ZDS DESIGN/CONSULTING SERVICES

91 Smiley Drive
St. Albans, WV 25177

Phone: (304) 755-0075
Fax: (304) 755-0076

DATE: April 2, 2008

TO: Shelly Murray
Department of Administration
Purchasing Division, Building 15
2019 Washington St. East
P.O. Box 50130
Charleston, WV 25305-0130

PROJECT NO: **DCH08118**
PROJECT: **WV Division of Culture & History**
WV Independence Hall
Renovations to the HVAC Plant
(Sealed bid for 4/10/08 @1:30 pm)

Qty:	Doc. No.	Doc. Date	Description	Action Code
7		4-10-08	WV Independence Hall **RFQ**	**J1**

Action Codes	
A - Action indicated on item transmitted	**F** - Furnish as corrected--Resubmittal required
B - For your information or use	**G** - Revise and resubmit
C - For signature and return to this office	**H** - Rejected
D - Furnish as submitted	**I** - For your approval
E - Furnish as corrected--Resubmittal not required	

J - Remarks:

1 **EOI- Expression of Interest to provide Architectural & Engineering Services to assess the HVAC Plant at WV Independence Hall, develop specifications to address issues or replace equipment, & provide Construction Administration services for monitoring, quality assurance & close out of project. Any questions or concerns, please contact Todd Zachwieja. We look forward to hearing from you.**

BY: Sherry Z. Powell

Mailed by ☐ UPS Next Day Air ☐ UPS Ground ☐ USA Priority Mail ☐ USA Mail

☒ Hand Delivery by SZP 4-9-08 ☐ Hand Pick Up

COPIES TO:

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TRANSMITTAL LETTER

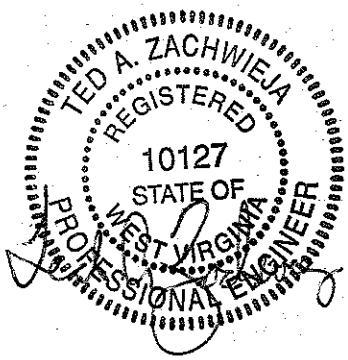
WV INDEPENDENCE HALL

HVAC RENOVATIONS

Wheeling, WV
RFQ #DCH08118

Qualifications

April 10, 2008



ZDS
Design/Consulting Services

MECHANICAL • ELECTRICAL • IAQ • ENERGY • COMMISSIONING

91 Smiley Drive, St. Albans WV 25177 (P) 304-755-0075 (F) 304-755-0076
Web site: www.ZDSDesign.com

Title Page

Expression of Interest

Subject:
To provide an assessment of the HVAC Plant at the WV Independence Hall, develop specifications as requested to address issues or replace equipment, provide Construction Administration services to monitor work and provide quality assurance up to official close out date.

RFQ# DCH08118

ZDS Design/Consulting Services
91 Smiley Drive
St. Albans WV 25177
(P) #304-755-0075
(F) #304-755-0076

ZDS Contact Person: Todd Zachwieja, PE

4-10-08

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EXPRESSION OF INTEREST

WEST VIRGINA DIVISION OF CUTURE AND HISTORY
WEST VIRGINIA INDEPENDENCE HALL
RENOVATIONS TO THE HVAC PLANT: DCH08118

Part 1 GENERAL INFORMATION

1.1 **Purpose:**
The Acquisition and Contract Administration Section of the Purchasing Division "State" is soliciting Expression(s) of Interest (EOI) for The West Virginia Division of Culture and History, "Agency", from qualified Vendors to provide architectural/engineering services as defined in section two (2) and three (3).

1.2 **Project:**
The mission or purpose of the project described in sections 2 & 3 is to assess the HVAC plant at West Virginia Independence Hall, develop specifications to address issues or replace equipment, and provide Construction Administration services to monitor work and provide quality assurance up to the official close out of the Project.

1.3 **Format: N/A**

1.4 **Inquiries:**
Additional information inquiries regarding this EOI must be submitted in writing to the State Buyer with the exception of questions regarding proposal submission, which may be oral. The deadline for written inquiries is identified in the Schedule of Events, Section 1.16. All inquiries of specification clarification must be addressed to:

Shelly Murray
Purchasing Division
P.O. Box 50130
Charleston, WV 25305-0130
Fax: (304) 558-4115

The Vendor, or anyone on the Vendor's behalf, is not permitted to make any contact whatsoever with any member of the evaluation committee. Violation may result in rejection of the EOI. The State Buyer named above is the sole contact for any and all inquiries after this EOI has been released.

1.5 **Vendor Registration:**
Vendors participating in this process should complete and file a ***Vendor Registration and Disclosure Statement*** (Form WV-1) and remit the registration

RFQ No. DCH08118

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: 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

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

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

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

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. Vendors should visit **www.state.wv.us/admin/purchase/privacy** for the Notice of Agency Confidentiality Policies.

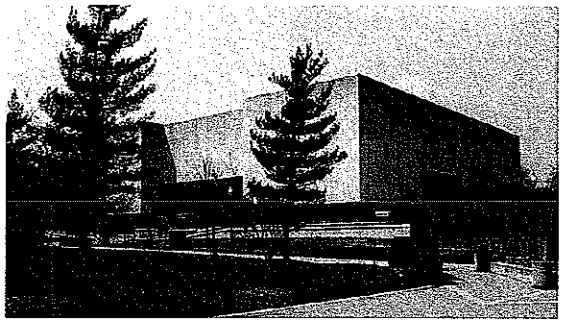
Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: ZDS DESIGN/CONSULTING SERVICES

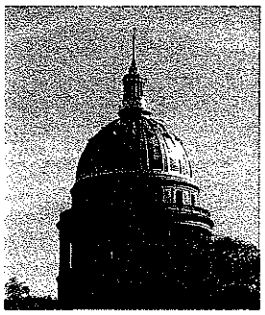
Authorized Signature: [signature] Date: 4/3/08

ZDS Design Consulting Services is pleased and proud to submit this expression of interest and statement of qualifications for your consideration. **ZDS** recently completed central heating plant upgrades for the WV Capitol Complex and specializes in HVAC design and energy efficiency without sacrificing comfort or protection of the facilities. Our previous and ongoing work at the WV Capitol Complex including the Cultural Center helps provide the experience to providing the requested, planning engineering design, bidding and construction administration services.

ZDS provided HVAC Mechanical/Electrical upgrades to the Cultural Center, solving significant Indoor Air Quality issues, restoring comfort to the building while providing an energy efficient HVAC system and addressing Museum Environments and Environmental Monitoring issues. Other recent HVAC renovation experience includes hundreds of educational facilities, Concord University, Kanawha County Commission, Marshall University, Ohio University and others.

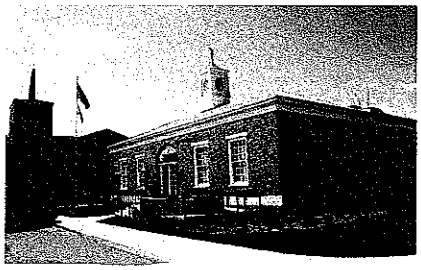


ZDS will lead all phases of the work, providing engineering and project management for the proposed HVAC upgrades and related engineering consulting services as we have done for many customers including many of buildings at the WV Capitol Complex. We understand the desired project completion is by March 2009 and would require immediate attention. We work with consultants for structural engineering and architecture when required due to the sensitivity of type of space renovated and goals to preserve the existing architecture. Our other team members include:



CAS Structural Engineering, Inc., a West Virginia Certified Disadvantaged Business Enterprise is located in the Charleston, West Virginia area. CAS will provide any structural design required for your project. Carol A. Stevens, PE, is the firm president and will be the engineer of responsible charge for this project. Ms. Stevens has over 18 years of experience with building structures in both West Virginia and Pennsylvania. Some projects for CAS include the West Virginia State Capitol Complex - exploratory evaluation and design for corrections to the Capitol dome (during the gilding project), evaluation of existing conditions and structural design for renovations at the Governor's Mansion, evaluation and recommendations for the renovations to the Main Capitol Building façade. CAS was on the team that received an AIA Award of Excellence in 2008 for the Upshur Co. Courthouse Renovations.

Chapman Technical Group located in St. Albans, WV will provide any professional Architectural and Interior design supporting services required for your project. CTG has a diverse range of projects and recently received the 2008 AIA Award of Excellence for Historical Buildings. CTG would provide any architectural design required to support the HVAC upgrades.



While the specialized programs and equipment are unique to each of these types of projects, the fundamental components of planning, designing, quality control, and construction administration is essentially the same for any type of building project. Chapman Technical Group has been providing these components for over 21 years. Our collective staff has hundreds of years of architectural and engineering experience.

ZDS's office is located in Teays Point Industrial Park, 91 Smiley Drive, St. Albans, West Virginia, 25177 a relatively short drive to the WV Capitol Complex, State Fire Marshal and other agencies. We also have a professional engineer located in Morgantown WV who will assist in the field investigation and on-site communications. Professional Engineers are licensed in West Virginia, Ohio, Pennsylvania, Virginia, Kentucky and elsewhere. **ZDS**'s personnel have worked in 23 different states.

Personnel Assigned Todd Zachwieja, **ZDS**'s principal in-charge of planning/design will follow the project from inception through design. We assign the production staff according to the nature of the project and the work force necessary to meet the schedule. Ted Zachwieja is **ZDS**'s Principal-in-Charge of overseeing the construction administration process and would manage the construction administration while coordinating the design intent with Todd Zachwieja and other engineers. David Dial, PE located in Morgantown WV will be instrumental in on-site investigation and construction administration due to his location to the facility and expertise. The resumes of the teams personnel are include in Section III. A brief listing of the key people includes:

Todd A. Zachwieja, P.E., CEM, LEED AP, CEO, Principal, BSME, MSEM with over 26 years of experience in M/E design, energy mgt., IAQ and commissioning. *Awarded the 2007 Legend in Energy by Association of Energy Engineers and nationally recognized for expertise in Mechanical Design, Indoor Air Quality, LEED's Accreditated Professional and Nationally Certified as an Energy Manager.*

Ted T. Zachwieja: Principal with over 40 years of experience in mechanical and electrical design. *Ted was one of three engineers selected by the Department of Energy to train those who manage buildings to conserve energy.*

David Dial, P.E., Senior Engineer with **ZDS**, BSME, MSEE, over 27 years of HVAC/Electrical/Plumbing & Structural design experience.

Mark Moore, P.E., Project Manager, Engineer with **ZDS**, BSEE, over 8 years of experience in Electrical/Plumbing/Mechanical design.

James Lowry, EIT, BSME specializes in HVAC, Fire Protection and plumbing Engineering design.

Carol Stevens, P.E., President of CAS Structural Engineering, BSCE, MEES, over 25 years of Structural design experience with extensive knowledge of historical buildings.

Phillip A. Warnock, NCARB, AIA, Architect-of-Record for Chapman Technical Group, over 12 years of project architect and architectural design experience.

References: We have extensive renovation experience including phasing construction. We encourage you to call our references and ask how well we worked with their staff, about our technical strengths and our ability to work with contractors to provide the Owner with a quality project. **ZDS** references that we would encourage you to call, and which relate to this type of Project include:

1. Mr. Mark Lynch, Director of Facility Operations, WV Division of Culture & History at (304)-558-0220, extension 160
2. Mr. Tony Crislip, Manager, Physical Plant, Marshall University Phone (304)-696-6241
3. Mr. John Daniels, Randolph Co Schools, Phone (304) 636-9150, Ext. 145
4. Dr. Mark Manchin, Executive Director School Building Authority, phone (304) 558-2541
5. Mr. Bill Elswick, Executive Director of Office of School Facilities, phone, (304) 558-2711
6. Ms. Jerie Whitehead, Purchasing Director, Kanawha County Commission, (304) 357-0115
7. Mr. Harry Given, Retired Dir. Of Maintenance, Webster County Schools, (304) 226-5288

We believe that our combined specialties will provide **WV Independence Hall** with the best expertise to provide economical solutions to your specific projects needs. Our proposed Team Members have

received awards for historical preservation and understand the needs of a museum, which will also aid in responding promptly to your needs.

Our team has been extremely effective in the past on acting in our clients' interests to determine availability in existing equipment, and pertinent existing conditions that may affect the design. Our approach to incorporate new proven technologies and management methods have saved our clients substantial money in the construction costs and operating costs. We pride ourselves on being viewed as an extension to ours client's staff and successfully incorporating pertinent information about their facility into any proposed solution.

Our team has over 4 decades of experience in West Virginia giving us the local understanding of your needs. The Kanawha County Commission and numerous other courthouse's, Marshall University, WV County Schools, Ohio University (Athens & Chillicothe campuses), Concord University, and the WV Capitol Complex all found **ZDS** to be successful in comparable infrastructure retrofits to their facilities. Many changes have occurred in the codes and regulations since the facilities were originally constructed. We have code specialist as part of our team to help ensure that the proposed renovations also incorporate the State of WV Fire Marshal requirements, NFPA, ASHRAE, NEC, International Building Code and other pertinent requirements. We also have an excellent reputation with the State Fire Marshal's office.

ZDS provided engineering for upgrades for the WV Cultural Center and Capitol Complex including Buildings #1, #3, #4, #5, #6, #7, #8 and #10 as part of a Performance Contracting team. We believe our knowledge of State historical facilities including the protection of our State's treasures will help with the proposed renovations. Our work at Ohio University at both its Athens campus and Chillicothe campuses involved saving over $2.5 million annually. Please review the enclosed article in Section II from the ***College Planning & Management*** on our work at Ohio University which states "**ZDS**, is worth the monies the university paid for their services. It was important to have somebody guide us through the process," says Sherwood Wilson, then Associate Vice President for Facilities and Auxiliaries.

We provided HVAC, plumbing and fire protection engineering for the eight-story Judicial Annex facility in Charleston and comprehensive HVAC and electrical renovations for Marshall Universities Harris Hall. Both involved an initial assessment of the needs to determine what to repair, replace and determine a direction to accomplish those goals. Our work with many WV County Schools involved extensive HVAC renovations involving millions in construction costs. We provided a pilot geothermal heat pump system for Webster County High School that reduced HVAC energy costs by 50% while improving IAQ and comfort. Ask the WV Department of Education and School Building Authority about our firm. Both have continually asked our participation in establishing HVAC design and construction guidelines for all schools in WV due to our long-term success and innovation in HVAC systems.

We believe that our combined specialties provide ***WV Independence Hall*** with the best Engineering expertise to provide economical solutions for your specific projects needs. We look forward to meeting with you to discuss our team's qualifications and your needs further. If there are any questions, please do not hesitate to call.

Sincerely,

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

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 five principals with over 100 years of technical expertise:

- **Todd A. Zachwieja,** PE, C.E.M., Chief Executive Officer, brings with him over 26 years in the design and consulting business.
- **Ted T. Zachwieja**, Principal over Construction Administration services with over 40 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 20 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, the same Principal of **ZDS** visits the job site regularly, all the way through the eight-month warranty inspection once the project is completed.

"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	ELECTRICAL DESIGN
• Structural & Machine	• Power Distribution
• Heating & Ventilation	• Interior Lighting
• Air Conditioning	• Exterior Lighting
• Environmental Controls	• Emergency Power
• Refrigeration	• Communications
• Plumbing	• Fire Alarm
• Medical Gases	• Security
• Sprinkler/Fire Protection	• Life Safety
• Master Planning	• 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."

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:

- **P**roviding detailed analysis of facilities.
- **R**ecommending sound and proven energy saving solutions.
- **I**mplementing energy management improvements
- **D**etermine, quantify and assist in securing available Utility & Government grants.
- **E**valuating and documenting utility savings.

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.
- 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 trap 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.

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 *IN*VIRONMENT© *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 *IN*VIRONMENT™ *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 *IN*VIRONMENT™ *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.

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 nations largest energy service companies. 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. 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. 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 Second 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 was held in May 1994.

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		

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. A design firm with staff committed to their projects of comparable duration is logical.

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.

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

CAS Structural Engineering, Inc.

Firm Profile

CAS Structural Engineering, Inc. – CAS Structural Engineering, Inc. is a West Virginia Certified Disadvantaged Business Enterprise structural engineering firm located in the Charleston, West Virginia area.

Providing structural engineering design and/or analysis on a variety of projects throughout the state of West Virginia, CAS Structural Engineering has experience in excess of 18 years on the following types of building and parking structures:

- Governmental Facilities (including Institutional and Educational Facilities)
- Industrial Facilities
- Commercial Facilities

Projects range from new design and construction, additions, renovation, adaptive reuse and historic preservation (including use of The Secretary of the Interior's Standards for Rehabilitation) to evaluation studies/reports and analysis.

CAS Structural Engineering utilizes AutoCAD for drawing production and Enercalc and RISA 3D engineering software programs for design and analysis. Structural systems designed and analyzed have included reinforced concrete, masonry, structural steel, light gauge steel and timber.

Carol A. Stevens, PE is the firm President and will be the individual responsible for, as well as reviewing, the structural engineering design work on this project. While CAS Structural Engineering, Inc. has only been in business for six years, Carol has over 19 years of experience in the building structures field, working both here in West Virginia and in the York, Pennsylvania vicinity. Her experience has included a number of parking structures evaluation and repair projects, both in West Virginia and Pennsylvania.

CAS Structural Engineering, Inc. is covered by a $1 million errors and omissions liability policy.

P.O. Box 469 **Alum Creek, WV 25003-0469** **(304) 756-2564 (voice)** **(304) 756-2565 (fax)**
A West Virginia Certified DBE Consultant
Certified in the Practice of Structural Engineering

Company Overview

Chapman Technical Group's St. Albans Office

Chapman Technical Group is a full-service consulting firm with offices in St. Albans and Buckhannon, West Virginia offering an extensive range of professional architectural, engineering, interior design and landscape architectural services. Established in 1984, Chapman Technical Group has steadily grown to a diverse firm of over 40, many of whom were educated in West Virginia colleges and universities. We have achieved an outstanding reputation for providing high-quality design projects, while meeting client schedules and budgets and have received numerous awards for our work.

Our facilities are both state-of-the-art and architecturally significant. Our St. Albans office is a former post office and is now on the National Register of Historic Places. We also have a corporate airplane to better access our project sites.

Chapman Technical Group offers a broad range of professional services.

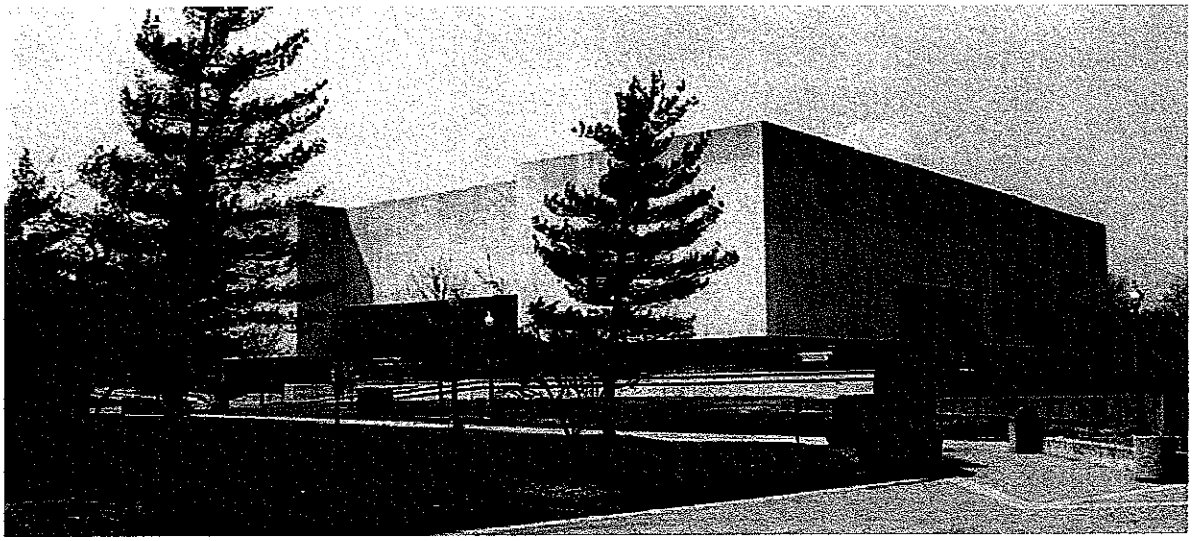
- Architecture
- Interior Design
- Space Planning
- Landscape Architecture
- Site Delelopment
- Recreactional Facilities
- Surveying
- Civil Engineering
- Roads, Highways, & Bridges
- Fire Pumping & Protection
- Airport Design
- Water & Wastewater Systems

ZDS Design/Consulting Services

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

Client Contact: Mr. Mark Lynch
Director Facility Operation
Phone (304) 558-0220
The Cultural Center - Bldg 9
WV Capitol Complex
Charleston, WV 25305

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



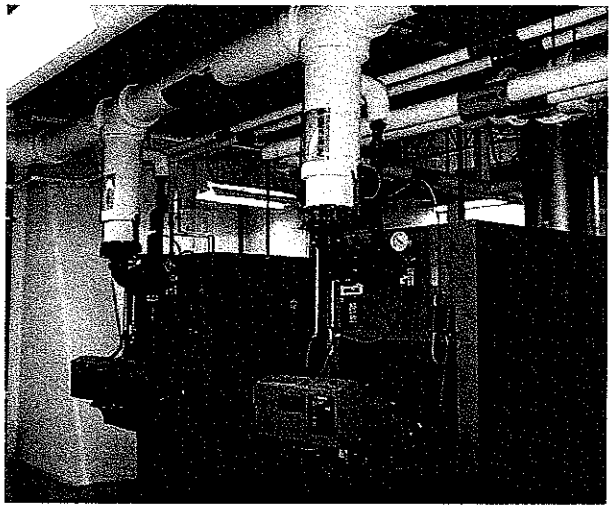
Museum of Culture & History

Project Description

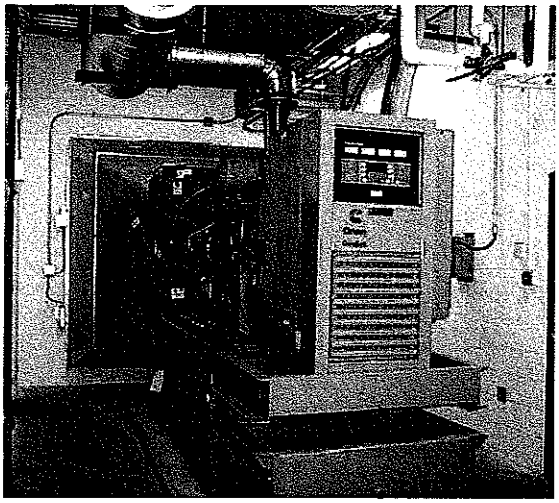
ZDS principals and personnel have been involved in numerous design and recommissioning projects for WV State Capitol Complex while at ZDS and through other employment over their careers. These projects required the engineering planning, design, supervision, preparation of construction documents, specifications, construction administration, and commissioning of HVAC systems, sprinkler systems, plumbing systems, electrical power, lighting, fire alarm, security, technology and communications.

ZDS completed the design for the WV Division of Culture and History correcting their long term HVAC and Indoor Air Quality problems in 2001. Lack of humidity control damaged many of the State's priceless artifacts. Books and other State collections were deteriorating rapidly due to lack of proper control of temperature, humidity, and filtration. The occupants had also experienced allergic reactions and discomfort from the long term high humidity conditions.

ZDS identified and designed the solutions. Conserving energy without sacrificing comfort or indoor air quality was a major consideration. The design included converting an all electric resistance heating system to natural gas, comprehensive DDC controls for central monitoring and control, converting AHU's from constant air volume to variable air volume while meeting stringent ASHRAE Indoor Air Quality requirements, provide variable water volume pumping and interfacing with the facility into the District campus chilled water system to reduce long term operating cost. The design also included providing new boiler plant with redundancy heating and piping distribution system and an emergency generator to help protect the States priceless collections. Heat from the boiler plant was later extended into the Governor's Mansion.



New Boiler Plant



New Emergency Generator

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

ZDS also provided the master planning and design for the campus district heating system through a Performance Contracting program for the WV Capitol Complex expected to save millions in energy and operating costs. ***ZDS*** also provides engineering planning and design services directly through the WV Division of Protective Services for the WV Capitol Complex and all State of WV owned or operated facilities for security, intercom, emergency power, HVAC systems as they relate to security, fire alarm and related systems.

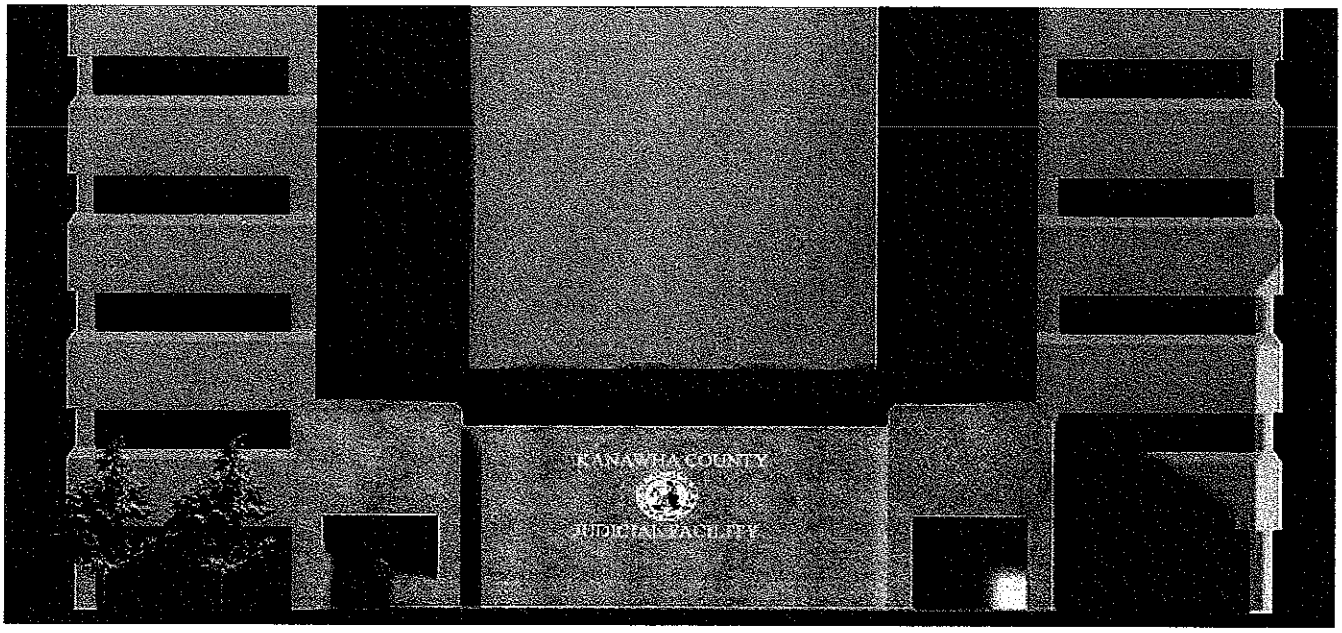
Total Cultural Center Project Cost:	**$4,500,000**
Size:	**228,500 FT^2**
Completion	**2001**
Estimated Energy Savings:	**Reduce HVAC Operating Costs up to 50%.**

ZDS Design/Consulting Services

Project Name: ***Kanawha County Judicial Annex - HVAC Retrofits***
Client/Location: ***Kanawha County Commission, Charleston, WV***

Client Contact: Ms. Jerie Whitehead, Director,
PO Box 3627
Charleston, WV 25336
Phone (304)-357-0115

Services: Engineering planning, design, bidding and construction administration services comprehensive HVAC retrofits, DDC Controls, smoke control system, sprinklers and plumbing retrofits.



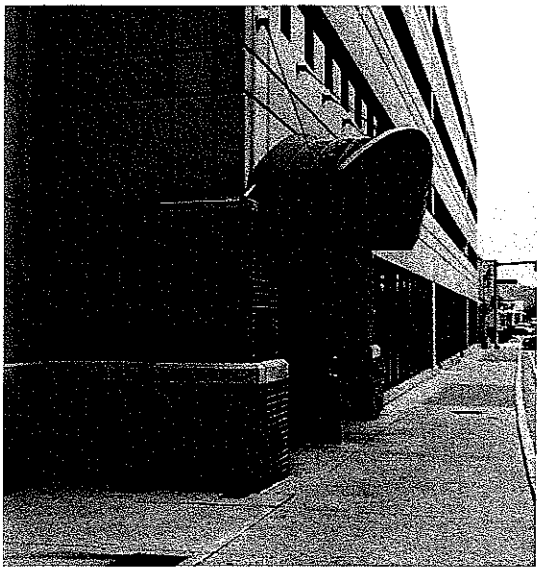
Project Description

The Judicial Annex, located across the street from the Kanawha County Courthouse in Charleston, WV, was originally constructed in 1982. The original eight-story building is attached to a multilevel parking garage.

The Kanawha County Commission initially contracted **ZDS** in 1998 to evaluate the Judicial Annex's existing mechanical and electrical systems. **ZDS** prepared an extensive report which showed opinion of costs for many options. The report covered multiple HVAC approaches with advantages and disadvantages for each. Some of the HVAC equipment was in poor condition and while the Owner was deciding on when to proceed with the recommended work, the primary chiller failed. The weather was hot so **ZDS** was commissioned under emergency conditions to

find a solution as soon as possible to avoid closure of the facility. **ZDS** designed/project managed a replacement chiller within **days** of the equipment failure which prevented extended closure of the building.

The Kanawha County Commission then hired **ZDS** to provide engineering design/construction administration services for renovations for the facility and significant additions. The renovations included seven Circuit Court courtrooms; jury deliberation rooms; attorney conference rooms; witness rooms; Court Clerks offices, public research area; adult probation offices; Maintenance Shops, Prosecutors offices, Voter's Registration, Court Administration offices; and all public areas. The engineering for the additions included a new entrance, security checkpoint, and lobby to alleviate a very overcrowded situation and a building expansion for Juvenile Probation and a newly established Family Court.



ZDS designed a VAV air handling system with reheat HVAC system to address health, safety, and IAQ issues by increasing outdoor ventilation air rates, higher filtration, strict humidity control, DDC monitoring/control, carbon monoxide demand control ventilation, outside air measuring/monitoring and other design strategies. Multiple HVAC options with their associated opinion of costs for modifying, updating and replacing the existing equipment were reviewed with the Owner for their preferences to find the best fit with the existing maintenance staff. All HVAC equipment was designed for full DDC controls for remote monitoring, and energy efficiency.

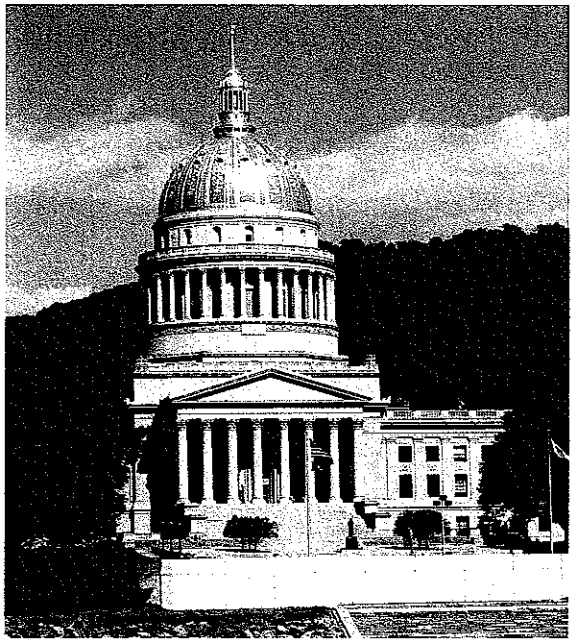
Other support services and building infrastructures improvements installed concurrently include complete voice and data wiring systems, including wiring for LAN; new power distribution for clean and normal power; and new lighting systems that complement the computer environment. Building security improvements 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.

Total Project Costs	**$10,270,000**
Mechanical Project Cost:	**$3,200,000**
Project Size:	**Renovations 93,000 ft^2 plus 23,000 ft^2 addition**
Completion Date:	**Completion 2004**

ZDS Design/Consulting Services

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

Client Contact: Mr. Aaron Allred,
Project Manager
Johnson Controls, Inc.
4132 First Ave.
Nitro, WV 25143
Phone: (304)-346-1340
Cell (304) 546-5225



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

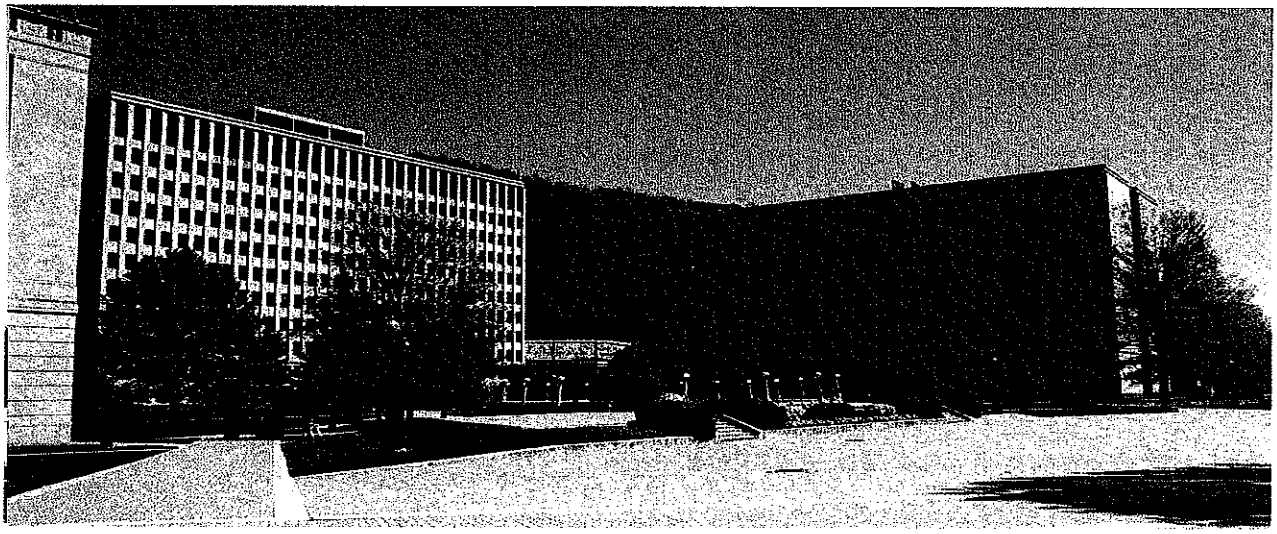
ZDS Design/Consulting Services and Johnson Controls Inc.

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,

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 with the remaining through a separate contract using **ZDS** to design and administer the construction activities for 2,137,400 square-feet involving 15 buildings at the campus.

Performance Contracting Program Costs:	**Up to approximately $20,000,000**
Potential Savings:	***Improvements self-fund within 15 years***
Size:	**1,929,155 FT^2**
Completion:	**2007 for Construction**

ZDS Design/Consulting Services

Project Name: ***Harris Hall - HVAC and Electrical Retrofits***
Client/Location: ***Marshall University, Huntington, WV***

Client Contact: Mr. Tony Crislip,
Project Manager,
Mechanical/ Electrical Trades
One John Marshall Drive
Huntington, WV 25755-2450
Phone (304)-696-6241

Services: Engineering planning, design, bidding and construction administration services HVAC & Electrical retrofits, DDC Controls, AHU's replacement, chiller replacement, VWV pumping, new electrical service, switchgear and fire alarm systems.

Project Description

Harris Hall, on Third Avenue on the north side of campus, was originally constructed in 1976. The four-story building houses the departments of classical studies, geography, history, religious studies, philosophy, psychology, counseling and rehabilitation, adult and technical education, and administrative education. Marshall University recognized that the HVAC and electrical systems were at the end of their expected service life and were experiencing frequent equipment failures, power outages and numerous complaints on comfort and "stuffy air".

Marshall University initially contracted **ZDS** to evaluate Harris Hall's existing mechanical/electrical systems and prepare an extensive report. **ZDS**'s cost estimates showed it would take $3 million to meet their needs. The planning document covered multiple HVAC approaches with advantages and disadvantages for each to provide a comfortable environment while addressing Indoor Air Quality, energy efficiency, operating costs and meeting the Owner's goals. The report also covered related work including roof replacement, lighting upgrades, and energy conservation measures.

We worked with the University on different approaches to fit the project within available funding while defining alternates that would permit the Owner to complete the HVAC/Electrical retrofits if more funding could be found or to phase the work as funding was found. With the aid of **ZDS**'s planning, Marshall University was able to phase the project. The facility was vacated for less than 60 days in the summer of 2006 to allow the contractor to perform the major construction efforts without working around the occupants. The project was successful through careful planning and coordinating construction efforts between the University, the design and the installation.

The HVAC system had a direct impact on the health and safety of the college students and staff. Previously, occupant comfort was not being maintained and recommended levels of outside ventilation air were not being introduced to the classrooms. **ZDS** designed a VAV air handling system with reheat HVAC system to address health, safety, and IAQ issues by increasing outdoor ventilation air rates, higher filtration, strict humidity control, DDC monitoring/control, carbon monoxide demand control ventilation, outside air measuring/monitoring and other design strategies. Multiple HVAC options with their associated opinion of costs for modifying, updating and replacing the existing equipment were reviewed with the Owner for their preferences to find the best fit with the existing maintenance staff. A ground mounted air cooled chiller with antifreeze and variable water volume pumping was also designed. All HVAC equipment was designed for full DDC controls for remote monitoring, trouble shooting and energy efficiency.

A new addressable fire alarm system, electrical service, electrical switchgear and additional panelboards were also included in the design. A section of the original aluminum bussed switchgear had previously "melted" which caused an extensive outage while a custom replacement part could be manufactured. The electrical retrofits addressed this problem area. Energy efficient lighting with motion detectors and water conservation features were also incorporated into the building.

Tony Crislip, Manager, Marshall University stated "***This building serves as a pilot for how all our buildings should be constructed. This building is the most comfortable one on campus!***"

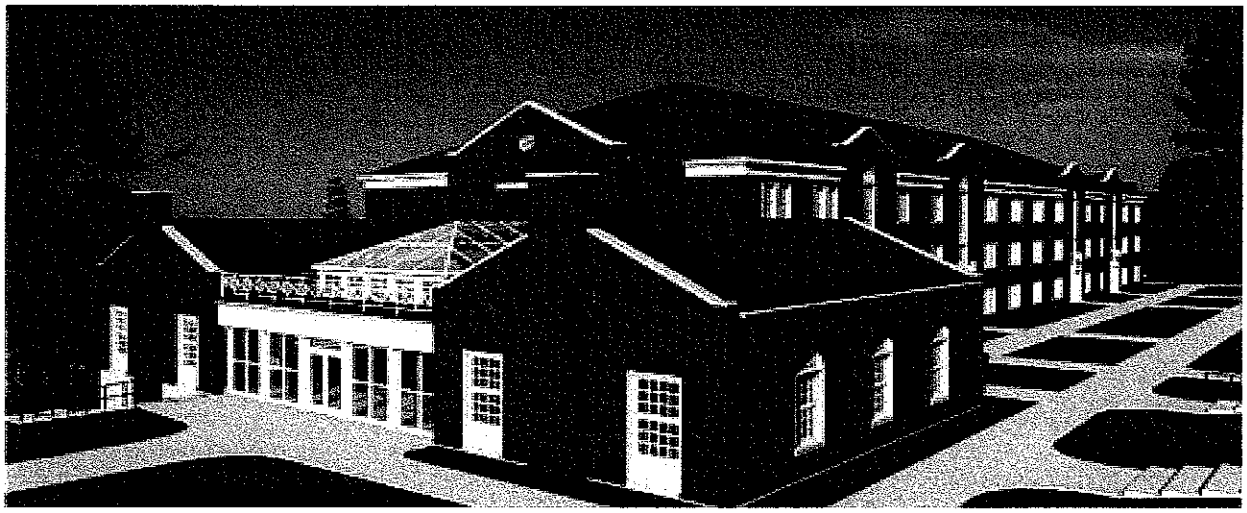
MEP Project Cost:	**$2,856,000**
Project Size:	**56,680 square-feet**
Completion Date:	**Completion fall 2006**

ZDS Design/Consulting Services

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

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

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



Project Description

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

The quality of HVAC system was crucial to Concord University since they had just spent over a $1 million correcting Indoor Air Quality (IAQ) problems in an existing relatively new building in which they believed the HVAC system contributed to the problem. **ZDS** designed around a centralized heating/cooling plant for greater efficiency in overall system operation and provided centralized control and maintenance of primary heating/cooling equipment, with the added benefit of supplemental capacity in the event of a boiler failure. The planning and design

services included providing a quality HVAC system and electrical equipment, and their sub-systems to provide a comfortable environment while addressing Indoor Air Quality, energy efficiency, operating costs and meeting the Owner's needs.

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

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

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

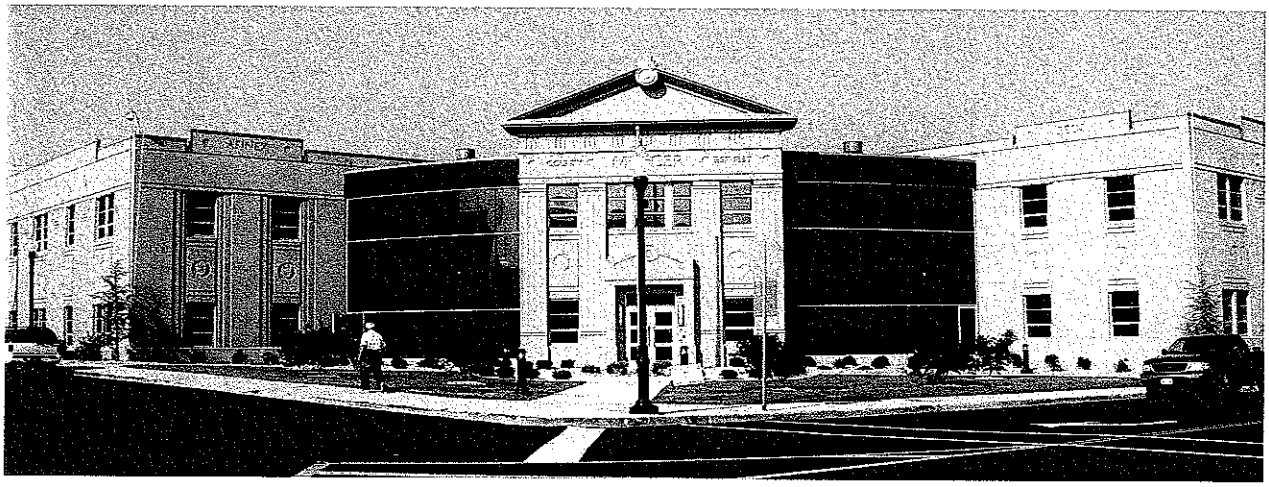
ZDS also designed, bid and provided construction administration services for completing the Campus Medium Voltage Loop involving every building on the campus which was completed in 2005 under budget and ahead of schedule. The $375,000 electrical upgrades also provided the electrical service capability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

MEP Construction Cost:	**$3,675,000 out of a $10,300,000 total costs**
Size:	***Approximately* 50,000 square-feet**
Completion Date:	**Under construction, completion in 2007**

ZDS Design/Consulting Services

Project Name: ***New Mercer County Courthouse Annex***
Client/Location: ***Mercer County Commission, Princeton, WV***

Services: Engineering planning, design, bidding and construction administration services HVAC, Electrical, Plumbing, and Fire Protection working through a local Architect.



Project Description: The new Mercer County Courthouse Annex, located across the street from the Mercer County Courthouse, was completed in 2006. The two-story building houses the Magistrate courtrooms, jury deliberation rooms, attorney conference rooms, video conference rooms, witness rooms, Court Clerks offices, public research area; adult probation offices, Prosecutors offices, Probate offices, Court Administration offices; and public areas.

The existing courthouse adjacent to the new Annex also needed more electrical power. **ZDS** evaluated the existing courthouses potential power needs and incorporated those in the new Judicial Annex's electrical systems while providing emergency power.

Approximate Project Cost:	**$6,000,000**
Project Size:	**32,000 square-feet**
Completion Date:	**Completion 2006**

ZDS Design/Consulting Services

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

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

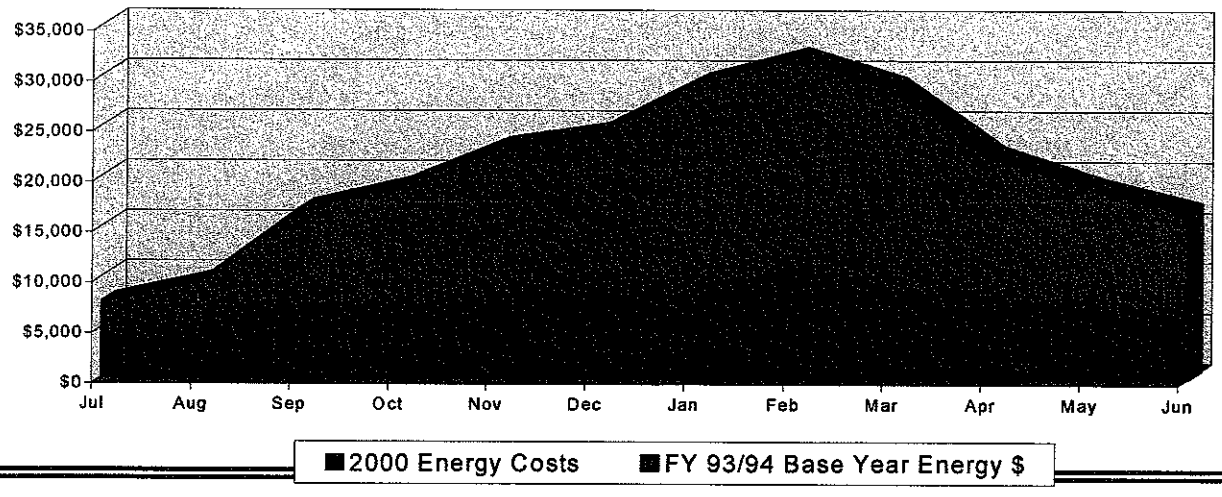
Services: Engineering planning and design for HVAC Renovations, Exterior Renovations, Lighting and Electrical Renovations

Project Description

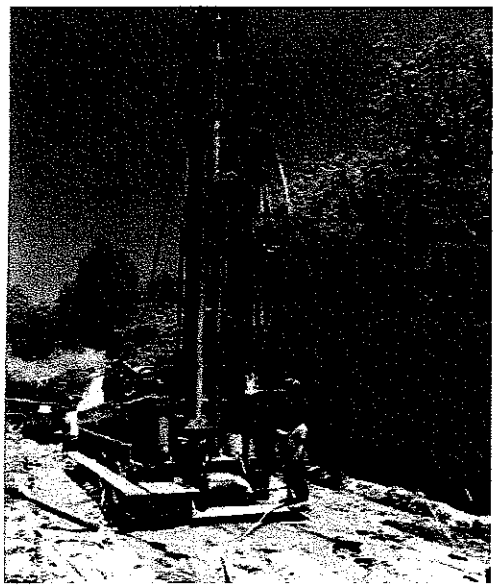
Initially Webster County Schools solicited bids from several Performance Contracting firms to make upgrades at the high school and pay for the improvements. Performance contracting approach could only partially pay for the improvements and a pure performance contracting approach was dropped. Webster 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



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 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.

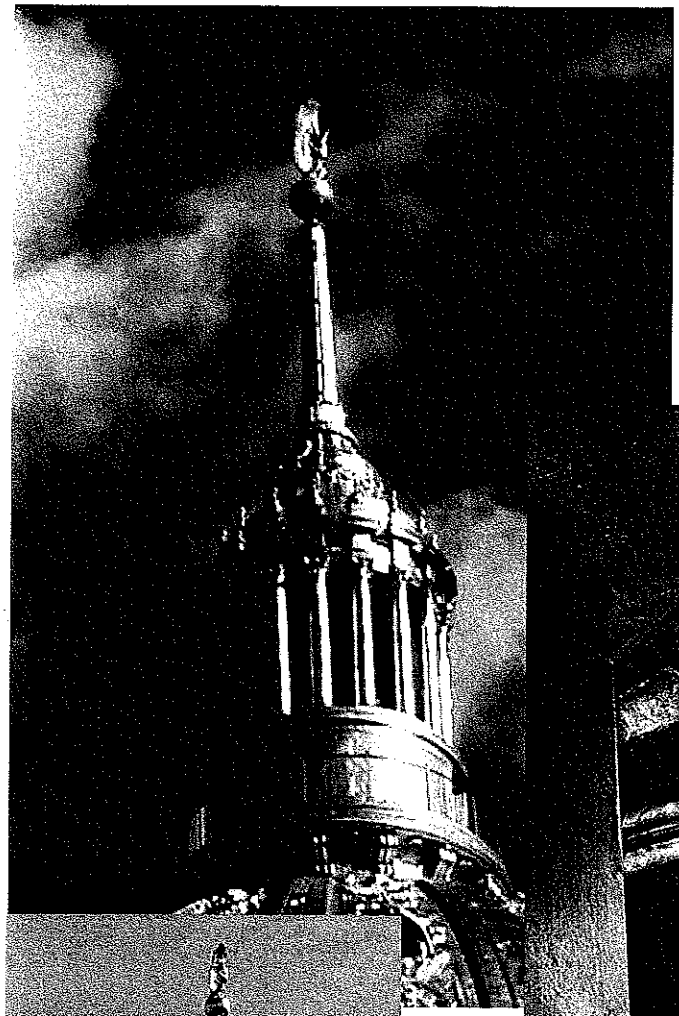
Systems for Control of Energy Use: Geothermal Heat Pump system, DDC controls, customized rooftop AHU's with air-to-air heat recovery, and variable water volume pumping.

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.

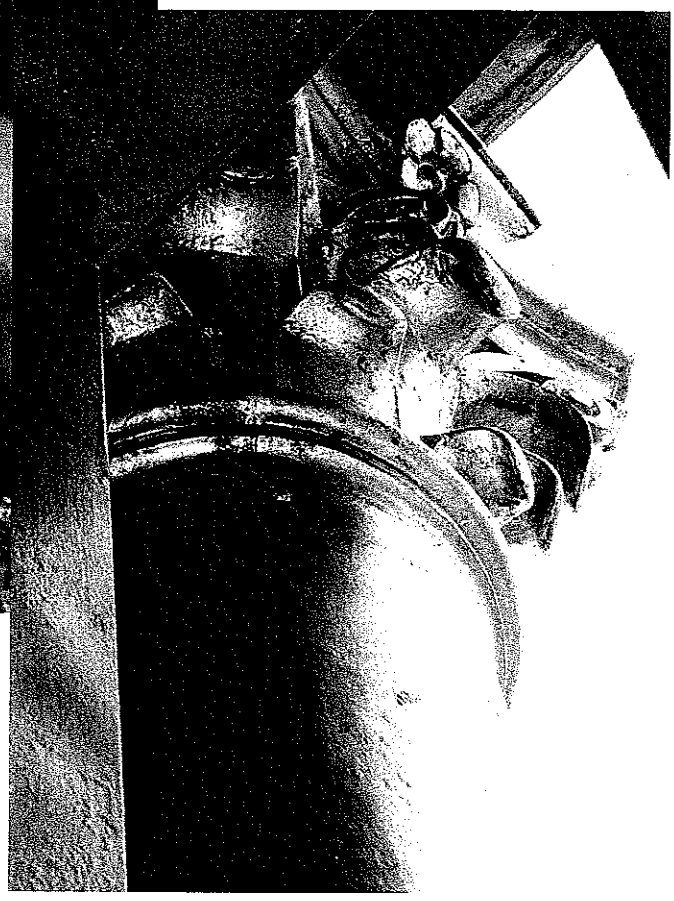
Project Size:	**110,000 ft^2**
Total Project Cost:	**$5,083,000**
SBA Funds:	**$5,083,000**
Potential Annual Energy Savings:	**50% Reduction HVAC & Lighting Operating Costs.**

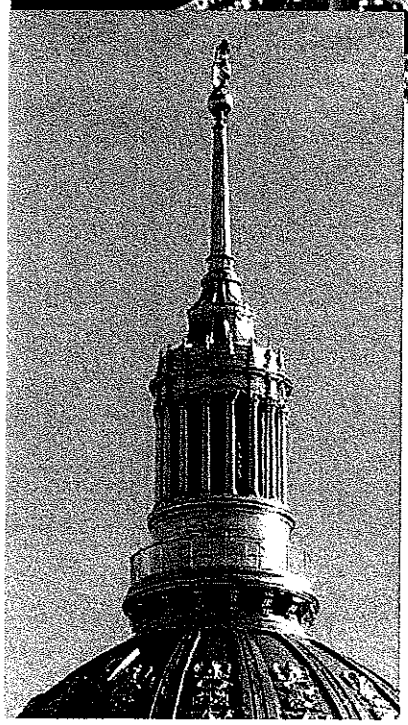
STRUCTURAL INVESTIGATION
MAIN CAPITOL BUILDING DOME

Charleston, West Virginia



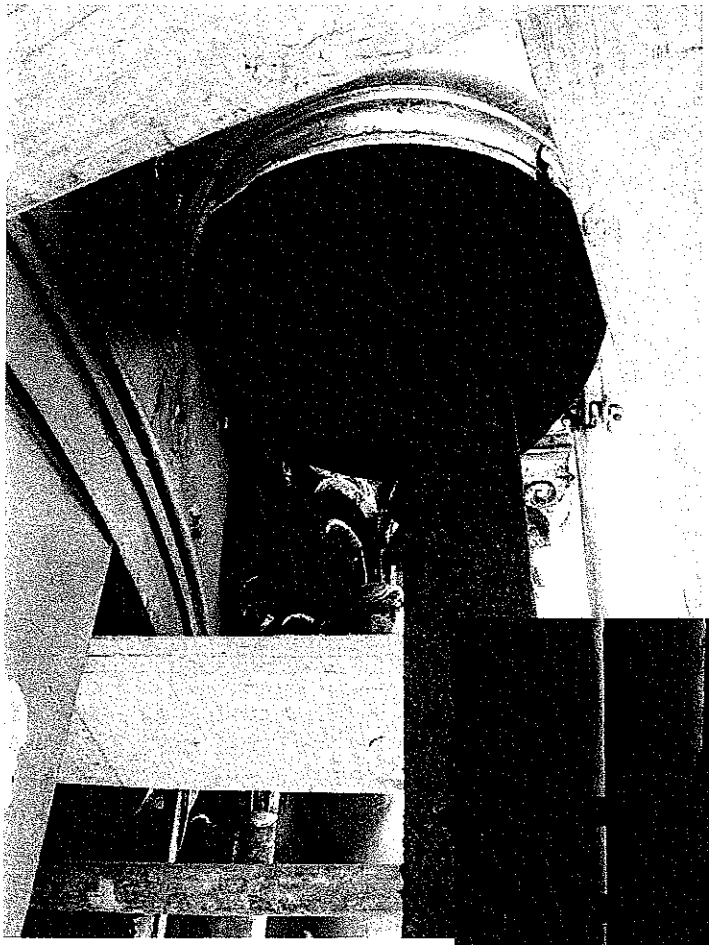
The structural steel in the lantern level shows evidence of deterioration. Project included probing to determine extent of deterioration and preparation of plans and specifications for repairs.





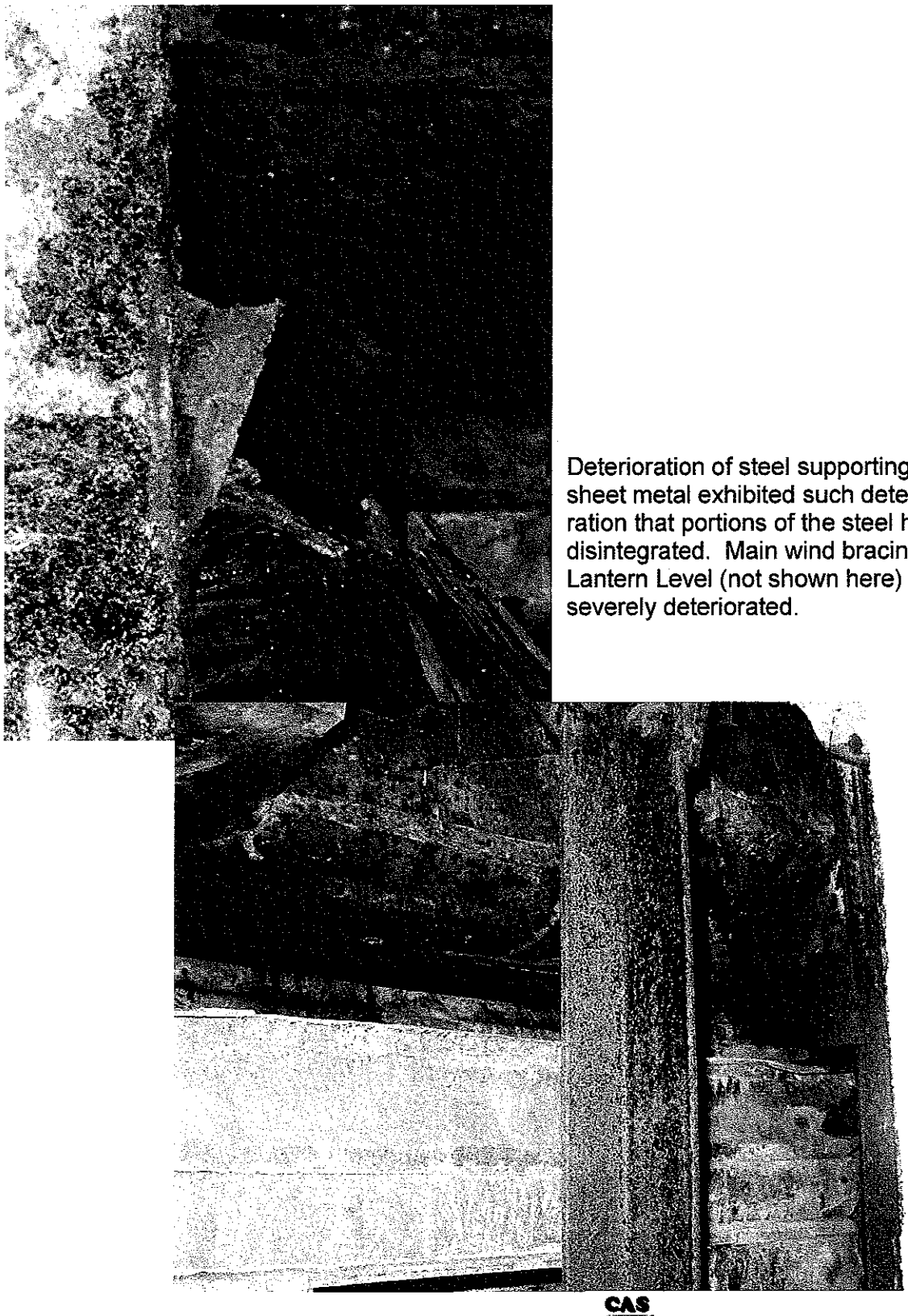
The structural steel after being repaired and the regilding complete.

CAS Structural Engineering, Inc.



Removal of decorative column wrap indicated that back-up structure was severely deteriorated.

CAS
Structural Engineering, Inc.



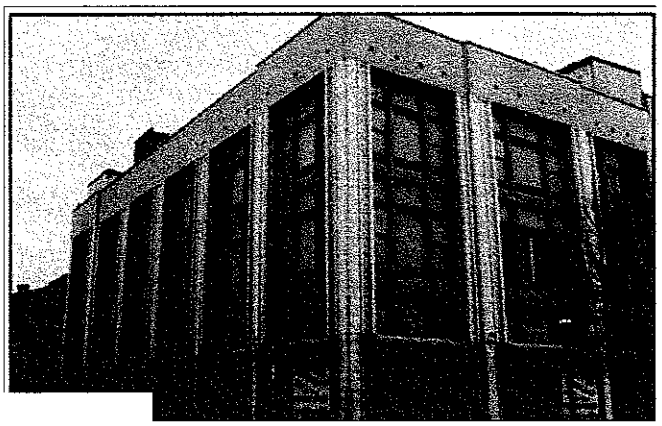
Deterioration of steel supporting sheet metal exhibited such deterioration that portions of the steel have disintegrated. Main wind bracing in Lantern Level (not shown here) also severely deteriorated.

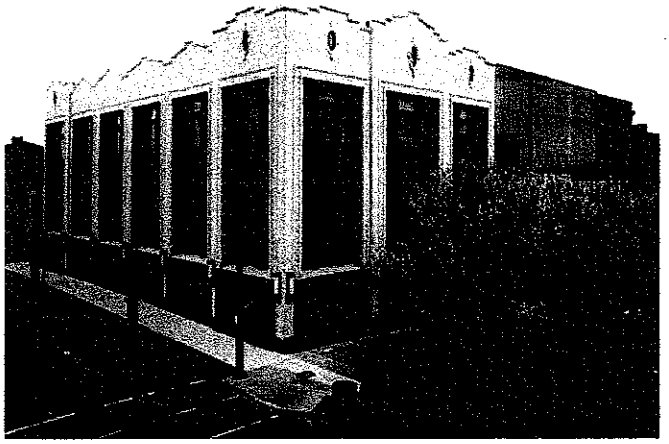
CAS
Structural Engineering, Inc.

YORK COUNTY GOVERNMENT CENTER

York, Pennsylvania

This 1898 former department store in downtown York was converted to the York County Government offices in the early 1990's.





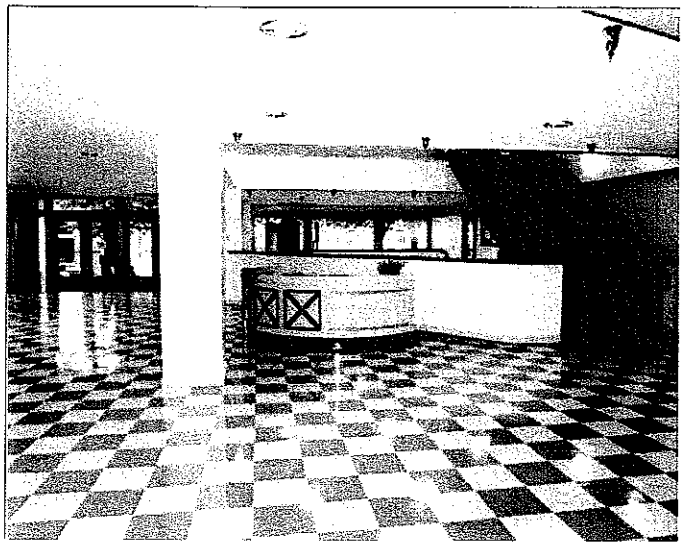
New exterior features included the monumental parapets and oval windows to recreate the original appearance.

Materials on this project ranged from cast iron to structural steel to masonry to wood framing. Loose-laid stone foundations walls were also encountered.

The former JC Penney Building renovation included a Beaux-Arts style façade. This building and an adjacent townhouse were incorporated into the design of the county offices and interior access between each of the structures was provided

This project was completed while working for a previous employer.

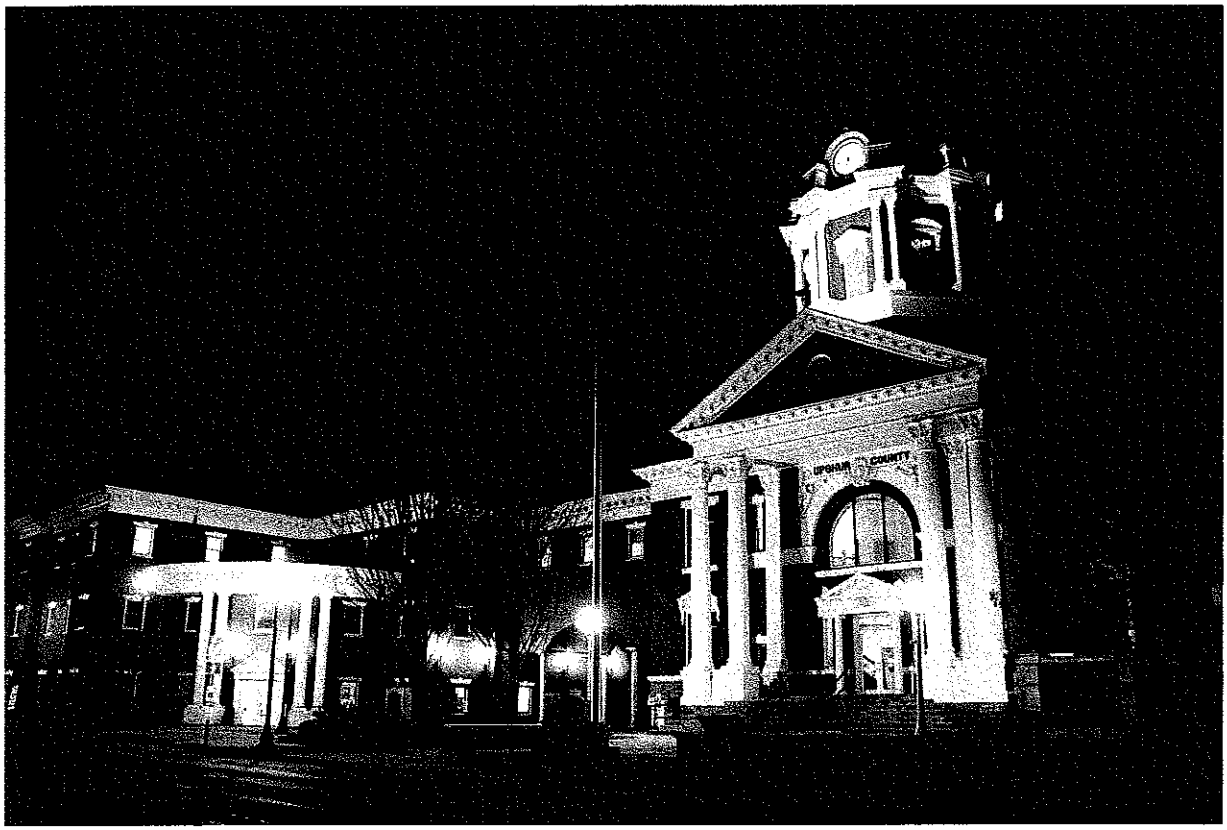
CAS
Structural Engineering, Inc.



The second floor originally consisted of a mezzanine around three sides of the structure. The renovated floor plan required adding floor structure on this level to access a new elevator. The new structural steel framing connections were designed to frame into the existing hollow cast iron columns.

Architecture

Upshur County Courthouse Renovations 04013

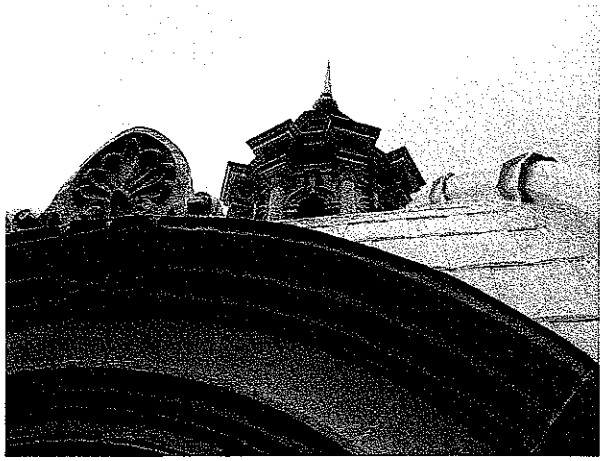


Upshur County Courthouse Complex

AIA Honor Award 2008

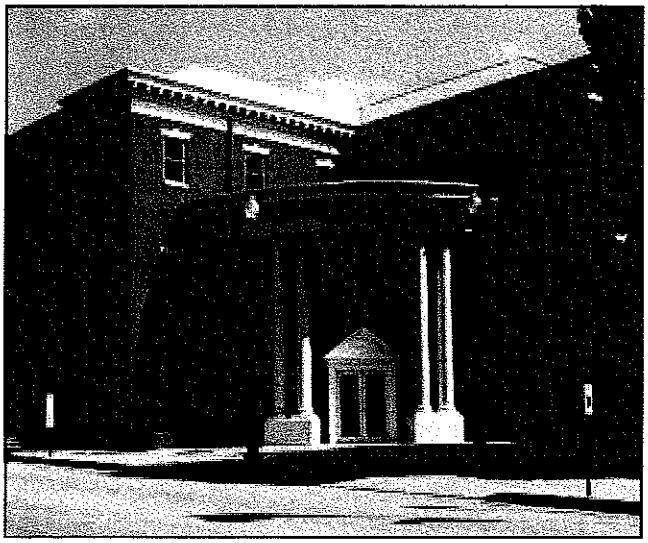
Upshur County Courthouse Renovations
Upshur County Commission
Buckhannon, West Virginia

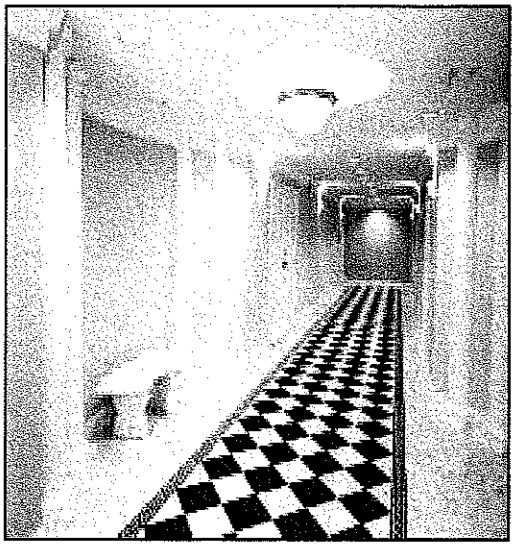
Since the design and construction of the courthouse annex in 1995, Chapman Technical Group has been involved in several improvement and restoration projects at the Courthouse in Buckhannon. In 2005, a lift was installed and the plaza renovated to make the original courthouse accessible. In 2006, the Courthouse dome and clock tower were completely restored. In 2007, the Courthouse portico stonework was restored, and in 2008 the work was honored by the AIA/WV for Excellence

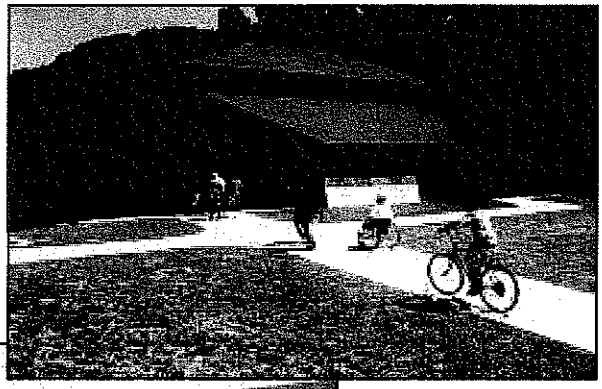


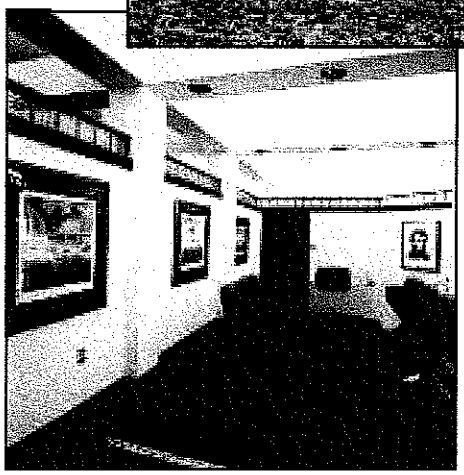
Dome Restoration Detail

Architecture and Interior Design









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Interior design and architectural services offer clients an opportunity to explore aesthetic and functional designs by complementing interior and exterior styles. Whether it's the renovation of an existing building or the construction of a new facility, Chapman Technical Group offers an experienced staff of interior designers and architects to provide an exceptional design. Developing partnerships with other disciplines, this department can coordinate site, interior, and exterior issues to reduce project costs and ensure overall design. The interior design and architecture disciplines enable Chapman Technical Group the ability to offer a complete design solution.

Paying for Performance

A growing number of colleges sign contracts with guarantees of savings of energy and money

BY MARTIN VAN DER WERF

*Todd A. Zachwieja, a Consultant with **ZDS** Design/Consulting Services: "Some schools have moved forward with contracts without fully understanding what they were doing."*

CHRIS GRANT FOR THE CHRONICLE

TECHNICIANS are crawling over the campus of Ohio University, charting the use of electrical current in every office and dormitory room, measuring the brightness of lighting, the consumption of water, the air temperature in every room and alcove. They are trying to document every way that the university can cut its energy costs.

The answers are in little places. Ohio will replace 9,000 exit signs with exit lights that use 80 percent less energy and last 25 times longer. It will replace windows. It will put smaller, more efficient fluorescent tubes in the light fixtures. It will probably be watering its lawns and fields with well water rather than water from the tap. And, as a symbol of its turn away from a longtime reliance on coal, the university is considering buying its own natural-gas field, in the nearby hollows of the Appalachians.

It will be a 20-year project that will save millions of dollars per year in energy costs. Yet, to do it, the university won't have to come up with any new money up front.

In April, it signed a $25-million "performance contract" with Vestar, a subsidiary of Cinergy Corporation, a Cincinnati-based energy company.

HOW IT WORKS

Performance contracts are an innovative financing method that is increasing in popularity on campuses. The process works like this: A contractor or energy company explores a campus and recommends ways to save money on energy bills. Then the contractor makes the changes or hires others to make them, and guarantees, in writing, that the savings the college will realize will cover the costs of the changes, usually within 10 years. The company can also arrange financing, so the college does not have any upfront costs. The college pays the company for construction and equipment in installments that roughly equal the amounts by which the college is cutting its energy bills.

The companies benefit by selling more of their products. For many colleges, the greatest appeal of the contracts is that they can use the savings to help eliminate backlogs in deferred maintenance. Many of them use the savings to buy more-efficient chillers, ventilation systems, and other utility-related equipment.

"This is a way for many institutions to get capital quickly," says Mohammad H. Qayoumi, vice chancellor for administrative services at the University of Missouri at Rolla, who leads sessions on utilities policy at institutes sponsored by the Association of Higher Education Facilities Officers.

"Are we going to see more? Definitely. We are going to see things going in that direction, especially with the deregulation of energy companies. They are increasingly going to want to sell electricity not only as a commodity, but all kinds of services along with it," he says.

University officials who have entered into the contracts point out, however, that the deals are immensely complicated. Any institution that is considering such a contract should consult with outside

Sherwood G. Wilson of Ohio U. says its new energy contract will help it cover the costs of deferred maintenance.

GEOFF BUTLER FOR THE CHRONICLE

experts, says Joe Kelley, executive director of facilities at Louisiana State University at Baton Rouge, which signed one of the first performance contracts by any college, an $18.8-million deal in 1990.

"We sort of had to find a pathway through the jungle on this one," says Mr. Kelley. His advice: "Get every word of it in writing."

Todd A. Zachwieja, principal of **ZDS** Design/Consulting Services an Ohio and West Virginia-based consultant on performance contracting, says there are now more than 100 companies in the business. The traditional market leaders are Fortune 500 companies like Honeywell, Johnson Controls, and Sempra Energy. Many of the newest ones are utilities trying to broaden their services.

AN UNTAPPED MARKET

The size of the market is difficult to quantify. Johnson Controls alone has about $1.6-billion in contracts, about 100 million worth with colleges, says Tom Proffitt, marketing manager for performance contracting at the Milwaukee-based company.

The college market, however, remains relatively untapped. Mr. Proffitt estimates that fewer than 20 percent of institutions have signed such contracts. But higher education has been a steadily growing segment of his company's business, he says.

Performance contracts were born in the 1970's, during the Arab

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oil embargo, when energy savings were at a premium. But they were not widely used until the mid to late 1980's, when they became particularly popular at hospitals, which could get some Medicaid and Medicare reimbursement for facilities improvements, says Mr. Zachwieja, chief executive officer of ZDS Design/Consulting Services, in St. Albans, W.Va.

Slowly, as states have passed laws allowing multiyear financing, elementary and secondary schools and local governments are beginning to sign the contracts. About 35 states have now enacted the laws, says Mr. Proffitt.

In 1994, President Clinton signed an executive order allowing federal agencies to make the agreements, and the contracts have begun to proliferate, mostly at military bases and at office buildings owned by the General Services Administration.

STAYING ON THE SIDELINES

Other than pioneers like Louisiana State; however, most higher-education institutions have stood on the sidelines.

Many were scared away by earlier performance contracts, in which hospitals and some government agencies didn't save as much as they expected. In the 1980's and early 1990's, the contracts were usually structured to give the company a share of the savings. Those incentives encouraged companies to maximize profits by doing the least amount of work to save the amount of money specified in the contract. But the long-term benefits for the institution were dubious.

Mr. Zachwieja, the West Virginia consultant, says that if colleges are careful about what they specify in their contracts, the real savings will come after the contract expires, as newly installed equipment continues to cut energy costs for years.

"Some companies are structuring contracts that only give benefits during the life of the contract," he explains. "You really aren't saving any money unless you get benefits that are lasting."

Louisiana State, for example, decided that it wanted all of the energy savings rather than sharing them, and, in 1992, bought out its contract with CES/Way International, an energy-contracting company, which has since been acquired by Houston-based Sempra Energy.

"We didn't really need the savings guarantee, because the savings were there, the technology was proven, and it was, in our minds, a low-risk project, so we took it over ourselves," says Mr. Kelley, the facilities director.

Colleges also feared losing control of the operation of their buildings, something that indeed came about in early contracts.

"Some schools have moved forward with contracts without fully understanding what they were doing," says Mr. Zachwieja. "Let's say they agree to a shutdown schedule — the lights shut down at a certain time, as opposed to before, when a custodian just shut down the lights on a room-by-room basis. Then the college decides to go to a nighttime-use schedule. Then it won't be able to produce the savings that were projected in its contract. How do you deal with that? All those possibilities must be considered."

Some college officials say they think such kinks have been worked out.

Sherwood G. Wilson, associate vice president for facilities and auxiliaries at Ohio University, believes that more institutions will sign the contracts as an answer to deferred-maintenance problems.

"We are faced with a backlog of deferred maintenance," says Mr. Wilson, who estimates Ohio's total at $55-million. "We have resources that fall a long way short of covering all of our needs." The contract will allow Ohio to take care of more than $10-million of the backlog.

Nationally, deferred-maintenance costs for colleges reached an estimated $26-billion, according to a 1996 report by the facilities-officers association. Chipping away at that total will become a big selling point as more companies approach colleges about the contracts, says Mr. Proffitt, of Johnson Controls.

"Everyone has looked at the K-12 market, and this has worked at K-12," he says. "You look at universities. There are greater bureaucracies, they may have credit issues, they have more-complex systems. Quite frankly, you go where the low-hanging fruit is, and that has been the school systems. The more-complex clients usually come later."

At Ohio, it took three years to get the administration, the Board of Trustees, and the state Board of Regents to approve the contract, mostly because of bureaucratic problems, says Mr. Wilson. When key financial people left, he had to explain and justify the contract to their replacements. It is one of the largest performance contracts ever signed by a university.

Then there is the cultural shift for a region where the economy is centered on energy consumption.

Ohio University has always been run by burning the very ground beneath it. Like clearing a forest to build a log cabin, the university has counted on nearby coal mines to stoke the boilers in the bowels of its sprawling campus.

But then came the Clean Air Act, and black-lung disease, and acid rain, and unemployment for many of the miners who dug up the ore that, in this part of the world, is particularly high in pollution-causing sulfur.

"We have tried to support the local industry, but this is even better," says Gene Mapes, an associate professor of environmental and plant biology and director of environmental studies. "I think this is a real leadership role, because we are modeling behavior." The university is trying to get area residents to acknowledge that the local economy must shift its emphasis from coal to tourism and small industry.

CREATING A LONG-TERM RELATIONSHIP

Construction is set to begin in June on the first phase of the contract with Vestar, in which the company will make changes in nine of the 200 or so buildings on campus.

"Our math building is a huge building, with lots and lots of lights that are inefficient," says Mr. Wilson. "Our library is the same way." In addition, showerheads and perhaps toilets will be changed in two residence halls to models that use less water. The power plant will get new controls, which will more closely match energy production to demand.

This is the beginning of a relationship that is expected to last for 20 years, says Mr. Wilson. The project will comprise five phases, with one starting every two years. Each phase will have a guarantee that the costs will be repaid by energy savings over the ensuing 10 years. Ohio can terminate the contract after any of the phases.

SAVING $25-MILLION

If the university goes through with all of the phases, the contract guarantees that Ohio will save $25-million, although Mr. Wilson and Vestar officials have analyzed only about half of the seven million square feet of building space on the campus.

Construction costs in the first phase are estimated at $4.2-million. Ohio University is financing the project itself, probably with bond issues. Financing costs for the first phase are estimated at $23 1,000. If the changes in the first phase save $700,000 a year, as projected, the savings will have paid for the costs, including financing, in a little more than six years. Each succeeding phase will involve more-complex projects, with longer payback schedules. Plans are still being drawn up for those phases.

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Mr. Wilson says he has not calculated how much all of the work will eventually save the university. In the first phase alone, he says, the equipment being installed will continue to save Ohio $700,000 annually for 20 years. The total savings after subtracting the cost of the equipment and financing would exceed $9-million.

At Louisiana State, the annual energy bill before the performance contract was $12.5-million. Now it is about $8.5-million, even with 10 percent more students on the Baton Rouge campus, says Peter N. Davidson, director of energy services.

The contracts are structured to guarantee that the savings will cover not only the costs of construction, new equipment, and financing, but also, in some cases, a fee, generally ranging from 1 to 4 percent of the size of the contract, for a guarantee that the contractor will make up the difference if the college's projected savings fall short of expectations.

Usually, the savings guaranteed in the contract are about 80 percent of the company's estimated energy-cost reductions, says Michael Besspiata III, director of facilities management at Georgetown College, in Kentucky.

Johnson Controls last year paid out about 1 percent of the total savings it guaranteed but could not meet in its $1.6-billion worth of contracts, says Mr. Proffitt.

As performance contracts become more common, Mr. Besspiata says, any size institution can benefit. Georgetown College, for example, signed a $750,000 performance contract last year with Enertech, a subsidiary of LG&E Energy Corporation.

Mr. Besspiata moved to Georgetown in May 1998, from the Southern Baptist Theological Seminary. Both institutions have fewer than 2,000 students. And each one now has modern energy-management systems, which tightly control energy use across the campus, paid for by the savings produced in performance contracts.

"I think a lot of colleges think they are too small to really get much benefit," says Mr. Besspiata. He projects savings in the current fiscal year of $85,000 on a typical annual utility bill of $1-million. "That's real money," he says. ■

For More Information contact:

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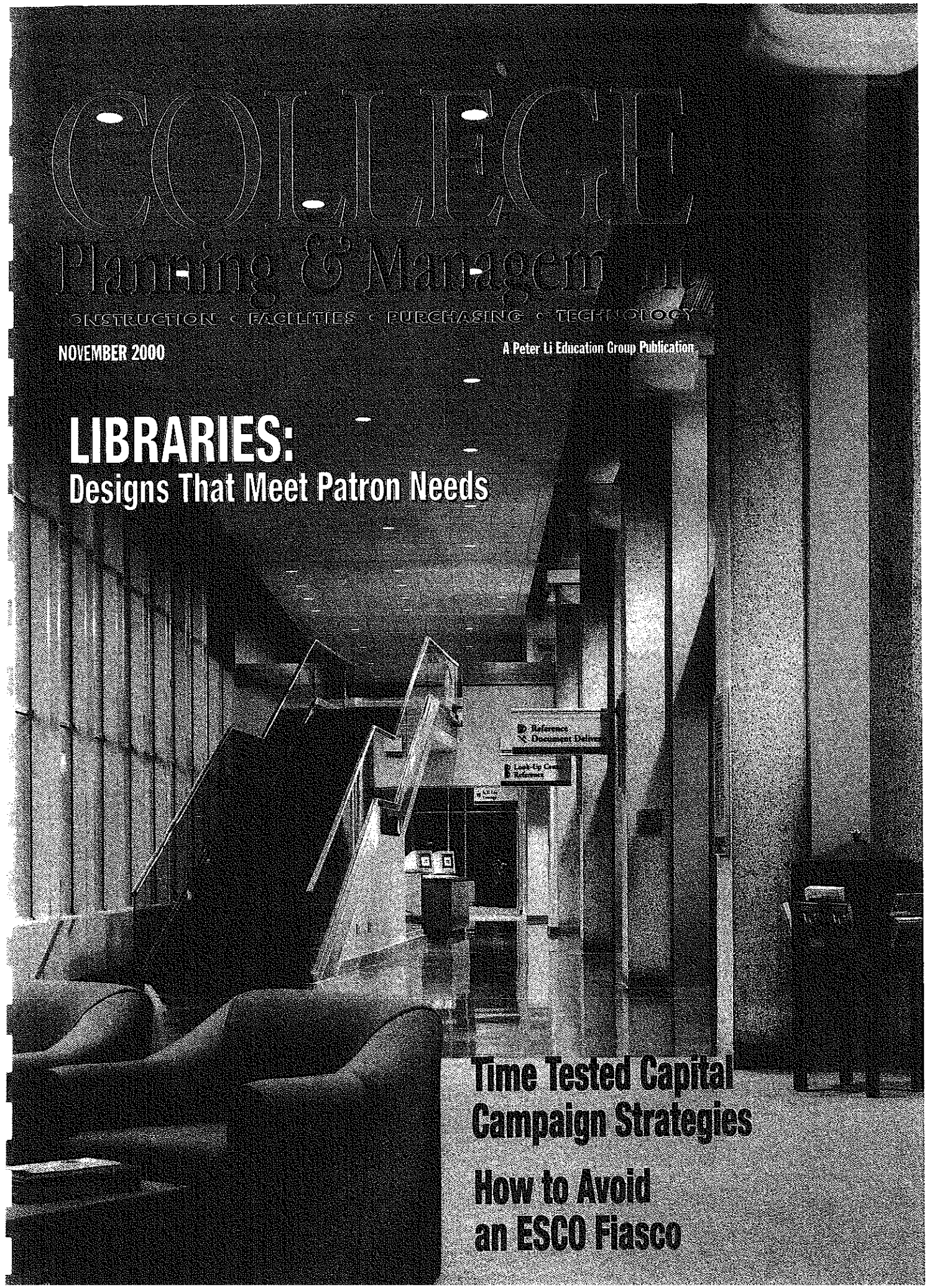
College Planning & Management

CONSTRUCTION • FACILITIES • PURCHASING • TECHNOLOGY

NOVEMBER 2000

A Peter Li Education Group Publication

LIBRARIES:
Designs That Meet Patron Needs



Time Tested Capital Campaign Strategies

How to Avoid an ESCO Fiasco

the field for the RFP. "If we had had the complete RFP done by 14 companies we would have had a mountain of paper," he says. "This streamlined the process even though the initial step took extra time."

Conry says there were a lot of similarities among candidates, but some distinct differences revealed by the RFQ. "One is the level of experience in performance contracting in higher education," he says. "Second, some had more solid in-house engineering teams and wouldn't need to go to subcontractors as much — we liked that accountability. Third, they differed in their philosophies of project staging and customer service."

The RFP got to the nitty gritty. "We said, 'Here are sample buildings: We want you to bring in your engineering team and give us specific proposals for improvements, tell us what the cost savings are, and explicitly show us how you calculated these cost savings,'" Conry says. "That allowed us to see how creative their engineering teams were, how sensitive they are to occupants during the implementation/construction, and how conservative or liberal they were in calculating the energy savings on a given measure. It was good to have that type of in-depth analysis of fewer firms."

As a result, the university selected as its energy services partner Vestar, an energy efficiency design, engineering, construction and facility operation firm with headquarters in Cincinnati, Ohio, and Toronto, Ontario.

Ironically, design and construction of the chilled water plant, which initially drove the university to explore performance contracting, is not part of the performance contract with Vestar. Conry says it did not have a quick enough payback — 10 years, as required by Ohio state law. That project is proceeding in phases under a separate contract, funded with Ohio University operating money, revenues accrued in its energy management fund and bonds, he says, "but coordinated with the energy performance contract to make sure that the system we are building is efficient and that we have controls in place that allow it to be operated efficiently in the future."

Consultant Proves Beneficial

Considering that the energy efficiency program implemented under the performance contract will save the university more than $2 million a year, Ohio University's facility planners and managers are convinced that their consultant, **ZDS**, is worth the monies the university paid for their services. "It was important to have somebody guide us through the process," says Sherwood Wilson, associate vice president for Facilities and Auxiliaries. "It is also important when you are doing something new to have an independent consultant to help convince trustees and administrators of the validity of the approach. Performance contracting was a new concept here."

Indeed, it's still a new concept. "Many universities really don't understand performance contracting, and they are scared to death of it," he says. "Performance contracting can be as little or as much as you want it to be — it is a concept, not a template. It can be styled and adjusted to meet the needs of your own campus."

But many administrators and planners shy away from hiring consultants. "They see consultants wanting to charge fees to guide them through a process they think they can already do themselves," Wilson says. "Our energy management program was very successful through the years, but it only picked the 'low fruit.' We still identified a need for a $25- to $30-million performance contract."

That's why hiring a consultant is smart business, Wilson says. "Having a professional to get you started is worth every penny."

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, West Virginia, No. 10,127
Certified Energy Manager (C.E.M.), National Certification
LEED® Accredited Professional, National Certification through USGBC
Professional Engineer, Georgia, No. 18253
Professional Engineer, Kentucky, No. PE-17961
Professional Engineer, North Carolina, No. PE-017445
Professional Engineer, Ohio, No. E-53587
Professional Engineer, Pennsylvania, No. PE-040929-R
Professional Engineer, 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 heath 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, 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 2007 as a "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 Specialists.

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 heath 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 24 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 2 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 8 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 twenty-eight 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 West Virginia. 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 duel 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 disciplines of 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 Chemistry 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 for 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 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

CAS Structural Engineering, Inc.

Carol A. Stevens, P.E.
Structural Engineer

EDUCATION

West Virginia University, BSCE, 1984
Chi Epsilon National Civil Engineering Honorary
The Pennsylvania State University, ME Eng Sci, 1989

PROFESSIONAL REGISTRATION

P.E.	1990	Pennsylvania
P.E.	1991	West Virginia
P.E.	1994	Maryland

BACKGROUND SUMMARY

2001 – Present	President, Structural Engineer CAS Structural Engineering, Inc.
1999 – 2001	Structural Engineer Clingenpeel/McBrayer & Assoc, Inc.
1996 – 1999	Transportation Department Manager Structural Engineer Chapman Technical Group, Inc.
1995 – 1996	Structural Engineer Alpha Associates, Inc.
1988 – 1995	Structural Department Manager Structural Engineer NuTec Design Associates, Inc.
1982 – 1988	Engineer AAI Corporation, Inc.

PROFESSIONAL ASSOCIATIONS

American Society of Civil Engineers, WV Section
Past President
National Society of Professional Engineers
American Concrete Institute
American Institute of Steel Construction
West Virginia University Department of Civil and Environmental Engineering Advisory Committee
West Virginia University Institute of Technology
Department of Civil Engineering Advisory Comm

CIVIC INVOLVEMENT

ASCE Christmas in April Project
Engineer's Week Speaker

EXPERIENCE

West Virginia, State Capitol Complex, Capitol Cafeteria: Investigated problems with support of structure above glass window walls and developed repair solution.

West Virginia, State Capitol Complex, Dome Structure: Exploratory investigation, preparation of construction documents for repairs to structural steel in Capitol Dome.

West Virginia, State Capitol Complex, Building 3: Structural design and construction administration of repairs and renovations to limestone canopy.

West Virginia, State Capitol Complex, Main Capitol Building Parapet: Exploratory investigation of limestone/brick parapet/balustrade of Main Capitol Building to determine cause of movement/cracking/leaks. Project also included preparation of construction documents for repairs.

West Virginia, State Capitol Complex, Governors' Mansion: Structural investigation to determine feasibility of enlarging openings and introducing skylights in existing historic residence.

West Virginia, Westmoreland Apartments: Designed structural additions and renovations to existing closed multi-story school for use as elderly apartments. Work included restoration of exterior masonry components.

West Virginia, Upshur County Courthouse Main Entrance: Designed repairs to failing entrance structure in 1899 structure.

West Virginia, Kanawha County Schools: Structural design of additions and renovations to George Washington, Sissonville, Herbert Hoover, South Charleston and Nitro High Schools.

West Virginia, Eastern West Virginia Regional Airport Authority: Designed foundations, floor and roof framing for new two-story airport terminal building.

West Virginia, Mercer County Airport: Designed foundations, floor and roof framing for additions and renovations to existing airport terminal building.

P.O. Box 469 Alum Creek, WV 25003-0469 (304) 756-2564 (voice) (304) 756-2565 (fax)
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Structural Engineering Certification Board

PREVIOUS EXPERIENCE

West Virginia, State Capitol Building: Designed structural system to replace deteriorated reinforced concrete slab at landing on north side of Capitol steps.

West Virginia, Upshur County Courthouse Annex: Performed structural evaluation and design for repairs to existing multi-story Annex addition.

West Virginia, Sissonville Library: Structural design of new 7,000 SF branch library. Structure consisted of wood framing.

West Virginia, Cabell Huntington Hospital Boiler Mezzanine: Structural analysis and testing of existing reinforced concrete mezzanine with significant degradation from brine tank leakage. Developed new structural system to replace existing concrete mezzanine utilizing steel framing and steel grating.

West Virginia, Farrell Law Building: Performed analysis of existing deteriorated structural sidewalk over parking area. Recommended repair solutions for reinforced concrete and aged terra cotta façade of 1920's building.

West Virginia, Beckley Wastewater Treatment Plant: Designed reinforced concrete tanks and masonry support structures for new wastewater treatment plant.

West Virginia, Morgantown High School Additions: Designed steel framing and foundations for science classroom, cafeteria and gymnasium additions to existing education complex.

West Virginia, Grafton High School Addition: Designed steel framing and foundations for new science classroom addition to existing high school.

Pennsylvania, York County Government Center: Structural analysis and design of 1898 former department store converted to county government offices. Interior renovations included adding floor framing at mezzanine level, analyzing and redesigning deficient floor framing, and adding new elevators. Exterior renovations included complete façade rework to recreate original appearance.

Pennsylvania, Metropolitan Edison Company, Headquarters: Structural design of new 80,000 SF two-story office addition and cafeteria addition to existing complex. Cafeteria addition was semi-circular in shape.

Pennsylvania, Defense Distribution Region East: Structural engineering and design for a 33,000 SF Hazardous Materials Storage Warehouse.

Maryland, U.S. Army Corps of Engineers, Baltimore District, Administration Building: Seismic design of new 10,000 SF masonry building.

Pennsylvania, Carlisle Syntec: Design of foundation supports for 800,000 lb rubber vulcanizing machine; enlargement of foreman's office including new framing to support mechanical equipment on roof; new monorail installation; extension of existing gantry rail.

Pennsylvania, Engel Worldwide: Steel framing and foundations for new 12,000 SF two-story office building; design of crane beams and columns for adjacent 60,000 SF crane building.

Pennsylvania, AMP IMF: Structural design for the renovation and conversion of a stamping facility into an integrated manufacturing facility (IMF) housing operations for stamping as well as blow molding processes.

Texas, York International: Structural survey of existing building structure for modifications to incorporate large testing and manufacturing areas for mechanical equipment.

Maryland, Columbia 100: Design of structural steel framing for new two-story 43,000 SF office building.

Pennsylvania, York Federal Savings and Loan Association/New Service Corporation: Design of steel framing, reinforced concrete retaining wall and foundations for new 14,400 SF two-story office building.

Pennsylvania, Yorktowne Parking Garage: Study of reinforced concrete/steel framed parking garage.

Pennsylvania, Blakey Yost Bupp & Schaumann: Re-construction of a 3-story 10,200 SF, fire damaged urban building and conversion into law offices.

Pennsylvania, College Misericordia: Structural design of new 50,000 SF student resident hall utilizing precast concrete planks and masonry bearing walls.

Pennsylvania, Homewood Suites: Structural and foundation design for new two-story hotel.

Pennsylvania, Comfort Inn: Structural and foundation design of new 5-story hotel.

Pennsylvania, Glatfelter Insurance: Design of steel framing and foundations for new 30,200 SF building.

Pennsylvania, M&M Mars: Multi-level steel structure to support dust collectors positioned over existing building, steel framing for motor control center within existing silo building, design of 4-story Alkalizing and Roasting Addition with accommodations for existing functioning railroad siding which remained operations beneath new building.

DALE E. WITHROW, AIT
Project Coordinator, Department Manager
Architecture

EDUCATION

West Virginia Institute of Technology, AS, Drafting and Design, 1975.

PROFESSIONAL HISTORY

November 2000 to Present: Chapman Technical Group
Project Coordinator/Department Manager.

March 1993 to August 2000: The HDMR Group, Inc.
Project Coordinator.

February 1990 to March 1993: AFAB Services
Owner/Designer - Drafter.

Prior to 1990 Mr. Withrow worked with several architectural and engineering firms as an employee and independent consultant.

From 1987 to 1997 he was a Facilities Planner for the Kanawha County Board of Education.

Mr. Withrow is a Project Coordinator involved in all aspects of a wide variety of architectural projects. He is also Manager of the Architecture Group.

31 years professional experience.

PROJECT EXPERIENCE

Project Design and Management: Experience ranges from drafting, detailing and design through construction observation and project management of numerous building projects in West Virginia, Kentucky and North Carolina including:

- Residential/Housing
- Governmental Facilities
- Hospital/Healthcare Facilities
- Public School Facilities
- College Athletic Facilities
- Hotel/Hospitality Facilities
- Military Support Facilities/Armories
- Grocery and Drug Chain Stores
- Industrial Plant/Laboratory Facilities
- Office Buildings
- Banking Facilities
- Americans with Disabilities Act

PHILLIP A. WARNOCK, NCARB, AIA
Project Architect

EDUCATION

The University of Tennessee, BArch, 1995

REGISTRATION

Architect, West Virginia, 2003
NCARB Certified Architect, 2002

PROFESSIONAL HISTORY

September 2003 to Present: Chapman Technical Group
Project Architect.

June 2002 to July 2003: ZMM
Architect.

June 1995 to May 2002: Lockwood Greene
Intern Architect.

August 1991 to July 1993: Omni Associates
Architectural Draftsman.

13 years professional experience with additional experience in construction, interior design and developing.

PROJECT EXPERIENCE

Assembly Occupancy Facilities: Projects include community centers, gymnasiums, a swimming pool bathhouse , and mail centers.

Aviation Facilities: Projects include air maintenance facilities, aviation education classrooms, master planning, and non-hub airport terminal additions and renovations.

Educational Facilities: Projects include a 400 student elementary school, additions and renovations to high schools, accessibility assessements and implementations, a facilities building, reroofing projects, kitchens and support area renovations.

Government: Projects include GSA courthouse studies, Navy air maintenance hangers, National Guard Armories and HUD elderly and disabled care facilities.

Health Care: Projects include hospice housing, adaptive re-use of an historic building fora psychiatric health center, housing for the elderly, mental and physically challenged, and a medical center library.

Housing Authorities: Projects include new multi-family dwelling developments, residential accessibility and modernization renovations, apartment complexes, independent living and staffed care facilities for HUD, HOPE Homes and Ridgeview Psychiatric.

Industrial Facilities: Projects include pharmaceutical, food, steel, automobile, brake, tire, bicycle tube and aluminum manufacturing facilities including research and development laboratories and industrial park master planning.

Master Planning: Projects include master planning for McGhee Tyson Airport, Nissan Automotive, Bush Beans, Inc., and the Oak Ridge Horizon Center Industrial Park.

Office/Commercial: Projects include speculative office buildings and complexes, pharmaceutical production offices, industrial complex offices, research and development centers, and corporate headquarter facilities.

AFFILIATIONS

National Council of Architectural Registration Boards (NCARB)
American Institute of Architects (AIA)

ZDS Design Consulting Services personnel and team members have worked on nearly all buildings at the WV Capitol Complex including the Cultural Center and understand the importance of historical buildings. We are nationally recognized as experts in HVAC renovations, energy efficiency and Indoor Air Quality. Our experience in performance contracting provides us with a unique in-sight into owning and operating HVAC system and enables us to address service and maintenance in our designs. We know the importance to save energy without reducing comfort. Humidity control is very important in the protection of the building and archives as well as the people. We previously assisted the Cultural Center facility for the same type of issues and believe we offer an excellent team for the WV Independence Hall proposed renovations.

Working through the State's selection, negotiation, bidding and award of contract process traditionally involves time. The desired time frame for this project is substantial completion of construction by March 31, 2009. This schedule requires prompt responses from the State through all phases of the process. The following sequence shows that decisions or delays by the State or approval agencies can impact the proposed completion schedule. If additional time is allowed for construction, bids will likely be more favorable, especially since this is a historical building and will likely need to remain accessible during most of the construction period. Our understanding of the milestones for the project includes the following:

1.	RFQ Submission	April 10, 2008
2.	Interview/Oral Presentation	
3.	Investigation/Planning/Preliminary Report Phase	Five weeks from notice to proceed
4.	50% Review Plans and Specs	Six weeks from approval of Preliminary plan
5.	75% Review Plans and Specs	Three weeks from approval of 50% plans
6.	Final Review Plans and Specs	Three weeks from approval of 75% Review
7.	State Fire Marshal Review	Concurrent with Final Review
8.	Advertizing/Bidding/Pre-bid	September 1, 2008 thru September 30, 2008
9.	Bid Opening	September 30, 2008
10.	Issue letter of intent to proceed	October 13, 2008
11.	Construction	October, 2008 thru March 31, 2009
12.	Substantial Completion	March 31, 2009
13.	Completion	April 30, 2009

Investigation, Planning, Preliminary Report: This is the initial step to allow us to review existing drawings, reports, specifications and any available information from previous renovations and proposed plans for the facility. An on-site investigation would be conducted to gain an understanding of the needs and challenges for renovating the facility and compared to available existing drawings. The major HVAC elements and related work would be assessed to determine if they need replaced, modified or can be reused. Usually the project needs are more than available funding, especially for renovation projects. A menu list of needs with preliminary cost estimates are prepared and reviewed for direction and to verify funding options. We would work with you to determining phasing the work or limiting the scope to fit with available funding.

Many codes and standards have changed since the last HVAC renovation occurred in 1975/76. HVAC renovation projects often impact other elements in the building due to changes in codes including but not limited to electrical service, building grounding system, fire alarm, and other systems. The project costs can grow if the other systems must also be brought up to current codes. We believe identifying those

areas impacted during the investigation phase allows for the direction to be applied to the design. The WV Culture Center was faced with a similar issue when ZDS evaluated the faculties HVAC system and identified many issues that needed addressed. ZDS assisted the Culture Center in prioritizing the needs and identified alternates that enabled them to obtain the necessary funding for most of their needs. This successfully included addressing Museum Environments and Environmental Monitoring requirements, indoor air quality, energy efficiency and maintenance.

Design: Our knowledge of the building obtained from the initial assessment and report will enable us to provide guidance for the extent of HVAC and related work construction activities that impact the building and use of the building during construction. We have prepared conceptual studies for many other of our customers including the WV Cultural Center, Kanawha County Commission, Marshall University, Webster County Schools and others. Once our design direction is established we proceed into developing construction documents for bidding. We integrate the recommendations for Museum Environments and Environmental Monitoring as part of those overall plans and the needs of the Division of Culture & History and the WV Independence Hall. Coordinating these needs early in the design process saves the tax payers and the State money.

State Fire Marshal Review: We have an excellent working relationship with the State Fire Marshal and have already met with them on various needs for the Capitol Grounds. We believe this will aid in expediting the review process with the Fire Marshal. We propose the Fire Marshal review occur construction documents concurrent with the final review by the Owner. This approach has been used successfully for many other State projects to save time.

Advertizing/Bidding/Pre-bid: Historically a 30 day bid period is required for a project of this size. ZDS would participate in the pre-bid conference and provide any clarifications or addenda during the bidding period as needed. A mandatory pre-bid is traditionally recommended for renovation projects to ensure the bidders review site conditions and can receive information related to submitting bids in consistent manor.

Bid Opening, Issue Letter-of-Intent: We propose issuing a letter of intent as soon as bids are received and the apparent low bidder is identified and meets the State requirements. The letter of intent will allow the State time to prepare the contract and gain the necessary internal approvals while allowing the contractor to prepare submittals at the same time. The letter of intent may be necessary to avoid delays by the installing contractor because the State can take a significant amount of time to release a contract.

Construction: Our previously renovation experience with the State and working with the Cultural Center staff will aid in the HVAC renovations work. We understand renovation projects and the need to maintain use of the building during the construction period. We have successfully worked with the Cultural Center and other State agencies in the past and hope to work on this project. We can be available to address construction issues quickly. We will conduct the preconstruction meeting and provide customary construction administration services. Substantial completion will be set for a minimum of 30 days prior to the completion date to allow the contractor time to address any punch list items and the required closeout documents.