

# Expression of Interest



To

**West Virginia Division of Corrections**

For

**Huttonsville Correctional Center**

Emergency Power Systems

Solicitation Number COR61694

June 18, 2014

06/17/14 11:55:36AM  
West Virginia Purchasing Division



Design/Consulting Services

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## CONFIDENTIAL

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# I – Executive Summary Letter



# ZDS

Design/Consulting Services

MECHANICAL . ELECTRICAL . INDOOR AIR QUALITY . ENERGY . COMMISSIONING

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St. Albans, WV 25177

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June 16, 2014

Department of Administration  
Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305-0130

### **Expression of Interest to Provide Professional Services for the Huttonsville Correctional Center**

Enclosed is one (1) original copy along with three (3) convenience copies and one (1) digital copy on CD-ROM of the **ZDS** Statement of Qualifications and Experience to provide Professional Engineering Services for the *Huttonsville Correctional Center*.

The **ZDS** Team has over fifty years of experience in West Virginia, giving us the local understanding of your needs. We have extensive renovation experience, including phasing construction to reduce potential disruptions. We work with the Client to assure that the needs of the facility are met so the designed solutions address the challenging issues.

**ZDS** has developed the master planning, evaluation and/or design for seven WVDHHR State Hospitals including nearly \$50,000,000 in construction costs for additions and renovations at the William R. Sharpe, Jr. Hospital. Work at Sharpe included three (3) new 600 kw bi-fuel generators that serve the three (3) branches of the essential electrical system required by Codes for a healthcare facility.

**ZDS'** experience involves hundreds of projects including working with many state and federal agencies. Our professionals are dedicated to performing quality services taking into account our clients' needs, scheduling and budgets. Refer to *Section II* for a brief description of **ZDS'** Organization and Services.

Refer to *Section III* of this document for a sampling of our projects including many that incorporated emergency generators and associated switchgear and distribution equipment. **ZDS** has extensive experience in renovation projects that required the work to be performed while the facility remained occupied and fully operational. **ZDS** founders Ted T. Zachwieja and Todd Zachwieja, as well as the rest of the staff, have been involved in hundreds of millions of dollars in renovations and new construction involving MEP systems. Past projects include multiple emergency generators and associated components and accessories. We are currently working on the design for installation of six (6) generators at six (6) individual buildings that will include service rated Automatic Transfer Switches to provide emergency power for the entire respective facility. **ZDS** does work in 24 states but our home and corporate offices are in St. Albans, West Virginia.



ZDS has the best expertise to provide solutions for the installation of emergency power systems at your facility. We have been extremely effective by acting in our clients' behalf to incorporate new proven technologies and management methods and have saved our clients substantial funds in construction and operating costs. We pride ourselves on being viewed as an extension to the client's staff and successfully incorporating pertinent information about their facility into any proposed solution.

## **APPROACH**

The Division of Corrections has listed goals/objectives in the RFQ that will be addressed in the design to attain a complete facility-wide emergency power system.

The desired results, as we understand the RFQ, are to make provisions for emergency power generation that will serve the North and South Electrical rooms as well as the Wastewater Treatment facility. The proposed capability to provide emergency power will meet, or exceed, the existing utility electrical power serving the areas. Modifications to the existing switchgear and electrical distribution equipment will likely be necessary and new equipment provided as required. The work by ZDS during the field investigation phase will include an attempt to identify existing Code issues and other potential deficiencies in the electrical systems. The emergency power system in the South Electrical room is experiencing unbalanced voltages and equipment/devices have been destroyed when the electrical power conversion from utility company to emergency power occurs. Recommended upgrades will be incorporated into the construction bidding package.

The facility at *Huttonsville* has multiple electrical services that stepdown from 12.5 kv distribution lines around the site. The desire to provide an all-encompassing standby power system appears to be achievable but challenging. We will investigate various solutions in order to prepare an approach to provide emergency standby power throughout the facility. The facility currently has a mix of 480/277 volt, 3-phase and 208/120 volt, 3-phase emergency generators.

For the project goals at the *Huttonsville Correctional Center*, ZDS will perform detailed field investigations and documentation. We will work with reputable emergency generator system manufacturers and suppliers to assist with the facility layout and specifications for the engine generator sets, Automatic Transfer Switches (ATS), miscellaneous components and accessories that will be required for fully functional emergency power generation and distribution systems at the facility. Close coordination and dialogue with the Client's representatives will be maintained throughout the design process to assure that we are complying with their intent and that the end result meets the criteria set forth in the RFQ.

Refer to *Section IV* of this document for our Professional Qualifications with detailed resumes. ZDS Design/Consulting Services has registered professionals in all of the required disciplines to effectively execute the requirements of the project. We believe that our specialties in commissioning/design of Electrical systems, Energy Management, Planning and Codes compliance make us most qualified to work on your facilities. We continue to have an excellent working relationship with the West Virginia State Fire Marshal and other agencies within the State of West Virginia. Below is a partial listing of the ZDS Team.

**Ted (Todd) A. Zachwieja**, **Principal-in-Charge** MSEM, P.E., CEM, LEED AP with over 38 years of experience in MEP design, energy management, IEQ and commissioning. *Nationally recognized for expertise in IEQ, LEED and Certified Energy Manager. Received "Legend in Energy" by AEE in 2007/2008. Guest Speaker at National System Commissioning Conference.*

**Ted T. Zachwieja**, **Founder and Project Executive** with over 55 years of experience in M/E design and Construction Administration. *Ted was one of three engineers selected by the Department of Energy to train those who manage buildings to conserve energy.*

**Jim Watters**, **Production Manager/Associate** with over 35 years of experience in mechanical, electrical and plumbing design/commissioning and Construction Administration.

**Jennings L. Davis II**, **Project Manager/Associate**, P.E. with over 24 years of experience specializing in MEP design, Construction Administration and commissioning.

**James Lowry**, **Senior Engineer**, P.E. specializing in MEP design and commissioning with over ten years of experience.

**Ted A. Zachwieja III**, **BIM Manager/Systems Administrator**, BSME, EI, 2012 Legend-in-Energy Award, specializes in 3D MEP design and IT systems administration with over 10 years of experience.

ZDS personnel have worked on hundreds of projects throughout West Virginia for various private and public entities. Below is a partial list of references that will attest to how we worked with their staff, our engineering technical strengths and our ability to work with Clients and contractors. Please contact any of them to get their opinion of ZDS' work and other details.

1. Mr. Ron Adkins, former Project Manager for West Virginia Air National Guard projects, currently Construction Manager, Central Facility Manager for DHHR, Charleston, WV (304) 634-9379.
2. Mr. Greg Nicholson, Chief Operations Officer, DHHR, Charleston, WV (304) 558-1577.
3. Mr. Mike Pickens, Executive Director of the West Virginia Department of Education (304) 558-2711.
4. Dr. Mark Manchin, former Executive Director School Building Authority, previous superintendent of both McDowell County Schools and Webster County Schools (304) 558-2541.
5. Mr. Bill Elswick, formerly Executive Director at Ohio University, Washington & Lee University, and director at CAMC (304) 345-3445.

ZDS has an excellent track record of completing projects on time and within budget and we are ready and willing to start on your project. We feel confident that our specialties will provide the **Huttonsville Correctional Center** with the best expertise to provide engineering services for the grounding and lightning protection issues. We look forward to discussing our qualifications. If there are any questions, please do not hesitate to call.

Sincerely,



Todd A. Zachwieja, P.E., CEM, LEED AP  
Principal, Chief Executive Officer

# II – Organization/Profile



ZDS offers an effective organizational structure -- one that takes each project from inception through completion, working as an extension of the client every step of the way.

Excellent mechanical and electrical design results from an experienced team, as well as listening to the needs of the client.

#### ABOUT ZDS DESIGN/CONSULTING SERVICES

##### ORGANIZATION

In 1983, Todd A. Zachwieja founded ZECO Consultants. In 1994 ZDS Limited Liability Company was incorporated in West Virginia using dba ZDS Design/Consulting Services, and was founded to provide design and consulting services. Today ZDS founders have combined experience exceeding 150 years of technical expertise:

**Todd A. Zachwieja, PE, C.E.M., LEED AP,** Chief Executive Officer, brings with him over 38 years in the design and consulting business.

**Ted T. Zachwieja, Founder,** M/E/P Construction Administration Project Executive, has over 55 years experience in the design and consulting business. He was owner of Ted T. Zachwieja & Company from 1962 to 1982.

**Daniel H. Kim, Ph.D.,** Manager of Strategic Planning, brings with him over 27 years in the design and consulting business and is one of the nation's leading experts in organizational management. He is also owner/founder of Pegasus Communications, Inc. from 1991 to present.

**Lori L. Zachwieja, C.P.A.,** Chief Financial Officer, M.F.A., was co-founder of ZECO Consultants and brings over 30 years experience in operating a business.

##### SERVICES

MECHANICAL	ENERGY	INDOOR AIR QUALITY
ELECTRICAL	BIM	3D LASER SCANNING
PLUMBING	COMMISSIONING	EXPERT WITNESS



Each new project is assigned to a principal in charge who will follow the project from inception through commissioning.

ZDS assigns the production staff according to the nature of the project and the work force necessary to meet the schedule. The principal in charge of that project determines if consultants are needed and coordinates all areas. After bidding, a principal of ZDS coordinates visits to the job site regularly, all the way through the post-warranty inspection.

ZDS believes in the team approach when providing engineering design and consulting services. We start with our client as the number one member on our team. We listen to the needs and concerns of our client and that becomes the basis for our design. Our design expertise includes:

**MECHANICAL DESIGN**

- Heating & Ventilation
- Air Conditioning
- Piping
- Environmental Controls
- Process Controls
- Refrigeration
- Plumbing
- Medical Gases
- Sprinkler-Fire Protection
- Master Planning

**ELECTRICAL DESIGN**

- Power Distribution
- Interior Lighting
- Exterior Lighting
- Emergency Power
- Communications
- Technology
- Fire Alarm
- Security
- Life Safety
- Master Planning

ZDS provides comprehensive design services. We have experience and specialties in indoor air quality, energy management and commissioning, along with traditional mechanical and electrical design experience dating back as far as 1958. We offer a complete package.

ZDS works with all levels of the client's staff: the building owner, budget supervisor, operating and maintenance staff and others impacted by the project. We recognize that the maintenance and operating staff live with the design long after the project's completion. We listen to and work with those who will continue to operate and maintain the equipment. We find that proper communication benefits the client throughout the design process and beyond.

The ZDS design team provides a total system evaluation for cost-effective selection, installation, and ease of maintenance for both new systems and retrofit of in-place systems.

Design begins with our client. Our staff meets with our client to review their concerns, budgets and schedules. The ZDS design team reviews the entire picture, and ends with "A Total Design."

**COMPANY LEGAL NAME**

**ZDS Limited Liability Company dba  
ZDS Design/Consulting Services**

**LOCATION OF INCORPORATION**

**West Virginia**

**FOUNDERS**

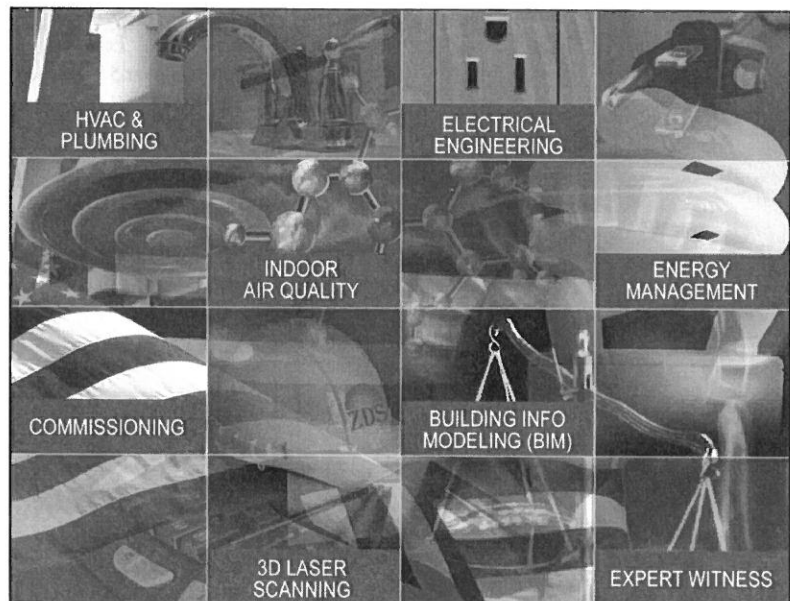
- Todd A. Zachwieja, P.E., C.E.O.**
- Lori L. Zachwieja, C.P.A., C.F.O.**
- Ted T. Zachwieja, Executive**
- Daniel H. Kim, Ph.D.**

**OFFICES**

**St. Albans, WV**

**EMPLOYEES**

**ZDS currently employs design  
professionals covering all aspects of  
our services.**



**INDOOR AIR QUALITY SERVICES**

ZDS provides consulting engineering services for the indoor air quality (IAQ) environment. These services include: strategic planning for renovation and new construction projects; technical research and writing; specialized applications software development; corporate and professional training programs; publications support and fulfillment; and site-specific engineering and scientific consultation.

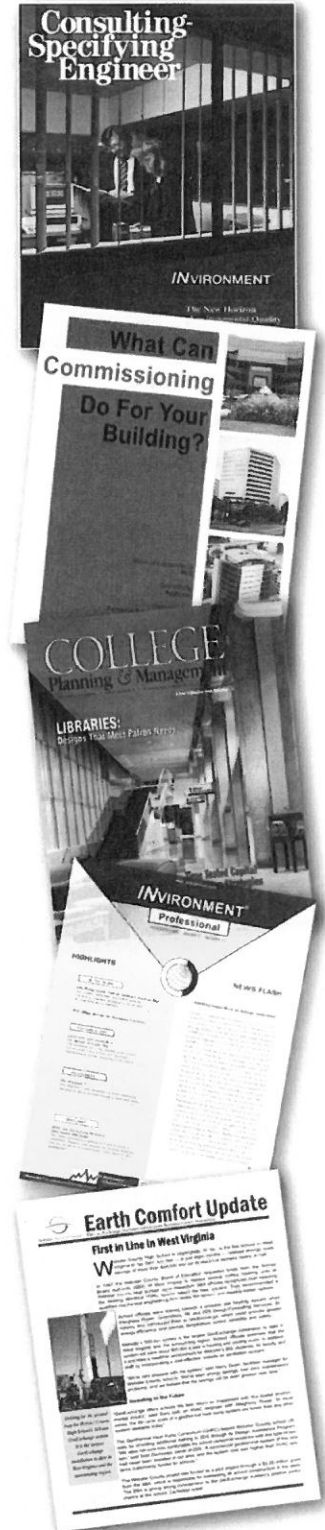
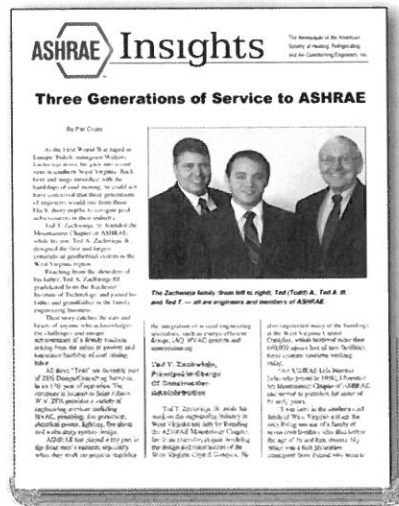
Todd Zachwieja, ZDS Principal, is contributing editor for the following IAQ publications:

- Technical Review Panel for the publication of the *INvironment™ Handbook of Building Management and Indoor Air Quality*, by Chelsea Group and published for Powers Educational Services
- Technical Review Panel for the quarterly publication of the *INvironment™ Newsletter*, by Chelsea Group for Powers Educational Services
- *Ventilation for a Quality Dining Experience: A Technical Bulletin for Restaurant Owners and Managers*, released in January 1993
- *The New Horizon: Indoor Environmental Quality*, published as a supplement to an issue of *Consulting-Specifying Engineer* magazine, a trade magazine distributed to roughly 50,000 engineers
- Editorial Advisory Board member reviewing the articles of the monthly publication *INvironment™ Professional*
- Editorial Advisory Board member of **POWER PRESCRIPTIONS™ Indoor Air Quality Publication** by Electric Power Research Institute

ZDS provides Indoor Air Quality (IAQ) services for major corporations, government organizations and property owners to resolve their specific facility problems:

- Resolve “sick building syndrome”
- Identify solutions to building-related illnesses due to extensive biological contamination
- Develop solutions for HVAC systems, temperature controls, equipment, operating and maintenance practices for indoor air quality
- Commission new and renovated facilities to minimize or eliminate IAQ issues before problems arise
- Develop and establish master plans as well as conduct training seminars for IAQ of schools and commercial buildings

As one of the nation’s leaders in Indoor Air Quality (IAQ), ZDS provides sophisticated technical expertise that enables our client to be proactive in solving and preventing indoor environmental problems.

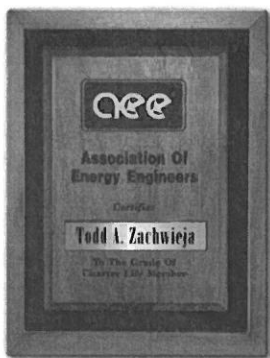


**SUMMARY**

At ZDS, our engineering staff integrates energy efficiency into each project design to provide you, our client, with the added value that you expect and deserve. The ZDS team approach represents a tremendous amount of experience in designing energy efficient facilities. ZDS offers a comprehensive range of energy management services including:

- Providing detailed analysis of facilities
- Recommending sound and proven energy saving solutions
- Implementing energy management improvements
- Determining, quantifying and assisting in securing available Utility and Government grants
- Evaluating and documenting utility savings

Todd Zachwieja received AEE's LEGENDS IN ENERGY AWARD in 2007 and 2008 for lifetime achievements in energy. The ZDS team members take pride in the quality of their projects and have been responsible for designing and implementing numerous energy management programs. These programs are providing significant energy improvements and include optimizing, central utility plant equipment, control systems, air handling systems, lighting systems, and other energy consuming equipment.



**Recent projects include:**

- Interconnecting boilers and chiller plant systems
- Designing Geothermal HVAC systems
- Optimizing HVAC equipment and operating sequences, including upgrades to variable speed operation
- Installing Direct Digital Control (DDC) Energy Management Systems
- Replacing inefficient lighting equipment with energy efficient systems
- Modifying air handling equipment from 100% outside air to return air operation
- Implementing heat recovery units into HVAC equipment
- Improving laundry, kitchen and other process application efficiencies

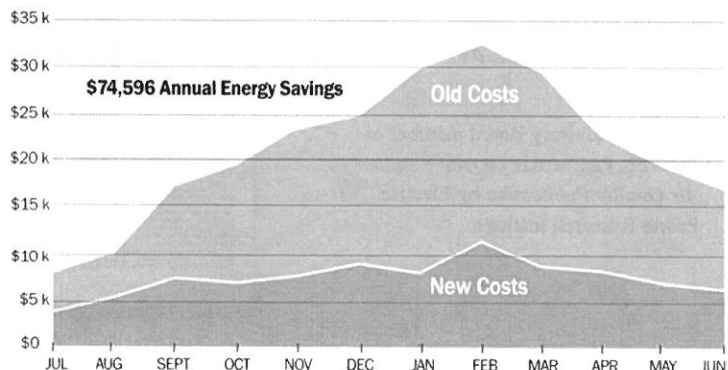
In addition to the energy management projects outlined above, the ZDS team members have extensive experience in identifying and implementing energy efficient operating and maintenance measures. These are typically low cost or no cost measures that include:

- Inspecting, calibrating temperature controls and adjusting outdoor air dampers
- Commissioning economizer cycle operation
- Testing steam traps and pressure relief equipment operation
- Enabling heating and cooling equipment only when required



Webster County Schools received Energy Star certification in 2013 as one of nation's top 25% of energy efficient schools.

**Chart Below:** ZDS designed and implemented the region's first and largest commercial geothermal system saving Webster County High School over \$74,596 in energy savings.



The ZDS team is trained and experienced in advising you of program options to incorporate energy efficiency and operational savings features into the design of your new construction and renovation projects. At ZDS, we view our role as helping you to define your own energy efficiency needs and goals through identifying energy savings options and providing supporting financial information. We then help you fit your energy efficiency needs and goals into a workable budget and schedule, and then design a program to fill those needs.

Sustainable “Green Building” design, including LEED certification, recognizes the importance of commissioning. The design and construction industry have had start-up problems when a facility is occupied and construction deficiencies were not discovered until the contractor’s traditional one-year warranty period expired. The mechanical and electrical systems have continued to become more complex with sophisticated control systems and equipment, and a mountainous amount of changing technology. If not properly addressed, building owners could face numerous operational problems from “Sick Building Syndrome,” excessive energy costs, and uncomfortable indoor environments. Commissioning is the missing link between design and implementation.

Subsequent to joining ZDS, Todd Zachwieja established commissioning services for one of the nation’s largest energy service companies. He is also a LEED Accredited Professional. Many utility companies and building owners now require commissioning for new or renovated facilities in order to maximize the use of their investments in their facilities and to obtain LEED certification. The

commissioning process offers the following benefits:

- Improved comfort, serviceability and owner understanding of systems and design intent
- Added technical support for the owner and being proactive in preventing new problems
- Reduced maintenance and decreased expenses related to operating deficiencies
- Early identification and resolution of system discrepancies while designers and contractors are still under contract and on the job
- Verification of system performance while meeting financial restraints
- Commission new and renovated facilities to minimize or eliminate IAQ issues before they become problems

ZDS and its consultants offer commissioning services for their commercial and institutional clients, including meeting LEED enhanced commissioning requirements. These services include strategic planning and operations assistance for renovation and new construction projects. Commissioning services consist of construction document review, equipment performance testing, documentation of design criteria, value engineering, operational fine tuning, coordination of professional operations training programs and site-specific engineering consultation. Our project team has the unique experience of in-depth design knowledge and hands-on operations knowledge that fills in the gap between traditional design services and the building owner’s operational needs.

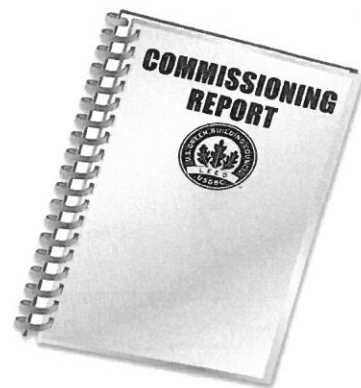
## NATIONAL RECOGNITION

The National Conference on Building Commissioning invited Todd Zachwieja, owner of ZDS, to speak. He jointly presented a paper with the Director of Maintenance of Charleston Area Medical Center’s Memorial Division. The Tampa, Florida Conference involved experts nationwide.

The principal owners of ZDS and their consultants have extensive experience in building commissioning and have saved their customers hundreds of thousands of dollars in construction costs and operating costs through their efforts.

The design team at ZDS is the best to provide engineering services for your project. Satisfying our client’s individual needs and distinct requirements is the foremost concern of ZDS.

The most important member of the design team is the client. We make every effort to involve our clients throughout the entire process, from planning through construction and beyond.





Since 1958, the ZDS design staff has provided millions of dollars of engineering design services on a variety of project types.

ZDS clients can rest assured that the design team will be available, not just for the year or two that we are involved in the initial design and construction, but also for years that follow as questions arise about your facility. A good engineered system and its equipment should last 15 to 40 years. Why not select a design firm with experienced staff committed to their projects with a comparable track record.

**Through the efforts of our staff, working locations include:**

- |               |                |
|---------------|----------------|
| West Virginia | Massachusetts  |
| Arkansas      | Michigan       |
| California    | New York       |
| Colorado      | North Carolina |
| Connecticut   | Ohio           |
| Florida       | Pennsylvania   |
| Georgia       | South Carolina |
| Hawaii        | Tennessee      |
| Illinois      | Texas          |
| Indiana       | Virginia       |
| Kentucky      | Washington, DC |
| Maryland      | Wisconsin      |

The ZDS design team will provide comprehensive services utilizing experienced staff through planning, cost estimating, engineering, coordination of bidding, regular site visitation during construction and specifications for equipment. You, our client, will greatly benefit from a single point of responsibility for every need your project may have.

The ZDS staff has the expertise with codes and standards. We have extensive experience in conducting engineering code surveys of existing facilities. Our staff has excellent working relationships with the West Virginia Fire Marshal's Office, West Virginia Department of Education and the West Virginia School Building Authority.

In addition to comprehensive Engineering services from an experienced design team, another major consideration in the selection of your engineer and design staff should be their track record. ZDS' organization has an unbeatable, long running, and well-known track record for meeting our clients' needs, on time and within budget, with outstanding quality.

ZDS views these characteristics as the foundation of Quality. We look forward to the opportunity to discuss our ideas with you and assist you by providing solutions for your needs with a full range of services from Planning to Commissioning.

**CLIENTS**

- Montgomery County (Rockville, MD) Departments of Corrections and Police
- Charleston Area Medical Center
- Charleston National Bank/Chase
- Concord University Nick J. Rahall II Technology Center
- District 2 Headquarters' Building HVAC Renovations, Huntington, WV
- General Motors North America Operations
- Harvard University Arboretum
- IMC Data Center, WV
- Kanawha County Commission Courthouse and Judicial Annex Renovations/Additions
- Laidley Towers, Charleston, WV
- Marshall University Harris Hall HVAC Renovations
- Smith Hall Renovations
- Meadowbrook & Burnsville Rest Areas
- Mercer County Courthouse
- Pocahontas Community Center
- St. Patrick Church Renovations, WV
- Tucker County Courthouse
- Veterans Administration
- Webster County Development Authority
- Webster County Schools
- White Sulphur Springs Welcome Center
- WV Air National Guard
- WV Army National Guard
- WV Dept. of Education
- WV Division of Energy
- WV Dept. of Transportation
- WV Division of Health & Human Resources – State-Wide
- WV Division of Culture and History Renovations
- WV Division of Protective Services
- WV General Services Administration – Capitol Complex HVAC Renovations
- WV Higher Education Policy Commission
- WV Parkways Authority HVAC Renovations
- West Virginia University



# III – Project Experience

# Emergency Generator Projects

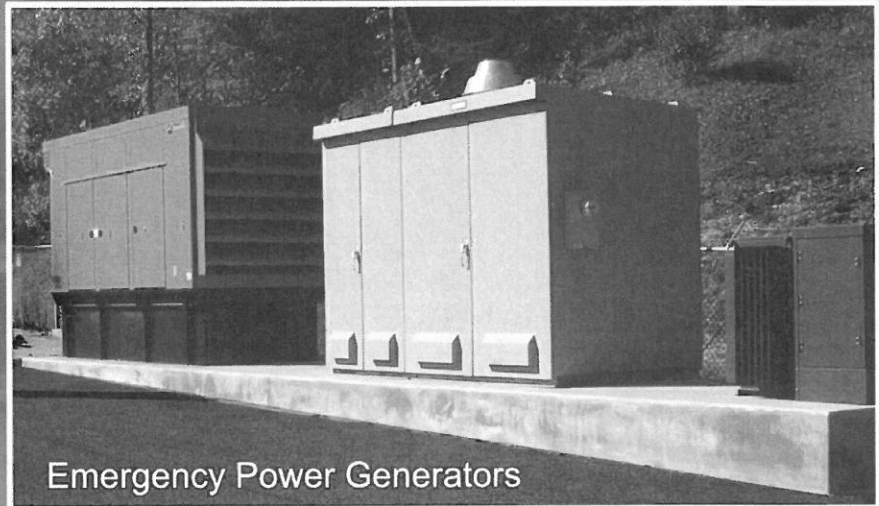
Our experience includes educational and governmental facilities that require multiple levels of security and power requirements.



## West Virginia Army National Guard

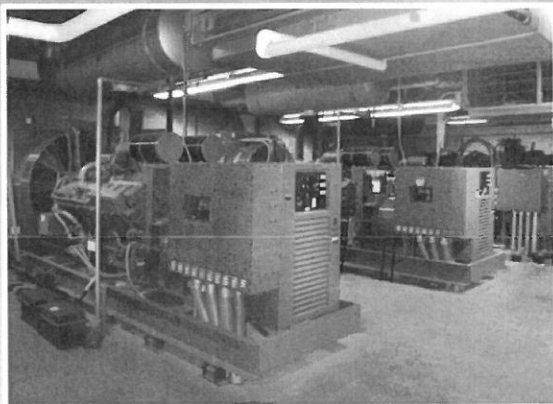
Army Headquarters Building and Annex

Charleston, WV



Emergency Power Generators

This project was completed ahead of schedule and within budget to provide emergency power needs for the Coonskin Army National Guard campus as part of their overall homeland security strategy.



Three emergency power generators were used on this project: one at 1250 kW, the second at 1250 kW and the third at 1000 kW.

## West Virginia University NASA Facility Fairmont, WV

The National Aeronautics and Space Administration (NASA) manages the nation's civilian space program and leads aeronautics and aerospace research.

The emergency power system supports many facets of the entire WVU NASA campus facility operations including computer mainframes, electrical, HVAC, fire safety and security systems.



Design/Consulting Services



# Emergency Generator Projects

Our experience includes health care facilities and complexes that require multiple levels of security and power requirements.

CAMC General Division



Charleston Area Medical Center (CAMC)  
*One of the largest health care providers in West Virginia.*

- Commissioning
- Energy Conservation
- Electrical Systems
- Emergency Generator
- Fuel Oil Storage
- HVAC Systems
- Power Controls
- Emergency Retrofits
- Campus Interconnects

CAMC Memorial Division

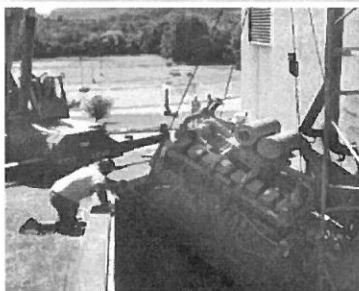


Women & Children's Hospital



The WVDHHR hired ZDS as the prime consultant for renovation work including engineering master planning, energy analysis, emergency power generators, M/E/P, bidding and construction administration for retrofitting the 212,000 ft<sup>2</sup> hospital.

William R. Sharpe, Jr. Hospital



Crane lowering the emergency power generator into the electrical room.

United Hospital Center

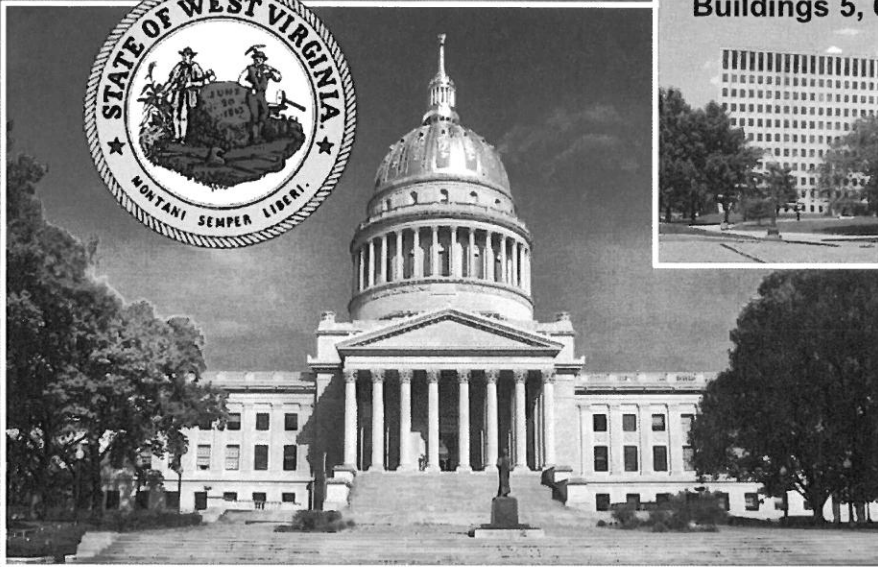


Design/Consulting Services



# Emergency Generator Projects

ZDS electrical engineering projects include governmental facilities and complexes that often require multiple levels of security.



**Buildings 5, 6 & 7**



Engineering master planning and design for specific life safety issues involving homeland security, fire alarm, sprinklers, emergency power, CCTV, intercom, and mass notification system.



**Building #3**



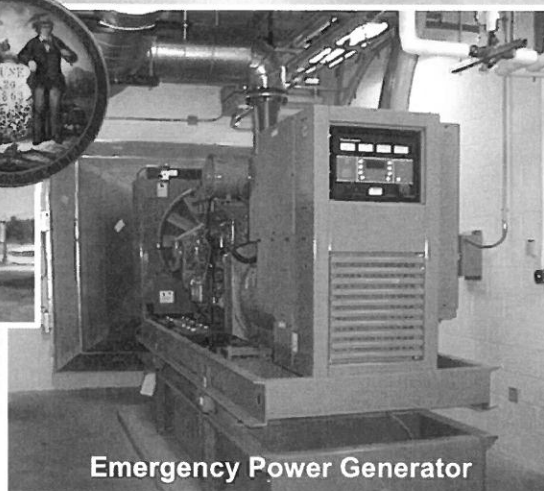
**Building #4**



**East Wing and West Wing**



**West Virginia Division of Culture and History**  
A 228,500 ft<sup>2</sup> Facility



**Emergency Power Generator**

Engineering master planning, energy analysis, Mechanical/Electrical/Fire Protection design, bidding and construction.



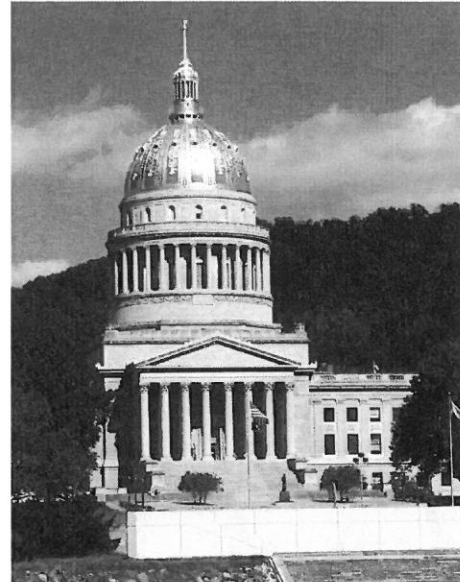
**Design/Consulting Services**

ZDS Design/Consulting Services

*State of WV Capitol Complex - Division of Protective Services, Charleston, WV*

**Client** Mr. Matt Brown, Security Systems Manager  
**Contact:** WV Division of Protective Services  
(304) 558-9911  
WV Capitol Complex  
Charleston, WV 25305

**Services:** Engineering master planning & design for specific life safety issues involving homeland security, fire alarm, sprinklers, emergency power, CCTV, intercom, mass notification and “giant voice” system.



**Main Capitol Building #1**



**Building #3**



**Building #4**

**Project Description:**

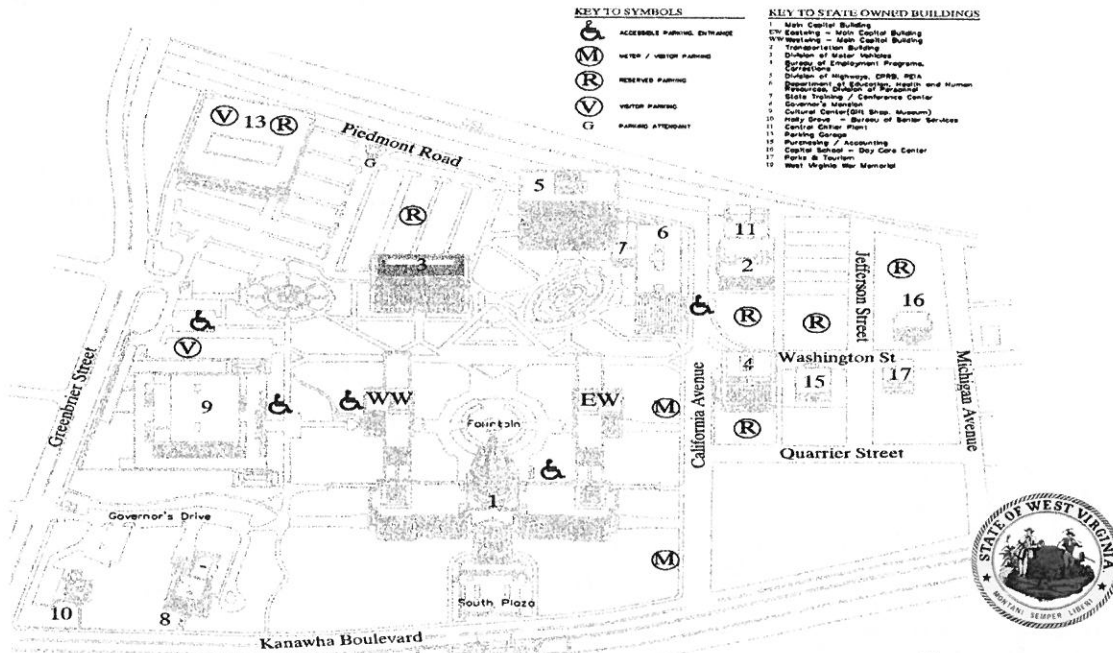
ZDS is in a 10 year contract to provide a preliminary procurement plan for the design, construction and installation of an integrated intercom, emergency notification, and fire alarm system. The engineering master planning and design services are for all State facilities on the Capitol Complex.

The work includes master planning for an overall site mass notification and public information system and specific upgrades to Buildings on campus. ZDS assists the agency in meeting the long-term plans on expanding the functionality of the Command Control to be a statewide technology hub and future dispatch center. The program includes preparing construction drawings and specifications for bidding renovations to the existing fire alarm,

## PROJECT EXPERIENCE

intercom/communications, security, sprinklers, HVAC controls, emergency power, and related systems impacting security and communication life safety systems.

ZDS assists the Division of Protective Services in providing information for interdepartmental coordination within State agencies with the goal of achieving a cost-effective integrated system. The program assists the State in incorporating the planning and design into other capitol infrastructure projects for consistency with the overall master plan.



ZDS also provided the West Virginia Capitol Complex with master planning and design for the campus district heating system through a Performance Contracting program with construction completed in 2007. We also provided HVAC engineering planning and design services for the West Virginia Division of Culture and History, protecting the State's artifacts while conserving energy without sacrificing comfort or indoor air quality.

The West Virginia Division of Protective Services program's work is projected to expand as the State realizes the value of integrating systems across interdepartmental boundaries which helps them operate their facilities more efficiently and effectively. The DPS is responsible for 2,137,400 square-feet involving over 15 buildings and the campus grounds covering over 54 acres.

**Projected Program Costs:**

**\$15,000,000**

**Size:**

**WV Capitol Complex Grounds & Facilities**

**Completion:**

**2016**

*ZDS Design/Consulting Services*

**Project:** *William R. Sharpe Jr. Hospital – Renovations & Additions, Weston, WV*  
**Client:** *WV Department of Health and Human Resources (WVDHHR),*

**Client Contact:** Mr. Greg Nicholson  
Chief Operations Officer  
WVDHHR  
One Davis Square, Room 116  
Charleston, WV 25301  
(304) 558-1577  
Greg.C.Nicholson@wv.gov

**Services:** Prime for renovation work including Engineering Master Planning, energy analysis, Mechanical, Electrical, and Fire Protection design, bidding and construction administration services for retrofitting the 212,000 ft<sup>2</sup> Hospital. Consultant for all MEP engineering for the 32,000 ft<sup>2</sup> addition.



***Project Description***

William R. Sharpe, Jr. Hospital (the “Hospital”), originally constructed in 1995, had many HVAC, electrical and plumbing issues even though the facility wasn’t that old. The two-story hospital houses 150 patients but is overcrowded. The HVAC and electrical systems experienced frequent equipment failures, power outages and many complaints on comfort. ZDS identified and designed the solutions. ZDS, as the Prime, evaluated existing MEP systems and prepared an extensive report and plan for renovating the facility while keeping the facility occupied. The initial phase involved replacing underground piping between the central plant and the Hospital. Provisions were also made for a temporary boiler and extension of piping for future renovations to the building including planning for a 32,000 ft<sup>2</sup> addition. This allowed for chilled water to continue to be served from the central plant while other renovations could be planned.

ZDS was selected to implement ARRA funded energy efficiency upgrades for all seven major WVDHHR hospitals including William R. Sharpe, Jr. Hospital. Energy efficient lighting was implemented using the ARRA funds and was completed on schedule in 2011 resulting in energy savings of up to 50% of the original lighting electric usage.



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## PROJECT EXPERIENCE

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All three original boilers were in such poor condition that a temporary boiler had to be installed and the original boilers permanently shut down. Many of the heating coils were blocked including control valves failing, making comfort a major issue. The boilers were blocked with debris assumed to come from leaks in the underground piping where the maintenance staff was adding up to 10,000 gallons of makeup water per day to the cooling system to keep it functional.

The design includes central plant replacement with three (3) 10,500 MBH dual fuel heating hot water boilers with variable water volume pumping, three (3) 600 KW Bi-Fuel emergency generators, 15,000 gallon fuel oil storage tank, three (3) chillers – two centrifugal chillers with cooling towers and one air cooled chiller with variable water volume pumping, and a new central domestic water heating system. The design and construction make provisions to allow the Hospital to retain emergency services and HVAC while the central plant is being retrofitted.

The HVAC renovation includes comprehensive DDC controls for central monitoring and control, replacing all AHU's, and provides new VAV terminal units with hot water reheat coils. The Hospital's HVAC system is also an integral part of the smoke control system. The Hospital will remain in operation while the renovations take place. Careful phasing, and the need to disrupt only small portions of the Hospital at a time, will result in an extended construction period to be finished in 2016. All original heating hot water piping and chilled water piping are being replaced. All lighting will be upgraded to today's energy efficient technology including extensive use of LED lighting and lighting controls.

ZDS is a consultant for the 32,000 ft<sup>2</sup> addition and is providing all the MEP engineering services for design, bidding and construction administration services related to the addition. The single story addition consists of rooms to house fifty (50) forensic patients and supporting staff, a Sally Port, enclosed courtyards and connection to the existing facility. An engineered smoke control system is integrated into the HVAC system. The four pipe VAV HVAC system is served from the central plant which is being upgraded. The project was designed so the construction could be completed in combination with the renovations work occurring under a separate contract. ZDS was the Prime for Phase I, ARRA Funded work and for the comprehensive renovations work that is currently on-going.

***“The ZDS staff are great planners and designers! They help us make the best decisions for the long term. We would recommend them to anyone!”***

Greg Nicholson, Chief Operations Officer – DHHR

<b><i>Phase I HVAC Project Cost:</i></b>	<b>\$1,403,000</b>	<b>Completed in 2012</b>
<b><i>ARRA Funded Lighting Upgrade Costs:</i></b>	<b>\$618,700</b>	<b>Completed in 2011</b>
<b><i>Original Hospital Size:</i></b>	<b>212,000 FT<sup>2</sup></b>	
<b><i>Comprehensive Renovation Project Cost:</i></b>	<b>\$30,000,000</b>	<b>Projected in 2016</b>
<b><i>Addition to the Hospital Size:</i></b>	<b>32,000 FT<sup>2</sup></b>	
<b><i>Addition Project Cost:</i></b>	<b>\$13,000,000</b>	<b>Projected complete in 2014</b>

*ZDS Design/Consulting Services*

**Project Name:** *The Museum of Culture and History - HVAC Renovations*  
**Client:** *State of West Virginia, Charleston, WV*

**Client Contact:** Mr. Mark Lynch, Director of  
Facility Operations  
(304) 558-0220  
The Culture Center - Bldg 9  
WV Capitol Complex  
Charleston, WV 25305

**Services:** Engineering Master Planning, Indoor Air Quality evaluation, energy analysis, Mechanical/Electrical/Fire Protection design, bidding and construction administration services for retrofitting the 228,500 ft<sup>2</sup> museum and protecting the artifacts.



*Museum of Culture and History*

***Project Description***

ZDS principals and personnel have been involved in numerous design and recommissioning projects for the West Virginia State Capitol Complex while at ZDS and through other employment over their careers. These projects required the engineering planning, design, supervision, preparation of construction documents, specifications, construction administration, and commissioning of HVAC systems, sprinkler systems, plumbing systems, electrical power, lighting, fire alarm, security, technology and communications. ZDS completed the design for the West Virginia Division of Culture and History, correcting their long-term HVAC and Indoor Air Quality problems in 2001, and were contracted again in 2008 for providing fire alarm and fire protection upgrades which were completed in 2010.

Lack of humidity control damaged many of the State's priceless artifacts. Books and other State collections were deteriorating rapidly due to lack of proper control of temperature, humidity, and

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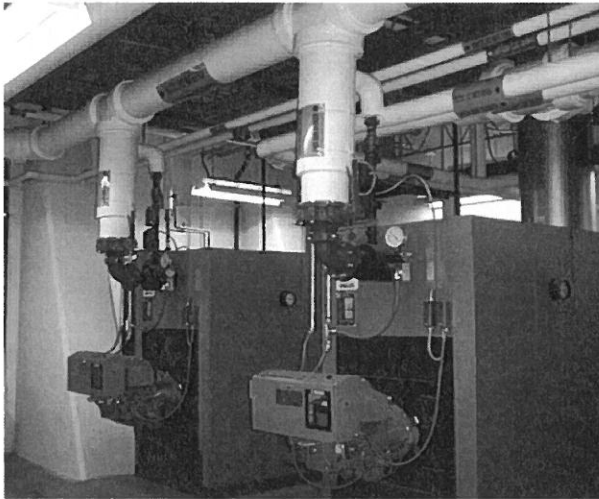
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## PROJECT EXPERIENCE

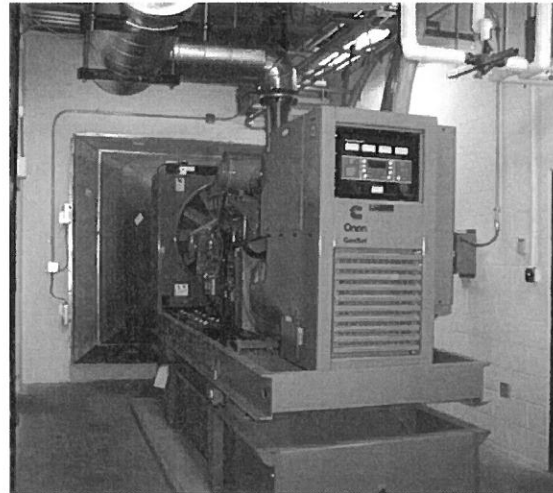
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filtration. The occupants had also experienced allergic reactions and discomfort from the long-term high humidity conditions. ZDS identified and designed the solutions. Conserving energy without sacrificing comfort or indoor air quality was a major consideration. The design included converting an all electric resistance heating system to natural gas, comprehensive DDC controls for central monitoring and control, converting AHUs from constant air volume to variable air volume while meeting stringent ASHRAE Indoor Air Quality requirements, providing variable water volume pumping and interfacing with the facility into the new District campus chilled water system to reduce long-term operating costs. The design also included providing a new boiler plant with redundant heating and piping distribution system and an emergency generator to help protect the State's priceless collections.



*New Boiler Plant*



*New Emergency Generator*

The mechanical and electrical renovations for the State of West Virginia Library Commission stacks and office spaces were also part of a \$4.5 million dollar HVAC and Electrical Renovations project for the Division of Culture and History. The retrofits saved energy and improved indoor air quality and comfort within the building. *The Culture Center renovations are estimated to save nearly \$153,000 annually over the costs of operating the old system.*

ZDS Design/Consulting Services was the Prime for both the HVAC/Electrical Renovations project and the Fire Alarm/Fire Protection renovations. The Fire Alarm/Fire Protection renovations project was completed well under budget while the work was effectively phased with the building remaining occupied throughout the renovations.

<b>Total Culture Center Project Cost:</b>	<b>\$6,000,000</b>
<b>Size:</b>	<b>228,500 FT<sup>2</sup></b>
<b>Completion:</b>	<b>2001 for HVAC, 2010 for FA/Sprinklers</b>
<b>Estimated Energy Savings:</b>	<b>Reduced HVAC Operating Costs up to 50%</b>

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## PROJECT EXPERIENCE

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### ZDS Design/Consulting Services

**Project Name:** *Nick J. Rahall II Technology Center*  
**Client/Location:** *Concord University, located in Athens, WV*

**Client Contact:** Mr. John Ferguson,  
Former Chief Procurement  
Officer  
PO Box 1000  
Athens, WV 24712-1000  
(304) 384-5233

**Services:** Engineering planning & design for HVAC, Electrical, Plumbing, compliance with ADA, Fire Protection, Technology, DDC Controls, VAV AHU's, variable water volume pumping, UPS, Emergency Power, energy efficient lighting, and information technology.



### *Project Description*

Concord University had an existing building, White Hall, that they wanted converted to a new state-of-the art technology center. Working through the Architect, ZDS evaluated the potential mechanical, electrical, plumbing, fire protection and technology needs for significant infrastructure upgrades for an existing building that was not ideally suited for a technology center. After careful analysis, the design team and Owner decided it was best to demolish most of White Hall and construct a 50,000 ft<sup>2</sup> three-story building attached to the existing remaining structure. Congressman Nick J. Rahall II helped in obtaining the necessary funding to make the project possible and Concord University named the building after him in appreciation.



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## PROJECT EXPERIENCE

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The quality of HVAC system was crucial to Concord University since they had just spent over a \$1 million correcting Indoor Air Quality (IAQ) problems in an existing relatively new building in which they believed the HVAC system contributed to the problem. ZDS designed around a centralized heating/cooling plant for greater efficiency in overall system operation and provided centralized control and maintenance of primary heating/cooling equipment, with the added benefit of supplemental capacity in the event of a boiler failure. The planning and design services included providing a quality HVAC system and electrical equipment, and their sub-systems to provide a comfortable environment while addressing Indoor Air Quality, energy efficiency, operating costs and meeting the Owner's needs.

HVAC systems were enhanced to meet applicable codes and standards and improved indoor air quality through higher filtration, strict humidity control, ultraviolet light purification air flow measuring/monitoring and other design strategies. The business incubator area was equipped with flexible HVAC zoning and additional power to meet potential varying uses for the space.

The electrical systems included providing uninterruptible power supply, redundant HVAC and emergency power to the central computer center where all of the University's internet/intranet systems resided. Classrooms were equipped with the latest in technology including provisions for some of the future 3-D imaging instruction tools being developed.

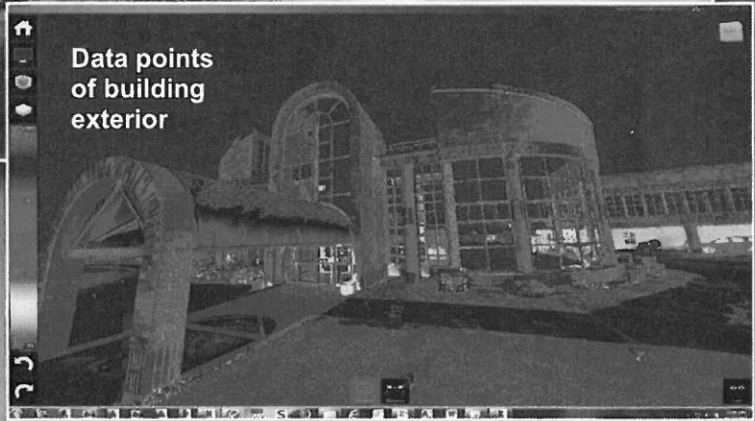
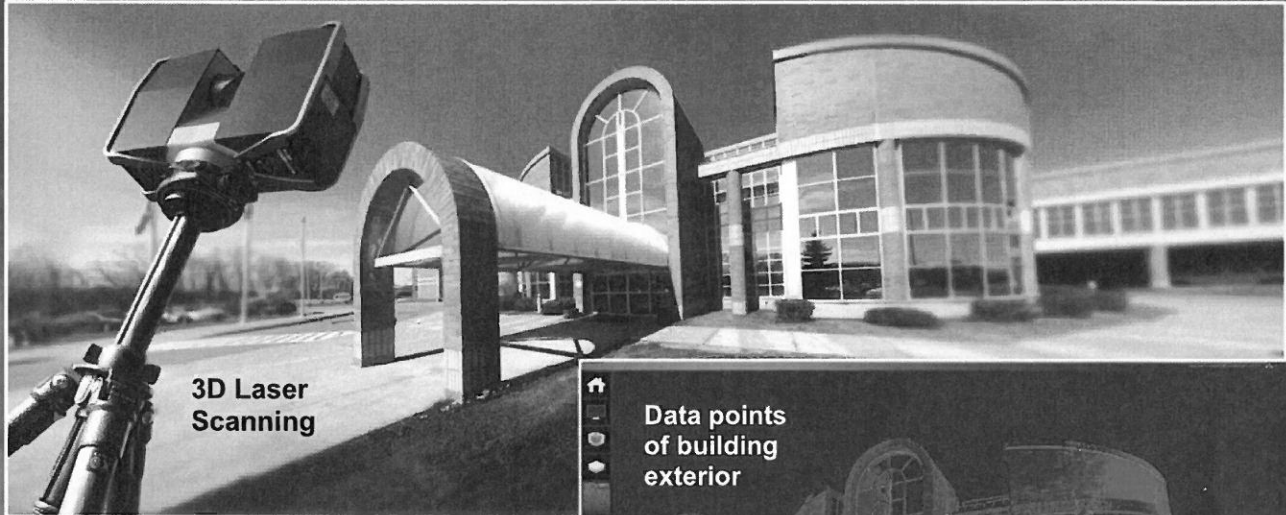
The MEP design aids Concord University to operate their facilities efficiently and effectively and the state-of-the-art technology will greatly benefit the faculty and students for many years to come.

ZDS also designed, bid and provided construction administration services for completing the Campus Medium Voltage Loop involving every building on the campus which was completed in 2005 under budget and ahead of schedule. The \$375,000 electrical upgrades also provided the electrical service capability for the new technology center.

<b><i>MEP Construction Cost:</i></b>	<b>\$3,675,000 out of a \$10,300,000 total costs</b>
<b><i>Size:</i></b>	<b><i>Approximately 50,000 square-feet</i></b>
<b><i>Completion Date:</i></b>	<b>Completed in 2008</b>

# 3D Digital Imaging for Facilities

Our 3D Laser Scanning Services helped William R. Sharpe, Jr. Hospital document existing conditions and integrate their 50-bed renovation.



## Why 3D Laser Scanning is better:

3D laser scans reveal significant differences between existing conditions and the original drawings.

3D laser scans also provide superior details by capturing data that is more comprehensive and precise than conventional methods.

**“With the 3D laser scanning service, ZDS saved us countless hours communicating to all project team members, even to those who work or live far away.**

**Also, we now have an accurate record of the existing conditions that DHHR can easily access now and into the future.”**

*Greg Nicholson, DHHR Chief Operations Officer*



## Web Share:

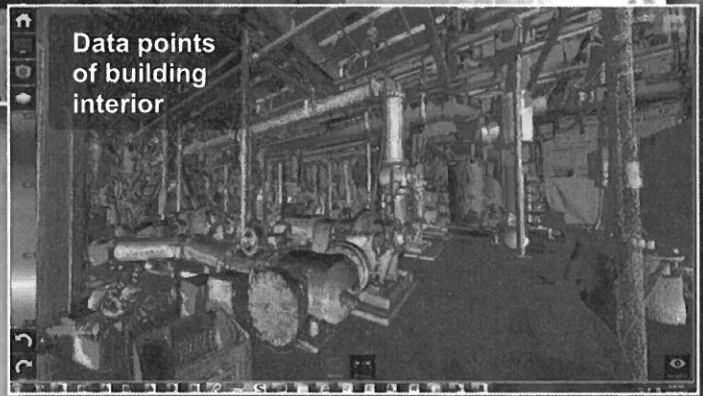
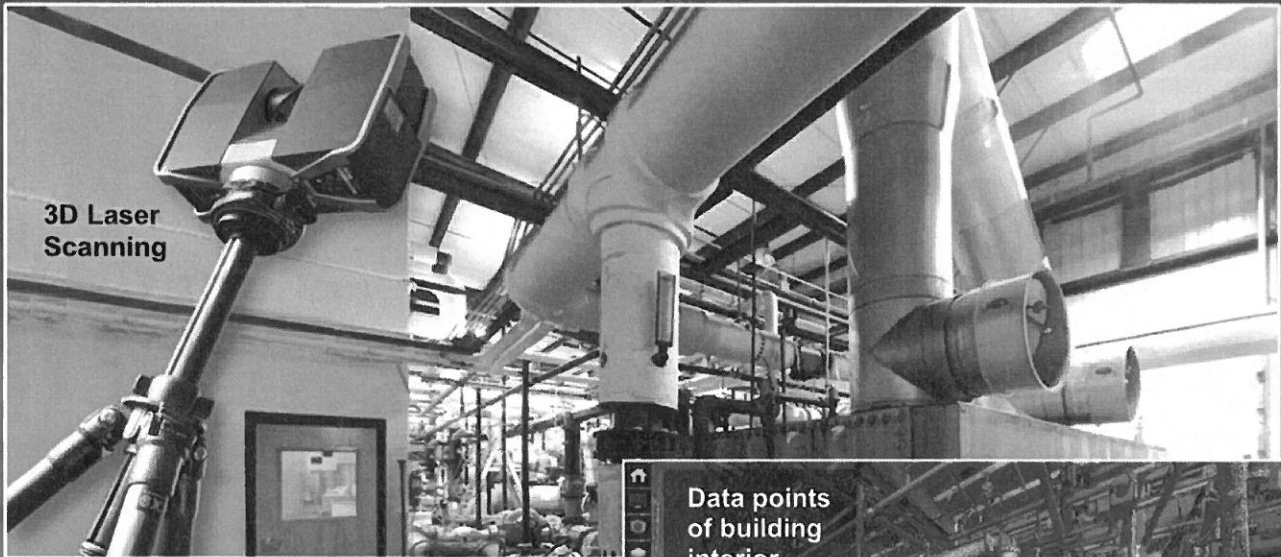
3D laser Scanning allows facility owners to view and measure areas with others on their planning and construction team.



Design/Consulting Services

**“The 3D laser imaging improves quality, saves time and money while providing a valuable resource now and into the future.”**

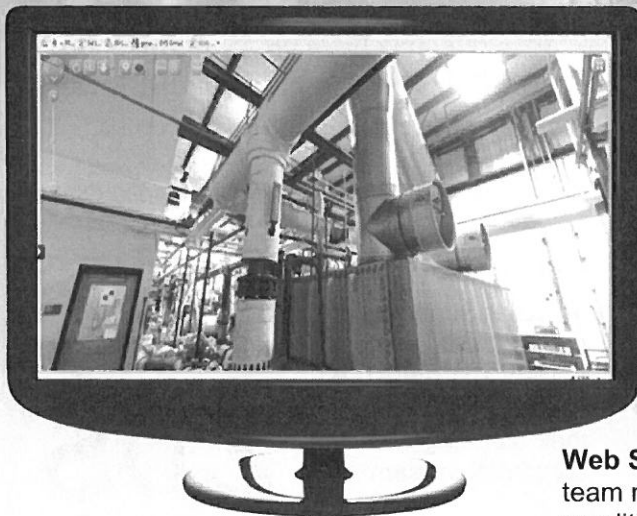
*DHHR*



**“The 3D laser scans safely document hard-to-reach interior areas — this greatly reduces our risk for liability.**

**Also, the excellent details of the laser scans convert to accurate construction drawings, both architectural and engineering.”**

*Ron Adkins, DHHR Director of Construction & Project Management*



**3D Engineering Drawing:**  
Sample of 3D mechanical drawing converted from 3D laser scan data points.

**Web Share:** Helps construction team members integrate existing conditions into BIM models.



**Design/Consulting Services**



# IV – Resumes



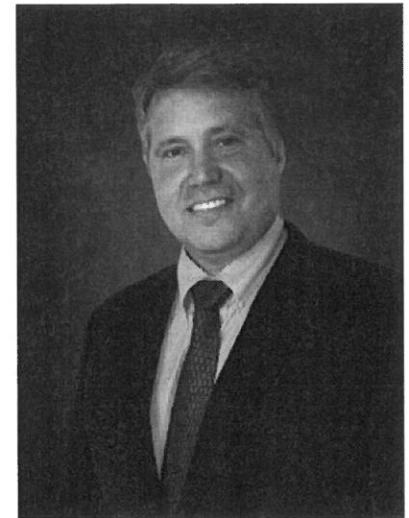
Todd has more than 38 years of experience in design, construction management, and specifications for the functional aspects of buildings. His specialties include mechanical engineering, HVAC master planning, conceptual design, energy conservation programs, commissioning and Indoor Environmental Quality (IEQ). In his IEQ engineering, Todd addresses the acoustics, lighting, Indoor Air Quality (IAQ) and comfortable HVAC, all with an aim towards energy-efficiency. His experience includes a wide variety of building types, including educational, commercial, governmental, industrial and health care facilities.

Prior to launching ZDS, Todd Zachwieja coordinated multi-million dollar projects in comprehensive energy conservation programs that resulted in annual energy savings of millions of dollars per year. He also managed a profitable regional office for one of the country's largest energy service companies covering the southeastern region of the United States. His expertise in analysis led towards the development of computer programs in energy analysis and monitoring of building systems. Recognized for these abilities, Todd has been invited to present technical papers at both regional and national conferences, such as National System Commissioning Conference.

Todd received national recognition for his work with Ohio University in the development of multiple performance contracting programs that save millions annually in energy and operating costs. Also, the State of West Virginia hired his services for the Capitol Complex renovations, an integration of nine buildings that realized over one million dollars of annual savings that ultimately paid for the initial \$10 million invested in the upgrades.

Todd also designed one of the largest geothermal heat pump applications in the mid-Atlantic region, and retro-commissioned HVAC systems and mechanical engineering at many General Motors' facilities in North America. Some of Todd's project experience includes the development and design of a pilot geothermal heat pump HVAC with variable speed pumping system that reduced electric bills by more than 40% while meeting IAQ requirements. This achievement was recognized by the Environmental Protection Agency with a 2013 Energy Star Award, placing the facilities in the top 25% of energy efficient buildings in the United States.

His leadership in facility engineering and systems analysis encouraged West Virginia University and the Division of Energy to select Todd as a trainer of the Code officials and the design community on the new ASHRAE 90.1 State Energy Code in 2013. Todd has served as a contributing editor and peer review panel member for industry publications such as *The Handbook of Building Management and Indoor Air Quality*, *Ventilation for a Quality Dining Experience*, *INvironment Professional*, *Power Prescriptions* and others addressing Indoor Environmental Quality (IEQ), MEP and energy engineering systems. Today, Todd continues to lead the industry and his professional peers as President of the ASHRAE West Virginia Chapter.



## EDUCATION

B.S. in Mechanical Engineering from West Virginia Institute of Technology

M.S. in Engineering Management from the University of West Virginia College of Graduate Studies

Registered Professional Engineer in GA, KY, NC, OH, PA, SC, VA, WV

Certified Energy Manager (C.E.M.), National Certification, No. 2205



LEED® Accredited Professional, National Certification through USGBC No. #10083891

Recognized nationally in 2007 as a "Legend in Energy"

Recognized nationally in 2008 as a "Charter Legend in Energy"

Charter Life Member of the Association of Energy Engineers



Served as ASHRAE's Energy and Technical Affairs Chairman for six years, currently **President-WV ASHRAE**

Designed Energy Star Certified Facilities



2 0 1 3

Ted has over 55 years of experience in mechanical, electrical systems design and construction administration including commissioning. His specialties include the design and development of mechanical and electrical systems, master planning and budgeting for mechanical and electrical systems, and management of complex design and construction projects. Also recognized as a Codes and Standards Specialist, Ted's work involves a broad spectrum of facility types, including commercial, educational, health care, industrial and governmental.

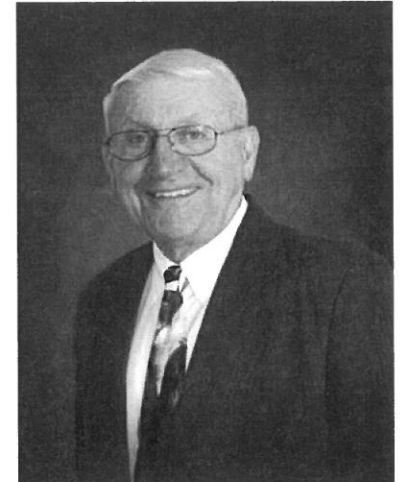
Ted has been involved in all aspects of mechanical and electrical design and construction since 1958, including machine design, structural design and design of heating, ventilating, air conditioning, plumbing, fire protection, energy conservation and electrical systems. Ted's experience includes work for clients in both the private and governmental sectors including U.S. Steel, Dow Chemical, Ohio University, Charleston Area Medical Center (CAMC), and the West Virginia Capitol Complex.

Ted was involved with the mechanical, electrical and fire protection renovations for the State of West Virginia Division of Culture and History as part of a total \$6 million upgrade program. Also, as a conservatory, the museum contents required precise levels of humidity, light and temperature control. Ted achieved this while also conserving energy. Ted's design regarding Chase Towers in Charleston included conducting a comprehensive energy audit, design of a Building Automation Energy Management System, HVAC renovations, design of flat plate heat exchanger system for the perimeter fan coil units and design of the boiler replacement.

Prior to forming ZDS, Ted was regional manager for a hospital design firm and responsible for designing, construction management and project management for over \$200 million in hospital and health care facilities. The facilities were located over the eastern United States. Ted's most recent health care experience includes lighting projects and various studies for seven hospitals for the West Virginia Department of Health and Human Resources (WVDHHR).

The renovations and additions to William R. Sharpe, Jr. Hospital involved \$35 million and careful phasing of the work to allow the hospital to remain in operation during construction while meeting Infection Control Risk Assessment requirements and Office of Health Facility Licensure & Certification requirements. ARRA funds were used to increase energy efficiency at all seven hospitals. His Master Planning provided the Agency with a roadmap on how to move forward with major needs and limited resources.

Ted's industry leadership includes the co-founding of ASHRAE West Virginia Chapter. Also, Ted was selected as one of three engineers to train and teach a course designed by the United States Department of Energy on the topics of energy conservation and energy efficient design.



## EDUCATION

Bachelor of Science in Mechanical Engineering, West Virginia Institute of Technology, 1958

## PROFESSIONAL AND COMMUNITY AFFILIATIONS

Construction Specifications Institute (Charter Member)

Life Time Member  
American Society of  
Mechanical Engineers



West Virginia Chapter  
ASHRAE  
Past President and Charter Member



Association of Energy Engineers

Associate Member  
West Virginia Society for  
Healthcare Engineering



Professional  
Affiliate Member  
of AIA



WV Association of Physical Plant Administrators

Energy Star Certified for  
facilities in the nation's  
top 25% of energy  
efficient facilities



2013

Jim has nearly 40 years of experience in design and implementation of HVAC, plumbing and electrical systems including nine years in the construction industry. He has a comprehensive knowledge of construction documents, contracts, and development of cost estimates, budgets and schedules. His experience includes projects on a wide variety of building types, including educational, commercial, governmental, industrial and health care facilities.

Jim's strengths reside in his ability to manage projects and people in an organized and cost-effective manner. Jim has been involved with the development of mechanical and electrical drawings and specifications including HVAC, plumbing, fire protection, lighting, electrical power and specialized systems. He has worked with and managed engineers on facility projects in the states of West Virginia, Ohio, Kentucky, Virginia, Georgia, New York, Arizona, Illinois and Massachusetts.

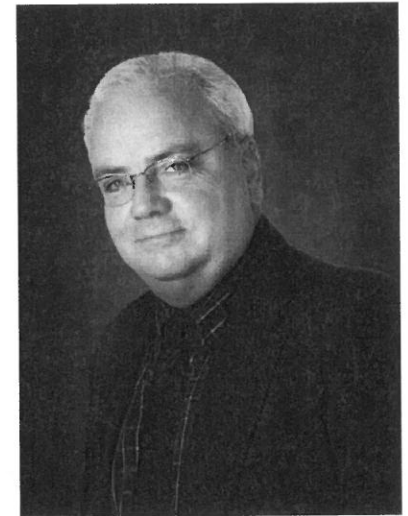
Jim has extensive experience in energy conservation programs for HVAC, plumbing and electrical systems in hospitals, state and government office buildings, school systems, and manufacturing facilities, as well as managing performance contracts for the state of Georgia totaling \$10 million in construction costs on various projects. Those projects included the conception, design and construction administration for the installation of a 1.5 Megawatt emergency generator at the Central State Hospital facility in Milledgeville, Georgia. The propane-fired generator and associated switchgear in conjunction with 60,000 gallons of propane fuel storage served to provide peak shaving/load shedding to save on the facility utility costs as well as provide emergency power functions.

Fenway Park in Boston, Massachusetts, home of the Boston Red Sox, had some concerns about the electrical grounding system at the ballpark. Jim performed a study utilizing conditions found during on-site investigations and prepared a report that identified many existing problems with the electrical distribution systems. The report outlined recommendations for an upgraded electrical grounding system as well as a new lightning protection system. The recommendations in this report were implemented by the Owners of the Boston Red Sox and Fenway Park.

Recently Jim worked on new emergency power generation and distribution systems at W.R. Sharpe, Jr. Hospital. The project is comprised of three (3) 600 kw bi-fuel generators, seven (7) new Automatic Transfer Switches, new distribution switchboards and a 15,000 gallon diesel fuel storage tank.

Jim's experience covers a broad spectrum of project types from singular structures to multi-facility complexes spreading over geographical distances. For example, he managed the master planning and renovations of the seven hospital campuses for the West Virginia Department of Health and Human Resources, each in a different area of the State.

Through the years, Jim has researched and implemented into practice International Building Codes, NFPA Codes, National Electrical Codes, Life Safety Codes, IES standards, AIA Guidelines for Design and Construction, and the evolving ADA standards. Some award-winning projects where Jim has had involvement include, but are not limited to, the West Virginia Department of Transportation prototype (AIA Award), the Air National Guard 130<sup>th</sup> Airlift Wing (LEED Silver Certification), and Elkins Middle School (2013 Energy Star Award).



## PROFESSIONAL AND COMMUNITY AFFILIATIONS

Member of the National Fire Protection Association (NFPA)



Member of the Health Care Section of the NFPA

Member of the Illuminating Engineering Society (IES)



Past member of the American Society of Plumbing Engineers (ASPE)



Past member of the Institute of Electrical Engineers (IEE)

## OTHER RECOGNITIONS

Energy Star Certified for facilities in the nation's top 25% of energy efficiency



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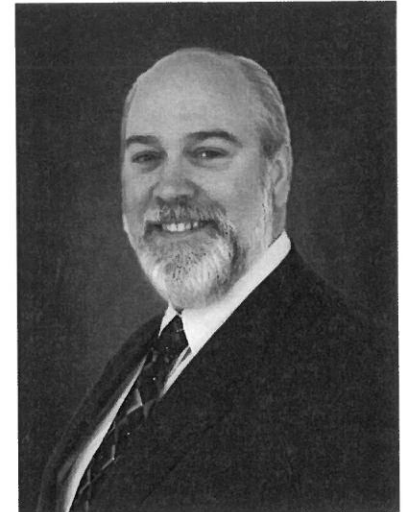
Jennings Davis has more than 25 years of experience in the design, project management and construction of heating, ventilating and air conditioning (HVAC), plumbing, electrical and specialized systems for facilities. He has been involved with performing construction commissioning and retro-commissioning services throughout most of his professional career. His professional experience includes positions as an Owner's Representative at West Virginia University (WVU), as a Mechanical Engineer for the West Virginia Department of Education (WVDE), and as a Project Engineer with design and consulting engineering firms.

During his employment with WVU, Jennings was responsible for management of major repair and capital construction projects designed by outside Architectural and Engineering firms with budgets ranging from \$50,000 to \$37,000,000, as well as the design of smaller in-house projects. While working for the WVDE, he was responsible for quality control of design documents for construction projects; troubleshooting maintenance for HVAC controls and for Indoor Air Quality (IAQ); recommissioning of HVAC systems to original design parameters; performing energy audits of educational facilities and making recommendations for upgrades and operational modifications of MEP systems to maximize potential energy savings; and training of maintenance personnel. He investigated facilities concentrating primarily on HVAC operation and occupant safety, which included measurements such as temperature, humidity and carbon dioxide; HVAC equipment visual inspection; life safety assessment; and building component checks.

As a Project Engineer, Jennings specializes in developing scope, budget and design parameters; establishing program requirements through interaction with Owners and other Team members; design reviews; budget analysis and control; schedule control; complete design oversight and task assignment; and project closeout. Some of the projects he has been involved with include numerous renovation projects at several VA Medical Centers including multiple radiology room/suite installations and renovations, MRI's, X-ray and CT Scanners, Emergency Department renovations, numerous hospital out-patient treatment areas and specialty clinic renovations, a new \$4.4 million Hospice facility at the VA Medical Center in Coatesville, PA, and a new \$5 million Medical Office Building for Somerset Hospital in Somerset, PA.

Other projects include a \$37 million addition and renovation to WVU's Wise Library, a \$2.1 million chiller replacement for WVU's Engineering Sciences Building, a new primary 23kV power feed to the existing sub-station for the WVU Coliseum, engineering design for a hydrogenation reactor laboratory for WVU's Engineering Research Building and an \$8 million HVAC and sprinkler renovation for WVU's Armstrong Hall.

His knowledge and understanding of ASHRAE Standard 90.1 as the State's recently adopted energy code led to Jennings being selected to participate in training of West Virginia State Code officials. Most recently, Jennings' active involvement and industry leadership resulted in his election as President-Elect of the West Virginia Chapter of ASHRAE.



#### EDUCATION

BS in Mechanical Engineering from  
West Virginia University

#### REGISTRATIONS

Professional Engineer:

- West Virginia No. 15060
- Pennsylvania No. PE062186
- Virginia No. 040028

#### PROFESSIONAL AFFILIATIONS

President-Elect - West Virginia  
Chapter of ASHRAE



Associate Member West Virginia  
Society for Healthcare Engineering





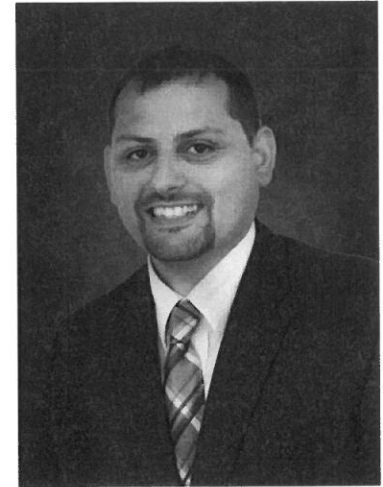
James has over 14 years of experience and has focused on HVAC, fire protection, plumbing and commissioning engineering. James' experience includes the project management, engineering design and commissioning for HVAC, plumbing, electrical and lighting. His work involves a wide variety of facility types including commercial, educational, governmental, health care and industrial. He researches and applies International Building Codes, NFPA, ASHRAE standards, NEC and FGI Guidelines for Design and Construction of Health Care Facilities.

During his tenure with ZDS, James has had extensive experience with HVAC renovations and Performance Contracting HVAC Retrofits and Master Planning for Security/Fire Alarm/Life Safety systems for a variety of projects. Some of his commercial projects have included Building 11 of the West Virginia Capitol Complex and the Kanawha County Judicial Annex, as well as assisting with the design of the North and South Bound Burnsville Rest Areas, an AIA Merit Award Recipient.

In addition to the above projects, James has worked on a variety of health care clients. Some of those include the Charleston Area Medical Center (CAMC) Wound Center, the Charleston Surgical Center and the VA Hospital in Huntington for the steam distribution system, extension upgrades and CT Scan renovations. Others include a Master Planning Study, new central steam plant and renovations to heating system and lighting renovations for seven (7) hospitals for the WVDHHR – Jackie Withrow Hospital, Beckley; Hopemont State Hospital, Terra Alta; John Manchin, Sr. Health Care Center, Fairmont; Lakin State Hospital, West Columbia; Mildred Mitchell-Bateman Hospital, Huntington; Welch Community Hospital, Welch; and the William R. Sharpe, Jr. Hospital, Weston - fifty bed forensic addition and renovations to entire existing hospital while building remains in use including new central heating/cooling plant, 2,100 KW emergency power station and comprehensive HVAC and electrical renovations throughout the facility.

James has been involved with HVAC and electrical renovations for many schools throughout the State of West Virginia. Some of these projects include Elkins Middle School, Glade Elementary/Middle School and Webster Springs Elementary School, all of which have received the 2013 Energy Star Certification. Also included in his experience are the following educational facilities: Harvard University Weld Hill Research and Administration Arnold Arboretum – LEED Gold Certified; Mercer County Schools Boiler Renovations for seven schools; Woodrow Wilson High School HVAC/electrical renovations; and West Virginia Higher Education Policy Commission (WVHEPC) South Charleston Tech Center – Campus Comprehensive Infrastructure Evaluation.

James has also had commissioning experience for projects, one of which includes the West Virginia Air National Guard – Commissioning for \$43 million maintenance and fuel cell hangars – LEED Silver Certified.



## EDUCATION

BS in Mechanical Engineering  
from West Virginia University  
Institute of Technology,  
Montgomery, WV in 2004

## REGISTRATIONS

Professional Engineer

- West Virginia No. 18948
- Ohio No. E-77003

## PROFESSIONAL AFFILIATIONS

Member and Chapter Technology  
Transfer Committee (CTTC) Chair  
for ASHRAE's West Virginia  
Chapter



Association of Energy Engineers  
(AEE) – Senior  
Member



## OTHER RECOGNITIONS

Energy Star Certified for  
facilities in the nation's  
top 25% of energy  
efficient facilities



Ted has over ten years of experience and has completed extensive Building Information Modeling studies through Autodesk. He also had special courses in Advanced Computational Techniques, Control Systems, Design Project Management, Design Optimization, Measurement Instruments and Controls, and Sound Attenuation, as well as extensive studies in several of the leading engineering programs: Autodesk Revit software, AutoCAD, Pro-Engineering software, ANSYS, Lab View, MATLAB, and complete training in Microsoft Office Software.

Ted develops and manages the IT systems at ZDS. The experience encompasses development and deployment of central server systems to networked client computer systems, strategic development for ZDS' Integrated Design Processes, and research and development into new technologies to continue staying on the cutting edge at ZDS.

Ted's project experience includes the commissioning and design for heating, ventilating, air conditioning, plumbing, electrical and lighting systems for educational, health care, industrial and commercial facilities. His experience encompasses working both on new construction as well as renovation projects. He also has experience as a Building Information Modeling (BIM) manager, 3D scanning for buildings, and excels at technical communications. Scanning experience involves over 75 projects in the last 3 years.

Ted maintains an active membership to the ASHRAE professional society and also has a lifetime membership to the Association of Energy Engineers. He maintains an active continuing education towards today's standards and codes.

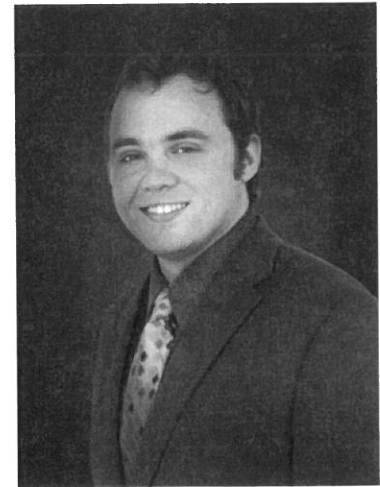
Some of Ted's project experiences include the following:

**Commercial and Industrial:** West Virginia Air National Guard Maintenance Hangar, Charleston, WV; West Virginia Air National Guard Fuel Cell Hangar, Charleston, WV; Bayer Material Science; I-70 Welcome Center, WV; West Virginia State Capital Complex Central Heating Plant.

**Health Care:** West Virginia Department of Health and Human Resources Hospitals: Jackie Withrow Hospital, Beckley; Hopemont State Hospital, Terra Alta; John Manchin, Sr. Health Care Center, Fairmont; Lakin State Hospital, West Columbia; Mildred Mitchell-Bateman Hospital, Huntington; Welch Community Hospital, Welch; William R. Sharpe, Jr. Hospital, Weston.

**Educational:** Greenbrier West High School Additions/Renovations; Davis-Thomas Elementary/Middle School Renovations; South Charleston High School Renovations; Glade Elementary/Middle School Renovations (*2013 Energy Star Certified*); Elkins Middle School Renovations; Jaeger/Panther Elementary School; plus 29 Schools in Raleigh County, WV.

Ted's awards and recognition include the 2012 Legend in Energy by the Association of Energy Engineers; Vice President and Social Chair for Phi Kappa Psi, a predominant scholastic fraternity celebrating over 20 years at Rochester Institute of Technology (RIT); distinguished by the RIT Dean's List for outstanding scholastic achievement; and numerous scholarships to RIT including Recipient of RIT Presidential Scholarship.



## EDUCATION

Bachelors of Science in Mechanical Engineering from Rochester Institute of Technology, Rochester, NY

## REGISTRATIONS

West Virginia State Board of Registration for Professional Engineers

- West Virginia No. 9569

## PROFESSIONAL AFFILIATIONS

Membership Promotion Chair and Board Member of ASHRAE's West Virginia Chapter



Lifetime Member of the Association of Energy Engineers (AEE)



Associate Member West Virginia Society for Healthcare Engineering



## OTHER RECOGNITIONS

Energy Star Certified for facilities in the nation's top 25% of energy efficiency





# Insights

The Newspaper of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

## Three Generations of Service to ASHRAE

By Pat Cross

As the First World War raged in Europe, Polish immigrant Walenty Zachwieja drove his pick into a coal vein in southern West Virginia. Back bent and lungs tarnished with the hardships of coal mining, he could not have conceived that three generations of engineers would rise from those black, dusty depths to navigate peak achievements in their industry.

Ted T. Zachwieja, Sr. founded the Mountaineer Chapter of ASHRAE, while his son, Ted A. Zachwieja, Jr., designed the first and largest commercial geothermal system in the West Virginia region.

Reaching from the shoulders of his father, Ted A. Zachwieja III graduated from the Rochester Institute of Technology and joined his father and grandfather in the family engineering business.

Their story catches the ears and hearts of anyone who acknowledges the challenges and unique achievements of a family business arising from the ashes of poverty and hazardous hardship of coal mining labor.

All three "Teds" are currently part of ZDS Design/Consulting Services, in its 17th year of operation. The company is located in Saint Albans, WV. ZDS provides a variety of engineering services including HVAC, plumbing, fire protection, electrical power, lighting, fire alarm and technology system design.

ASHRAE has played a key part in the three men's success, especially when they work on projects requiring



*The Zachwieja family (from left to right), Ted (Todd) A., Ted A. III, and Ted T. — all are engineers and members of ASHRAE.*

the integration of several engineering specialties, such as energy-efficient design, IAQ, HVAC systems and commissioning.

### **Ted T. Zachwieja, Founder Construction Administration & Project Executive**

Ted T. Zachwieja, Sr. made his mark on the engineering industry in West Virginia not only by founding the ASHRAE West Virginia Chapter, but in an extensive project involving the design and construction of the West Virginia Capitol Complex. He also engineered many of the buildings at the West Virginia Capitol

Complex, which involved more than 640,000 square feet of new facilities; those systems continue working today.

"An ASHRAE Life Member [who who joined in 1964], I founded the Mountaineer Chapter of ASHRAE and served as president for many of its early years.

"I was born in the southern coal fields of West Virginia and am the only living son out of a family of seven (two brothers who died before the age of 10 and four sisters). My father was a first generation immigrant from Poland who went to

*(Continue to next page)*

the coal fields in West Virginia during World War I as a coal miner. The hardships of mining took his life with black lung, but not before he made sacrifices to be sure I had the opportunity to go to college and become an engineer.

"I have four children, one son and three daughters. I started working in the early 1960s and had to fast-track learn how to design HVAC, plumbing and electrical systems. I was responsible for all MEP design and didn't have the luxury of specializing in only one area like engineers do today—we had to learn it all."

**Ted (Todd) A. Zachwieja,  
P.E., Principal, CEO**

Ted A. Zachwieja II (also known as Todd) acquired national acclaim with the design and installation of the largest commercial geothermal system in West Virginia and the surrounding region and pioneering indoor air quality practices in design prior to them ever being adopted into codes or standards.

"I started working for my father when I was 14 years old and found a passion in engineering design. I knew in sixth grade I wanted to be an engineer. I followed my father's advice in pursuing a mechanical engineering degree and then a M.A. in Engineering Management, with ASHRAE being an important part of my development.

"I have been involved with ASHRAE for over 30 years. I also founded the Mountaineer Chapter with my father and served as Technical Chairman for many years. My father encouraged me to continue developing my engineering skills, which allowed us to start our business in 1994 as partners."

**ASHRAE has played a key part in the three men's success, especially when they work on projects requiring the integration of several engineering specialties, such as energy-efficient design, IAQ, HVAC systems, and commissioning.**

**Ted A. Zachwieja III,  
Systems Manager, Designer**

"I started working for both my father and grandfather at the age of 14 through ZDS Design/Consulting Services. I was told I had the 'knack' at a very early age and was very interested in the engineering field.

"I received a scholarship to attend Rochester Institute of Technology in mechanical engineering and in my senior year, I continued to co-op with ZDS and assisted remotely while completing my undergraduate engineering degree.

"I joined ASHRAE as a student member and attended my first Winter Conference with my father to gain the exposure and experience that ASHRAE has to offer. I am very fortunate to be able to work with both my father and grandfather and gain their wisdom with many opportunities to share in their ASHRAE experience and create lifetime memories."

The strong bonds between these three generations of engineers all named Ted give testimony to the tradition of the family business. The devotion and determination to make sacrifices for the benefit of the next generation show most clearly in the

story of these three Teds whose beginnings heard the ring of an iron pick on the black walls of the West Virginia coal mines nearly a century ago. ■

*Pat Cross is the daughter of  
Ted T. Zachwieja.*

For more information on how ZDS Design/Consulting Services can help your organization improve its work environment, productivity and energy management, contact:

Todd A. Zachwieja, CEO  
Ted T. Zachwieja, Sr.  
Ted Zachwieja III

ZDS Design/Consulting Services  
281 Smiley Dr.  
St. Albans, WV 25177  
Phone: (304) 755-0075  
contact@zdsdesign.com  
www.zdsdesign.com

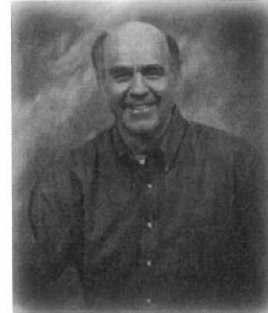




# V – Client Testimonials

## TIM HOLBROOK

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July 8, 2013

Re: ZDS Design/Consulting Services.

To Whom It May Concern:

I have had the recent privilege to work with ZDS Design/Consulting Services on several construction projects for the Greenbrier County Board of Education. In my role as the Clerk of the Works (owner's representative) for these projects, I was fortunate to be able to work with a company possessing their level of knowledge and expertise as an important part of our design team.

ZDS was on board from the conceptual design/development phase through the completion of construction and close out of the project. They constantly pushed to see that work progressed as it should and was done right.

Their personnel was extremely qualified and easy to work with. They were immediately responsive to any questions, problems, or issues that came up, and often called offering ideas and suggestions that could benefit the owner.

They were also instrumental in helping the board secure some rebates and credits that helped with the project costs.

I would be very happy to do another project with ZDS as they were a first class company, willing to do what it took give the owner a quality job. I highly recommend them for any mechanical and electrical construction project you may have.

Very truly yours,

A handwritten signature in cursive script that reads "Tim Holbrook".

Tim Holbrook



July 19, 2013

To whom it may concern:

ZDS Design/Consulting Services was sub-contracted by SAIC to perform the fundamental commissioning activities on a two-phase maintenance and fuel cell hangar project for the 130<sup>th</sup> Airlift Wing on the West Virginia Air National Guard Base at Yeager Airport outside Charleston, West Virginia.

Without hesitation, I recommend Todd Zachwieja and his team for their efforts on this complex project. The first phase, the Replace Aircraft Maintenance Hangar and Shops phase, was initially scoped to meet a certifiable level for LEED® certification. ZDS Design/Consulting Services worked with my team and the West Virginia Air National Guard (WVANG) representatives through the design phase to provide the necessary activities required to meet the LEED® Energy and Atmosphere Prerequisite 1, Fundamental Commissioning of the Building Energy Systems. However, when the second phase, the Fuel System/Corrosion Control Hangar and Shops phase, came to life about the time that phase 1 construction began, the entire project was required by the National Guard Bureau to be certified by the Green Building Certification Institute (GBCI) at a LEED® Silver level. ZDS Design/Consulting Services diligently worked with the general contractor, the WVANG and SAIC to develop an approach to the phasing of the commissioning activities for both buildings that still met the fundamental commissioning prerequisite requirements as one of the hangars was to lay dormant after completion for an extended period of time until near the completion of the second phase. This required that ZDS Design/Consulting Services perform some of the commissioning activities for the first phase during the first phase construction and the remainder during commissioning of the second phase.

Through the construction process, Todd Zachwieja's group kept me well informed on their schedule and their deliverables. Todd was frequently on my LEED status calls with the contractor to stay abreast of any upcoming issues that would affect the commissioning activities and to assist in how to resolve issues that would come up. In addition, ZDS Design/Consulting Services assisted us with services beyond the commissioning activities as well. These included providing and reviewing building flush-out calculations to determine if LEED® Indoor Environmental Quality Credit 3.2, Construction IAQ Management Plan, Before Occupancy, was achievable and providing light level readings for a light pole that needed to meet certain light levels. The project achieved LEED® Silver certification and the fundamental commissioning prerequisite was approved by the GBCI after the first construction review without qualification.

ZDS Design/Consulting Services proved to be a well-qualified firm that provides timely and efficient services. SAIC was extremely pleased with their services on this challenging project.

Sincerely,

SAIC Energy, Environment & Infrastructure, LLC

A handwritten signature in black ink, appearing to read "Thomas Warner", written over a horizontal line.

Thomas Warner, LEED® AP, BD&C  
LEED Administrator/Senior Architect

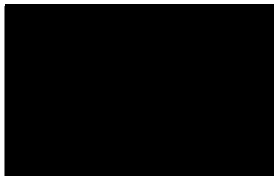
**SAIC Energy, Environment & Infrastructure, LLC**

60 East Plato Boulevard, Suite 300 | St. Paul, MN 55107 | tel: 651.771.2222 | fax: 651.778.3911 | [saic.com/EEandI](http://saic.com/EEandI)

July 26, 2013



Michael Pickens



**RE: ZDS Design/Consulting Services**

I have had the privilege to work with ZDS Design/Consulting Services' principals and many of their staff since working at the School Building Authority in the 1990's in my roles at the School Building Authority to my current role as Executive Director of the Office of School Facilities at the West Virginia Department of Education.

When an emergency issue arose, they would immediately make themselves available to help. ZDS's principal, Todd Zachwieja, did not hesitate to board a helicopter during a weekend to help assess the damage to the State's school facilities when damaging floods occurred. Helicopters were the only way to reach many of the facilities because the roads had been washed away or were impassible. Anytime a challenging issue has arisen that no one knew how to resolve, ZDS has stepped up to solve the challenges. Their extensive engineering knowledge of energy efficient systems, HVAC, controls, lighting, power and plumbing systems has always been at the leading edge in the industry, providing innovative solutions that also minimize energy and operating costs. I have always considered their approach in engineering design and commissioning for buildings to be the best and would highly recommend them to anyone.

Their ability to work with the State Fire Marshal and other agencies – while guiding everyone to a practical design approach – always provided each project with the best value. They are much more than excellent design engineers; they also understand the importance of operating and maintaining equipment and have hands-on knowledge to troubleshoot and also commission to ensure our projects were a great success. Their combined engineering design and commission skills prove to be invaluable.

ZDS Design/Consulting Services was also selected to help the WV Department of Education and the School Building Authority in writing new codes and standards to raise the bar for the entire State. They were chosen because their projects were a success while we were having challenges with others. Todd Zachwieja was also asked to teach school facility staff members, and his reference books continue to be used today. I would always think of ZDS first whenever a challenge would occur, knowing I would get the best results possible.

I trust ZDS's staff in their technical expertise and their approach in solving challenging engineering issues and believe that anyone who uses them will be as satisfied as I have been. They are worth it!

Sincerely,

A handwritten signature in black ink, appearing to read "Michael E. Pickens". The signature is written in a cursive, flowing style.

Michael E. Pickens





**ELSWICK & ASSOCIATES, LLC**

August 5, 2013

To Whom It May Concern:

I am distinctly honored to provide this letter of recommendation for ZDS Design/Consulting Services to your organization. I have known ZDS's principals and many of their staff since working with Ted and Todd Zachwieja at West Virginia Institute of Technology located in Montgomery, WV, from the 1970's, while I was the Physical Plant Director there. That relationship continues through today. Their knowledge of energy efficient systems related to Heating, Ventilating, and Air-Conditioning (HVAC), Building Automation Systems (BAS), lighting, power distribution, and plumbing systems has always been at the cutting edge of the industry. They have routinely provided innovative solutions to complex design challenges while minimizing energy and operating costs and enhancing maintenance efficiency. I have always considered their approach to engineering design and commissioning systems first for higher education, hospitals and schools to be superior and I would recommend them to anyone.

Throughout my career I have continued my working relationship with Ted and Todd Zachwieja and Jim Watters while I was Director of Facilities Management at Charleston Area Medical Center (CAMC), General Division, located in Charleston, WV. During that time, they provided mechanical, electrical, and plumbing (MEP), engineering, and construction administration services for all areas of CAMC's facilities. Their knowledge of health care code and practical design approach always provided the uniqueness required for the scope of the work. They understood the importance of operating and maintaining equipment and used their hands-on knowledge to ensure all our projects were on schedule and within budget. As a matter of fact, Todd led the first energy services performance contract in West Virginia. Through Todd's leadership, CAMC saved in excess of \$800,000.00 annually in energy costs and those savings were used for mechanical, electrical, and infrastructure upgrades at all three CAMC divisions. Ted, Todd, and Jim also assisted in many other projects at all CAMC divisions, including commissioning the work implemented as part of the energy savings program. Their combined engineering design and commissioning skills proved to be invaluable.

I also worked with ZDS Design/Consulting Services while I was Director of Facilities, Planning and Management at Washington & Lee University in the 1990's. They designed, acted as the construction project manager and commissioned the campus chilled water plant and distribution system to address the needs of the growing campus while fast tracking the project from start to finish in just nine months. I would always think of ZDS first whenever I was faced with a challenge, knowing that I would get the best technical expertise available.

513 Havana Dr.  
Charleston, WV 25311  
304.542.8877

Likewise, ZDS helped establish one of the first performance contracting programs in the State of Ohio's higher education system for Ohio University, saving the Athens campus millions annually while the savings were used for the mechanical, electrical and building automation improvements to generate the savings.

I have the utmost confidence in the technical expertise, the collaborative approach and ethical standards of ZDS Design/Consulting Services. Furthermore, these individuals are truly honorable professionals. In this regard, if you have questions or need additional information, please don't hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Bill Elswick", written over a light blue horizontal line.

Bill Elswick, MBA, CEO

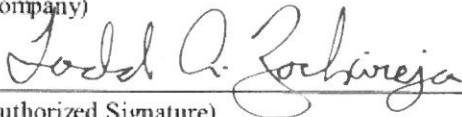
# VI – Attachments

**CERTIFICATION AND SIGNATURE PAGE**

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

ZDS Design/Consulting Services

(Company)



(Authorized Signature)

Todd A, Zachwieja, Principal/CEO

(Representative Name, Title)

(304) 755-0075

(Phone Number)

(304) 755-0076

(Fax Number)

June 16, 2014

(Date)



STATE OF WEST VIRGINIA  
Purchasing Division**PURCHASING AFFIDAVIT**

**MANDATE:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate, or (2) the debtor is in employer default.

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

**DEFINITIONS:**

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

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

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

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

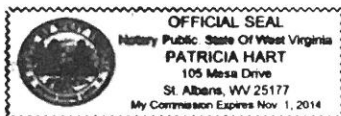
**WITNESS THE FOLLOWING SIGNATURE:**Vendor's Name: ZDS Design/Consulting ServicesAuthorized Signature: *Joshua G. Schirer* Date: June 16, 2014State of West VirginiaCounty of Putnam, to-wit:Taken, subscribed, and sworn to before me this 16 day of June, 2014.My Commission expires November 1, 2014.

AFFIX SEAL HERE

NOTARY PUBLIC

*Patricia Hart*

Purchasing Affidavit (Revised 07/01/2012)



**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: COR61694**

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

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

**Addendum Numbers Received:**

(Check the box next to each addendum received)

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

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

ZDS Design/Consulting Services

Company

*Jodd A. Zebireja*

Authorized Signature

June 16, 2014

Date

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