

04/14/20 10:39:30
WV Purchasing Division

CAMP DAWSON BUILDING 215 MEDICAL WING RENOVATION

CEOI ADJ2000000006

www.cjengineering.com

Original

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CEOI ADJ2000000006

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 type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input 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.

CJL Engineering

Company

Mark F. Sotisky

Authorized Signature

4/6/20

Date

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

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Mark F. Sotosky, Director | Business Development

(Name, Title)

Mark F. Sotosky, Director | Business Development

(Printed Name and Title)

232 Horner Street, Johnstown, PA 15902

(Address)

814.536.1651, ext. 102 / 814.536.5732

(Phone Number) / (Fax Number)

marksotosky@cjlengineering.com

(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

CJL Engineering

(Company)



(Authorized Signature) (Representative Name, Title)

Matthew R. Sotosky, P.E., LEED AP | Managing Partner

(Printed Name and Title of Authorized Representative)

April 9, 2020

(Date)

814.536.1651, ext. 110 / 814.536.5732

(Phone Number) (Fax Number)

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: 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: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, 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: CJL Engineering

Authorized Signature: *[Signature]*

Date: April 9, 2020

State of Pennsylvania

MATTHEW R. SOTOSKY

County of CAMBRIA, to-wit:

Taken, subscribed, and sworn to before me this 9 day of April, 2020

My Commission expires AUGUST 15, 2020

AFFIX SEAL HERE

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Brenda I. Szelong, Notary Public
Richland Twp., Cambria County
My Commission Expires Aug. 15, 2021
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

NOTARY PUBLIC

[Signature]

Purchasing Affidavit (Revised 01/19/2018)

CONTENTS

01 FIRM OVERVIEW

05 COMPANY EXPERIENCE

15 STAFF QUALIFICATIONS

23 PROJECT AND GOALS



FIRM OVERVIEW

Established in 1938, CJL Engineering is a full service, mechanical, electrical, plumbing, fire protection, and civil/structural consulting engineering firm known for mastering the most challenging projects in the region. With offices in western Pennsylvania, eastern Ohio, northern West Virginia and Maryland, our super-regional focus has enabled us to become one of the preeminent MEP firms in the industry, proudly serving a wide range of specializations and clients.

Health care is a major focus of CJL Engineering's practice. Our firm has been involved in designing MEP systems for health care for more than 81 years. Health care accounts for 40% of our annual billing. Our experience over the past 5 years represents more than \$1.38 billion dollars in total construction cost, and approximately 9.5 million square feet of healthcare facilities design.



Range of services:

- Engineering Analysis
- Engineering Design
- Building information modeling (BIM)
- Energy modeling
- Detailed construction documents
- Construction phase services
- Building commissioning



A broad range of clients

- Healthcare - Hospitals, Urgent Care, Medical Centers and Labs
- Green Buildings, Science, Laboratory and Research Facilities
- Education - Colleges, Universities, Trade Schools, K-12
- Corporate, Commercial, Office Buildings
- Industrial - Light and Heavy Manufacturing, Warehousing
- Performing Arts Centers, Museums, Theaters and Libraries
- Government and Secure Facilities
- High Tech Buildings/Mission Critical Data Centers
- Hotels, Ice Arenas and Sports Facilities
- Apartments, Dormitories and High Rise
- Central Plants, Energy Facilities and Utility
- Distribution Centers
- Historic and Adaptive Retrofit
- Master Planning and Design



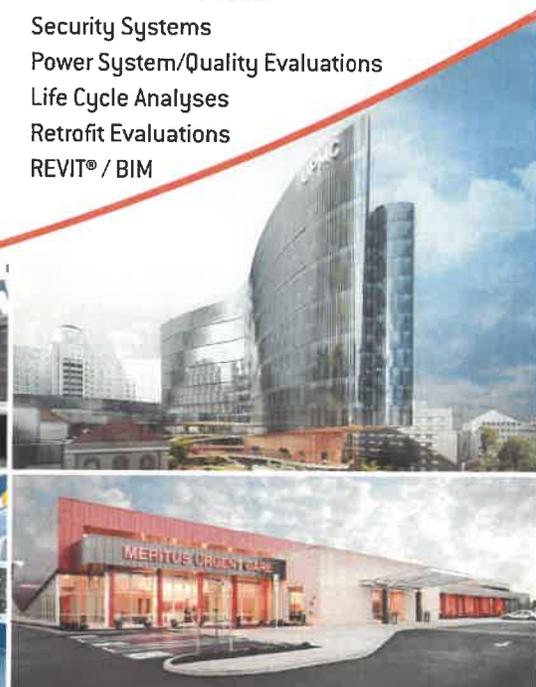
Specialization

- HVAC Systems
- Electrical Systems
- Fire Detection and Protection
- Plumbing Design
- LEED® Green Building Design
- Commissioning
- Energy Modeling Solutions
- Civil / Structural Engineering
- Architectural Lighting and Controls
- Telecommunications
- Life Safety Systems
- Voice/Data/Audiovisual
- Security Systems
- Power System/Quality Evaluations
- Life Cycle Analyses
- Retrofit Evaluations
- REVIT® / BIM



More than 160 personnel, including:

- 32 Professional Engineers
- 28 LEED® Accredited Professionals
- A Certified Energy Manager (CEM)
- Commissioning Process
- Management Professionals (CPMP)
- Building Energy Assessment Professionals (BEAP)
- Healthcare Facility Design Professional (HFDP) and Certified Healthcare Constructor (CHC)



BY THE NUMBERS:

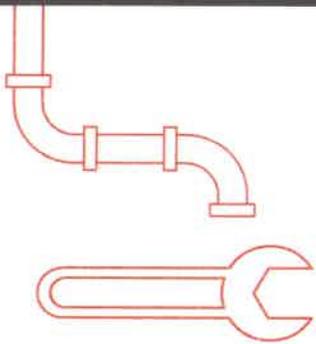
6

Regional Offices

1. Pittsburgh, PA
2. Johnstown, PA
3. Youngstown, OH
4. Frederick, MD
5. Erie, PA
6. Morgantown, WV



160 employees
including **32** registered professional engineers



More than
81
years of experience in
MEP design for healthcare

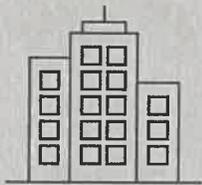


Healthcare represents
40%
of CJL's business



National leader in the design,
construction and commissioning
of LEED buildings with
28 LEED-accredited
professionals on staff

\$1.38 billion
dollars total construction cost and
9.5 million
SF of healthcare spaces in
the past five years alone



Experience partnering with
a wide range of design firms
and contractors



Ranked #40
on *Building Design &
Construction's* 2018 list of
Top 50 Engineering Firms



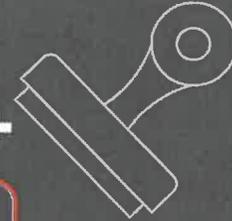
Ranked #77
on *Consulting-Specifying
Engineer's* 2018 MEP
Giants list

We have
1 LEED Fellow
 & Founding member
 of the USGBC

We have
300+

LEED

projects



Winners of 5
**Project of the
 Year awards**
ESWP



2012 Commercial Project of the Year
UPMC East



2013 Sustainable Project of the Year
Center for Sustainable Landscapes



2014 Sustainable Project of the Year
Energy Innovation Center

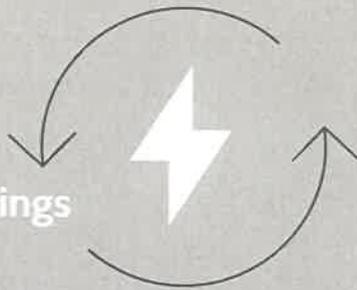


2016 Commercial Project of the Year
UPMC Lemieux Sports Complex



2017 Commercial Project of the Year
Union Trust Building

3 Net
 Zero
 buildings



LEED Platinum Projects



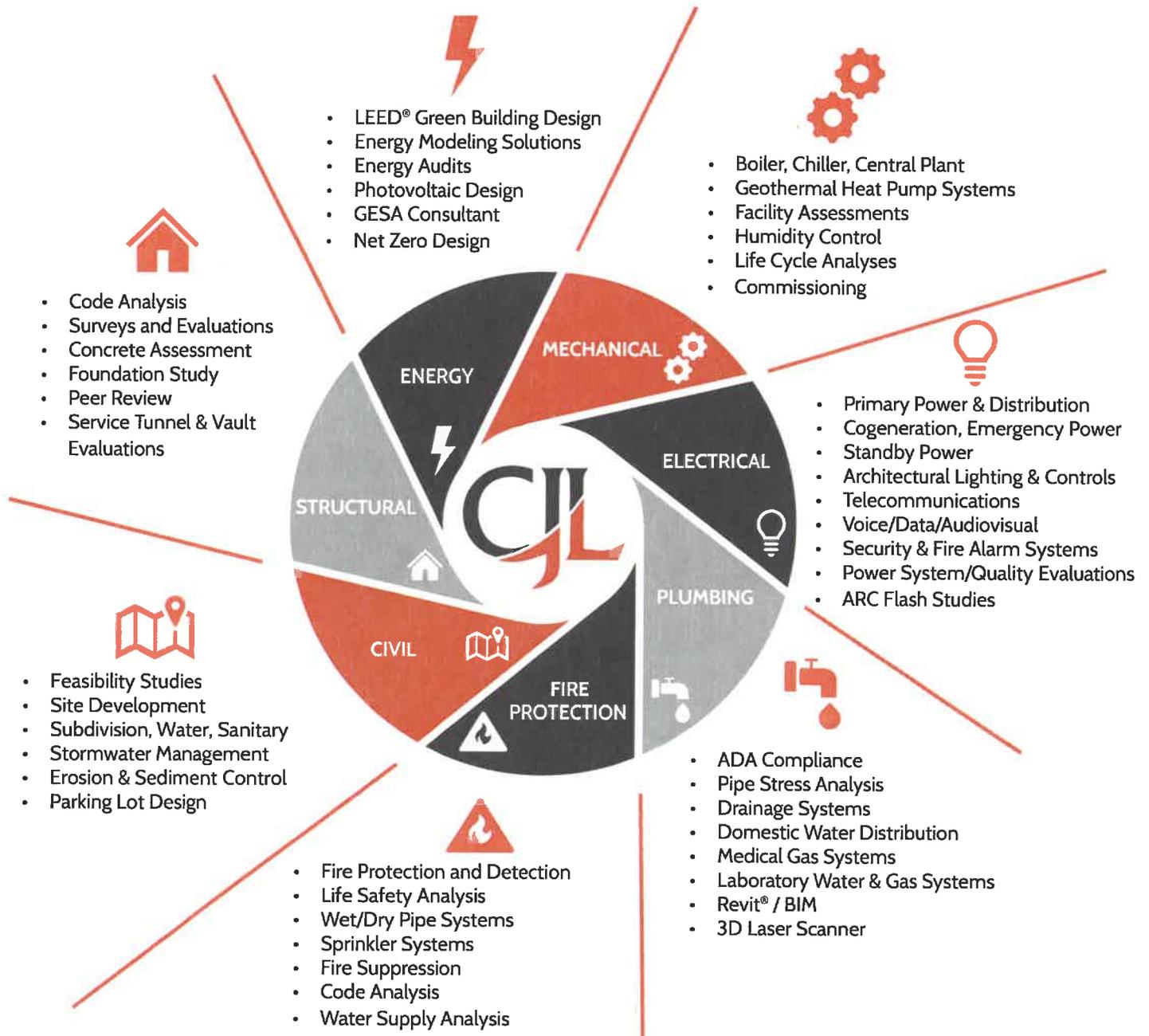
LEED Gold Projects

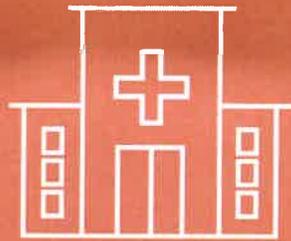
CJL's International Work

includes projects in Bulgaria, Czech Republic,
 Afghanistan, Africa, Italy, and Germany

WHAT WE DO

CJL Engineers roll up their sleeves and work alongside our clients, creating a trusted professional partnership based on strong collaboration and communication, engineering experience and quality technical documents.





COMPANY EXPERIENCE

HEALTHCARE CLIENTS

Abbott Northwestern Hospital, Minneapolis, MN
Affinity Medical Center, Massillon, OH
Akron Children's Hospital, Boardman, OH
Akron Children's Hospital, Mahoning Valley Campus, Beeghly, Boardman, OH
Armstrong County Memorial Hospital, Kittanning, PA
BJC Health Care, St. Louis, MO
BJC Missouri Baptist Hospital, Sullivan, MO
Bluefield Regional Medical Center, Bluefield, WV
Bradford Regional Medical Center, Bradford, PA
Brownsville General Hospital, Brownsville, PA
Canonsburg General Hospital, Canonsburg, PA
Chan Soon-Shiong Medical Center at Windber, Windber PA
Children's Rehabilitation Center, Warren, OH
Citizen's General Hospital, New Kensington, PA
Clearfield Hospital, Clearfield, PA
Corry Memorial Hospital, Corry, PA
D.T. Watson Rehabilitation Hospital, Sewickley, PA
Divine Providence Hospital, Susquehanna Health System, Williamsport, PA
Dubois Regional Medical Center, Dubois, PA
Duke Life, Conemaugh Memorial Hospital, Johnstown, PA
East Liverpool Hospital, East Liverpool, OH
Eastern Virginia Medical School, Norfolk, VA
Elk Regional Health Center, St. Marys, PA
Ephrata Community Hospital, Ephrata, PA
Frick Hospital, Excela Health, Mount Pleasant, PA
Garrett County Memorial Hospital, Oakland, MD
Greenville Memorial Hospital, Greenville, SC
Harmarville Rehabilitation Center, Harmarville, PA
Humility Mary Health Systems, Mercy, St. Joseph's, Warren, OH
Humility Mary Health Systems, Mercy, St. Elizabeth's, Youngstown, OH
M.D. Anderson Cancer Center, University of Texas, Houston, TX
J.C. Blair Memorial Hospital, Huntingdon, PA
Jameson Hospital, New Castle, PA
Jeannette Memorial Hospital, Jeannette, PA
Jefferson Regional Medical Center, Pittsburgh, PA
John J. Kane Regional, Allegheny County, PA
John P. Murtha Neuroscience and Pain Institute, Conemaugh Health System, Johnstown, PA
Latrobe Area Hospital, Latrobe, PA
Lutheran Health Systems, St. Joseph's Hospital, Ft. Wayne, IN
McKeesport Hospital, McKeesport, PA
Memorial Hospital of Bedford County, Bedford, PA
Mercy Hospital of Pittsburgh, Pittsburgh, PA
Montefiore Hospital Medical Office Building, Pittsburgh, PA
Muncy Valley Hospital, Muncy, PA
Oakland Orthopedic Associates, Oakland, PA
Oil City Hospital, Oil City, PA
Ohio Valley General Hospital, McKees Rocks, PA
Philipsburg General Hospital / Southwood Psychiatric Facility, Philipsburg, PA
Pittsburgh Eye and Ear Hospital, Pittsburgh, PA
Presbyterian Hospital of Plano, Plano, TX
Punxsutawney Hospital, Punxsutawney, PA
Roswell Park Cancer Institute, Buffalo, NY
Sewickley Valley Hospital, Sewickley, PA
Sharon Regional Health Systems, Sharon, PA
Sidney Health Center, Sidney, MT
Staten Island University Hospital, Staten Island, NY
St. Francis Hospital, New Castle, PA
St. Vincent Hospital, Allegheny Health Network, Erie, PA
Sutter Medical Center, Sacramento, CA
Titusville Hospital, Titusville, PA
University of Pittsburgh Medical Center, Pittsburgh, PA
UPMC East, LEED® Silver, Monroeville, PA
UPMC Lee Regional Hospital, Johnstown, PA
UPMC Hamot Medical Center, Erie, PA
UPMC Horizon Hospital, Greenville, PA
UPMC Horizon Hospital, Shenango, PA
UPMC Lee Regional Hospital, Johnstown, PA
UPMC Memorial Hospital, Bedford, PA
UPMC Mercy Hospital, Pittsburgh, PA
UPMC Northwest Hospital, Seneca, PA
UPMC Magee-Women's Hospital, Pittsburgh, PA
UPMC Passavant Hospital, LEED® Silver, Pittsburgh, PA
UPMC Shadyside Hospital, Pittsburgh, PA
VA Hospital /Aspinwall, Pittsburgh, PA
VA Hospital / Butler, Butler, PA
VA Hospital / Highland Drive, Pittsburgh, PA
VA Hospital / University Drive, Pittsburgh, PA
VA Medical Center, Erie, PA
VA Medical Center / Eye Clinic, Philadelphia, PA
Valley Care Health System, Beeghly Medical Park, Boardman Township, OH
Valley Care Health System, Hillside Rehabilitation Hospital, Warren, OH
Valley Care Health System, Northside Medical Center, Youngstown, OH
Valley Care Health System, Trumbull Memorial Hospital, Warren, OH
Warren Hospital, Warren, PA
Waterfront Surgery Center, Homestead, PA
Weirton Medical Center, Weirton, WV
Wenner Medical Arts Building, Susquehanna Health System, Williamsport, PA
Westmoreland Regional Hospital, Excela Health, Greensburg, PA
Western Pennsylvania Surgical Center, Wexford, Pa
Wheeling Clinic, Wheeling, WV
Wooster Community Hospital, Wooster, OH
WVU Medicine, Children's Hospital, Morgantown, WV
WVU Medicine, J.W. Ruby Memorial Hospital, Morgantown, WV

WVU Medicine, Children's Hospital

New Construction, Morgantown, WV



THE PROJECT

Our expertise in healthcare engineering including central plants and system planning for hospitals allowed CJL to skillfully design the mechanical and electrical systems for this new Children's Hospital owned by and located on the WVU Medicine Ruby Campus.

The \$158 million project consists of a new 9-story building of 300,000 SF. This 150-bed full-service hospital houses a comprehensive radiology department, operating rooms, cardiac catheterization and endoscopy facilities, 31-bed Pediatric Intensive Care Unit (Cardiac Unit/Epilepsy Unit), 54-bed Neonatal Intensive Care Unit, 34-bed Pediatric Acute Care Unit, 31-bed Birthing Center, multiple clinics, a dedicated emergency department, a compounding pharmacy, central sterile processing department, cafeteria and a Family Resource Center, a unique space for family therapy and gathering.

CJL DESIGN SOLUTIONS

- CJL collaborated with WVU Medicine and the Architect to plan the mechanical and electrical systems to serve the building efficiently while providing the style and functionality they desired.
- New energy efficient chilled water plant was designed.
- New steam boiler plant to serve hot water, domestic water, and sterilization needs.
- Emergency generator and new electrical service, 23k voltage.
- Indoor location and size required custom air handling units to be designed, 100,000 and 150,000 CFM.
- Designed a new below grade fuel oil system which required extensive coordination for permitting and construction.
- Expert commissioning services.

Bluefield Regional Medical Center

Obstetrics and OR Suites Upgrades, Bluefield, WV



THE PROJECT

Bluefield Regional Medical Center (BRMC) is a community healthcare provider offering inpatient, outpatient, diagnostic, medical, surgical and emergency care. BRMC is also a teaching facility for osteopathic medicine and serves the southern Virginia and West Virginia regions. CJL Engineering provided significant upgrades to the hospital's Obstetrics and Surgery units including 20,000 SF of new space.

CJL DESIGN SOLUTIONS

- CJL Engineering completed the infrastructure Master Plan and worked with the hospital on the implementation of the projects over a four-year period.
- 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, 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 provide.

Conemaugh East Hills, Outpatient Center

Duke LifePoint Healthcare, Johnstown, PA



THE PROJECT

CJL Engineering was contracted to provide mechanical, electrical and plumbing consulting engineering services. The East Hills Outpatient Care Center is a new, 123,000 SF, three-story facility serving as a one-stop shop for many medical services that feature state-of-the-art technology and care. The first floor hosts MedWell urgent care, corporate care, diagnostic imaging, laboratory services, women's diagnostic services, rehabilitation programs, pulmonary testing and education rooms. The second floor features neuroscience and pain management centers as well as outpatient surgical services. The third floor offers women's health services and primary and specialty care offices.

CJL DESIGN SOLUTIONS

- Designed a rooftop penthouse to house 6 indoor air handling units. Units are hot water heating and direct exchange (DX) cooling.
- Hot water boiler plant located in the penthouse serving the air handling units and building terminal units.
- Dedicated systems for controlling humidity and temperature of operating rooms and specialty rooms in the building including MDF, MRI, CT, Radiology.
- Electrical system designed with LED lighting throughout building and site.
- Specified emergency generator serving ambulatory surgery suite.
- Power and systems throughout building serves the needs for all specialty systems: MRI, CT, Radiology, Offices.
- Fire protection design for building equipped with sprinkler system throughout with pre-action systems installed in special areas such as MDF, MRI, CT, and Radiology.
- CJL Engineering produced the design deliverables in Autodesk REVIT®.

UPMC East, LEED® Silver Hospital Complex, Monroeville, PA



THE PROJECT

UPMC East was Pittsburgh's first new hospital to achieve LEED® Silver Certification, and serves as another example of UPMC's continuing commitment to sustainability. The 300,000 SF hospital with 156 beds includes an emergency department, surgery, cardiac catheterization laboratories, imaging rooms, cancer center, endoscopy units, pharmacy and a 149,000 SF, 400-vehicle parking garage.

CJL 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 high-pressure 9,900 MBH steam boilers for sterilizers, humidifiers, converters and instantaneous hot water heaters
- Two 2-megawatt emergency generators
- Snow melting system for helipad and the connecting sidewalk
- Primary electrical distribution system – 4,160 volts
- Fire protection and alarm systems
- Communication, paging, monitoring and nurse call systems
- Interior and exterior lighting design
- Plumbing and medical gas distribution and evacuation systems
- Testing, adjusting and balancing of operational systems
- Emergency room revisions
- Full-time on-site field engineer

Wooster Community Hospital Outpatient Cancer Center, Wooster, OH



THE PROJECT

CJL Engineering was contracted to provide Wooster Community Hospital with mechanical, electrical, and plumbing engineering design services for its new addition. The addition houses the Hospital's outpatient Cancer Center, as well as radiology services, ambulatory care and physician office space. The 40,000 SF building project required extensive coordination of all the building systems.

CJL DESIGN SOLUTIONS

- Designed new variable air volume HVAC system with hot water reheat and perimeter radiant panels
- New 1,900 ton variable primary chilled water plant to serve new addition and existing Hospital loads
- New 60,000 CFM hospital grade rooftop air handling units
- Pharmacy HVAC System designed to ISO Class 7, utilizing HEPA ceiling mounted fan filter units
- The custom mechanical infrastructure was designed to accommodate future growth.
- Custom designed interior and exterior lighting and voice / data systems
- DDC automatic temperature control system
- Fire protection and fire alarm systems
- Communication, paging, monitoring and nurse call systems
- All plumbing, oxygen and medical gas distribution and evacuation systems
- CJL Engineering produced the design deliverables in Autodesk REVIT®

Lehighon Readiness Center

DGS C-0961-0027 Systems Upgrade, Lehighon, PA



THE PROJECT

CJL Engineering provided the mechanical and electrical engineering upgrades to the 16,000 SF Lehighon Readiness Center. The facility is used by the Pennsylvania Army National Guard for troop training and housing military vehicles. The project was administered through the Pennsylvania Department of General Services; design was completed in 2019.

CJL DESIGN SOLUTIONS

- New HVAC system including rooftop units and energy recovery units
- Electrical power distribution includes electric service entrance and power distribution equipment
- New LED lighting and branch circuit wiring
- Emergency generator for standby power generation
- Technology network includes new data cabling infrastructure.
- Kitchen upgrades to include new exhaust hood
- New building access control system and vault intrusion detection system

Hamburg Readiness Center

DGS 961-31, Systems Upgrade, Hamburg, PA



THE PROJECT

CJL Engineering provided the mechanical and electrical engineering upgrades to the 20,000 SF Hamburg Readiness Center. The facility is used by the Pennsylvania Army National Guard for troop training and housing military vehicles. The project was administered through the Pennsylvania Department of General Services; renovations were completed in 2014.

CJL DESIGN SOLUTIONS

- New hot water heating system with high efficiency condensing boilers
- New heating and ventilating units and split system DX cooler for office areas
- Electrical power distribution includes electric service entrance and power distribution equipment
- New lighting and branch circuit wiring
- Emergency Generator for backup power generation
- Technology Network includes new telephone service entrance and data infrastructures

Stryker Brigade Readiness Centers

Bradford, Hermitage and Punxsutawney, PA



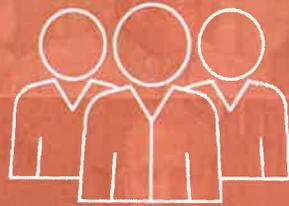
THE PROJECT

The Pennsylvania National Guard's Stryker Brigade program includes ten new readiness centers, along with extensive upgrades to their existing facilities. Each secure center is designed for use by the Pennsylvania Army National Guard for troop training and military vehicles. The projects are administered through the Pennsylvania Department of General Services.

CJL Engineering was selected to provide the mechanical and electrical engineering design for three facilities: Bradford (DGS 962-15), Hermitage (DGS 963-16) and Punxsutawney, (DGS A964-46). The projects were designed to achieve the National Guard Bureau's Sustainable Project Rating Tool (SPiRiT) Gold Rating

CJL DESIGN SOLUTIONS

- The HVAC design feature rooftop air-conditioning units with DX cooling, gas heat
- Electrical power distribution includes electric service entrance and power distribution equipment
- Security measures included securing entry doors, and camera monitoring system throughout each building
- Redundant Systems for backup power generation, automatic transfer switches and duct banks
- Secure Technology Network includes new telephone service entrance and data infrastructures



STAFF QUALIFICATIONS



Matthew R. Sotosky, P.E.
LEED® Accredited Professional
Managing Partner | Mechanical Engineer

Contact Information

☎ 814.536.1651, ext. 110

✉ msotosky@cjlengineering.com

PROFESSIONAL SUMMARY

Matt Sotosky is a Managing Partner of CJL Engineering. He started with the firm in 1990 and has extensive experience in Design and Commissioning of HVAC, Plumbing and Fire Protection for Healthcare, Educational, Industrial and Commercial projects, with over 30 years experience as a professional engineer.

Matt is responsible for designing and managing mechanical, electrical, plumbing and fire protection engineering projects for all types of buildings and applications. He has designed and / or managed over \$2.5 billion in construction projects.

REPRESENTATIVE PROJECTS

- WVU Medicine, Morgantown, WV
- Children's Hospital
 - Clinical Pharmacy Clean Room
- Bluefield Regional Medical Center, Obstetrics and OR Suites Upgrades, Bluefield, WV
- UPMC, Numerous Locations
- UPMC East LEED® Silver, New Medical Center, Monroeville, PA
 - UPMC Hamot, Regional Center for Mother and Baby Health, Erie, PA
 - UPMC Hamot, New Patient Care Tower, Erie, PA (In-Design)
 - UPMC Passavant Pavilion, LEED® Silver, Expansion Pittsburgh
 - UPMC Presbyterian, Deconstruction & Redesign, Pittsburgh, PA
 - UPMC Magee-Womens Hospital, Multiple Renovations, Pittsburgh, PA
 - UPMC Erie, Chartwell Pharmacy Clean Room (ISO Class 7), Erie, PA
 - UPMC Altoona, Chartwell Pharmacy Clean Room (ISO Class 7), Altoona, PA
- Meritus Health System, Hagerstown, MD
- North End Outpatient Services
 - John R. Marsh Cancer Center
 - Robinwood Suite 200 Residency
- Wooster Community Hospital, Wooster, OH
- Outpatient Cancer Center
 - Pharmacy Relocation and Redesign
 - Central Sterile Processing

- Duke LifePoint, Conemaugh Health System
- East Hills Outpatient Care Center, Johnstown, PA
 - Conemaugh 'D' Building, Main Campus Renovations, Johnstown, PA
 - Central Steam Plant Condensate Return Corrective Actions, Johnstown, PA
 - Pharmacy USP 800 Upgrades, Johnstown, PA

NOTEWORTHY PROJECTS

- Hamburg Readiness Center, Pennsylvania National Guard, Hamburg, PA
- Leighton Readiness Center Renovation, Leighton, PA
- Greensburg Readiness Center, Renovation, Greensburg, PA
- Southwestern Veterans Center, Allegheny County Renovation Pittsburgh, PA
- Stryker Brigade Readiness Center, Punxsutawney, PA and Bradford, PA
- Pennsylvania State Correctional Institutions Renovations
- SCI Dallas
 - SCI Huntingdon
 - SCI Frackville
 - SCI Cambridge Springs, PA
 - SCI Mercer
- SCI Muncy, GESA Consultant, DGS GESA-2017-2, Lycoming County, PA
- SCI Houtzdale, GESA Consultant, DGS GESA-2018-1, Clearfield County

EDUCATION

Bachelor of Science,
Mechanical Engineering,
University of Pittsburgh - 1989

SPECIALIZATIONS

Mechanical Engineering
Feasibility Study, Master Planning
Healthcare and Assisted Living
Central Plant, Boiler, Chiller Systems
Geothermal Systems
Commissioning

REGISTERED PROFESSIONAL ENGINEER

West Virginia, Pennsylvania, Maryland, Indiana, Missouri, Ohio, Illinois, Colorado, Oklahoma, Florida, New Mexico, Georgia, Texas, Michigan, Kentucky, Tennessee

MEMBERSHIPS/ACTIVITIES

International District Energy Association (IDEA)
American Society of Mechanical Engineers (ASME)
ASHRAE
American Society for Health Care Engineering (ASHE)
International Ground Source Heat Pump Association (IGSHPA)
Pennsylvania Society of Professional Engineers (PSPE)
National Society of Professional Engineers (NSPE)
U.S. Green Building Council (USGBC)

Adam B. Hale, P.E.
Associate Principal | Mechanical Engineer

Contact Information

814.536.1651, ext. 139

ahale@cjleengineering.com



PROFESSIONAL SUMMARY

Adam Hale is a Mechanical Engineer at CJL Engineering. He joined the firm in 2008 as an intern and became a full-time employee in 2010.

Adam is responsible for the design and specification of HVAC and other mechanical systems for educational, healthcare, commercial, and corporate 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 client.

REPRESENTATIVE PROJECTS

- WVU Medicine, Morgantown, WV
 - Children’s Hospital,
 - Central Sterile Renovation
- Duke LifePoint, Conemaugh Health Systems, Ebensburg Outpatient Care Center, Ebensburg, PA
- Duke LifePoint, Conemaugh Health Systems, Somerset Medical Office Building, Somerset, PA
- Duke LifePoint, Conemaugh Health Systems, Johnstown, PA
 - East Hills Outpatient Care Center
 - Conemaugh ‘D’ Building / Main Campus Renovations
 - Conemaugh Good Sam Radiology Oncology Renovations
 - Conemaugh Molecular Lab Renovations
 - Conemaugh Wound Care Renovations
 - Education Center Renovations
 - Medical Park CPG Plastics
 - Pharmacy Renovation
 - Vascular OR#5 Renovation
 - E Building Sleep Lab Renovations
- Meritus Health System, Frederick, MD
 - North End Outpatient Services
 - John R. Marsh Cancer Center
 - Executive Administrative Office Reno.
 - Family Medicine, Walnut Street Reno
 - Robinwood Suite 200 Residency

- Duke LifePoint, Conemaugh Health Systems, Meyersdale Medical Center, Radiology Replacement, Meyersdale, PA
- Meadville Medical Center, Vernon Place, Medical Office Building, Meadville, PA
- Wooster Community Hospital, Wooster, OH
 - Outpatient Cancer Center
 - Central Sterile Processing
- UPMC, Multiple Locations
 - UPMC East LEED® Silver, New Medical Center, Monroeville, PA
 - UPMC Hamot, Regional Center for Mother and Baby Health, Erie, PA
 - UPMC Hamot, New Patient Care Tower, Erie, PA (In-Design)
 - UPMC Passavant Pavilion, LEED® Silver, Expansion Pittsburgh
 - UPMC Presbyterian, Deconstruction & Redesign, Pittsburgh, PA
 - UPMC Presbyterian, Hybrid O.R. Renovation, Pittsburgh, PA
 - UPMC Lemieux Sports Complex, Cranberry, PA
- Allegheny Health Network, St. Vincent Hospital, MRI Relocation Erie, PA
- Conemaugh Health System, Nason Medical Center, Roaring Springs, PA
 - Feasibility Study
 - Mobile Cath Lab Unit Renovation
 - OR Chiller Replacement
 - Medical Gas Upgrades

EDUCATION

Bachelor of Science
Mechanical Engineering Technology
University of Pittsburgh - 2010

SPECIALIZATIONS

- Mechanical Engineering
- HVAC Design
- Facility Analysis
- Master Planning
- On-site Troubleshooting

REGISTERED PROFESSIONAL ENGINEER

West Virginia, Pennsylvania

MEMBERSHIPS / CERTIFICATES

- ASHRAE
- ASHRAE HFDP (Healthcare Facility Design Professional)
- ASHE



Timothy C. Bertolino, P.E.
Partner | Electrical Engineer

Contact Information

814.536.1651, ext. 114

tbertolino@cjlengineering.com

PROFESSIONAL SUMMARY

Tim Bertolino is a Principal of CJL Engineering with over 20 years of electrical design experience. He joined CJL Engineering in 2006 and manages the Electrical Department. Tim has been involved in the electrical system design and commissioning of projects for health care, government, schools K-12, industrial, college/university and corporate projects.

Tim specializes in the design and specification of low and medium voltage distribution systems, lighting systems, emergency power systems, local area networks, sound and communications systems and site utilities.

REPRESENTATIVE PROJECTS

WVU Medicine, Children's Hospital, Morgantown WV

West Virginia University, Puskar Center Performance Dining Facility, Morgantown, WV

Harrison-Taylor County Emergency Call Center, Bridgeport, WV

Duke LifePoint, Conemaugh Health Systems, East Hills Outpatient Center, Johnstown, PA

UPMC Mercy, Vision and Rehabilitation, Pittsburgh, PA

UPMC East, LEED® Silver, New Medical Center, Monroeville, PA

UPMC Hamot, Regional Center for Mother and Baby Health, Erie

UPMC Lemieux Sports Complex, New Medical Offices, Dual Ice Rink and Training Facility Cranberry, PA

UPMC Southside, Pittsburgh, PA

UPMC Hamot, Patient Care Tower, Erie, PA

Wooster Community Hospital, Wooster, OH
Mount Nittany Health, Medical Center, Reedsville, PA

DaVita Healthcare Partners (multiple locations Nationwide)

Jameson Hospital, New Castle, PA

East Liverpool Hospital, East Liverpool, OH
Department of General Services

- Greensburg Readiness Center Rehabilitation, Greensburg, PA
- Additions/Renovations to Troop "D", PA State Police, Butler, PA

Fulton County Medical Center, McConnellsburg, PA

Bradford Regional Medical Center, Bradford, PA

Clearfield Hospital, Clearfield, PA

Milford Health and Wellness Center, Milford, PA

Garrett County Memorial Hospital, Oakland, MD

Garden State Urology Center, Whippany, NJ

Lakewood Ranch Radiation Urology Oncology Center, Sarasota, FL

Dialysis Clinic Inc., Philadelphia, PA

Springpoint Senior Living at Monroe Village, Skilled Nursing Facility, Monroe Township, NJ

Homewood Retirement Centers, The Lodge at Willow Ponds, Frederick, MD

Westminster Canterbury at Shenandoah Valley, Senior Living Community Expansion, Winchester, VA

WRC Senior Services, Assisted Senior Living Residence, Clarion, PA

EDUCATION

Bachelor of Architectural Engineering
The Pennsylvania State University - 1997

SPECIALIZATIONS

Electrical Engineering
Master Plans & Feasibility Studies
Energy Audits

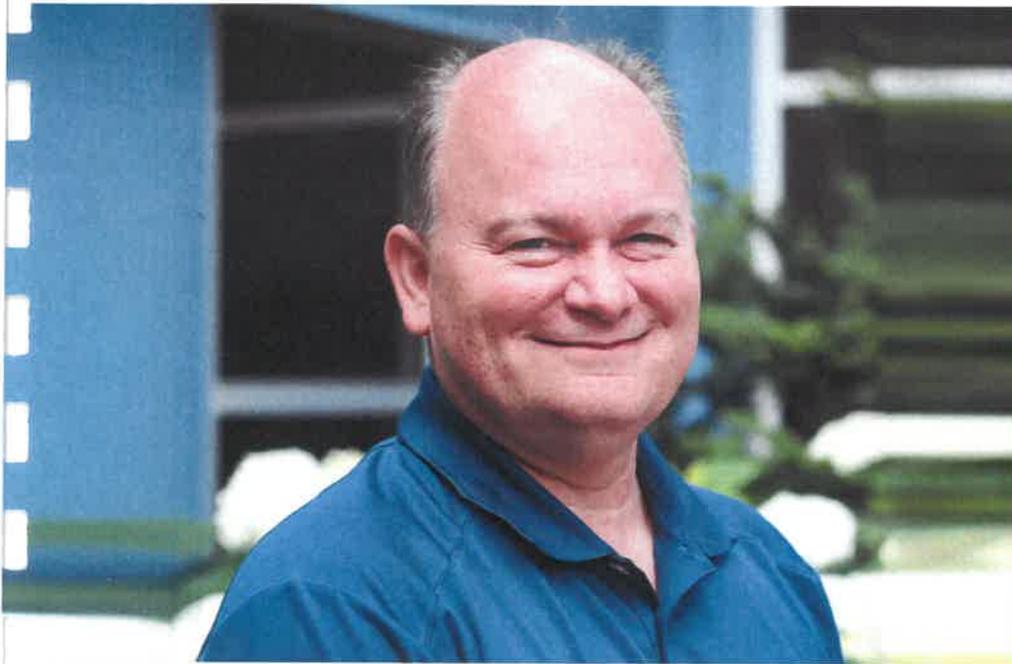
Emergency Power Generation
High, Medium & Low Voltage

REGISTERED PROFESSIONAL ENGINEER

Pennsylvania, Colorado, Virginia, New York, Arizona, New Mexico
Connecticut, Oklahoma, Florida, Nebraska, Montana, Texas, Arkansas, District of Columbia, Massachusetts

MEMBERSHIPS/ACTIVITIES

Illuminating Engineering Society of North America (IESNA)



Rodney A. Wolfe, P.E.
Principal | Electrical Engineer

Contact Information

☎ 814.536.1651, ext. 115

✉ rwolfe@cjlengineering.com

PROFESSIONAL SUMMARY

Rodney Wolfe is an Electrical Engineer and Principal of CJL Engineering. He started with the firm in 1993 and he is responsible for overseeing the electrical drafting, design and specifications of projects to assure compliance with local, state and federal codes, regulations and standards, establish company electrical design criteria, and schedule electrical department personnel to complete project assignments.

Rodney is involved in the design and specification of low and medium voltage distribution systems, lighting systems, emergency power systems, local area networks, sound and communications systems and site utilities. His noteworthy projects, comprising new construction, expansions and adaptive retrofit include:

REPRESENTATIVE PROJECTS

WVU Medicine, Children's Hospital, Morgantown, WV
Kaley Center, Electrical Distribution, 10th Floor Lighting, Wheeling, WV
Lincoln Primary Care Center, 100 kW Generator, Charleston, WV
Wheeling Pittsburgh Steel Locker Room Renovation, Wheeling, WV
Harrison-Taylor County Emergency Call Center, Bridgeport, WV
Garrett County Memorial Hospital, Oakland, MD
Department of General Services
• Lehighon Readiness Center, Rehabilitation, Lehighon, PA
• Stryker Brigade Readiness Center, Punxsutawney, PA
• Hamburg Readiness Center, 75 kW Generator, Hamburg, PA
• Warren State Hospital, Renovate Fire Alarm and Fire Suppression Systems, Warren County, PA
• Greensburg Readiness Center Rehabilitation, Greensburg, PA
• Southwestern Veterans' Center, Emergency Generator Installation, Pittsburgh, PA
Westmoreland County Juvenile Detention Facility, Greensburg, PA
GE Transportation Division, Erie, PA

Allegheny Health Network, St. Vincent Hospital, Multiple Projects, Erie, PA
Meritus Health System, North End Outpatient Services, Frederick, MD
Forum Health, Northside Medical Center, Youngstown, OH
Forum Health, Trumbull Memorial Hospital, Warren, OH
Shriner's Hospital for Children, Multiple Projects, Erie, PA
UPMC Hamot Medical Center, Numerous Projects, Erie, PA
Meadville Medical Center, Vernon Place, Medical Office Building, Meadville, PA
LECOM Health, Corry Memorial Hospital, Corry, PA
Pennsylvania State Correctional Institutions Renovations
• SCI Dallas
• SCI Huntingdon
• SCI Frackville
• SCI Greensburg
• SCI Cambridge Springs
State Regional Correctional Facility Mercer, Mercer County, PA
Pittsburgh Zoo and PPG Aquarium, Water's Edge, Polar Bear Exhibit LEED® Compliant, Pittsburgh, PA
Housing Authority of the City of Erie, PA

EDUCATION

Bachelor of Science
Electrical Engineering
University of Pittsburgh - 1988

SPECIALIZATIONS

Electrical Engineering
Primary Power
Industrial Power
Government and Healthcare
Schools K-12
Colleges and Universities
Building Evaluations
Feasibility Studies

REGISTERED PROFESSIONAL ENGINEER

West Virginia
Pennsylvania
Maryland
Ohio

MEMBERSHIPS/ACTIVITIES

Member of the Building Industry Consulting Service International (BICSI).
Pennsylvania Society of Professional Engineers (PSPE)
National Society of Professional Engineers (NSPE)



Adam R. McKinley, E.I.T., CPD
Associate Principal | Plumbing Design

Contact Information

☎ 814.536.1651, ext. 113

✉ amckinley@cjlengineering.com

PROFESSIONAL SUMMARY

Adam McKinley is the Plumbing Department Supervisor of CJL Engineering. He started at the firm in 2003 and serves as Project Manager for numerous projects, and is a Certified Plumbing Designer. His experience includes numerous utility extensions and/or relocations for universities, schools, office buildings, hospitals, restaurants, high-rise condominiums and personal care home projects.

REPRESENTATIVE PROJECTS

- WVU Medicine, Children's Hospital, Morgantown, WV
- Bluefield Regional Medical Center, Systems Retrofit, Bluefield, WV
- West Virginia Capitol Complex, State Office Building #3, Charleston, WV
- West Virginia University, Morgantown, WV
 - New Business and Economics Building (In-Design)
 - Puskar Center Performance Dining Facility
 - Oglebay Hall Renovation
- UPMC East, LEED® Silver Hospital, Monroeville, PA
- UPMC Hamot, Regional Center for Mother and Baby Health, Erie, PA
- UPMC Hamot, Bayview Medical Office Building, Erie, PA
- Garrett County Memorial Hospital, Oakland, MD
- Wooster Community Hospital, Wooster, OH
- Fulton County Medical Center, McConnellsburg, PA
- Allegheny Health Network, Saint Vincent Hospital, Erie, PA
 - OSI Building Renovation
 - Hardner Building
 - Nuclear Imaging Renovation
 - Infill Building
 - 5th Floor Women's Center
 - Urology Expansion & Renovation

- Department of General Services
 - Stryker Brigade Readiness Center, Punxsutawney, PA
 - Hamburg Readiness Center, 75 kW Generator, Hamburg, PA
 - Greensburg Readiness Center Rehabilitation, Greensburg, PA
 - Additions/Renovations to Troop "D", PA State Police, Butler, PA
 - Presque Isle State Park, Beach and Shower House Replacement
 - Meadville Medical Center, Vernon Place, Medical Office Building, Meadville, PA
 - Leidos Biomedical Research, Inc., Fort Detrick, Chiller Plant, Frederick, MD
- ## NOTEWORTHY PROJECTS
- Erie Public Safety Building, 911 Center, Erie, PA
 - Union Trust Building, Historic Renovation/ Retrofit, Pittsburgh, PA
 - University of Pittsburgh, Cathedral of Learning, Pittsburgh, PA
 - Greater Johnstown Community YMCA, Johnstown, PA
 - Paris Healthcare Linen Services – Processing Plant, DuBois, PA
 - Swann Biomass Ethanol Plant, Clearfield, PA
 - Punxsutawney Area Transit Authority, Punxsutawney, PA
 - CamTran ATA Operations Center, Johnstown, PA

EDUCATION

Bachelor of Science
Mechanical Engineering Technology
University of Pittsburgh - 2001

SPECIALIZATIONS

HVAC and Plumbing Design
Project Management

MEMBERSHIPS/ACTIVITIES

American Society for Plumbing
Engineering Member (ASPE)



Jaclyn A. Krawczyk, EIT
LEED® Accredited Professional
Senior Associate | Fire Protection

Contact Information

814.536.1651, ext. 183

jkrawczyk@cjlengineering.com

PROFESSIONAL SUMMARY

Jackie Krawczyk is an Associate and Fire Protection Designer with CJL Engineering and has over 14 years of experience in the industry. She is responsible for surveying and evaluating the condition of existing facilities, designing new fire protection and fire alarm systems, International Building Code and NFPA code consultations, evaluating shop drawing submissions, and performing life safety analysis on new and existing building projects. Jackie also provides construction observation services, which requires her to visit the construction site to solve field problems and to provide punch lists for completion of the project.

REPRESENTATIVE PROJECTS

West Virginia Capitol Complex, Building #3, Tie into the Central Heating Plant, Charleston, WV

West Virginia University, Oglebay Hall, Forensic Science Lab, Historic Building Renovation, LEED® Certified, Morgantown, WV

Bluefield Regional Medical Center, Systems Retrofit, Bluefield, WV

Valley Hospice Personal Care Home, Wheeling, WV

Harrison-Taylor County Emergency Call Center, Bridgeport, WV

UPMC East, New Medical Center, LEED® Silver, Monroeville, PA

UPMC Hamot, Regional Center for Mother and Baby Health, Erie, PA

UPMC Hamot, Emergency Department Expansion and OR Upgrades, Erie, PA

Akron Children's Hospital, Beeghly Campus, Boardman, OH

Missouri Baptist Hospital, St. Louis, MO

Radiation Oncology Center at Lakewood Ranch Professional Center, Sarasota, FL

UPMC Lemieux Sports Complex – New Medical Offices, Dual Ice Rink and Training Facility, Cranberry, PA

Duke LifePoint, Conemaugh Health Systems, Ebensburg Outpatient Care Center, Ebensburg, PA

Duke LifePoint, Conemaugh Health Systems, Somerset Medical Office Building, Somerset, PA

Duke LifePoint, Conemaugh Health Systems, Johnstown, PA

- East Hills Outpatient Care Center
- 'D' Building / Main Campus Renovations
- Medical Park CPG Plastics
- Molecular Lab Renovations
- Memorial Medical Center, Fire Sprinkler

Wooster Community Hospital, Wooster, OH Department of General Services

- Polk Center, Fire Suppression Upgrade
- Warren State Hospital, Renovate Fire Alarm and Fire Suppression Systems, Warren County, PA
- Additions/Renovations to Troop "D", PA State Police, Butler, PA

DaVita Healthcare Partners (multiple locations Nationwide)

Garrett County Memorial Hospital, Oakland, MD

LECOM Health, Corry Memorial Hospital, Corry, PA

UPMC Altoona, Chartwell Pharmacy Clean Room (ISO Class 7), Altoona, PA

EDUCATION

Bachelor of Science

Mechanical Engineering,

The Pennsylvania State University - 2004

SPECIALIZATIONS

Sprinkler System Design

Fire Alarm System Design

Code Consultation

Life Safety Analysis

MEMBERSHIPS/ACTIVITIES:

Society of Fire Protection Engineers Member

National Fire Protection Association Member

AutoCAD

REVIT BIM

HASS Hydraulic Analysis



Chris Polacek
Architectural Designer

Contact Information

☎ 814.536.1651, ext. 165

✉ cpolacek@cjlengineering.com

PROFESSIONAL SUMMARY

Chris Polacek is an Architectural Designer at CJL Engineering, joining the firm in 2016. He has over 22 years of experience in the Architectural planning and design. Chris is responsible for architectural planning, design, documentation, project management, and construction administration. His experience includes healthcare, industrial, educational, correctional, municipal, sports, and commercial facility projects. These project types encompass new construction, renovations and additions to existing facilities.

EDUCATION

Bachelor of Architecture
(five year program)
Minor in Architectural History
The Pennsylvania State University – 1997

SPECIALIZATION

Architectural planning and design

REPRESENTATIVE PROJECTS

- Dover Air Force Base, Bathroom and Kitchen Renovation, Dover, DE
- Punxsutawney Area Hospital, Medical Gas Upgrade, Punxsutawney, PA
- Duke LifePoint, Conemaugh Health Systems, Memorial Medical Center, Fire Sprinkler, Johnstown, PA
- Meritus Health System, North End Outpatient Services, Frederick, MD
- Department of General Services, Polk State Center Kitchen HVAC Upgrades, Venango County, PA
- Department of General Services, Southwestern Veterans' Center, Emergency Generator Upgrade, Pittsburgh, PA
- Frederick National Laboratory for Cancer Research, Frederick, MD
 - Chilled Water Plant Expansion
 - Building 560 - Lab Renovations
 - Building 325 - Animal Housing Facility Renovations
- Elliott Group, Research and Development Facility, Jeannette, PA
- Acosta Mine Maintenance Shop/Bath House, Friedens, PA
- Greater Johnstown YMCA, Addition and Alterations, Johnstown, PA
- Dale Oxygen Expansion and Renovation, Johnstown, PA

- Autodesk® Bakery Square 2.0, Fit-Out, Pittsburgh, PA
- White Township Recreation Complex, S&T Bank Arena Evaluation and Renovation, Indiana, PA
- The Pennsylvania State University, Various Locations
 - Pattee Paterno Library HVAC Upgrades, University Park Campus
 - Laboratory Classroom Building Renovations, Beaver Campus
 - Frable & Ostermayer Building, Greater Allegheny Campus
- St. Francis University, Chilled Water Plant Upgrades, Loretto, PA
- Bottle Works Green Roof, Johnstown, PA
- University of Pittsburgh, Various Locations
 - College Park Apartments Renovation, Johnstown, PA
 - Buckhorn and Sunset Lodge Renovations, Johnstown, PA
 - McGowan Center HVAC Upgrades, Pittsburgh, PA
 - GPSH Condensate Pump Vault Vent, Pittsburgh, PA
 - Benedum Hall Nanotech Phase II, Pittsburgh, PA
- Stoneham Arena, Rink Floor and Refrigeration Systems, Stoneham, MA
- Holy Name Church, New Elevator, Ebensburg, PA



PROJECT AND GOALS

APPROACH AND METHODOLOGY

Project Goal 4.1: Planning

The proper balance between design and cost is integral to CJL's approach to accurate engineering. As your engineer, it is our responsibility to develop a comprehensive, efficient, and reliable design for the MEP/FP systems at a cost that is both reasonable and in line with the project budget. We accomplish this through substantial involvement by our most experienced engineers, including those who participate in the QA process. Our experience enables us to get right to the heart of issues early on in the project design process, when decisions can be made most cost effectively. Our engineering team members plan, develop, evaluate and analyze throughout each phase of the project, while coordinating with the client, the project team, appropriate agencies, and utilities at each step. The resulting design decisions are documented in the project team minutes of meeting, in CJL reports, and our drawings. Through this process, project changes are minimized, allowing our clients to make informed decisions during each stage of the design process, while the opportunity to influence or modify project direction remains available.

Project Goal 4.2: Existing Conditions

CJL's Design Team works in Medical Facilities on a daily basis and fully understands the complexity and lack of space for utility pathways, as well as the impact of these utility pathways, through existing areas of the facility that are not included in the primary project area. Existing condition documentation is the critical first step. The early understanding of the type of proposed utilities as well as their physical size is required to determine the optimal path of these utilities. Quite often various pathways are required to be reviewed and studied prior to the final pathway being selected. Collaboration and very open communication amongst all members of the project team are required for this pathway process. One of CJL's fundamental working philosophies is a strong emphasis on interaction with the Owner, Architects, Construction Manager and other professionals on the design team from the onset of the project. This helps to integrate the MEP design into the beginning phases of the project design.

Project Goal 4.3: Quality Documents

The high quality and accuracy of our documents result in fewer problems during the construction process, minimal change orders and more effective communication and relationship with contractors. CJL Engineering as our standard

operating process, focuses on accurate documentation and written communications throughout the project, including MEP minutes of meetings to supplement those of the Architect. Project documentation is rigorously maintained in a project manual, including reports, calculations, correspondence, punch lists, and utility coordination. This process ensures maximum clarity of engineering concepts and design decisions.

Project Goal 4.4: Completion

The same engineers that developed the design will remain involved through the completion of the project, insuring continuity and the benefits of experience in the construction of the project. The Senior Engineers spend time in the field working with the construction team to resolve any issues, thereby creating a better understanding of the design intent and a less adversarial relationship between the engineers and the contractors. This will enable CJL to identify and resolve problems encountered during construction more effectively. The ongoing design coordination done effectively and in collaboration with the construction team results in a much better understanding of the design intent on the part of the construction team. This further reduces misunderstandings and construction problems in the field.

Utilize Tools of Technology

BIM 360: Efficient Data Collection; Accessibility for All Team Members, such as, owners and subcontractors; Less Administrative Activities, more attention to quality in the field and Customized Reporting Capabilities. **3D Laser Scanner:** Time and Cost Saving - minimizes down time, remote measurements and less change orders; Accurate Documentation - takes real field conditions and imports them into BIM models and Plan for Future Improvements - routing for clash detection and space optimization. **Digital Virtual Reality:** Experience - more realistic sequencing requirement and space constraints; Animate Complex System Equipment - helps ensure smoother implementation in the field and Resolve - constructability concerns with a higher level of confidence.

