

EXPRESSION OF INTEREST FOR:

Professional Architectural/Engineering Services for a Building Evaluation Study on the Administration Building and the Central Boiler Building

SUBMITTED TO:

**West Virginia Schools
for the Deaf and Blind**

April 16, 2009

RECEIVED

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WV PURCHASING
DIVISION

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**BUCHART
HORN, INC.**

ENGINEERS | ARCHITECTS | PLANNERS

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April 16, 2009

Ms. Shelly Murray, Buyer
West Virginia Purchasing Division
2019 Washington Street, East
Charleston, WV 25305-0130

**Re: Evaluation of the Administration Building & Central Boiler Facility
West Virginia Schools for the Deaf and Blind**

Dear Ms Murray:


Thank you for the opportunity to submit our qualifications to perform building evaluations for the Central Boiler Facility and the Administration Building.

Successful facility evaluations begin with a great team that understands the client's goals, develops a comprehensive list of tasks, executes the work, and identifies effective solutions. Our proposed team begins with you! Our project approach will involve your staff from the outset from the initial field investigative work through involvement in the evaluation process.

For over 64 years, Buchart Horn, Inc. has had extensive experience and developed expertise in working on behalf of clients to perform facilities evaluations and planning. Our team is comprised of qualified engineers and architects who have the required knowledge and training to perform the various functions and evaluations required by this project. Our seasoned resource base offers immediate access to up-to-date, in-house technical specialists, without the delay of locating an outside consultant. We know how to operate as a team, with the goal of keeping you well informed and involved throughout the project.

Should you have any questions, please do not hesitate to contact me at (304) 346-1127. I hope to be able to work with you on this important project.

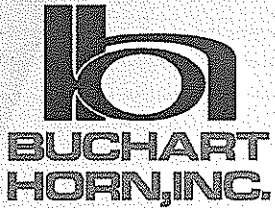
Sincerely,


Michael M. Phillips, AIA, LEED® AP
Project Manager

MMP/wri

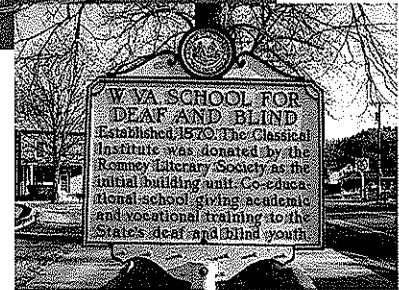
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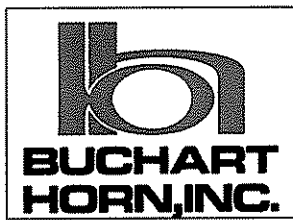


Overview

The West Virginia Schools for the Deaf and Blind were established in 1870 to offer comprehensive educational programs for hearing impaired and visually impaired students respectively. The Schools were established on the site of the Romney Classical Institute, which is now the Schools' Administration Building. The Schools are soliciting qualifications for the performance of building evaluation studies, and potential improvement design for the Administration Building and the Central Boiler Facility on their Romney campus. Phase I of the project will include in-depth studies and evaluations of the existing facilities, with recommendations for future modifications.



Buchart Horn has completed a number of similar study and design efforts, both for Educational Institutions and for other governmental clients where coordination with the State Division of Culture and History, as well as maintaining ongoing operations, were critical parts of the project. Our approach stresses communication among the study/design team and the Facility's decision makers, so that potential issues are identified and addressed early in the process.



Buchart Horn, Inc. has been providing engineering and architectural services through our Charleston operations since the mid 1960's. We bring extensive experience in helping clients meet their needs for additional or improved space. Our recent project history includes several major building renovation and historic preservation projects, including the Kanawha County Judicial

Annex in Charleston, the Preston County Courthouse in Kingwood, and renovations to Old Main on the campus of Marshall University in Huntington.



ZDS Design / Consulting Services is one of the leading mechanical and electrical design firms in West Virginia. They bring direct experience with the WV Schools for the Deaf and Blind through their recent work on the fire

alarm upgrades for the campus gymnasium. Buchart Horn and ZDS have worked very successfully together on the design of renovations to the Kanawha County Judicial Annex in Charleston.

Proposer's name, location and principal place of business

Firm Name: Buchart Horn, Inc.
Address: 400 Tracy Way, Suite 110
Charleston, WV 25311
Contact: Michael Phillips, AIA, Project Manager
Telephone: (304) 346-1127

Buchart Horn will perform project management, architectural and structural design at our Charleston offices. Mechanical and electrical support services will be provided by ZDS. QA/QC services for architectural and engineering services will be provided through other Buchart Horn office locations utilizing personnel not directly involved in the project design, but possessing experience with West Virginia codes and standards, and with educational and historic facilities.

Historic Preservation

As noted previously, the Buchart Horn team understands the critical role that historic preservation will play in any renovations to the Administration Building. Our team will use an approach that blends traditional architectural services with specialty expertise in building materials. Our architects, engineers and architectural conservators will evaluate the condition of the existing structure based on a holistic understanding of the structural, environmental and historic factors involved. We will perform a complete assessment and develop a prioritized building conservation program

General Approach

This project will present a number of critical challenges to the architect/engineer team, and the Schools. As with most projects in the present day environment, budget and schedule will be chief among these challenges. Buchart Horn will begin to address these issues by sitting down with the Schools during the development of the project scope to begin to identify and prioritize project intent. Accurate information about the condition of the facilities and building systems will form the foundation for future planning. In general the project requires a thorough structural and systems investigation and evaluation of two buildings, the Central Boiler and the historic Administration Building. From this evaluation, deficiencies will be identified, documented and prioritized; cost analysis of potential options will be developed, and a corrective action plan will be prepared. Our action plan for Phase I will be as follows:

- Conduct a kick-off meeting at the facility with School personnel to accomplish:
 - Review the project scope and verify project intent
 - Plan the building evaluation to meet the School's schedule, personnel, and security requirements
 - Ascertain any known building and system problems from school facilities and maintenance personnel
 - Obtain copies of any available building drawings

- Review all existing drawing and spec data, and prepare field forms for use in the evaluation. Although we have used tablet PCs and database input on past evaluation projects, the scope and schedule of this project may be more suited to hand-written notes to document conditions.
- Visit the facilities to perform a thorough walk-through evaluation. A team of professionals, led by a registered Architect and including registered Professional Engineers, will perform this evaluation. Conditions will be assessed and deficiencies documented with a rating system (generally ranging from low to medium to high priority. This information will be valuable later when costs are determined and value engineering is performed). Digital photographs will also be taken of the deficiencies.
- Obtain material testing if deemed necessary by the walk-through evaluation.
- Develop repair recommendations and estimated costs. Once the order of magnitude of deficiencies is developed, value engineering will be performed to determine the most cost-effective course(s) of action in comparison to budget, building usage, future plans, and schedule constraints. We'll perform a cost analysis of repair versus reconstruction where appropriate and will look at phasing of high priority work before lower priority work.
- Submit a draft report of findings to the client followed by meetings and discussions of findings.
- Submit a final report with all comments and questions addressed.

Key Project Personnel

Mike Phillips, AIA, LEED, (19 years experience), will serve as our Project Manager. Mr. Phillips has served as Project Manager / Lead Architect for the following renovation / retrofit projects:

- Renovation of the Kanawha County Judicial Annex, including upgrades to the mechanical and electrical systems.
- Renovation / adaptive re-use of the Old Main Auditorium at Marshall University.
- Renovation of the Preston County Courthouse and conversion of an adjacent building for use as a Judicial Annex.
- Design for the addition of office space to accommodate the Transportation Safety Administration at Yeager Airport in Charleston, including an expansion of the mechanical systems and upgrade of electrical service.
- Design of the Gate 10 Terminal Expansion project at Yeager Airport in Charleston.
- Marshall University President's Home renovation and preservation planning report.
- Davis and Elkins College, Renovation of Allen Residence Hall for use as a hotel.

Detailed resumes for Mike and other key members of our project team are included in Section 3.

Buchart Horn, Inc. is a multi-disciplinary organization with a staff of over 330 professionals that provides architectural, engineering, environmental, planning, project management, construction services, and administrative services to a wide variety of clients.

Our experience and resources facilitate cost effective solutions. Our strong Project Manager approach clarifies project responsibilities and promotes project communication.

Background

Established in 1945, Buchart Engineering Corporation evolved into Buchart Horn, Inc., Consulting Engineers, Architects, and Planners. Today, *Engineering News Record* ranks us among the top consulting firms. From our domestic offices and two in Germany, we serve public and private clients around the world:

West Virginia: *Charleston*

New Jersey: *Marlton*

Pennsylvania: *York (headquarters), Coatesville, Harrisburg, Hershey, King of Prussia, New Cumberland, Pittsburgh, State College, Stroudsburg*

Maryland: *Baltimore*

Louisiana: *Baton Rouge*

Tennessee: *Memphis, Nashville*

Mississippi: *Batesville*

Germany: *Frankfurt/Main, Kaiserslautern*



Services

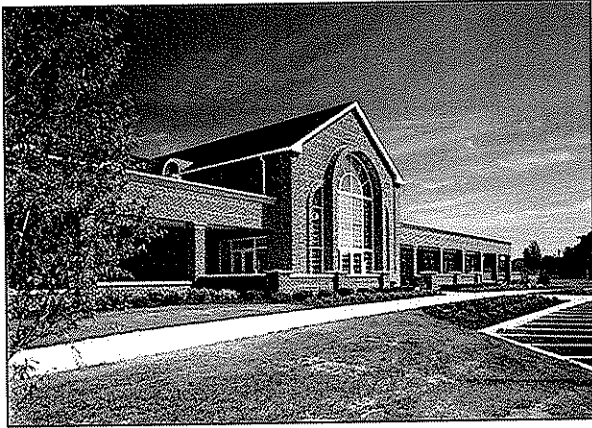
We specialize in designing, improving, and solving the problems of infrastructure and structures, and in helping our clients comply with environmental, life safety, and other codes and regulations. Our work includes:

- Architecture
- Mechanical systems-HVAC, plumbing, energy conservation
- Electrical systems and computer wiring
- Telecommunications
- Civil/site development
- Construction phase services
- Energy conservation
- Environmental planning, engineering, compliance
- Geographic Information Systems (GIS)
- Highways, roads, streets
- Landscape architecture design
- Structural design
- Surveys/mapping
- Traffic and traffic management

Contact

Mr. Michael M. Phillips, AIA LEED® AP will serve as Project Manager on the State Office Building Project. He is based on our Charleston office. Work performed for this project will be performed from the Charleston office, with support from our Pittsburgh, PA office as necessary.

Buchart Horn
400 Tracy Way, Suite 110
Charleston, WV 25311
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Architectural Services

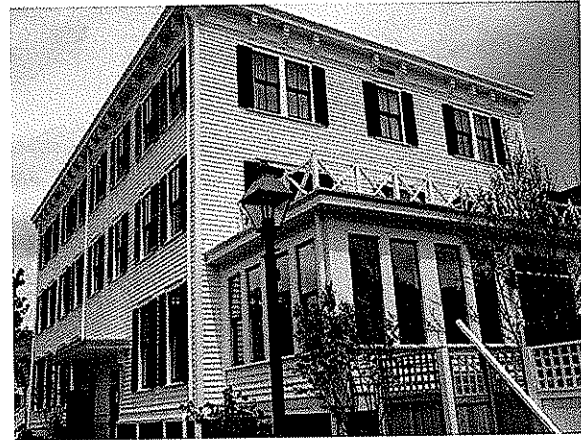
Buchart Horn offers our clients complete architectural design capabilities including site selection and feasibility analysis.

- Design
- Building Evaluation
- ADA Compliance
- Environmental Assessments
- Historic Preservation
- Interior Design
- Restoration
- Site Engineering and Evaluation
- Space Planning

Electrical Engineering

From specialty lighting design and electrical power supply to completely automated systems development, our experienced electrical engineering staff can support a project from evaluation through system start-up and troubleshooting. Complete electrical engineering services are provided to architects, engineers, and industrial clients. Sophisticated instrumentation and control systems are often at the heart of today's electrical engineering projects. Our specialized experience brings cost-effective solutions to respond to client needs.

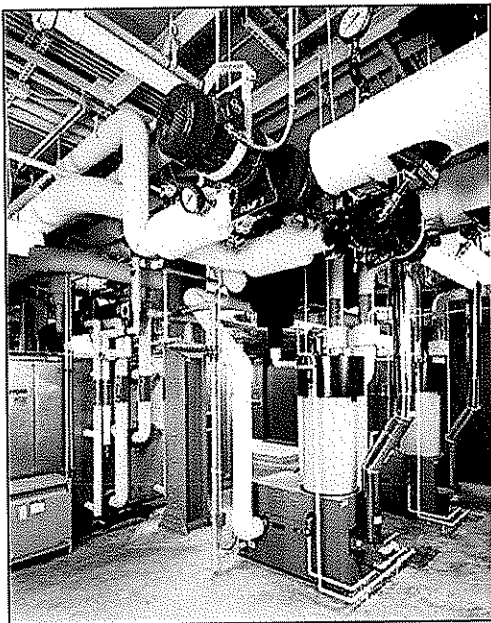
- Interior and Exterior Lighting
- Power Distribution
- Facility Systems
- Telecommunications and Networking
- Process Automation and Control
- Operation and Maintenance Evaluation
- Systems Commissioning, Field Inspection, and Start-up
- Electrical Studies and Analysis
- Highway and Airport Lighting
- Electric Deregulation Consulting



Mechanical Engineering

Buchart Horn provides complete system assessment, design and construction phase services for HVAC, plumbing and fire protection systems. Our design goal is to achieve a suitable balance of comfort, safety, health, and hygiene with sensitivity to client budgets and ease of maintenance. Our common sense approach to design integrates the building systems with the building occupants' needs for a flexible, responsive and energy-saving environment.

- Alternative Energy Sources (Geothermal/Solar)
- Automatic Temperature Control
- Building Management Systems
- Coal, Gas and Oil Burner Retrofits
- Compressed Air Systems
- Dust Collection Systems
- Energy Protection Systems
- High-Pressure Boiler Plants
- HVAC Systems
- Plumbing and Drainage Systems
- Steam Power Distribution
- Value Engineering and Life Cycle Analysis
- Ventilation Heat Recovery



Structural Engineering

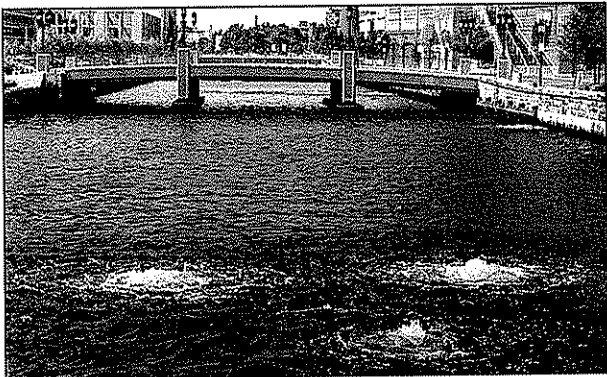
Our structural engineering services involve all types of materials and structural systems.

- Structural Studies, Reports, Investigations, Evaluations, and Design for Structural Systems
- Foundation Systems
- Retaining Walls
- Above- or Below-Ground Liquid Containment Structures
- Masonry Wall-Bearing Systems
- Steel Frames
- Cast-in-Place Concrete Frames
- Precast Concrete Framing Systems
- Wood Framing Systems

Civil Engineering

Our civil engineering group matches sophistication and execution to complex, project-specific, and regulatory requirements to leverage the latest technological and computer advances.

- Flood Studies
- Grading Plans
- Parking Studies and Design
- Right-of-Way Services
- Sediment and Erosion Control
- Signalization
- Site Development
- Stormwater Management
- Traffic Studies and Analyses
- Utilities Design



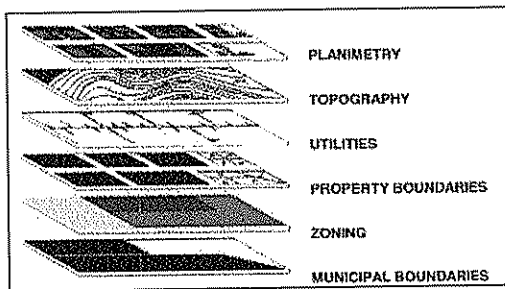
Site Development

Planning is not a separate discipline in our firm. It is an important component in our efforts to assist our clients in making knowledgeable project and programming decisions.

- Comprehensive Planning
- Economic Feasibility
- Environmental Planning
- Facilities Planning
- GIS/Mapping
- Land Planning
- Landscape Architecture
- Master Planning
- Public Meetings
- Recreational Planning
- Space Planning
- Zoning and Subdivision Ordinances

GIS Services

Experienced GIS Analysts and Technicians provide full GIS services to a variety of public and private clients. These services include consulting, needs analysis, database design and development, feature updating, GPS Mapping, software customization and spatial analysis. We routinely combine photogrammetric imagery with GIS to produce high quality base mapping, and we typically develop custom applications to meet clients' needs. In addition, we provide ESRI Authorized training and software and hardware technical support. We have the experience and knowledge to complete these services in a variety of software environments, including both ESRI and Intergraph.



Photogrammetry

Experienced flight crews, using the latest technology, provide superior aerial photography. The aerial cameras are equipped with forward image motion compensation and automatic exposure control, delivering the highest quality and resolution available.

The Photogrammetric Specialists utilize state-of-the-art stereo instruments and digital workstations to provide high quality based mapping for all types of projects. Under the direct supervision of an ASPRS Certified Photogrammetrist, we customize each project to meet our clients' needs for accuracy, scale, content, schedule and budget.

Digital orthophotos are developed using Z/I Imaging Softcopy work station. Digital elevation models produce contours, cut and fill volumes, stockpile quantities, and may be used for 3D visualization.

Customization

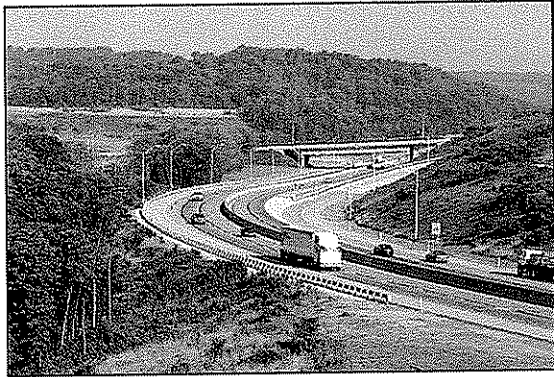
Buchart Horn has a wide range of GIS-related customization experience for development of user-friendly custom interfaces, data conversion, and the reduction of redundant tasks.

Our programming experience ranges from the Avenue, AML, and Visual Basic languages in Arcview, Arc/Info and ArcGIS.

We often tie-in outside datasets, such as MS Access, and write programming to run queries, produce automated maps, generate reports and perform spatial analysis. Our programming serves all GIS skill levels.

Mapping Services

- Aerial Photography
- Airborne GPS
- GPS Surveying
- Analytical Aerial Triangulation
- Photogrammetric Mapping
- High Resolution Scanning
- Digital Orthophotography
- Volumetric Surveys
- GIS Consulting
- GIS Needs Assessment
- Database Design/Development
- GIS Application Development
- Digitizing/Data Conversion
- Spatial Analysis
- ESRI Authorized Training
- Internet GIS



Transportation Services

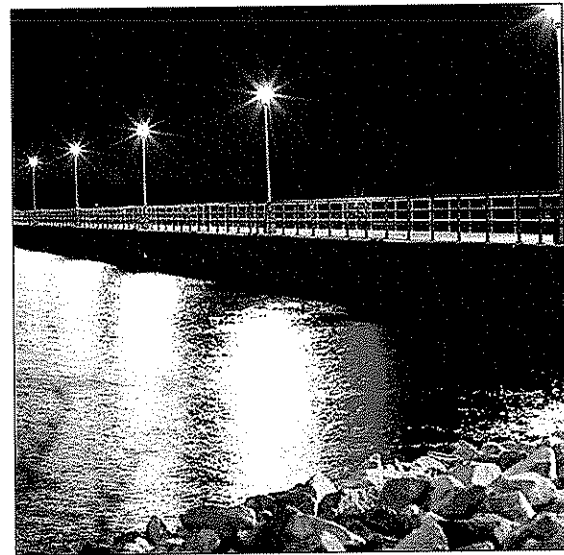
Our Transportation Division offers a full range of transportation-related experience including:

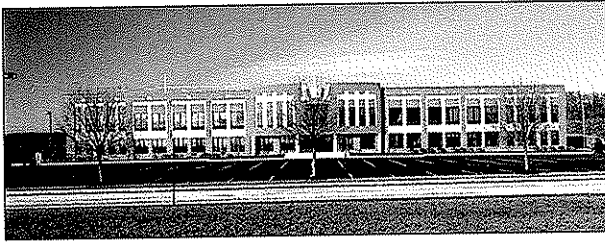
- Airport Design
- Bridge Design and Inspection
- Dam Design and Inspection
- Flood Studies and Hydrological Analyses
- General Structural Design
- Highway Design
- Railroad and Railroad Bridge Design
- Site Grading, Drainage and Stormwater Design
- Traffic Signal Design
- Traffic Studies

Environmental Services

The firm's environmental engineering services range from water treatment and sludge management to regulatory compliance issues. Services available include:

- Comprehensive Planning
- Environmental Assessments/Impact Studies
- Financial Analysis/Funding Assistance
- Highway Noise Analysis
- Infiltration/Inflow Studies
- Instrumentation, Telemetry, and Controls
- Permitting - New and Renewals
- Process and Piping Design
- Pumping Stations
- Sludge Management and Disposal
- Wastewater Collection/Treatment Systems
- Water Distribution/Storage Systems
- Water Treatment
- Wetlands Delineation and Permit Applications





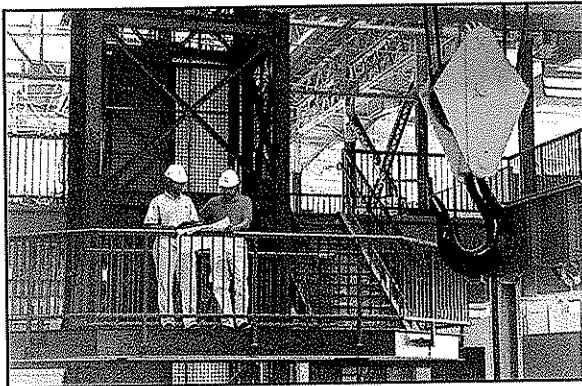
Construction Services

Buchart Horn established an independent Construction Services Division in 1968 specifically to provide comprehensive technical, managerial and financial guidance and to assure quality construction for all projects.

Corporately and individually, we possess extensive experience in all aspects required to transfer an owner's idea into a functioning facility.

Designated as a major division in our firm, the Construction Services Division provides the detailed attention and control procedures necessary for a successful project.

Our Construction Services Division is experienced in the management of any size project from \$10,000 to \$52,000,000 from constructability reviews through warranty inspections.



Value engineering was an integral part of the renovation of Buchart Horn, Inc. corporate headquarters.

Our range of services includes:

- Constructability Reviews
- Value Engineering
- Reports to Owner
- Scheduling
- Bidder Development
- Estimating
- Pre-Construction and Routine Job Conferences
- Full-time Site Representation
- Project Coordination
- Construction Management
- Submittal Processing
- Construction Monitoring and Documentation
- Document Management
- Quality Control Testing
- Application for Payment Processing
- Budget Updates
- Change Order Processing
- Independent Testing Coordination
- Request for Information Processing
- Claim Review
- Supplier Training Videotaping Services
- Substantial and Final Completion Services
- Coordination with Owner
- Record Drawings
- Warranty Period Coordination

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.

In 1983, Todd A. Zachwieja founded ZECO Consultants. In 1994 ZDS Limited Liability Company was incorporated in WV using dba **ZDS Design/Consulting Services**. This company was founded to provide design and consulting services. Today there are four principals with over 100 years of technical expertise:

- **Todd A. Zachwieja, PE, C.E.M., LEED AP**, Chief Executive Officer, brings with him over 28 years in the design and consulting business.
- **Ted T. Zachwieja**, Principal over Construction Administration services with over 45 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 22 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 Zachwieja, CPA**, Chief Financial Officer and cofounder of ZECO Consultants.

ZDS is a consulting engineering firm specializing in the following areas:

**MECHANICAL
ELECTRICAL
INDOOR AIR QUALITY
COMMISSIONING
ENERGY**

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

We assign 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.

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

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.

We work with all levels of the client’s staff: the building owner, the budget supervisor, the operating and maintenance staff and others impacted by the project. We recognize 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.

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.”

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:

- Contributing Editor and Technical Review Panel for the publication of the *ENVIRONMENT^o 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 *ENVIRONMENT[™] 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 the June 1993, 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 *ENVIRONMENT[™] Professional*
- Editorial Advisory Board member of *POWER PRESCRIPTIONS[™] Indoor Air Quality* Publication by *Electric Power Research Institute*.

ZDS provides IAQ services for major corporations, government organization, and property owners to resolve their specific facility problems:

- Resolve the building's "sick building syndrome" complaints.
- Identify solutions to extensive biological contamination building related illnesses in renovated office buildings.
- Develop solutions for HVAC systems, temperature controls, equipment, operating and maintenance practices causing IAQ problems in schools and commercial buildings.
- Commission new and renovated facilities to minimize or eliminate IAQ issues before they become problems.
- 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, ZDS produces sophisticated technical expertise that enables *Our Client* to be proactive in solving and preventing indoor environmental problems.

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 that includes:

- Providing detailed analysis of facilities.
- Recommending sound and proven energy saving solutions.
- Implementing energy management improvements
- Determine, quantify and assist in securing available Utility & 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.
- Installing Direct Digital Control (DDC) Energy Management Systems.
- Replacing inefficient lighting equipment with energy efficient ones.
- Converting constant speed air handling equipment and pumping systems to variable speed operation.
- 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.

The **ZDS** team is trained and experienced in advising you of program options to incorporate energy efficiency and operational saving 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 saving options and providing supporting

financial information. We then help you to 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's certification recognizes the importance of commissioning. The design and construction industry have had start-up problems when a facility is occupied and constructions' deficiencies that were not discovered until the contractors traditional one-year warranty period expires. 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's Accredited Professional*. Many utility companies and building Owners now require commissioning for the new or renovated facilities in order to maximize the use of their investments in their facilities and to obtain LEED's 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's enhanced commissioning requirements. These services include strategic planning operations assistance for renovation and new construction projects. Commissioning services consists of construction document review, equipment performance testing, documentation of design criteria, value engineering, operational fine tuning, 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 Owners operational needs.

NATIONAL RECOGNITION

The National Conference on Building Commissioning invited Todd Zachwieja, ZDS's owner, 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 Design/Consulting Services** 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 the planning through the construction and beyond.

The ZDS design staff continuously provides engineering design services value well into the millions of dollars on a variety of project types. Designing expertise goes as far back as 1958. Through the efforts of our staff, project locations include:

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

Our 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.

Our 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.

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 and the West Virginia Department of Health.

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 Client's* needs, on time and within budget with outstanding quality.

We view 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.

**Architect/Engineering Services,
Building Evaluation Study
West Virginia Schools
for the Deaf & Blind**

Principal-in-Charge
Anthony J Shinsky, AIA, LEED® AP

QA/QC Manager
Stephanie A Schaefer, AIA

Project Manager/Lead Architect
Michael M Phillips, AIA, LEED® AP

Architectural Support
W Scott Loercher, AIA, LEED® AP
Luke R Cunningham

Structural Engineer
James M California, PE
Robert G Cramer, PE

Site/Civil Engineer
George J Crittenden
Vincent Wayne, PE

**Electrical Engineer &
Fire Protection**
ZDS Design/Consulting Services

Mechanical Engineer
ZDS Design/Consulting Services

Hazardous Materials
Randy D Deardorff, PG

Cost Estimating/Specifications
Eugene G Williams, PLS, CDT, MAI

Technical support staff of over 300, including structural, civil, and cost estimating.

Anthony J Shinsky, AIA, LEED® AP
Principal-in-Charge

Education:

Bachelor of Architecture/
Architecture/Temple University

Registrations:

LEED 2.0® Accredited
Professional/2005

NCARB

Registered Architect

Years' Experience:

Total: 20

Professional Affiliations:

American Institute of Architects

As the Principal-in-Charge on this project, Mr. Shinsky will meet regularly with the Project Manager to monitor schedules and budgets. He will also periodically contact you to confirm that you are satisfied with the progress being made and with our performance throughout the course of this project. As Buchart Horn's Vice President of the Facilities Division, Mr. Shinsky is available to discuss any aspect of this project with you at your request. In addition, he will review project performance reports prepared by the QA/QC Officer and coordinate with the Project Manager and QA/QC Officer any action to be taken to maintain excellent performance standards.

- Towson Place Apartments, Facilities Inspection and Summary Report, Towson, MD.
- Municipal Building Space Planning Study and Site Assessment, Borough of Middletown, PA.
- Design of New Elementary School, East Stroudsburg Area School District, PA.
- Senior Independent Living Facilities Prototype Design, Champion Home Builders, Multiple Sites, PA.
- Trexler Nature Preserve "Green" Environmental Center, Lehigh County, Allentown, PA.
- PA State System of Higher Education, Dixon University Center, A/E Services for Combined Cadaver and Physical Diagnostics Lab, Harrisburg, PA.
- Spiegle Architectural Group, Analysis of Existing Conditions and As-built Drawings for HVAC, Electrical Power and Lighting, TD Bank Call Center, Harrisburg, PA.
- Middle School Architectural/Engineering Services, Downingtown Area School District, Uwchlan Township, Chester County, PA.
- PA State System of Higher Education, Dixon University Center Campus Enhancement Plan, Harrisburg, PA.
- Architectural Services for Hardin County Schools, Savannah, TN.
- Mechanical, Electrical and Plumbing Engineering Services for New Intermediate School, Dallastown Area School District, Springfield Township, PA.
- Central WV Regional Airport Authority, Terminal Renovations at Yeager Airport, Charleston, WV.

Michael M Phillips, AIA, LEED® AP
Project Manager/Lead Architect

Education:

*Bachelor of Architecture/
Architecture/University of
Tennessee*

Registrations:

*LEED 2.0® Accredited
Professional/2006*

Registered Architect

NCARB

Years' Experience:

Total: 22

Professional Affiliations:

*American Institute of Architects,
West Virginia Chapter*

*Mainstreet Ripley, Inc.: Board
Member and Chairman, Design
Committee*

Mr. Phillips graduated from the School of Architecture of the University of Tennessee in 1988. With a diverse background in project scale, type, and style, he has a strong record of successfully working within and integrating existing facilities into new designs and programs. The knowledge and experience gained from a strong background and practice in historic preservation and renovation bring a keen insight into dealing with the issues of adaptive re-use and the recycling of existing built elements. His wide-ranging experience has also helped fashion a working knowledge of resilient, lasting designs, structurally, functionally, and pragmatically as well as aesthetically. Mr. Phillips has also given his time, talent, knowledge, and leadership skills to the community by being a founding tutor, board member, and past Vice President of PRO-Kids, Inc., a non-profit tutoring organization for disadvantaged children.

- Administrative and Judicial Facilities Renovation Design, Preston County Commission, Kingwood, WV.
- County Jail Building Adaptive Re-use, Pocahontas County Commission, Marlinton, WV.
- Pocahontas County Jail Structural Evaluation, Pocahontas County Commission, Marlinton, WV.
- Monongalia County Commission, Jail Modifications Feasibility Study, Morgantown, WV.
- Investigation and Proposed Modifications to State Capitol Parking Facility, Charleston, WV.
- Monongalia County Courthouse Addition and Intermodal Parking Facility, Morgantown, WV.
- Elkins Maintenance Facility, WVDOT, Randolph County, WV.
- New Research Support Building and Yard, Canaan Valley Institute, Davis, WV.
- Public Restrooms Renovations at Ripley and Ravenswood Libraries, Jackson County Libraries Board of Trustees, WV.
- Old Main Auditorium Renovation, Marshall University, Huntington, WV.
- Former Marion County Jail Conversion to Parking and Storage Facility, Fairmont, WV.
- Lewis County Courthouse Annex Comprehensive Plan, Weston, WV.
- Kanawha County Judicial Annex Renovations, Charleston, WV.

Stephanie A Schaefer, AIA
Quality Assurance/Quality Control

Education:

*Bachelor of
Architecture/Architecture/
Virginia Polytechnic Institute and
State University*

*Graduate Coursework/Virginia
Polytechnic Institute and State
University*

Registrations:

Registered Architect

Years' Experience:

Total: 25

Professional Affiliations:

American Institute of Architects

Ms. Schaefer has more than 25 years of diverse experience in the field of architecture. She is responsible for managing projects as well as coordinating design teams. Her abilities encompass all phases of architecture from feasibility studies and conceptual design through the production of construction documents and construction administration.

- Booker T. Washington Middle School Feasibility Study for Restoration of Brownstone Facade, Baltimore City Public Schools, MD.
- Design of Air Conditioning for Diggs-Johnson Middle School, Baltimore City Public Schools, MD.
- On-Call Construction Management, Chiller Replacement, Furley Elementary School, Baltimore City Public Schools, MD.
- Architectural/Engineering Services for Systemic Renovations at Edmondson Heights Elementary School, Baltimore County Public Schools, Baltimore, MD.
- Indefinite Delivery Contract for Architectural and Engineering Services, US Postal Service, Columbia, MD.
- Carl Sandburg Middle School Addition and Renovations, Neshaminy School District, Levittown, PA.
- Indefinite Quantity A/E Contract, U.S. Army Corps of Engineers, Tobyhanna Army Depot, PA.
- Master Planning IDIQ Contract, Tobyhanna Army Depot/US Army Corps of Engineers, Tobyhanna, PA.
- HVAC Upgrade, CFS Unit, US Postal Service, Baltimore, MD.
- Seven Oaks Elementary School Prototype Modifications, Annapolis, MD.
- Post Office Renovation and Addition, US Postal Service, Ellicott City, MD.
- Water Heater Replacement, US Postal Service, Baltimore, MD.
- Chiller and Air Handling Unit Replacements, Processing & Distribution Center, US Postal Service, Baltimore, MD.
- Indefinite Quantity Architectural/Engineering Services for Maryland Postal Facilities, US Postal Service, Eastern Facilities Service Office, Greensboro, NC.
- IQC for A/E Services: Repairs and Alterations and Small Standard Building Design/Medium Standard Building Design, Baltimore and Capital Districts, USPS, Eastern Facilities Service Office, Greensboro, NC.

W Scott Loercher, AIA, LEED® AP
Architectural Support

Education:

Bachelor of Architecture/
Architecture/Temple University

AS/Architecture/Spring Garden
College

Registrations:

Registered Architect

NCARB/2008

LEED 2.0® Accredited
Professional/2004

Years' Experience:

Total: 14

Professional Affiliations:

American Institute of Architects

Mr. Loercher is an experienced architect with a varied background encompassing both renovation and new construction. His responsibilities have included schematic design, development of construction documents, processing change order requests, responding to RFI's and attending all job conferences. Mr. Loercher was Project Designer/Coordinator for the renovations and additions to the West York Area High School and also responsible for material and color selection. In addition, Mr. Loercher was the principal designer for the Pennfield Corporation Renovation, Lancaster Post Office Expansion and the renovations to the second floor of the Berg Electronics Valley Green facility.

- Building Evaluation Study and Database (Master Plan Task Order), Tobyhanna Army Depot, Tobyhanna, PA.
- Facility Assessment and Window Replacement, Trinity House Apartments, Columbia, PA.
- Building Evaluation Study Update and Expansion (Master Plan Task Order), Tobyhanna Army Depot, PA.
- County Administration Building Conversion, Phase 3, Dauphin County Commissioners, Harrisburg, PA.
- Lafayette Avenue School Phase II Classroom Addition, Ventnor City Board of Education, NJ.
- Canadochly Elementary and Eastern High School Roof Replacements, Eastern York School District, Wrightsville, PA.
- HVAC Improvements Design, Montandon and Milton Elementary Schools, Milton Area School District, PA.
- High School Addition and Renovations, Neshaminy School District, Langhorne, PA.
- Carl Sandburg Middle School Addition and Renovations, Neshaminy School District, Levittown, PA.
- Walter Miller Elementary School Additions and Renovations, Neshaminy School District, Levittown, PA.
- Walter Miller Elementary School Kitchen Renovation, Neshaminy School District, Levittown, PA.
- Elementary School Renovation and Addition Design, St. Joseph's Church, York, PA.
- Indefinite Quantity A/E Contract, U.S. Army Corps of Engineers, Tobyhanna Army Depot, PA.

Luke R Cunningham
Architectural Support

Education:

*BS/Architecture Engineering/
Fairmont State University*

Years' Experience:

Total: 4

Professional Affiliations:

*American Institute of Architects,
Student Member 2003-2006*

Mr. Cunningham's relevant architecture design experience includes the following projects:

- Squadron Operations Building 107 Repair, Pennsylvania Air National Guard/171st ARW, Coraopolis, PA.
- Regional Forensic Center, Memphis/Shelby County, TN.
- Investigation and Proposed Modifications to State Capitol Parking Facility, Charleston, WV.
- Statewide Architectural Services, WVDOT.
- I-81 Tabler Station Interchange, West Virginia DOT, Martinsburg, WV.
- Corridor H Final Design, WVDOT, Grant County, WV.
- Administrative and Judicial Facilities Renovation Design, Preston County Commission, Kingwood, WV.
- Wastewater Treatment Plant Upgrade and Expansion, Poplarville, MS.
- Central WV Regional Airport Authority, Terminal Renovations at Yeager Airport, Charleston, WV.
- Combat Arms Training Simulator and Combat Arms Training and Maintenance Facility Design, Pennsylvania Air National Guard/171st ARW, Coraopolis, PA.
- New Research Support Building and Yard, Canaan Valley Institute, Davis, WV.
- Elkins Maintenance Facility, WVDOT, Randolph County, WV.
- Bus Service Facility Additions and Alterations, Tri-State Transit Authority, Huntington, WV.
- Public Restrooms Renovations at Ripley and Ravenswood Libraries, Jackson County Libraries Board of Trustees, WV.
- Huse Memorial Park Administration/Maintenance Facility, Town of Fayetteville, WV.
- Aircraft Systems Maintenance Hangar Repair and Renovation, Building 304, Pennsylvania Air National Guard/171st Air Refueling Wing, Coraopolis, PA.
- Water Line Feasibility Studies, West Virginia Department of Environmental Protection, Boone, Mercer, and Raleigh Counties, WV.

James M California, PE
Structural Engineer

Education:

Bachelor of Architectural
Engineering/Structural
Engineering/Pennsylvania State
University

Registrations:

Professional Engineer

Years' Experience:

Total: 28

Professional Affiliations:

American Institute of Steel
Construction (AISC) - #065709

Mr. California is a Senior Structural Engineer and has extensive experience in structural building design on various educational, commercial, industrial, municipal, and government projects; field investigation and evaluation of existing structures; technical report preparation; shop drawing review; and technical support during construction. He has also designed various tanks, towers, equipment supports, and foundations.

- New Research Support Building and Yard, Canaan Valley Institute, Davis, WV.
- Elkins Maintenance Facility, WVDOT, Randolph County, WV.
- Huse Memorial Park Administration/Maintenance Facility, Town of Fayetteville, WV.
- Kanawha County Judicial Annex Renovations, Charleston, WV.
- Old Main Auditorium Renovation, Marshall University, Huntington, WV.
- Assessment of Existing Conditions for the Columbia Market House, Borough of Columbia, PA.
- Carl Sandburg Middle School Renovations and Addition, Neshaminy School District, Levittown, PA.
- Indefinite Quantity A/E Contract 2004 Re-Award, U.S. Army Corps of Engineers, Tobyhanna Army Depot, PA.
- Building Evaluation Study Update and Expansion (Master Plan Task Order), Tobyhanna Army Depot, PA.
- Central Chilled Water Plant Replacement, Building 1, Tobyhanna Army Depot, PA.
- Chiller and Air Handling Unit Replacements, Processing & Distribution Center, US Postal Service, Baltimore, MD.
- Indefinite Quantity Architectural/Engineering Services for Maryland Postal Facilities, US Postal Service, Eastern Facilities Service Office, Greensboro, NC.
- Investigation and Proposed Modifications to State Capitol Parking Facility, Charleston, WV.
- IQC for A/E Services: Repairs and Alterations and Small Standard Building Design/Medium Standard Building Design, Baltimore and Capital Districts, USPS, Eastern Facilities Service Office, Greensboro, NC.
- Floris Elementary School Renovation and Addition, Fairfax County Public Schools, Herndon, VA.

Robert G Cramer, PE
Structural Engineer

Education:

BS/Civil Engineering/Pennsylvania State University

MBA/Business Administration/Pennsylvania State University - The Capital College

Registrations:

Professional Engineer

Years' Experience:

Total: 19

Professional Affiliations:

American Society of Civil Engineers

American Institute of Steel Construction

Mr. Cramer has 19 years of experience in structural engineering design and project management for municipal, industrial, and institutional facilities. He has extensive experience on design-build projects both as a design engineer and project manager.

- Structural Investigation and Analysis of Nineteen Schools, Anne Arundel County Public Schools, Annapolis, MD.
- Sprinkler and Fire Alarm Systems Replacement, Building 87, Defense Distribution Depot, Susquehanna, New Cumberland, PA.
- Technical Specifications for Task Order Contract Documents, Defense Distribution Depot, Susquehanna, New Cumberland, PA.
- Middle School Architectural/Engineering Services, Downingtown Area School District, Uwchlan Township, Chester County, PA.
- Elkins Maintenance Facility, WVDOT, Randolph County, WV.
- Structural Reinforcement Design for Seven Schools, Anne Arundel County Public Schools, Annapolis, MD.
- Open-end A/E Consulting and Design Contract, USPFO for PA, Fort Indiantown Gap, Annville, PA.
- Central Chilled Water Plant Replacement, Building 1, Tobyhanna Army Depot, PA.
- Trexler Nature Preserve "Green" Environmental Center, Lehigh County, Allentown, PA.
- Building 22 Adaptive Study and Renovation, US Army Corps of Engineers, Tobyhanna Army Depot, PA.
- IQC for A/E Services: Repairs and Alterations and Small Standard Building Design/Medium Standard Building Design, Baltimore and Capital Districts, USPS, Eastern Facilities Service Office, Greensboro, NC.
- Mail Equipment Shop Renovations, US Postal Service, Washington, DC.
- American Automobile Association (AAA) Office Expansion and Renovation, State College, PA.
- Building 10 (Bay C) Renovation, Odyssey International/Tobyhanna Army Depot, PA.
- Architectural Services for Hardin County Schools, Savannah, TN.
- Gasoline Laboratory Renovations, HVAC Replacement, Fire Sprinkler Modifications, Building 85, Defense Distribution Susquehanna, PA.

Randy D Deardorff, PG

Hazardous Materials

Education:

BS/ Geosciences/ Pennsylvania State University

Coursework/ Groundwater Pollution/ Hydrology/ Princeton University

MBA/ Business Administration/ York College

Registrations:

Professional Geologist

Years' Experience:

Total: 27

Mr. Deardorff is responsible for management and technical support for geologic, hydrogeologic, and environmental remediation projects. His experience includes geology, hydrogeology, permitting, transportation - environmental, subsurface investigations, Preliminary Environmental Site Assessments, Brownfield/Act 2 closures and investigations, facility management and administration, and project management.

- Master Planning and Design of Municipal Complex, Spring Garden Township, York, PA.
- 1-T Contract for Architectural and Engineering Services, The Pennsylvania State University, State College, PA.
- Scranton High School Geotechnical Investigation, Scranton, PA.
- Preliminary Site Assessments for Proposed Emergency Storm Shelters, Pearl River County, MS.
- Blue Band Facility Geotechnical Investigation, The Pennsylvania State University, State College, PA.
- Architect of Record and Design of New Middle School, West York Area School District, PA.
- High School Renovations and Addition, West York Area School District, PA.
- PA Department of General Services, Fish Passageway at Flat Rock Dam, Schuylkill River, Lower Merion Twp., PA.
- Monongalia County Courthouse Addition and Intermodal Parking Facility, Morgantown, WV.
- Third Avenue Streetscapes and Interior Renovation of Train Station Building, City of Coatesville, PA.
- Bucknell University, Campus Theatre Environmental Site Assessment, Lewisburg, PA.
- Bucknell University Phase I Environmental Site Assessment, Lewisburg, PA.
- McFaul Youth and Senior Center, Bel Air, MD.
- Architectural and Engineering Consulting Services, Dauphin County Commissioners, Harrisburg, PA.
- Preconstruction CM Services for Kovalchick Convention and Athletic Complex, PA DGS/Indiana University of PA, Indiana, PA.
- High School Additions and Renovations, Dover Area School District, PA.

Vincent Wayne, PE
Site/Civil Engineer

Education:

BS/Civil Engineering/Pennsylvania State University

AS/Architectural Engineering Technology/Pennsylvania State University

Registrations:

Professional Engineer

Years' Experience:

Total: 25

Professional Affiliations:

American Society of Civil Engineers

Mr. Wayne has more than 25 years of experience in the field of land development. He is responsible for managing projects as well as coordinating design teams. His abilities encompass all phases of land development, from conceptual design and final plan through production of construction documents. Mr. Wayne's experience includes residential, commercial, and educational site designs. His site planning experience includes designs for stormwater management, grading plans, erosion and sedimentation control plans, and site layouts.

- Site and Civil Engineering Services for New Intermediate School, Dallastown Area School District, PA.
- High School Additions and Renovations, Dover Area School District, PA.
- Campus Recreation Center, Kutztown University, Kutztown, PA.
- Kutztown University Land Development Plans for Two Parking Lots, Kutztown, PA.
- University Place Parking Lot Construction Plans and Lighting Design, Kutztown University, Kutztown, PA.
- Kutztown University Student Union Building North Addition Civil Design, PA.
- Mission Support Training Facility Design, USPFO for PA/ Ft. Indiantown Gap, Annville, PA.
- Main Capitol Building, North Wing Basement Fit-Out, Pennsylvania State Senate, Harrisburg, PA.
- New Student Apartments, Bloomsburg University/PA State System of Higher Education, Bloomsburg, PA.
- Monty's Deli Expansion, Bloomsburg University/PA State System of Higher Education, Bloomsburg, PA.
- Open-End Contract for Professional Design Services, Millersville University/PA State System of Higher Education, Millersville, PA.
- Open-end A/E Consulting and Design Contract, USPFO for PA, Fort Indiantown Gap, Annville, PA.
- Indefinite Quantity A/E Contract, U.S. Army Corps of Engineers, Tobyhanna Army Depot, PA.
- Trexler Nature Preserve "Green" Environmental Center, Lehigh County, Allentown, PA.
- Valley View Elementary School Storm Sewer Improvements, York Suburban School District, York, PA.

George J Crittenden
Site/Civil Engineer

Education:

Coursework/Tennessee State University

Coursework/Kentucky State University

Registrations:

National Institute for Certification in Engineering Technologies (NICET)

Years' Experience:

Total: 32

Mr. Crittenden has 32 years of experience in providing design, technical services, and surveying for residential subdivisions, airports, highways, and mine land reclamation projects.

Mr. Crittenden's relevant experience includes the following projects:

- WVDOT, I-81 Tabler Station Interchange, Martinsburg, WV.
- WVDOT, Corridor H, Section 4, Final Design, Grant County, WV.
- I-79/FBI Access Road Interchange, Harrison County, WV.
- I-77 Welcome Center, Wood County, WV.
- West Virginia Statewide Traffic Improvements Projects.
- TCP Commercial Development Project, Ritchie County, WV.
- Rock Wilson Residential Development, Ritchie County, WV.
- Glen Fork/Sabine Area Phase II Abandoned Mine Lands Water Feasibility Study and Water Line Extension, Wyoming County, WV.
- Marrowbone Water Line Extension, Mingo County, WV.
- Ragland-Delbarton Water Supply Extension, Mingo County, WV.
- City of Williamson Water Line Extension, Mingo County, WV.
- WVDOT - SR 19 (Merrick Creek Connector) Interchange - Sanitary Sewer Design, Cabell County, WV.
- CR 42 Over Davis Creek - Sanitary Sewer Relocations, Cabell County, WV.
- Phase I Wastewater System Improvements, Logan County Public Service District, WV.
- Town of Hamlin - Storm Sewer System Improvements Preliminary Study and Report, Lincoln County, WV.
- City of Hamlin - Belcher Avenue Sidewalk Improvement Project, Lincoln County, WV.
- First Commonwealth Bank Streetscape Improvements, Prestonsburg, KY.

Eugene G Williams, PLS, CDT, MAI
Cost Estimating/Specifications

Education:

Coursework/Civil Engineering
Technology/Pennsylvania State
University

Registrations:

Professional Land Surveyor

CDT/1992

MAI/2006

ASPE/1999

Years' Experience:

Total: 43

Professional Affiliations:

American Society of Professional
Estimators

As Assistant Director of Specifications/Estimating Division, Mr. Williams directs and supervises the work of Specification Writers and Typists and prepares construction cost opinions relating to a variety of engineering projects. He is experienced in preparing both technical and non-technical project specifications and cost estimates from preliminary through final design phases. His experience includes generating architectural and engineering specifications as well as preparing front end documents using AIA, EJCDC, and our own documents. Mr. Williams has also developed architectural and engineering cost estimates for numerous projects to ensure that projects remain within budget.

- Building 1A Mezzanine HVAC, Tobyhanna Army Depot, Tobyhanna, PA.
- Bohemia Manor Middle School/High School Renovation and Addition, Cecil County Board of Education, MD.
- Design of New Clear Run Elementary Center, Pocono Mountain School District, Swiftwater, PA.
- Design of New Clear Run Intermediate School, Pocono Mountain School District, Swiftwater, PA.
- Devers Elementary School Addition and Renovations, School District of the City of York, PA.
- High School Additions and Renovations, Dover Area School District, PA.
- Design of New Elementary School, East Stroudsburg Area School District, PA.
- Floris Elementary School Renovation and Addition, Fairfax County Public Schools, Herndon, VA.
- Buildings 79, 81, and 2001 Fire Sprinkler Modernization, Defense Distribution Depot, Susquehanna, New Cumberland, PA.
- Kanawha County Judicial Annex Renovations, Charleston, WV.
- McGuire Air Force Base Hot Water System, McGuire AFB, NJ.
- Boiler, Chiller, and Piping Replacements in Wastewater Treatment Plant Buildings, Metropolitan Water Services, Nashville, TN.
- Carl Sandburg Middle School Addition and Renovations, Neshaminy School District, Levittown, PA.
- Building 11/1A Tunnel Renovation, Tobyhanna Army Depot, PA.
- Renovations of Four Elementary Schools, West York Area School District, PA.

Primary MEP Contact: Todd Zachwieja, Principal, mobile phone (304) 545-4550

Secondary MEP Contact: Ted T. Zachwieja, Principal, mobile phone (304) 552-5724

ZDS was formed to provide quality engineering and consulting services specializing in:

- Design of mechanical systems and electrical systems.
- Building indoor air quality survey and analysis.
- Energy management and conservation services.
- Commissioning for new and renovated systems in commercial, educational, industrial and health care facilities.

ZDS approaches engineered systems improvements from the building owner operator's perspective, focusing on practicality, cost effectiveness, energy efficiency, reliability, operability, maintainability of the systems and timely implementation of projects to minimize disruption on existing facilities. We concentrate on optimizing and utilizing the existing systems prior to recommending the purchase of new equipment when upgrading a facility. Actual requirements of existing systems are analyzed and considered in addition to the "design" requirements. Our staff listens to their clients needs through their extensive interaction with the facility operators and the key decision-makers. We believe this approach enhances the design of new systems and ensures that the systems will be practical and functional.

ZDS is a team of professionals capable of meeting a diverse range of needs of facility professionals in the building design, construction and operations. The principals each have specialties in certain aspects that relate to meeting the needs of the building owners and operators. Mr. Ted T. Zachwieja's over 40 years of experience in mechanical and electrical design bring the depth of skills necessary to make the construction and design process operate effectively. Mr. Todd A. Zachwieja's project management skills with his extensive technical strengths in mechanical/electrical engineering and experience in indoor air quality, energy management and commissioning complement the traditional design needs. Mr. Daniel H. Kim's extensive management experience with some of the nation's largest companies provides us with important conceptual planning and organizational understanding. Ms. Lori Zachwieja's accounting and financial management skills provide the in house experience to operate an efficient and effective company to better serve our clients.

ZDS's continues to grow and is in the process of opening a Morgantown Office with a Professional Engineer heading that office. Our current project team includes the following to meet the challenges of our client's building design and operating needs.

TODD (TED) A. ZACHWIEJA, PE, C.E.M., LEED AP**Chief Executive Officer****Principal-in-Charge, M/E/P Design Project Manager**

- Education** Bachelor of Science in Mechanical Engineering from West Virginia Institute of Technology in 1982.
Masters of Science in Engineering Management from the University of West Virginia College of Graduate Studies in 1989.
- Registrations** Professional Engineer (PE), West Virginia, No. 10,127
Certified Energy Manager (C.E.M.), National Certification
LEED® Accredited Professional, National Certification through USGBC
PE - Georgia, No. 18253, PE - Kentucky, No. PE-17961
PE - North Carolina, No. PE-017445, PE - Ohio, No. E-53587
PE - Pennsylvania, No. PE-040929-R, PE - South Carolina, No. 25985
Professional Engineer, Virginia, No. 0402 025427
- Qualifications** Todd has more than 28 years of experience; in the design, construction management, and specifications for mechanical engineering, heating, ventilating, air conditioning, plumbing, electrical, and lighting; indoor air quality analysis and building system commissioning for educational, commercial, industrial and health care facilities. His specialties include mechanical engineering, HVAC systems master planning, conceptual design, energy conservation program development, commissioning and IAQ analysis relating to HVAC systems. He has extensive experience in industrial, commercial facilities, hospitals and educational design including preparation of construction documents for millions in renovations and additions to facilities. Some of his project experience includes projects new Mercer County Courthouse, Princeton, WV, Kanawha County Commission – 120,000 sf additions/renovations for the Judicial Annex/Kanawha County Courthouse Charleston WV, Laidley Towers – Charleston WV, Renovations to Buildings #1, #3, #4, #5, #5, #7, #8, #9, #10 at the WV State Capitol complex, Cultural Center HVAC Renovation, Union Carbide, United Center - Charleston WV, Phillip Morris USA, Rhone-Poulenc, Toyota, Olin Corporation, Walker Machinery, WV Air & Army National Guard, Bank One, WV; Kohl's, Sears, WV Public Service Commission Headquarters, and Yeager Airport. He also designed one of the largest geothermal heat pump applications in the mid Atlantic region, commissioned HVAC systems and mechanical engineering at many General Motors facilities in North America.
- Some of his health care experience includes millions in renovation and new construction design for Charleston Area Medical Center including commissioning of Charleston Area Medical Center's \$41 million Surgery Replacement center and many projects at General Division, Memorial Division, and Women & Children's Hospital. Other health care experience includes Bluefield Regional Medical Center, Hopemont Hospital, Monongalia General Hospital, Montgomery General Hospital, United Hospital Center, St. Mary's Hospital, Summersville Memorial Hospital, Thomas Memorial Hospital, Webster Memorial Hospital, Cabell Huntington Hospital, Welch Emergency Hospital, Surgicare Center, VA

Hospital - Clarksburg, Mercy Medical Center, Wayne Memorial and Webster Memorial Hospital.

He also has experience in providing M/E design for the following College and Universities including: Alderson Broadus College, Bluefield State College, Concord University, Fairmont State College, Marshall University, Ohio University's Athens & Chillicothe campuses, Southern WV Community & Technical College, University of California-Davis, University of Charleston, Washington & Lee University, WV Wesleyan College, and West Virginia University. He was recognized nationally for his work with Ohio University in development of a performance contracting program that is anticipated to save \$2.5 million annually in energy and operating costs.

He also has experience in providing M/E/P design for the following schools: Clay, Grant, Greenbrier, Hardy, Harrison, Jackson, Kanawha, Logan, Marion, McDowell, Mercer, Mingo, Monroe, Ohio, Pocahontas, Putnam, Raleigh, Randolph, Ritchie, Summers, Taylor, Tucker, Upshur, Webster, and Wyoming County Schools. Some of his project experience includes the development and design of a pilot geothermal heat pump HVAC with variable speed pumping system at Webster County High School which reduced electric bills by more than 40% while meeting IAQ requirements.

Prior to joining ZDS, Todd Zachwieja coordinated millions in comprehensive energy conservation programs resulting in annual energy saving millions per year and managed a profitable regional office for one of the countries largest energy service companies. He also developed computer programs for building energy analysis and monitoring and presented technical papers at regional and national conferences.

Professional Affiliations

Charter member Mountaineer chapter of American Society of Heating Refrigeration and Air conditioning Engineers (ASHRAE)
Served as ASHRAE's Energy and Technical Affairs Chairman for 6 years.
Recognized by the International Who's Who of Professionals.
Recognized nationally as West Virginia's Business Man of the Year
Recognized nationally in 2008 as a "Legacy Legend in Energy"
Charter life member of the Association of Energy Engineers
Professional Affiliate Member of the American Institute of Architecture
Member of the American Association of Hospital Engineers
Member of the National Society of Professional Engineers
Member of National Society of Plumbing Engineers
Member of the International Code Council
Contributing editor and served on the Editorial Review Panel for "The Handbook of Building Management and Indoor Air Quality", "Ventilation for a Quality Dining Experience", INvironment Professional, Power Prescriptions and other publications and articles dealing with Indoor Air Quality (IAQ) and MEP engineering systems.
Presented at regional and national conferences including the National System Commissioning Conference

TED T. ZACHWIEJA**Principal-in-Charge Construction Administration****Education**

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

Qualifications

Ted's responsibilities include over 40 years of experience in mechanical and electrical systems design and construction administration. 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. He is also a Codes and Standards Specialist.

He has been involved in West Virginia since 1958 in all aspects of mechanical and electrical design and construction, including machine design, structural design and design of heating, ventilating, air conditioning, plumbing, fire protection and electrical systems. His experience includes work for U. S. Steel, Union Carbide, Rhone-Poulenc, Bluefield Regional Medical Center, Charleston Area Medical Center, United Hospital Center, Kanawha County Schools, Marshall University, most buildings on the West Virginia Capitol Complex, West Virginia Institute of Technology, West Virginia University, Bank One and many others in the private sector.

Ted's Design regarding Chase Towers, Charleston, formerly Charleston National Bank, including conducting a comprehensive energy audit, design of a Building Automation Energy Management System, HVAC renovations of floors LM and LM1, design of flat plate heat exchanger system for the perimeter fan coil units and design of the boiler replacement.

Ted has been involved in the planning, design and construction administration of Concord University's Technology Center and Concord's campus medium voltage upgrades, Marshall University's Harris Hall renovations, Southern WV Community & Technical College's renovations, West Virginia University's White Hall and Armstrong Hall, WVU's Wise Library Sprinkler System, WVU's Chilled Water Loop Interconnect, Morgantown, WV; Charleston Area Medical Center (CAMC), Memorial Division Chiller Replacement; CAMC's General Division Chiller Replacement, Variable Pumping System and Chillers Interconnect, Charleston, WV; and many others. He has worked on new and renovation projects such as West Virginia University Stadium and Forestry Building, Morgantown, WV; Addition and Renovation of the Air Conditioning System for the West Virginia State Capitol Building, Charleston, WV; Conley Hall and Science Building HVAC Renovations and Additions, West Virginia Institute of Technology, Montgomery, WV; Indoor air quality (IAQ) and HVAC Renovations of Andrew Jackson Junior High School for Kanawha County School Systems; Fume Hood

Design and HVAC Additions and Renovations for Union Carbide, Charleston, WV; and Rhone Poulenc, Institute, WV; HVAC renovation for the Benedum Student Center at West Virginia Wesleyan College, Buchannon, WV; Greenbrier East and Greenbrier West Schools; Mingo County Schools; Raleigh County Schools including Shady Springs Middle School, Trap Hill Junior High School, Academy of Career and Technology Center, Marsh Fork Elementary, Park Middle School, Woodrow Wilson High School and others, Pocahontas County High School (Geothermal), Wyoming County Schools; Tucker County Schools; Webster County High School & Webster Springs Elementary School HVAC Renovations (Geothermal) and Exterior Renovations, and various other secondary schools throughout the years.

Ted was involved with the mechanical and electrical renovations for the State of West Virginia Library Commission Cultural Center as part of a total \$4.5 million HVAC and Electrical Renovations, Charleston, WV. The indoor air quality, temperature and humidity each were not in accordance with good design practices for this type of structure. ZDS was commissioned to correct these deficiencies while conserving energy.

Ted was selected as one of three engineers to train and teach a course designed by the Department of Energy and American Society of Heating, Refrigeration and Air Conditioning Engineers for emergency building temperature restrictions.

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 eastern United States. Some of his health care experience includes millions in renovation and new construction design for Charleston Area Medical Center's Special Care Facility. Other local health care experience includes Bluefield Regional Medical Center, Hopemont Hospital, Monongalia General Hospital, Montgomery General Hospital, United Hospital Center, St. Mary's Hospital, Summersville Memorial Hospital, Thomas Memorial Hospital, Webster Memorial Hospital, Cabell Huntington Hospital, Welch Emergency Hospital, Surgicare Center, VA Hospital - Clarksburg, Mercy Medical Center, and Webster Memorial Hospital

**Professional
Affiliations**

Construction Specifications Institute (Charter Member)
American Society of Mechanical Engineers
American Society of Heating, Refrigeration & Air Conditioning Engineers
WV Mountaineer Chapter ASHRAE Past President and Charter Member
Association of Energy Engineers
Association of Hospital Engineers
WV Society of Hospital Engineers
Professional Affiliate Member of AIA
WV Association of Physical Plant Administrators

DANIEL H. KIM, PH.D.

Principal - Management Services

Education Ph.D. in Management from Massachusetts Institute of Technology Sloan School of Management in 1993
Bachelor of Science in Electrical Engineering from Massachusetts Institute of Technology in 1987

Qualifications Daniel brings with him a strong design and management experience with over 26 years of experience in consulting ranging from traditional electrical and mechanical systems design to being one of the nations leading experts in organizational issues including Total Quality Management and Systems Thinking.

His specialties include the management and design of HVAC systems for new building construction in the \$50 - 150 million range including the One Hundred and Fifty, Federal Streets, Boston, MA; the Becton Dickinson World Headquarters, NJ; Marketplace Center, Boston, MA.

Daniel has been an organizational consultant and public speaker who are committed to helping problem-solving organizations transforming into learning organizations. He has worked with numerous companies including DuPont, Ford Motor, Harley Davidson, Hanover Insurance, Healthcare Forum, CIGNA, Life Technologies, Ameritech Services, Brigham & Women's Hospital and General Electric among others.

Publications "Learning Laboratories: Designing Reflective Learning Environments," *Proceedings of 1989 International System Dynamics Conference*, Stuttgart.
"Experimentation in Learning Organizations: A Management Flight Simulator Approach," *European Journal of Operations Research*, May 1992.
"Systems Archetypes: Diagnosing Systemic Issues and Designing High-Leverage Interventions" 1992, Cambridge, MA: Pegasus Communications.
"Toward Learning Organizations: Integrating TQC and Systems Thinking," *Special Report Series*, Cambridge, MA: Pegasus Communications.
"The Leader with the "Beginner's Mind," *Healthcare Forum Journal*, July/August 1993.

Lectures Keynote speaker and/or concurrent session at several conferences, including those hosted by The Planning Forum, The Healthcare Forum, Institute for Healthcare Improvement, The Conference Board. Speaker at Hofstra University, Monmouth College, University of Houston, and U.C. Berkeley.

LORI L. ZACHWIEJA, CPA

Principal - Chief Financial Officer

- Education** Bachelor of Science in Accounting, Bachelor of Science in Business Management and a Bachelor of Science in Computer Management; all three degrees were with Honors, West Virginia Institute of Technology in 1983.
Master's Degree at Marshall University
- Registrations** Certified Public Accounting in 1988, No. 2542
Member of West Virginia Society of CPA's since 1985
Certificate Number 1949
- Qualifications** Lori has over 25 years experience in finance, business, and accounting including being a Partner in a consulting firm, a Senior Financial and Tax Analyst for the Corporate Financial Services and Small Systems Support Department at Blue Cross and Blue Shield of West Virginia, Inc. and Staff Accountant for Simpson and Osborne, a CPA firm located in Charleston WV. Lori also has worked with an architectural firm located in Charleston, WV.

SHERRY Z. POWELL

Office Manager - Specification Coordinator

- Education** Bachelor of Art Degree. Education Major WV state licensed K-12 with Minor in Psychology through Marshall University, Huntington, WV 1992. Order of Omega honorary member. National AE Association. Marshall University Dean's List.
- Qualifications** Sherry is the ZDS Specifications Coordinator. She has over 10 years experience working with various state contracts with 3 years specifically in Engineering Design contracts. She has also provided assistance with AIA contracts and job specific Construction Administration documents. She coordinates day to day operational office management activities and has 12 years experience with various office settings. She has a diverse background through previous volunteer and charity work activities. She has served as co-coordinator and officer for numerous local groups and charitable organizations.

MARK A. MOORE, P.E.**Project Manager: Electrical, Mechanical & Plumbing**

Education BS in Electrical Engineering from West Virginia University Institute of Technology, Montgomery, WV in 2001

Registration Professional Engineer, West Virginia, No. 17286

Qualifications Mark has more than 9 years of experience in electrical engineering, lighting, plumbing, technology, mechanical engineering, heating, ventilating, air conditioning, for educational, commercial and health care facilities. He researches and applies, International Building Codes, NFPA, Illuminating Engineers Society standards and National Electric Code in design. Mark has a strong background in microprocessor and microcomputer design. He is also responsible for Information Technology functions for ZDS and our customers.

Mark is also an information systems and technology specialist and provides networking solutions and Windows based programming system solutions.

Mark specializes in electrical power, security, fire alarm, lighting, plumbing, HVAC piping, and fire protection. Some of his educational and health care project experience includes: Charleston Area Medical Center, Bluefield High school renovations/Performing Art Center, Clay Elementary School HVAC Renovations, Concord University Technology Center, Elkins Middle School Renovations, H. J. Keiser Elem renovations, Hopemont State Hospital Fire Alarm renovations, James Monroe High School renovations, Ohio University Bennett Hall M/E Renovations, Park Middle School renovations, Ravenswood High Renovations, Ritchie Middle/High School renovations, Tucker County High/Career Center renovations, Webster Springs Elementary School geothermal heap pump system, Winfield High School HVAC/Electrical renovations, Pocahontas Co High School Renovations/science center additions, new McDowell County Southside K-8 school, Woodrow Wilson High School HVAC/Electrical renovations, United Hospital Center Wound Center and others.

His commercial experience includes; Cass Railroad Clubhouse renovations, DOT Rest Area and Welcome Center prototypes for the WV Department of Transportation, 4-H Camp Muffly Training/Dining facility, Hardy Co. Daycare facility, Jackson County Courthouse Annex renovations, Kanawha County Judicial Annex Renovations, Mason County Courthouse renovations, new Mercer County Courthouse Annex, multiple branch bank facilities, Camp Dawson Barracks security renovations, award winning Webster County IMC office facilities, Pendleton County Courthouse additions/renovations, new Webster Co. Multi-tenant Bldg., WV Capitol Complex Performance Contracting HVAC retrofits, WV Capitol Complex Master Planning for Security/Fire Alarm/Life Safety systems and others.

DAVID G. DIAL, P.E.**Senior MEP Engineer**

Education Bachelor of Science Mechanical Engineering, WV University, 1978
Masters of Science Environmental Engineering, WV University, 1980

Registration Professional Engineer, West Virginia, No. 11692

Qualifications David has over 28 years of experience in the design and commissioning of Mechanical and Electrical systems. He provides HVAC, electrical and plumbing design services for a variety of clients in WV. His background also includes managing operating and maintenance repair and construction services for HVAC, plumbing, electric, and maintenance. David has managed grounds maintenance, security staff, information technology, IT NASA network, video surveillance and telephone systems. These areas provide inherent coordination expertise.

David has experience in Maintenance Engineering in plumbing, HVAC, clean room design, dust collector selections, steam and condensate flow measurement, transfer of steam production from in-house to private contractor, athletic field lighting design, farm pump water design, and even completed a successful energy grant application from the US Department of Energy.

Environmental Design experience includes PCB remediation, Air Pollution Control Commission annual reporting, removal of underground fuel storage tanks/pumps, installation & testing for radioactive material, conversion of a fleet of vehicles to operated dual fuel (gasoline and natural gas) including training, designing a filling station, custom built compressor station, cylinder operations area, filling post and monitoring of natural gas usage.

He has been involved in the design, document development, contract administration and recommissioning of the structural, mechanical, and electrical for several WVU projects including: Downtown Steam Tunnel Assessment, Coliseum Tunnel Redesign, Towers exercise room, Brooks Clean Room, lighting retrofits at Brooks Hall, exterior lighting for Mountainlair Parking Garage, cooling towers replacement at the Chem Annex, replacement of electric hot water boilers with natural gas pulse steam boilers, HVAC controls for Allen Hall, measure flow for sub metering/billing for campus steam/condensate systems, PCB removal from electrical equipment on campus, and power/cooling for a data Center at the WVU/NASA facility.

Other project experience includes design Fire Alarm upgrades for gym at WV School for the Deaf and Blind, Trinity High School's HVAC, plumbing and electric system, industrial dust collector system for the Percival Dust Collector, replacement of rigging of a 2500 seat Auditorium. As a production engineer, David optimized design of medical quality cryogenic freezers, incubator and shaker including scheduling the freight trucks, quality assurance of sheet metal shipments, writing repair manuals and set up insulation.

JAMES W. LOWRY, E. I. T.**HVAC, Plumbing & Fire Protection Designer**

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

Registration EIT West Virginia # 8376
West Virginia State Board of Registration for Professional Engineers

Qualifications James has completed extensive HVAC design training at Carrier Training Center, Syracuse, NY and hydronic design/applications at the B&G training center, Chicago, IL. He also had special courses in: Finite Element Analysis, Vibration Analysis, Fluid Power, Automatic Controls, Industrial Instrumentation, and Programmable Logic Controllers (PLCs).

James experience includes the design for mechanical engineering, heating, ventilating, air conditioning, plumbing, electrical, and lighting for educational and commercial facilities. He specializes in HVAC, Fire Protection and Plumbing design. He researches and applies International Building Codes, NFPA, ASHRAE standards and the AIA Guidelines for Design and Construction of Health Care Facilities in design.

His commercial experience includes VA Huntington Steam Piping Upgrades, Cass Railroad Clubhouse renovations, DOT Rest Area prototype, DOT Welcome Center prototype, 4-H Camp Muffly Training/Dining facility, Kanawha County Judicial Annex renovations, Jackson County Courthouse Annex renovations, Mason County Courthouse renovations, Pendleton County Courthouse additions/renovations, Pt. Pleasant River Museum Addition, Hardy Co. Daycare Center, multiple branch bank facilities, Webster Co. Multi-tenant build-out, WV Capitol Complex Performance Contracting HVAC retrofits & Master Planning for Security/Fire Alarm/Life Safety systems and others.

Some of his educational project experience includes: Concord University Technology Center, Elkins Middle School Renovations, James Monroe High School HVAC renovations, Man/Central Elementary Addition, Park Middle School HVAC renovations, Ritchie County Middle/High School HVAC/Plumbing Renovations, Tucker County High/Career Center HVAC renovations, new McDowell County Southside K-8 School, and Woodrow Wilson High School HVAC/Electrical renovations.

Professional Affiliations American Society of Mechanical Engineers

JAMES E. WATTERS**Project Manager****Qualifications**

Jim has over 35 years experience in design and implementation of HVAC, plumbing and electrical systems including 9 years in the construction industry. He has a comprehensive knowledge of construction documents, contracts, and development of cost estimates, budgets & schedules. 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 design and production of mechanical and electrical drawings including HVAC, plumbing, fire protection, lighting, electrical power and specialized systems. He has worked with and managed engineers in projects for health care, educational and commercial buildings in the states of West Virginia, Ohio, Kentucky, Virginia, Georgia, New York, Arizona, Illinois and Massachusetts. He has extensive experience in energy savings' programs for HVAC, plumbing and electrical systems in hospitals, state & government office buildings, school systems, and manufacturing facilities as well as managing performance contracts for the state of Georgia totaling \$10,000,000 in construction costs on various projects.

Some of Jim's HVAC, plumbing, fire protection and electrical project experience includes: Eleanor Maintenance Facility for the WV Department of Military Affairs and Public Safety in Eleanor WV; Kings Daughters Medical Center in Ashland KY (multiple projects exceeding \$12,000,000 in construction costs); Charleston Area Medical Center in Charleston, WV; St. Mary's Medical Center in Huntington WV; Paul Blazer High School in Ashland KY; Marshall University Student Housing in Huntington, WV; Pleasant Hill Elementary plumbing renovations in Calhoun County WV; Boyd County Judicial Center in Boyd County, KY; Ritchie County Middle/High School; Elkins Middle School HVAC and electrical renovations; WV DOT Burnsville Rest Area and domestic water pumping station; Tucker County Board Office Boiler Retrofit; Kanawha County Commission Judicial Annex Renovations, new Jaeger/Panther Elementary School, and West Virginia Division of Culture and History Fire Alarm/Sprinkler upgrades.

Through the years Jim has researched and implemented into practice International Building Codes, National Electrical Codes (includes NFPA), Life Safety Codes, IES standards, AIA Guidelines for Design and Construction, and the evolving ADA standards and guidelines.

Building Evaluation Study and Database, Tobyhanna Army Depot Tobyhanna, Pennsylvania

Client:
US Army Corps of Engineers



Buchart Horn, Inc. performed a visual facility evaluation and developed a prototype tool so the Depot's Department of Public Works (DPW) could more effectively identify and correct facility deficiencies, thus enhancing real property maintenance management. Three facilities were identified for the prototype facility evaluation.

These three buildings were selected as typical depot facilities comprising shop, warehouse, and administrative areas. The inspection covered the architectural, structural, mechanical, and electrical disciplines. Additionally, an analysis for compliance with the American Disabilities Act (ADA) was performed. The inspection identified both code deficiencies and maintenance deficiencies under each discipline. Cost estimates to correct each deficiency were prepared.

Upon completion of the inspections, facility, deficiency, and cost data were entered into a computer database capable of sorting the data under a variety of groupings including discipline, work category, door, window and/or priority. This tool allows Tobyhanna to not only review deficiencies but also program, repair, and maintenance projects.

Subsequent to reviewing and using the prototype building evaluation study and database, a second delivery order was issued for Buchart Horn to inspect, report on, and expand the database to cover the remaining 44 operation facilities on the Depot. The database tool has been expanded to provide area square footage, UBC, and cost code data to facilitate real property reporting. Our inspections and database population including approximately 40,000 entries covering over 4.3 million square feet under roof.

Under a separate delivery order, we updated and expanded this study to include deficiency identification for eight additional facilities, for which we obtained inventory information on automatic doors, stairs, ramps, and HVAC units.

Tobyhanna Army Depot Building Evaluation Study

Tobyhanna, Pennsylvania

Client:

US Army Corps of Engineers



Tobyhanna Army Depot (TYAD) required an update and expansion of the Building Evaluation Study previously prepared by Buchart Horn in 1999. Some buildings which were not included in the previously prepared study were added to the list of buildings for inclusion in the new Building Evaluation Study.

The new study surveyed and documented deficiencies and recommended corrective measures for facilities amounting to 4,352,000 square feet under roof. The Depot is composed of administrative facilities, storage support, vehicle maintenance, electronic shops, training centers, installation hazardous storage, fire and rescue facilities, etc.

Upon completion of the inspections, facility data and deficiency data were entered into a project-specific computer database capable of sorting data in a number of ways, including discipline, work category, door, window, mechanical and electrical features, and/or priority. The written building report included:

- A brief description of the facility under the various disciplines (architectural, mechanical, electrical, structural and compliance with the American Disabilities Act);
- Discussion of all high priority issues and clarification of deficiencies that could not be described in the space allotted within the database;
- A printout of the database deficiencies listed by room number was also provided for each building.

A separate document that contained all of the building sketches was also prepared.

Boiler Plant Renovation, Allentown State Hospital *Allentown, Pennsylvania*

Client:
PA DGS

Buchart Horn provided engineering services to renovate the coal-fired boiler plant at the Allentown State Hospital. Tasks included:

- Replacement of drive units (motor and gearbox) on existing traveling grate stoker
- Replacement of the combustion control system with new and more energy efficient PLC systems
- Addition of waterside and combustion side system monitoring with remote monitors and recording
- Addition of radio remote water level monitoring and alarm for off-site water storage tank.
- The outdated stoker motor and drive units will be replaced as funding permits.

The existing installation is meeting the DER emissions standards for low Nitrogen Oxide (NOX). The new controls will not directly change performance of the emissions, but are expected to improve emissions and plant efficiency. The hospital's coal-fired boilers, installed in 1965, provide steam generation for the entire facility. The steam serves building heat, domestic hot water, and cooking kettle. The facility includes 28 buildings and maintains 153,893 square feet of heated space. Both patients and staff occupy some buildings, while only day staff personnel occupy other buildings. There are approximately 600 patients and staff personnel.

Yeager Airport, Transportation Security Administration Offices Charleston, West Virginia

Client:
Central WV Regional Airport
Authority



Buchart Horn was commissioned by the Central West Virginia Airport Authority to design secure administrative offices for the Transportation Security Administration (TSA), a division of the U.S. Department of Homeland Security. The Administration is responsible for airport baggage screening. The offices serve as management offices for the screeners at Yeager Airport, and also as the statewide center for TSA's airport security operations.

With an ideal location atop the existing 1950s-era concrete terminal building, the new offices have direct secure access via a new secure elevator. Determining the new location required extensive analysis of the existing structure and sophisticated design to allow the original building to carry the additional load of another floor.

An innovative solution was developed by Buchart Horn to add space on the existing rooftop of the 1940's terminal building. This created much needed office space (4,500 s.f.) immediately adjacent to the airports executive offices, a requirement of the TSA, to allow close coordination of security, paramount in the event of emergencies.

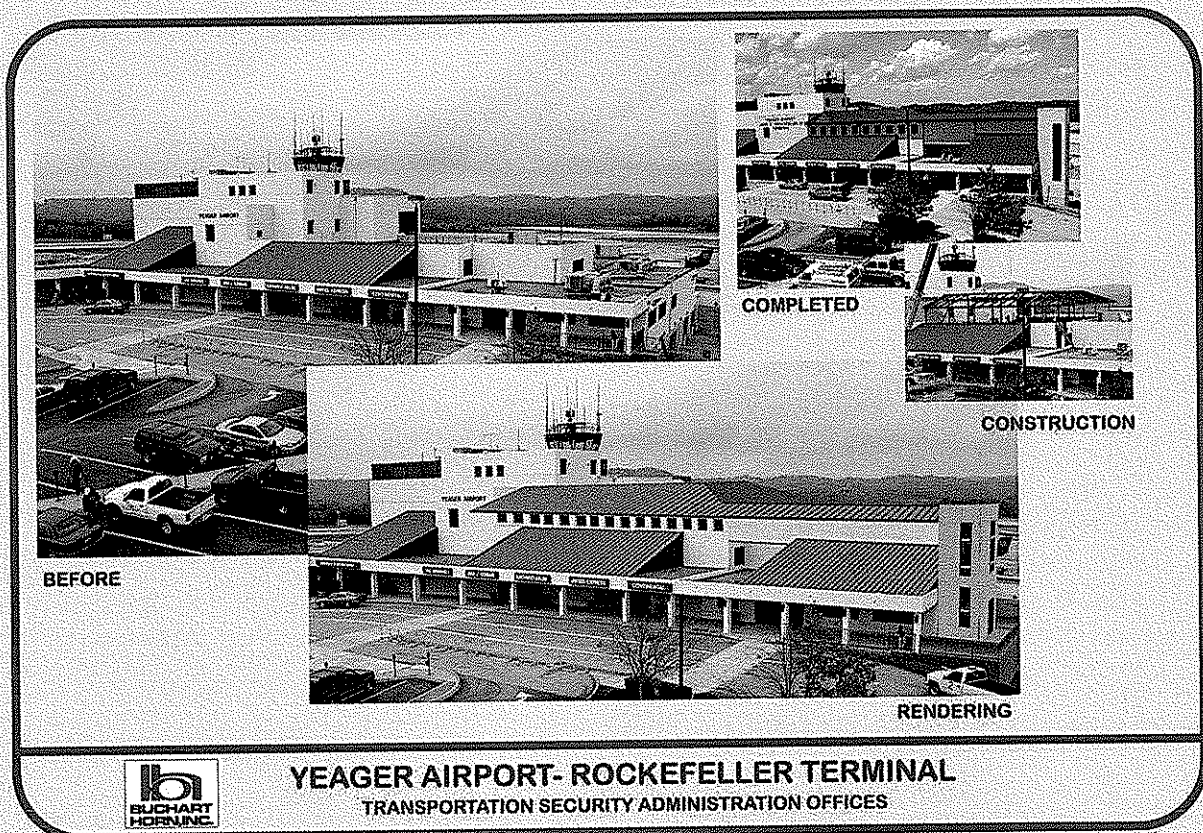
The space is utilized by the General Services Administration for the central offices of the Transportation Security Administration, for their West Virginia operations. The solution includes:

- Biometric Security Devices
- Proximity Security Devices
- Director's and Administrative Offices

Buchart Horn, Inc.

- Conference/Emergency Operations Area
- Outside Runway Observation Deck
- Interior Runway Observation Bridge
- Secure Private Elevator
- Training Areas
- I.T. Room
- Network Servers
- Kitchenette and Breakroom
- ADA Compliant Rest Rooms

The project also included modifications to other existing spaces for ADA and sprinkler as well as adding HVAC to certain areas.



West York Area School District, Renovation of Four Elementary Schools York, Pennsylvania

Client:
West York Area School District



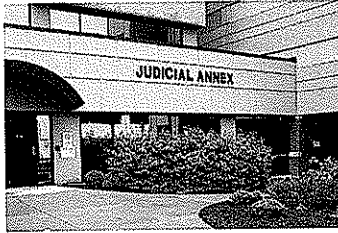
Buchart Horn was responsible for design and construction phase services for HVAC, accessibility, data wiring, and security improvements for the District's four elementary schools. We also provided full-time project site representatives to monitor and expedite construction progress.

The four Elementary Schools are Lincolnway Elementary School, 73,395 square feet plus 1,875 square foot basement for district maintenance; Norman A. Trimmer Elementary School, 69,806 square feet; Grace E. Loucks Elementary School, 28,082 square feet plus 5,418 square feet for district storage; and Charles B. Wallace Elementary School, 31,661 square feet plus 1,176 square feet for storage.

Kanawha County Courthouse Renovation

Charleston, West Virginia

Client:
Kanawha County Commission



Buchart Horn, Inc. was commissioned to prepare an Initial Planning Study, describing immediate and short-term needs; a Comprehensive Plan projected five to ten years into the future; and to design the renovations and additions to the existing Judicial Annex.

The surveys, interviews, analyses, project budgeting, ADA recommendations, and concept were prepared for review by the Judiciary and the Kanawha County Commission.

The project focused on a new entrance, security checkpoint, and lobby to alleviate a very overcrowded situation; renovations to seven courtrooms to improve function and image; renovations to the associated judicial suites to assure proper circulation, functionality, and security; and a building expansion for Juvenile Probation and a newly established Family Court.

Other services provided included vertical transportation planning, security consultation, and technology planning such as video conferencing, data and voice communications, and evidence display systems.

Renovations included seven Circuit Court courtrooms; jury deliberation restrooms; Court Clerks offices and public research area; adult probation offices; Court Administration offices; and all public areas.

Additions included main entrance, security vestibule, and lobby; Voter Registration work room; four Family Court Suites; holding cell; and a central security control room.

Support services and building infrastructures improvements include new and modified HVAC systems, with VAV boxes and controls; complete voice and data wiring systems, including wiring for LAN; new power distribution for clean and normal power; and new lighting systems that complement the computer environment.

Building security improvements included a central security control room, staffed twenty-four hours a day; security vestibule with screening stations; closed circuit monitoring and card access admission systems; secured private judges suites connected to a private elevator; secured prisoner transfer from sally port to courtrooms; emergency call system from courtrooms, chambers and other public interface points; and development of a policy and procedure manual. Provisions were made for video monitor use, video projection, palatial recording, and teleconferencing. Emergency call buttons were designed for Judges' bench and Court Clerks' stations were wired for telephone and data connection to other chambers. A central control panel in the Court Clerks' station includes an ADA-compliant sound reinforcement system, public address system, and lighting controls.

Neshaminy School District Carl Sandburg Middle School Renovations and Addition

Levittown, Pennsylvania

Client:
Neshaminy School District



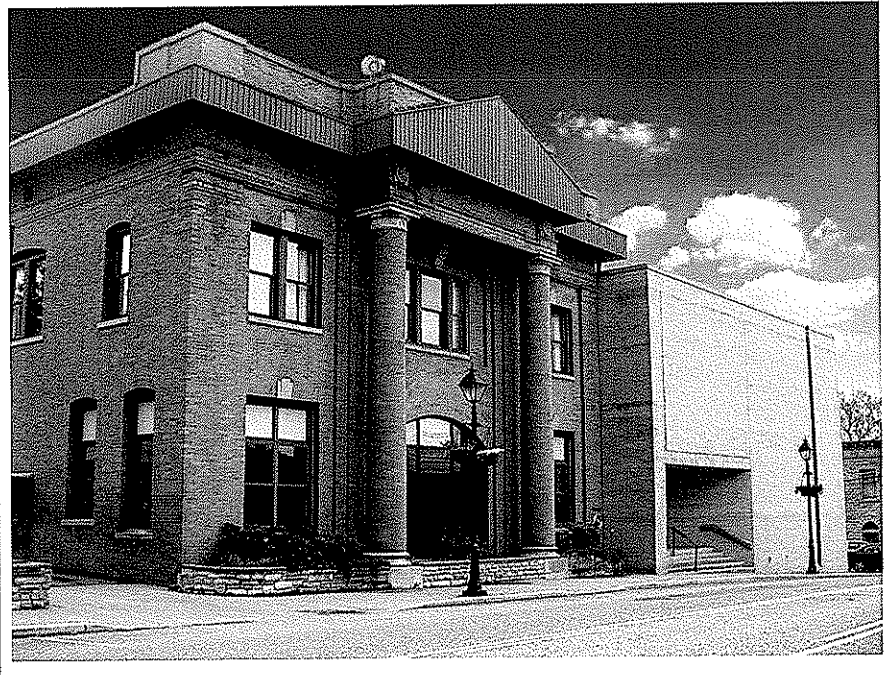
As part of Phase I of the \$45 million, nine year Neshaminy School District facilities improvement plan, Buchart Horn designed a new 750-seat auditorium for the Carl Sandburg Middle School. Renovations to the existing facility involved meeting current educational and ADA code requirements. We provided architectural, electrical, mechanical, structural and acoustical engineering services throughout the project.

Preston County Administrative and Judicial Facilities Space Needs Analysis and Design *Kingwood, West Virginia*

Client:
Preston County Commission

Faced with overcrowding and paying rent to house County functions and in an effort to streamline their operations and serve their community more efficiently, Preston County hired Buchart Horn to perform a space needs analysis and a facilities inventory and assessment of their current facilities; as well as perform a feasibility study for remodeling a former bank building across from their courthouse into a County Administrative Office building.

Buchart Horn's analysis and feasibility study provided convincing evidence that this was indeed feasible and would be financially beneficial to the County for several reasons: the County would no longer have to rent space as all functions could be accommodated on County property; administrative offices which were currently scattered over 3 1/2 floors, could be located adjacent to each other on one floor. This alone would greatly reduce the amount of duplicate files, printers and storage necessary to fulfill their tasks as well as potentially eliminate needs for additional staff in the short term. Not to mention that the renovated modernized offices would be designed for their respective functions instead of 'making-do' with existing space. With unanimous approval, Buchart Horn was asked to continue into making the necessary modifications to the buildings.



Marshall University, Old Main Auditorium Renovation Huntington, West Virginia

Client:
Marshall University



Marshall University's challenge was a need for more administrative space than the available facilities in the historic Old Main building, which is on the National Register of Historic Places, could provide. Buchart Horn/BASCO Associates' challenge was to design for constructing four floors of new office space within the 110-year-old auditorium while preserving its external appearance, walls, and roof structure.

With careful application of new steel structure inside and by adjusting floor and ceiling heights to adapt to the building's window wells and atriums, we were able to provide 14,400 square feet of new administrative space and, through modifications to underutilized space, add 4,800 square feet of premium office space.

The existing auditorium was stripped of its stage, proscenium arch, sloped timber-frames floor, and suspended balcony to accommodate new interior steel framing; only the existing exterior brick walls and substantial roof framing systems were retained. New internal steel columns and concrete footings supported the vast majority of the new framing and concrete deck floor loads. Floor framing was typically cantilevered to the existing walls, but only lateral attachments were made to these walls. The design was governed by the need to minimize the lengths and weights of individual steel members due to the difficulty of installation through side windows.

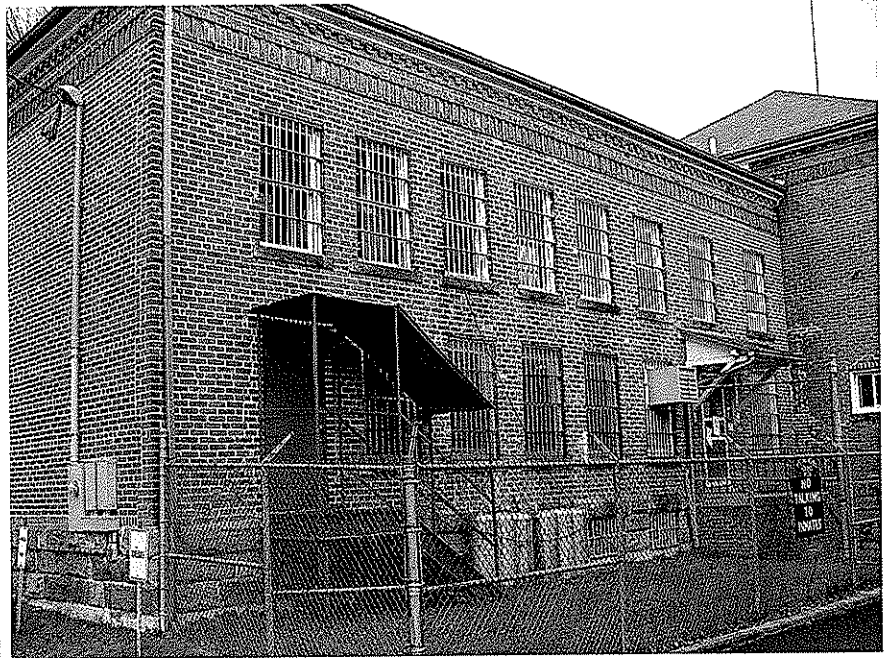
The project included structural construction drawings after the asbestos and lead-based paint removal portions of the work were finished and the University approved phasing and budgeting.

Pocahontas County Commission, County Jail Building Survey

Marlinton, West Virginia

Client:
Pocahontas County Commission

Buchart Horn performed a structural evaluation study of the Pocahontas County jail building to determine the existing structural condition of the jail and the potential for the adaptive re-use of the structure. Pocahontas County has recently moved much of the jail operations into another facility, and is reviewing options for the removal or re-use of the old jail building. Potential uses for the facility include new office and storage space for County operations. Buchart Horn is also providing support in the form of assistance in seeking grant monies to move the project forward.



**Baltimore City Public Schools, HVAC System Evaluation of Bldg. #93,
Dr. Samuel L. Banks Professional Development Center**
Baltimore, Maryland

Client:
Baltimore City Public Schools

Buchart Horn provided architectural and engineering services for the evaluation of the existing Heating, Ventilating, and Air Conditioning (HVAC) Systems and related electrical systems at Dr. Samuel L. Banks Professional Development Center, a four-story 298,325 square foot junior high school building built in 1970. The study report completed was in four weeks.

The HVAC system consisted of two 320-ton central steam absorption chiller plant, and two 400 BHP boiler plant with four pipe and two pipe distribution to terminal units, A/C units, and central air handlers. The report addressed technical, operational and reliability problems and comfort performance and made recommendations for improvement. The report included escalated opinions of construction cost budgets and phasing schedule for construction.

**Baltimore City Public Schools, Boiler Chiller Replacement Evaluation,
Schools 82, 178, and 228**
Baltimore, Maryland

Client:
Baltimore City Public Schools

Buchart Horn provided an economic analysis of three feasible options for the proposed 450-ton chiller plant for Dr. Roland N. Patterson Middle School, Francis M. Woods Alternative High School and John Ruhrah Elementary School. Consideration was given to adding standby chilled water/condensing water pumps. We performed an analysis of the options selected, comparing the merits, limitations, probable construction cost, life cycle analysis, and provided recommendations on the most feasible and economical option. Our firm also provided a total project cost estimate including an estimated time schedule for Design and Construction phases. The study was completed in five weeks.

**Baltimore City Public Schools, Boiler Replacement,
Gwynns Falls Elementary School #60**
Baltimore, Maryland

Client:
Baltimore City Public Schools

Buchart Horn provided professional design and construction administration services for the replacement of the steam boiler plant and domestic hot water heating system at Gwynns Falls Elementary School. The scope of work includes replacing two 100 BHP steam boilers, vacuum pumps, condensate feed water system, domestic hot water storage tank, and related piping, controls, electrical, architectural, and structural work, as well as removal of an underground fuel oil tank and related pumps and piping.

Baltimore City Public Schools, Boiler Replacement, Booker T. Washington Middle School (#130)

Baltimore, Maryland

Client:

*Baltimore City Public Schools
\$38,148*

Buchart Horn provided project management for replacing two 400 BHP steam boilers, two hot water circulation pumps, condensate feed water system, heat exchanger, one 100 BHP steam boiler, two domestic hot water storage tanks, and related piping, controls, electrical, architectural, and structural work. Two new boilers will be natural gas-fired for heating water duty. Removed all unneeded equipment, piping, and controls related to steam system. Decentralized the domestic hot water heater and storage system from the heating water/steam boiler plant.

Baltimore City Public Schools, Chiller Plant Replacement HQ#540

Baltimore, Maryland

Client:

Baltimore City Public Schools

Buchart Horn provided an economic analysis of three feasible options for the proposed 450-ton chiller plant. Consideration was given to adding standby chilled water/condensing water pumps. We analyzed the options selected, comparing the merits, limitations, probable construction cost, life cycle analysis, and provided recommendations on the most feasible and economical option. Buchart Horn provided a total project cost estimate including an estimated time schedule for Design and Construction phases. The study was completed in five weeks.

Baltimore City Public Schools, Chiller Plant Replacement School #89

Baltimore, Maryland

Client:

Baltimore City Public Schools

Buchart Horn provided architectural/engineering services and construction documents for the Chiller Plant Replacement at Rognel Heights Elementary/Middle School #89.

The project involved the replacement of one 168-ton steam absorption chiller, a cooling tower, one chilled water circulation pump, one condenser water circulation pump, and related piping, controls, electrical, architectural, and structural work. New water-cooled screw chiller, cooling tower with VFD, chilled water pump, and condenser water pump were provided based on the construction feasibility, phasing, and construction budget constraints. Existing electrical power service to the building was replaced and upgraded including coordination with BGE, and replacement of main switchboard "MDP." Existing motor starter panel "MS" in the Boiler Room was also replaced. We performed life cycle analysis comparing three chiller plant options.

USPS IQC for A/E Services, Repair and Alteration for Small and Medium Standard Designs *Statewide, Maryland*

Client:
United States Postal Service

The USPS Eastern Facilities Service Office Greensboro, NC awarded Buchart Horn, Inc. an indefinite quantity contract for repairs, alterations, and small and medium standard building design services to postal facilities.

Existing facilities may require access, code, building envelope, plumbing, HVAC, or electrical upgrades. And, while USPS commissions its buildings to standard designs, the actual fitting of a USPS facility to a particular site requires site/civil design, arranging the standard building modules to fit the site, and architectural, structural, electrical, mechanical, plumbing, and HVAC design.

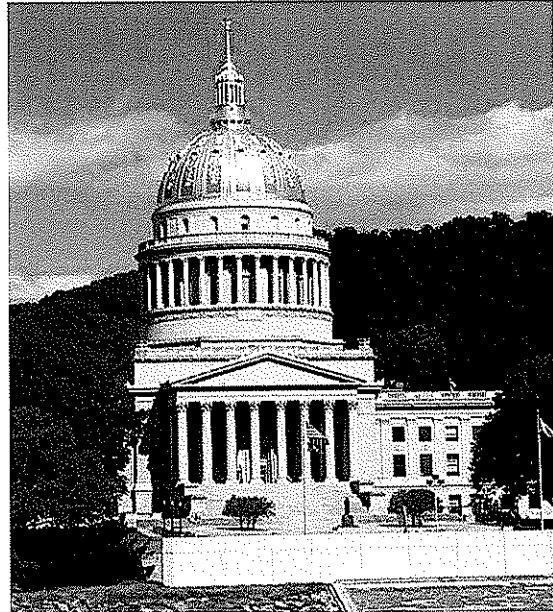
Since early 2004, we have been providing a wide range of these services to the Postal Service:

- Boiler and chiller studies and replacements; HVAC upgrades
- Construction administration of system or building renovations
- Temporary heating and cooling during system or building renovations;
- Building envelope upgrades
- Feasibility studies for various facility maintenance and upgrade projects
- Mechanical, electrical, and plumbing (MEP) engineering in postal facilities
- Structural studies of such building changes as extension of a mezzanine
- Studies of conditions, upgrade methods, and upgrade cost estimates for building systems and components, such as fire alarms, loading/unloading dock resurfacing, lighting, column corbels and upper decks in a parking garage, and compressed air dryer systems
- Emergency response and structural redesign of a wind-damaged high stud wall
- Partial site drawings and site lighting drawing with photometrics for parking lot
- Roof condition study, including roof-top air handling unit locations and penetrations, with report and recommendations
- Feasibility study of converting an existing building into a standard postal facility

ZDS Design/Consulting Services

Project Name: *State of WV Capitol Complex Performance Contracting
Located in Charleston, WV*

Client Contact: Mr. Russ LaBarbra,
Sr Performance Assurance Eng
Johnson Controls, Inc.
4132 First Ave.
Nitro, WV 25143
Phone: (304)-759-2709
Cell (304) 389-1254



Services: Engineering planning & design for central heating plant, DDC controls, Air Handling Unit replacements and retrofits, operating and maintenance, training, heat recovery, fuel conversion, VFD's, variable water volume pumping, steam/heating hot water & chiller optimization.

Project Description

ZDS Design/Consulting Services and Johnson Controls Inc.

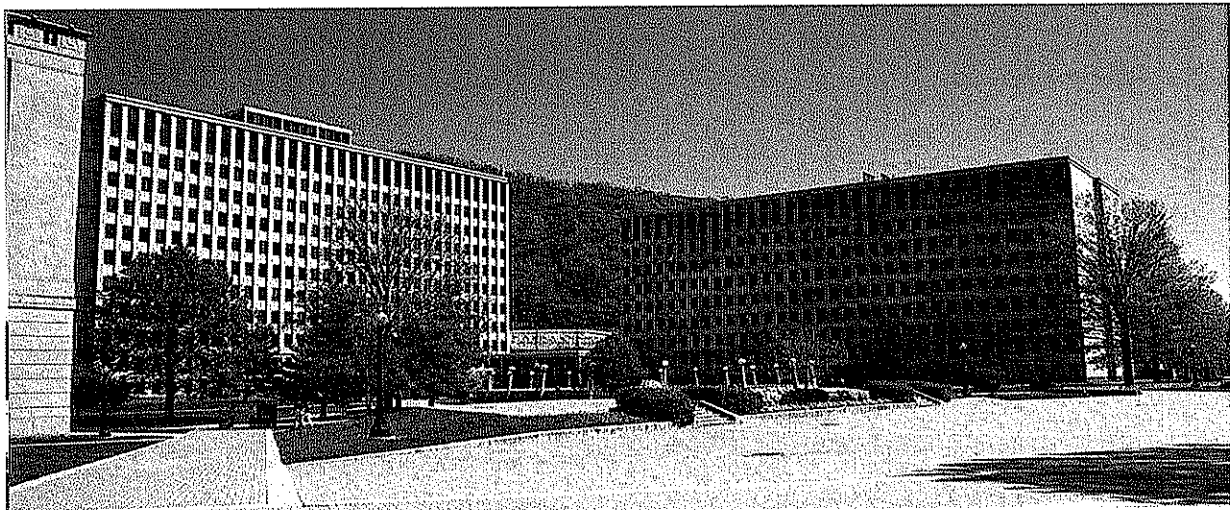
The State of West Virginia was aware that their facilities at the Capitol Complex were aging and in need of significant infrastructure upgrades but were having difficulty in appropriating the necessary funding to make such improvements. Many of the existing boilers and other primary heating equipment are past their expected service life and are in disrepair. The State of West Virginia passed a new bill in 2003 that permits Performance Contracting to be used as an avenue for implementing infrastructure upgrades in State facilities provided the upgrades self-fund within a 15 year time period. The State elected to solicit proposals from various ESCO's with the intention of crafting a major improvement project that would reduce operating costs to the State as well as pay for itself over the 15 year period. After an extensive review and selection process, the Team of Johnson Controls Inc. and ZDS Design/Consulting Services was selected. The scope of the proposal included various energy conservation measures to the Capitol Building as well as Buildings #3, 4, 5, 6, 7 and others. Significant HVAC improvements were engineered for the Capitol Building, as well as Buildings #3, 4, 5, 6, 7, 8 (Governor's Mansion) and provisions for #10 (Holly Grove) plus additional future capacity.

A central heating plant anchored the Facility Improvement Measures. It yielded the elimination of 14 failing boilers with provisions for future expansion of up to 250,000 square-feet of office space. A centralized heating plant offers greater efficiency in overall system operation,

PROJECT EXPERIENCE

centralized control and maintenance of primary heating equipment, with the added benefit of supplemental capacity in the event of a boiler failure. The first phase of the program began in May 2005 with the evaluation of the existing heating plants, HVAC equipment, and their sub-systems to quantify deficiencies and potential opportunities to improve comfort, IAQ, extension of equipment life and an overall reduction in operating costs. Preliminary engineering studies reflected that millions of dollars could be saved annually in energy, operating cost and deferred capital costs by implementing this multi-million dollar program.

Some typical improvements include either the replacement or retrofit of major air handling units, reestablishing proper control strategies, reducing outdoor air intake quantities when allowable, installing new building automation equipment, general HVAC equipment repairs and replacement, documentation of existing and post construction conditions, and establishing a consistent overall operating strategy. Individual HVAC systems are also being enhanced to meet applicable codes and standards. Exhaustive hours were spent with the State in assisting them with the identification and prioritization of facility improvement measures. The time spent also identified potential construction issues with an emphasis on critical phasing requirements.



The program's work was expanded as the State realized the value of the program and aids in helping them operate their facilities more efficiently and effectively. The WV Division of Protective Services also incorporating some of the integrated campus wide security, fire alarm, intercom, emergency power, and communications infrastructure upgrades either in with the base program work, or through separate projects planned for 2,137,400 square-feet involving 15 buildings at the campus.

Performance Contracting Program Costs:

Potential Savings:

Size:

Completion:

Up to approximately \$20,000,000

Improvements self-fund within 15 years

1,929,155 FT²

2007 for Construction

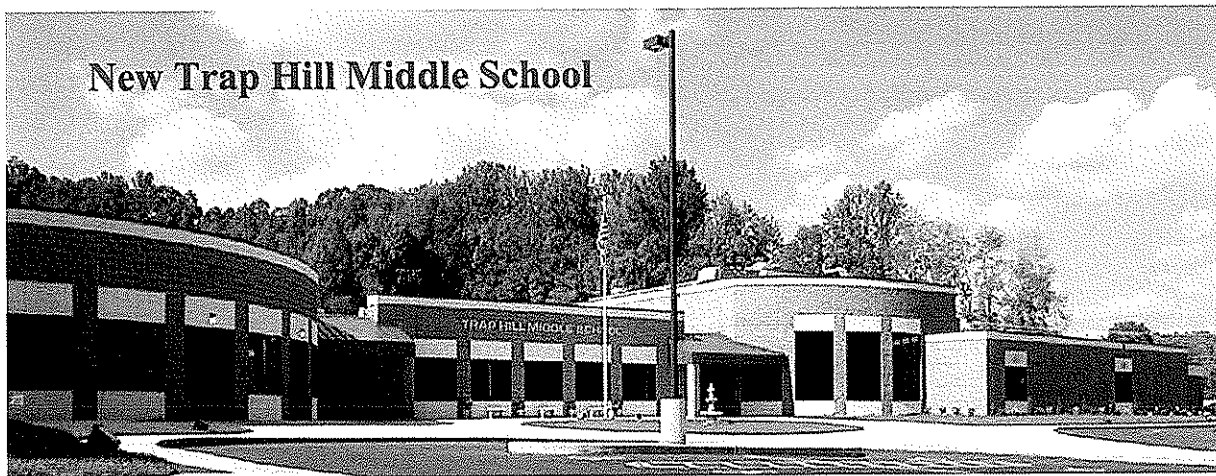
ZDS

Design/
Consulting
Services

ZDS Design/Consulting Services

Client: *Raleigh County Schools, West Virginia*
Project: *New Trap Hill Middle School*

Client Contact: Mr. Racine Thompson, Assistant Superintendent.
Phone (304) 256-4500,
Raleigh County Schools
Beckley, WV 25801-3791

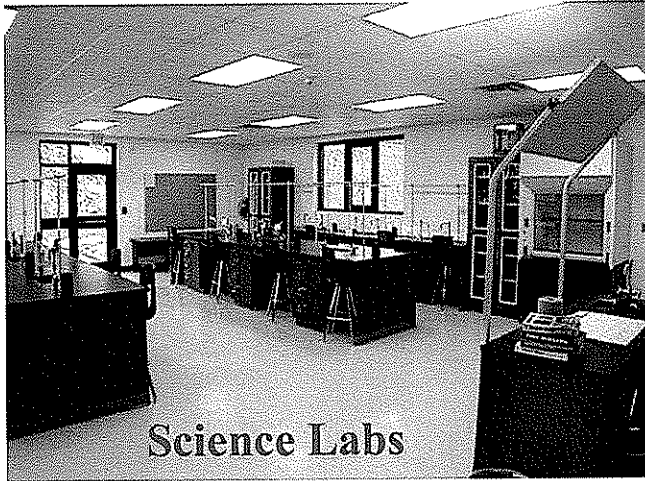


Project Description

ZDS provided the HVAC, plumbing, fire protection and electrical engineering design for the new Trap Hill Middle School that was completed in 2002. The school was funded from a bond levy that passed in 1999. Raleigh County voters have been very supportive of the county school system which showed when they passed another bond levy in 2004.

Raleigh County Schools have been successful because they include the Maintenance staff in a key role as part of the design team. The facility was design around equipment that Raleigh County schools could obtain service and support locally. The energy efficient design included Direct Digital Controls for remote monitoring and control of the facility's HVAC systems. Energy efficient lighting, motors and equipment were also incorporated into the facility's systems. Raleigh County Schools elected to be proactive in addressing Indoor Air Quality (IAQ) by incorporating many of the recommended practices even before they are required by codes. Improving filtration, fully ducting the return air systems, considering the condensate removal system and providing adequate outside ventilation air were included in the HVAC systems.

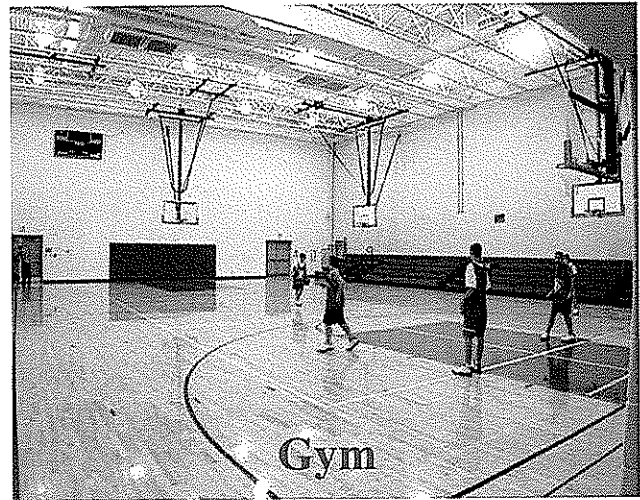
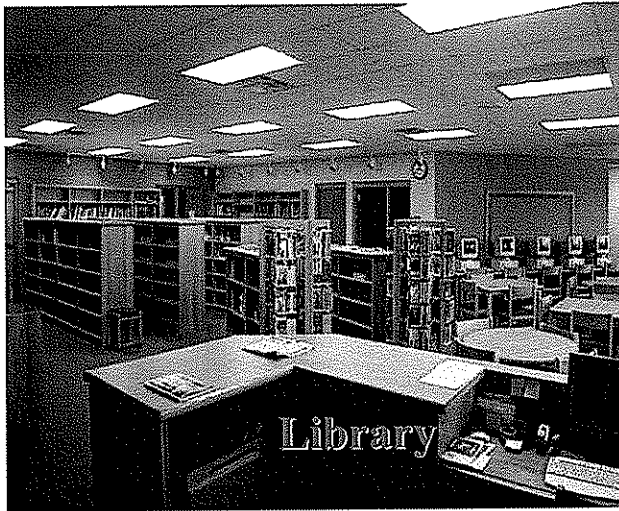
PROJECT EXPERIENCE



The new Science Labs were designed to meet the WV Department of Education's requirement.



The new computer labs incorporated state-of-the-art technology to help prepare the students for high school.



Total Project Cost:	\$9,251,899
School Building Authority Funds	\$1,363,900
School Size:	60,950 Square-Feet

ZDS Design/Consulting Services

Client: *Raleigh County Schools, West Virginia*
Project: *New Shady Springs Junior High School*

Client Contact: Mr. Racine Thompson, Assistant Superintendent.
Phone (304) 256-4500,
Raleigh County Schools
Beckley, WV 25801-3791



Project Description

ZDS provided the HVAC, plumbing and electrical engineering design for the new Shady Springs Junior High School that was completed in 2002. The Maintenance staff played an important role as part of the design team. The facility was design around equipment that Raleigh County schools could obtain local service and support. The energy efficient design included Direct Digital Controls for remote monitoring and control of the facilities HVAC systems. Energy efficient lighting, motors and equipment were also incorporated into the facilities systems. Raleigh County Schools elected to be proactive in addressing Indoor Air Quality but incorporating many of the recommended practices even before they are required by codes. Improved filtration, ducted return air system, special consideration into the condensate removal system and providing adequate outside air were included in the HVAC systems.

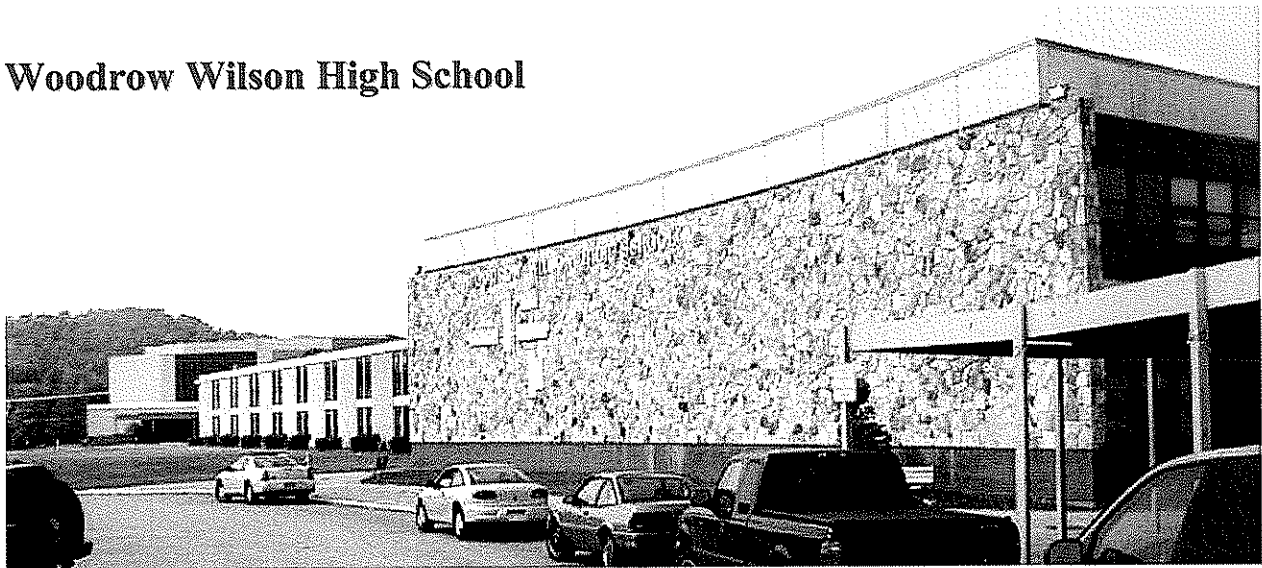
Total Project Cost: **\$9,116,384**
School Building Authority Funds **\$1,833,800**
School Size: **77,543 Square-Feet**

ZDS Design/Consulting Services

Client: *Raleigh County Schools, West Virginia*
Projects: *Woodrow Wilson High School & Academy of Career & Technologies Renovations*

Client Contact: Mr. Racine Thompson, Assistant Superintendent
Phone (304) 256-4500,
Raleigh County Schools
Beckley, WV 25801-3791

Woodrow Wilson High School



Project Description

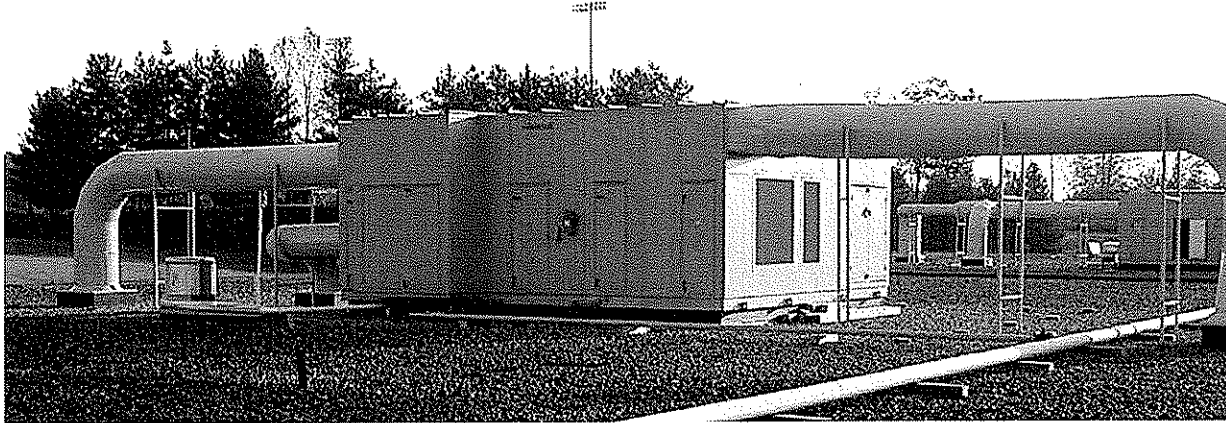
Woodrow Wilson High is rich in tradition with over 180,000 sq-ft. and space for over 1500 students. The building was constructed in 1965 and the HVAC systems are well past their expected life. When it was time to renovate these facilities Raleigh county Schools hired ZDS to evaluate the HVAC and electrical needs for Woodrow Wilson High School and the Academy Career and Technology center to bring the schools up to current codes and standards. The renovation work needed implemented in phases. The first phase involved HVAC upgrades for the Administrative wing of WWHS and the main area of ACT which was completed in 2001. All within budget while saving over \$122,000 through breaking out portions of the work to be purchased directly by the school. The next phase involved lighting upgrades, ceiling plenum cleaning and tile replacement which was completed in 2003.

The next phase involves \$10 million to complete the HVAC and related upgrades for the remainder of Woodrow Wilson High School. ZDS evaluated the facility and developed the preliminary opinion of construction costs used for the Bond Levy that was overwhelming passed

PROJECT EXPERIENCE

in January 2004. ZDS then designed the solutions. The project is under construction and expected to be completed in the fall of 2008.

Academy of Career & Technology – Rooftop Units



Across the street from Woodrow Wilson High School is the Academy of Career and Technology's Center (ACT) that was also retrofitted concurrently with the high school. ACT's primary HVAC system was not providing comfort or meeting the stringent Indoor Air Quality codes and standards enforced by the WV Department of Education. Two custom roof-top HVAC units were designed and installed to bring 60,000 square-feet of the vocational facility up to today's current technology. High efficient filtration was incorporated into the custom variable air volume air handling units. All of the HVAC equipment was also under Direct Digital Control for remote central monitoring and control. ZDS separate out the rooftop HVAC equipment for direct purchase by Raleigh County Schools which saved the county over \$122,000.

Space comfort and indoor air quality in Academy of Career and Technology's Center were brought up to levels; the students and staff are now saying

***“We have never been comfortable until now!
We can now focus our attention on teaching and learning.”***

<i>Total Project Cost:</i>	\$12,050,000
<i>School Building Authority Funds</i>	\$900,000
<i>School Size:</i>	240,000 Square-Feet

ZDS Design/Consulting Services

Client: *Webster County Schools, West Virginia*
Project: *Webster County High School Renovations*

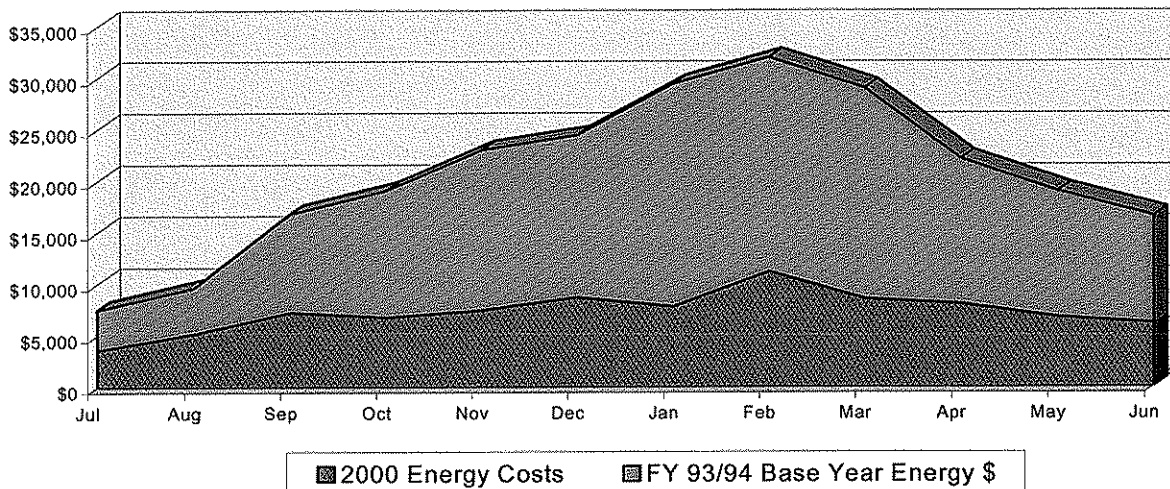
Client Contact: Mr. Harry Given, Retired Dir. of Maintenance.
Webster County Schools
Webster Springs, WV 26288-1123
Home Phone (304) 226-5288

Project Description

Initially Webster County Schools solicited bids from several Performance Contracting firms to make upgrades at the high school and pay for the improvements. Performance contracting approach could only partially pay for the improvements and a pure performance contracting approach was dropped. Webster County Schools then hired **ZDS Design/Consulting Services** to evaluate their options, design their recommended solutions for Webster County High School, and establish an approach to address the county HVAC needs with low operating costs.

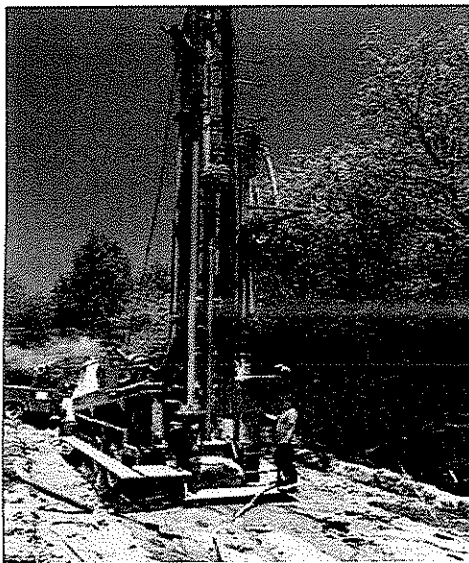
Multiple Heating Ventilating and Air Conditioning (HVAC) systems were evaluated and a geothermal heat pump system proved to have the lowest life cycle cost. This system was projected to reduce their HVAC electric cost by nearly 50% over usage of the existing system. **ZDS** assisted Webster County Schools in obtaining funding for the project from the State's School Building Authority and receive additional grants from the Geothermal Heat Pump Consortium and Allegheny Power for the project which was the first major geothermal heat pump system in the State of West Virginia.

**Webster County High School
Geothermal Heat Pump Energy Savings**



PROJECT EXPERIENCE

Webster County High School used a 500 ton geothermal heat pump loop consisting of 240 wells; 307 foot deep, with over 28 miles of underground piping spread in an adjacent practice football field. A 20% propylene glycol/water solution is pumped through the closed loop with a variable water volume (VWV) pumping system for energy and operation systems. The HVAC system is fully automated through a central Direct Digital Control (DDC) system. Indoor air quality issues are addressed in the new design through increased ventilation, improved filtration, customizing the design of the AHU's to address current Indoor Air Quality (IAQ) practices, and cleaning/coating existing ductwork. Operating costs for the increased ventilation were minimized through incorporating air-to-air energy recovery systems into the new rooftop air handling equipment. The combining of the air-to-air heat recovery together with the primary air handling equipment is receiving national attention and may be the first of its kind for geothermal applications.



*Drilling for the ground
loop for Webster County
High School's 500-ton
Geothermal system.*

*It is the largest
GeoExchange installation to date in
West Virginia
and the surrounding region.*

Systems for Control of Energy Use: Geothermal Heat Pump system, DDC controls, customized rooftop AHU's with air-to-air heat recovery, and variable water volume pumping.

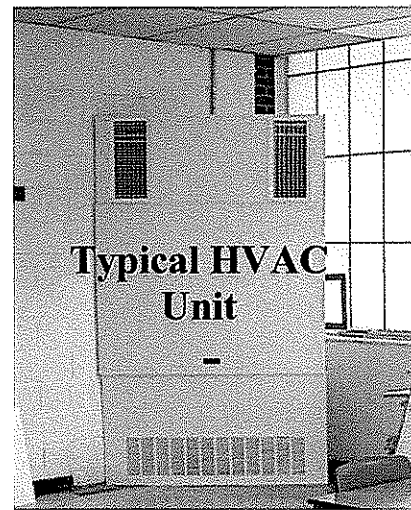
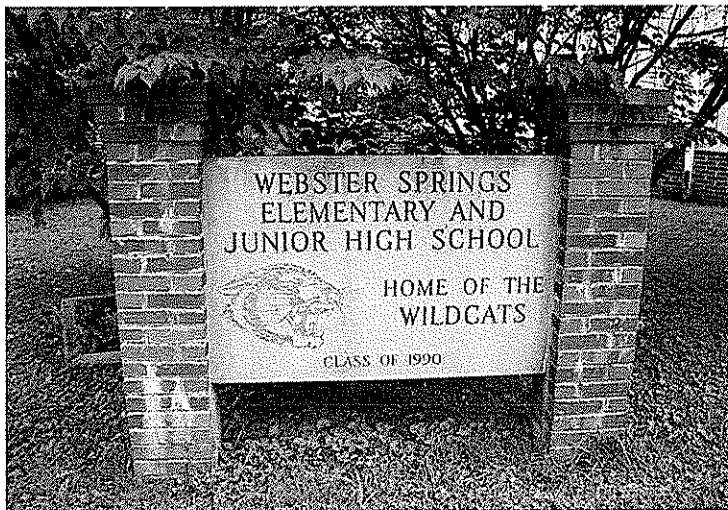
The interior lighting, ceilings and bricking the exterior are part of the overall upgrades to Webster County High School. Webster County Schools was so impressed with the results at Webster County High School that the approach was applied to Webster Springs Elementary School and is proposed for Glade Elementary School when funding becomes available.

<i>Total Project Cost:</i>	\$5,083,000
<i>SBA Funds:</i>	\$5,083,000
<i>Potential Annual Energy Savings:</i>	50% Reduction HVAC & Lighting Operating Costs.

ZDS Design/Consulting Services

Client: *Webster County Schools, WV*
Project: *Webster Springs Elementary School HVAC Renovations*

Client Contact: Mr. Harry Given, Retired Dir. of Maintenance.
Home Phone (304) 226-5288
Webster County Schools
Webster Springs, WV 26288-1123



Project Description

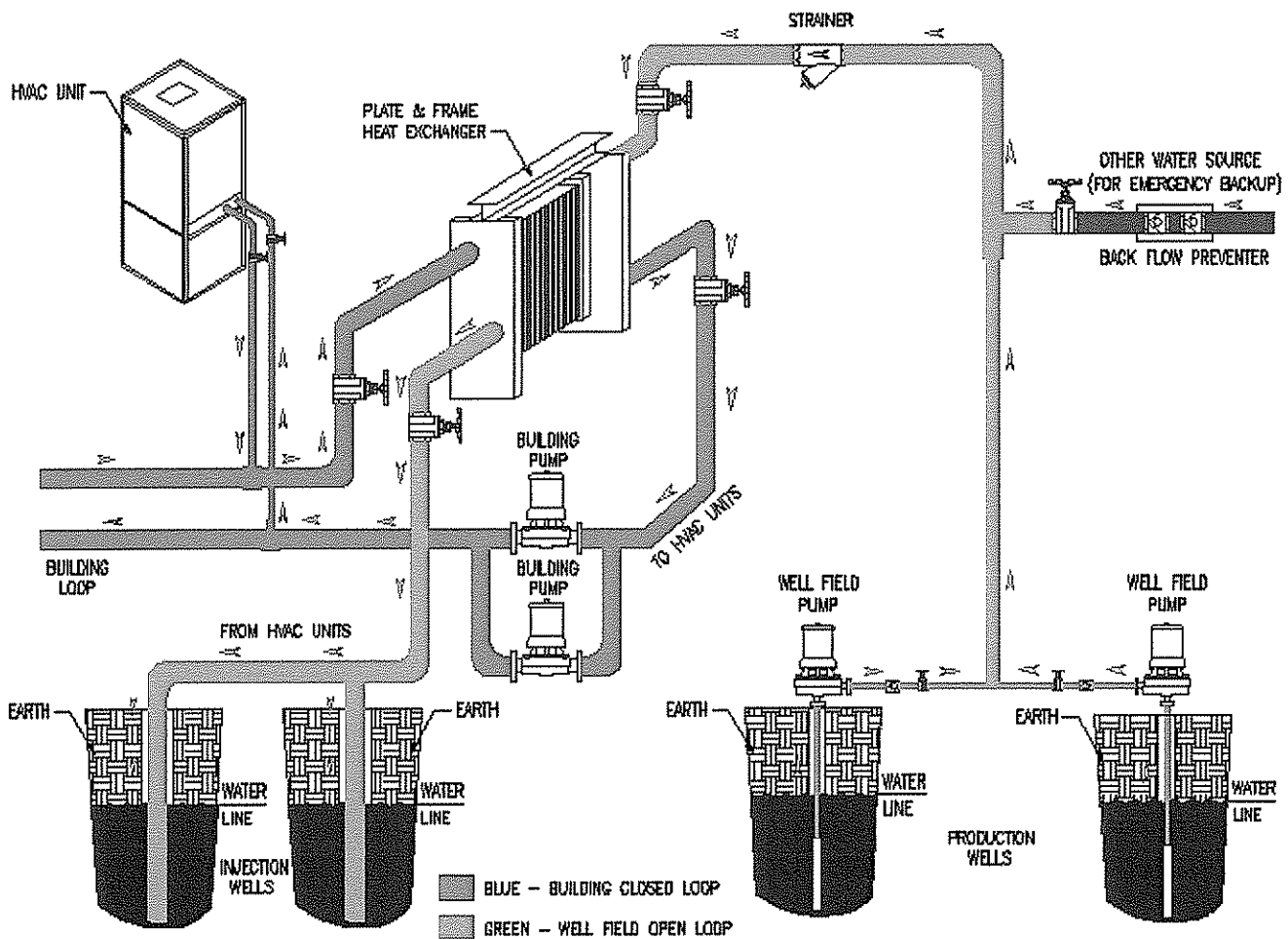
ZDS assisted Webster County Schools in obtaining funding for the project from the State's School Building Authority to upgrade Webster Springs Elementary's HVAC systems. The elementary school is a two story structure and was using coal fired steam boilers. Natural gas was not available and the labor and emissions from using coal fire boilers were no longer acceptable. Geothermal heat pump systems were designed and constructed for the school's new HVAC system. The football field beside the school was selected to install the well field. Once construction started, a tremendous amount of water was encountered below the grade which made installing a closed loop well field impractical. Since this large underground aquifer was found an open-loop well field was designed and installed. Multiple production wells and injection wells were installed that extract water from the ground which is piped through a plate and frame heat exchanger then injected back into the ground. *See the diagram on the next page for more details.*

The HVAC system in the building remained a closed loop system by circulating fluid through the plate-and frame heat exchanger. A 20% propylene glycol/water solution is pumped through the building closed loop using a variable water volume (VWV) pumping system for energy

PROJECT EXPERIENCE

efficiency and operational flexibility. The building water never comes in direct contact with the well water because the heat exchanger keeps these two water streams separated. A special permit was required in order to use this type of system. This was the first system installed according the State Department and **ZDS** help establish a procedure to minimize the risk of cross contamination with underground aquifers as part of this project.

Indoor air quality issues are addressed in the new design through increased ventilation, improved filtration, customizing the design of the HVAC units to address current Indoor Air Quality practices. Ultraviolet lights are installed to reduce the risk of mold growth and also kill air born germs. Operating costs for the increased ventilation required to meet Indoor Air Quality were minimized through incorporating carbon dioxide outdoor ventilation air control. The open loop geothermal heat pump system is the first of its kind for a West Virginia School.

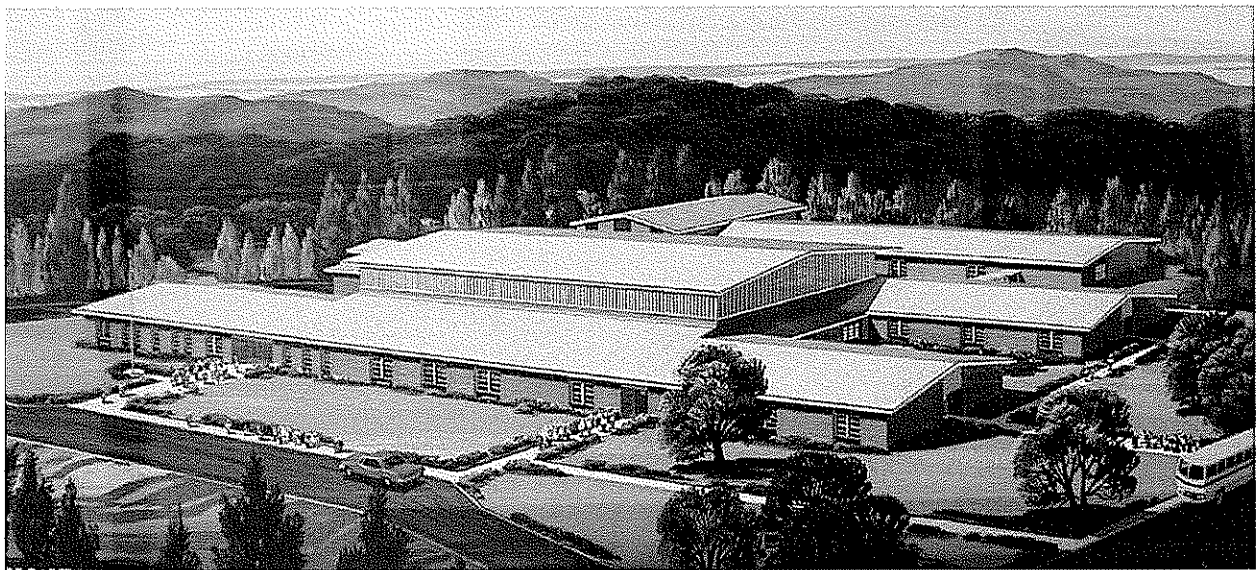


Total Project Cost: \$1,430,000
SBA Funds \$1,300,000
Potential Annual Energy Savings: 40% Reduction in HVAC energy usage

ZDS Design/Consulting Services

Client: *Pocahontas County Schools, West Virginia*
Project: *Pocahontas High School Renovations*

Client Contact: Dr. James B. Phares, former Superintendent.
Phone (304) 367-2100,
Pocahontas County Schools
Marlinton, WV 24954



Project Description

Pocahontas County Schools hired **ZDS** Design/Consulting Services to evaluate their heating ventilating options and design their recommend solutions for Pocahontas High School. The schools electrical systems, security, fire alarm and intercom systems also needed addressed. The Science department facilities needed updated to meet the West Virginia Department of Education requirements. **ZDS** assisted Pocahontas County Schools in obtaining funding for the project from the State's School Building Authority to implement the work over two phases.

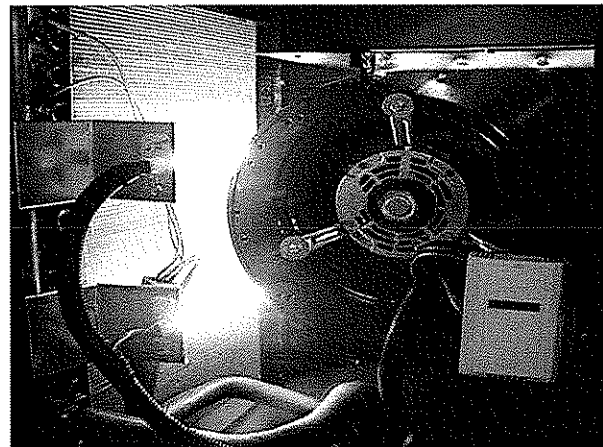
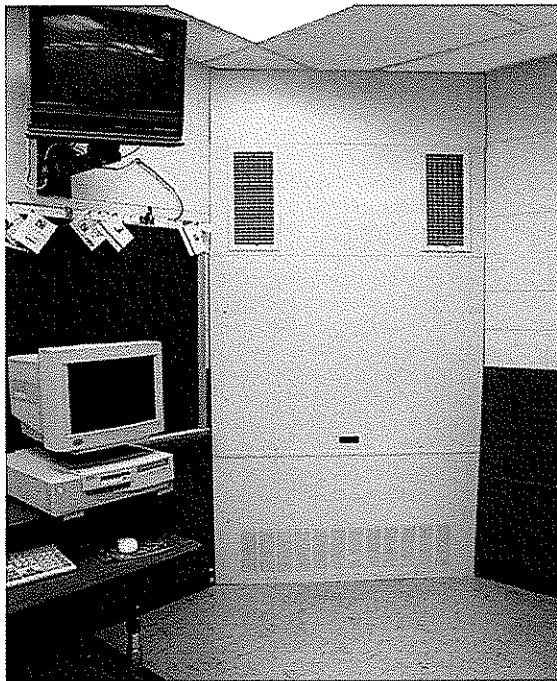
Phase I: Multiple Heating Ventilating and Air Conditioning (HVAC) systems were evaluated and a geothermal heat pump system proved to have the lowest life cycle cost which are projected to reduce their HVAC electric cost by nearly 50% over usage for the existing system. The added benefit was that now the school would have air conditioning. Tom Sanders, principal of Pocahontas High School stated *"It's wonderful to be comfortable for graduation in the gym!"*

PROJECT EXPERIENCE

The geothermal heat pump system provides energy efficient heat, using only around 1/3 of the energy previously required and also provides energy efficient air conditioning

The geothermal heat pump loop consists of 192 wells; 300 foot deep, with over 20 miles of underground piping spread in an adjacent parking lot was installed. A 20% to 30% propylene glycol/water solution is pumped through the closed loop with a variable water volume (VWV) pumping system for energy efficiency and operation flexibility. Indoor Air Quality (IAQ) issues are addressed in the new design through increased ventilation, improved filtration, customizing the design of the HVAC units to address current IAQ practices. Partial backup electric heats was incorporated into the heat pump units to assisting in phasing the initial construction and help meet comfort during the extremely cold weather commonly found for this mountainous region.

Operating costs for the increased ventilation required to meet Indoor Air Quality were minimized through incorporating carbon dioxide outdoor ventilation air control and programmable thermostats.



The left picture shows a typical “corner consol” geothermal heat pump. These units incorporate ultraviolet light (UV) technology (shown above) which kills mold and bacteria

Phase II: The Science Center addition and renovations are scheduled to be complete in 2004 which ends the final phase of the renovations.

Total Project Cost:	\$4,232,233
School Building Authority Funds	\$4,232,233
<i>Potential Annual Energy Savings:</i>	40% Reduction in energy and operating costs



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

Request for Quotation

RFQ NUMBER
DBSM91057

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
SHELLY MURRAY
304-558-8801

VENDOR

RFQ COPY
 TYPE NAME/ADDRESS HERE
Buchart Horn, Inc.
400 Tracy Way, Suite 110
Charleston, WV 25311

SHIP TO

SCHOOL FOR THE DEAF & BLIND
RECEIVING DEPARTMENT
301 EAST MAIN STREET
ROMNEY, WV
26757-1894 304-822-4810

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
04/02/2009				

BID OPENING DATE: **04/16/2009** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LS		906-00-00-001		
EXPRESSION OF INTEREST THE WEST VIRGINIA PURCHASING DIVISION, FOR THE AGENCY, THE WEST VIRGINIA SCHOOLS FOR THE DEAF AND BLIND, IS SOLICITING EXPRESSIONS OF INTEREST FOR PROFESSIONAL ARCHITECTURAL/ENGINEERING SERVICES FOR A BUILDING EVALUATION STUDY ON THE ADMINISTRATION BUILDING AND THE CENTRAL BOILER BUILDING PER THE ATTACHED.						
ARCHITECT/ENGINEERING SERVICES, PROFESSIONAL						
CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.						
BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATI- CALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.						
NOTICE A SIGNED BID MUST BE SUBMITTED TO: DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE 	TELEPHONE (304) 346-1127	DATE April 16, 2009
TITLE Project Manager	FEIN 23-1498326	ADDRESS CHANGES TO BE NOTED ABOVE

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

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:

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

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:

If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code*. The vendor **must** make said affirmation with its bid submission. Further, public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code* and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the *West Virginia Code* may take place before their work on the public improvement is begun.

ANTITRUST:

In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:

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

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.

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

Vendor's Name: Buchart Horn, Inc.

Authorized Signature: _____

Date: April 16, 2009



ENGINEERS | ARCHITECTS | PLANNERS

400 Tracy Way • Suite 110 • Charleston, WV 25311
(304) 346-1127 • FAX (304) 346-7295

www.bh-ba.com