division,
1976-1977

operating properties to the students as practice for true industry applications.

- + Westinghouse Electric Company, NATD/Advanced Energy Systems Division, Fuel Cell Test Facility. Responsibilities: Tested and supported a Hydrogen Phosphoric Acid Fuel Cell consisting of a 4 gas, closed process control loop system. Gas mixture analysis using a chromatograph.
- + Westinghouse Instrument Service Company, Westinghouse Nuclear Services Division. Responsibilities: Developed, tested and serviced specialized robotic tooling equipment for sleeving and tube end repair on commercial nuclear power generators.
- + General Electric Company. Responsibilities: Advised purchasing for the Advanced Lightweight Torpedo project. Performed automatic fault insertion testing for the Trident Submarine Fire Control System. System and software design for an IC analyzer based on a Tektronix component tester. Software design for the General Electric Training System.
- + General Electric Company, Heavy Military Electronics Division, Court Street Plant. Responsibilities: Supervised maintenance for the AN/FPS-80 satellite tracking radar. The areas covered were the transmitting, receiving, and signal processing equipment of the radar. This servicing included alignments, modifications, and preventative maintenance using various testing equipment found in the RF field through Tektronix, Hewlett-Packard, Wavetek, Systron/Donner, Alfred, etc.
- + General Electric Company, Management and Technical Services, Space Division. Responsibilities: Research and development of Magneto-hydrodynamic Power (MHD). Repair, modifications and calibrations of combustors, coal handling systems, air compressors, water cooling systems, and control instrumentation.
- + General Electric Company, Heavy Military Electronics Division, Court Street Plant. Responsibilities: Maintenance, modifications and repair for the AN/FPS-80 satellite tracking radar. Field Service Position in Shemya Aleutian Islands, Alaska.



Alvin E. Radeshak Jr.

Senior Lead Project Designer

Education

A.A. Electrical Design and Drafting 1974, Triangle Tech

Skills

Electrical Instrumentation and Control System Analysis and Design

Relevant Training/Courses

PID Analog and Instrumentation Control, 1999

PLC Control, Modicon and Allen-Bradley, 1978

Electrical Design, Westmoreland Vo-tech, 1977
Continuing Education, Penn State New Kensington Campus, 1976

Professional Employment

Vulcan International, Inc., 2004-2012

SD Engineers, 2004-2005

Vulcan Engineering Company, 1974-2003

Bechtel Power Corporation, 1974

Professional Summary

Mr. Radeshak specializes in electrical design with extensive experience in control system design for the metals, waste water, steel, and chemicals industries on specific client requirements and major turnkey projects. His design work covers customized and very specialized equipment, including control and power schematic design, low and medium voltage systems, motor control for both AC and DC drives, PLC control from various manufacturers, I/O interface analog, and digital.

Mr. Radeshak develops MCC layouts with modified and special configurations, PLC panel arrangements, conduit and cable schedules, interconnection and system block diagrams, conduit arrangement both above and embedded, lighting, and HVAC and fire protection systems and grounding. He is proficient with AutoCAD and familiar with NEC, IEC, IEEE, and NEMA standards.

Professional Experience

- + Compressor Installation in Cheswick, Pennsylvania for GenOn Energy, Inc. Motor Controls. Designed feeder and instrumentation power and control for relocation of a new screw compressor system which entailed interfacing with the existing DCS system and alarm monitoring. New conduit arrangements and installation of high capacity switches and supports for field installation.
- + Process Waste Stream Filtration in Towanda, Pennsylvania for Global Tungsten and Powder. Motor Controls, Installation and design of VFD drives for pump and material handling, AC and DC control for instrumentation, power schematic diagrams and emergency backup systems. PLC configuration along with I/O diagrams for discrete and analog devices. Conduit and cable schedules custom designed with detail on cable sizes and all required information for material takeoff for the electrical contractor, interconnections and control panel arrangements and equipment layouts with bill of materials. I/O list development, conduits arrangements and detail along with data sheets. Plant lighting local and area, grounding and protection of power distribution systems.
- + Greenfield Hot Metal Desulfurization Station for 450-ton Torpedo Ladle Car in Gadsden, Alabama which included customized moving equipment for the injection of material for the plants process. Designed the electrical control for a high capacity baghouse, 4160 switchgear fan motor along with operation of screw conveyors and shaker motors with timing circuits.
- + Granite City III. completed dual internal desulfurization system which consisted of PLC level I and level automation. Control room with motor control centers, Leco process labs instrumentation and touch screen monitors and computers.



- + Mittel Steel Poland internal reagent and injection system for hot metal ladles, electrical engineering was produced on smart E-Plan software, this also included fire protection system back for all process control, level I and 2 interfacing. AC drive control for a 200 ton moving ladle and slag pot transfer car along with cable track and on board hydraulic power units and valves.
- + South Africa for Mittal Steel was a complete turnkey desulfurization plant. Worked with local electrical contractors, creating scopes of work and estimates and complete bid packages, this system contained analog and digital instrumentation, full PLC control, smart motor drives along with silos and pressure vessels. Moving lance handling equipment and transfer car controls. Switchgear for 800HP baghouse fan control with vibration sensors, current and amp alarm indications. Local PLC processors and racks interfaced with motor and baghouse instrumentation. Customized two floor dual level control and motor room with all equipment prewired for ease of field installation. Designed complete turnkey systems, which consisted of dual desulfurization lance equipment, silos and pressure vessel instrumentation, bag house systems, 480v motor control, Allen-Bradley and Siemens PLC configurations, I/O and panel arrangements. Conduit, Lighting and Grounding. Ladle transfer cars with power units and DC drive controls. Responsible for all customer contacts, site visits and demo investigations along with interfacing with existing customer equipment. I/O lists with complete bill of materials, on site startup and budget control.
- + Bridging slag-skimming Machines and Upgrade of Existing Open-hearth Steelmaking Facility in various parts of the world for US Steel, Mittal Steel, Allegheny Ludlum, Republic and National Steel. Incorporated wall-traveling oxygen lance cranes and controls.
- + B.O.F. new oxygen lance cranes and drive controls for SNA in Detroit.
- + Demo of existing conduit, panel and resistors racks. Wire termination with field point to point checkup and update existing client drawings.
- + Installation of 4 new BOF oxygen lance cranes, custom wired, and field installed new 250vdc contractor panels, pushbutton stations and touch screen color monitors. Worked with plant programmers to develop software and screen designs.
- + New Shroud mechanism with drive and controls for Burns Harbor in Chicago, Illinois. AC variable speed drive panel along with remote PLC rack. Shop wired all solenoids and limit switches, pushbutton stations via power track to control panels.
- + Automatic deslagging for furnace tap hole includes valve stands, hydraulic power units, PLC control for tracking furnace motion and schematic diagrams. System included encoders and resolvers for machine and furnace tracking.
- + Chemical reheating facility for Isdemir Turkey, Scope entailed a complete turn-key system for raising the temperature of the hot metal and control and transport of various materials with monitoring weights and distribution.



- + Slag Skimmers for removal of slag from ladle, Hydraulic control of manifolds and solenoid operated slag skimming units.
- + Dual desulfurization and temperature lance mechanisms, full voltage motor control with custom designed and built control panels, encoder and resolver feedback, local and automatic control.
- + Multiple Rolling Mill and Vacuum Degassing System Projects for Nucor Steel. Lead CAD Designer. Design included all motor controls with complete PLC and hardwired system interface; all single lines, schematic diagrams, I/O discrete and instrumentation drawings, lighting, grounding, panel arrangements; conduit schedules, cable tray installation, and drawings; piping and instrumentation integrated with existing system for custom equipment in various applications of the steel and metals industry.
- + Waste water treatment facility for Youngstown Sheet and Steel facility, designed all control panels and interfacing with pumps and necessary drives, instrumentation and control systems for a complete installation. Also generated budget and scope of work for the electrical contractors.
- + Slag retention system for Wuhan China hot metal steel facility, works and responsibilities included the project specifications, and design engineering for automated slag retention mechanism along with PLC control with entailed interfacing with new valve stands and the existing furnace controls.
- + Automated bricking furnace reline tower, Power and control automation for transporting various size bricks along tracking conveyors which traveled and rotated at variable speeds to a matching dropping conveyor belt to deliver the bricks to operating personal. The drive system included PLC control along with various servo and motorized drives. Custom designed control panels and lift tables for providing the bricks to the reline tower.
- + Material handling equipment for moving large amount of various reagents for mixing along with weighing and injection into the customer's process bins.
- + Rolling mill equipment for Nucor Steel, this work consisted of power and control room arrangements for large multi section motor control centers, power transformers, and incoming main switchgear units. All I/O interfacing to remote located transmitters, and limit switches. 480vac motor control, cable and conduit arrangements, pullbox and terminal box design, motor control with starter and variable speed drive operation with local and automated operator control, communication system, fiber optic to various instruments. Incorporation of fire protection systems and alarm monitoring.
- + Complete design and internal wiring of custom built control rooms with power and control sections. High temperature reflective glass along with under the floor wiring to control panels, lighting systems and closed circuit television.
- + Automatic alloy feed systems, material handling of various products which meant precise measuring and weighing for distribution into bins to relieve manual operator control for a safe efficient operation. Wrote the programming scope which detailed all I/O conditions for the programmer, along with hydraulic and nitrogen valve control, variable speed control of



conveyor belts and movable trays and hoppers. Electrical single line and schematic, panel layouts and interconnection wiring diagram. Local and automatic operator stations and full manual control in case of PLC failure.

- + Sub-lance system for American Stainless Gent Kentucky, Project includes the skimming of slag buildup from hot metal ladles, local control station with joystick operator controls, proportional speed hydraulic controls with dc power supplies for movement of both raking, tilting and rotation of slag skimming machine. Pressure and flow control of hydraulic fluid along with monitoring to ensure machine operation. The main sub-lance machine consisted of AC variable speed drives, automatic locking cylinders, Toledo load cells and scales, under load and overload devices, braking both shoe and dynamic control. Remote I/O racks with control net. Automatic probe cassette, lifting and probe attaching unit and connection arms. All units were completely automatic with all local manual interfacing. Power tracks for both power and control were incorporated.



Education

B.S. Electrical Engineering
2013, Saginaw Valley State
University

A.S. Instrumentation
Engineering 2008, Southern
Alberta Institute of
Technology

A.S. Electronics 2002,
Government Polytechnic
Institute

Skills

Industrial Mechanical and
Electrical Utility Systems

Affiliations

National Society of
Professional Engineers
(NSPE) (Student Member)

Association of Professional
Engineers, Geologists and
Geophysicists of Alberta,
Canada (APEGGA)

Professional Employment

Ametek Process Instruments,
2008-2012

Professional Summary

Mr. Kumar specializes in electronics and electrical instrumentation engineering. He supports manufacturing equipment installation and commissioning and effectively leads and motivates teams.

Mr. Kumar is experienced in applying Six Sigma and lean manufacturing, and his software skills include: AutoCAD, Matlab, Labview, PLC, and DCS

Professional Experience

- + Instrumentation Technologist for Ametek Process Instruments in Calgary, Alberta. Conducted testing of functional performance of systems, subassemblies, and parts under specified environmental conditions. Performed data collection and statistical analysis that resulted in sound recommendations that were adopted by department. (e.g. Recommended a different testing procedure for H2S Gas analyzer, which resulted in 30% less time required to perform the test). Set up test equipment to evaluate performance and operation of nonstandard or customer returned units. Conducted a variety of tests on analyzers used in Tail Gas/Air Demand, Hot/Wet Single Gas Mass Flow CEM, Hot/Wet Single Gas, H2S in Sulfur Pit, and Single Gas H2S processes to ensure that the products met or exceeded the required specifications. Conducted numerous Factory Acceptance test (FAT) for different customers around the world.
- + Cresson AMD Project. Assisted in providing Engineering services for Acid Mine Drainage Treatment Plant, including preparation of bill of materials, conduit and cable schedules, and construction drawings.
- + Dominion Curley Hollow Solid Waste Management Facility. Assisted in providing Engineering services for Stage 2A and 2B Construction, including preparation of bill of materials, conduit and cable schedules, and construction drawings.
- + American Electric Power John E. Amos Generation Plant. Assisted in providing Engineering services for North Valley Leachate Pumping System, including preparation of bill of materials, budgetary pricing for electric distribution equipment, conduit and cable schedules, and construction drawings.



Appendix B – Signed Solicitation Forms



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Solicitation

NUMBER
COR61694

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
TARA LYLE
304-558-2544

RFQ COPY

TYPE NAME/ADDRESS HERE

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GAI Consultants, Inc.
 300 Summers Street
 Suite 1100
 Charleston, WV 25301

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DIVISION OF CORRECTIONS
 1409 GREENBRIER ST
 CHARLESTON, WV
 25311 304-558-8045

DATE PRINTED
03/26/2014

BID OPENING DATE: 05/06/2014 BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	EA		906-00-00-001		
***** PLEASE NOTE: A MANDATORY PRE-BID MEETING HAS BEEN SCHEDULED FOR 04/23/2014 AT 10:00 AM AT THE HUTTONSVILLE CORRECTIONAL CENTER LOCATED AT ROUTE 219/250 SOUTH HUTTONSVILLE, WV 26273. *****						
ARCHITECT/ENGINEERING SERVICES, PROFESSIONAL						
EXPRESSION OF INTEREST (EOI)						
THE WEST VIRGINIA PURCHASING DIVISION, FOR THE AGENCY, WV DIVISION OF CORRECTIONS, IS SOLICITING EXPRESSIONS OF INTEREST TO PROVIDE ARCHITECTURAL AND ENGINEERING SERVICES FOR THE HUTTONSVILLE CORRECTIONAL CENTER LOCATED IN RANDOLPH COUNTY, WV, PER THE ATTACHED SPECIFICATIONS.						
ATTACHMENTS INCLUDE: COR61694 EXPRESSION OF INTEREST INSTRUCTIONS TO VENDORS SUBMITTING BIDS GENERAL TERMS AND CONDITIONS CERTIFICATION AND SIGNATURE PAGE PURCHASING AFFIDAVIT						

SIGNATURE <i>David J. Bealogue</i>	TELEPHONE 724-387-2170, x2726	DATE 6/18/2014
TITLE Senior Director, Energy	FEN 25-1260999	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

CERTIFICATION AND SIGNATURE PAGE

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

GAI Consultants, Inc.

(Company)

David J. Bevilacqua

(Authorized Signature)

David J. Bevilacqua, Senior Director, Energy
(Representative Name, Title)

724-387-2170, x2726 724-387-2265

(Phone Number)

(Fax Number)

6/18/2014

(Date)

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, 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: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. 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.

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.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"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.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: GAI Consultants, Inc.

Authorized Signature: *David J. Beulaguer* Date: 6/18/2014

State of WEST VIRGINIA

County of KANAWHA, to-wit:

Taken, subscribed, and sworn to before me this 18TH day of JUNE, 2014

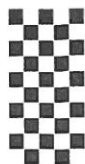
My Commission expires APRIL 11, 2023

AFFIX SEAL HERE

NOTARY PUBLIC

Jason T Green
Purchasing Affidavit (Revised 07/01/2012)





Fax Cover Sheet

GAI Consultants, Inc.

Cranberry Office
 500 Cranberry Woods Drive
 Cranberry Township, PA 16066
 T 724.772.2011 | F 724.772.2050
 www.gaiconsultants.com

Date: 6-18-2014
 Pages (including cover sheet): 2

To: WV Department of Administration, Purchasing Division
 Company: _____
 Fax No.: 304-558-3970 Project No.: COR61694
 From: K. Michael Croud, GAI Consultants, Inc.
 Subject: COR61694 Huttonsville Correctional Center EOI

Message:

I forgot to include the attached Addendum Acknowledgement form in the GAI Consultants Expression of Interest for the Huttonsville Correctional Center Electrical System Issues (COR61694). I called Tara Lyle and she told me that we can fax the form in and it would be placed in our EOI package. Please call me if there are any problems.

Best regards,



K. Michael Croud
 Mobile phone: 724-682-0723

06/18/14 12:41:49PM
 West Virginia Purchasing Division

Original will:

- Follow via mail
- Follow via overnight delivery
- Will send upon request

Confidentiality Notice: The documents and materials transmitted herewith contain confidential and proprietary information belonging to the sender and are legally privileged. They are solely for the use of their intended recipient. Misdirection of this electronic transmission does not constitute a waiver of any rights or privileges granted under law. Use of these materials by any party other than the intended recipient is strictly prohibited and may be punishable by civil and/or criminal penalties.

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: COR61694

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

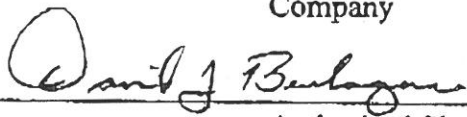
Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input checked="" type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input checked="" type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input checked="" type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input checked="" type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

GAI Consultants, Inc.

 Company


 Authorized Signature

 6/18/2014

 Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.