

January 17, 2020

Dennis Carson
Director of Economic Development
Office of Economic Development for the City of Lafayette
515 Columbia Street
Lafayette, IN 47901

RE: Lafayette Theater Building Assessment

Mr. Carson,

It was good to meet with John Collier and John Hughey on December 18th to discuss the City's short and long-term plans for the Lafayette Theater. Keystone Architecture is excited by the opportunity to partner with the City on the revitalization and continued use of another historic downtown landmark!

As we discussed, since the City only recently took full possession of the building, a logical first step will be a complete building assessment. A complete assessment will take a detailed look at all aspects of the building, including architectural, mechanical, electrical, plumbing, structural, and acoustic. At the end of the assessment process, the City will have a document that can inform decisions on how to invest in the building, both immediately and over the next 5-10 years. The assessment will contemplate the building attributes with regard to the suitability of the various uses discussed during our meeting, such as a gathering space for meetings, musical performances, and rentals.

A detailed scope of work for the Architectural, Mechanical, Electrical, and Plumbing Building Assessment, which would be performed by Keystone Architecture's own in-house licensed architects and engineers, is as follows:

- Evaluate existing space usage of the facility. Make recommendations on modifications to better suit the City's planned usages, including examining viewing angles for flat or tiered first floor scenarios.
- Evaluate the existing building's elements versus current code requirements for accessibility, life safety, egress, occupancy, and energy efficiency. Make recommendations on existing noncompliant conditions, including modifications and code strategies.
- Evaluate the building envelope, including roof, exterior walls, and openings. Make recommendations short-term and long-term maintenance, knowing that the historic building exterior must remain unchanged.

- Evaluate electrical and low-voltage systems, such as fire alarm, and structured cabling. Make recommendations what existing infrastructure is suitable for continued use, and what may need to be upgraded based on the City's planned usages and standards.
- Evaluate plumbing and sprinkler systems, including domestic hot and cold water, sanitary, natural gas, piping material and condition, and roof drains. Make recommendations what existing infrastructure is suitable for continued use, and what may need to be upgraded or upsized based on the City's planned usages, or increased restroom counts.
- Evaluate mechanical systems and equipment. Make recommendations on unit replacement or refurbishment, considering the City's planned usages, and taking into account the unit the City has already purchased.

A complete building assessment should also include a structural evaluation. For this, we would recommend engaging Arsee Engineers from Indianapolis. Their experience with structural and masonry work on historic buildings is peerless in Indiana. They are the right choice for this project. Their scope of work is as follows:

- Perform one day of field observations with a 2-person crew to review the interior and exterior of the building for structural and envelope issues. Areas to be reviewed include roof, attic, basement, marquee interior, and exterior masonry. Make recommendations on short-term and long-term needs, including repairs and maintenance for continued longevity, and to fix any issues that are revealed during the evaluation.

Due to the use of the facility as a performance space, an acoustic evaluation may also be of value to assess potential suitable uses. For this, we have contacted Stan Roller & Associates. Our companies have worked together successfully on previous projects, and they have experience with buildings of this types. There scope of work is as follows:

- Visit the facility and meet with the Owner's Representatives to gain a clear understanding of the details and condition of the existing construction, receive input on the intended uses of the facility, budget considerations, etc. Provide a written evaluation on the acoustic strengths and weaknesses of the facility. Provide general recommendations on changes that might be required for the facility to host the kinds of performances the Owners envision.

All of these findings will be summarized in a written report, supplemented from photos taken during field investigations. We will also assist Kettelhut construction in their preparation of cost estimates as needed.

At this stage, the observations and for the assessment will be made from visual observations that can be made with the naked eye to areas that be accessed safely without special equipment. No destructive testing will be performed, or specialized equipment such as boom lifts used to access areas or review hidden conditions. Based on our findings, we may recommend additional

observations using more advanced techniques and equipment. If these become necessary, a cost to provide them can be provided at that time. Recommendations for action on items within the assessment will be based on the current general knowledge of the City's potential uses for the facility, as discussed in the December 18th meeting, and normal building maintenance and upkeep procedures. We will not perform exhaustive analyses of existing conditions, such as calculating heating and cooling loads or analyzing capacities of existing structural elements. We will not create "as-built" drawings of the facility as part of this study, since the City already has existing drawings from the previous Owner. We will create section illustrations to accompany our examination of viewing angles.

Our regular fee structure is based on the number of hours we estimate to complete this work, as well as the skill level of the various staff members we utilize to provide the various components of the assessment. For the structural and acoustic portions of the assessment, we have solicited proposals from outside consultants that we feel best meet the City's needs. The costs for these portions of the assessment are passed directly to the City without any markup from Keystone. The cost breakdown for the facility assessment is as follows:

- Architectural, Mechanical, Electrical, and Plumbing (Keystone Architecture) – \$8,000
- Structural & Building Envelope (Arsee Engineers) – \$6,000
- Acoustic (Stan Roller & Associates) – \$3,200

The City may choose to move forward with any or all of these on a schedule that they feel is appropriate. Based on observations made during our January 8th site visit, we would recommend proceeding with the structural and building envelope evaluation from Arsee at the same time as the architectural, mechanical, electrical, and plumbing at Keystone.

Since we have already performed field investigations of the architectural, mechanical, electrical, and plumbing systems, we anticipate another 3-4 weeks or so to compile findings into a report, once this proposal is approved. For the structural and acoustic assessments, 4-6 weeks from approval is realistic to take into account scheduling field investigations and compiling the report. This proposal assumes the final copy of the report will be digital. Printed copies can be furnished upon request, with printing being a reimbursable expense above and beyond the amounts above.

We hope you decide to allow Keystone Architecture to assist you with this facility assessment to help formulate the future of the Lafayette Theater. We have attached some of our relevant work from our company, and from Arsee and Stan Roller & Associates, to the end of this proposal. We feel these examples speak to our credentials to work with the City on this project, and reinforce the quality of our team. We have also attached the City of Lafayette Standard Terms and Conditions

to this proposal as Exhibit A. To proceed with any of the portions of the assessment, please sign below and indicate which portions of the study you would like to proceed with. Once we receive confirmation, we can provide a preliminary document with some short-term recommendations based on our January 8th visit for your consideration and implementation prior to hosting public events.

Should you have any further questions, please do not hesitate to ask. We will be happy to expand on any issue you wish to learn more about. Thanks again for the opportunity!

Sincerely,



Justin Sorber
Architectural Vice President
Keystone Architecture

- Architectural, Mechanical, Electrical, and Plumbing Assessment (Keystone Architecture)
- Structural & Building Envelope Assessment (Arsee Engineers)
- Acoustic Assessment (Stan Roller & Associates)

Accepted by:  Date: 1/23/20

ADOPTED AND PASSED by the Lafayette Redevelopment Commission this 23rd day of January 2020.

LAFAYETTE REDEVELOPMENT COMMISSION

Donald J. Teder

Jos Holman

T.J. Thieme

Sherry Henriott

Jim Terry

ATTEST:

Dave Moulton

Randy Bond

LONG CENTER RESTORATION

LONG CENTER FOR THE PERFORMING ARTS RESTORATION

Keystone Architecture, Inc. was contracted by the City of Lafayette because we understand the complexity of balancing the needs of government, community, and business interests when a historical structure needs to be renovated. We were honored to be the firm chosen to evaluate and implement renovations to a "Gem" like the Long Center for the Performing Arts. These historical projects require the upmost care.

Much of the work associated with historical buildings includes:

- ADA accessibility.
- Relocation of electrical service.
- Evaluating existing windows and doors, known wall construction, and roof conditions for ways to improve energy efficiency.
- Studying interior finishes for possible upgrades for a more contemporary look.

Work is progressing in stages to complete the restorations while the Theater maintains its operational status.



ROHRMAN PERFORMING ARTS CENTER

JEFFERSON HIGH SCHOOL

The music department at Lafayette Jefferson High School had outgrown the existing music wing that was built in 1969 and was in need of additional space and modern conveniences to bring the music department up to date with other schools in its class. The project was funded through private funds raised by the Band Boosters.

The new performing arts center features both a renovation of the existing 12,000 sf music wing as well as a 33,000 sf addition. The project also enlarges the scope of the music department, by pulling in other musical disciplines such as dance and room for future departments. The existing music wing was renovated into the music department office, music library, classrooms, and restrooms. The addition has new, larger band room and choir room, with two new instrumental rooms. Also included in the addition are several new practice rooms, a dance studio and lockers, and significantly more storage space for music equipment. The addition also provides a new entrance and vestibule space for the theater for moving in and out of larger set pieces. It also includes new set storage.

The addition is constructed of block walls with sand filled cores to eliminate sound transmission from the outside and corridors into the instrumental and practice rooms. An EIFS and stone façade on the addition creates classical feel with its columns, base and cap, while the curves reflect the fluidity of music.



SUNNYSIDE INTERMEDIATE SCHOOL

AUDITORIUM

Upgrades to ADA requirements are a special success at Sunnyside. The renovated auditorium is a public space that required up-to-date ADA accessibility and technology. One piece of technology is the "hearing loop." A hearing loop allows people using hearing aides to wirelessly connect to the facility sound system. A grant from the Lafayette Community Foundation helped pay for this technology, and the generosity put's Sunnyside's auditorium on the "high-tech" map



PARAMOUNT ARTS CENTER

AURORA, ILLINOIS

Keystone Architecture, Inc, a Cordogan Clark Company provided design and construct services for a new addition for the acclaimed Paramount Arts Center located in Aurora, Illinois. The program also included the modernization of several backstage areas of the original building.

The Paramount Arts Centre opened in 1931 as a movie house. Today it offers educational opportunities and activities, and diverse multi-cultural programming and entertainment. The Paramount Arts Centre is listed on the National Register of Historic Places.

The new addition was designed to enhance and expand the original theater. The size of the new addition adds to the historic character of the Paramount Theater. The Theater's historic character, defining features, brick detailing and terra cotta medallions are highlighted by the new addition.

The 12,500 S.F. addition was constructed in the Sesquicentennial Park adjacent to the existing theater in downtown Aurora. The addition provides more usable public space and prefunction areas, including banquet kitchen and washroom facilities, as well as additional offices. Adjacent remodeling includes a dance studio and children's theater.



ALMA COLLEGE

ALMA, MICHIGAN

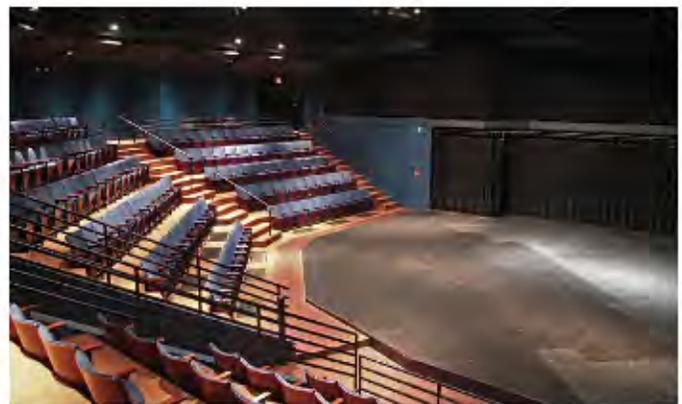
REMICK HERITAGE CENTER FOR THE PERFORMING ARTS

Located at the entrance to the campus, the Heritage Performing Arts Center becomes a signature building for Alma College. The administration desired a facility, which would be compatible with the other buildings on campus. The Performing Arts Center was therefore designed as a foreground building, which respects its context.

The building's exterior uses design elements from the existing campus while introducing distinctive central arches and unifying banding to highlight the significant nature and prominent location of the structure.

The three main components of this multipurpose Performing Arts Center - a 500 seat concert hall, a 250 seat flexible theater, and a dance studio – are clearly articulated as independent volumes, and are united by loggias and a unifying vocabulary of masonry and cast stone.

Its spacious lobby and multi-use dance studio, allow for large public gatherings and exhibitions of all kinds. This facility is developed as a group of independently articulated theaters and pavilions, which are merged into a coherent whole. This design encourages interaction between theater, dance and music groups.



Theaters

CLIENT ORIENTED – BY DESIGN



State Theatre - South Bend, Indiana
Restoration - structural and exterior.



Buskirk Chumley Theater - Bloomington, Indiana
Restoration - structural and exterior.



Historic State Theater - Elizabethtown, Kentucky
Interior restoration and remodeling.



Elliott Hall of Music - West Lafayette, Indiana
Exterior repairs.



Eagles Theatre - Wabash, Indiana
Interior structural restoration and renovation.



Emens Auditorium - Muncie, Indiana
Exterior restoration and interior structural work.

Theaters

CLIENT ORIENTED – BY DESIGN



Rivoli Theatre - Indianapolis, Indiana
Assessment of the exterior and structural systems.



Artercraft Theatre - Franklin, Indiana
Exterior restoration and marquee re-support.



Clowes Memorial Hall - Indianapolis, Indiana
Major repair of the exterior.



Damm Theatre - Osgood, Indiana
Restoration - structural and exterior.



Lerner Theater - Elkhart, Indiana
Restoration - structural and exterior. Structural design of a major addition. Indiana Landmarks Cook Cup award winner.



Princess Theatre - Bloomington, Indiana
Exterior restoration.




Stan
Roller &
Associates, Inc.
Consultants in Acoustics, Audio & Video

Providing Excellence in Acoustics for over 25 years.



MEMBER FIRM
NATIONAL COUNCIL OF ACOUSTICAL CONSULTANTS

Sracoustics.com



H. Stanley Roller
stanroller@sracoustics.com
301 Vista Drive
Bolingbrook, IL 60490
Office: (630) 355-8232



David T. Walters
dwalters@stanrolleracoustics.com
1344 South 7th Street
Lincoln, NE 68502
Office: (402) 474-5445

Providing Excellence in Acoustics for over 25 years



Corpus Christie University Parish (Toledo, OH)



Zeeland High School Auditorium (Zeeland, MI)



St. Patrick Catholic Church (Freemont, NE)



Aurora University's Center For Collaboration (IL)



University of Mississippi Chapel
(Oxford, MS)



Wesley United Methodist Church
(Bloomington, IL)



Petoskey High School Auditorium Renovation (MI)



Mount St. Benedict Monastery Chapel
(Erie, PA)



Governors State University Performing Arts Center
(University Park, IL)

MEMBER FIRM
NATIONAL COUNCIL OF ACOUSTICAL CONSULTANTS

Stan Roller & Associates, Inc. was formed in 1987 to provide comprehensive consulting services in architectural acoustics, HVAC noise control, sound, audio-visual and television systems. Stan Roller is the principal and partner consultant for Stan Roller & Associates, Inc.

For the client, the advantage of a small office is the inherent dedication and continuity of personnel. Your project is important to us. Our continuous personal involvement ensures a combination of creative and well thought-out designs with a willingness to communicate throughout the project. We typically work under the direction of the Architect as part of the design team and pride ourselves as viable, even-tempered team members. We consider ourselves to be the owner's personal acoustics representative on the design team.



We work on all building types, but we specialize in **theaters, auditoriums, religious buildings, music halls, music buildings, recording and television studios, government**

buildings, gymnasiums, stadiums, hospitals, school and university facilities. We provide resource information to the design team and to the owner. Recommendations are made in meetings, letter reports, drawings, emails, and telephone discussions as required.

Comprehensive budget information and documents are prepared for sound and related systems with final drawings and specifications for inclusion in the Architect's bid package. For architectural acoustics and mechanical system design, information is drafted suitable for incorporation into drawings by the Architects and their Engineers.

We are available to work during all phases of a project. We can follow-up our basic recommendations with bid and shop-drawing reviews, construction site visits, and conformance testing after work completion. Our offices are equipped with CAD facilities, and our drawings are produced on **AutoCAD, AutoDesk Revit, Google Sketch-up**, or as required by the project. Our consultants use the latest computer-based programs for acoustic and systems design (where applicable) and provide file documentation.

Our services are supported by a full complement of company-owned acoustic and sound measurement instruments. Project checkouts include acoustic tests, HVAC noise measurements, documentation as well as the tuning and balancing of sound systems. We have a strong ability and the experience to apply acoustic theory in a viable and creative way to a building so it will successfully meet the requirements for drama, dance, music and other communication uses. We consider all aspects of the design to be important.



We understand the need to work within the budget framework of the designated project. Our goal is to maximize the acoustic performance of the project and to recognize where compromise is appropriate. We design and consult to maximize user-friendly systems and to provide high acoustic performance that is aesthetically interesting for diverse needs.

SRA is a group of independent consultants. We do not represent any manufacturers, resellers, or distributors of acoustical products, sound/video equipment or other components. This allows us to provide our clients with completely unbiased designs and recommendations. We are the owner's acoustic and technical representative to the design team.

H. Stanley Roller



Stan Roller is President and Principal Consultant for Stan Roller & Associates, Inc. Stan has specialized in architectural acoustics for over 40 years. He founded SRA in 1987.

He was a supervisory consultant with Bolt Beranek & Newman for 11 years and he was United States Gypsum Company's corporate acoustician for 10 years. He has been responsible for the acoustic design of hundreds of architectural projects and has applied the science of acoustics to the development of practical commercial products and systems.

Stan has in-depth experience with construction systems and construction materials. He has worked with many mechanical engineers on the development of practical, quiet mechanical systems for performing spaces. Stan is an accomplished pianist and theatre organist. His passion for music helps him create acoustic spaces that are unsurpassed in performance for both the user and the listener.

Education

Bachelor of Architecture, 1966

University of Florida

Bachelor of Building Construction, 1954

University of Florida

Associations and Affiliations

Acoustical Society of America (ASA)

Member since 1970

National Council of Acoustical Consultants

Member since 1987

American Theatre Organ Society & Chicago Area Theatre Organ Enthusiasts

Papers and Publications

ARCHITECTURAL ACOUSTICS

Book by M. David Egan, contributor on sound isolation

SOUND CONTROL FOR TODAY'S TECHNOLOGY

Invited paper, ASHRAE

HOW TO SELECT THE RIGHT HIGH PERFORMANCE DRYWALL PARTITION

Article, FORM & FUNCTION

DESIGN AID FOR OFFICE ACOUSTICS

Technical feature article, FORM & FUNCTION

HIGH TECH SOUND WALL GOES TO THE MOVIES

Article, FORM & FUNCTION

RESEARCH EVALUATES ROLE OF DENSITY ON ACOUSTICAL INSULATION PERFORMANCE

Technical feature article, FORM & FUNCTION

DESIGN DATA FOR ACOUSTICIANS

Book

SOUND ISOLATION RATING SYSTEM FOR USE WITH MUSIC OR MACHINERY SOURCES

Contributed paper, ACOUSTICAL SOCIETY OF AMERICA

MUSIC SCHOOL GETS HIGH MARKS FOR ACOUSTICAL PERFORMANCE

Feature article, FORM & FUNCTION

BATHROOM WALLS DESERVE BETTER TREATMENT

Article, FORM & FUNCTION

ACOUSTIC DESIGN WORKS TOWARD AESTHETIC END

Article, BETTER SCHOOLS

PLASTER COMPLEMENTS ACOUSTIC DESIGN

Article, FORM & FUNCTION

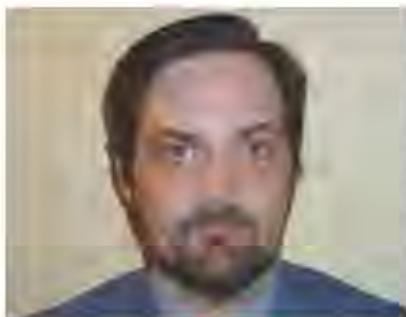
PEOPLE AND CARPET: ACOUSTICAL SIGNIFICANCE IN ONE CHURCH

Contributed paper: ACOUSTICAL SOCIETY OF AMERICA

DISCOVERING THE WORLD OF SOUND

Slide & Stereo Sound Presentation on Architectural Acoustics

David T. Walters



David T. Walters is the Principal Consultant for sound system and audio visual design for Stan Roller & Associates, Inc. He has over 25 years experience in Audio/Video Systems and Acoustics.

David has a deep appreciation for music and the arts. Having engineered sound for many concerts, theatrical, and corporate events, David understands the needs of both the performers and the system operators. He is able to not only address the technical requirements of the systems but the artistic elements as well.

David has been the system design engineer for over 400 audio, audio/video projects throughout the United States. He has given lectures and presentations on a myriad of acoustical, sound reinforcement and multi-media topics.

Professional Experience

- Over 25 years experience in Audio/Video Systems and Acoustics.
- Consultant/Engineer for over 400 audio, audio/video and acoustical projects throughout the United States.
- Author and Presenter of seminars on sound reinforcement system principals of design and operation.
- Team member and Instructor for specialized Audio/Acoustical Design workshops.
- Consultant/Project manager for audio, video and acoustical projects in Churches, Theaters, Schools and Governmental facilities.
- Audio Engineer for multiple national touring productions.
- Audio Engineer and Sound Designer for the Pinewood Bowl Musical summer productions 1990 to 2004.
- Experience with acoustic and electro-acoustic modeling and prediction software including:
 - o Odeon
 - o EASE
 - o CATT-Acoustics
- Experience with FFT, Time Delay Spectrometry and Real Time analysis of electro acoustic systems and room acoustics using the following equipment and software:
 - o TEF System 20
 - o TEF System 25
 - o EASERA Pro

Education

- Southeast Community College, 1980, Milford, NE A.A.S. degree in Electronic Engineering.
- University of Nebraska, 1985-86, Lincoln, NE Physics 1 & 2, Calculus 2, Analytical Geometry.

Memberships and Associations

- Member NSCA (National Systems Contractors Association),
- Member of Synergetic Audio Concepts since 1986.
- Member AES (Audio Engineering Society).
- Member ASA (Acoustical Society of America).
- Member ICIA (International Communications Industries As-

Papers and Publications

- Author of "Sound Isolation - Principals and Practice" a lecture given at the University of Nebraska-Kearney, NE.
- Author of "Sound System Design", a presentation given at the Technologies in Worship seminar in Omaha, NE.

Commercial, Educational, Government, & Sports Facilities

Alcorn State University MBA Lecture Room

Natchez, MS

Barrington City Hall

Barrington, IL

Barrington Police Shooting Range

Barrington, IL

Bartlett Community Center

Bartlett, IL

Bauer Recording Studios

Chicago, IL

Bellevue University Criss Lecture Auditorium

Bellevue, NE

Bellevue University ESB Addition

Bellevue, NE

Biloxi Community Center, Library & Multiuse Facility

Biloxi, MS

Biloxi Lighthouse & Visitor's Center

Biloxi, MS

Blue Cross Data Center Facility

Waukegan, IL

Brighton High School Gymnasium

Brighton, MI

Café Navarre Restaurant

South Bend, IN

Capital City Airport Sound System

Capital City, MI

Carle Hospital Auditorium

Urbana, IL

Central Community College Health Science Building

Grand Island, NE

Central Michigan University Student Events Building

Mt. Pleasant, MI

Central Ohio Tech College Conference Center

Newark, OH

Chicago Clearing Branch Library

Chicago, IL

Clarion Health Center Riley Outpatient Center Auditorium

Indianapolis, IN

Danville Criminal Justice Center

Danville, IL

Des Moines Federal Courthouse

Des Moines, IA

Harold Washington Library Winter Garden Room

Chicago, IL

Henry Doorly Zoo Conference Center

Omaha, NE

Henry Doorly Zoo Desert Nocturnal Dome

Omaha, NE

Houghton High School Gymnasium

Houghton, MI

Illinois State University Fell Hall Radio Studios

Normal, IL

Illinois State University Student Fitness Center Isolation

Normal, IL

J. Edgar Hoover FBI Headquarters Building

Washington, D.C.

Jackson State University School of Journalism

Jackson, MS

Kodak Marketing & Education Auditorium, TV Studios

Henrietta, NY

Lisle Police Gun Range

Lisle, IL

Lisle Village Hall

Lisle, IL

Merrill High School Gymnasium

Merrill, WI

Minneapolis Institute of Arts TV Studios & Lecture Rooms

Minneapolis, MN

Mississippi State Supreme Court Building

Jackson, MS

New Mexico Military Institute Leadership Development Center

Roswell, NM

New Mexico State University Lecture Hall

Las Cruces, NM

Niles Health & Wellness Center

Niles, IL

Niles Village Hall

Niles, IL

North Central College RES-REC Sound System

Naperville, IL

Northern Illinois University Cole Hall Lecture Computer Lab

DeKalb, IL

Omaha Public Schools Board Room A/V

Omaha, NE

Paramount Theatre Orchestra Rehearsal Room

Cedar Rapids, IA

Pettit National Ice Center

Milwaukee, WI

Prairie Island Nuclear Plant Noise Control

Prairie Island, MN

Prairie State College Learning Resource Center

Chicago Heights, IL

Purdue University Classroom & Laboratory Building

Fort Wayne, IN

Quaker Oats Company Conference Rooms

Chicago, IL

Rockford High School Field House, Pool & Stadium

Rockford, MI

Roger Beu Recording Studio

Crystal Lake, IL

Sentara Princess Ann Hospital

Virginia Beach, VA

South Dakota State University Classroom Building

Brookings, SD

South High School Gymnasium

Omaha, NE

South Putnam High School Athletic Facility / Gymnasium

South Putnam County, IN

Spacek Auditorium at A. Anderson Center for Prof. Development

St. Charles, IL

St. James Lutheran High School Sound Isolation

Chicago, IL

Steve Ford Recording Studio

Chicago, IL

Taft School Athletic Facility / Gymnasium

Watertown, CT

The Art Institute of Chicago School of Design Building

Chicago, IL

The Art Institute of Chicago Rubloff Auditorium

Chicago, IL

Toledo Museum of Art Gallery Renovation

Toledo, OH

U of Minnesota Law School Building

Minneapolis, MN

Pettit National Ice Training Center

The Pettit National Ice Training Center was completed on December 31, 1992. The monumental task of building this structure in a one-year time frame exhibited excellent cooperation and coordination between the architects, the design-build contractors, the consultants, and the State of Wisconsin. The project was built with a combination of private donations and a loan from the State.

The facility is very large; it is big enough to house three 747's nose-to-tail. There are two large ice rinks in the center, with a 400 meter Olympic speed skating oval around the perimeter. A running track for training surrounds the ice oval. Locker rooms, food court, lounge, training, medical, and skate rental facilities are on the lower level with a tunnel leading to the middle of the ice arena.



Stan Roller and Associates served as consultant, designer and project manager for the acoustics and sound systems which are a necessary part of this facility. Because this is the only facility of its kind in the United States, and only one of three similar facilities in the world, little information was available for design guides.

The sound systems include over three hundred loudspeakers. Each ice area has its own system, and the main system is divided into fourteen zones. Network feeds are located at camera platforms and at the media center for network coverage of significant events.

Harold Washington Library's Winter Garden Room

The Winter Garden room was designed as a reading room. With terrazzo and marble floors, marble and plaster walls and a 52-foot high glass vaulted roof ceiling, the room was impressive but highly reverberant. It reflects a unique and strong European classical design motif. The room is large, with 100-foot floor plan dimensions in a cruciform shape. The Winter Garden Room is highly coveted as a rental space for large banquets and special ceremonies that include speeches, presentations as well as live, amplified and recorded music.

The highly reverberant nature of the room, and the need for a high-quality sound system with completely hidden Loudspeakers, presented a unique challenge for Stan Roller & Associates, Inc.



Picture above is the Harold Washington Library Winter Garden Room. (Chicago, IL)

The solution to the acoustic issues relied on the use of unique acoustic materials and the creative location and application of those materials. This required extensive interfacing with the manufacturers and the consultant to arrive at the most practical material and to get it installed to meet the project timetable. Unique locations were identified for application of acoustical material. Even the table tops were acoustically treated.

The solution to hiding the loudspeakers was to modify the custom lighting chandeliers to accommodate large, high-output loudspeakers. Coordination with lighting, loudspeaker and backbox manufacturers was required to achieve the desired end result. Further creativity in sound system design was required to attain adequate low-end audio for music reproduction. Custom subwoofer loudspeakers located in four large tree planters was the key to creating the low-end audio.

The success of this project was due to a combination of unique solutions and the dedication/coordination of the Architects, Consultants and Contractors to bring together an excellent result within the project's time frame.



The photo on the left is the chandelier during the speaker installation.

The photo on the right shows the terrazzo and marble floors in combination with marble and plaster walls.



Northern Illinois University's Cole Hall



The Jameson Auditorium in Cole Hall is a 350-seat lecture room. The original lecture room had poor acoustics, and the ceiling was oppressively low for such a large space. The concrete block walls of the rectangular room added to the visual and acoustical problems.

Stan Roller worked with the Architects to develop new ceiling and wall designs. The new ceiling, consists of spaced, curved fiberglass-reinforced gypsum panels in order to uniformly distribute the sound and create the illusion of greater height in the open space between the sound reflectors.

Photos
Top Left: Cole Hall Collaborative Computing Center.
Top Center: Cole Hall Jameson Auditorium and Lecture Hall
Top Right: Cole Hall Jameson Auditorium and Lecture Hall



Above photo: This is a close-up photograph of the pods containing multiple workstations. At the end of the pod are the large touch-screens to demonstrate group assignments or allow for live editing.

The walls are a combination of curved fiberglass-reinforced gypsum panels and flat wood panels that are shaped for sound distribution to accent the vertical and create a more visually-spatial room. The room also has the latest technology for lighting and amplified sound.

The Cole Hall Collaboration classroom has 6 separate pods with a total number of 48 computer workstations. Each pod has a 65-inch high definition touch screen plus a larger screen at the end of the pod. The state-of-the-art-system was designed by David Walters of SRA.

Mississippi State Supreme Court Building Henry Doorly Zoo Desert Dome and Aquarium

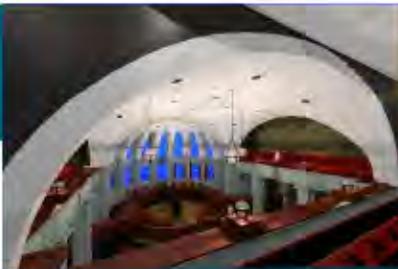


Photo Left: Virtual Rendering of the Mississippi State Supreme Court Room



Photo Right: Nighttime view of the Desert Nocturnal Dome at Henry Doorly Zoo.



Photo Left: Actual photo of the Mississippi State Supreme Court Room after completion.



Photo Right: View of the underwater aquarium at Henry Doorly Zoo.

The new Mississippi State Supreme Court Room was designed to resemble the former building built a century ago. SRA worked with the Architect to create an invisible sound absorption treatment for the sound focusing geometry. SRA also designed a sound reinforcement system with visually unobtrusive loudspeakers.

Located in Omaha, NE, the Desert Dome is the largest glass dome in the world. The greatest acoustic challenge was to isolate sound from the large mechanical room located at the top of the dome. SRA also designed a new sound system for the aquarium that is used for the sounds and narratives that go along with the various exhibits within the complex.



U of Southern Mississippi International Center
Hattiesburg, MS
U of Wisconsin Hospital Sleep Clinic
Madison, WI
U of Wisconsin Medical Foundation MTI Suite Study
Madison, WI
United Airlines Patterson Museum
Elk Grove, IL
University of Michigan Kelsey Museum of Archaeology
Ann Arbor
University of Mississippi Bus. School Auditorium & Classrooms
Hattiesburg, MS
University of Mississippi Pharmacy Classroom Building
Jackson, MS
University of Mississippi School of Medicine
Jackson, MS
University of Notre Dame Cancer Research Suite
Notre Dame, IN
University of Notre Dame Music Bldg Sound Isolation Upgrade
Notre Dame, IN
University of Notre Dame Sleep Clinic
Notre Dame, IL

University of Southern Mississippi Recording, Radio & TV Studios
Hattiesburg, MS
US Geological Survey National Headquarters Building
Reston, VA
USG Corporation TV Studios
Chicago, IL
Viking Lodge Remodel
Muskegon, MI
Washington & Lee University Undergraduate Library
Lexington, VA
Waubensee Community College Executive Office Suite Isolation
Sugar Grove, IL
Waubensee Community College Aurora Campus
Aurora, IL
Werner Guest Lodge, Shooting Range, Guest Rooms, Dining
Valley, NE
West High School Music Rehearsal Suite
Iowa City, IA
West Virginia University White Hall Lecture Room
Morgantown, WV
Woolfolk Capitol Building Conference Center
Jackson, MS

Performing Art Spaces

Albuquerque Academy Recital Hall & Theatre
Albuquerque, NM
Alma College Performing Arts Center
Alma, MI
Archer - Pulaski High School Auditorium & Music Suite
Chicago, IL
Arlington High School Great Room, Black Box & Music Suite
St. Paul, MN
Augustana College Theatre
Sioux Falls, SD
Aurora East High School Auditorium Restoration
Aurora, IL
Aurora University I.C.E. Concert Hall
Aurora, IL
Aurora University Perry Theatre Renovation
Aurora, IL
Bellevue University Humanities Lecture Auditorium
Bellevue, NE
Benson High School Auditorium & Music Suite
Omaha, NE
Big Rapids High School Auditorium/Music Suite/Gym/Cafeteria
Big Rapids, MI
Blair High School Auditorium
Omaha, NE
Blair Middle School Auditorium
Omaha, NE
Bloomington Jr. High School Auditorium
Bloomington, MN
Brighton High School Auditorium, Music Suite, Gym & Cafeteria
Brighton, MI
Brookhaven High School Auditorium Renovation
Brookhaven, MS
Brownell Talbot Academy Auditorium Addition/Renovation
Omaha, NE
Bryan High School Auditorium
Omaha, NE
Caledonia Middle School Music Suite
Caledonia, MI

Central City Performing Arts Center
Central City, NE
Central College Theatre/Communications Arts Building
Pella, IA
Central High School Auditorium
Rapid City, SD
Chase Tower Auditorium
Chicago, IL
Cincinnati School For Performing Arts
Cincinnati, OH
City High School Auditorium Renovation
Iowa City, IA
Clarian Health, Riley Outpatient Auditorium
Indianapolis, IN
Columbus Community College Auditorium
Columbus, NE
Concord High School Auditorium
Dunlap, IN
Concordia College Chapel-Auditorium
River Forest, IL
Coopersville High School Auditorium & Music Suite
Coopersville, MI
Cowherd Middle School Gym / Auditorium
Aurora, IL
Denison University Burke Hall of Music & Art
Granville, OH
Eastern Illinois University Music Building & Concert Hall
Charleston, IL
Eastern New Mexico University Music Building Renovation
Portales, NM
Edgewood College Black Box Theatre
Madison, WI
Elizabethtown High School Auditorium & Music Suite
Elizabethtown, KY
Fairmont High School Auditorium
Fairmont, MN
Farragut High School Auditorium & Music Suite
Chicago, IL

Performing Art Spaces

Fermilab Ramsey Auditorium & Hi-Rise Lab Bldg.

Batavia, IL

Forest Lake High School Auditorium

Forest Lake, MN

Frauenthal Performing Arts Center

Muskegon, MI

Glenbrook North High School Auditorium

Northbrook, IL

Governors State University Performing Arts Center & TV Studio

University Park, IL

Grand Haven High School Auditorium/ Music Suite/ Cafeteria

Grand Haven, MI

Grandville High School Auditorium/ Music Suite/ Gym/ Cafeteria

Grandville, MI

Grayling High School Auditorium

Grayling, MI

Harbor Springs High School Auditorium

Harbor Springs, MI

Harding High School Auditorium

Ft. Wayne, IN

Haslett High School Auditorium

Haslett, MI

Hawkins Construction Lecture Auditorium

Omaha, NE

Henderson Community College Performing Arts Center

Henderson, KY

Henry Sibley High School Auditorium

St. Paul, MN

Highland Park High School Auditorium

St. Paul, MN

Hinsdale Community Center Auditorium Renovation

Hinsdale, IL

Hole in the Wall Gang Camp Theatre

Ashford, CT

Hughes Center High School Auditorium Renovation

Cincinnati, OH

Huntington High School Auditorium

Huntington, IN

Huntley Park District Theatre

Huntley, IL

Illinois Central College Performing Arts Building

Peoria, IL

Indiana University S.E. Performing Arts Center & Music Bldg

New Albany, IN

Jackson Community College Performing Arts Center

Jackson, MI

Jackson Prep School Auditorium

Jackson, MS

Kaskaskia College Fine Arts Building

Centralia, IL

Kentucky Country Day School Art & Music Classrooms

Louisville, KY

La Grange College Drama Theatre

La Grange, GA

Lathrop High School Music Suite

Fairbanks, AK

Lincoln Christian College Aud-Chapel & Music Building

Lincoln, IL

Main East High School TV Studio

Park Ridge, IL

Marion High School Auditorium

Marion, IN

Marion-Adams Jr./ Sr. High Auditorium

Sheridan, IN

Mattawan High School Auditorium & Music Suite

Mattawan, MI

Maumee Valley Country Day School Auditorium

Toledo, OH

McKendree University Performing Arts Building

Lebanon, IL

Memphis Little Theatre

Memphis, TN

Merrillville High School Auditorium

Merrillville, IN

Millington Navy Base Theatre

Millington, TN

Miners Institute Theatre Restoration

Collinsville, IL

Mississippi U for Women Speech & Communications Center

Columbus, MS

Monroe Middle School Cafetorium & Music Suite

Omaha, NE

Mound High School Auditorium

Mound, MN

Mount Pleasant High School Auditorium, Music Suite & Gym

Mt. Pleasant, MI

New Mexico Military Institute Pearson Auditorium Restoration

Roswell, NM

North Central College Meiley-Swallow Thrust Stage Theatre

Naperville, IL

North Evansville High School Auditorium & Music Suite

Evansville, IN

North High School Renovation of Auditorium & Music Suite

Omaha, NE

Northern Hennepin State Jr. College Fine Arts Building

Minneapolis, MN

Northrup High School Auditorium

Ft. Wayne, IN

Northwestern College Theatre & Communications Building

Orange City, IA

Northwood High School Auditorium

Nappanee, IN

Oak Hill High School Auditorium

Converse, IN

Papillion High School Auditorium

Lavista, NE

Pendleton Heights High School Auditorium & Music Suite

Pendleton, IN

Peoria School for the Hearing Impaired

Peoria, IL

Peru High School Auditorium

Peru, IN

Petoskey High School Auditorium Renovation

Petoskey, MI

Petoskey Middle School Auditorium Renovation

Petoskey, MI

Princeton High School Auditorium & Music Suite

Princeton, IN

Rockford High School Auditorium/ TV/ Music/ Gym/ Pool/ Stadium

Rockford, MI

Saenger Theatre Historical Restoration to Performing Arts Center

Hattiesburg, MS

Saenger Theatre Historical Restoration to Performing Arts Center

Biloxi, MS

The Hole In The Wall Gang Camp

The Hole in the Wall Gang camp is located in Ashford, CT. The Hole in the Wall was built for children with illnesses that prevent them from attending ordinary summer camps. The camp was funded by Paul Newman, Newman's Foundation, and other charitable organizations. The camp was named after the hide-out location in the movie "Butch Cassidy and the Sundance Kid". The buildings followed the wild west architectural theme. Good, natural acoustics and sound systems were essential. However, a non-technical-look was needed to preserve the old west visual environment.

The designers wanted the walls to be exposed wood lath, painted dark blue. The acoustics were achieved by utilizing glass fiber behind the lath in some areas and gypsum board in others. Two sound systems were utilized to allow highly articulate sound as well as maximum gain from stage microphones. Many of the children have uncorrected hearing problems and require very clear sounds in order to hear. The sound system is used for music playback, and it also accompanies the video projection systems. The systems are extremely user-friendly, allowing operators of varying technical expertise to achieve quality results.

Bottom Photo: Side and back view showing balcony rails & wood shutters.



Photo Above: View of the projection screen on stage.

The facility provides learning opportunities for the children by allowing them to participate in their own productions.

The theater is also a wonderful place to enjoy entertainment on a rainy day.

Bottom Photo: View of the stage scaled for productions by children.



Hettenhausen Center for the Arts at McKendree University



Photo Above: View from the stage looking towards the rear of the room.



Photo Below: Stage view of Hettenhausen Center Auditorium.



Photo Above: View of the sound reflectors and wood curved panels.

Hettenhausen Center for the Arts is a 488-seat theater at McKendree University in Lebanon, IL. The "Hett" has become a symbol of superb acoustics in the town of Lebanon, IL. Through excellent coordination of the design team, we were able to get the correct shaping and mechanical detail. The reverberation time in the auditorium is 1.5 seconds. For a room of this size 1.5 seconds is an excellent time, and it is ideal for concert or vocal performance. There are curtains to adjust the reverberation time. The room has good surround sound and a lot of sound diffusion created by the architecture. The interiors have shaped sound reflectors in the ceiling. It is an open-ceiling plan, in that the outside surface (actually, the roof deck) has concrete over steel, so there is a hard sound reflecting deck above everything.

The curved reflectors are made out of gypsum board over steel frames, and they cover about half the ceiling area. In a rough sense, we wanted to reflect about half for early sound (traveling the shortest path between the source and the listener) and the other half to bounce around and come back as reverberant sound. In addition, wood curved panels on the walls provide diffuse sound reflection. To keep the HVAC quiet all the duct work is round double wall K27. The outside is metal with 1" fiberglass duct lining inside with a perforated metal interior. The ducts also act as acoustical diffusers.

New Mexico Military Institute Pearson Auditorium

The Pearson Auditorium was built in Roswell, NM around 1939 and was a fairly typical high school Auditorium of the era. The interior style was Art Deco, but not much was spent on Art Deco details. Given that the building was on the historic register the first 20 feet on the Auditorium side of the proscenium remained. The walls and ceiling in the first 20-feet are shaped plaster. There are Art Deco grilles that conceal the pipes of a major Wurlitzer theater pipe organ.

The balance of the Auditorium ceiling was Celotex sugar cane fiber 16" x 32" acoustic tile. The only truly historic items in the room were the organ and large hexagonal ceiling fixtures which also housed air diffusers. The major historic features remained primarily with the building exterior. The former theater had windows that were covered with velour curtains to darken the room, an inadequate sound system, and was overall a very subpar space.

Photo on the Left:
Stage view from floor level



Center Photo: View of the ceiling, walls, and balcony of Pearson Auditorium

Photo on the Right:
Stage view from balcony

Awarded ENR
Southwest's
Best Renova-
tion/ Restoration
project in 2012

The school staff had no kind words to say about the original theater: The acoustics were bad and the theatrical lighting was non-existent. The school officials wanted the room converted into a movie palace space that would work well for all types of performances. SRA, in conjunction with the Architect, designed a ceiling of curved cast fiberglass reinforced gypsum panels and flat gypsum board panels based on the geometry created by the light fixtures which remained. The design was carried to the walls which included covering the windows on the inside. SRA also designed the state of the art sound and video systems.

The acoustics
are excellent in
all 1,200 seats.

V. Sue Cleveland High School

This 1,100 seat Concert Hall in Rio Rancho, NM is a rectangular space with a main floor and two balconies within a 48-foot tall space. The concert hall features an orchestra pit, state-of-the-art sound and lighting systems, variable acoustical shaping, and operable curtains to provide acoustical flexibility for the performance of a symphony, a choral group, a piano recital, or a lecture. An unusual feature of the room is the large window on the rear wall of the stage which has a spectacular view of the Rio Grande River Valley and the Sandia Mountains beyond. The window can be sealed off with solid, sound reflective panels or with operable, sound absorbing curtains.

Awarded ENR
Southwest's
Best Cultural
Project of the
year 2011

Green Judges'
Choice Winner
2010 Green Ed-
ucation Design
Showcase

Photo on the Left: View
of stage from the balcony.
(Notice the large window
looking out at the Sandia
Mountains)



Center Photo:
View of stage when the
window is sealed off with
sound reflective panels.

Photo on the right: view
of the side balconies, the
ceiling reflector and the
speaker array system.

The room is shaped with curved walls for even distribution of sound and to provide the sound diffusion required for a beautiful music sound. The material is painted fluted concrete block. The deep fluted metal deck is covered with 4 inches of concrete. Suspended below the deck are large, adjustable sound reflectors. There are no overhead ducts in the space which make the clean-cut look of the deck possible. This look was achieved by supplying conditioned air to the space through several hundred small openings from a large pressurized plenum below the floor. The large loudspeakers can be raised out of view when not in use. With all curtains exposed the unoccupied concert hall has a reverberation time of 2.0 seconds.

With all curtains withdrawn, the reverberation time increases to 2.3 seconds.

Sewickley Academy Auditorium
Pittsburgh, PA
Sheldon High School Auditorium
Sheldon, IA
Simmons Middle School Gym / Auditorium
Aurora, IL
South Adams High School Auditorium
Berne, IN
South Bend Civic Theatre
South Bend, IN
South High School Auditorium & Music Suite
Omaha, NE
South Montgomery High School Auditorium
New Market, IN
Southeast Community College Fine Arts Center
Cumberland, KY
Spertus College of Judaica Auditorium
Chicago, IL
St. Andrews Episcopal School Auditorium
Jackson, MS
St. Croix Falls High School Band Room
St. Croix, WI
Stivers School for the Arts Theatre
Dayton, OH
Sun City Auditorium
Sun City, FL
Thomas Alva Edison High School Auditorium
Green Bay, WI
Troy High School Auditorium & Music Suite
Troy, MI
Trueblood Theatre
Washington Island, WI
U of Northern Iowa Theatre & Speech Hearing Complex
Cedar Falls, IA
U of Southern Mississippi Communication Complex
Hattiesburg, MS
University of Louisville Music Building & Concert Hall
Louisville, KY

University of Nebraska at Omaha Music Building / Concert Hall
Omaha, NE
University of S. Mississippi Reed Green Coliseum Renovation
Hattiesburg, MS
University of Southern Mississippi Performing Arts Center
Hattiesburg, MS
V. Sue Cleveland H.S. Concert Hall/ Theatre/ Music Suite
Rio Rancho, NM
Vanderburgh Auditorium & Convention Center
Evansville, IN
Wayne High School Auditorium
Ft. Wayne, IN
Webster University Community Music School
Webster, MO
Wellington High School Auditorium
Wichita, KS
Wells College Auditorium Remodeling
Aurora, NY
Wells College Music Building
Aurora, NY
West High School Auditorium
Iowa City, IA
Western High School Auditorium
Birmingham, AL
Western High School Auditorium
Parma, MI
Westside High School Auditorium
Omaha, NE
Wilmington College Boyd Theatre Renovation
Wilmington, OH
Wilson Junior High Auditorium
Council Bluffs, NE
Wisconsin Lutheran College Performing Arts Center
Milwaukee, WI
Wood River High School Auditorium
Wood River, NE
Zeeland High School Auditorium/ Music suite/ Cafeteria/ Gym
Zeeland, MI



Top Left:
Vanderburgh Auditorium and Convention Center
Evansville, IN



Top Right:
Pitowsky Middle School Auditorium Renovation
Pittsby, MI



Bottom Left:
South Bend Civic Theatre
South Bend, IN



Bottom Right:
Grand Haven High School Auditorium
Grand Haven, MI

Religious Spaces

Bethesda Lutheran Church

Moorhead, MN

Chicago Sinai Congregation Chapel

Chicago, IL

Corpus Christi University Parish

Toledo, OH

Eastview Christian Church

Bloomington, IL

EFCA Youth Camp Retreat

Omaha, NE

Federated Church

Columbus, NE

First Congregational Church Fellowship Hall

Hudson, OH

First Lutheran Church

Omaha, NE

First Lutheran Church

Fremont, NE

First Presbyterian Church

Normal, IL

First Presbyterian Church

Jackson, MS

First Union Congregational Church

Quincy, IL

First United Methodist Church Sanctuary Renovation

Normal, IL

Grace United Methodist church

Naperville, IL

Holy Spirit Catholic Church

Bowling Green, KY

Home of Good Shepherd

St. Paul, MN

Institute for Priestly Formation

Omaha, NE

Intercessors of the Lamb Chapel

Omaha, NE

Kenneseth Israel Synagogue

St. Louis Park, MN

Lutheran Church of the Masters, West Campus

Omaha, NE

Messiah Lutheran Church

Ralston, NE

Morning Star Baptist Church

Omaha, NE

Mount Michael Chapel Renovation / Restoration

Omaha, NE

Mount St. Benedict Monastery Chapel

Erie, PA

Mount Union College Chapel

Alliance, OH

North Central College Kiekhofler Chapel

Naperville, IL

Our Lady of the Valley Catholic Church

Windsor, CO

Plymouth Congregational Church

Aberdeen, SD

Saint Elizabeth Ann Catholic Church

Omaha, NE

Saint Gerald's Catholic Church

Omaha, NE

Saint Katharine Drexel Catholic Church

Sugar Grove, IL

Saint Patrick Catholic Church

Fremont, NE

Salem Baptist Church

Omaha, NE

St. Augustine Cathedral

Tucson, NM

St. Bede Catholic Church Sanctuary Renovation

Southfield, MI

St. Charles Borromeo Catholic Church

Gretna, NE

St. Isidore's Catholic Church

Columbus, NE

St. Joesph Catholic Church

Sandpoint, ID

St. John Neumann Catholic Church

Canton Township, MI

St. Johns Catholic Church Sound System

Lincoln, NE

St. Joseph Catholic Church

Winterset, LA

St. Joseph Catholic Church

Le Mars, IA

St. Leo's Catholic Church

Grand Island, NE

St. Mark Catholic Church

North Tucson, AZ

St. Matthews Catholic Church

Erie, PA

St. Patrick Catholic Church

Bryan, OH

St. Patrick Catholic Church

Gretna, NE

St. Paul Evangelical Lutheran Church

Norwood Park, IL

St. Roberts Catholic Church

Omaha, NE

Temple Menorah Social Hall

Chicago, IL

The Way of Holiness Mission

Chicago, IL

Tougaloo College Woodworth Chapel Restoration

Tougaloo, MS

Trinity Lutheran Church

Omaha, NE

University Lutheran Church

Lincoln, NE

University of Mississippi Chapel

Oxford, MS

Village Presbyterian Church Sanctuary Renovation

Northbrook, IL

Welcoming Family of Faith Catholic Church

Fairfield, IA

Wesley United Methodist Church

Naperville, IL

Wesley United Methodist Church Renovation

Bloomington, IL

Zoar Lutheran Church Renovation / Addition

Perrysburg, OH

Wesley United Methodist Church

In the early 1970's there was a great deal of discussion between pipe organ builders and acousticians as to the effect of carpet in the center aisle and on the chancel floor in churches with the "A" shape cross-section. The organ builders had observed that after the carpet was installed, the "high end" frequencies seemed to disappear. It was assumed that the problem was reverberation. However, such carpet placement does not affect reverberation all that much. In 1971, R. Lawrence Kirkegaard, Teddy D. Boys and H. Stanley Roller were consultants in acoustics with Bolt Beranek & Newman in Downers Grove, Illinois and chose the Wesley United Methodist Church sanctuary to research this issue. There are countless churches with this basic plan and section, so it was important to get some definitive answers to this acoustic question. It would be too lengthy to describe the research here in detail. Generally, it involved making acoustical measurements in the occupied and unoccupied church with carpet in the main aisle and on the chancel floor. We then repeated the measurements with the carpet covered by gypsum board. There was also a 6 foot by 20 foot dossal cloth, suspended about 2 feet from the back wall of the Chancel, which was removed when the carpet was covered.



Photo on Left:
Picture of the
rear aisle in
the sanctuary.
(Notice the
curved gypsum
board on the
ceiling.)



Center Photo:
Entrance to the
Sanctuary inside
Wesley United
Methodist
Church,
Superiorville, IL.
Photo on Right:
Image from the
A.V. area of the
Balcony.



The apparent sound absorption coefficient of the carpet (based on reverberation time measurements) was the expected 0.6. However, the absorption coefficient of the carpet (using an ILG fan calibrated noise source) demonstrated the apparent mid-frequency absorption coefficient was 15.0 and nearly 30.0 at 2000 Hz. The increased loudness of the pipe organ was astounding. Removing the carpet increased the sound level of the organ in the congregation area by 6 dB at 500Hz, 10 dB at 1000 Hz, 22 dB at 2000 Hz and 25 dB at 4000 Hz. In a 2008 major renovation of Wesley UMC all acoustic issues in the space were corrected.

The view toward the Chancel shows the wood floor in the Chancel and porcelain tile in the main aisle and the front cross-over aisle. To stabilize reverberation between the occupied and the unoccupied state, the pews have cushions, and there is carpet in the pew areas. The thin wood panels on the ceiling have been replaced with curved gypsum board to minimize sound absorption and to give a modest spread to reflected sound. These changes have contributed to creating a magnificent room for all music. The stereo sound reinforcement system can be seen in the trusses. This is true stereo, in that the pulpit on the left is separate from the lectern source on the right.

On the lower back wall, the sloped wood panels eliminate echo and redirect the sound to the rear third of the room which increases both loudness and intelligibility. The curved wood, gothic arched shields on the rear wall in the balcony provide diffusion and eliminate echoes. This room now has high speech intelligibility and spectacular music acoustics.

Our Lady of the Valley Catholic Church



Our Lady of the Valley Catholic Church,
Windsor, CO



Catholic churches generally want their worship spaces to have a reverberation time that is as long as possible within the given cubic volume. They also want the amplified spoken word to be highly articulate, and this church follows that criteria. The room boundaries are designed to provide a diffuse, musical reverberation that is free of echoes. Running music "liveness" is promoted with the sound-reflective tile floor in the chancel and center aisle. There are pew cushions and carpet under the pews to stabilize reverberation time between no occupancy and full occupancy. Highly articulate amplified speech is provided by the two vertical-steered, line array speakers that can be seen on each side of the arch on the front wall. This is a full frequency system, so it is also effective for use in amplifying music presentations when that is desired. As illustrated in the photo above, the loudspeakers are barely noticeable.



The arrow is pointing to the vertical
steered line array speakers.



St. Augustine Cathedral



Left Photo:
This is a picture of the coffered ceiling at St. Augustine Cathedral in Tucson, NM.



Right Photo:
A view of the Sanctuary at St. Augustine Cathedral in Tucson, NM.

In the original room, each coffer in the barrel vault ceiling was treated with a sound absorbing material. This may have resolved the sound focusing problem of a barrel vault ceiling, but it also reduced the reverberation creating a negative effect on their music program. Even with the lower reverberation time, the cathedral, always had very poor speech intelligibility with its sound systems.

SRA worked with the artist, John Warford, to create an acoustical solution for the treatment of each coffer with a material, and shape, that could be finished with his art. The solution was to use convex-shaped gypsum panels.

The panels de-focused the barrel vault and are sound reflective so that the desired reverberation time could be achieved.

Additionally, a portion of the rear wall was treated with fabric-wrapped fiberglass sound-absorbing panels to eliminate echoes from a new sound system designed by SRA. The vertical-steered, line array speaker can barely be seen on the left next to the column at the front of the room. For the first time, the congregation can enjoy cathedral music along with highly intelligible speech.

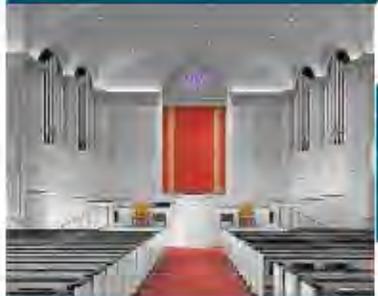
First Presbyterian Church

First Presbyterian Church in Jackson, MS needed to add about 300 seats in the large sanctuary to meet the Sunday attendance requirements. There was no room on the site to build a new sanctuary; therefore, the only feasible option was to enlarge the existing sanctuary. This required removing the entire roof and building twin balconies the length of the room.

The congregation wanted a simple unadorned arch ceiling for the main center span. A simple concave arch would have created unacceptable sound focusing issues, and it would not have distributed sound uniformly throughout the sanctuary.

Good music acoustics is very important to the church's programs because the church has a large choir and a major pipe organ. SRA worked with the Architects to develop the arch (shown in the lower left photo). The arch is designed so that it will not focus sound.

The church did not want large loudspeakers suspended down from the pristine designed ceiling. Again, SRA utilized the steered, line array technology to design a sound system that consists of the line arrays on each side of the chancel. Each one is actually a double array: one covers the main floor and the other covers the balcony area. The system is controlled with a sound board in the balcony.



Left Photo:
A view of the Sanctuary and Aisle inside First Presbyterian Church



Right Photo:
This is a picture of the side balcony, and main floor, from the opposite balcony in First Presbyterian Church



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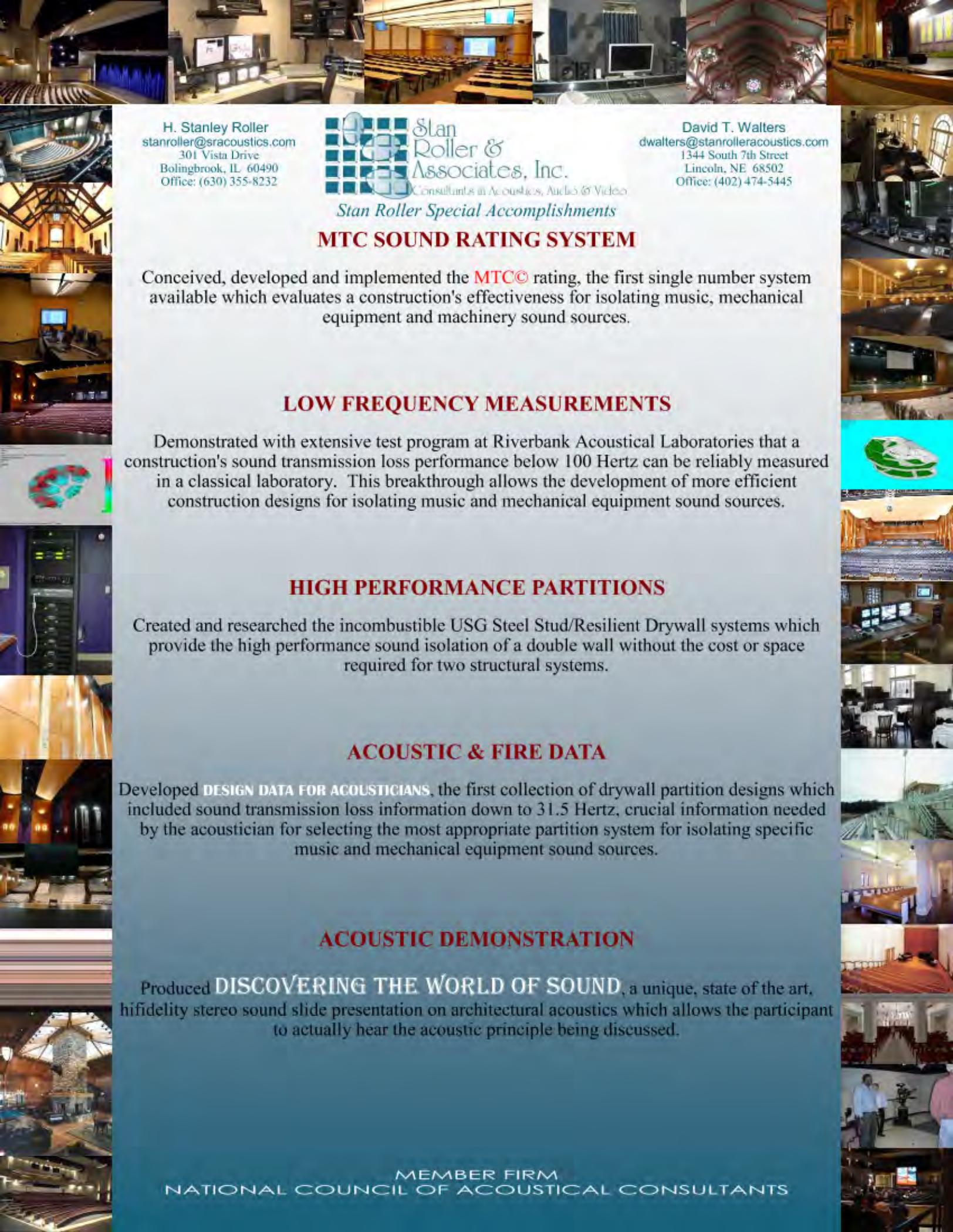
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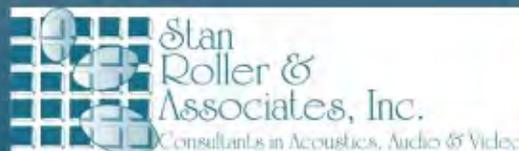
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CITY OF LAFAYETTE, INDIANA

STANDARD TERMS AND CONDITIONS
PROFESSIONAL SERVICE CONTRACTS

1. **Billing.** On hourly, not to exceed, contracts, services may be billed monthly for the hours and costs expended during that period. Services under fixed fee or lump sum contracts may be billed monthly on the estimate of the percentage of work completed.
2. **Employment.** During the term of the Agreement, the Consultant shall not engage on this project on a full or part-time basis any professional or technical personnel who are, or have been at any time during the period of the Agreement, in the employ of the City, except regularly retired employees.
3. **Ownership of Documents.** All reports, tables, figures, drawings, specifications, boring logs, field data, field notes, laboratory test data, calculations, estimated and other documents prepared by Consultant shall remain the property of the Consultant. The City shall be entitled to copies or reproducible sets of any of the aforesaid.
4. **Insurance.** The Consultant shall at its own expense maintain in effect during the term of the Agreement the following insurance with limits as shown or greater:
 - A. General Liability (including automobile) – combined single limit of \$2,000,000. The City shall be named as Additional Insured and be given a 30 day notice of cancellation, non-renewal or significant change of coverage. Consultant’s insurance shall be written on a “primary” basis and the City’s insurance program shall be in excess of all of Consultant’s available coverage.
 - B. Worker’s Compensation – statutory limit. Workers Compensation shall include a Waiver of Subrogation endorsement in favor of the City.
 - C. Professional Liability for protection against claims arising out of the performance of professional services caused by negligent error, omission or act in the amount of \$2,000,000.
 - D. The Consultant shall provide Certificates of Insurances indicating the aforesaid coverage.
5. **Successors and Assigns.** Neither the City nor the Consultant shall assign, sublet or transfer their interest in the Agreement without the written consent of the other.
6. **Termination of Agreement.** The Agreement may be terminated by either party should the other party fail to substantially perform in accordance with the terms through no fault of the other upon fifteen (15) days written notice. The Agreement may be terminated by the City for convenience upon thirty (30) days written notice to Consultant. In the event of termination, due to any reason other than the fault of the Consultant, the Consultant shall be paid for services performed to termination date, including reimbursable.

7. **Dispute Resolution.** All claims or disputes of the Consultant and the City arising out of or relating to the Agreement, or the breach thereof, shall first be submitted to non-binding mediation. If a claim or dispute is not resolved by mediation, the party making the claim or alleging a dispute shall have the right to institute any legal or equitable proceedings in the Tippecanoe Superior or Circuit Court. The prevailing party shall be entitled to recover attorney fees and costs.
8. **Indemnities.** Consultant and City each agree to indemnify and hold the other harmless, and their respective officers, employees, agents and representatives from and against liability for all claims, losses, damages or expenses caused by the indemnifying party's negligent acts, errors or omissions. In the event claims, losses and damages or expenses are caused by the joint or concurrent negligence of the City and Consultant, they shall be borne by each party in proportion to its negligence.
9. **E-Verify.** Consultant must enroll in and verify the work eligibility status of all newly hired employees of the Consultant through the E-Verify program operated by the United States Department of Homeland Security. If the E-Verify program ceases to exist, the Consultant will not be required to verify the work eligibility status of newly hired employees through the E-Verify program. The Consultant affirms under penalties for perjury that the Consultant does not knowingly employ an unauthorized alien.
10. **Contracting with Iran.** Consultant certifies that under penalties of perjury that it does not engage in investment activities in Iran as more particularly described in Indiana Code 5-22-16.5.
11. **Tobacco Free Policy.** Consultant, subcontractors and suppliers shall comply with the City of Lafayette's Tobacco Free Workplace Policy while on the job-site.
12. **Compliance with Laws.** The Consultant specifically agrees that in the performance of the services herein enumerated by the Consultant or a subcontractor or anyone acting on behalf of either, that each will comply with all State, Federal and Local Statutes, Ordinances and Regulations.
13. **Changes in Work.** In the event that either the City or Consultant determine that a major change in scope, character or complexity of the work is needed after the work has progressed as directed by the City, both parties in the exercise of their reasonable judgment shall negotiate the changes and the Consultant shall not commence the additional work or the change of the scope of work until a supplemental agreed is executed and the City has provided written notice to the Consultant to proceed.
14. **Delays and Extensions.** The Consultant agrees that no change or claim for damages shall be made by if for any minor delays from any cause whatsoever during the progress of any portion of the services specified in the Agreement. Any such delays shall be compensated for by an extension of time for such period as may be determined by the City, subject to the Consultant's approval. However, it being understood, that permitting the Consultant to proceed

EXHIBIT A

to complete any services, or any part of them after the date to which the time of completion may have been extended, shall in no way operate as a waiver on the part of the City or any of its rights herein.

15. **Standard in Practice.** The Consultant will strive to conduct services under the Agreement in a manner consistent with that level of care and skill ordinarily exercised by members of the professional currently practicing in the same locality under similar conditions as of the date of the Agreement.

16. **Waiver of Contract Breach.** The waiver of one party of any breach of the Agreement or the failure of one party to enforce at any time, or for any period of time, any provisions hereof, shall be limited to the particular instances, shall not operate or be deemed to waive any future breaches of this Agreement and shall not be construed to be a waiver of any provision, except for that particular instance.

17. **Entire Understanding of Agreement.** The Agreement represents and incorporated the entire understanding of the parties hereto, and each party acknowledges that there are no warranties, representations, covenant or understandings of any kind, matter or description whatsoever, made by either party to the other except as expressly set forth herein. City and Consultant hereby agree that any purchase orders, invoices, confirmations, acknowledgments or other similar documents executed or delivered with respect to the subject matter hereof that conflict with the terms of the Agreement shall be null, void and without effect to the extent they conflict with the terms of the Agreement.

18. **Non-Discrimination.** Pursuant to Indiana and Federal law, the Consultant and the Consultant's subcontractors, if any, shall not discriminate against any employee or applicant for employment, to be employed in the performance of the work under the Agreement, with respect to hire, tenure, terms, conditions or privileges of employment or any matter directly or indirectly related to employment because of race, color, religion, sex, disability, national origin or ancestry. Breach of this covenant may be regarded as a material breach of the Agreement.

19. **Amendments.** The Agreement may only be amended, supplemented or modified by written documents executed in the same manner as the Agreement.

20. **Governing Law.** The Agreement and all of the terms and provisions shall be interpreted and construed according to the laws of the State of Indiana. Should any clause, paragraph, or other part of this Agreement be held or declared to be void or illegal, for any reason, by any court having competent jurisdiction, all other clause, paragraph or other part of the Agreement, shall remain in full force and effect.

21. **Public Record.** The Consultant acknowledges that the City will not treat the Agreement as containing confidential information and may post this Agreement on the Indiana Transparency Portal as required by IC § 5-14-3.8-3.5.