

Request for Proposals

City of Zeeland

Atrium Acoustics Remediation Project

Howard Miller Public Library

14 S. Church Street
Zeeland, Michigan 49464

Issue Date: August 12, 2026

Mandatory Pre-Proposal Meeting: August 28, 2026, at 10:00 AM local time

Deadline for Vendor Questions: September 4, 2026, at 5:00 PM local time

City's Final Written Responses/Addenda Issued By: September 7, 2026, at 5:00 PM local time

Proposal Due Date: September 18, 2026, at 10:00 AM local time

Anticipated Award: October 5, 2026

Preferred Construction Window: October 2026 through February 2027

1. Invitation and Purpose

The City of Zeeland is soliciting proposals from qualified acoustical treatment contractors for the Atrium Acoustics Remediation Project at Howard Miller Public Library, located at 14 S. Church Street, Zeeland, Michigan 49464.

The purpose of this project is to implement the Preferred Treatment recommendations identified in the Atrium Acoustics Report prepared by ABD Engineering & Design, dated February 23, 2026. The work is intended to reduce reverberation, reduce reflected speech energy, improve acoustic comfort, and reduce the impact of sound transfer from the second-floor Quiet Study Area to the first-floor Circulation Desk.

The City of Zeeland is the contracting entity. Howard Miller Public Library is the location where the work will be performed.

This solicitation is a Request for Proposals. Award will not be based solely on lowest cost. The City will evaluate proposals based on qualifications, technical approach, materials, schedule, references, price, and overall value to the City.

2. Background

Howard Miller Public Library includes a two-story atrium space with hard surfaces, open volume, and direct acoustic connection between the second-floor Quiet Study Area and the first-floor Circulation Desk.

ABD Engineering & Design visited the site on January 18, 2026, to measure reverberation time and background noise conditions. ABD reported that the atrium experiences excessive reverberation in the mid-frequency range of 500 Hz to 1000 Hz, exceeding the target reverberation time by approximately 0.3 seconds. ABD also identified that noise from the second-floor areas negatively impacts the Circulation Desk below.

ABD recommended a target reverberation time of approximately 1.0 to 1.2 seconds for the atrium. The Preferred Treatment option is modeled to achieve approximately 1.0 second reverberation time and an overall sound pressure level reduction of approximately 5.6 dBA at the Circulation Desk.

The selected contractor shall implement the Preferred Treatment scope as described in the ABD report and in this RFP.

The ABD report is included as an attachment to this RFP and shall be considered part of the project documents. If a conflict exists between this RFP and the ABD report, the more stringent requirement shall apply unless clarified by written addendum issued by the City.

3. Project Objectives

The selected contractor shall provide a complete, turnkey acoustics remediation installation that accomplishes the following objectives:

1. Implement the Preferred Treatment recommendations from the ABD report.
2. Reduce mid-frequency reverberation in the 500 Hz to 1000 Hz range.
3. Improve speech clarity and acoustic comfort within the atrium and adjacent areas.
4. Reduce reflected speech energy and perceived sound transfer from the second-floor Quiet Study Area to the first-floor Circulation Desk.
5. Achieve installation conformance with the approved product data, shop drawings, manufacturer requirements, code requirements, and this RFP.
6. Minimize disruption to library operations, patrons, staff, furnishings, finishes, and collections.

4. Procurement Approach and Award Basis

This is a Best Value Request for Proposals.

The City intends to award a contract to the proposer whose proposal is determined to be most advantageous to the City, considering qualifications, technical approach, product quality, schedule, references, price, and overall value.

The City is not obligated to award to the lowest-priced proposer. The City reserves the right to accept or reject any or all proposals, waive informalities or irregularities, request clarification, conduct interviews, negotiate with one or more proposers, or cancel this solicitation if determined to be in the City's best interest.

Proposals shall remain firm for one hundred eighty (180) calendar days from the proposal due date.

5. Project Location

Howard Miller Public Library
14 S. Church Street
Zeeland, Michigan 49464

Work will occur primarily in the two-story atrium, second-floor Quiet Study Area, atrium opening between the first and second floors, and related adjacent areas as described in the ABD report.

6. Project Schedule

The anticipated schedule is as follows:

Milestone	Date
RFP issued	August 12, 2026
Mandatory pre-proposal meeting	August 28, 2026 at 10:00 AM local time
Deadline for vendor questions	September 4, 2026 at 5:00 PM local time
City's final written responses/addenda issued by	September 7, 2026 at 5:00 PM local time
Proposals due	September 18, 2026 at 10:00 AM local time

Milestone	Date
Anticipated award	October 5, 2026
Preferred construction window	October 2026 through February 2027

The Library may require phased installation, off-hour work, weekend work, or specific sequencing to minimize disruption to public operations. Proposers shall clearly identify the work hours, duration, sequencing, closures, staging needs, and assumptions included in their proposal.

7. Mandatory Pre-Proposal Meeting and Site Visit

A mandatory pre-proposal meeting will be held at the project location on August 28, 2026, at 10:00 AM local time.

Attendance is required for all proposers. Proposals submitted by firms that do not attend the mandatory pre-proposal meeting shall be rejected as non-responsive.

The purpose of the meeting is to allow proposers to inspect existing conditions, verify access requirements, observe building systems, review staging limitations, and understand the operational setting of the Library.

Each proposer is responsible for field verification of all dimensions, quantities, mounting conditions, substrates, access limitations, lift requirements, obstructions, diffusers, sprinklers, alarms, lighting, signage, railings, framing, adjacent finishes, furnishings, and any other conditions affecting the work.

No additional compensation will be allowed for conditions reasonably observable during the mandatory site visit.

8. Questions, Clarifications, and Addenda

All questions shall be submitted in writing to:

Ben Kiewiet
Facilities Maintenance Supervisor
City of Zeeland
bkiewiet@cityofzeeland.com
(616) 931-3313

Questions must be received by September 4, 2026, at 5:00 PM local time. Responses that modify, clarify, or interpret the RFP will be issued only by written response or addendum.

The City's final written responses/addenda will be issued by September 7, 2026, at 5:00 PM local time.

No oral statements, interpretations, or instructions shall be binding on the City unless confirmed by written addendum.

Bidders are required to register with Susan Moore at smoore@cityofzeeland.com prior to the proposal due date to ensure receipt of addenda, clarifications, and other communications.

Each proposer shall acknowledge receipt of all addenda in its proposal.

9. Scope of Work

The selected contractor shall furnish all labor, materials, equipment, lifts, scaffolding, tools, supervision, layout, engineering, shop drawings, coordination, protection, cleanup, warranties, and incidentals necessary to complete the Preferred Treatment installation in full.

The Preferred Treatment includes all work described in Options 1 and 2 of the ABD report, plus the additional treatment described in Option 3.

Quantities listed below are approximate and are provided for bidding convenience only. Proposers shall verify all quantities and site conditions. The proposed lump sum price shall include all work necessary to complete the Preferred Treatment installation shown and described in the ABD report and this RFP.

9.1 Upper Atrium Wall Panels, Option 1 Component

Install approximately 680 square feet of 2-inch-thick acoustical wall panels within the metal framing attached to the upper ceiling around the atrium perimeter, as identified in the ABD report.

Minimum requirements:

1. 2-inch acoustical wall panels.
2. Minimum NRC of 0.90.
3. Installed within the metal framing areas identified in the ABD report.
4. Attachment method suitable for existing substrates and installation height.
5. Finish, edge profile, color, layout, and mounting system subject to City approval.

9.2 Quiet Study Ceiling Treatment, Option 2 Component

Install approximately 850 square feet of acoustical ceiling tile above the second-floor Quiet Study Area, as identified in the ABD report.

Minimum requirements:

1. Minimum NRC of 0.90.
2. Integration with existing ceiling grid, lighting, sprinklers, diffusers, and other building systems.
3. Clean, complete, finished installation suitable for an occupied public library.
4. Product and finish subject to City approval.

9.3 Quiet Study Wall Panels, Option 2 Component

Install approximately 70 square feet of 2-inch acoustical wall panels in the Quiet Study Area.

Minimum requirements:

1. Minimum NRC of 0.90.
2. Mounted between approximately 3 feet and 7.5 feet above finished floor, as shown in the ABD report.
3. Durable finish suitable for public use.
4. Impact-resistant product required unless the City approves an alternate product in writing.
5. Finish, edge profile, color, layout, and mounting system subject to City approval.

9.4 Atrium Opening Wall Panels, Option 2 Component

Install approximately 270 square feet of 2-inch acoustical wall panels on the straight walls within the atrium opening between the first and second floors.

Minimum requirements:

1. Minimum NRC of 0.90.
2. Panels shall be installed on straight wall areas identified in the ABD report.
3. Panels shall not be installed on the curved wall that supports the flag unless directed otherwise by written addendum.
4. Installation shall accommodate air supply diffusers and other building systems.

5. Finish, edge profile, color, layout, and mounting system subject to City approval.

9.5 Additional Upper Wall Panels, Option 3 Preferred Treatment Component

Install approximately 550 square feet of 2-inch acoustical wall panels on the two long, parallel walls above the second floor, directly below the Option 1 treatment areas, as identified in the ABD report.

Minimum requirements:

1. Minimum NRC of 0.90.
2. Installed full length on the long wall areas shown in the ABD report, subject to field coordination.
3. Installation shall accommodate air diffusers, structural framing, and other building systems.
4. Finish, edge profile, color, layout, and mounting system subject to City approval.

10. Product Requirements

Products listed in the ABD report establish the required level of quality, performance, and suitability. Proposed products shall meet or exceed the performance of the listed products.

Acceptable manufacturers include those referenced in the ABD report or approved equals. Proposed equals must be approved by the City before award or as part of the submittal review process, at the City's sole discretion.

Minimum product requirements include:

1. Minimum NRC of 0.90 for all acoustical panels and ceiling tile unless otherwise approved in writing.
2. 2-inch thickness for wall panels where 2-inch panels are specified.
3. ASTM E84 Class A flame spread and smoke developed rating, or other applicable fire classification acceptable to the authority having jurisdiction.
4. Durable, cleanable, public-facility appropriate finish.
5. Impact-resistant construction for panels located within reach of patrons or staff, unless otherwise approved in writing.
6. Manufacturer-approved mounting system suitable for the existing substrate and installation height.

7. Compatibility with existing building conditions, including humidity, temperature, public occupancy, cleaning practices, and adjacent finishes.
8. Finish, color, fabric, edge profile, reveal, seam layout, and mounting details subject to City approval prior to fabrication.
9. No exposed sharp edges, unsafe projections, loose fabric, or visually unfinished components.
10. Full manufacturer warranty and installation warranty.

11. Substitutions and Approved Equals

Products listed in the ABD report are acceptable examples and are not intended to unnecessarily restrict competition. However, proposed equals must demonstrate equivalent or superior acoustic performance, durability, appearance, fire rating, cleanability, warranty, and suitability for a public library.

Requests for approval of equals shall include:

1. Product name and manufacturer.
2. Full technical data sheets.
3. Independent laboratory test documentation confirming NRC rating.
4. ASTM E84 or applicable fire rating documentation.
5. Thickness, density, construction, edge details, and mounting system.
6. Finish options and color charts.
7. Cleaning and maintenance instructions.
8. Warranty information.
9. Written comparison to the products listed in the ABD report.
10. Identification of any differences, exceptions, limitations, or assumptions.

The City reserves the sole right to determine whether a proposed product is an approved equal.

Substitution requests received after the deadline established by the City may be rejected.

12. Code, Permits, Life Safety, and Building Systems

The contractor shall comply with all applicable federal, state, and local laws, codes, ordinances, rules, and regulations.

The contractor is responsible for identifying and obtaining any permits required for the work, unless the City expressly agrees otherwise in writing.

The contractor is responsible for securing a building permit with the City of Zeeland. Fees for the permit will not be waived.

The work shall not obstruct, cover, relocate, impair, or interfere with:

1. Fire suppression systems.
2. Fire alarm devices.
3. Smoke detectors.
4. Strobes and audible notification devices.
5. Exit signs.
6. Emergency lighting.
7. HVAC diffusers, returns, or controls.
8. Lighting fixtures.
9. Security cameras.
10. Access panels.
11. Electrical devices.
12. Signage.
13. Railings, guards, and fall protection elements.
14. Any other life safety, mechanical, electrical, plumbing, security, or building system.

If relocation, adjustment, or modification of any building system is required, the contractor shall identify the issue promptly and coordinate with the City before proceeding. No such work shall be performed without written authorization from the City.

The contractor shall provide engineered or manufacturer-approved attachment details when required by code, manufacturer instructions, site conditions, installation height, panel weight, or the City.

Nothing in the ABD report modifies the requirements of applicable codes or authorities having jurisdiction. Where conflicts exist, the most restrictive requirement shall apply.

13. Contractor Responsibilities

The selected contractor shall:

1. Provide a complete turnkey installation of the Preferred Treatment scope.
2. Verify all dimensions, quantities, substrates, access conditions, and obstructions.
3. Provide detailed shop drawings showing panel layout, ceiling tile layout, mounting details, attachment methods, edge conditions, dimensions, finish selections, and coordination with building systems.
4. Submit product data, acoustic test documentation, fire rating documentation, finish samples, and warranty information before ordering materials.
5. Coordinate with the City, Library staff, and any City-designated consultant.
6. Protect existing finishes, furnishings, collections, equipment, flooring, walls, railings, shelving, technology, and public areas.
7. Provide all lifts, scaffolding, barriers, signage, floor protection, dust control, debris control, and safety measures.
8. Maintain safe access for patrons and staff unless specific closures are approved by the City.
9. Perform daily cleanup and secure all tools, materials, and work areas.
10. Coordinate work to minimize noise, dust, odors, and operational disruption.
11. Comply with OSHA and all applicable safety requirements.
12. Repair damage caused by the contractor or its subcontractors at no additional cost to the City.
13. Provide closeout documentation, warranties, maintenance instructions, and final as-built layout information.
14. Correct punch list items promptly.
15. Warrant the installation and materials as required by this RFP and the final contract.

14. Work in an Occupied Public Facility

The Library may remain open during portions of the work. The contractor shall conduct the work in a manner that protects patrons, staff, collections, furnishings, and City property.

Proposals shall include a written library operations plan addressing:

1. Proposed work hours.
2. Expected duration.
3. Phasing and sequencing.
4. Any requested closures or restricted access areas.
5. Lift or scaffold locations.
6. Public safety barriers.
7. Dust, noise, and odor control.
8. Protection of books, furniture, equipment, flooring, walls, and finishes.
9. Daily cleanup procedures.
10. Material delivery and storage.
11. Parking and staging requirements.
12. Communication with City and Library staff.
13. Any assumptions about City-provided support.

If the proposal assumes regular business hours only, that must be clearly stated. If evening, weekend, or off-hour work is proposed or required, that must be clearly stated and included in the proposed price or listed as a separate alternate.

15. Shop Drawings and Submittals

The selected contractor shall submit the following for City review before fabrication or installation:

1. Product data sheets.
2. NRC documentation and independent test data.
3. Fire rating documentation.
4. Panel and ceiling tile samples.
5. Finish, fabric, color, and edge profile selections.

6. Shop drawings showing layout, dimensions, seams, edges, reveals, attachment method, and coordination with building systems.
7. Mounting system details and fastener information.
8. Manufacturer installation instructions.
9. Cleaning and maintenance instructions.
10. Warranty documents.
11. Safety plan and work area protection plan.
12. Updated project schedule.

City review of submittals does not relieve the contractor of responsibility for proper installation, code compliance, field verification, dimensional accuracy, attachment adequacy, or coordination with existing conditions.

16. Acceptance, Verification, and Closeout

Final acceptance shall be based on:

1. Completion of the full Preferred Treatment scope.
2. Installation consistent with approved shop drawings and product data.
3. Installation consistent with manufacturer instructions.
4. Compliance with this RFP, the final contract, and applicable code requirements.
5. Satisfactory finish quality and appearance.
6. Correction of all punch list items.
7. Submission of closeout documents and warranties.

The City may retain ABD Engineering & Design or another qualified acoustical consultant to review installation conformance and, at the City's discretion, perform post-installation acoustical verification.

The contractor shall correct deficiencies at no additional cost if deficiencies are caused by incomplete installation, improper placement, unapproved substitutions, products that do not meet submitted performance data, inadequate attachment, poor workmanship, or failure to follow approved shop drawings or manufacturer instructions.

Unless otherwise stated in the final contract, the contractor is responsible for installation conformance and product performance as submitted. The contractor is not responsible for

guaranteeing the accuracy of the ABD acoustical model unless the contractor proposes and the City accepts a contractor-designed performance solution.

17. Warranty

The proposal shall include warranty information for all materials and installation.

At minimum, the selected contractor shall provide:

1. Manufacturer warranties for all products.
2. A contractor installation warranty of not less than two (2) years from final acceptance.
3. Warranty coverage for defective workmanship, loose panels, failed attachments, visible installation defects, and failure to comply with approved shop drawings or manufacturer instructions.

Longer warranties may be considered favorably during evaluation.

18. Qualifications

Proposers shall demonstrate qualifications appropriate for this specialized work.

At minimum, proposers shall provide:

1. Company overview.
2. Years in business.
3. Experience installing architectural acoustical treatments.
4. Experience in libraries, educational facilities, municipal buildings, or comparable public facilities.
5. Evidence of at least three similar completed projects within the past five years.
6. Experience working in occupied public facilities.
7. Identification of subcontractors.
8. Appropriate licensing, registration, and authorization to perform work in Zeeland, Michigan.
9. Current insurance capacity and bonding capacity.
10. References for similar work.

19. Proposal Format and Required Contents

Proposals shall be organized using the following sections:

Tab 1: Cover Letter

Include the proposer's legal name, address, contact person, phone number, email address, and confirmation that the proposal remains firm for one hundred eighty (180) calendar days.

Tab 2: Similar Project Experience and References

Provide at least three similar projects completed within the past five years. For each project, include:

1. Project name.
2. Owner name.
3. Location.
4. Project description.
5. Contract amount.
6. Completion date.
7. Scope of acoustical work.
8. Whether the facility was occupied during installation.
9. Reference name, title, phone number, and email.

Tab 3: Product Data and Materials

Provide proposed products, manufacturers, NRC documentation, fire rating documentation, finish information, edge details, mounting systems, warranty information, and proposed substitutions or equals.

Tab 4: Library Operations Plan

Provide the work plan required in Section 14, including work hours, phasing, public safety measures, protection plan, lift/scaffold plan, cleanup plan, and disruption mitigation.

Tab 5: Schedule

Provide proposed schedule, including submittals, material lead times, mobilization, installation duration, phasing, punch list, and final completion.

Tab 6: Price Proposal

Provide lump sum pricing for full implementation of the Preferred Treatment scope. Provide a breakdown of costs for Treatment Options 1, 2, and 3.

Provide unit prices as required in Section 20.

Tab 7: Warranty

Provide manufacturer and contractor warranty information.

Tab 8: Exceptions, Assumptions, and Deviations

Identify all exceptions, assumptions, exclusions, deviations, or requested changes to the RFP or contract requirements.

Any requirement not listed as an exception shall be deemed accepted by the proposer.

20. Price Proposal, Unit Prices, and Alternates

The proposal shall include a lump sum price for full implementation of the Preferred Treatment scope.

The lump sum price shall include all labor, materials, equipment, lifts, scaffolding, supervision, layout, shop drawings, coordination, protection, cleanup, warranties, bonds, insurance, overhead, profit, and incidentals necessary to complete the work.

Unit prices are requested only for City-authorized additions or deductions to the scope after award. Unit prices shall not limit the contractor’s responsibility to complete the full base scope for the lump sum price.

Proposers shall provide the following unit prices for additions or deductions authorized by the City:

Item	Unit Price
2-inch acoustical wall panels, installed	\$____ per square foot

Item	Unit Price
High NRC acoustical ceiling tile, installed	\$____ per square foot
Impact-resistant acoustical wall panels, installed	\$____ per square foot

The City may request alternates. Proposers shall not include voluntary alternates unless clearly identified and accompanied by a base proposal fully responsive to this RFP.

21. Evaluation Criteria

Proposals will be evaluated according to the following criteria:

- Relevant public facility and acoustical installation experience
- Product quality, acoustic documentation, durability, aesthetics, and suitability
- Schedule, phasing, and library operations plan
- References and past performance
- Cost and overall value

The City may request interviews, clarification, additional information, revised pricing, or best and final offers from one or more proposers.

The City may consider any information available to it regarding proposer responsibility, including past performance, claims history, references, financial capacity, staffing, safety, and ability to complete the work successfully.

22. Proposal Submission Instructions

Proposals must be mailed or delivered in person to:

City of Zeeland Clerk's Office
21 South Elm Street
Zeeland, Michigan 49464

Proposals must be received before 10:00 AM local time on September 18, 2026.

Proposals shall be submitted in sealed envelopes clearly marked:

Proposal for Atrium Acoustics Remediation Project
Howard Miller Public Library

Late proposals may be rejected.

The City may conduct a public opening to record the names of proposers. Pricing and evaluation will occur after the opening in accordance with the City's procurement process.

23. Insurance Requirements

The selected contractor shall provide certificates of insurance before commencing work. The City of Zeeland shall be named as additional insured where applicable.

Minimum insurance requirements include:

1. Commercial General Liability: not less than \$2,000,000 per occurrence and aggregate, or such higher amount as required by the City.
2. Workers Compensation: statutory limits as required by Michigan law.
3. Employer's Liability: not less than \$500,000 each accident, \$500,000 disease policy limit, and \$500,000 disease each employee, or such higher amount as required by the City.
4. Automobile Liability: not less than \$1,000,000 combined single limit for owned, hired, and non-owned vehicles.

Coverage shall be primary and noncontributory where applicable. Waiver of subrogation shall be provided in favor of the City where available.

The selected contractor shall hold harmless, defend, and indemnify the City of Zeeland, its officials, officers, employees, agents, and representatives from and against claims, damages, losses, liabilities, costs, and expenses arising out of or resulting from the contractor's work, to the fullest extent permitted by law.

Insurance requirements shall be confirmed by the City before contract execution.

24. Bonds

The selected contractor shall provide a Performance Bond and Labor and Material Payment Bond, each in the amount of 100% of the contract price, issued by a surety authorized to do business in the State of Michigan and acceptable to the City.

Bonds shall be provided before commencement of work.

25. Prevailing Wage and Funding

The project is funded by the City of Zeeland.

This project does not require the payment of prevailing wages. Proposers are responsible for complying with all applicable wage, labor, and employment laws.

26. Contract Requirements

The selected proposer will be required to enter into a written contract with the City of Zeeland.

The final contract may include this RFP, addenda, the selected proposal, approved submittals, insurance certificates, bonds, and any other documents required by the City.

The City reserves the right to negotiate final contract terms before award.

27. City Rights

The City reserves the right to:

1. Accept or reject any or all proposals.
2. Waive informalities, irregularities, or minor defects.
3. Request clarification or additional information.
4. Conduct interviews.
5. Negotiate with one or more proposers.
6. Reject proposals that do not comply with this RFP.
7. Reject proposals from firms that lack sufficient experience, capacity, responsibility, or responsiveness.
8. Award a contract in the best interest of the City.
9. Cancel this RFP at any time.
10. Modify the schedule by written addendum.

28. Proposal Form

Atrium Acoustics Remediation Project

Howard Miller Public Library
14 S. Church Street
Zeeland, Michigan 49464

Submitted to:

City of Zeeland
21 South Elm Street
Zeeland, Michigan 49464

Proposer Information

Legal Name of Proposer: _____

Contact Person: _____

Title: _____

Street Address: _____

City, State, Zip: _____

Phone: _____

Email: _____

Addenda Acknowledgment

The proposer acknowledges receipt of the following addenda:

Addendum No. ____ Date: _____

Addendum No. ____ Date: _____

Addendum No. ____ Date: _____

Lump Sum Proposal

The undersigned proposes to furnish all labor, materials, equipment, supervision, coordination, protection, cleanup, warranties, bonds, insurance, and incidentals necessary to complete the Preferred Treatment scope described in the RFP and ABD report for the following lump sum amount:

Total Lump Sum Proposal: \$ _____

Written Amount: _____

Proposed Schedule

Estimated start date after notice to proceed: _____

Estimated substantial completion date: _____

Estimated final completion date: _____

Total calendar days from notice to proceed to substantial completion: _____

Work Hour Assumptions

The proposal assumes the following work hours:

Exceptions and Deviations

All exceptions, assumptions, exclusions, or deviations are listed in Tab 11 of the proposal.

Yes: _____ No exceptions: _____

Certification

The undersigned certifies that the proposer has reviewed the RFP, attended the mandatory pre-proposal meeting, inspected the site, reviewed the ABD report, verified existing conditions to the extent necessary, and submits this proposal in accordance with the RFP requirements.

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

29. Attachments

Attachment A: ABD Engineering & Design Atrium Acoustics Report, dated February 23, 2026



ABD Engineering & Design

Architectural Acoustics • AV Design • Noise & Vibration

February 23, 2026

Amanda Hanson
Howard Miller Public Library
14 S. Church Street
Zeeland, MI 49464
ahanson@cityofzeeland.com | (616) 748-5901

Re: HMB – Public Library – Atrium Acoustics

Introduction

ABD Engineering & Design, Inc. (ABD) visited the Howard Miller Public Library in Zeeland, MI on January 18, 2026, to measure the reverberation time (RT) and other acoustical metrics of the two-story atrium. ABD has also reviewed the construction drawing set for the Howard Miller Public Library. We understand that the space is more reverberant than desired and that noise from the 2nd floor areas negatively impacts the circulation desk. The goal of this study is to determine the existing reverberation time in the Library Atrium, analyze the space in an acoustical model, and provide recommendations to improve the acoustics of the space.

Nothing in these documents should be construed as modifying the requirements of any applicable building code. Where conflicts exist, the most restrictive condition should be satisfied.

Terminology

When dealing with sound, the physical quantity is expressed as sound pressure level, and the perceived level is expressed as loudness. Sound pressure level is measured in units called decibels (abbreviated dB). Decibels are power ratios that are quantified using logarithmic units¹. Audible sound occurs over a wide frequency range, from approximately 20 Hertz (Hz) to 20,000 Hz. Human hearing does not respond equally to sounds at different frequencies (or pitches) – a high-frequency sound will generally be perceived as louder than a low-frequency sound of the same decibel level. A frequency weighting can be applied to sound level measurements to accommodate this variation in frequency sensitivity of human hearing. When the weighting is applied, the resulting sound level measurements are said to be “A-weighted” and the decibel level is abbreviated dBA.

Table 1 lists some commonly encountered noises, their A-weighted sound pressure levels, and associated subjective evaluations:

¹ Because decibels are a logarithmic unit, when several decibel levels are combined, logarithmic addition is used instead of typical arithmetic addition. For instance, 40 dB + 40 dB = 43.0 dB, 50 dB + 50 dB = 53.0 dB, and 40 dB + 50 dB = 50.4 dB, which rounds to 50 dB.

Table 1: Noise Source Comparison

Subjective Evaluation		A-weighted Decibels	Examples
Deafening		140 dBA	Near jet engine
		130 dBA	Threshold of Pain
		120 dBA	Threshold of Feeling – rock band
		110 dBA	Chainsaw (at 3 ft)
Very Loud		100 dBA	Loud auto horn (at 10 ft)
		90 dBA	OSHA 8-hour Noise Exposure Limit
Loud		80 dBA	Shouting (at 3 ft)
		70 dBA	Busy office
Moderate		60 dBA	Conversational speech (at 3 ft)
		50 dBA	Average office
Faint		40 dBA	Soft radio music in apartment
		30 dBA	Average residence without music playing
Very Faint		20 dBA	Average whisper
		10 dBA	Human breathing
Threshold of Hearing		0 dBA	Threshold of Audibility

Adapted from *Concepts in Architectural Acoustics* by M. David Egan (1972) and
Architectural Acoustics: Principles and Design by M. Mehta, J. Johnson, and J. Rocafort (1999)

It is helpful to have some idea of the qualitative experience of changes in noise levels – this is illustrated in Table 2. The table can be used as a guide when evaluating the effect of different mitigation options.

Table 2: Subjective effects of changes in sound levels

Change in Sound Level	Change in Apparent Loudness
1 – 2 dB	Just perceptible
3 – 5 dB	Clearly perceptible
10 dB	Twice or half as loud
20 dB	Much louder or quieter

Adapted from *Engineering Principles of Acoustics* by Douglas D. Reynolds (1981)

Background Noise

In addition to the dBA level, the background or ambient noise in a room is often represented by a single-number rating called the NC or Noise Criterion. The NC level is determined by comparing the measured sound levels within the room with charts that compensate for human sensitivities to noise. The sound levels measured at various frequencies are reduced to a single number that coincides with the highest curve that the measured data intersects. High background noise is often the result of mechanical ventilation noise or noise infiltration from other areas. Low background noise is a key factor in providing good listening and teaching spaces, however a lower background noise level can result in greater impact from nearby noise sources, such as conversation.

Reverberation Time

Reverberation time (RT) is the length of time that it takes for a sound to decrease in level by 60 decibels (dB) in a space. A higher RT value means that the room is more reverberant, and that sound will persist for longer before becoming inaudible and dying out. An excessively long reverberation time can significantly degrade speech intelligibility; it can also lead to an increase in overall noise levels within the room.

The anticipated uses of a room dictate the appropriate target reverberation time. Based on the size and use of the Library, we recommend a reverberation time of 1.0 – 1.2 seconds. Our recommendations focus on reducing the reverberation time, including a balanced room acoustic response over the frequency spectrum and avoiding harmful reflections that impact the reception desk area.

Measurement Results

ABD visited the site on January 18, 2026, to measure the reverberation time (RT) and the background noise of the two-story atrium. At the time of the testing, the room was unoccupied. The atrium has acoustical ceiling tile, gypsum board, and fiber-glass ceilings, carpeted flooring, brick and gypsum board walls with windows throughout the first and second floor's east and south facing walls.

Measured Background Noise

While on site, we measured the noise levels at various locations throughout the Library. At the time of measurements, the HVAC was off to provide the quietest background noise condition. Since there are no existing concerns with the HVAC noise levels, measurements of the HVAC was not captured with the system in full operation.

The overall background noise level measured in the Library space was NC 25-26 (33-35 dBA). These are acceptable NC levels, however the low background noise during the HVAC off condition also increases the distraction of nearby noise intrusions.

Measured Reverberation Time

We completed RT measurements throughout the space on both the 1st and 2nd floors. The average results are shown below in Figure 1.

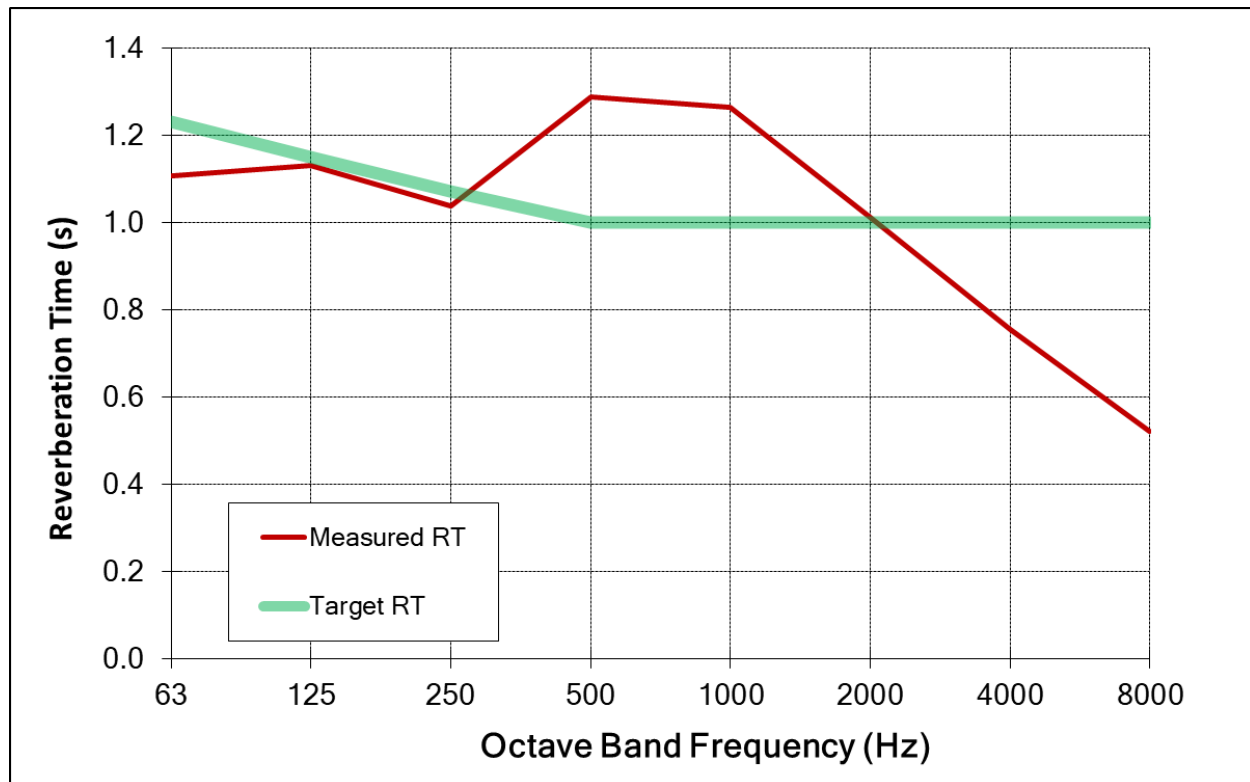


Figure 1: Measured Library RT and Target RT

As the figure shows, the low frequency RT is meeting the target reverberation time, however the mid frequencies (500-1000 Hz) are exceeding the target by approximately 0.3 seconds. Critical speech frequencies occur at 500 – 4000 Hz, so this longer RT at the mid frequency range will reinforce speech in a space with low background noise, thus causing greater distraction at other areas. Additionally, our hearing sensitivities are greatest at 1000 Hz, which may cause additional annoyance with speech in the space. Reducing noise levels at these frequencies will help reduce the impact of speech in the space and provide a better balanced and comfortable acoustical environment.

Sound Pressure Level

Using the acoustical model of the Library, we analyzed the achievable noise level reduction experienced at the Circulation Desk, where the noise from the 2nd floor areas is disrupting Circulation Desk activities. Several treatment options were tested to determine the ideal treatment locations for reducing noise transfer from the 2nd floor to the 1st floor, as seen in Table 3.

Table 3: Overall Noise Reduction with Treatment Options

Treatment Option	Total dBA Reduction
Back Wall Panels Only	0.7
High NRC Tiles Only	0.9
Main Opening Panels Only	1
Minimum Overall	1.5
Improved #1 Overall (Combined Treatment)	3.4
Preferred Overall	5.6

Based on the noise reduction achieved with each individual option, a combined option is preferable to provide a noticeable reduction in noise levels at the Circulation Desk. As described in Table 2 above, a 3 dB change is just noticeable, and a 5 dB change in noise level is clearly noticeable but not quite halving of sound. The treatment options provided below are designed to help reduce the overall reverberation time at mid-range frequencies and reduce reflected sound from the Quiet Study Area.

Room Acoustics Recommendations

We understand that the atrium space contains collaborative student spaces, such as the Quiet Study Area section on the second floor, with openings to the first floor Circulation Desk. The noise from those second floor spaces is difficult to control and transfers to all areas of the library, but especially the Circulation Desk, where speech intelligibility is very important. This noise transfer is further amplified by our hearing sensitivities, the unbalanced acoustics within the space, and the location of the Circulation Desk directly below the opening between the first and second floors.

Figure 2 below shows the measured RT as well as the predicted reverberation times for the treatment options listed below.

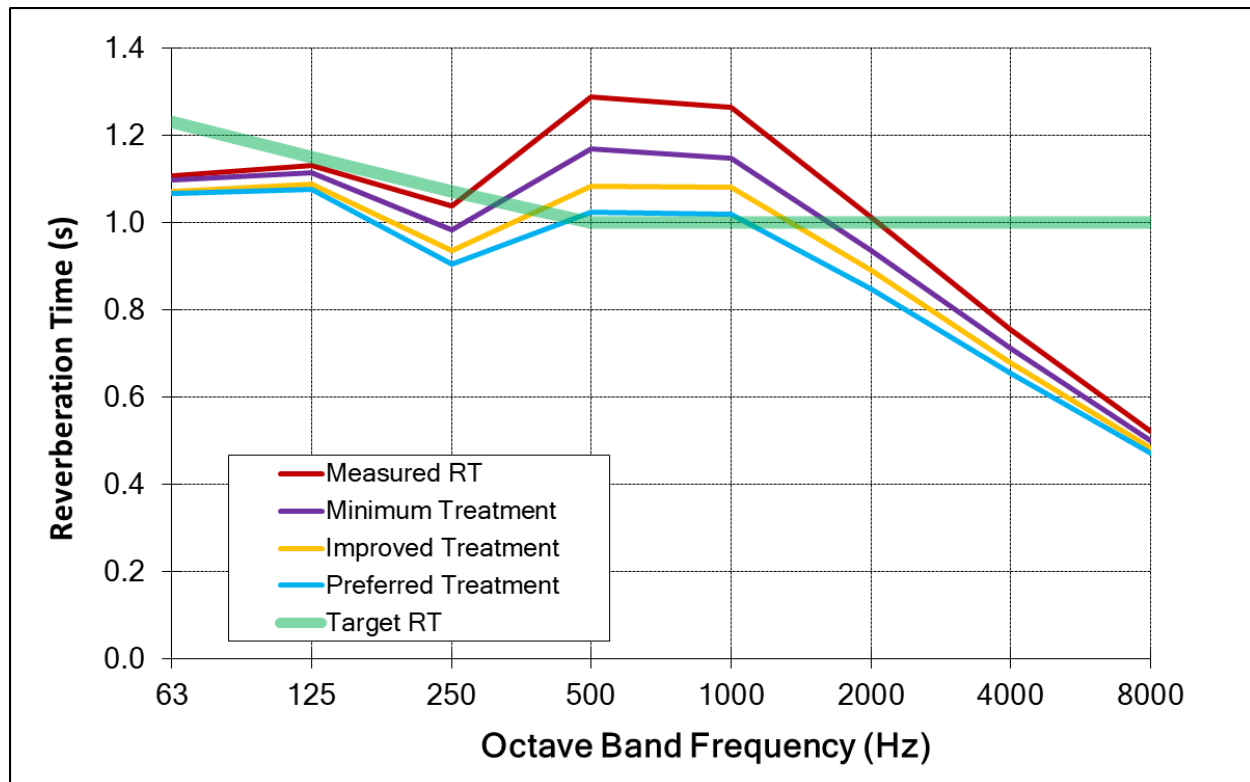


Figure 2: Measured RT vs Treatment Options

Our mitigation is focused on reducing the RT and echo at the critical frequencies of 500-1000 Hz to improve acoustical comfort within the space.

We have provided multiple options for the space – Minimum, Improved, and Preferred Treatments.

Option 1 – Minimum Treatment (1.2 second RT)

- Install approximately 680 ft² of 2" thick acoustical wall panels with a minimum Noise Reduction Coefficient (NRC) of 0.90. These panels should be installed within the squares created by the metal framing attached to the upper ceiling, all the way around. Figure 3 below indicates the recommended wall treatment locations to reduce noise levels and reflections from the upper ceiling area. In addition, Figure 4 shows a photo of the metal framing with highlighted areas to indicate the location of the recommended wall treatment. Suitable products are listed below:
 - [Hardside](#) by Kinetics Noise Control.
 - [Respond A Series](#) by Conwed Designscape.
 - [S-2000 Wall Panel](#) by Sound Seal.
 - [Acousti-Panel](#) by Golterman & Sabo Acoustics.

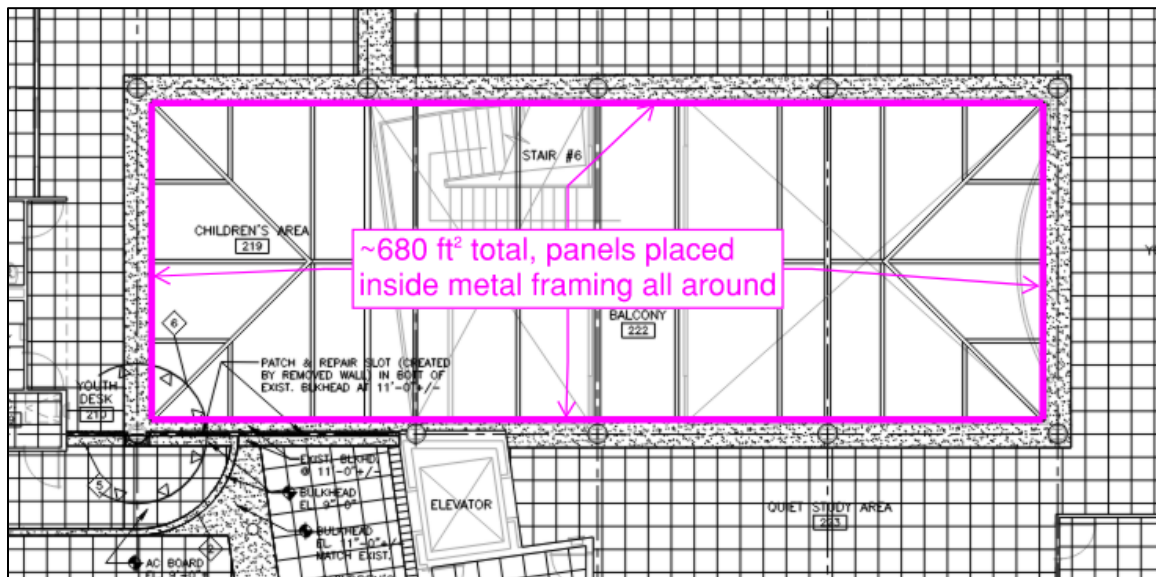


Figure 3: Recommended Wall Treatment Locations for Option 1



Figure 4: Photo Markup of Recommended Wall Treatment Locations for Option 1

Option 2 – Improved Treatment (1.1 second RT)

- Install the wall treatment described above in Option 1.
- On the second floor, above the Quiet Study Area, install approximately 850 ft² of acoustical ceiling tile as shown in Figure 5. Provide a ceiling tile with a minimum Noise Reduction Coefficient (NRC) of 0.90, such as [Optima](#) by Armstrong Ceilings or [Mars High-NRC](#) by USG.

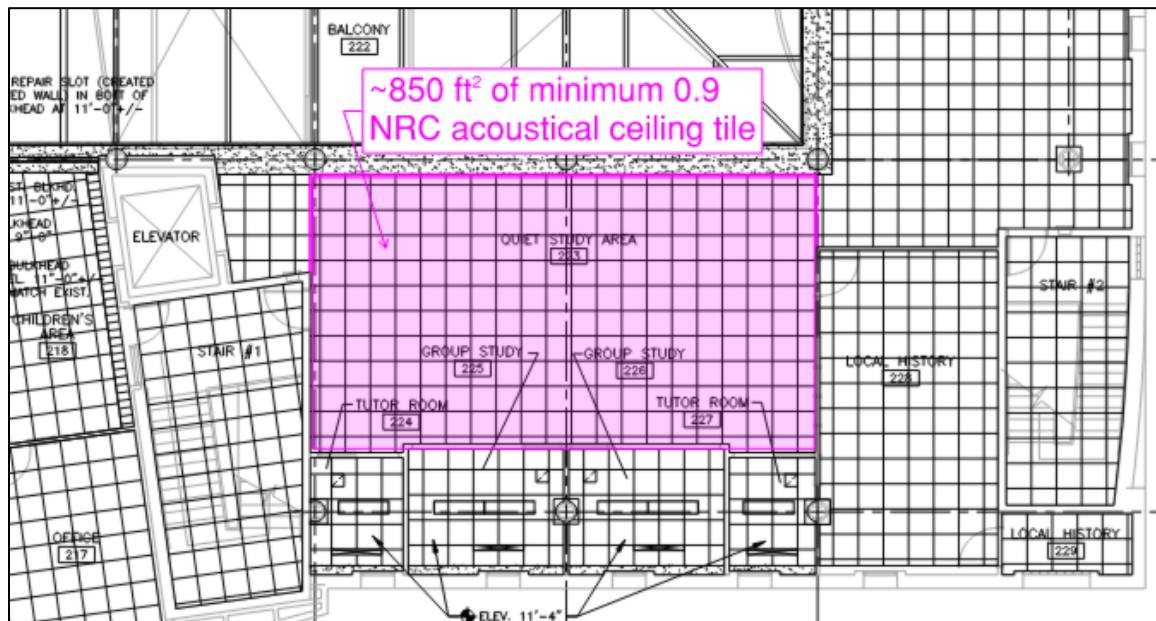


Figure 5: Recommended Ceiling Treatment Locations for Option #2

- In addition, install approximately 70 ft² of 2" thick acoustical wall panels with a minimum Noise Reduction Coefficient (NRC) of 0.90 on the available walls in the Quiet Study. These panels should be mounted from 3 ft above the floor to 7.5 ft as shown in Figure 6. Suitable products include the following:

Fabric-wrapped panels:

- [Hardside](#) by Kinetics Noise Control.
- [Respond A Series](#) by Conwed Designscape.
- [S-2000 Wall Panel](#) by Sound Seal.
- [Acousti-Panel](#) by Golterman & Sabo Acoustics.

Impact Resistant Panels:

- [High Impact Hardside](#) by Kinetics Noise Control
- [Respond HI](#) or [Metro Rebound](#) by Conwed
- 1" thick [Tectum](#) or [Strandtec](#) wall panel on 1" furring strips with batt insulation in the cavity.

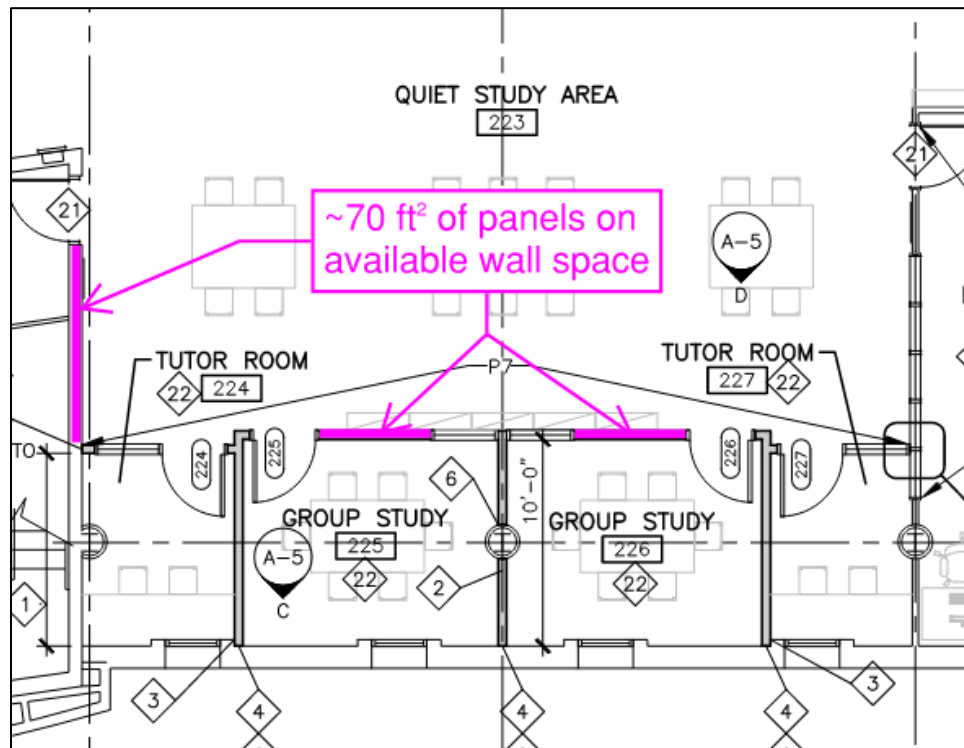


Figure 6: Recommended Wall Treatment Locations for Option #2 in the Quiet Study Area

- In addition, install approximately $\sim 270 \text{ ft}^2$ of 2" thick acoustical wall panels with a minimum Noise Reduction Coefficient (NRC) of 0.90. These panels should be installed on the available wall space within the opening that connects the first and second floors into the Atrium. Accommodation for the air supply diffusers should be made when installing this treatment. Panels should be placed on the straight walls, excluding the curved wall that hangs the flag. Figure 7 and Figure 8 below indicate the recommended wall treatment locations to reduce noise levels and reflections at crucial locations. Suitable products include the acoustical wall panels listed above.

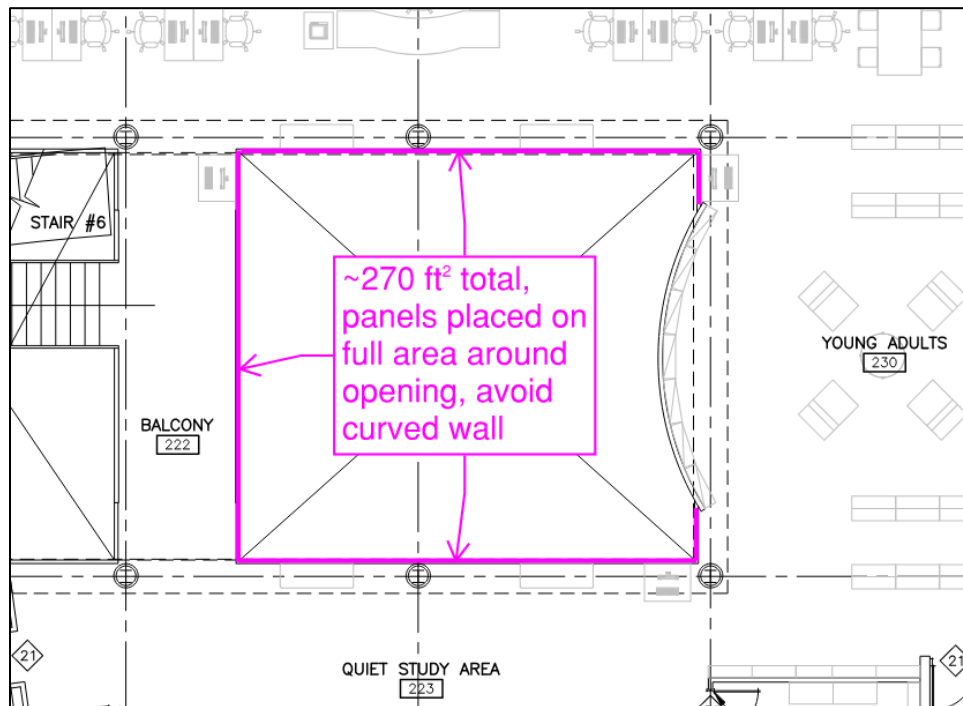


Figure 7: Recommended Wall Treatment Locations for Option #2



Figure 8: Photo Markup of Recommended Wall Treatment Locations for Option #2

Option 3 – Preferred Treatment (1 second RT)

- Install the treatment as described in Options 1 and 2.
- In addition, install approximately ~550 ft² of acoustical wall panels with a minimum Noise Reduction Coefficient (NRC) of 0.90. These panels should be installed on the two long, parallel walls above the second floor, directly below the Option 1 recommended treatment. Accommodation for the air supply diffusers should be made when installing this treatment. Figure 9 and Figure 10 below indicate the recommended wall treatment locations. Suitable products include those listed above for Option 1.

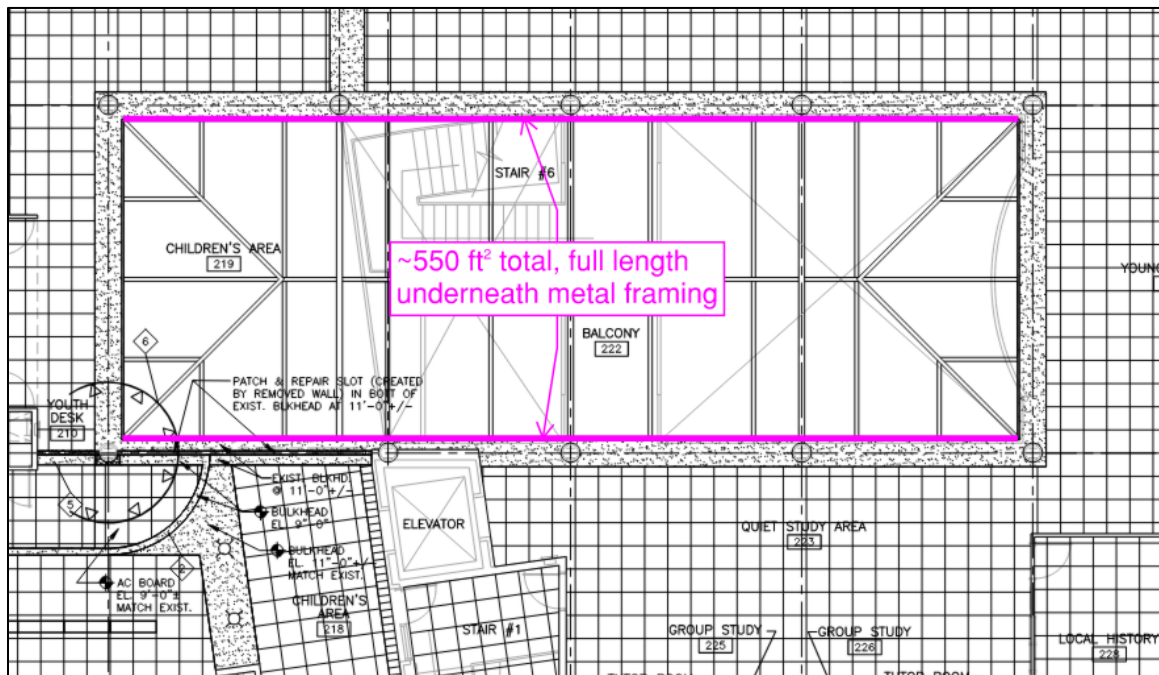


Figure 9: Recommended Wall Treatment Locations for Option 3



Figure 10: Photo Markup of Recommended Wall Treatment Locations for Option 3

Finally, note that our comments only apply directly to acoustics; we cannot comment on such things as local codes, ordinances, electrical systems, fire suppression systems, or any other non-acoustic issues. Our recommendations should be reviewed by the appropriate design professionals for code compliance before they are implemented.

If you have any questions, please contact us.

Sincerely,

ABD Engineering & Design, Inc.

Per:

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