Ogden, Utah is located 40 miles north of Salt Lake City and is currently the seventh largest city in Utah. Ogden has a long and rich past from its early days as a settlement to becoming a major, thriving railway hub connecting the east and the west. Historically the second largest city in Utah, Ogden has lost this position to fast growing suburbs in and around Salt Lake. However, Ogden’s history and stature as an established urban area and railway hub has resulted in a collection of many historically significant structures in the city. The city continues to grow and evolve; and serves as a unique, proud and dynamic community in Utah.

For the first time in decades, the Ogden City School District determined that they needed to go out to the public with a bond to replace and/or renovate many schools in their district due to age and condition. This led to a failed bond attempt in November 2004 in which the public was asked to support a $165 million bond. After this failure the District regrouped, studied and set forth a clearly articulated plan based on very specific needs. In the spring of 2005, Ogden City School District commissioned the design and planning team to develop a master plan for Ogden High School, one of two co-ed secondary schools serving the community of Ogden. The clarity and rationality of this document in outlining a plan for the renovation of this school played a large part in the successful passage of the bond in November 2006.

Construct in 1937 as a project for the Federal Public Works Project, Ogden High School has been an educational, cultural and architectural cornerstone of Ogden for over 75 years. Designed by Hodgson and McClennahan of Ogden in 1936, the project is the masterpiece of a firm responsible for some of Ogden’s most important historic architecture, including the Municipal Building, the Eccles Building and the Egyptian Theatre. What distinguishes this building among an oeuvre of such accomplishment is its successful aesthetic and functional resolution, creating a facility that is characterized by its organizational and hierarchical clarity, formal brilliance and decorative sophistication.

The master plan document, completed in February of 2006, addressed three major categories: Educational Facilities Analysis (including a complete Educational Specification document), Life Safety and Accessibility Analysis and the Preservation Assessment. Based on the results of these analyses, the following recommendations were made in the final document.

1. Preserve and Rehabilitate the existing historic Main Classroom Building.
2. Reconfigure the Interior of the existing historic Main Classroom Building to address different teaching modalities and support the educational environment of the learning communities.
3. Construct a New Physical Education Complex outside the historic Main Classroom Building where space is available to address deficiencies in the current physical education program, including the need for multiple gymnasium floors.
4. Construct a New Kitchen, Student dining and commons Facility.

Within the context of these four recommendations, the guiding objectives of the project were:

1. Preserving the formal integrity of the historic main building.
2. Creating new buildings which not only support the educational needs of Ogden High School but also complement the architectural vocabulary of the historic structure on the campus.
3. Establishing accessible paths through the campus to all the buildings.
4. Creating a safe pedestrian friendly quadrant at the center of the campus.
5. Providing state of the art facilities for the learning communities within the historic main structure.
6. Creating an attractive and accessible campus place for dining, meeting and socializing.
7. Providing facilities that are environmentally sustainable.
SCOPE

Upon successful passage of the bond election in November of 2006, design work began on the project. The scope of the work included:

1. Historically preserve and renovate the Main Classroom building
2. Improve educational facilities:
   a. athletics
   b. performing arts
   c. classrooms and educational technologies
   d. student commons and cafeteria
   e. science labs
3. Improve life safety:
   a. seismic upgrade
   b. fire sprinklers throughout the entire facility
   c. emergency egress upgrade
4. Electrical and Mechanical upgrade

The work was scheduled to be phased due to both funding limitations and the need to keep the school operational throughout the construction process. Seismic, mechanical and electrical upgrades needed to be solved and planned for the entire school in order that partial work in initial phases would dovetail with the final phases of construction.

Based on the funding available from the initial bond, Phase 1 added the new Physical Education Complex, renovated the food service area at the lower level of the historic Classroom Building while expanding the cafeteria and adding new commons facing the new quad area (formerly a parking lot.) Parking was removed from the center of the campus and new parking was placed at the northern edge of the school. A new school Entry oriented to the new parking area and linked to the new commons was part of the project as well. This new entry anticipated the relocation of the administration space to this area which did not occur until 4 years later as part of Phase 3 work. Phase 1 was completed in August of 2009.

As additional funding became available, design work on phase 2 began. Phase 2 renovated the south end of the historic Main Classroom Building. This work included the historic restoration of the auditorium and the performing arts wing (Black Box Theatre, Band and Choral rooms, and Dance studio) directly across the hall from the auditorium. Beneath the
performing arts spaces at the lower level, science laboratories with adjoining instructional spaces were located. Both the new performing arts and the new science wing were housed in the area of the former gymnasium and physical education space in the historic structure which had been relocated to the new field house as part of Phase 1.

The seismic upgrade to the Main Classroom Building was fully implemented in this quadrant of the building. Micro-pile footings and shot-crete reinforced walls which were utilized in the renovated kitchen area on the lower level as part of Phase 1, were installed from footings to the upgraded roof diaphragm at the fourth floor level. Center coring was utilized to reinforce the tall, slender walls supporting the large volume of the historic auditorium.

Phase 2 also added multiple computer labs and a large lecture hall capable of holding three classes at once.

The restoration of the auditorium became the focal point of phase 2. The historic auditorium is the crown jewel of Ogden High School. The decorative, elaborately painted space is like no other high school auditorium. While the majority of the Ogden High School renovation was funded by a publicly elected bond, the restoration of the auditorium was funded entirely by private donations through a close partnership between the Ogden City School District, the design team and the Ogden School Foundation. The community came together with the District and the Foundation to raise $9 million to restore this iconic space to its previous splendor without any tax payer dollars involved. Architecturally and from the perspective of the community, this was the most significant effort of Phase 2 and arguably of the entire project. Phase 2 work was completed in August of 2011.

With the assistance of District secured grants and other funding sources, the design work for phase 3 began. Phase 3 included the renovation of the remaining balance of the historic structure. The project moved through the lower level and up through the three remaining levels over a 2 year period. During this time, classrooms were brought on line and others taken off line for renovation keeping the necessary total number of teaching stations on line to maintain the educational
process. This phase of the work included the renovation of the historic media center and rotundas, a new administration section and a visual arts wing. The seismic, mechanical and electrical upgrades initiated upgrades in Phases 1 and 2 continued as well. The majority of the phase 3 work created new instructional classrooms. Phase 3 work was completed in December 2012.

BUDGET

Construction Budget identified in February 2006 in the Master Plan included four phases of construction valued at $57,747,477. The final total Construction Cost upon completion of the final of three phases in December of 2012 was $57,781,718.

The costs per phase were as follows:

Phase 1: $21,835,046
Phase 2: $21,988,672
Phase 3: $13,958,000

COMMUNITY ENGAGEMENT

The project engaged multiple stakeholders given the unique historical significance of the school. These stakeholders included the Ogden City School District, Ogden School Foundation, Ogden Landmarks Commission, Ogden High School Administration, Teachers and Students, Ogden City residents, parents of current students and past graduates.

Ogden High School is on the National Historic Registry of Historic Places and on the Ogden City Landmarks Register. The latter designation required constant interface between the design team and the Ogden Landmarks Commission throughout the planning, design and construction of the project. Presentations were made, questions were answered and the support from this municipal body was achieved.

The Ogden School Foundation was the fundraising arm of the project team. The District budget was focused on educational and life safety upgrades to the school. However, it was clear from the start that funding for the ornate painting, plaster and other architectural upgrades to the auditorium would be a burden to the District finances and fall outside the district mission of education and life safety. The dedicated staff of the Foundation and the design team conducted tours and engaged the public leading up to the work on the auditorium during phase 2 of the construction. Through these efforts and with the unparalleled engagement and support of the Ogden community, the Foundation was able to raise $9 million in private donations for the architectural restoration of this beautiful space. Many tours were conducted as the work was proceeding to maintain and recognize the commitment of the community to this project.

During the development of the Educational Specifications for Ogden High School, in addition to District and school representatives, representatives of the PTA and parents of Ogden High students participated in the workshop process to generate the program for the school. This outreach to the community was merely one of many examples of the investment of many individuals from Ogden who helped to make this project a success.

CHALLENGES

Maintaining an environment conducive to education over a period of 5 years and 3 phases of construction was a significant challenge for everyone involved with this project. This required the Ogden High School staff, teachers and students to be fully engaged in the design and construction process. The need to maintain, phase and coordinate the required number of teaching stations became paramount to maintaining the educational environment. Their patience and perseverance represents their commitment and support for the work performed on this school.

Providing funding for the restoration of an historic landmark school facility in a district with limited resources required multilevel support from within the school district and from the community. The raising of $9 million in private donations for the historic upgrade to the auditorium played no small part in overcoming this challenge.

The phasing plan for this project was no small task. Aside from the potential compromises to the educational environment, integrating the seismic upgrades which ran through the walls of the structure from the footings to the
roof had to be carefully timed and coordinated to maintain life safety throughout the work. Upgrades to power had to be phased and timed to keep the school in operation while instituting upgrades. Creating an overall vision and approach to the entire project helped facilitate this process in light of the fact that less than half of the overall funding was available at the start of the construction.

Bringing new technology, electrical and mechanical systems into the 1937 structure proved to be a significant challenge as well. The existing structural system had very limited ceiling space which made it challenging to accommodate any of this infrastructure upgrade. The mechanical upgrades are a particular case in point. The existing system was steam piping to wall radiators. Fresh air was brought into classrooms through wall ventilators. The original building had been designed around this system with no duct paths for a forced air system. In trying to solve this challenge, the design team approached the district with an active chilled beam system. This placed the HVAC system in the ceiling space of each classroom only requiring hot and chilled water piping to access the each classroom. This work dovetailed with the historic preservation assessment which identified the hallways as historically significant and the classrooms as having only a minimal significance. Thus, the hallway ceilings could remain intact and a ceiling cloud was dropped in the classrooms to accommodate not only the chilled beam system but the cable tray system for data and technology upgrades.

AVAILABLE ASSETS

Ogden High School is a significant, highly valued, historic landmark in the community. This asset fueled the outpouring of support for this iconic structure from Ogden citizens from all walks of life. Graduates from this school remain passionate about its place in the urban fabricate and its role in the education of students for over seven decades.

VALUE OF PROCESS AND PROJECT

The coalition of design team members, the District, the Foundation and the Landmarks Commission lead to a highly engaged partnership with the community. The value of this process was exemplified in the successful raising of $9 million in private donations to restore the historic auditorium.

The value of the project was that significant historic landmark was saved not as a museum piece but as an effective 21st century educational facility steeped in a rich history. The historic nature of this project enhances its unique role in the education of the students who learn there and the teachers who teach there.

EDUCATIONAL ENVIRONMENT

The renovation of Ogden High School supports the educational environment identified in the Master Plan document of 2006. The educational philosophy is based on the concept of learning communities. The school has four: Applied Science and Technology, Arts and Humanities, Health Science and Human Resources, and Business and Computers. Based on the upgrade to the school, Ogden High School now houses an International Baccalaureate
Each learning community is supported by a central teacher preparation area and satellite counseling offices. The new environment supports a variety of learning and teaching styles. Classrooms sizes range from 650 square feet to 1200 square feet to support different teaching modalities. There are two 2500 square foot lecture halls which can support combined classes for instructional and lecture opportunities. The Black Box Theatre, Band and Choral spaces are located adjacent to the historic auditorium and serve as staging area for large performances in the auditorium. The 2-D and 3-D art studio spaces are across the hall from one another and are joined by an art exhibit space which is centered in the visual arts wing. The renovated media center, the second most historically significant space, was diligently restored to its original glory much in the same manner as the auditorium.

Physical Environment

There has been much public discourse concerning the loss of so much of our architectural heritage through the demolition and replacement approach to progress. To be sure, old buildings present many and significant challenges to districts in terms of maintenance, technological upgrades and classroom configurations to accommodate changing teaching modalities. However, these existing structures can sometimes transcend some of these perceived limitations and supplant them with benefits to the educational experience in terms of the richness of the physical environment. Ogden High School is a case in point.

In developing the plans for the school, the design team played upon the unique design of the 1937 Art Deco building designed by Hodgson and McClennen (its symmetry, its axial disposition and its articulation of form). The new physical education building in phase 1 was organized around one of the major axis of the original historic classroom building and defines the fourth quadrant of the new outdoor quad. The new commons space, which was added onto the original building, is enclosed by a transparent curtain of glass that allows views to the quad and the mountains to the east which served as the original inspiration of the Art Deco “zigzag” style of the building over 75 years ago. The new Commons serves as the new living room of the school and was designed to provide a café atmosphere with built in banquet seating with informal gathering and study areas around the perimeter. Although the common’s

Program as well.
curtain of glass is an evocation of contemporary design, it is articulated to reference the beautiful stainless steel transoms and decorative grilles of the existing building.

The new complements the original as historic upgrades returned the auditorium, media center, the rotundas and hallways to their original glory. The building signage, the palette of materials in the additions and renovations reinforce the style of the existing structure through a dialogue for all to share. Like the concentric circles emanating from the center of the quad carrying into the floor patterns in the new commons and new physical education complex, there is a story here where the past meets the future for those willing to stop, look and listen.

**Impact**

The project, just completed at the end of last year, continues to have an impact which seems to be still expanding. Hughes General Contractors, an invaluable team member and the CMGC for all three phases of the work, received a 2013 Alliant Build America Award for the Ogden High School Auditorium Renovation from the Associated General Contractors of America. More recently, the Ogden City School District received an 2013 Honor Award from the Utah Heritage Foundation. Included at the end of this dossier are articles from newspapers and professional periodicals which have focused.
Phases 2 & 3
Staging process for the historic main classroom renovation.
teaching station schedule

aug 2011
- 33 main bldg
- 2 portable
- 9 pe bldg
- 12 bldg 2
- 56 total t.s.

aug 2012
- 56 existing
- 11 add
- 67 total t.s.

dec 2012
- 67 existing
- 14 add
- -12 temp
- 69 total t.s.

Phases 2 & 3
Teaching station allocations during the micro phases of the work.
historic stainless steel grill transoms
View of the new commons from the new quad. The commons curtain of glass is articulated to reference the decorative grilles of the historic structure.
original cafeteria space
new expanded cafeteria commons space
new entry linking parking, administration and commons
new physical education complex entry mirroring the commons facade located across the quad.
the original tiger mascot in the original gymnasium floor on display in the new physical education field house
new restored proscenium in the historic auditorium
restored historic auditorium
detail of restored historic auditorium
new black box theater
new science lab
new science instruction space
restored rotunda outside the restored media center
New administration space.

Note the transparent “history window” wall to the left, which reveals the original wall construction and the seismic upgrades introduced to improve it.
Ogden High project: ‘There’s nothing like it’

About 1,200 donors gave to the Ogden High School Capital Campaign, including many from the large pool of alumni, with donations ranging from one dollar to $1.2 million.

Ogden High Principal Stacey Biggs wasn’t surprised by the success of the drive, which hit its $4 million goal in August 2000. “The alumni here are like nothing I’ve ever seen,” Biggs said. “They’re committed to the success of the building and the students.” James House (Ogden School Foundation executive director), said the level of giving was unprecedented for a public school. Donations came in from across the country and internationally.

The original construction of the “million-dollar school” began in 1936 and was funded with a Federal Works Administration grant and a local bond issue. The first students arrived in 1937 and the first graduating class was in 1938. The building had art deco features, including metal grilles on the front doors, decorative mosaic tiles in the corridors and light fixtures in the lobby. Women’s bathrooms were built on the left and men’s on the right.

When Ogden High School was built in 1936, it was a “milestone in education.” The building was designed by notable architect Ray Heald, who was also the architect for the Salt Lake Temple.

The restoration effort began in 2000 with a capital campaign. The goal was to raise $4 million to replace the old auditorium with a new one that would be a “showplace.” The campaign was led by Stacey Biggs, who had previously been a music teacher at the school.

The campaign was a huge success, exceeding its goal by more than $1 million. The new auditorium was designed to be a “showplace” and a symbol of Ogden High’s commitment to providing a quality education for its students.

Without the support of the people of Ogden, this restoration would have never taken place.”

BEN PRATT
Ogden School Foundation

The new auditorium features state-of-the-art technology, including a new stage that can be raised or lowered, and a new lighting system that allows for a variety of effects. The new auditorium also includes new seating, new acoustics, and new heating and cooling systems.

The new Auditorium is a major improvement over the old one, which was built in 1936. The old auditorium was small, outdated, and lacked modern amenities.

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Ogden High School’s auditorium is highlighted by intricate, delicate design work. (Inset) A pleasant open space features a unique ceiling mural. (All photos courtesy ETA Architects © 2012-13 Paul Richer; Richer Images.)
STUNNING RENOVATION FOR OGDEN HIGH

$58 million project restores classic Art Deco building that holds great value to local community.

By Brian Fryer

Often regarded as the finest example of Art Deco architecture in Utah, Ogden High School was the first $5 million school in the U.S. when it was built as a Depression Era project by the Works Progress Administration in 1937. Over the years, renovations were made and enrollment grew, but by 2006 Ogden School District officials were faced with the need to replace or restore the historic school. A bond issue passed by voters provided some funding for the $58 million project, which was augmented by nearly $9 million raised by a group of enthusiastic alumni.

Not only did alumni pitch in to help with the restoration but the job of designing the project fell to Robert Herman, AIA, of Salt Lake City-based EDA Architects and an Ogden High graduate.

"To be able to come back, all these years later to a building I knew and grew up with and do this renovation was a unique experience," said Herman.

The renovation/restoration was carried out in three phases beginning with the construction of a new field house, followed by a new cafeteria and commons area, seismic upgrading of the foundation and shear walls with the restoration of the historic auditorium.

On solid ground

Corey Price, a structural engineer for Reaveley Engineers and Associates of Salt Lake City said the foundation of the school needed rehabilitating first.

"In some places the soil under the building had settled and there were some big voids under some of the slabs. We did a lot of replacement of slab-on-grade," said Price.

"We also went in with milling equipment and drill rigs and put in new micro-piles to support the existing footings. Some of them went 60 to 90 ft into the ground."

Project Manager Patrick Alcorn of Hughes General Contractors of North Salt Lake, said around 200 micro-piles were installed at various points around the building's existing foundation. Price said new shear walls were installed or retrofitted to existing walls.

Alcorn said none of the existing walls in the historic building were moved in the process.

"There were some strict guidelines on what could be changed," said Alcorn.

Price said walls were also braced and the exterior brick veneer was secured with a system of helotie bolts.

The new shear walls were tied to the floor and into a new roof diaphragm after the removal and replacement of the original roof.
Raising the curtain on the next act

But while the shoring, shear walls and bracing were all necessary, a highlight of the project was the restoration of the school's auditorium. The 33,700 sq ft facility with its intricate, Art Deco plasterwork is one of the best examples of this form in Utah according to EDA.

Again, reinforcing work was required before restoration could go on. Seismic reinforcement of the walls in the space was complicated according to Alcorn. Traditional center coring work could damage the plasterwork from water used in the process and vibration. Alcorn said the team reached out to a California subcontractor specializing in “dry-coring” reinforcement work in historic buildings. The process drills cores without using water as a lubricant and drilling proceeds slowly enough to minimize vibrations.

"That was a tough part of the job," said Alcorn. "Some of the cores we drilled down the walls had to be about 40 ft long. We had to do about 100 of them and we averaged about three a day. The other issue is that if you are off by as much as a quarter inch at the top, you could end up drilling out of the wall."

Alcorn said inside the auditorium the seats in the best condition were repaired and moved to the balcony while new seating, designed to resemble the originals, was installed on the main floor.

Herman said little work had ever been done to repair or restore the decorative plasterwork with its large amounts of gold and silver leaf accents and vibrant colors. "There was good documentation on what the original work looked like so we used that for the restoration," he said.

Original wood wainscoting in the auditorium and in the school's library was also restored. Above the auditorium stage, a new catwalk system was added along with new lighting and controls.

Alcorn said extra reinforcing work was done around the stage area and the fly-loft. "There was unreinforced masonry there so we added a brace frame there," he said. "We added steel beams that run the full height of the fly-loft and reinforced it with rebar and shotcrete."

Replacing the roof of the auditorium caused some anxious days. "We did the roof replacement in the summer, that was a 24 hours a day, seven days a week effort to prevent the weather or anything like that ruining the artwork," he said. "There were a few times we had to seal everything off and wait for a storm to come through, but most of them seemed to miss us."

In with the new

As important as it was, the restoration and reinforcing of the existing structure was, it was only part of the project. New sections needed to be added and in a way that was complimentary to the existing building, said Herman.

"We needed to make a 21st Century-learning environment using a 75-year-old building," he said. "Trying to integrate those two requirements while respecting the building was a real balancing act from a design standpoint."

The new additions to the campus include a new 54,000 sq ft athletic field house to the east of the existing building. A new 8,500 sq ft cafeteria and commons area was attached to the east wall of the existing building, filling a space formerly occupied by a parking lot.

The new construction is distinct in materials, utilizing aluminum and glass while incorporating signage and decorative elements referencing the art deco design of the original building.

Price said structurally the new sections were attached to the existing building as minimally as possible.

"We didn’t want to do anything to the existing building we couldn’t reverse," said Price. The school was kept open through the renovation and completed near the end of 2012.

Project Team

Owner: Ogden City School District
Architects: EDA (design), CRSA (historical)
GC: Hughes General Contractors
Structural: Reaveley Engineers + Associates
Mechanical: Calvin Engineering
Electrical: Spectrum Engineers
Historic Ogden High School Renovation & Addition
Ogden, Utah

Active Beams Bring Modern Comfort to Historic “Hollywood” High School

Project Summary

Project Type: New Construction, Commercial
Project Cost (construction cost): $48,823,000
Year Completed: 2009
Building Square Footage: Dining Area - 2,900 ft²;
Commons Area - 5,100 ft²
Price Products Used: Active Chilled Beams
Mechanical Engineer: Colvin Engineering Associates, Inc.
Architect: EDA Architects Inc.
Price Representative: Midgley-Huber, Inc.

Ogden High School is a four-story, art deco high school first built in 1936. Listed on the National Historic Registry, character permeates the facility, which has been featured in several Hollywood films, such as Three O’Clock High (1987) and Drive Me Crazy (1999).

In 2006, the school initiated plans to renovate the existing cafeteria and build a new commons area while maintaining the historic façade of the building. Active beams were installed in these spaces as they allowed the design team to work around significant mechanical constraints and deliver comfort levels that far surpassed expectations.

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Historic Ogden High School Renovation & Addition
Ogden, Utah

The Challenge: Balance Comfort and Aesthetics in an Historic Landmark

Built in 1936, Ogden High School relied on noisy unit ventilators for cooling. With no central air distribution system in the building, there was little or no ceiling space in which ductwork could be incorporated.

The Historic Landmark Committee overseeing the project mandated that the famed art deco façade of the building be maintained. This meant that the extensive renovations required to lower ceilings and allow ductwork for an all-air system in the existing cafeteria would not be possible.

For the new Commons Area, which was an addition to the existing building, the architect opted for a two- to three-storey glass curtain wall through which the original façade of the building could still be appreciated. The temperature extremes in Salt Lake City meant that comfort would be a significant concern. With these areas accommodating 600-800 people at one time, the design team wanted to ensure that the students were not left with a hot, uncomfortable space.

Design Team Profile

Colvin Engineering Associates, Inc.
(www.colvinengineering.com)

A mechanical engineering firm in Salt Lake City, Utah, Colvin Engineering Associates, Inc., is known for energy efficient designs. A number of their projects have received several regional and national awards for energy conservation and innovative systems. They have completed hundreds of commercial, institutional and manufacturing projects across the United States, utilizing a wide array of design elements such as indirect/direct evaporative cooling, under floor air distribution systems, displacement ventilation, radiant panel systems, and chilled beams to achieve conservation goals.

EDA Architects, Inc.
(www.edaarch.com)

EDA Architects, Inc. (EDA) has over 50 years of experience in planning and design work for clients throughout the Intermountain West. EDA provides a broad range of architectural services, including master planning, programming, architecture, and interior design. The firm is committed to a highly interactive and integrated design process through which they and their clients are challenged to create places that enhance lives and make a lasting contribution.

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Historic Ogden High School Renovation & Addition
Ogden, Utah

Price Solution: Chilled Beams Bring Modern Comfort to Historic High School

Active chilled beams from Price were utilized for the project because they were able to meet the comfort requirements of the space without disrupting the aesthetic of the building. Due to the temperature extremes and the expansive glass curtain wall in the Commons Area, the design team had approached the project with limited options and significant concerns about comfort in the space.

The engineer’s recommendation to employ active beams, however, addressed the design team’s concerns and they opted to move forward with the selection. This would vastly reduce the ducting requirements while also saving energy and ensuring occupant comfort.

The renovations were completed in early 2009, with occupants reporting that they love how quiet the system is and are impressed with the high levels of thermal comfort and the virtual elimination of cold drafts. Greg Brooks of EDA Architects described the impact of chilled beams on the space as “…incredible – you can walk down the corridors of the high school and feel cool air 100 feet before you get to [the] Commons. It is a very comfortable cool – you forget about [the] mechanical system.”

The piping requirements for active beams were easily incorporated into the existing structure of the cafeteria and the need for extensive renovation related to ductwork was eliminated. In the Commons Area, the beams were attractively integrated into the 16-foot high cloud ceiling. The system has proven to be extremely low maintenance, which was an important consideration for the school custodians.

The renovation and addition were designed to embody LEED principals and the beams were part of a hybrid approach that also incorporated a radiant floor system. The architect, engineer and contractor worked collaboratively to create a space that far exceeded the expectations of all involved.