



ACOUSTICAL SOCIETY OF AMERICA STUDENT DESIGN COMPETITION 2010

PRESENTED BY: THE TECHNICAL COMMITTEE ON ARCHITECTURAL
ACOUSTICS, THE ROBERT BRADFORD NEWMAN STUDENT AWARD
FUND, AND THE NATIONAL COUNCIL OF ACOUSTICAL
CONSULTANTS

ANNOUNCEMENT

The Acoustical Society of America's Technical Committee on Architectural Acoustics (<http://tcaa.acosoc.org>) with support from the Robert Bradford Newman Student Award Fund (<http://www.newmanfund.org/>) and the National Council of Acoustical Consultants (<http://www.ncac.com/>) is sponsoring a student design competition to be judged and displayed at the 159th meeting of the Acoustical Society of America in Baltimore, Maryland, April 19-23, 2010.

The Student Design Competition is open to undergraduate and graduate students in the disciplines of Architecture, Engineering, Physics and other curriculums that involve building design and/or acoustics. This competition is intended to encourage students to express their knowledge of architectural acoustics and noise control in the design of a facility in which acoustical considerations are of significant importance.

PARTICIPATION AND REGISTRATION

Entries may be submitted by individual students or teams of a maximum of three students. Undergraduate and graduate students are encouraged to participate. Teams comprised of students from different institutions are welcome. Teams comprised of students from different disciplines are encouraged. A faculty sponsor is required.

Teams must register by sending an email to Bob Coffeen (coffeen@ku.edu) and copying Andy Miller (amiller@baiaustin.com) on or before **March 19, 2010**. In the email, please indicate your name(s), school, and faculty advisor. Provide the email addresses of the faculty advisor and one team member to serve as contact for the entire team.

PRESENTATION FORMAT AND SUBMISSION PROCEDURE

Entries are to be poster presentations. Submissions shall be presented on up to three (3) separate display boards with maximum dimensions of 22x28 in. (56x71 cm) per board. The competition language is English. It is not necessary to attend the meeting in order to participate in the competition.

Design and layout of the submissions should account for the presentation style. The font size, amount of narrative text, and number of graphs should be appropriate for poster viewing. A thoughtful viewing and analysis of the presentation should be possible in 4 to 6 minutes. Additional design details, calculations or other documentation may not be attached to the boards. The judges will not review such information.

Presentation boards should be suitable for wall or easel display. Means of attachment to the wall or easel will be provided by the competition, (submissions need not include Velcro or pins). Please denote the orientation and arrangement for the presentation boards either on the rear of the boards or on an included sheet.

In an opaque envelope affixed to the back of EACH display board, provide the name, address, phone, email addresses, school affiliation and advisor/sponsor of all participating team members. And, please indicate summer e-mail and mailing addresses for all team members. Team member names, school affiliation, etc. will not be revealed to the competition judges.

Please package display boards securely to prevent damage during shipping.

For entry in the competition, presentation boards **must be received** no later than **Wednesday, April 14, 2010** at the following address:

Dr. Peter D'Antonio
RPG Diffuser Systems
651-C Commerce Drive
Upper Marlboro, Maryland 20774

However, students attending the Baltimore, Maryland meeting may deliver their entries assuming that they are available at the host hotel in Baltimore no later than **8:30 am on Tuesday, April 20, 2010**.

An e-mail message must be sent to Bob Coffeen (coffeen@ku.edu) by **5:00 pm on April 13, 2010** indicating that presentation boards have been sent to the above address or that they will be delivered at the meeting.

TECHNICAL REQUIREMENTS

Design competition entries should emphasize the general building acoustics design (room acoustics, noise control, and acoustic isolation). Acoustical design for the **Performance Hall, Rehearsal Room**, and the **Lobby** are of primary importance, but other programmed building spaces must be included in the overall design, and they may be similarly considered in regard to room acoustics and noise control at the discretion of each competition participant(s) and in the interest of design completeness. Presentations may include plan and section drawings, renderings, acoustical calculations, acoustical criteria, and details of construction relating to acoustics and noise control as necessary to describe and support the design. If computer programs are used in the design, graphics and data from the programs may be displayed.

Electroacoustic system (sound reinforcement system) design is not required.

While the design of the building mechanical and electrical systems is very important to the acoustical success of a project, it is not necessary to indicate in detail the mechanical and electrical system noise control procedures that are required. However, the presenter(s) may wish to indicate noise criteria, along with general noise and vibration control procedures relating to air handling, electrical transformers, theatrical lighting dimmers, etc. And, for this particular

design problem, it is not necessary to indicate special stage facilities for opera (such as stage rigging, side and rear slip stages, stage traps, etc.), but space for these facilities should be included.

REFERENCES

Useful references for opera house design include:

Concert Halls and Opera Houses: Music, Acoustics, and Architecture, Leo Beranek, 2nd Edition, 2002, Springer-Verlag

Halls for Music Performance: Two Decades of Experience, 1962-1982, Acoustical Society of America

Halls for Music Performance: Another Two Decades of Experience, 1982-2002, Acoustical Society of America

Performing Arts Spaces, Paul Scarbrough and Robert Campbell, Time-Saver Standards for Building Types

DESIGN SCENARIO

A college of moderate size with a very strong music program intends to construct on their campus a performance hall primarily for opera. Opera performances are typically from the standard repertory (excluding Wagner) with a 70 member orchestra and a 40 to 50 person chorus with both student performances and performances by professional opera companies. Although the main purpose of the hall is to support the opera program, the hall will also be used for musical theatre, orchestral concerts, chamber music, chorus, dance, and an occasional lecture.

The site is bound by busy streets to the north, south, east, and west. Three hundred feet (300 ft [90 m]) from the northwest corner of the site is the intersection of two six-lane interstate highways. The interstate speed limits are 55 miles per hour (89 km/h). The opera hall may be located as you see fit on the site. Visibility from the nearby interstate highways to the building is highly desirable, as well as acoustical isolation from the highway noise. The Google Earth image on the following page shows the site with a cross-hatch and white outline. The site may be located using Google Earth (so that you may publish your own images, identify other building elevations with the 3D feature, identify geographic features, etc.): it is in Kansas City, Missouri, and it is bound on the north by West 16th Street, on the west by Broadway Blvd., on the east by Baltimore Avenue, and on the south by West 17th Street.



BUILDING PROGRAM

Performance Hall

Audience Seating: Approximately 1,200 seats with approximately 40% of the seating in two or three levels of side and rear balconies and/or boxes. Sixty seats will serve as reserved box seats. Identify the box seats on the drawings.

Stage: Approximately 9,600 ft² (890 m²) with depth of approximately 60 ft (18m) and with side stage areas for rigging control, storage, and preparation. Easy access to truck loading dock for scenery and other materials is essential.

Stage Proscenium: Minimum 50 ft (15.25 m) wide and 30 ft (9.15 m) high.

Stage House: The stage to gridiron height must be 2.5 to 3.0 times the proscenium height to accommodate rigging. (The rigging system design is not a part of the acoustical design problem.)

Orchestral Accommodations: A pit that serves 70 musicians is programmed. An orchestra shell/portable stage enclosure is also required. Variable acoustics in the hall should be considered, given its multipurpose nature.

In-house Mix Position: 50 ft² (4.7 m²) located somewhere in the audience area that will allow for critical listening of performances.

Rehearsal Room

Approximately 2,200 ft² (200 m²) for dancers and chorus (with daylighting).

Green Room

Multipurpose Green Room at approximately 1,200 ft² (112 m²)

Scene Shop, Prop Shop, and Electrical Repair

Approximately 3,000 ft² (279 m²) with easy access to Performance Hall stage and to truck loading dock. Door(s) for scenery entrance and exit with dimensions of approximately 18 ft (5.5 m) wide and 25 ft (7.6 m) high. It is anticipated that the Scene Shop will be in use during rehearsals in the Performance Hall and occasionally during performances.

Dressing Rooms, Costume Shop, Wardrobe Room, and Wig Shop

Three chorus dressing rooms at approximately 500 ft² each.
Five solo dressing rooms at approximately 200 ft² (18.6 m²) each.
Two 4-person dressing rooms at approximately 350 ft² (32.5 m²) each.
Orchestra dressing room at approximately 2,100 ft² (195 m²) with easy access to orchestra pit.
Total of approximately 1,200 ft² (112 m²).

Lobby

To serve as the entrance to the Performance Hall and to a box office and house manager's office. In addition to serving as a typical lobby, it will be used on occasion for art exhibits, meetings, luncheons and dinners, receptions, and small group/chamber musical groups.

Mechanical Equipment Room

The MER will primarily house air handlers. Chilled water and steam are available from a nearby college building. Approximately 1,400 ft² (130 m²).

JUDGING AND AWARDS

The submitted designs will be judged by a panel of practicing design professionals. The panel will include acoustics consultants and may include architects and theater consultants.

Entries will be evaluated on technical merit, design vision, adherence to the design scenario and program requirements, and effectiveness of presentation.

An award of \$1,250 will be made to the individual or team whose entry is chosen as "First Honors". Commendation awards of \$700 will be made to four other outstanding entries. Awards are made possible through a grant from the Wenger Foundation and by the Newman Student Award Fund.

QUESTIONS AND CLARIFICATIONS

Questions regarding the competition requirements or clarifications about the design scenario may be directed to Bob Coffeen via email (coffeen@ku.edu). Questions and answers deemed to affect all entries will be copied to all participants and advisors who have registered. Questions

relating to procedural matters (shipping of posters, etc.) may be directed to any of the design competition chairs as noted below.

COMPETITION TIMELINE

November, 2009	Release of Announcement and Design Scenario
March 19, 2010	Registration Deadline
April 14, 2010	Deadline for Receipt of Submissions
April 19-23, 2010	159th Meeting of the Acoustical Society of America, Baltimore, Maryland

STUDENT DESIGN COMPETITION CHAIRS

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