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ELECTRICAL

PLUMBING

CIVIL

FIRE PROTECTION

COMMISSIONING

LEED

ENERGY

Designing for a Sustainable Future

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WV PURCHASING  
DIVISION

Expression of Interest

GSD136412: EOI Boiler Plant Upgrades

West Virginia Purchasing Division  
2019 Washington Street, East  
P.O. Box 50130  
Charleston, WV 25305-0130

CJL Engineering  
232 Horner Street  
Johnstown, PA 15902



A. **Concept** (CJL Firm Approach / methods of design and project sequence)

Quality Control: Detailed surveys of existing conditions have enabled CJL Engineering to routinely see jobs to completion at change order rates less than 2 percent. Partner level involvement throughout the project, including the survey is key to our very successful track record of turning out quality design packages.

While at the Managing Partner Level, James Vizzini, P.E., LEED maintains a close connection to all facets of his projects. His responsibilities continue to include on-site surveys, systems comparisons, scope determination, plan and specifications review, and construction inspection

B. **Firm / Team Qualifications**

• Firm's Contact Person:

James M. Vizzini, P.E., LEED, Managing Partner, CJL Engineering  
232 Horner Street  
Johnstown, PA 15902

Tel: (814) 536-1651

Cell: (814) 322-5457 Email: [jvizzini@cjlengineering.com](mailto:jvizzini@cjlengineering.com)

Signature: \_\_\_\_\_

  
James M. Vizzini, P.E., LEED

• Team Resumes and Functions

James M. Vizzini, P.E., LEED, Managing Partner – Partner-in-Charge

Bruce A. Grasser, P.E., LEED, Principal – Mechanical Engineer

Raymond H. Meucci, P.E., LEED, Principal - Mechanical Engineer

Gregory F. Alexander, P.E., Managing Partner – Project Management

Kristoffer J. Rickabaugh, Associate – CADD Design

Ernest C. Richards, Associate - Mechanical Design

## GSD136412: EOI Boiler Plant Upgrades

- Prime Professional

With a cumulative staff of 135 professionals, CJL Engineering is fully staffed and qualified to serve as sole Prime Professional on this project. Engineering disciplines include Mechanical Engineering (HVAC / Boilers / Plumbing), Electrical, Site Civil and LEED services.

- Agency Ownership of Engineering Services

CJL Engineering acknowledges and accepts that the Agency will have all property rights to all work produced as a result of this contract, and can be used or shared by the Agency as deemed appropriate.

- CJL Engineering has no outstanding litigation or arbitration proceedings, including vendor complaints filed with the State's Purchasing Division, disputes with other Agencies of the State of West Virginia that involve legal representation by either party relating to the firm's delivery of design services, if applicable. Also, any disputes with other Agencies of the State of West Virginia that involve legal representation by either party.

### **C1. Project Organization**

James M. Vizzini, PE will be the Principal-in-Charge partner for this project. While more detailed information is listed on the attached resume, Mr. Vizzini's central boiler plant expertise over the last 20 plus years is extensive. Even though he is listed at the managing partner level, Mr. Vizzini has always focused on being hands on. As a reference to this commitment to stay "close" to a project, we cite his detailed physical surveys of WV #3 and the scope direction developed from them. It has always been our philosophy that projects can be most successful only when the top level partners bring their years of experience directly into a project. The unique characteristics of central heating and cooling plants demand such attention. Other members of the anticipated project team and their years of experience are included in their attached resumes which follow.



**James M. Vizzini, P.E. LEED® Accredited Professional**

James M. Vizzini, P.E. is a Managing Partner of CJL Engineering. He is responsible for management decisions, overseeing current projects, and maintaining relationships with architect and clients. He has also served as a project engineer on numerous historic renovation projects.

While at the Partner level, Jim maintains a close connection to all facets of his projects. His responsibilities continue to include on-site surveys; systems comparisons, scope determination, plan and specifications review as well as construction inspection. He also supervises HVAC systems design for various commercial and institutional projects, as well as schools (K-12), universities and health care facilities. These projects have ranged from large equipment replacement such as chillers, cooling towers, boilers and air handling units, entire HVAC systems design to district heating and cooling plants. Some of Mr. Vizzini's more noteworthy projects include:

- WVU Evansdale Campus (Utilities Master Plan) Evansdale, WV
- Kane Biomass Plant (6,000 MBH Output), Kane, PA
- SCI Cresson, Biomass Plant (27,000 #/HR, 350# HPS), Cresson, PA
- UPMC Mercy, Central Plant (111,000 #/HR, 125# HPS), Pittsburgh, PA
- West Virginia Capitol Complex, Building #3 (Tie in to the Central Heating Plant), Charleston, WV
- Benedum Center for the Performing Arts and Byham Theater / The Pittsburgh Cultural Trust (Historic Retrofit – Heating and Cooling Plant), Pittsburgh, PA
- Youngstown Thermal, Youngstown, OH and Detroit Thermal, Detroit, MI
- Punxsutawney Hospital (30,000 #/HR, 65# HPS Boiler Rebuild), Punxsutawney, PA
- Three PNC Plaza (LEED Gold), 1,700-Ton Central Chilled Water Plant, Commissioning and upgrade, Pittsburgh, PA
- Cambria County War Memorial Arena (15,000 MBH Heating Plant), Johnstown, PA
- Allegheny County Soldiers and Sailors Memorial Hall (Historic Retrofit), Chilled water plant and steam plant upgrade, all part of a complete HVAC renovation, Pittsburgh, PA
- University of Pittsburgh - Upper Campus Chilled Water Plant and High-Pressure Steam Line Extension, Pittsburgh, PA
- Chevron Science Center (Retrofit 2,100-Ton chilled water tie-in, 40,000 #/HR, 175# HPS tie-in), Pittsburgh, PA
- Westinghouse Building, Central Boiler and 2,200-Ton Chilled Water Plant, includes 550-ton heat recovery chiller, Pittsburgh, PA ( )
- Youngstown State University, 3,600-Ton Chilled Water Plant, Youngstown, OH
- eCenter@LindenPointe (LEED Silver and Geothermal), Hermitage, PA



**TITLE:**

Managing Partner

**SPECIALIZATION:**

Mechanical Engineering  
Master Planning  
District Heating and Cooling Plants

**EDUCATION:**

Bachelor of Science, 1987, Mechanical Engineering Technology  
University of Pittsburgh at Johnstown

**REGISTERED PROFESSIONAL**

**ENGINEER:**

Pennsylvania  
District of Columbia  
Maryland  
New Jersey  
Virginia  
West Virginia  
North Carolina  
Delaware  
Massachusetts

**MEMBERSHIPS/ACTIVITIES:**

American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

U.S. Green Building Council

Construction Specifying Engineer  
October, 2006  
Featured in: "Full of Hot Air?" Profiling the Chevron Science Center Renovation, University of Pittsburgh

Presenter: Energy and Education Conference (Geothermal Design) St. Francis University, Loretto, PA - 2009



**Bruce A. Grasser, P.E. LEED® Accredited Professional**

Bruce Grasser is a Principal of CJL Engineering who joined the firm in 1999. Previously, Mr. Grasser provided technical engineering services for various power plant locations owned by GPU Genco (Penelec), Johnstown, PA.

As a Principal, Mr. Grasser is responsible for the design and specification of HVAC and other mechanical systems for commercial, institutional, industrial, and private clients. He surveys existing facilities and systems to confirm and evaluate their condition. He conducts engineering studies, establishes design criteria, and estimates project costs. He is also responsible for communicating project needs and requirements between owner, architect, engineer and contractor as well as managing in-house design efforts. Mr. Grasser's additional noteworthy projects include:

- Akron Children's Hospital at Beeghley Medical Park, Boardman, OH
- Bluefield Regional Medical Center, (Master Plan / OR-HVAC Replacement / East Wing HVAC Upgrade), Bluefield, WV
- Carlow University Master Plan, Pittsburgh, PA
- DiSepio Rural Health & Wellness Center, St. Francis University, Loretto, PA
- Elk Regional Medical Center, Biomass Boiler, St. Marys, PA
- Garrett County Memorial Hospital, (Replacement of Air-Handling Unit #1 / New Emergency Generator), Oakland, MD
- Forum Health / Trumbull Memorial Hospital, (Emergency Generator Replacement / Chilled Water Line Extension), Warren, OH
- Hamot Medical Center, (Bayview Medical Office Building / Women and Babies Center), Erie, PA
- Mahoning Valley Hospital, (New Hospital for Long-Term Acute Care), Youngstown, OH
- Point Park University, Dance Studio (LEED), Pittsburgh, PA
- University of Pittsburgh, Pittsburgh, PA
  - Trees Hall Natatorium, HVAC Study
- University of Pittsburgh at Johnstown, Johnstown, PA
  - Sport and Recreation Center – Expansion
  - Owen Library, Oak Hall / Maple Hall / Laurel Hall
- Youngstown State University, Chiller Plant, Youngstown, OH

**Penelec Power Plants:**

- Shawville Station, Clearfield, PA\*
- Seward Station, Seward, PA\*
- Conemaugh Station, New Florence, PA\*
- Keystone Station, Shelocta, PA\*
- Homer City Station, Homer City, PA\*
- Warren Station, Warren, PA\*
- Front Street Station, Erie, PA\*

\* With previous employer



**TITLE:**

Principal

**SPECIALIZATION:**

Mechanical Engineering

**EDUCATION:**

University of Pittsburgh at Johnstown

B.S. – Mechanical Engineering Technology - 1983

**REGISTERED PROFESSIONAL ENGINEER:**

Pennsylvania

**MEMBERSHIPS / ACTIVITIES:**

American Society of Mechanical Engineers (ASME)

American Society of Heating Refrigerating, and Air-Conditioning Engineers (ASHRAE)

Mr. Grasser served as President of ASHRAE's Johnstown Chapter in 1988-89, winning the Region III Best Chapter Award, and as the ASHRAE Region III Chapter Regional Conference Co-Chairman in 1991



**Raymond H. Meucci, PE** LEED® Accredited Professional

Prior to joining CJL Engineering, Ray was a Principal at Meucci Engineering for over 25 years. His diverse experience includes corporate, commercial and industrial projects, steam and chilled water plants, elementary schools, colleges and universities, hospitals and other medical facilities, government facilities, churches, public housing, and site utilities. Ray's responsibilities include project management, mechanical engineering design, and construction services support. He is actively involved in the design, coordination and completion of all projects.

**Health Care/Labs**

Excelsa Health System Frick Hospital O.R. Suite, Mt. Pleasant, PA  
Cranberry Surgery Center, Pittsburgh, PA  
UPMC Mercy Hospital, Pittsburgh, PA  
UPMC Southside, O.R. Suite, Pittsburgh, PA  
UPMC Greenville, Greenville, PA  
Marshall Township Primary Care, Marshall Township, PA  
Latrobe Primary Care, Latrobe, PA  
North Fayette Primary Care, North Fayette Township, PA  
Allegheny County Crime Lab, Pittsburgh, PA  
Jefferson Regional Medical Center Misc. Labs, Pleasant Hills, PA  
University of Pittsburgh Dental Lab, Pittsburgh, PA  
Carnegie Mellon University Miscellaneous Labs, Pittsburgh, PA

**Corporate/Commercial**

PA Turnpike – Various interchange buildings including:  
Mon-Fayette Transportation Project, North & South Mainline Toll Plaza  
PennDOT Traffic Management Center – Bridgeville, PA  
PNC Corporate Office and Bank Branch Buildings – Various Sites  
Freemarkets Center Commercial Office Suites, Pittsburgh, PA  
Westinghouse Corporation Office Renovations – Various Sites  
Dollar Bank Computer Center, Pittsburgh, PA  
USX Tower, Miscellaneous Offices (Fit-Out), Pittsburgh, PA  
Donley Corporate Offices, Pittsburgh, PA  
Dynavox (60,000 sq. ft.), Pittsburgh, PA  
Allegheny County Courthouse Building and County Office Building  
Washington County Office Building, Washington, PA

**Education**

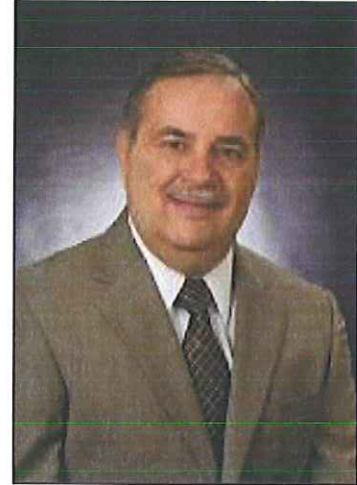
Brentwood Middle/High School, Brentwood Boro, PA  
Western Pennsylvania School for Blind Children, Pittsburgh, PA  
Arlington Elementary, Pittsburgh School Board, Pittsburgh, PA.  
Clairton Education Center, Clairton PA  
Oakland Catholic High School, Pittsburgh, PA  
University of Pittsburgh, Pittsburgh, PA - Various projects  
Washington & Jefferson College, Howard J. Burnett Center, PA  
College of Wooster, Admissions Building, Wooster, OH  
California University of PA, Dixon Hall, California, PA  
Carnegie Mellon University, Mellon Institute, Pittsburgh, PA

**Theaters/Performing Arts**

Byham Theater, Pittsburgh PA  
Davidson College, Grey Music Hall, Charlotte, NC  
Metropolitan Theater, Morgantown, WV  
Orchard Hill Church, Wexford, PA  
South Hills Bible Chapel, McMurray, PA

**Recreational**

YMCA Penn Hills Renovation and Addition, Pittsburgh, PA  
YMCA North Hills, New Construction, Pittsburgh, PA  
Davidson College, Knobloch Campus Center, Charlotte, NC  
Robert Morris University Student Activity Center, Moon Township, PA



**TITLE:**

Principal  
CJL Pittsburgh

**SPECIALIZATION:**

Mechanical Design

**EDUCATION:**

1975 University of Pittsburgh, B.S.  
Mechanical Engineering

**REGISTERED PROFESSIONAL ENGINEER:**

Kentucky  
New York  
North Carolina  
Ohio  
Pennsylvania  
Maryland  
West Virginia  
Rhode Island  
New Jersey

**MEMBERSHIPS/ACTIVITIES:**

American Institute of Architects  
Hospital Engineers of Southwestern Pennsylvania  
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASRAE)  
American Council of Engineering Companies of Pennsylvania  
Greater Pittsburgh Metropolitan YMCA System Facilities Committee

## **Gregory F. Alexander, Managing Partner**

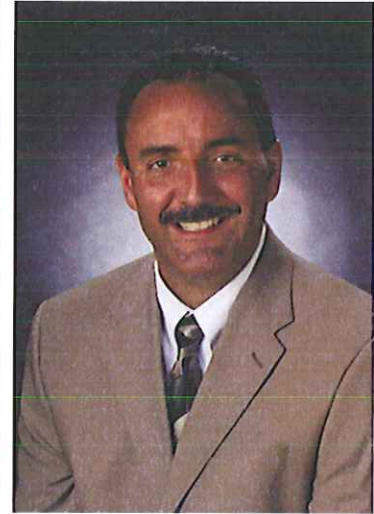
Greg Alexander joined CJL Engineering in 2001. He previously served as a consultant for 20 years. Mr. Alexander is responsible for managing many of the university and hospital projects at CJL Engineering as well as surveying existing facilities, evaluating the condition of existing facilities, and designing new electrical and fire protection systems. Mr. Alexander also provides construction observation services, which requires him to visit the construction site to solve field problems and provide punch lists for completion of the project.

### **Education**

- Pleasant Hills Middle School, Pleasant Hills, PA  
Electrical renovation of 80,000 sq. ft. school
- Dubois Area Catholic School, K-12, Dubois, PA  
100,000 sq. ft. school
- Franciscan University, Steubenville, OH  
Electrical renovation of four (4) campus facilities: St. Thomas Moore Hall, St. Francis Hall, Egan Hall and D.C. Williams Student Center

### **Healthcare**

- Forum Health Northside Medical Center, Youngstown, OH  
Boiler Plant Renovations, Medical Records Office, 120,000 sq. ft. West Addition of Patient Treatment Wing, Chiller Plant Renovation, Cath Labs, Cardiovascular OR and CT scanner, new 647-vehicle Parking Garage and emergency generator plant renovation.
- Forum Health Trumbull Memorial Hospital, Warren, OH  
Invasive Cardiology, 1,200 Ton Chiller and Cooling Tower Replacement, Emergency Department and Radiology/Oncology Department.
- Forum Health Beeghley Medical Park, Boardman Township, OH  
Master Plan, Laboratory Renovations, Women's Services, Building B and New Central Heating and Cooling Plant
- Shadyside Hospital, Pittsburgh, PA  
100,000 sq. ft. professional office building, including 4,160 volt electrical distribution and Cath Labs.
- Weirton Medical Center, Weirton, WV  
100,000 sq. ft. medical office building, CT Scanner, MRI and Operating Rooms
- Magee-Women's Hospital, Pittsburgh, PA  
4,160 volt electrical distribution system for the campus, and Imaging Suite and OR renovations
- UPMC/Presbyterian Hospital, Pittsburgh, PA  
4,160 volt electrical distribution system - D Wing Addition
- Westmoreland Regional Hospital, Greensburg, PA  
Emergency Generator Plant, Single Line Diagrams, MRI, CT Scanner and UPS Project



### **TITLE:**

Managing Partner / Project Engineer  
CJL Pittsburgh

### **SPECIALIZATION:**

Electrical design  
Specification writing  
Bid evaluations  
Construction observation





***Kristoffer J. Rickabaugh, Associate***

Kris Rickabaugh is an electrical designer, currently serving as the chairman of the CADD and Office Standards Committee. He brings a great deal of varied experience to the position. While Kris spends a great deal of his time doing electrical design work, he has also spent many years as a member of the IT staff and is highly skilled in the areas of modeling and rendering. Kris has been the head electrical designer on many projects, and uses his design experience to mentor designers who are new to the firm.

His experience enables Kris to move seamlessly from task to task. He is equally comfortable carefully reviewing project details with a client as he is visualizing, designing, and implementing an elaborate 3D rendering. While renderings give the client an opportunity to envision their project, Kris is able to compile exact measurements using modeling software to ensure that nothing is lost as the building moves from concept to reality.

**Representative Projects**

**Education**

**West Virginia University, Morgantown, WV**  
Oglebay Hall Renovations and Additions  
Evansdale Campus – Master Plan

**California University of Pennsylvania, California, PA**  
Steele Auditorium Renovations and Additions

**University of Pittsburgh, Pittsburgh, PA**  
Barco Law Library Renovations

**Allegheny College, Meadville, PA**  
Tippie Alumni Center

**University of Pittsburgh, Pittsburgh, PA**  
Falk School Renovation and Addition

**University of Pittsburgh, Pittsburgh, PA**  
Thornburg Room

**Commercial Projects**

**Presque Isle Downs, Erie, PA**  
Clubhouse

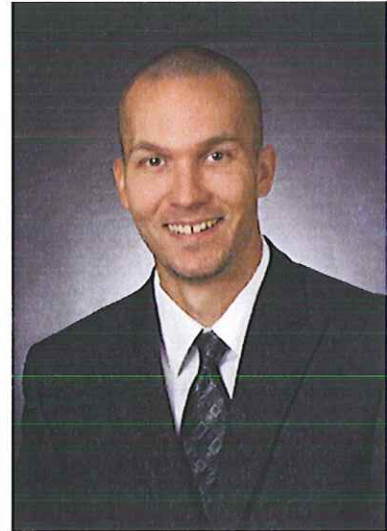
**PNC Branch Office Site Lighting, various locations**  
Open-Ended Contract

**East Liverpool City Hospital, East Liverpool, OH**  
New MRI

**U.S. Secret Service, Pittsburgh, PA**  
New Office Fit-Out

**UPMC Mercy Hospital, Pittsburgh, PA**  
Emergency Department Renovation

**Monroeville Convention Center, Monroeville, PA**  
New Convention Center



**TITLE:**

Associate/Electrical  
CJL Pittsburgh

**EDUCATION:**

1998 / Associate of Applied Science in  
Architectural Drafting and Design and  
Computer Aided Drafting and Design /  
Pittsburgh Technical Institute



***Ernest C. Richards, Associate***

Mr. Richards is an Associate of CJL Engineering and has over 35 years of experience. Mr. Richards has served as the lead draftsman for hospital, housing, commercial and institutional projects including more than 300 school projects in all areas of Pennsylvania. As a lead draftsman, he is responsible for surveying the existing systems in subject structures, making design recommendations and decisions, coordinating the drafting production efforts, calculating the heating, cooling and exhaust requirements as required by local, state and federal codes, regulations and standards and aiding in the resolution of field problems.

***Representative Projects***

**Johnstown Housing Authority, Johnstown, PA**

- Belmont Homes Basement Heating
- Child Care Center
- Development Vine Street & Townhouse
- Connor Towers - Boiler Piping and Ventilation - 1991
- Oakhurst Homes Building #6
- Oakhurst Homes Buildings 29 and 30 Site
- Oakhurst Homes Central Boiler Room
- Prospect Homes - Central Boiler Room
- Prospect Homes and Oakhurst Homes PA19-1 & PA 19-2
- Solomon Homes - Central Boiler Room
- South Fork Homes PA 19-16
- Town House Roof Replacement
- Town House Towers - Exhaust Systems

**University of Pittsburgh, Upper Campus Chilled Water Plant,  
Pittsburgh, PA**

**Forum Health, Youngstown, OH**

- Trumbull Hospital, Warren, OH
- Northside Hospital, Youngstown, OH

**Garrett County Memorial Hospital, Oakland, MD**

**AT&T Building, Pittsburgh, PA**

**Elk Regional Health Center, St. Mary's, PA**

**NASA Independent Verification & Validation Center, Fairmont, WV**

**Punxsutawney Hospital, Punxsutawney, PA**

**Veterans Administration Hospitals - Oakland, Highland, Aspinwall**

**Erie School District, Erie, Pa**

**Gateway School District, Monroeville, PA**

**Horry County School District, Myrtle Beach, SC**

**North Allegheny School District, Bradford Woods, PA**

**Northeastern School District, Manchester, PA**

**Penn Hills School District, Pittsburgh, PA**

**South Butler County School District, Saxonburg, PA**

**Fairmont State College, Fairmont, WV**

**K. Leroy Irvis Science Center (LEED Silver anticipated) Community**

**College of Allegheny County (CCAC) Pittsburgh, PA**

**Westmoreland County Community College Science Center,  
Youngwood, PA**

**University of Pittsburgh at Titusville, Titusville, PA**

**Clarion University of Pennsylvania Steam Line Replacement,  
Clarion, PA**



**TITLE:**

Associate – Mechanical  
CJL Johnstown

**SPECIALIZATION:**

Housing  
Healthcare  
Colleges and Universities  
Geothermal Radiant Systems

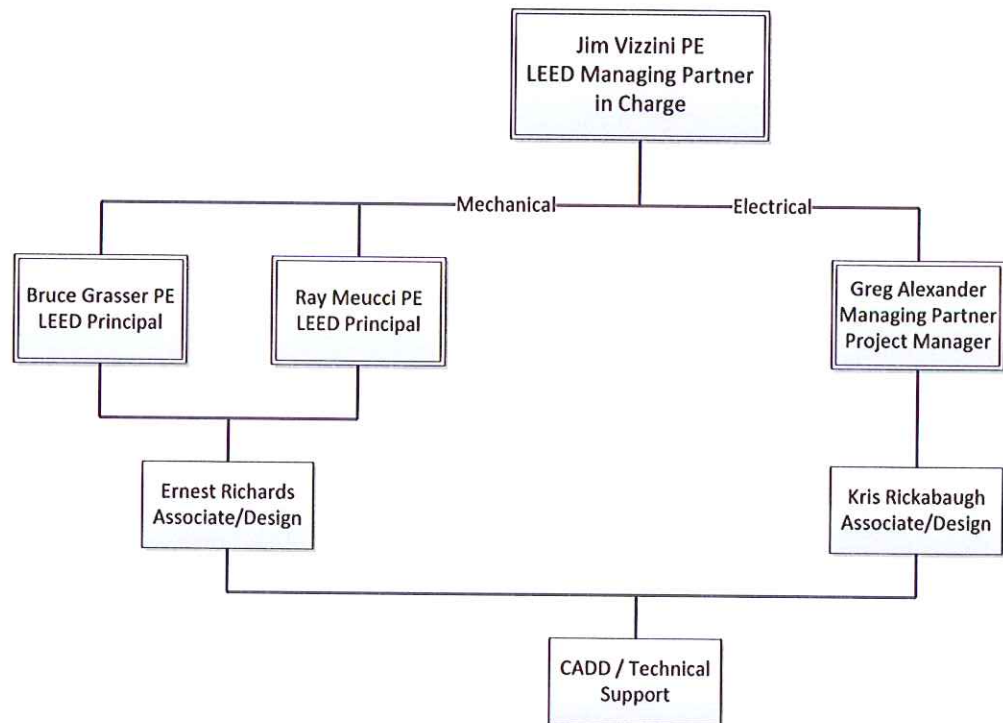
**EDUCATION:**

Triangle Technical School  
Pittsburgh, PA

# GSD136412: EOI Boiler Plant Upgrades

## C2. Ability to Provide Services

CJL Engineering is headquartered in Pittsburgh, PA. The Johnstown, PA branch office houses the core of the central plant mechanical design team. The Pittsburgh office houses the core of the central plant electrical design team. While in separate offices, this overall team approach has been proven extremely successful on recent projects such as UPMC East (new 400k sq ft hospital), PNC Data Center, SCI Cresson Biomass Heating and Power Generating Plant and UPMC Mercy Hospital Central Energy (Steam/Chilled Water/Emergency Power) Plant.



CJL Engineering, with a total staff of over 135 has the ability to appropriately allocate the proper personnel during all phases of a project. We have weekly scheduling meetings between the Pittsburgh, Johnstown and Youngstown offices to determine where resources are most needed and to confer on which office/personnel have the skill sets to most meet the needs of particular projects. Our engineers are very dedicated and will work most diligently to maintain your required schedule. To provide evidence to the above mentioned commitment to our clients, we would welcome that you contact any in the list of our references. To add weight to this

## GSD136412: EOI Boiler Plant Upgrades

statement, a recent check on overall projects suggests that almost 90 percent of our work is with repeat clients.

### **D1 Experience With Similar Projects of a Similar Size and Scope**

1. West Virginia Capitol Complex, Building 3, (Comprehensive Retrofit and Engineering Upgrade - tie in to the Central Heating Plant listed in this RFP), Charleston, WV
2. WVU Evansdale Campus (Utilities Master Plan), Evansdale, WV
3. UPMC Mercy Central Plant (New Central Plant), Pittsburgh, PA
4. UPMC East -LEED Silver (a completely new 'Green' hospital), Pittsburgh, PA
5. Kane Biomass Plant, Kane, PA
6. SCI Cresson Biomass Plant, Cresson, PA
7. Northside Medical Center, Youngstown, OH
8. Metropolitan Theater, Morgantown, WV
9. Bluefield Regional Medical Center (High Pressure Steam System Master Plan), Bluefield, WV
10. Benedum Theater / Pittsburgh Cultural Trust (Plant Upgrades), Pittsburgh, PA
11. Punxsutawney Hospital (Boiler Rebuild) Punxsutawney, PA

### **D2 Project Experience**

Ten corresponding CJL project pages follow

**State Office Building #3 (LEED Certified)**  
West Virginia Capitol Complex  
Charleston, WV



**The Project:**

The West Virginia State Office Building #3 is a 235,000 sq. ft. 10-story limestone-faced structure that is part of the Capitol Complex in Charleston, WV. Built in the early 1950's the structure houses a number of different state offices. The building required a comprehensive retrofit and upgrade of all Mechanical, Electrical and Plumbing Systems. Following its architectural and engineering retrofit, the building achieved LEED® Certification.

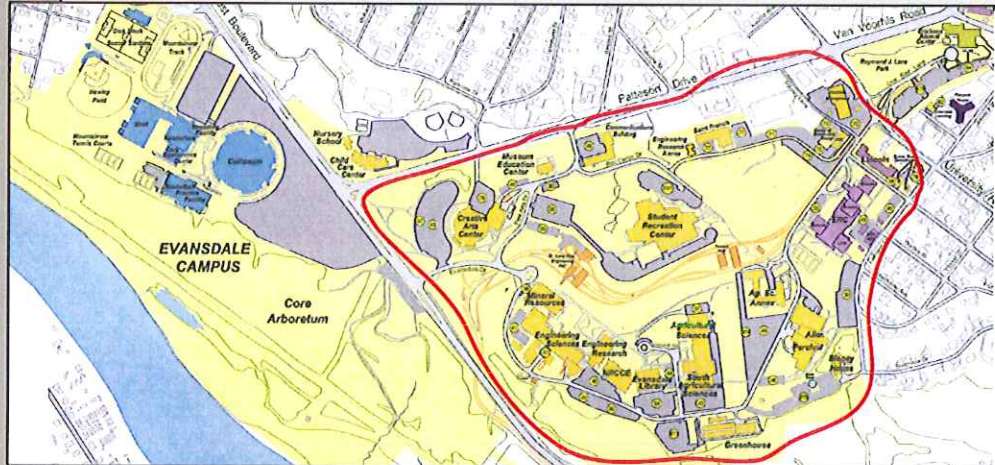
**CJL Engineering Design Solutions:**

- All existing MEP equipment was replaced with new systems and the building was brought up to meet current code requirements
- Heating and cooling systems will be connected to the existing campus wide steam and chilled water systems
- New electrical service and equipment will be provided to serve the building including a new emergency generator
- All new plumbing systems, including new fixtures, were installed
- Fire protection systems will be installed for a fully sprinklered building with a new fire pump located in the basement
- The building is LEED® Certified

# Campus Assessment of all Site Utilities

## West Virginia University – Evansdale Campus

### Morgantown, WV



#### The Project:

CJL Engineering is providing a campus-wide assessment of all site utilities at West Virginia University's Evansdale Campus, Morgantown, WV. The suburban campus is linked to the University's Main Campus in downtown Morgantown by a monorail student transit system. The CJL assessment is a vital component of an overall Master Plan now being implemented by STRADA, the Pittsburgh, PA-based architectural design firm.

#### CJL Engineering Assessment Areas:

- Utility Assessment includes all Campus Systems: 125# High-Pressure Steam, Chilled Water, Gas, Domestic Water, Electric, IT for existing and all proposed new buildings
- Reviewed and provided Cost Savings Analysis of energy efficient equipment upgrades for all existing buildings
- Proposed improvements to existing utility infrastructure for more efficient operation
- Generated plans for long-range utility extensions
- Assisted the University in the location of proposed new buildings to avoid interference with high-voltage electric and high-pressure steam lines that serve the Health Sciences Campus

## UPMC Mercy Hospital Central Plant Replacement Pittsburgh, PA



### **The Project:**

CJL Engineering is providing Mechanical, Electrical and Plumbing services for a new 6,500-Ton Central Plant Replacement at UPMC Mercy Hospital, Pittsburgh, PA.

### **CJL Engineering Design Solutions:**

- Sixteen Chiller Options were modeled to determine the most cost effective chiller selections
- Three – 1,500-Ton Single Compressor Chillers
- One – 2,000- Ton Dual Compressor Chiller
- One – 2,000 -Ton Future Chiller
- Complete Control Optimization to achieve lowest operable KW/Ton
- ~ 90,000 #/HR High Pressure (150#) Steam Plant
- Five - 21,000 #/HR Boilers and one future boiler
- Weishaupt Burners to achieve up to 87 percent efficiency
- Flue Gas Economizer
- Three – 2 Mega Watt Emergency Generators
- The new Central Plant is also the home of the hospital lab and includes offices for Facilities Engineering

# New LEED® Silver Hospital Complex

UPMC East  
Monroeville, PA



## The Project:

CJL Engineering provided Mechanical and Electrical Engineering as well as LEED design services for the new UPMC East. This 300,000 sq. ft. hospital is located in Monroeville. It is Pittsburgh's first all new hospital to be entirely designed to achieve LEED Silver Certification. The project emphasizes UPMC's continuing commitment to sustainability. The programming for UPMC East includes Emergency Department, Surgery, Cardiac Catheterization, Laboratories, Imaging Services, Cancer Center, Endoscopy, Dining and a Pharmacy. It has a patient capacity of 156-beds. A new 149,000 sq. ft., 400-vehicle parking garage is incorporated into the complex.

## CJL Engineering Design Solutions:

- Three 750-Ton centrifugal chillers and three 750-Ton cooling towers for N+1 redundancy
- Complete Variable Air Volume HVAC System with hot water reheat and perimeter radiant panels plus a DDC Control System
- Three 9,900 MBH high-pressure steam boilers provide steam to sterilizers, humidifiers, converters and instantaneous hot water heaters
- Snow melting system for helipad and the connecting sidewalk
- Primary Electrical Distribution System – 4,160 volts
- Fire Protection and Fire Alarm Systems
- Communication, Paging, Monitoring and Nurse Call Systems
- Interior and Exterior lighting design
- All Plumbing and Medical Gas Distribution and Evacuation Systems
- Testing, adjusting and balancing of all operational systems



# Kane BioMass Boiler System

Kane Area School District  
Kane, PA



## The Project:

The Kane Area School District obtained a Department of Energy grant to install a 6 million BTU BioMass Hot Water Boiler System to serve the Senior High School. CJL Engineering designed the installation which utilizes lumber yard waste as its primary fuel source. The design included a combustion unit with an Automated Auger Fuel Feeding System. The BioMass Plant is housed in a new building remote from the school. The payback for this system installation will be less than seven (7) years by utilizing sawdust produced from local lumber yards in North Central Pennsylvania vs. the current natural gas fuel source. Fuel for the plant will also be provided by the Allegheny National Forest Initiative. This National Program has been established to provide for the long term health of the Forest by clean out of scrub debris.

## CJL Engineering Design Solutions:

- This combustion unit utilizes a series of air induction fans controlled by VFD'S (Variable Frequency Drives) to maintain a burn chamber temperature of 1800° F. A fire tube boiler unit fits atop the combustion unit and provides the heat transfer means to generate hot water.
- A large exhaust fan draws the products of combustion from the combustion unit through a waste heat boiler which produces hot water for the School. The hot water is used for the building Heating System.
- The combustion by-products are then drawn through a cyclone separator, removing particulates prior to exhausting to the atmosphere. This cyclone separation process significantly reduces particulate emissions thereby satisfying the requirements of the Pennsylvania Department of Environmental Protection.
- Since the new plant was remote to the High School, pipe had to be routed underground up through the Vo-Ag building, and then back underground and into the existing boiler room.

## Biomass Boiler and Turbine Co-Generation System State Correctional Institution – Cresson Cresson, PA



### The Project:

CJL Engineering designed a new Biomass Boiler and Turbine Co-Generation System for the Pennsylvania State Correctional Institution - Cresson. The Co-Generation Plant provides electricity by generating electric power utilizing a steam turbine from high-pressure steam produced by a Biomass Boiler. The high-pressure steam enters the turbine at 315 psig and exits at 50 psig.

The 50 psig steam is piped into the campus-wide Steam Distribution System and is utilized for space heating, domestic water heating, and laundry operations. The 300 kw of electric power generated from the turbine is directly connected into the campus Electric Distribution System.

### CJL Engineering Design Solutions:

- Biomass Boiler is wood chip fueled; 600HP capacity, 350 psi Design Pressure, and provides 20,700 lbs per hour of steam
- 315 kw Back pressure steam turbine generating up to 300 kw of electricity
- Fuel Handling System includes a Walking Floor Pit for wood truck unloading
- A 18,000 cubic feet fuel silo with bucket elevator and various conveyors
- Installed cyclonic dust collectors in the flue gas ducting and an electrostatic precipitator (ESP)
- The residual ash is used beneficially in field dressing or as an additive for composting. The plant generates 200-300 tons of wood ash per year



## New Boiler Plant Northside Medical Center (Forum Health) Youngstown, OH



### **The Project:**

CJL Engineering provided Mechanical and Electrical Engineering services for Forum Health at its three major hospitals: Northside Medical Center, Trumbull Memorial Hospital and Hillside Rehabilitation Hospital, plus Beeghly Medical Park, all located in Greater Youngstown / Warren, Ohio area. The Scope of Work for the Northside Medical Center's Master Facility Plan and Implementation included a new 100,000 sq. ft. Building Expansion, plus upgraded Chilled Water Plant, new Boiler Plant and Electrical on-site Generation, HVAC, Plumbing and Electrical Systems, a 545-vehicle Parking Garage, plus additional implementation projects.

### **CJL Engineering Design Solutions:**

- The Mechanical Design also included a new 50,000-lb / hour High-Pressure Steam Boiler located in a Central Boiler Plant.
- New 12 inch high-pressure steam distribution piping serves the new addition and is piped over 300 feet via an elevated piping support structure located on the roof of the existing Hospital.
- Total Steam Plant capacity for the \$2.5 million Boiler Plant was increased to 130,000 lbs. / hr. of High Pressure Steam.
- All new Boiler Plant Controls were added to allow all three existing boilers to operate in system, as required. The overall plant efficiency was increased by over 17 percent.

## Mechanical Systems Upgrade Metropolitan Theatre Morgantown, WV



### **The Project:**

The Metropolitan Theatre began its life in 1924 as a 1,300 seat movie palace. Today it has been renovated and rehabilitated into an events and concert venue. After extensive renovations, it now has a state of the art sound and lighting system and a small portable screen for movies.

### **CJL Engineering Design Solutions:**

- The original supply air blower was re-used and the return, mixed air plenums were refurbished, and a new hot water heating coil was custom fit to the built up fan system. This system served the theater proper
- Four new air handling systems were installed with heating and cooling coils (cooling coils for future cooling) to serve the ancillary areas of the theater. A chilled water system was planned for future installation of air conditioning
- New primary secondary pumping/piping arrangement was provided for the existing hot water
- The relatively new boilers and primary pumps that had been abandoned were retained and refurbished
- The hot water distribution piping system, air handling unit coils, unitary heating equipment, and auxiliaries were provided to complete the heating system

# Bluefield Regional Medical Center Systems Retrofit of Obstetrics & OR Suites Bluefield, WV

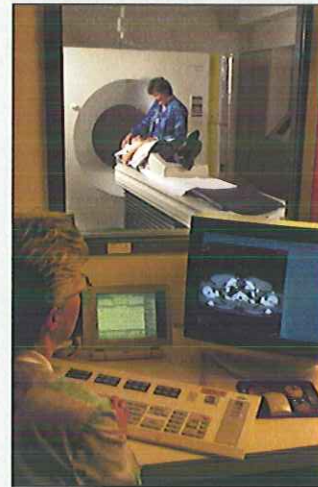


## The Project:

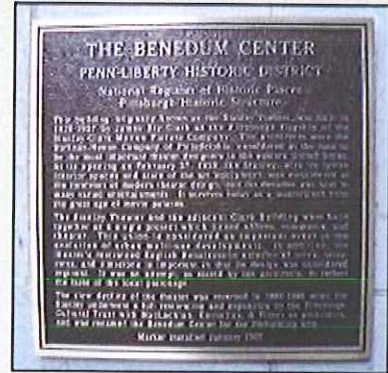
Bluefield Medical Center is a healthcare facility serving southern West Virginia and southwestern Virginia. The hospital offers state of the art, comprehensive, integrated health care. CJL Engineering provided significant upgrades to the hospitals Obstetrics and Surgery units.

## CJL Engineering Design Solutions:

- The HVAC System is comprised of air-cooled chillers, and double wall air-handling units equipped with all necessary filters to meet hospital requirements
- New steam service from existing boiler to steam converters for hot water heating was provided
- The Operating Rooms were designed to be able to maintain as low as 60° F space temperature at 50 percent relative humidity
- The Electrical System upgrades included adding onto the existing electric service, normal and normal/emergency electrical distribution system.
- A new 400 Kw emergency generator to serve the all new and existing 480v mechanical equipment and surgery equipment was provided
- CJL Engineering has completed an infrastructure Master Plan and worked with the hospital on the implementation of those projects



# Benedum Center for the Performing Arts New Chilled Water Plant and Electrical Upgrades Pittsburgh, PA



## The Project:

Benedum Center for the Performing Arts is the premier multi-purpose venue in Pittsburgh's Cultural District. Built in 1927 as the Stanley Theater, the 2,800-seat hall is home to four of Pittsburgh's opera and dance companies, and hosts a diverse range of touring productions. The need for increased cooling capacity led to the redesign and installation of a new Chilled Water Plant and electrical upgrades.

## CJL Engineering Design Solutions:

- New cooling equipment provides reliability, redundancy and a reduction in utility costs. Lower chilled water temperatures improve dehumidification, and provide flexibility for smaller startup and non-event cooling loads.
- New chillers, cooling towers, controls, pumps and associated electrical infrastructure.
- The new plant has two 275-ton centrifugal electric chillers, one 175-ton electrical screw compressor chiller, two-285-ton cooling towers, three VFD pumps, all new piping and chemical feed tanks and 2 refrigeration leak exhaust systems.
- New electrical switchgear capacity was added and brought on line without disrupting operations.
- New risers and distribution panels were routed to the gridiron and penthouse levels.

# Master Plan and Implementation

## Punxsutawney Hospital

### Punxsutawney, PA



#### **The Project:**

CJL Engineering provided Mechanical and Electrical Master Planning, along with a variety of Open-Ended renovations and upgrades to Punxsutawney Hospital, including the replacement of its 30-year-old Chilled Water Plant. The hospital is located in rural Jefferson County, PA.

#### **Chilled Water Plant:**

- Project included the removal of CFC chillers
- Increased plant tonnage from 400 tons to 550 tons to accommodate a major patient wing expansion
- To assist in fast tracking the project, new chillers and cooling tower were pre-purchased; design was completed while this equipment was being manufactured
- New chillers were of improved efficiency (kw/ton) and utilized environmentally friendly, R-134a refrigerant
- Cooling tower was equipped with a variable speed drive for energy savings
- Reworked primary / secondary piping
- New primary system pumps
- New secondary chilled water pumps were provided with variable speed drives for energy savings
- Reworked main / secondary piping loop
- Design new 34,500-volt Primary Power service, plus a 1,000 kVA 34,500-480Y/277-volt transformer and a 1,000 kVA 34,500-208Y/120-volt transformer

# GSD136412: EOI Boiler Plant Upgrades

## D3 Project References

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