BALLENTINE WALKER SMITH

Acoustics & Vibration Consultants

4659 Brazil Wood Drive, Kennesaw, Georgia 30144 Tel: 770.517.6464 Fax: 770.517.6565 Web: www.bwsacoustics.com

Our History

J.R. Ballentine & Associates, Inc. (JRB) was founded in 1974 by John R. Ballentine, following ten years experience as a consulting acoustical engineer and eighteen years experience in the fields of sound, vibration and noise control. John received his B.S. degree in mechanical engineering in 1948 and a M.S. degree in mechanical engineering in 1951, both from Texas A&M University. John's first assignment was professor of mechanical engineering at University of Texas El Paso. John's talents as an educator attracted the likes of General Dynamics and Lockheed, where he was appointed director in charge of sound and vibration research and development. It was during these years John honed skills that later would be applied to real world challenges in architectural acoustics, industry and environmental noise assessment and mitigation. John was founder and president of Acoustics And Vibration Associates (AVA). AVA, founded in 1969 by four Lockheed acoustics and vibration engineers, was one of the first and largest consulting firms in the southeast prior to it's acquisition by Science Applications, Inc. in 1974.

The Adelicia, Nashville, Tennessee

Scott Walker Smith joined the JRB engineering staff in 1992 and he immediately became John's right hand man and an integral member of the team. Scott was named a JRB Associate in 1994 and eventually acquired the firm in 1995. The firm was renamed to Ballentine Walker Smith Inc. during this acquisition. Scott brought to the firm experience in acoustics, noise control and engineering design. Scott received a B.S. degree in applied physics in 1987, a M.S. degree in physics in 1989 and B. degree in electrical engineering in 1994, all from the Georgia Institute of Technology. During his graduate studies, Scott earned a multidisciplinary certificate in acoustical engineering for coursework in the schools of architecture, aerospace engineering, mechanical engineering and physics.

Over the years members of the staff have contributed to the improvement of engineering practice by publishing technical papers and participating in seminars which cover topics of current interest in the fields of sound and vibration. Members of the staff are active in technical and professional societies serving as chairman and members of committees involved in standards preparation and society functions. Members of the staff often are requested to conduct "Lunch & Learn" seminars for architects and engineering firms to better educate their staff on the "do's and don'ts" of proper noise and vibration control in buildings.

Our Creed

Ballentine Walker Smith is an independent consulting firm offering services in acoustics, noise control and A/V design. BWS believes in fair business practice and we pledge to our clients that no staff member is affiliated with any university, governmental agency or manufacturer that might allow our firm an unethical competitive business advantage. BWS retains sole ownership of all equipment, software and intellectual property and we assure to our clients that no conflicts of interest shall arise through utilization of facilities and laboratories directly or indirectly funded by government or industry.

Our Firm

Each year since the founding of the firm, the volume of work has increased substantially. Ballentine Walker Smith Inc. does continuing work for many outstanding A-E firms, utilities, industrial firms, and governmental agencies. The firm has successfully completed over 1600 projects which includes designs for television, recording and post-production studios, performing arts facilities, worship spaces, auditoriums, theaters, HVAC system noise control, industrial noise and vibration control, and environmental impact and community noise surveys.

All professional staff at BWS hold degrees in engineering or physics from accredited universities. A strong continuing education program for staff members ensures the maintenance of high levels of competence and the timely introduction into practice of significant results of current sound and vibration research.

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Every project at BWS is under the direct supervision of a principal. A formal Quality Assurance program ensures that every detail of work is carefully supervised, reviewed, and checked.

Hewlett Packard, Perimeter Summit Building, Atlanta, Georgia

Our Equipment

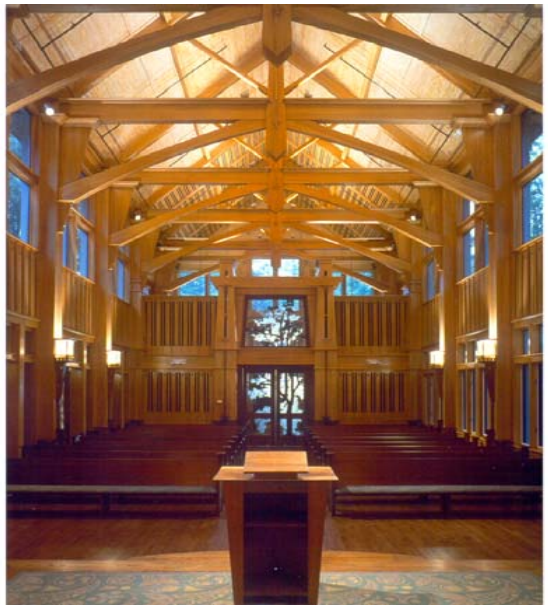
BWS employs a variety of data acquisition and reduction instrumentation and software in providing consulting services. The equipment includes GenRad, Bruel & Kjaer Instruments, Larson/Davis, Ono Sokki, TEF, E.A.S.E, Endevco, Wilcoxon, and Quest (all of which comply with American National Standards Institute standards, where applicable).

Architectural Acoustics

Acoustical design in architecture must be aesthetically pleasing, functional and cost effective. In addition, it is imperative that acoustical and noise control design considerations are integrated into the project early on. This helps to ensure the owner may successfully utilize their space as intended upon final build-out. Typically considerations for acoustics and noise control are minimal during the schematic design phase which limits the amount of overall budget that might otherwise be dedicated to important acoustical design aspects related to the functionality of a space. Project specific considerations that require immediate attention include, but are not limited to:

- *Acoustical goals relating to the proper function and end-use for each design critical space.*
- *Proper considerations for environmental noise conditions at the project site.*
- *End-user privacy requirements.*
- *Mechanical and HVAC systems noise & vibration control.*
- *Desired acoustics in presentation spaces.*

Olive Baptist Church, Pensacola, Florida



State Botanical Garden Chapel
AIA Religious Architecture Design Award

BWS provides clients with cost effective, technically efficient acoustical solutions for a broad array of project types comprising worship spaces, recording / television / post-production studios, educational facilities, high-rise corporate buildings and open plan office environments, conference centers and performing arts facilities.

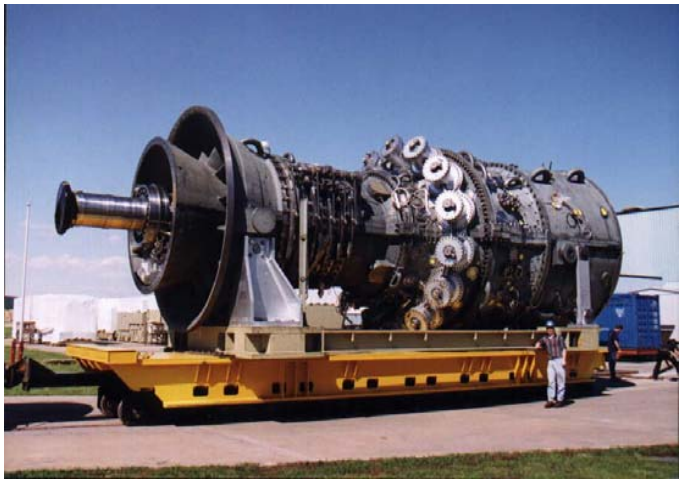
BWS assists architects, engineers, general contractors and owners in a way that provides a clear understanding of the functional requirements and acoustical design methods that must be employed to stay on budget while accomplishing the design intent. In fact, many clients repeatedly hire us based upon our cost-effective acoustical and noise control design solutions. It is relatively simple to design a facility using excessive levels of acoustic treatment. More often than not this leads to an over-inflated budget and a design that is impractical to implement under normal field conditions. BWS understands these challenges and provides clients with a minimalist design approach that best suits the client's needs and objectives.

Environmental Acoustics

The Noise Control Act of 1972, promoted by the U.S. Congress, provided a statutory mandate for a national policy on noise. The purpose of this policy was "to promote an environment for all Americans free from noise that jeopardizes their public health and welfare". The Noise Control Act of 1972 divided the responsibilities for noise permitted in the environment between Federal, State and Local governments. The Federal government was given the responsibility for controlling noise source emissions while the states and political subdivisions retained primary responsibility to control the use of noise sources and noise levels permitted in the environment.

Hartsfield-Jackson Atlanta International Airport Concourse E

To accomplish the tasks set forth in The Noise Control Act of 1972, the Environmental Protection Agency produced two documents which form the basis for modern-day assessment, evaluation and control of environmental noise. These documents were respectfully named "Public Health and Welfare Criteria for Noise (1973)" and "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (1974)". These documents were produced based upon years of research and cumulative data by acoustical consultants, research scientists and governmental agencies. The information contained in these documents has been referenced in noise regulations adopted by HUD, FHWA, FAA and FICON. Most local governmental agencies develop noise ordinances based upon information provided in these documents.



"World's Largest Turbine" GE 9F Turbine
GE Turbines, Greenville, SC

Ballentine Walker Smith Inc. has extensive experience in performing environmental impact surveys (EIS) and assessments of noise. BWS has conducted hundreds of community noise surveys and provides critical expert review and testimony to settle noise disputes.

Industrial Acoustics

The Code of Federal Regulations (CFR) Part 1910.95 Occupational Noise Exposure requirements adopted by The U.S. Department of Labor Occupational Safety and Health Administration (OSHA) requires employers to protect employees from prolonged exposure to noise. The current requirements developed by OSHA as set forth in this standard limit time weighted average (TWA) employee noise exposure to not greater than 90 dBA per 8-hour time duration, or a typical work day. In addition, a hearing conservation program is required by the employer if an employees' TWA noise exposure exceeds the 85 dBA "action level" over the same time period.

GE Turbines Test Stand #8 Control Room , Greenville, South Carolina

Hearing conservation program requirements include, but are not limited to, annual audiometric testing for employees working in noise hazardous areas, educating employees on the effects of prolonged noise exposure and hearing loss, providing custom and selectable hearing protection devices for employees and industrial noise mitigation in noise hazardous areas to reduce noise exposure to acceptable levels, where applicable.

BWS develops and maintains short-term and long-term industrial noise abatement programs for numerous industrial clients. A typical noise abatement program may incorporate the following interrelated tasks:

- *Detailed facility noise survey and mapping.*
- *Identification of all noise hazardous areas and equipment producing excessive levels of noise.*
- *Comprehensive employee noise exposure monitoring.*
- *Noise abatement design analysis and noise mitigation techniques.*
- *Detailed reporting based upon the facilities short-term and long-term goals and achieving OSHA compliance.*

When requested, BWS performs cost analysis for recommended noise abatement options and specialty systems. BWS assists manufacturers and contractors to ensure the design is properly implemented from inception to build-out. Our knowledge and application of industrial noise control products eliminates the communications gap between industry, contractors and product vendors.

Scott Walker Smith, Principal

Scott Walker Smith has over seventeen years experience as a consultant in acoustics. He is the principal in charge of Ballentine Walker Smith Inc. and oversees all consulting operations. Mr. Smith has extensive experience in architectural acoustic design, noise and vibration control, environmental acoustics, community noise assessments and industrial acoustics.

Scott received a Bachelor of Science in Applied Physics (1987), a Master of Science in Physics (1989) and a Bachelor of Electrical Engineering with High Honor (1994) from the Georgia Institute of Technology. Scott also holds a Certificate in Acoustical Engineering for cumulative studies and course work relating to the field of acoustics and noise control. In graduate school, he was an instructor for the School of Physics electronics laboratory.

Scott is a member of the Acoustical Society of America (ASA), Audio Engineering Society (AES) and American Society of Testing and Materials (ASTM). He is a voting member in ASTM Technical Committee E33 on Building and Environmental Acoustics. Technical Committee E33 is responsible for developing and maintaining test standards relating to sound transmission class (STC), impact insulation class (IIC) and environmental impact surveys (EIS). These standards are the definitive reference for building codes relating to acceptable levels of sound and vibration.

Paul W. Peace, Jr. - Chief Audio Engineer

Paul has a long history in audio that started with an Applied Physics degree from Georgia Tech in 1987. During his career, he has served as Director of Audio Engineering for Imax Corporation, Senior Design Engineer for Frazier Loudspeakers, and Project Engineer with Sonics Associates. Paul has designed and commissioned hundreds of systems, large and small, along with numerous loudspeaker designs currently in production.

Paul is president of Auditoria where he oversees all daily operations. Auditoria is a Birmingham based A/V firm which specializes in systems and product design and engineering. The BWS and Auditoria design team works with architects and contractors to ensure room acoustics and technical systems enhance the creative vision of the owner. To accomplish this task, BWS and Auditoria develop computer models which allow the room and loudspeaker performance to be evaluated prior to construction. At Auditoria's laboratory each system is rigorously tested using state-of-the-art measurement equipment. This allows Auditoria the flexibility to provide optimized loudspeaker systems for any size job.

Paul is a member of the Audio Engineering Society (AES), Acoustical Society of America (ASA), National Systems Contractors Association (NSCA) and the Society of Motion Picture and Television Engineers (SMPTE).

Hartsfield-Jackson Atlanta International Airport , Atlanta, GA

Acoustical and noise control design for International Concourse 'E' and Atrium. Additional services and testing provided for train station upgrades to ensure 'people generated' noise was minimized.

Olympic Drug Testing Facility, Atlanta, GA

Site vibration measurements and design recommendation for an isolation system that ensured the mass spectrometers maintained calibration in a hostile vibration environment.

IRS Customer Service Center, Atlanta, GA

The service center comprised 400,000 sq.ft. of office space, a training center, fitness center and a "cafetorium". BWS provided all acoustics and noise control design for the building.

Keesler Air Force Base Flight Simulator Facility, Biloxi, MS

BWS provided interior acoustic design for privacy between training spaces and a custom design to ensure flight simulator hydraulic equipment and pumps did not impact the function of the facility.

Cobb County Galleria Centre, Atlanta, GA

Interior acoustic and noise control design of rotunda, meeting rooms, ballrooms and convention center spaces.

Emory University Burlington Road Music Facility

Performance / Rehearsal Hall acoustic design. Additional acoustic and noise control design for music practice rooms.

Cobb Galleria Centre, Atlanta, GA

Emory University 1525 Clifton Road Building, Atlanta, GA

Acoustical and noise control design for classroom building including lecture halls and mechanical equipment isolation.

Camille Olivia Hanks Cosby Academic Center, Atlanta, GA

BWS provided acoustics and noise control design for this 69,000 square foot facility that provides an intellectual nucleus for faculty in the humanities and women's studies. Dedicated in 1996 as The Camille Olivia Hanks Cosby Academic Center, this facility houses the Spelman College Museum of Fine Art and a state-of-the-art College Archives. Additional spaces comprise auditoria and lecture halls.

Life University 1377 Building

Acoustical , noise control and A/V design services provided for distance learning center which includes audi toriums and classrooms. The state-of-the-art facility included a custom fiberoptic network capable of interconnecting campus buildings.

Elizabeth Bradley Turner Center, Columbus, GA

Acoustical design retrofit to modernize this historic lecture hall at Columbus State University.

Salem High School, Atlanta, GA

Acoustical and noise control design of new music wing comprising a multiuse performance hall, band , choir and orchestra rehearsal spaces.

IRS Customer Service Center, Atlanta, GA

Vanderbilt University Light Hall Building

BWS provided noise control analysis and design to control rooftop emergency generator noise from propagating into upper floor laboratories. Environmental noise monitoring was conducted for nearby helicopter operations at the hospital to provide proper facade noise control.

Kennesaw State University Wilson Music Building

Music building comprising custom ensemble spaces, practice rooms and a black box theater dedicated to the drama department. BWS provided design for room-to-room noise control and HVAC noise control design to ensure privacy and interior background noise design goals were met.

Special Operations Command (SOCOM)

Ballistic testing noise tests as per MIL-STD-1474DN1 to determine peak noise level and b-duration of door breaching and "flash bang" ammunition.

Georgia Bureau of Investigation (GBI)

Peak noise testing of firearms for GBI case.

I-285 Perimeter Center Marriott Condemnation

Site environmental noise monitoring and predictive noise modeling to determine noise impact on the Marriott Hotel for the Georgia Department of Transportation (GDOT) I-285 realignment project. Testimony was also provided on the case.

Berry College School of Education & Family Science, Rome, GA

Remedial acoustics and noise control recommendations to improve speech intelligibility in classrooms.

Emory University Performance / Rehearsal Hall, Atlanta, GA

Casulon Plantation

Environmental noise monitoring and predictive modeling for rock quarry noise impact on Georgia Department Of Natural Resources protected historic site.

Smyrna Municipal Services Building, Smyrna GA

Acoustical and noise control design of courtroom / council chambers.

Glynn County Courthouse

Acoustical and noise control retrofit design of commission meeting room. The court house is a historic landmark so aesthetics were preserved.

Richard Russell Bankruptcy Courts, Atlanta

Acoustic and noise control redesign of four bankruptcy courts. The HVAC system was reused so noise and vibration measurements were made to facilitate proper systems retrofit to maintain low background noise in new courts.

Gordon College Fine Arts Center

The Gordon College Fine Arts Center has a 500 seat theater, on-site set design facilities and performance and music practice rooms. The theater is multipurpose and is primarily used for plays, concerts and musicals.

BWS provided acoustical consulting services for interior acoustics, performance and practice room noise and vibration isolation, mechanical systems noise control and architectural acoustic design.

Jenny T. Anderson Theater, Marietta, GA

BWS provided acoustic and noise control design for this multi-purpose performance theater. Both the initial and retrofit expansion designs were accomplished. The theater is part of the Cobb County Civic Center complex.

Lakeview Hills Baptist Church Condemnation For Georgia Department of Transportation

Site environmental noise monitoring and predictive noise modeling to determine noise impact on Lakeview Hills Baptist Church for the Georgia Department of Transportation (GDOT) S.R. 53 widening project. Testimony was also provided on the case.

Federal Center Building

Acoustical testing and redesign of partitions separating judge's offices and building aerobics facility.

Albany Courthouse (renamed C.B. King), Albany, GA

Complete acoustical and noise control design of courthouse building comprising staff offices, judge's chambers and courtrooms.

Cobb County Civic Center, Marietta, GA

Complete acoustical and noise control design of multipurpose Civic Center building. The Civic Center houses a main arena with breakout rooms for graduation ceremonies,