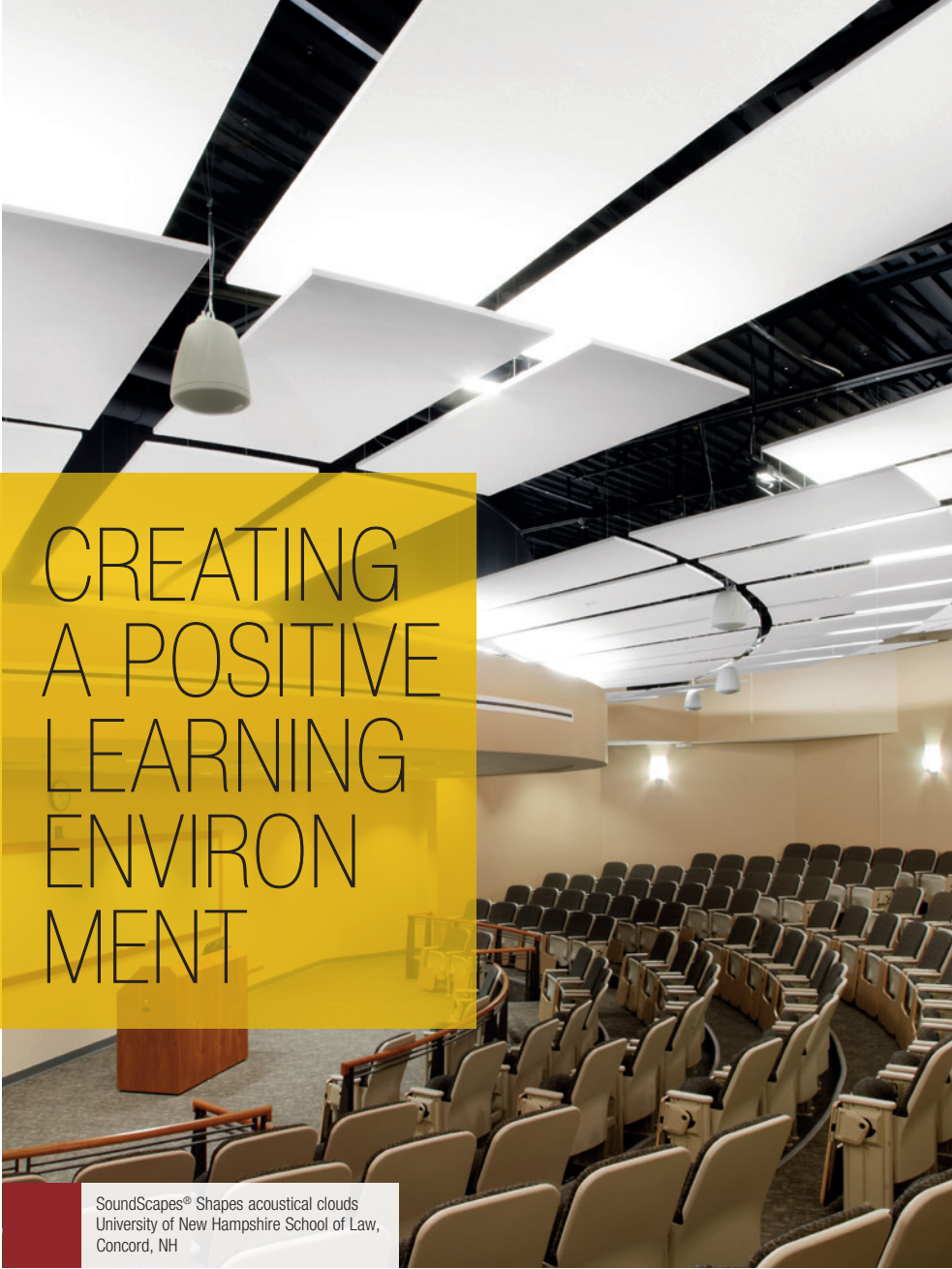


PLACES TO LEARN

CEILING SYSTEMS THAT
MAKE A DIFFERENCE IN
EDUCATIONAL FACILITIES

Armstrong®
CEILING SOLUTIONS



CREATING A POSITIVE LEARNING ENVIRON- MENT

SoundScapes® Shapes acoustical clouds
University of New Hampshire School of Law,
Concord, NH

Whether orchestrating a dramatic and engaging impression or creating a high performance classroom for better learning, you can rely on Armstrong Ceiling and Wall Systems for products that deliver the performance your school needs – room to room – from high acoustics in the classroom to tough durability in the hallways...from wow entryways to dynamic auditoriums.



WoodWorks® Tegular panels in Natural Variations™ Maple
TCU Instructional Building, Rees-Jones Hall, Fort Worth, TX



HEARING & UNDERSTANDING

Teachers can't teach and students can't learn in a noisy classroom full of distractions. Interference with the ability to hear increases stress, decreases concentration, and interferes with learning. Proper classroom acoustics are extremely important for younger children, students with learning disabilities, the hearing impaired, and English as a second language students. And let's not forget teachers; teacher surveys consistently rank noisy classrooms and vocal fatigue high on their list of frustrations.

SEEING THINGS CLEARLY

Proper lighting is critical to effective learning too. Poor lighting and glare in the classroom can cause eye strain and fatigue, hampering a student's ability to concentrate. High light-reflectant ceilings can brighten classrooms by reflecting up to 90% of the light striking their surfaces – creating brighter, more evenly lit spaces. These ceilings can help reduce total building energy savings by as much as 11%.

IMPACTING YOUR IMAGE

Many schools have signature spaces that tell the world who they are, impacting the ability to recruit students and faculty, endowments, and community goodwill. Presenting a professional, innovative, and sophisticated image has never been more important. With a variety of upscale, inspiring options, including WoodWorks®, MetalWorks™, SoundScapes®, Ultima® Create!™, and Infusions® panels, there's a product to help you create a space that inspires.

SHH...

PROTECTING STUDENTS AND THE ENVIRONMENT

Armstrong is committed to offering sustainable solutions for schools and universities. Our portfolio in metal, wood, mineral fiber, and fiberglass all contribute to the United States Green Building Council (USGBC) LEED® for School credits. Our acoustical offering is designed specifically to meet the reverberation and acoustical requirements for classrooms. Many of the products contain recycled content (both post-consumer and pre-consumer), meet acoustic performance requirements, and can contribute to the construction waste management credits by diverting ceilings from landfill through the Armstrong Ceiling Recycling Program.

Armstrong® HumiGuard® Plus ceiling systems with BioBlock® Plus have a 30-Year Limited Ceiling Systems Warranty against the growth of mold and mildew, in addition to a warranty against visible sagging over time, a critical issue for schools when systems are shut down over summer.

LEED® is a registered trademark of the U.S. Green Building Council



THE RIGHT CEILING FOR THE RIGHT SPACE

Ultima® Create!™ Vector® panels with
Prelude® XL® 15/16" suspension system
Springmill Learning Center, Mansfield, OH

CLASSROOMS

On any given school day, thousands of students across the country are unable to understand 25 to 30 percent of what's said in their classroom. The reason: excessive noise and reverberation within the classroom interferes with their ability to clearly hear their teacher. The result: a decreased level of concentration, an increased level of stress, and an overall reduction in the level of learning. To help create more effective spaces for teaching and learning, Armstrong offers a portfolio of ceilings that can substantially improve classroom acoustical design. School Zone® Fine Fissured™, Ultima®, Cirrus® High CAC, and Ultima® and Optima® Create!™ ceilings are all good choices for K-12 classrooms, while Optima, TechZone®



TechZone® Optima® panels in White with Prelude®
15/16" suspension system in White; TCU Instructional
Building, Rees-Jones Hall, Fort Worth, TX

FOCUS PRIVACY COLLABORATION

perforated WoodWorks® and MetalWorks™ panels provide higher end visuals. These ceilings feature greater sound absorption and impact resistance than most conventional ceiling panels used for classrooms.

ENTRYWAYS & HALLWAYS

First impressions in schools are important. Entryways and open area are great places to make a statement – especially in higher education. Our selection of canopies, clouds, wood, metal, and translucent ceilings in many forms offer design options limited only by the imagination.



MetalWorks™ DH700 Faceted system in custom colors; Lyman Elementary School, Lyman, SC

MULTIPURPOSE SPACES & CAFETERIUMS

Cafeterias and multi-purpose spaces in schools typically have high levels of noise. The din of multiple voices speaking at once – in a space that is often an exposed structure design – contributes to low speech intelligibility, adding additional stress on students and faculty. Spot acoustical solutions such as Optima® Capz™ panels, SoundScapes® Shapes acoustical clouds, Soundsoak® baffles, or SoundScapes Blades™ panels can significantly lower noise levels in open, noisy areas.

AUDITORIUMS & LIBRARIES

Acoustical performance and beauty play as much a part in the effectiveness and appeal of auditoriums and libraries, as the dramatics on stage. Armstrong has the largest portfolio of standard and custom acoustical and aesthetic ceiling options available in the industry today.

REDUCE NOISE THROUGH WALLS

Most interior walls are lightweight in design. As a result, noise transmission between rooms is a problem. The ANSI Standard specifies that the STC or sound transmission class of a wall separating two adjacent classrooms be 50 or greater. Adding fiberglass insulation in the wall cavity, adding a layer of gypsum board, and sealing infiltration gaps will help reduce noise transmission between rooms. Soundsoak® Acoustical Wall Systems are available in a wide variety of colors and textures and absorb 50-90% of sound striking the surface.

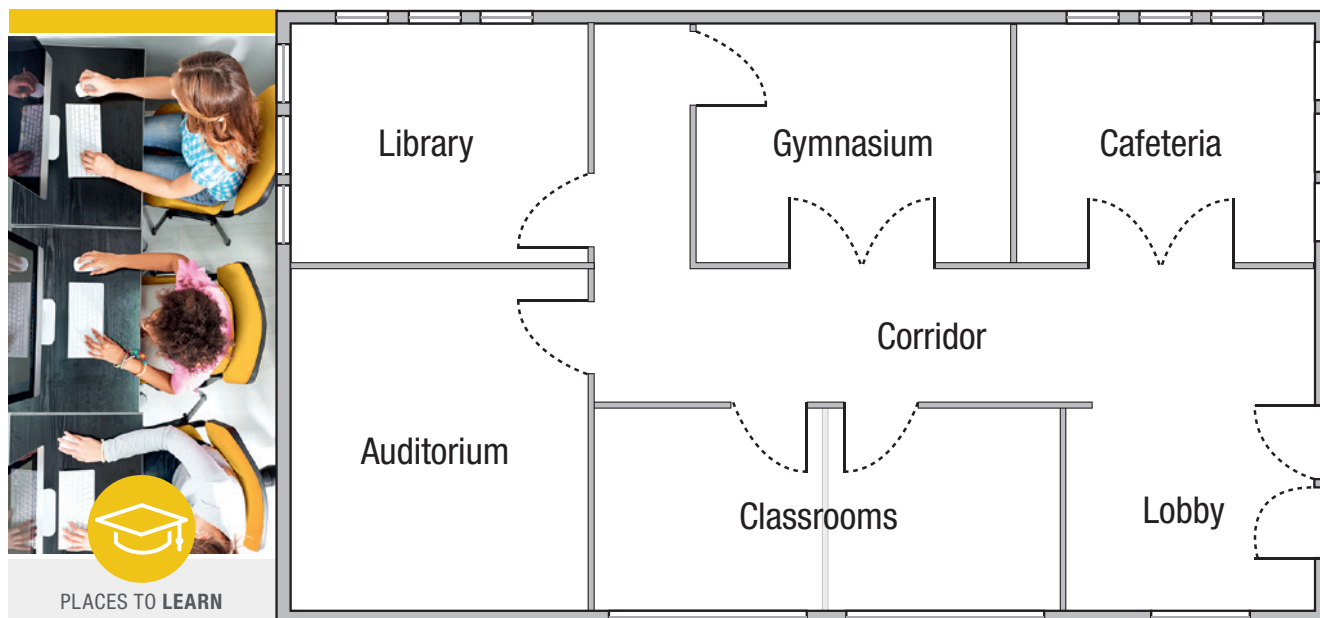
REDUCE HVAC NOISE

The main source of background noise in classrooms is often the HVAC system. The best acoustical design uses a centralized system, rather than individual room units. Air handlers and mechanical equipment should be located away from classrooms. Position rooftop equipment over hallways, cafeterias, and gymnasiums.

A CEILING FOR EVERY SPACE™

Discover high-performance ceiling solutions for every application.

Armstrong ceilings such as Optima® and Ultima® have a light reflection of 0.90, meaning that they reflect 90% of the light that hits them, absorbing only 10% of the light.



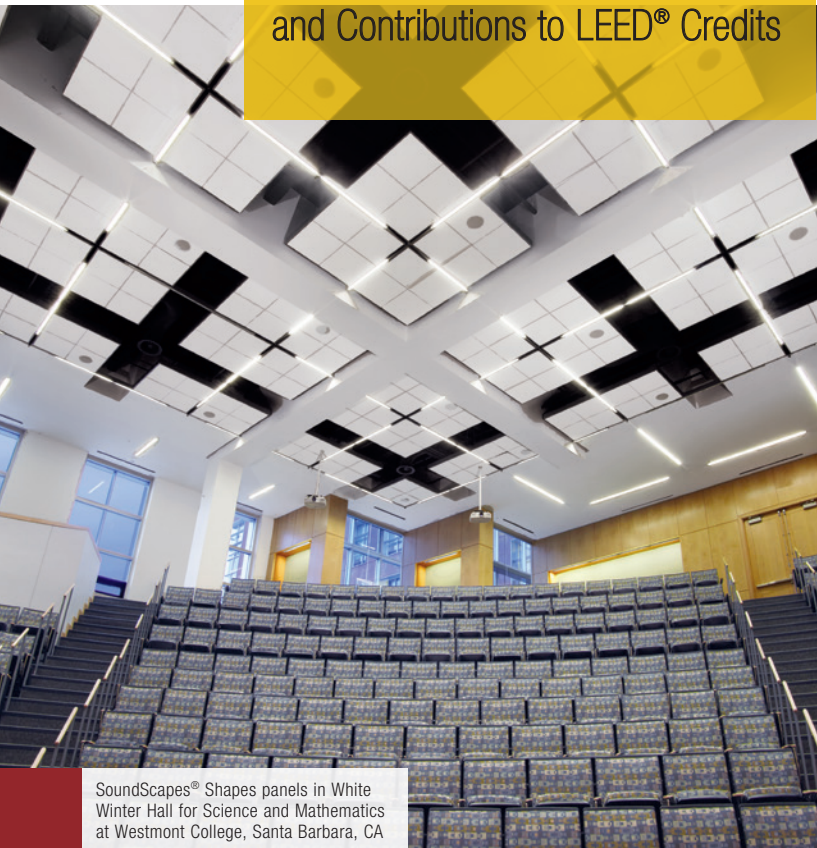
RECOMMENDED PRODUCTS AT-A-GLANCE

Space	How the Right Ceiling Can Help	Product Recommendations		
Libraries	Students need a quiet space for thoughtful study, as well as a place that inspires creative thinking. Select ceilings that play equal parts acoustics and beauty.	<ul style="list-style-type: none"> • MetalWorks™ • WoodWorks® • Calla® • Lyra™ • Lyra™ High CAC • Ultima® • Ultima High NRC 	<ul style="list-style-type: none"> • School Zone® Fine Fissured™ • School Zone® Georgian™ • SoundScapes® Canopies, Shapes, and Blades™ • Formations™ Acoustical Clouds 	<ul style="list-style-type: none"> • Serpentina® Classic, Vault, and Waves™ • MetalWorks™ Blades – Classics™ • Infusions® Blades – Concepts™, Canopies, Lay-in
Auditoriums	Play up drama with designs that set a stage, but also provide the acoustical performance that preserves sound quality.	<ul style="list-style-type: none"> • MetalWorks • WoodWorks • Calla • Lyra • Lyra High CAC • Ultima High NRC • Mesa™ 	<ul style="list-style-type: none"> • TechZone® Ceiling Systems • School Zone Fine Fissured, Georgian • SoundScapes Canopies, Shapes, and Blades • Formations Acoustical Clouds 	<ul style="list-style-type: none"> • Serpentina Classic, Vault, and Waves • MetalWorks Blades – Classics • Infusions Blades – Concepts, Wings

Space	How the Right Ceiling Can Help	Product Recommendations		
Classrooms	Create better spaces for students to learn, and teachers to teach with the right balance of sound absorption and sound blocking. Consider specifying Total Acoustics™ performance ceilings to help you meet the ANSI standard and gain LEED® points.	<ul style="list-style-type: none"> • MetalWorks™ • WoodWorks® • Calla® • Lyra™ High CAC • Ultima® High NRC • Ultima • Ultima® Health Zone™ 	<ul style="list-style-type: none"> • Fine Fissured™ High NRC • Cirrus® & Cirrus® High NRC • SoundScapes® Canopies, Shapes, and Blades™ • Formations™ Acoustical Clouds 	<ul style="list-style-type: none"> • Serpentina® Classic, Vault, and Waves™ • MetalWorks™ Blades – Classics™ • Infusions® Blades – Concepts™
Corridors	Help reduce unwanted noise coming from noisy corridors with high CAC ceilings, in addition to high STC walls.	<ul style="list-style-type: none"> • MetalWorks • WoodWorks • Calla • Lyra • Cirrus • Dune™ 	<ul style="list-style-type: none"> • Mesa™ • Georgian™ • Graphis® • Metaphors® Coffers • Tundra® • Ultima 	<ul style="list-style-type: none"> • Lyra High CAC • TechZone® Ceiling Systems • School Zone® Fine Fissured™ • School Zone® Georgian™
Lobbies	Design to make a great first impression. Lobbies and entryways are perfect places to make a statement that reflects the personality of an educational institution – especially in higher education.	<ul style="list-style-type: none"> • MetalWorks • WoodWorks • Calla • Lyra • Cirrus • Dune • Mesa • Ultima 	<ul style="list-style-type: none"> • Lyra High CAC • TechZone Ceiling Systems • School Zone Fine Fissured • School Zone Georgian • SoundScapes Canopies, Shapes, and Blades 	<ul style="list-style-type: none"> • Formations Acoustical Clouds • Serpentina Classic, Vault, and Waves • MetalWorks Blades – Classics • Infusions Blades – Concepts
Cafeterias	Treat these noisy areas to dampen the buzz of many voices talking all at once. Cafeterias and multipurpose areas are also places to have fun with design.	<ul style="list-style-type: none"> • MetalWorks • WoodWorks • Armatuff® • Create!™ • Calla • Cirrus • Dune • Fine Fissured • Georgian • Graphis • Lyra • Mesa 	<ul style="list-style-type: none"> • Optima® • Optima® Health Zone™ • Tundra • Ultima • Ultima Health Zone • TechZone Ceiling Systems • Lyra High CAC • School Zone Fine Fissured • School Zone Georgian 	<ul style="list-style-type: none"> • Capz • SoundScapes Canopies, Shapes, and Blades • Serpentina Classic, Vault, and Waves • Formations Acoustical Clouds • MetalWorks Blades – Classics • Infusions Blades – Concepts
Gymnasiums	These booming spaces need a mix of durability and high acoustical performance. Quiet the boom of these large spaces with high NRC, impact-resistant ceilings.	<ul style="list-style-type: none"> • WoodWorks • Armatuff • Ceramaguard® • Optima • Lyra High CAC 	<ul style="list-style-type: none"> • School Zone Fine Fissured • School Zone Georgian • Canyon™ • Capz 	<ul style="list-style-type: none"> • Soundsoak® Baffles • MetalWorks Blades – Classics • Infusions Blades – Concepts

MEETING ANSI STANDARDS

and Contributions to LEED® Credits



SoundScapes® Shapes panels in White
Winter Hall for Science and Mathematics
at Westmont College, Santa Barbara, CA

LEED CREDIT CONTRIBUTIONS FOR ACOUSTIC PERFORMANCE

Acoustical design solutions in schools can contribute to LEED for School credits for Acoustic Performance. In LEED, there is a prerequisite for minimum acoustic performance credit that is required on all LEED school projects, and a credit for Acoustic Performance. Design classrooms and other core learning spaces to include sufficient sound-absorptive finishes for compliance with the reverberation time requirements specified in ANSI Standard S12.60-2010, Part 1, Acoustical Performance Criteria, Design Requirements and Guidelines for Schools. The intent of the LEED credit is to provide classrooms that facilitate teacher-to-student and student-to-student communication through effective acoustic design.

Many states have adopted ANSI Standard S12.60 in recognition of the importance of good hearing environments to learning. This Standard focuses on speech intelligibility by setting maximum permissible levels for reverberation time to ensure that speech can be heard above the noise. Designing a classroom to meet the acoustical requirements of the ANSI Standard is neither difficult nor costly, if addressed early in the planning and design stages.

REDUCE REFLECTED SOUND

The level of reflected sound and the reverberation time can be reduced by adding sound absorbing material. For classrooms, especially in younger grade levels where teachers move throughout the classroom, and where ceiling heights are less than ten feet, the best placement of the sound absorbing material is the ceiling plane. A ceiling with an NRC (noise reduction coefficient) of at least 0.70 is recommended, meaning it will absorb 70% of the sound that strikes it.

REDUCE PLENUM NOISE

When walls don't extend all the way from the floor to the deck above, noise can travel through the ceiling plenum from one classroom to another. To reduce the noise intrusion between classrooms, use an acoustical ceiling panel that has a high CAC or ceiling attenuation class value. The higher the value, the more sound blocking occurs as the ceiling creates a barrier to sound intrusion from one room to another.



Ultima® Tegular panels in White with
Prelude® 15/16" suspension system in White
Brookland Middle School, Washington, DC



MetalWorks™ Torsion Spring Radial panels in Reflections™ Laminates Rock Maple
School Zone® Fine Fissured™ panels with Prelude® 15/16" suspension system
Dover High School, Dover, DE



Ultima® panels with Supratine® 9/16" suspension system, and Axiom® Paired in custom color
St. Thomas Aquinas HS, Ft. Lauderdale, FL



MetalWorks® Torsion Spring panels in Laminates Rock
Maple TCU Bass Hall Addition, Fort Worth, TX



Ultima® Tegular panels with Prelude® 15/16" suspension system and Axiom® Classic trim
Albany Park Branch Library, Chicago, IL

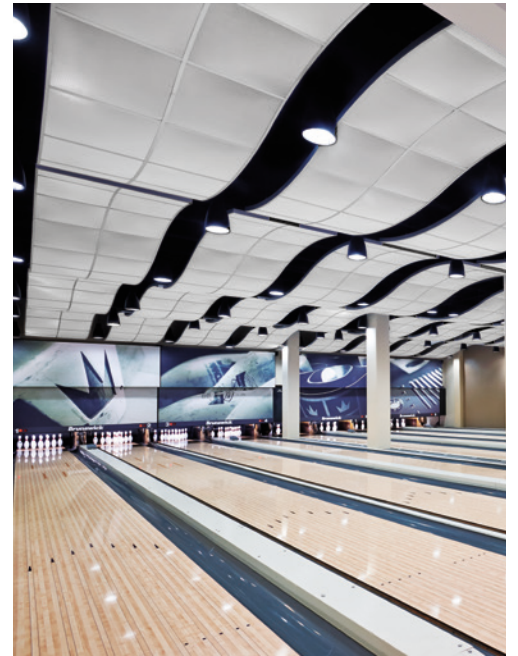
CEILING FOR PLACES TO LEARN



MetalWorks™ RH215 Barrel Vault system in White
Miami University of Ohio, Oxford, OH



NEED
TO FLOP
WORDS
IF I USE
IT THIS
WAY



EXTRA
PHOTOS
THAT MIGHT
WORK?

take the next step

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Latest product news

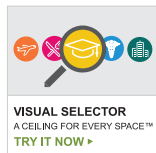
Standard and custom product information

Online catalog

CAD, Revit®, SketchUp™ files

A Ceiling for Every Space™

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Product literature and samples – express service
or regular delivery

Contacts – reps, where to buy, who will install

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Detail drawings

Specifications

Planning and budgeting

Pre-construction Assistance

Layout drawings for standard
and premium products

Project installation recommendations

Contractor installation assistance

you inspire™
solutions center

helping to bring your one-of-a-kind ideas to life

COVER

WoodWorks® Radial panels in
Constants™ Cherry
Shadow Hills High School,
Indio, CA

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