

NEWMAN STUDENT AWARD FUND'S

2023
STUDENT DESIGN
COMPETITION

PRESENTED BY:



**ROBERT BRADFORD NEWMAN STUDENT AWARD FUND
THROUGH THE ACOUSTICAL SOCIETY OF AMERICA -
TECHNICAL COMMITTEE ON ARCHITECTURAL ACOUSTICS**

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INTRODUCTION

The Technical Committee on Architectural Acoustics with support from the Robert Bradford Newman Student Award Fund and The Wenger Foundation, is sponsoring a student design competition to be judged in conjunction with the 185th meeting of the Acoustical Society of America, held in Sydney, Australia on 4-8 December 2023.

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

GENERAL INFORMATION

ENTRY REQUIREMENTS

Entries may be submitted by individual students or teams of a maximum of three students. Each person is restricted to one submission, they may not submit as part of multiple teams. Undergraduate and graduate students are encouraged to participate. Participants must be registered as a student during a portion of the 2023 calendar year. Teams comprised of students from different institutions are welcome. Teams comprised of students from different disciplines (Acoustics, Sound Arts, Architecture, etc.) are encouraged. You may work with a faculty advisor, but it is not a requirement for entry. ASA Meeting attendance is not required to participate in the competition.

REGISTRATION

Teams must register by e-mail **before 1:00 PM (CST) on 1 November 2023** with the competition co-chair, Robin Glosemeyer Petrone at robin@thresholdacoustics.com. In the e-mail, please include the following information (in an editable text file – ***please do not attached as a pdf***):

1. The name and contact information of each entrant on the team. For each team member, please include:
 - a. Name
 - b. School affiliation
 - c. Email addresses
2. The name of your faculty advisor, their school, and their e-mail address.
3. Please indicated if the project will be completed:
 - a. For credit as part of a design studio
 - b. For credit as part of a non-studio class
 - c. As an extra-curricular project
4. Indicate the student participant who will serve as primary contact for the team. The primary contact will serve as a vital link for receiving information and updates on the competition. This may include answers to frequently asked questions and changes to information presented in this bulletin.

JUDGING AND AWARDS

Entries will be evaluated on technical merit, design vision, innovation, and effectiveness of presentation.

The submitted designs will be judged by a panel of practicing design professionals including acoustical consultants, architects, theatrical consultants.

Awards are made possible through a generous donation from the Wenger Foundation to the Newman Student Award Fund and will include:

- One First Honors prize of 1,400 USD*
- Up to Four Commendation Awards of 900 USD*

* Should the judges determine there to be less than 4 entries worthy of Commendation Awards, the total prize award of USD 5000 USD will be subdivided between the First Honor and Commendation winners.

PRESENTATION FORMAT AND SUBMISSION PROCEDURE

As of the penning of the brief, the 185th meeting of the Acoustical Society of America, will take place in December 2023 and will be held in-person in Sydney, Australia. Submission requirements will include a digital submission for judging prior to the in-person meeting and a printed copy of the submission for display at the ASA Meeting where the winners will be announced during the Technical Committee on Architectural Acoustics.

Entrants shall submit digital poster as pdfs with maximum dimensions equivalent to 3 poster boards of 22 x 28 inches (56 x 71 cm) per board. Additional documentation beyond that accommodated within the area of the 3 boards may not be included. Text and image size on the display surface shall be legible at a distance of 3 feet (1 meter), as if the boards were to be printed and displayed. Body text may be no smaller than 24-point font; captions may be no smaller than 18-point font. The font size, amount of narrative text, and number of graphs should be appropriate for poster viewing. A thoughtful viewing of the presentation should be possible in about 10 minutes. If information is not legible in the digital and print submission, if, for instance the text is too small or is pixelated to the point of illegibility, no "credit" is given for the work.

The competition language is English.

Digital Submission:

- Please submit one version of your digital submission with no identifying team names or school affiliation for judging.
- Submit a second digital copy with all entrants' names and school affiliation included under the submissions project name. The second version will be posted on the Robert Bradford Newman Student Award Fund website for viewing. (<https://www.newmanfund.org/student-design-competitions/2019-sdc-announcement/>). All submissions will be posted on the website.
- Include a separate text file (.doc or similar, please do not send as a .pdf) with the names, addresses, phone numbers, e-mail addresses, school affiliations, and advisor(s) of all participating team members. Team member identifying information (names, addresses, etc.) will not be revealed to the competition judges.
- Digital submission shall be received **on or before 1:00 PM (CST) on 13 November 2023**.
- Please use send documents via We Transfer at <https://wetransfer.com/> to **Robin Glosemeyer Petrone at robin@thresholdacoustics.com**

Hard Copy Submission:

- Please bring or mail a hard copy submissions to the 185th ASA Meeting in Sydney, Australia for display

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during the meeting. Your submission will remain on display throughout the entire meeting and will be displayed during the TCAA committee meeting (typically on Tuesday) when the winners are announced and presented awards.

- If you choose to mail your hard copy, we will provide you with instructions for mailing when you submit your digital submission on 13 November 2023.
- Submission are to be mounted on up to three (3) separate display boards with maximum dimensions of 22 x 28 inches (56 x 71 cm) per board. Mount posters to foam core board or another rigid backer for display.

Awards

- Awards will be distributed after the meeting during the month of December 2023.

Additional Information

- Additional Information may be obtained by contacting:

Robin Glosemeyer Petrone
Threshold Acoustics
P 312.386.1400
E robin@thresholdacoustics.com

SUGGESTED REFERENCES

- Architectural Acoustics (1988, reprinted in 2007) by M. David Egan
- Architectural Acoustics Illustrated (2015) by Michael Ermann
- Architectural Acoustics, 2nd Edition (2014) by Marshall Long
- Acoustical Design of Theatres for Drama Performance (2010) by David T. Bradley (Editor), Erica E. Ryherd (Editor), Michelle C. Vigeant (Editor)
- Concert Halls and Opera Houses: Music, Acoustics, and Architecture, 2nd Edition (2003) by Leo Beranek

TIMELINE SUMMARY

- 30 December 2022 – Design Competition Announced
- 1 November 2023 – registration to be submitted by 1:00 PM Central Standard Time
- 13 November 2023 – submissions to be posted by 1:00 PM Central Standard Time.
- 4-8 December 2023 - Posting of submissions for open exhibition at the 183rd ASA meeting
- 4-8 December 2023 - Announcement of winners in the TCAA meeting session
- December 2023 – Distribution of awards

CO-CHAIRS CONTACT INFORMATION

Competition primary contact will be through the e-mail address robin@thresholdacoustics.com

NEWMAN STUDENT AWARD FUND COCHAIRS:

Robin Glosemeyer Petrone
Threshold Acoustics

Daniel J. Butko
University of Oklahoma

DESIGN SCENARIO

A nation's capital city wishes to construct a new 2,300-seat Concert Hall for their local resident symphony orchestra to present the full range of symphonic repertoire performances. The building will include a Rehearsal Room of the same area as the stage play area. The site for the concert hall is in an urban environment. The city block on which the project will be built is surrounded by high trafficked streets in all four cardinal direction and is used by emergency vehicles.

PROGRAM DETAILS

Following is the architectural program statement for the concert hall facility which defines the building desired by the Residential Symphony Orchestra and the City. Submissions shall address the room acoustics, sound isolation and noise control needs for Concert Hall and Rehearsal Hall spaces

Concert Hall:

- Audience Layout:
 - 2,300 seats.
 - The configuration may take the form of a shoebox, vineyard, or hybrid form - it is for the submitter to explain the acoustic rationale behind the form chosen.
- Stage:
 - Size to accommodate 90 orchestra members.
 - Provide stage of choral terrace space to accommodate 200 choristers.
 - Provide easy access to loading dock for scenery and other material load in and out of stage area.
 - There must be a stage crossover corridor for musicians and technical staff during the performance, especially for use by staff and performers with mobility assistance requirements. You may not assume crossover occurs on the performance platform.
- Concert Hall program:
 - Classical Orchestra
 - Orchestral Pop
 - Orchestral Hip Hop
 - Electronic Orchestra
 - Orchestral Jazz
- Lighting and Stage Manager Control Room: 300 ft² (28 m²)
- In-house Audio Mix Position: 9 ft (3 m) wide, two seating rows deep
- Follow Spot Booth: 250 ft² (22 m²)

Rehearsal Room:

- Provide room rehearsal space large enough to accommodate
 - Plan area and height required to be determined but submitter.

BUILDING (INTERNAL) SOUND ISOLATION CONSIDERATIONS

MEPFIT (mechanical, electrical, plumbing, fire protection, IT) Rooms

- The MEPFIT Rooms will be located on the second floor of the facility, over the Rehearsal Room and shares a wall with the Concert Hall. See the Plans and Sections.
- The MER will house two air handlers. The casing rated unweighted sound pressure levels, LZeq, for a single unit are as following:

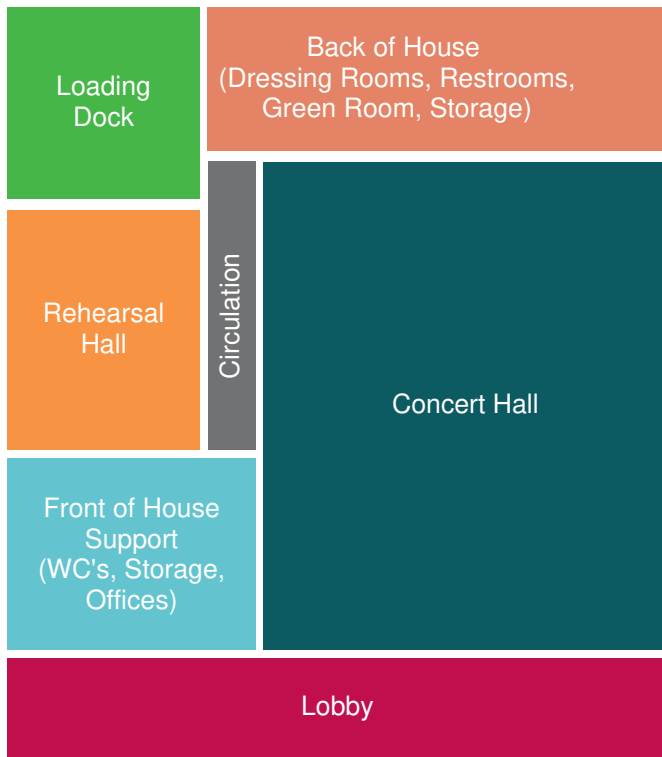
	<u>Sound Pressure Levels - dB re 20μ Pa</u>							
	<u>Octave Band Center Frequency (Hertz)</u>							
	<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>
AHU Casing Radiated	71	71	63	63	84	75	62	47

SITE NOISE CONSIDERATIONS

The project will be constructed in the city's downtown on an open city block measuring 300 ft x 360 ft (90 meter x 110 meter.) Highly trafficked streets surround the building site in all four cardinal directions. See the Site Plan. The peak, unweighted, LZeq, noise levels recorded for emergency vehicle traffic events, at a location of the building facade, in octave frequency bands are as follows:

	<u>Sound Pressure Levels - dB re 20μ Pa</u>							
	<u>Octave Band Center Frequency (Hertz)</u>							
	<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>
Emergency Vehicular Traffic	71	71	63	63	84	75	62	47

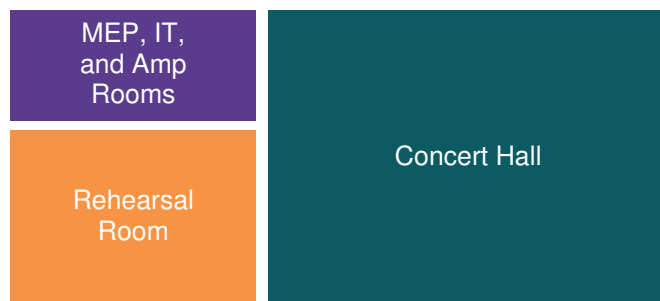
PLANS AND SECTIONS



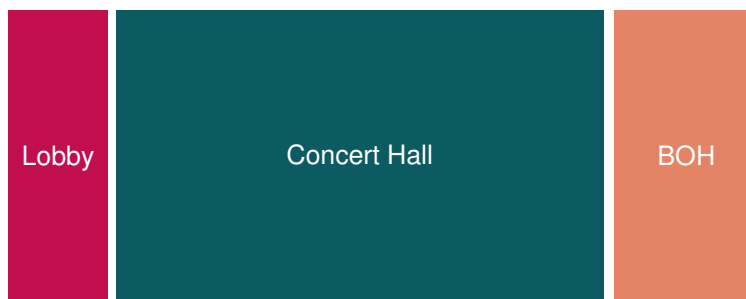
First Floor Plan



Second Floor Plan



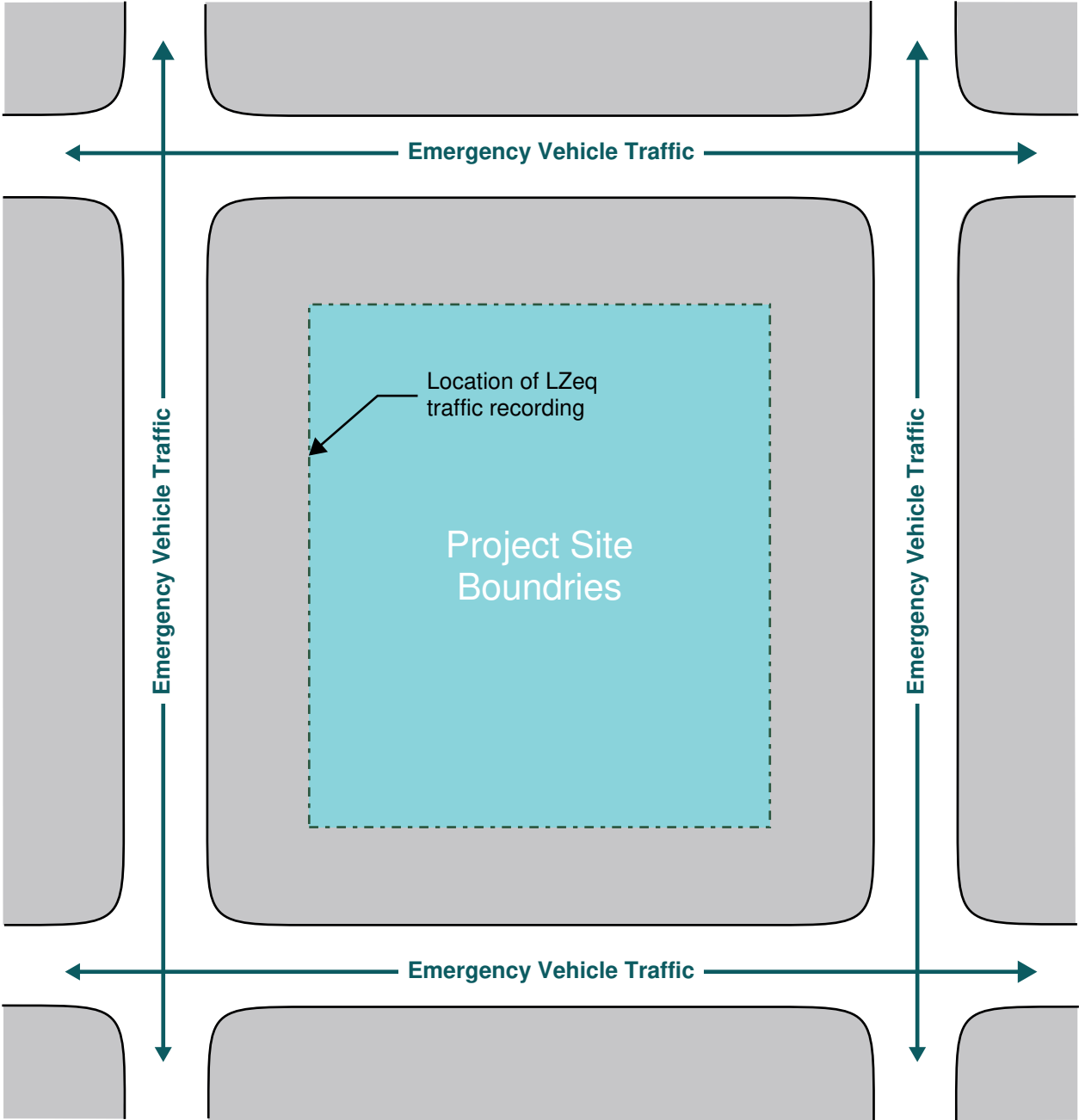
East-West Section



North-South Section



PLANS AND SECTIONS



Site Plan



TECHNICAL REQUIREMENTS

Design competition entries should emphasize the acoustic design, including the room acoustics, sound isolation and noise & vibration control, and its interaction with the overall architectural design for the Concert Hall and Rehearsal Room. The drawings should present comprehensive solutions to the acoustical design in schematic design format. It is not necessary to prepare architectural exterior building elevations.

In addition to plans and sections for the Concert Hall and Rehearsal Room, the poster boards should display acoustical calculations, acoustical criteria, and details of construction relating to acoustics, sound isolation and noise control as necessary to describe and support the design described. If computer programs are used in the design, graphics and data from the programs may be displayed.

Front and back of house support spaces, such as restrooms, costume storage, and equipment rooms, are to be included in the plan and section layout of the building. The submission does not need to address the interior room requirements of each space. If the spaces are likely to have the potential to produce noise either due to the equipment they hold or the intended use, the sound isolation of said rooms should be considered. Examples include noise generated by equipment in MEPFIT rooms and the loading dock noise interrupting rehearsal on stage or in rehearsal room, to name a few. Note the criteria indicated the MER will have two AHU's and shares common partitions with the concert hall and rehearsal room in plan or section. Judges will be looking for the submissions to include the desired background noise levels for each of the occupied spaces, including the Concert Hall and Rehearsal Room at a minimum along with strategies to control interruptions from noisy spaces including the MEP room, the loading dock, and the exterior.

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 for this particular design problem.

Designs shall provide an acoustic rooms response capable of supporting the listed range of performance types. Sound amplification, lift, and electro-acoustic enhancement system design is outside of the scope of this competition. It is, however, necessary to address the presence of amplification loudspeakers as sound sources. Electroacoustic sound systems are not to be used to produce the change in room acoustic response between amplified and non-amplified performance types.