

Council Action Form

Item # 8A
Date: 8/12/24

Date: August 12, 2024

Agenda Item: Field House Sound Dampening

History:

During construction of the Field House, it was not known how sound would carry throughout the facility. Over the past 6 months we have found that the track, gymnasium and turf areas do not cause an issue with sound. That being said, the play area, lobby and hallways tend to be quite loud as the sound does tend to carry. Because it was unknown how sound would carry throughout the building, sound dampening was part of the project, but would be an owner purchase item, if found necessary. The play area being in such close proximity to the lobby, hallways and offices has proven to be difficult to hear others when talking, when in person, or on the phone and also causes issues with concentration while working in our office space.

We reached out to RMH to provide guidance regarding this issue. Jeff put us in touch with Armstrong. Through the process of working with Armstrong over the past several months, they provided us with information on their products, a reverberation time (RT) report based on our square footage and ceiling heights, gave options for product and material needed to meet suggested RT targets. Their report indicated that treatment on both the ceiling and walls would limit "flutter echo". Armstrong also put us in contact with a local supplier to provide pricing for the chosen Tectum Finale that would improve RT and give a 4dB level sound reduction.

After receiving the quote from FBM Des Moines to provide 560 sq ft of Tectum Finale product, we researched other possible vendors and found one other vendor that has an equivalent to the Tectum Finale product, Cardinal Acoustics based out of Colorado. Certainteed also had a similar product, however their product did not include a complete package of attached furring strips and wool making it labor intensive. Other systems researched, did not have the durability or warranty of Armstrong and Cardinal.

After review of the information provided by Armstrong, Cardinal and Certainteed, along with other research on various types and styles of acoustic panels, we feel as if the complete panels with an NRC of .85, providing a .7 RT will be the best for use in our "gymnasium" space. Please see attached supporting documents regarding the sound report and quotes along with warranty information.

If we were to purchase panels, City staff would install the panels upon arrival. RMH has indicated that they would help determine placement of the panels on both the ceiling and walls. The hope is that 560 sq ft. of the product will provide enough sound dampening to improve the issues we are having.

Quotes for 560 sq. ft. of complete panels:

- Armstrong: \$8,200.00
- Cardinal Acoustics: \$4,742.02
- Certainteed: Non-Equivalent

Options:

1. Accept the quote from Cardinal Acoustics to provide 560 sq ft. of Cardinal Complete for \$4,742.02. Installation screws would be purchased locally.
2. Continue research into other options.
3. Do nothing at this time.

Staff Recommendation:

Park Board and Staff recommends that we move forward with option 1.

Questions, please feel free to contact me at 382-4352 (office) or by email at nevadarecreation@gmail.com



Date: June 25th, 2024
Prepared By: Kenneth W Good Jr
Report ID: 06252024 -07
Prepared for: Danielle James
Case: 02337077
Project: Nevada Fieldhouse Play Area1.0

Introduction:

Armstrong Techline is not an acoustical engineering firm nor was this report prepared by an acoustician. We are happy to provide these reports to support the appropriate use of our products. Our Reverberation Time (RT) Reports are the result of simple Reverberation Time (RT) Calculations based on the Sabin or Eyring Equation and Our Speech Privacy Class (SPC) Reports are calculations based on laboratory performance data applied to ASTM E2638 calculations method. In all cases good design practices must be used to prevent or account for special conditions. This report should not be misunderstood as professional acoustical advice. A professional Acoustical Consultant can be found at the National Council for Acoustical Consultants web page (<http://www.ncac.com/>)

Request:

The request was to evaluate the treatment options for a kids sports room. Revision 2.0 corrected the ceiling height.

Report Index:

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Target:

In Room Sound Quality

Hear Reverberation Time samples.

- As a guide, the ASA/ANSI S12.60 Part 4; Acoustics Standard for Physical Education Spaces, requires gymnasium this size to not exceed RT 0.7 seconds. I am suggesting a maximum target not to exceed RT 1.0 seconds, however for better occupant satisfaction a preferred target may be closer to RT 0.7 seconds.

Conditions:

Room: Estimated Area of 1185 SF Average Ceiling Height 13'
Surface finishes:

- Floor: Carpet, Rubber, & Turf
- Walls: Drywall & Glass
- Ceiling: Exposed Structure

Treatment Options:

I calculated the RT with the following treatment options:

- **Tectum (A Mount)**
- **Tectum High NRC (D-20 Mount)**
- **Tectum Finale**

Reverberation Time Fundamentals

Reverberation time is one of the key elements related to the acoustic comfort within a room. Reverberation Time (RT) is the decay rate of sound within a space. When sound strikes a hard surface such as concrete, nearly all the energy is reflected back into the space thus the room will have a longer RT.

Inversely, when sound strikes a soft surface such as an acoustical ceiling, only a portion of sound is reflected back into the space, thus a lower RT will result. When a material minimizes the reflection, this is known as sound absorption. Sound Absorption can be a surface treatment such as ceilings and wall materials or space absorbers such as canopies, clouds, baffles and blades.

The appropriate RT target will depend on the usage and expectation of the space. An office or classroom will require a low RT to meet the intended function and comfort. A festive pub or lobby may require a higher RT to create the appropriate atmosphere.

Learn more about reverberation time.

Executive Summary

Based on the results of this study we can estimate the material needed to meet the suggested RT target. Good acoustic design will include treatment on the ceiling and a modest amount of treatment on the walls to minimize lateral reflections which can be perceived as "flutter echo". Each of the options included in this study can be installed as a ceiling and or a wall application.

Tectum General Note:

The class leading durability of Tectum has historically made it the "go-to" solution for gymnasiums and other high abuse applications. With new options such as **Tectum Create** and **Tectum DesignArt**, along with the rich texture, and ability to field paint, Tectum family has become a popular design feature.

Tectum A Mount: (Modest)

When Tectum is mounted flat to a wall or ceiling without an airgap behind the panel (A Mount) it is a modest sound absorber and more material than practical may be required to meet the suggested target range.

- Between 1310 to 1970 square feet is needed.

Tectum High NRC D-20 Mount: (Better)

The Tectum High NRC has an acoustical fleece backing so that when mounted with an airgap behind the panel (D-20 Mount) it is a better sound absorber which means less material is required.

- Between 900 to 1350 square feet is needed.

Tectum Finale: (Best)

Tectum Finale (or C-20 Mounting) is the most acoustically efficient option therefore the least material is required.

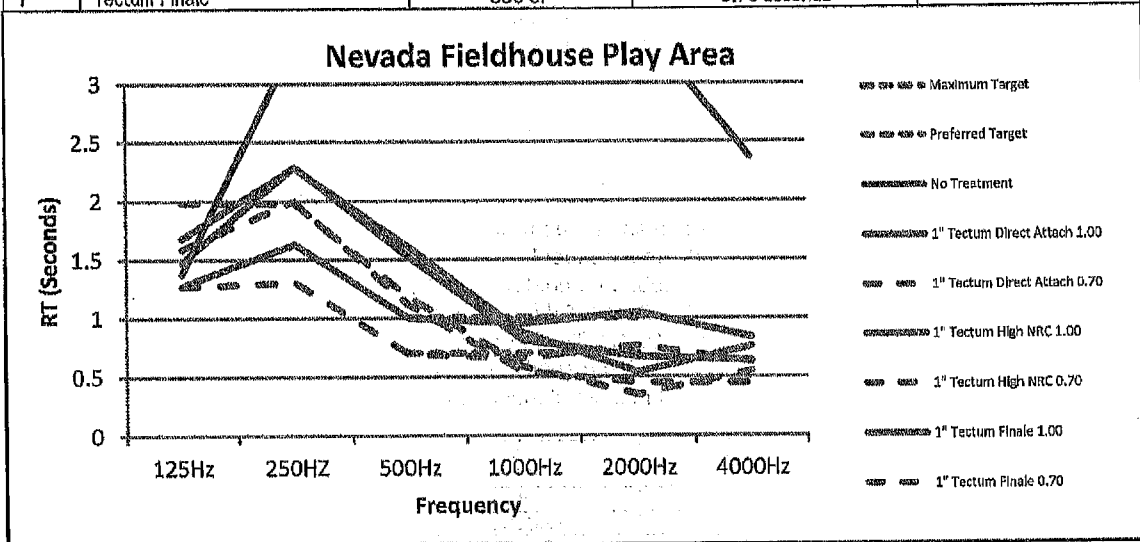
- Between 560 to 830 square feet is needed.

Part I: Reverberation Time

Commentary:

1. I calculated the RT for the space without treatment as a baseline.
2. Next, I calculated the amount of Tectum A Mount needed to meet the maximum target.
3. I then calculated the amount of Tectum A Mount needed to meet the preferred target.
4. Next, I calculated the amount of Tectum High NRC D-20 Mount needed to meet the maximum target.
5. I then calculated the amount of Tectum High NRC D-20 Mount needed to meet the preferred target.
6. Next, I calculated the amount of Tectum Finale needed to meet the maximum target.
7. Last I calculated the amount of Tectum Finale needed to meet the preferred target.

	Ceiling/Wall Treatment	Amount (SF)	Reverberation Time (RT)	Level Reduction
1	No Treatment	NA	4.76 seconds	NA
2	Tectum A Mount	1310 SF	1.00 seconds	3dB
3	Tectum A Mount	1970 SF	0.70 seconds	3dB
4	Tectum High NRC D-20 Mount	900 SF	1.00 seconds	3dB
5	Tectum High NRC D-20 Mount	1350 SF	0.70 seconds	4dB
6	Tectum Finale	560 SF	1.00 seconds	4dB
7	Tectum Finale	830 SF	0.70 seconds	4dB



Kenneth W Good Jr

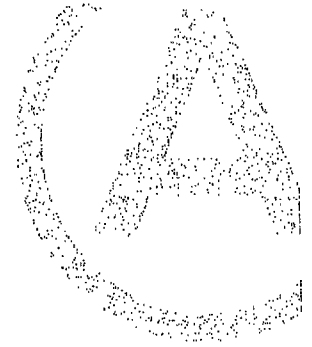
Architectural Acoustics Specialist, Techline Team
Member - Acoustical Society of America.



2500 Columbia Avenue, Lancaster, PA 17603

P: 877.276.7876, Option 2

E: Techline@armstrongcellings.com | armstrongcellings.com



Project Name: Nevada Parks and REc
 Quotation #: PQ24-476123
 Date: 7/8/2024
 Center of Excellence: Lancaster
 Quotation Prepared by: Ben McNeal
 To: Ben McNeal
 FBM DES MOINES IA (042) - URBANDALE, IA

This quotation has been priced as a packaged project, any changes to project scope may require a revised quotation prior to order acceptance.

Lead times noted below are guidelines and may be decreased or extended based upon manufacturing and CAD capacity at time of order approvals.

Lead Time: 6 Weeks (No Shop Drawings or Custom Samples Required)
Lead Time if Shop Drawings or Custom Samples are required: See Below

1. **Submittals: 3-5 Weeks** Upon receipt of a customer purchase order and electronic drawings files. Submittals include color sample, shop drawings and any other items required for approval prior to production. Shop drawings require an additional charge of \$2,500.
2. **Revisions: 2-4 Weeks** Revisions include shop drawings and/or samples.
3. **FOA: 3 Weeks** Upon receipt of approved shop drawings and samples, Armstrong requires approximately 3 Weeks for preparation of Record Set and Final Order Acknowledgment (FOA) to be sent to customer for approval.
4. **Production: 6 Weeks** Production will start after Armstrong receives all approved shop drawings, samples and signed FOA. If multiple shipments are required, lead time applies to first shipment.

Shipping Terms: Delivered to Contiguous US or Canada Locations

Customer Terms: Standard Ceiling Terms

Escalation

Order Placed After:	Price:
1/8/2025	Quote Price + 5%
4/8/2025	Quote Price + 10,25%
7/8/2025	Quote Not Valid

No Shop Drawings required: If the project does not ship within 6 months of PO placement with ASORDER, 5% will be added to final price. An additional 5% will be added for each subsequent 3-month project delay.

If Submittals / FOA required: Each FOA must be signed within 6 months of PO placement with ASORDER, or 5% will be added to final price. An additional 5% will be added for each subsequent 3-month delay.

To: FBM DES MOINES IA (042) - URBAN DALE, IA

Tectum Interior Quotation

PQ24-476123

Nevada Parks and REc

7/8/2024

Panels

Item #	Description	Dimensions [WxLxTotal Thk] [W & L Actual]	Qty	Price/UOM	Total Price
Sp Item #	Finale PB Standard Ceiling/ Wall Panel; White Face and Edges; Edges-Bev/Bev [thickness includes 1" mineral wool and spacers] [SUSTAIN®]	23.75" x 48" x 2"	70 PC	\$110.00 PC	\$7,700.00

Total for above panels \$ 7,700.00
 Small Qty Setup [less than 2500 SFT] \$ 500.00
Price Total \$ 8,200.00

Tolerances: Tectum is a natural wood product and can expand and contract based upon temperature and humidity. As such, finished tolerances will typically fall within 1/4 inch. Armstrong cannot guarantee sizing accuracy beyond these tolerances.

Important Notes

1. If Purchase Order is canceled after Shop Drawings and Submittals are issued, Armstrong reserves the right to charge a minimum of 20% of the value of the order. If Purchase Order is canceled after submittals are released to production, Armstrong reserves the right to charge up to 100% of the value of the order.
2. Quote is subject to freight surcharges as announced via customer bulletins.
3. Lay-in and Tegular 2' x 2' and 2' x 4' panels must be purchased in full carton quantities.

Accessories

Screws, Clips and Paint are not included with Tectum Interior Panels and must be ordered separately. Please use unit pricing in table below to determine your total price for these items.

Item #	Description	UOM	Price/UOM
8187L30TWH	3" Drywall Screws/Sharp Point, 2"-2.5" panels, 1000 PC/CTN	CTN	\$ 375.00
8188L30TWH	3" WH Drywall Screws/Drill Point, 2"-2.5" Panels	CTN	\$ 560.00
8189L32TWH	3-1/4" Tapcon Screws (Conc. Fastener)/CMU, 2"-2.5" panels, 100 PC/CTN	CTN	\$ 300.00
AS0124TWH	White Touch-up Paint (gallon can)	PC	\$ 145.00

Product Specific Notes

1. Please read Product Description(s) carefully.
2. Quotation is based upon product attributes and quantities as detailed above. If there are any changes, a revised quote will be required.
3. Custom Shapes - Shape may be formed with 2 or more panels, if oversized.
4. Products in the Armstrong's Sustain Portfolio are free of Red List chemicals, have HPD and EPDs, and have a DECLARE label. Learn more at: www.armstrongceilings.com/sustain
5. At time of order placement, you will be charged one color setup charge for each different Colorations or Sherwin Williams color on your order.

Terms and Conditions

1. ACCEPTANCE OF ORDERS

- a. No order placed with SELLER shall be considered as accepted until officially acknowledged by SELLER. If SELLER'S acknowledgment contains terms additional to or different from the PURCHASER'S order, it shall be effective as an acceptance of such order only if such terms are included in the sale contract and they shall be so included if not objected to in writing within ten (10) days from the date of SELLER'S acknowledgment.
- b. PURCHASER acknowledges that PURCHASER is placing an order for nonstandard goods (a "Special Order"), which are being specifically produced to meet PURCHASER'S unique requirements, and that PURCHASER has provided SELLER with PURCHASER'S specifications (the "Specifications") for the Special Order. PURCHASER further acknowledges that if PURCHASER:
 - (i) makes a change in the quantity ordered, the required specifications or other changes to the Special Order, SELLER is likely to incur additional costs which may, in SELLER'S discretion, be charged to PURCHASER and, if so charged, shall be paid by PURCHASER in addition to the previously established pricing; and/or
 - (ii) cancels the Special Order for any reason after SELLER has incurred any costs in connection therewith, whether through the ordering of materials, beginning of production or the incurring of any other cost or expense, PURCHASER agrees to reimburse SELLER for all costs and expenses, direct or indirect, incurred by SELLER, including, but not limited to, reimbursement for all materials ordered for the Special Order which are not generally usable by SELLER for its standard goods, set up costs, startup costs, reassignment of personnel and reallocation of resources.

PURCHASER is solely responsible for the Specifications and/or determining the quantity of goods to be ordered and which will meet PURCHASER'S needs. PURCHASER acknowledges that PURCHASER is not entitled to, and has not in fact, relied upon any statement or representation of SELLER, its employees, representatives or agents with respect to the Specifications and/or the quantity of goods required for PURCHASER'S needs.

2. APPROVAL AND RELEASE FOR PRODUCTION

- a. Orders will be acknowledged to the customer with an approval package consisting of an order acknowledgement document, shop drawings and other information pertinent to the precise definition of the products and materials to be supplied.
- b. Orders will be released for production *only upon receipt of signed approval of the package mentioned in the above paragraph*. Production lead times will begin the date approval is received at SELLER'S location.

3. DEPOSITS

At SELLER'S discretion a deposit may be required prior to the processing of an order for nonstandard goods. Such deposit requirement will be stated on the quotation form. When a deposit is required, the receipt of the deposit will be an additional prerequisite for release to production.

4. DELIVERY

All Sales are F.O.B. shipping point, unless specifically stated otherwise on the quotation and/or order acknowledgement. No allowance from prices will be made for freight or cartage on material picked up at our plant or warehouses.

SELLER undertakes to provide a freight estimate to PURCHASER and to arrange for transportation of goods from shipping point (plant of origin) to destination. SELLER will make its best effort to ensure the accuracy of such freight estimates, but does not guarantee same.

5. FORCE MAJEURE

Delay or failure to fulfill or perform any order or contract shall be excused by any cause beyond SELLER'S control, including, but not limited to, sabotage, fire, flood, differences with workmen, riot, insurrection, war, inability to obtain raw materials at competitive prices or due to shortages (and any resulting allocation of products, whether or not within the control of SELLER), act of any governmental authority, including but not limited to wage and price controls, priorities granted at the request or for the benefit, directly or indirectly, of any government or agency thereof, and act of God. Any of the foregoing conditions resulting in the delay or failure to perform under this agreement shall excuse such delay or failure whether the condition exists now or arises hereafter.

6. PRICE CHANGES

Prices of all goods are those applicable on date of shipment to PURCHASER. Where no price is indicated for a future time period listed herein, it is estimated by, but not binding upon, SELLER that such prices will not exceed a 10% increase over the level of prices shown for the preceding time period. All prices contained herein are the best current estimate of SELLER and are subject to change without notice. Prices quoted on items not shown in this price list (special items - nonstandard) are void after 90 days unless a firm order is received.

7. WARRANTY

The goods sold hereunder are warranted to be free from defect in material and workmanship, and are warranted to conform to the descriptions contained in the approved order documents. All other warranties, expressed or implied, including any implied warranty that the goods shall be fit for a particular purpose or are merchantable, are hereby excluded. Defective goods may be returned to SELLER after inspection by SELLER and upon receipt of definite instruction from SELLER. Goods so returned and found to be defective will be replaced or repaired without charge, but SELLER shall not be liable to PURCHASER or any other person for loss or damage (including, without limitation, general special, consequential, incidental and/or punitive damages) directly or indirectly arising from the use of the goods, from breach of any warranty or from any other cause, the exclusive remedy against the SELLER being to require replacement or repair of defective goods. Every claim on account of defective goods, short count, or for any other cause, shall be deemed waived by PURCHASER unless made in writing within thirty (30) days from the date of shipment of goods to which such claim relates.

8. TERMS OF PAYMENT

Applicable terms of payment are shown on the face of the Quotation and Order Acknowledgment forms. Terms of payment shall be subject to approval of SELLER'S Customer Financial Services Department and in case of doubt arising at any time as to PURCHASER'S financial responsibility, production may be stopped and shipments suspended until satisfactory assurances are received. SELLER shall be under no obligation to make any shipment when PURCHASER is in default hereunder or under any other sales agreement between SELLER and PURCHASER.

9. TAX

Sales hereunder are subject to the condition that the PURCHASER pay the SELLER the amount which SELLER is required to pay on account of any excise, manufacturer's payroll, use, or sales taxes or charges which may be established or levied by any governmental authority (domestic or foreign) upon the merchandise sold hereunder or any part thereof, or the manufacture, use, sale, or delivery thereof, insofar as the same may be applicable to the merchandise sold hereunder or the manufacture, use, sale, or delivery thereof.

Cardinal Acoustics
 An Acoustical Wood Fiber Company
www.cardinalacoustics.com

Quotation
 080824-9D

2941 Donnylane Blvd.
 Columbus, Ohio 43235
 614-721-9001



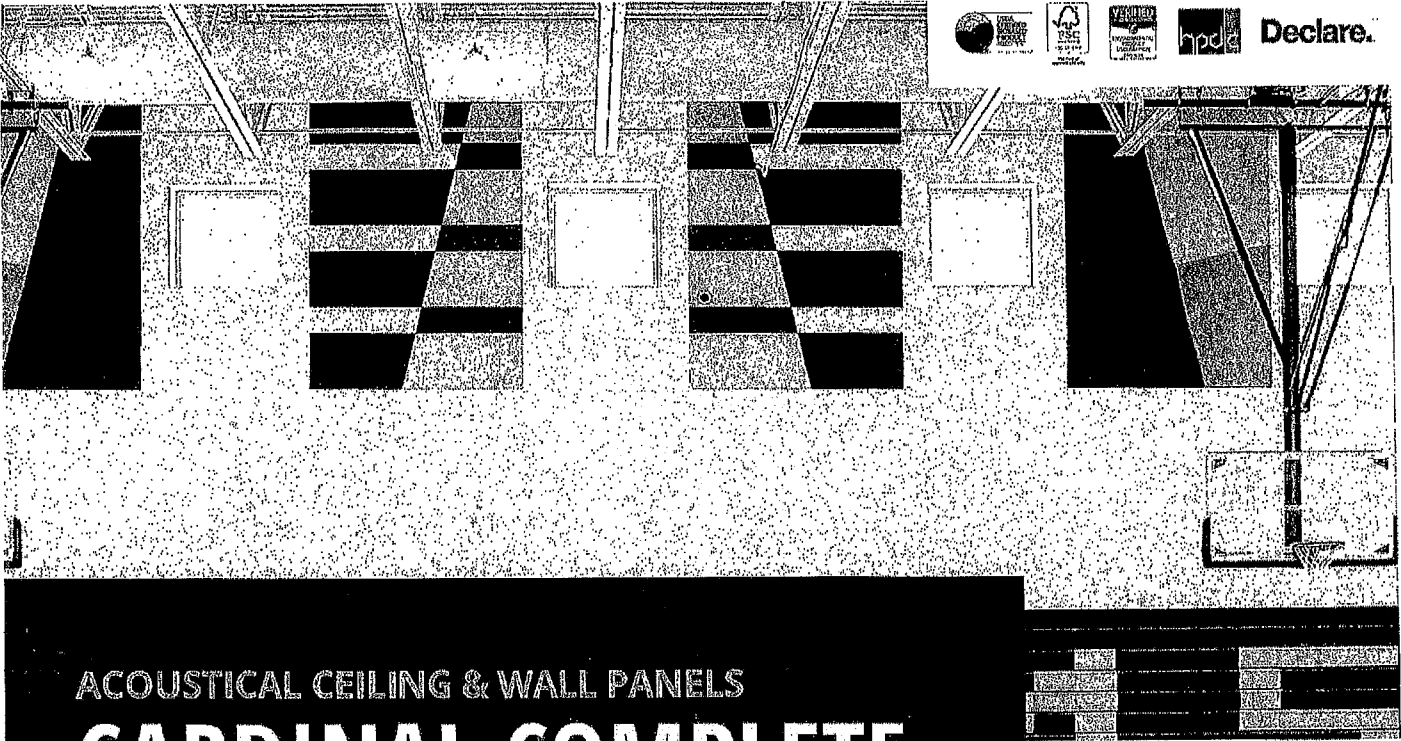
Job Name : Nevada Iowa
 SHP TO
 Name : Parks & Rec Dept

DATE 8/8/2024
 Quotation # 080824-9D
 Customer ID
 Sales Rep
 Quotation valid until 12/31/2024

Phone:
 Special Instructions : Customers are responsible for verification of sizes, quantities, description, price and shipping information. Notify us immediately if incorrect. All changes must be confirmed in writing. All non-standard panels are custom and are not returnable

QTY (PCS)	T	W	L	PRODUCT	EDGE	FINISH	QTY (SQ)	PRICE	AMOUNT	
70	5/8" + 1"	23.75"	48"	Cardinal Complete	Bev / Sq	Painted White	560.00	\$ 6.730	3,768.80	
Notes:									SUBTOTAL	\$ 3,768.80
1) Field verify dimensions before ordering									CRATING	\$ 84.00
2) Freight estimates may change at the time of shipment									FRT SC	\$ 84.22
3) Contractor responsible for panel quantities and dimensions									FREIGHT	\$ 795.00
4) Raw unpainted not recommended as a final finish color										
5) Beveled edge recommended when two or more panels butt together										
6) Field cutting may be necessary										
7) Shop drawings and additional accessories not included. Please inquire for cost.										
8) Quoted material must be ordered and shipped prior to expiration date in order to avoid price increase										
9) FSC material pricing is available upon request										
10) Terms pending credit approval. Standard terms are net 30.									TOTAL	\$ 4,732.02

THANK YOU FOR YOUR BUSINESS



ACOUSTICAL CEILING & WALL PANELS

CARDINAL COMPLETE PANEL

PREMIUM ACOUSTICAL PERFORMANCE

Cardinal Complete panels are composed of a 5/8" or 1" baseboard with pre-attached wood fiber furring strips. Cardinal Acoustics attaches a 1" or 2" layer of lightweight, thermal, acoustic insulation (depending on desired NRC value) to the framed-out cavity of the panel. This premium sound absorbing product requires no additional mounting materials.

We recommend beveled edge panels where two panels are in contact with each other.

All Cardinal Acoustics ceiling panels meet the requirements of ASTM E1264 Type XIV, pattern F, Class A as tested in accordance to ASTM E84.

APPLICATIONS

- Gymnasiums
- Classrooms
- Cafeterias
- Multi-purpose rooms
- Indoor pools
- Restaurants
- Shooting ranges

FEATURES

- NRC up to 1.00
- Prefabricated composite panel
- Replaces C-20 mounting
- Furring strips attached
- Reduces labor

For more information, visit cardinalacoustics.com
 or call us at 614.721.3001
 Email: info@cardinalacoustics.com

OFFICE HEADQUARTERS **MANUFACTURING & FABRICATION PLANT**
 2941 Donnylane Blvd. 2000 S. Yellow Springs St.
 Columbus, OH 43235 Springfield, OH 45506

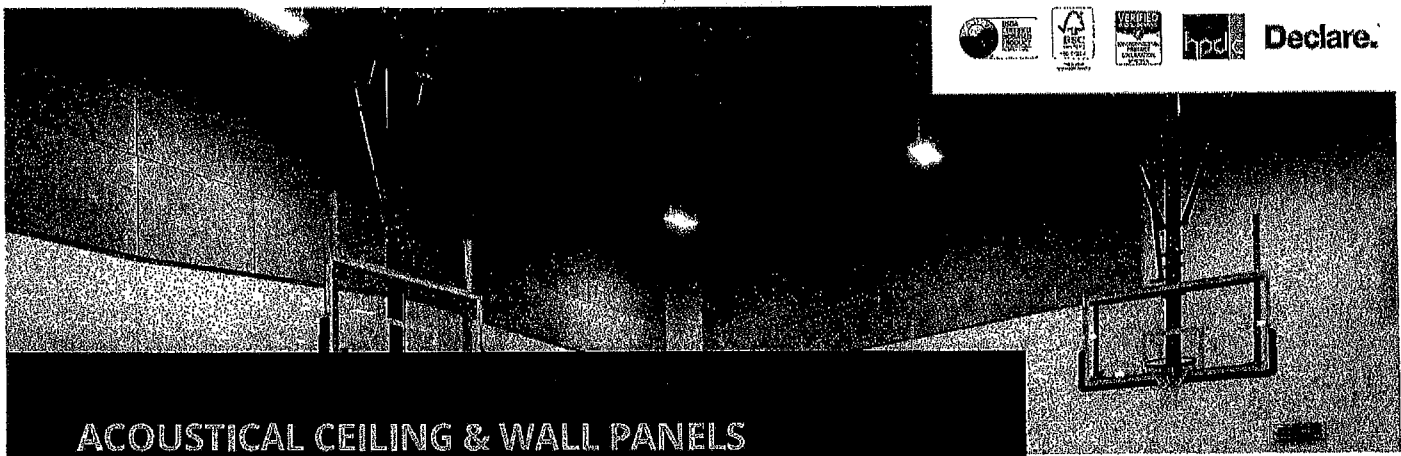


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 AN ACOUSTICAL WOOD FIBER COMPANY

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MasterSpec
a member of The Acoustic Institute of America



Declare.

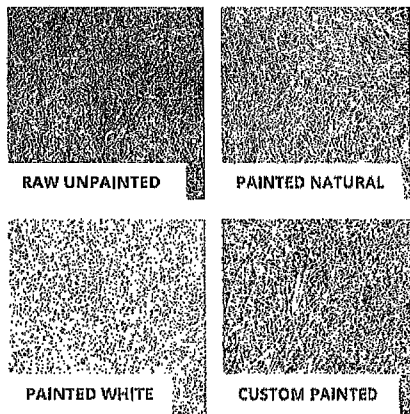


ACOUSTICAL CEILING & WALL PANELS

CARDINAL COMPLETE PANEL

EDGE DETAIL	NRC	THICKNESS*	WIDTH	LENGTH	WEIGHT P/SF
Bevel/Bevel, Bevel/Square, Square/Square	.85	5/8"	23-3/4" or 48"	48" up to 96"	2.5
	.90	1"			3.0
	1.00	1"			3.8

Thickness is for baseboard only. Add 1" for .85 and .90 Complete Panel (total thickness). Add 2" for 1.00 Complete Panel (total thickness).



FINISH OPTIONS

Cardinal Direct Attached Panels are available in painted natural, painted white, and can be customized to match colors of all paint manufacturers.

Maintains NRC rating and Class A fire resistance rating when factory or field painted

For more information, visit cardinalacoustics.com
or call us at 614.721.3001

Email: info@cardinalacoustics.com

OFFICE HEADQUARTERS 2941 Donnylane Blvd, Columbus, OH 43235
MANUFACTURING & FABRICATION PLANT 2000 S. Yellow Springs St, Springfield, OH 45506

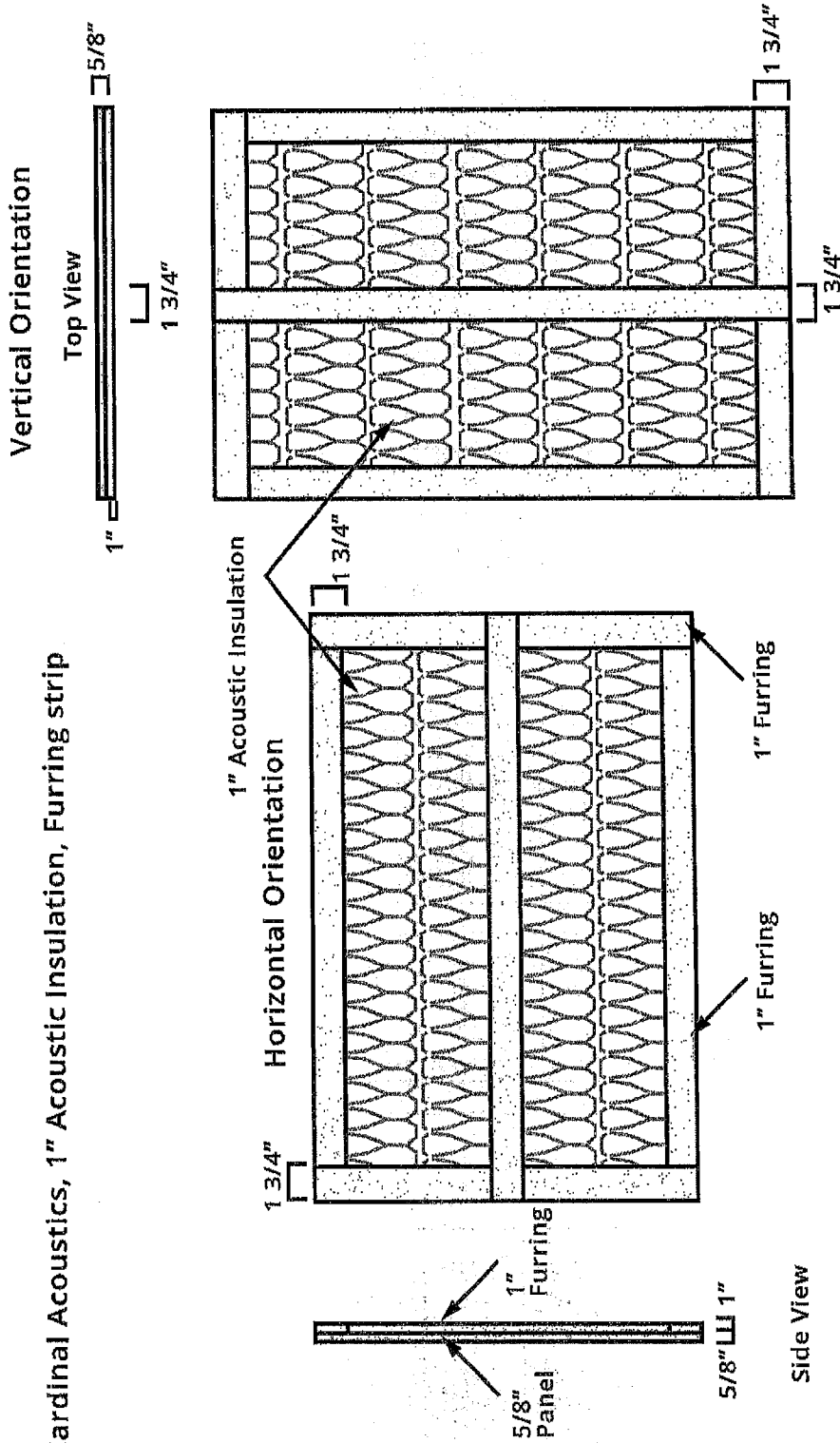


CARDINAL
ACOUSTICS®
AN ACOUSTICAL WOOD FIBER COMPANY

Find us in
MasterSpec
a part of the Acoustic Institute of America

CARDINAL COMPLETE

5/8" Cardinal Acoustics, 1" Acoustic Insulation, Furring strip



CARDINAL COMPLETE - 5/8"

DETAIL NUMBER

1002

SCALE

NTS

NRC

.85

REVISED

10/2/22



CARDINAL
ACOUSTICS
AN ACOUSTICAL WORLD WIDE COMPANY

info@cardinalacoustics.com
614.721.3001
CARDINALACOUSTICS.COM

OFFICE HEADQUARTERS
2941 Donnylane Blvd.
Columbus, OH 43235

MANUFACTURING & FABRICATION PLANT
2000 S. Yellow Springs St.
Springfield, OH 45506

PANEL FACE FINISH OPTIONS

Cardinal Acoustics wood fiber products are available in any of the following finishes:

Cardinal Acoustics Raw Unpainted

Cardinal Acoustics raw unpainted panels are the most affordable and durable sound absorption style we offer. These panels are ideal for applications where they are custom field painted, or in industrial settings where the unpainted panels are less visible. Note that the sound absorption quality of raw unpainted panels is equal to that of painted panels.

The color and tone of the raw unpainted panels is derived from the natural poplar fibers used in the manufacturing process. Some sections of poplar wood are more pigmented than others, and as a result of this variation, the raw unpainted panels display inconsistencies from one panel face to the next. Though visible, these variations are not indicative of imperfection or lower sound absorption performance.

Cardinal Acoustics Painted Natural or Painted White

PAINTED NATURAL:

- Professionally painted in Sherwin Williams 9110 Malabar, our painted natural panels channel and embrace the natural color of the poplar wood fiber from which they are constructed.
- This color is ideal for applications where a natural, calming, and warm aesthetic is desired.

PAINTED WHITE:

- Professionally painted in Sherwin Williams 7757 Highly Reflective White, our white panels offer a clean, fresh, suede-like appearance.
- This color is ideal for applications in which a modern, sleek aesthetic, and high luminous reflectance (LR) are desired.

Cardinal Acoustics Custom Painted

We can professionally paint any of our wood fiber panels to match custom colors of any paint manufacturer to suit each project's unique aesthetic requirements.

We offer superior-quality sound absorption, fast, 2 to 4-week lead time, with no minimums, and unparalleled customer service for all our products.



CARDINAL
ACOUSTICS®
AN ACOUSTICAL WOOD FIBER COMPANY

For more information, visit cardinalacoustics.com
or call us at 614.721.3001
Email: info@cardinalacoustics.com

CARDINAL VS. TECTUM COMPARISON

		CARDINAL ACOUSTICS	TECTUM
	MOUNTING		
DIRECT ATTACHED PANELS			
5/8"	A	0.45	
1"	A	0.60	0.40
1 1/2"	A	0.70	0.55
2"	A		0.60
LAY-IN CEILING PANELS			
5/8"	E-400	0.60	
1"	E-400	0.70	0.40
1 1/2"	E-400	0.75	0.55
2"	E-400		
COMPOSITE PANELS	5/8" + 1"	0.85	
	1" + 1"	0.90	0.85
	1" + 2"	1.00	
INTERIOR PANELS			
5/8"	D-20	0.55	
1"	D-20	0.70	0.45
1 1/2"	D-20		0.60
2"	D-20		0.70
5/8"	C-20	0.80	
1"	C-20	0.90	0.80
1 1/2"	C-20		0.90
2"	C-20		0.95
5/8"	C-50	0.80	
1"	C-50	0.95	0.85
1 1/2"	C-40		0.95
2"	C-40		1.00

*C-40

	CARDINAL ACOUSTICS	TECTUM
Standard Widths	2' or 4'	2', 2'-7", or 4'
Standard Lengths	Up to 8'	Up to 12'
Custom Sizes	Available	Available
Fire Rating	Class A	Class A
FSC Certification	FSC 100% Available	FSC Mix
EPD	Yes	Yes
HPD	Yes	Yes
Declared Label	Yes	Yes
VOC Content	No VOCs	No VOCs
Light Reflectance	89%	75%
Minimum Order Requirements	No	Yes
Warranty	Lifetime	30 year



CARDINAL
ACOUSTICS®
AN ACOUSTICAL WOOD FIBER COMPANY

For more information, visit cardinalacoustics.com
or call us at 614.721.3001

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